



TRANSNET CAPITAL PROJECTS
ENVIRONMENTAL MANAGEMENT

**STANDARD ENVIRONMENTAL
SPECIFICATION (SES)**

ENV-STD-002 Rev00

Document Control

This document will be managed and controlled in terms of the TCP document management procedure.

Revision History

Author	Date	Description	Revision
Khathutshelo Tshipala	15 September 2011	Standard Environmental Specification (SES)	00

This document has been reviewed by:

Reviewer	Date reviewed
Joseph McMahan	15 September

Document Approvals List

This document has been approved by:

Signed approval forms are filed in the Management section of the project files.


Name	SAP Component	Signature	Date approved
Christelle van Der Merwe	legal, Risk, Quality & Sustainability		30 September 2011

Table Of Contents

1 Purpose	1
2 Scope	1
3 References	1
4 Standards for environmental management	2
4.1 Site establishment.....	2
4.1.1 Objective.....	2
4.1.2 Scope.....	2
4.2 Waste Management.....	3
4.2.1 Objective.....	3
4.2.2 Scope.....	4
4.2.3 Approach.....	4
4.2.4 Waste Management.....	5
4.3 Vehicle and Equipment Refueling.....	6
4.3.1 Objective.....	6
4.3.2 Scope.....	6
4.3.3 Refueling.....	6
4.4 Spray Painting and Sandblasting.....	8
4.4.1 Objective.....	8
4.4.2 Scope.....	8
4.4.3 Spray Painting and Sandblasting.....	8
4.5 Dust Management.....	8
4.5.1 Objective.....	8
4.5.2 Scope.....	9
4.5.3 Management of Dust.....	9
4.6 Storm water and Dewatering Management.....	10
4.6.1 Objective.....	10
4.6.2 Scope.....	10
4.6.3 Storm water and Dewatering Management.....	10
4.7 Rehabilitation.....	12
4.7.1 Objective.....	12
4.7.2 Scope.....	12
4.7.3 Rehabilitation.....	12
4.8 Noise Management.....	12
4.8.1 Objective.....	12
4.8.2 Scope.....	12
4.8.3 Noise Management.....	12
4.9 Protection of heritage resources	13
4.9.1 Objective.....	13
4.9.2 Scope.....	13
4.9.3 Archeological Sites	13
4.9.4 Graves and middens.....	13
4.10 Fire prevention.....	14
4.10.1 Objective.....	14
4.10.2 Scope.....	14
4.10.3 Fire control	14
4.11 Supply of water for human use.....	14
4.11.1 Objective.....	14
4.11.2 Scope.....	14
4.11.3 Collection of water from natural resources.....	14
4.11.4 Provision of drinking water.....	14

4.12 Protection of livestock or game and the collection of firewood.....	15
4.12.1 Objective.....	15
4.12.2 Scope.....	15
4.12.3 Poaching of livestock or game	15
4.12.4 Killing of animals.....	15
4.12.5 Collection of firewood	15
4.13 Environmental Awareness Training	15
4.14 Handling and Batching of Concrete and Cement.....	16
4.14.1 Objective.....	16
4.14.2 Scope.....	16
4.14.3 Handling and Batching of Concrete and Cement.....	16
5 Documentation.....	17
6 Records	17

1 Purpose

This procedure describes the minimum standards for environmental management to which Contractors and sub-Contractors on a construction site must comply. It is a generic standard for use across all construction works within Transnet Capital Projects.

There may be project specific environmental standards in addition to the standards in this document, or that exceed the standards prescribed here. These project specific environmental standards will be described in the Project Environmental Specification (PES) that will be issued separately for each project.

This document must be read in conjunction with the Transnet Capital Projects Construction Environmental Management Plan (CEMP).

2 Scope

This standard applies to Contractors that work on site under the authority of Transnet Capital Projects.

3 References

- Constitution of the Republic of South Africa 108 of 1996
- National Environmental Management Act 107 of 1998
- National Environmental Management – Air Quality Act 39 of 2004
- National Environmental Management – Waste Act 59 of 2008
- National Environmental Management – Biodiversity Act 10 of 2004
- National Environmental Management – Protected Areas Act 57 of 2003
- National Environmental Management – Integrated Coastal Management Act 24 of 2008
- National Veld and Forest Fire Act 101 of 1998
- Marine Living Resources Act 18 of 1998
- Marine Pollution (Control and Civil Liability) Act 2 of 1986
- Mineral and Petroleum Resources Development Act 28 of 2002
- National Heritage Resources Act 25 of 1999
- National Forests Act 84 of 1998
- National Water Act 36 of 1998
- Atmospheric Pollution Prevention Act 45 of 1965
- Environmental Authorisation (EA) applicable to the Project
- Sea-shore Act No. 21 of 1995
- Standards Act 29 of 1993
- Dumping at Sea Control Act 73 of 1980
- Occupational Health & Safety Act 85 of 1993

- Environment Conservation Act 73 of 1989
- ISO 9001:2008
- ISO 14001:2004
- OHSAS 18001:2007
- Road Traffic Act 29 of 1989
- Hazardous Substances Act 15 of 1973
- SANS 10103:2004. The measurement and rating of environmental noise with respect to land use, health annoyance and to speech communication
- Transnet Safety, Health, Environmental and Quality Risk Management System
- Transnet Capital Projects Construction Environmental Management Plan

4 Standards for environmental management

The Contractor shall identify the potential environmental impacts that may occur as a result of their activities and accordingly prepare separate Method Statements describing how each of these impacts will be prevented or managed so that the standards set out in this document are achieved. These method statements will be prepared in accordance with the requirements set out in the Transnet Capital Projects Construction Environmental Management Plan.

4.1 Site establishment

4.1.1 Objective

To ensure that environmental issues are taken into account in the establishment of the site offices and all other facilities on site.

4.1.2 Scope

This standard applies to all activities relating to the planning of the site, site establishment, operation of the site and closure of the site.

4.1.2.1 Site plan

The Contractor shall establish his construction camps, offices, workshops, staff accommodation and any other facilities on the site in a manner that does not adversely affect the environment. However, before construction can begin, the Contractor shall submit to the Construction Manager for his approval, plans of the exact location, extent and construction details of these facilities and the impact mitigation measures the Contractor proposes to put in place.

The plans shall detail the locality as well as the layout of all waste treatment facilities for litter, kitchen refuse, sewage and workshop-derived effluents. The site offices should not be sited in close proximity to steep areas. It is recommended that the offices, and in particular the ablution facilities, aggregate stockpiles, spoil areas and hazardous material stockpiles are located as far away as possible from any water course as possible. Regardless of the chosen site, the Contractor's intended mitigation measures shall be indicated on the plan.

4.1.2.2 Sewage

Particular reference in the site establishment plan shall be given to the handling of sewage generated at the site offices and staff accommodation and at all localities on the site where there will be a concentration of labour. Sanitary arrangements should be to the satisfaction of the Construction Manager.

Safe and effective sewage treatment will require one of the following sewage handling methods: septic tanks and soak-aways, dry-composting toilets such as "enviro loos", or the use of chemical toilets which are supplied and maintained by a subContractor. The type of sewage treatment will depend on the location of the site and the surrounding land uses, the duration of the contract and proximity (availability) of providers of chemical toilets. Should a soak-away system be used, it shall not be closer than 800 metres from any natural water course or water retention system. The waste material generated from these facilities shall be serviced on a regular basis.

Toilets and latrines shall be easily accessible and shall be positioned within walking distance from wherever employees are employed on the works. Use of open areas (i.e. the veldt) shall not, under any circumstances, be allowed.

Outside toilets shall be provided with locks and doors and shall be secured to prevent them from blowing over. The toilets shall also be placed outside areas susceptible to flooding. The Contractor shall arrange for regular emptying of toilets and shall be entirely responsible for enforcing their use and for maintaining such facilities in a clean, orderly and hygienic condition to the satisfaction of the engineer.

4.1.2.3 Effluent management

All effluent water from the camp / office sites shall be disposed of in a properly designed and constructed system, situated so as not to adversely affect water courses (streams, rivers, pans dams etc). Only domestic type wastewater shall be allowed to enter the designated system.

4.2 Waste Management

4.2.1 Objective

To ensure that all waste generated during construction and commissioning of the facilities is properly disposed of.

Examples of typical construction waste which, could be expected on the site are indicated in the following table:

TABLE 2: EXAMPLE OF CONSTRUCTION WASTE CLASSIFICATION

WASTE	CLASSIFICATION	
	HAZARDOUS	GENERAL
Aerosol containers	X	
Batteries, light bulbs, circuit boards, etc.	X	X
Clean soil		X
Construction debris contaminated by oil or organic compounds	X	

WASTE	CLASSIFICATION	
	HAZARDOUS	GENERAL
Domestic waste		X
Empty drums (depends on prior use)	X	X
Empty paint and coating containers		X
Explosive waste	X	
PCB waste	X	
Rubble (not contaminated by oil or organic compounds)		X
Waste Cable		X
Waste plastic		X
Waste paint and/or solvent	X	
Waste oil	X	
Waste concrete		X
Waste containing fibrous asbestos	X	
Waste timber		X
Sewerage sludge	X	
Scrap metal		X

4.2.2 Scope

This standard applies to all construction, commissioning and site activities that may lead to the generation of waste.

4.2.3 Approach

Waste is grouped into "general" or "hazardous", depending on its characteristics. The classification determines handling methods and the ultimate disposal of the material.

General waste to be expected during construction includes the following:

- Trash (waste paper, plastics, cardboard, etc.) and food waste from offices, warehouses and construction personnel
- Uncontaminated construction debris such as used wood and scrap metal
- Uncontaminated soil and non-hazardous rubble from excavation or demolition

Hazardous waste means any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical characteristics, such as toxic, ignitable, corrosive, carcinogenic or other properties or toxicological characteristics of that waste, have a detrimental impact on health and the environment.

Waste avoidance and minimisation

A hierarchical control approach to waste management is encouraged. Waste should preferably be managed in the following order:

- **Prevent:** waste avoidance and minimisation during production
- **Recycle:** waste recycling, recovery and utilisation
- **Treat:** waste treatment in order to reduce toxicity and to minimise the quantities of waste
- **Disposal:** waste disposal, probably by incineration, destruction or landfill

4.2.4 Waste Management

The Contractor is responsible for the removal of all waste from site, generated through the Contractor's activities. The Contractor shall ensure that all waste is removed to appropriate licensed waste management facilities. (For the identification of an appropriate facility, the following source may be utilized: www.sawic.org.za)

The classification of waste determines handling methods and the ultimate disposal of the material. The Contractor shall manage hazardous wastes that are anticipated to be generated by his operations as follows:

- Characterise the waste to determine if it is general or hazardous
- Obtain and provide an acceptable container with label
- Place hazardous waste material in container
- Inspect the container on a regular basis as prescribed by the Contractor's waste management plan
- Track the accumulation time for the waste
- Haul the full container to the disposal site
- Provide documentary evidence of proper disposal of the waste

The Contractor's Environmental Officer will work in conjunction with the Contractor's construction safety and industrial hygiene personnel to create a Hazardous Materials Management Program. This program will establish the necessary protocol for proper handling and removal of hazardous materials on the site.

Information on each hazardous substance will be available to all persons on site in the form of Material Safety Data Sheets (MSDS). Training and education about the proper use, handling, and disposal of the material will be provided to all workers handling the material.

The Contractor's Environmental Officer must be informed of all activities that involve the use of hazardous substances to facilitate prompt response in the event of a spill or release.

The Contractor shall manage GENERAL WASTE that is anticipated to be generated by operations as follows:

- Determine if waste is non-hazardous and obtain containers for waste storage
- Notify waste hauler when container is full so that it can be removed and replaced with an empty

- No littering is allowed on site. In the event where staff mobility is high, refuse bags will be made available by the Contractor.

On the Project, however, waste generating entities are directed to control the generation of non-hazardous waste by:

- Eliminating waste generation or reducing the total volume
- Reducing the degree of contamination of waste generated
- Reclaiming materials otherwise considered waste

The Contractor shall recycle GENERAL WASTE that is anticipated to be generated by its operations as follows:

- Obtain and label recycling containers for:
 - Office Waste
 - Aluminum
 - Steel
 - Glass
 - Ferrous Metals
 - Non Ferrous Metals
 - Waste Timber
 - And locate them within temporary office building and trailers
- Establish recycled material collection schedule
- Arrange for full bins to be hauled away

Spent batteries, circuit boards, and bulbs, while non-hazardous, require special collection and handling.

4.3 Vehicle and Equipment Refueling

4.3.1 Objective

To eliminate/control fuel and oil spillage at refuelling facilities.

4.3.2 Scope

This standard applies to all refuelling, lubrication and oil changing requirements on all vehicles and machinery.

4.3.3 Refueling

Engine driven compressors, pumps, air conditioners, and arc welders can have small leaks (usually oil) that can accumulate to become spills, which require clean up. These leaks become more evident if the equipment remains in the same place for an extended period of time. Damaged fuel tanks, fuel hoses, and fuel pumps can be sources of significant fuel

leaks. Hydraulic systems can blow gaskets or hoses resulting in large quantities of hydraulic fluid spilled to the ground.

4.3.3.1 Control

No vehicles or machines shall be serviced or refuelled on site except at designated servicing or refuelling locations, no oil or lubricant changes shall be made except at designate locations, or in case of breakdown or emergency repair.

The Contractor shall store fuel and oil at a secure area, which shall be bunded to contain 110% of the total volume within the bund and designed with an impervious layer or liner or paved surface to prevent spillage from entering the ground.

The Contractor shall provide details of its proposed fuel storage and fuelling facility to the TCP Environmental Officer for approval, the design shall comply with the regulations of the National Water Act, (Act 36 of 1998), the Hazardous Substances Act, (Act 15 of 1973), the Environmental Conservation Act, (Act 73 of 1989), and the Occupational Health and Safety Act, (Act 85 of 1993), mainly the Construction - and Hazardous Chemical Substances Regulations.

4.3.3.2 Spill Response

The Contractor shall comply with the regulations of the National Water Act, (Act 36 of 1998), the Hazardous Substances Act, (Act 15 of 1973), the Environment Conservation Act, (Act 73 of 1989), and the Occupational Health and Safety Act, (Act 85 of 1993).

The Contractor shall provide details for approval of its spill response plan in the event of any spills of fuel, oils, solvents, paints or other hazardous materials. The plan will show measures to be taken to remove contaminated soils from site and demonstrate complete removal of contamination.

The Contractor shall instruct construction personnel on the following spill prevention and containment responsibilities:

- Immediately repair all leaks of hydrocarbons or chemicals
- Take all reasonable means to prevent spills or leaks
- Do not allow sumps receiving oil or oily water to overflow
- Prevent storm water runoff from contamination by leaking or spilled drums of oil or chemicals
- Do not discharge oil or contaminants into storm water or sewer systems

If a spill occurs on land, the Contractor must:

- Immediately stop or reduce the spill
- Contain the spill
- Recover the spilled product
- Remediate the site
- Implement actions necessary to prevent the spill from contaminating groundwater or off-site surface water
- Dispose of contaminated material to a location designated thereto

Any spill to water has the potential to disperse quickly, therefore, the spill must be contained immediately using appropriate containment equipment.

If a spill to water occurs, the Contractor must:

- Take immediate action to stop or reduce the spill and contain it
- Notify the appropriate on-site authorities
- Implement actions necessary to prevent the spread of the contamination by deploying booms and/or absorbent material
- Recovery of the spilled product
- Proper disposal of spilled material

4.4 Spray Painting and Sandblasting

4.4.1 Objective

To ensure that all spray painting and sandblasting on site is done in a controlled manner where appropriate measures are taken to prevent paint contamination of the soil and to ensure that sandblasting grit/media is properly contained and disposed of.

4.4.2 Scope

All spray painting and sandblasting on site.

4.4.3 Spray Painting and Sandblasting

Spray painting and sandblasting should be kept to a minimum. All painting should, as far as practicable, be done before equipment and material is brought on site. Touch-up painting is to be done by hand painting or by an approved procedure. A Method Statement shall be submitted to the TCP Environmental Officer for approval.

The relevant Contractor will inform his Environmental Officer of when and where spray painting or sandblasting is to be carried out prior to commencement of work. The Environmental Officer will monitor these activities to ensure that adequate measures are taken to prevent contamination of the soil.

NB: If the area is in confined or high (elevated) areas, a protection plan must be issued for approval.

4.5 Dust Management

4.5.1 Objective

To prevent/control the generation of dust on the construction site and access roads.

4.5.2 Scope

Contractors (associated with activities such as earthworks, geotechnical surveys, piling, storm water drainage, construction of roads and railways, foundations, brick building, operating workshops, fencing, erecting construction camps, and batch plant activities, etc.) shall submit a dust control plan for approval by the Environmental Officer.

4.5.3 Management of Dust

Material in transit should be loaded and contained within the load bin of the vehicle in such a way as to prevent any spillage onto the roads and the creation of dust clouds. If necessary, the load bin of the vehicle shall be covered with a tarpaulin to prevent dust.

Dust is to be controlled on unpaved access roads and site roads using sprayed water. Contractors are responsible for managing dust generated as a result of their activities. The Contractor will be responsible for dust control of the entire construction area.

Some dust control measures which are normally applied during construction are presented in this section for inclusion by the Contractor in his Dust Control Method Statement.

These dust-mitigating procedures include the following:

- Limit vehicle speeds on unpaved roads to 20 km/h
- Wash paved surfaces within the construction area twice a week
- Minimise haulage distances
- Apply water to gravel roads with a spraying truck when required
- Environmentally friendly soil stabilisers may be used as additional measures to control dust on gravel roads and construction areas
- Dust suppression measures will also apply to inactive construction areas. (An inactive construction site is one on which construction will not occur for a month or more).
- Construction material being transported by trucks must be suitably moistened or covered to prevent dust generation
- Strip and store topsoil in separate stockpiles with mounds not exceeding 2 m in height to, among other things, prevent wind-blown dust
- Minimise disturbance of natural vegetation during right-of-way construction (e.g. transmission lines and erection of fences) to reduce potential erosion, runoff, and air-borne dust
- Implement a system of reporting excessive dust conditions by construction personnel (as instructed through Environmental Awareness Training)

Water for dust control shall be taken only from approved sources.

4.6 Storm water and Dewatering Management

4.6.1 Objective

To ensure that storm water and dewatering drainage across the site occurs in a manner that will negate contamination by oils, fuels, litter and other waste and prevent erosion of the construction terrace.

4.6.2 Scope

All runoff and dewatering activities.

4.6.3 Storm water and Dewatering Management

Water is a valuable resource. Both the quality and quantity of water used by the Contractor should be considered in making resource conservation plans.

Construction activities that may potentially impact on surface water and groundwater are: runoff and percolation; dewatering activities; and miscellaneous liquid wastes associated with construction activities.

In general, construction activities may affect water quality and/or quantity of groundwater and/or surface water of the area.

The Contractor shall be aware that, apart from runoff from overburden emplacements and stock piles, storm water can also be contaminated from batch plants, workshops, vehicle wash-down pads, etc., and that contaminants during construction may include hydrocarbons from fuels and lubricants, sewerage from employee ablutions and excess fertiliser from rehabilitated areas, etc.

The Contractor shall take note that discharges to controlled waters such as the sea, rivers, groundwater or to sewerage systems are controlled under South African Water Legislation

4.6.3.1 Surface runoff

Construction activities such as surface grading and excavation will disturb surface areas on site. This will increase the potential for soil erosion and subsequent sediment transport during periods of precipitation runoff or when excavation dewatering is required. Construction activities also have the potential to change local surface drainage and sediment transport patterns, site floodplain delineation, and percolation rates into soil.

4.6.3.2 Dewatering

Dewatering during groundwork produces a surface water discharge that will require collection and sedimentation. Dewatering also has the potential to affect groundwater quality and quantity.

4.6.3.3 Wastewater

Liquid wastes including used solvents, used lubricating oils, chemical flushing agents, spill cleanup wastes, painting wastes, and concrete mixing drum washings, etc., have the potential to affect surface water and groundwater quality.

4.6.3.4 Management Requirements

- Temporary drainage must be established on site during the construction period until permanent drainage is in place. Contractors are responsible for maintaining the temporary drainage in their areas. Contractors must provide secondary drainage that prevents erosion
- Contractors must employ good housekeeping in their areas to prevent contamination of drainage water
- The Contractor shall clear stagnant water

Specific water management measures (surface and groundwater) for incorporation by Civil/Earthworks Contractors into their EMP's include the following:

- The Contractor shall ensure that no contaminated surface water shall flow off-site as a result of Contractor operations. Silt traps shall be constructed to ensure retention of silt on site and cut-off ditches shall be constructed to ensure no runoff from the site except at points where silt traps are provided
- If applicable, the Contractor shall be responsible for collection, management, and containment within the site boundaries of all dewatering from all general site preparation activities. The dewatering water shall be contained within the site boundaries by sequentially pumping or routing water to and from sub-areas within the site as the construction activities proceed. No discharge/dewatering to off-site land or surface water bodies will be allowed
- On-site drainage shall be accomplished through gravity flow. The surface drainage system shall consist of mild overland slopes, ditches, and culverts. The graded areas adjacent to buildings shall be sloped away with a 5% slope. Other areas shall have a minimum slope of 0,2% or as otherwise indicated
- Ditches shall be designed to carry a 25-year storm event with velocities in accordance to minimise erosion. Erosion protection shall consist of suitable stabilising surfaces in all ditches
- Culverts shall be designed to ensure passage of the 25-year storm peak runoff flow

Both structural and non-structural (vegetative) erosion control measures will be designed, implemented, and properly maintained in accordance with best management practices which will include the following:

- Scheduling of activities to minimise the amount of disturbed area at any one time
- Implementation of re-vegetation as early as feasible
- Limiting construction traffic and/or avoidance thereof on access roads and areas to be graded to the extent feasible at drainage ditches
- Compacting loose soil as soon as possible after excavation, grading, or filling
- Using silt fences, geo-textiles, temporary rip-rap, soil stabilisation with gravel, diversionary berms or swales, small sedimentation basins, and gravelled roads to minimise transport of sediment
- Implementing the erosion and sedimentation control plan and ensuring that construction personnel are familiar with and adhere to it
- Managing runoff during construction
- The Contractor shall be responsible for checking and maintaining all erosion and sedimentation controls

4.7 Rehabilitation

4.7.1 Objective

To ensure that all areas affected by the project are appropriately rehabilitated and re-vegetated in a manner congruent with the surrounding biophysical environment. The prevention of spread of alien invasive species.

4.7.2 Scope

All areas affected by the project including lay down areas.

4.7.3 Rehabilitation

Contractors shall rehabilitate their lay-down area/s upon completion of work on site. A rehabilitation plan will be submitted to the Construction Manager for approval at least six weeks before completion. The following are critical issues to be included in the rehabilitation plan:

- Details of soil preparation procedures including proposed fertilisers or other chemicals being considered for use
- A list of the plant species that will be used in the rehabilitation process. Note that these should all be indigenous species, and preferably species that are endemic to the area. The assistance of an appropriately qualified botanist should be sought in developing this list
- Procedures for watering the planted areas (frequency of watering, methodology proposed etc).
- An indication of the monitoring procedures that will be put in place to ensure the successful establishment of the plants (duration and frequency of monitoring, proposed criteria for declaring rehabilitation as being successful)
- Procedures for the prevention of the establishment and spread of alien invasive species.

4.8 Noise Management

4.8.1 Objective

To maintain construction noise at the site within legal limits.

4.8.2 Scope

Any noise generated at the construction site.

4.8.3 Noise Management

- Keep all equipment in good working order

- Operate equipment within its specification and capacity and don't overload machines
- Apply regular maintenance, particularly with regards to lubrication
- Operate equipment with appropriate noise abatement accessories, such as sound hoods

Noise control measures for incorporation by the Contractor in its noise control plan shall include the following:

- Ensure that the potential noise source will conform to the South African Bureau of Standards recommended code of practice, *SANS 10103:2004*, so that it will not produce excessive or undesirable noise when released
- All the Contractor's equipment shall be fitted with effective exhaust silencers and shall comply with the South African Bureau of Standards recommended code of practice, *SANS 10103:2004*, for construction plant noise generation
- All the Contractor's vehicles shall be fitted with effective exhaust silencers and shall comply with the Road Traffic Act, (Act 29 of 1989) when any such vehicle is operated on a public road
- If on-site noise control is not effective, protect the victims of noise (e.g. ear-plugs) by ensuring that all noise-related occupational health provisions are met. (Occupational Health and Safety Act, (Act 85 of 1993).

4.9 Protection of heritage resources

4.9.1 Objective

To ensure the protection of archaeological, historical artefacts, or heritage resources discovered during construction activities.

4.9.2 Scope

Archaeological, historical artefacts, or heritage resources discovered on or near the site.

4.9.3 Archeological Sites

If an artefact on site is uncovered, work in the immediate vicinity shall be stopped immediately. The Contractor shall take reasonable precautions to prevent any person from removing or damaging any such article and shall immediately upon discovery thereof inform the engineer of such a discovery. The South African Heritage Resources Agency (SAHRA) is to be contacted and will appoint an archaeological consultant. Work may only resume once clearance is given in writing by the archaeologist.

4.9.4 Graves and middens

If a grave or midden is uncovered on site, or discovered before the commencement of work, all work in the immediate vicinity of the graves/middens shall be stopped and the engineer informed of the discovery. The National Monuments Council should be contacted and in the case of graves, arrangements made for an undertaker to carry out exhumation

and reburial. The undertaker will, together with the National Monuments Council, be responsible for attempts to contact family of the deceased and for the site where the exhumed remains can be re-interred.

4.10 Fire prevention

4.10.1 Objective

To minimise the risk of uncontrolled fires.

4.10.2 Scope

All activities on or near the site that could initiate an uncontrolled fire.

4.10.3 Fire control

Fires shall only be allowed in facilities or equipment specially constructed for this purpose. A firebreak shall be cleared and maintained around the perimeter of the camp and office sites. All conditions incorporated in the requirements of the Occupational Health and Safety Act shall be implemented.

4.11 Supply of water for human use

4.11.1 Objective

To ensure that there is an adequate, safe water supply for all personnel on site.

4.11.2 Scope

Managing the water supply on site and controlling the abstraction of water from natural resources in the area.

4.11.3 Collection of water from natural resources

No water for domestic use (drinking water or for bathing or washing) shall be abstracted from any water resource (stream, river, or dam) without the express permission of the Construction Manager. Such permission shall only be granted once it can be shown that the water is safe for use, that there is sufficient water in the resource to meet the demand, and once permission has been obtained from the Department of Water Affairs in accordance with the requirements of the National Water Act (Act 36 of 1998).

4.11.4 Provision of drinking water

Water for human consumption shall be available at the site offices and at other convenient locations on site. The generally acceptable standard is that a supply of drinking water shall be available within 200m of any point on the construction site.

4.12 Protection of livestock or game and the collection of firewood

4.12.1 Objective

To prevent illegal activities potentially perpetrated by site staff and to prevent the killing of any animals trapped in construction works or discovered on the construction site or surroundings.

4.12.2 Scope

Managing the activities of site staff during work - and after hours.

4.12.3 Poaching of livestock or game

On no account shall any hunting or fishing activity of any kind be allowed. This includes the setting of traps, or the killing of any animal caught in construction works.

4.12.4 Killing of animals

On no account shall any animal, reptile or bird of any sort be killed. This specifically includes snakes or other creatures considered potentially dangerous discovered on site. If such an animal is discovered on site an appropriately skilled person should be summoned to remove the creature from the site. Consideration should be given to selection and nomination of such a person prior to site establishment. If no-one is available, training should be provided to at least two site staff members.

4.12.5 Collection of firewood

The Contractor shall provide adequate facilities for all his staff so that they are not encouraged to supplement their comforts on site by accessing what can be taken from the natural surroundings. The Contractor shall ensure that energy sources are available at all times for construction and supervision personnel for heating and cooking purposes.

4.13 Environmental Awareness Training

An Environmental Awareness Program is considered a necessary part of the Construction Environmental Management Plan for the Project. Training of the appropriate construction personnel will help ensure that all environmental regulations and requirements are followed to be defined in the relevant Method Statement to be prepared by the Contractor.

Objectives of environmental awareness training are:

- Environmental Management – protecting the environment from the effects of construction by making personnel aware of sensitive environmental resources.
- Regulatory compliance – complying with requirements contained in project – specific permit conditions, also complying with requirements in regional and local regulations.

- Problem recognition and communication – training personnel to recognise potential environmental problems, i.e. spills, and communicate the problem to the proper person for solution.
- Liability control - non-compliance with regulatory requirements can lead to personal and corporate liability.

All individuals on the Project construction site will need to have a minimum awareness of environmental requirements and responsibilities. However, not all need to have the same degree of awareness. The required degree of knowledge is greatest for personnel in the Safety, Health, and Environmental Sections and the least for the manual personnel.

The Contractor shall keep a record of all the environmental related training of the personnel.

4.14 Handling and Batching of Concrete and Cement

4.14.1 Objective

To control cement and concrete batching activities so as to prevent the spillage of cement waste water and potential contamination of soil, groundwater and marine environment (where applicable). To avoid or substantially reduce dust emissions caused by cement and concrete activities on site and ensure that no noise nuisance results from batching activities.

4.14.2 Scope

Cement and concrete batching activities commonly produce cement-laden (contaminated) runoff, mainly from washing of mixing equipment. The contaminated runoff is alkaline and contains high levels of chromium, which causes leachate that may ultimately contaminate groundwater. Cement-contaminated water can also increase the pH of marine waters and cause detrimental damage to aquatic life.

Fine dust particles containing cement and concrete are pollutants and can cause damage to neighbouring amenities when allowed to spread.

Excessive noise during batching may cause stress to employees on site and other people within the construction vicinity.

This procedure applies to all cement and concrete batching activities, delivery of ready-mix concrete and small-scale mechanical and hand mixing of concrete and cement, as well as the washing of equipment used in these activities on construction sites managed by TCP.

4.14.3 Handling and Batching of Concrete and Cement

4.14.3.1 Siting

Concrete batching shall only be conducted in demarcated areas which have been approved by the TCP Construction Manager.

Such areas shall be fitted with a containment facility for the collection of cement-laden water. This facility shall be bunded and have an impermeable surface protection so as to prevent soil and groundwater contamination. Drainage of the collection facility will be separated from any infrastructure that contains clean surface runoff.

The batching facility will not be placed in areas prone to floods or the generation of stagnant water. Access to the facility will be controlled so as to minimise potential environmental impacts.

4.14.3.2 Handling and Storage

Hand mixing of cement and concrete shall be done on mortarboards and/or within the bunded area with impermeable surface or concrete slab.

Bulk and bagged cement and concrete additives will be stored in an appropriate facility at least 10m away from any watercourses, gullies and drains.

Waste water collected in the containment facility shall be left to evaporate. The Contractor shall monitor water levels to prevent overflows from the facility. Water can be pumped into sealed drums for temporary storage and must be disposed of as liquid hazardous waste.

All concrete washing equipment, such as shovels, mixer drums, concrete chutes, etc. shall be done within the washout facility. Water used for washing shall be restricted as far as practically possible.

Ready-mix concrete trucks are not allowed to wash out anywhere other than in an area designated for this purpose.

The Contractor shall periodically clean out hardened concrete from the wash-out facility or concrete mixer, which can either be reused or disposed of as per accepted waste management procedures.

Empty cement and concrete bags, if temporarily stored on site, will be secured with adequate binding material.

Sand and Aggregates containing cement will be kept damp to prevent the generation of dust.

4.14.3.3 Disposal

Concrete and cement or any solid waste materials containing concrete and cement will be disposed of at a registered disposal facility. Where disposal facilities for general waste are utilised, written consent from the relevant municipality must be obtained.

5 Documentation

- Refer to Section 6.5 of the Construction Environmental Management Plan.

6 Records

All documents generated in terms of this procedure will be classed as records and retained for the life of the project.

