

**BASIC ASSESSMENT FOR THE PROPOSED
PETROLEUM FILLING STATION, HARDING, KWAZULU-NATAL**

EIA REF: DC21/0003/12

APPENDIX F:

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

**BASIC ASSESSMENT FOR THE PROPOSED
PETROLEUM FILLING STATION, HARDING, KWAZULU-NATAL**

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DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

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1. INTRODUCTION

Zeranza 311 (Pty) Ltd. ('the Applicant') intends to construct a new petroleum filling station in the Town of Harding, in southern KwaZulu-Natal.

The proposed activity requires a Basic Environmental Assessment (BA) to be undertaken in compliance with the regulatory requirements of the National Environmental Management Act (Act 107 of 1998) (NEMA) and the Environmental Impact Assessment (EIA) Regulations, 2010, GN R. 543, R. 544 and R.546.

As part of the BA process, it is required that an Environmental Management Programme (EMPr) be prepared for the construction and operational phases.

Terratest (Pty) Ltd was appointed by Ms Kerry Quinn, a representative of the Applicant, to manage the application for environmental authorization process for the proposed development of a petroleum filling station, within

This Environmental Management Programme (EMPr) was designed for the proposed development of a petroleum filling station on Portion 3 of Erf 101, situated along Hawkins Street in the Town of Harding. This document considers the impacts that are likely to arise from the implementation of the project and the mechanisms that are recommended to minimise the severity of these impacts. The EMPr covers the principles, responsibilities and requirements applicable in order to implement effective environmental management, during the construction activities.

The purpose of the EMPr is to proactively address potential problems before they occur. This will ensure that unnecessary damage to the environment during the construction phase is avoided. Moreover, mitigation measures will be implemented to minimize environmental degradation.

This EMPr was prepared by the following environmental consultants:

Name of representative of the EAP	Education qualifications	Professional affiliations	Experience at environmental assessments (yrs)
Warren Hale	BSc (Hons);	IAIAsa; Environmental Law Association	6 yrs
Magnus van Rooyen Pr.Sci.Nat. (400335/11)	MSc (Environmental Management)	IAIAsa; Environmental Law Association	9 yrs

2. PROJECT DESCRIPTION

The proposed Petroleum Filling Station is located on Portion 3 of Erf 101, Town of Harding, in the Umuziwabantu Local Municipality (KZ 214) (Ugu District). The development of the Petroleum Filling Station will bear the brand 'Total' (Total South Africa).

The site lies at the following coordinates:

Latitude /Longitude	Degrees	Minutes	Seconds
South	30	34	16.86
East	29	52	43.41

Portion 3 of Erf 101 is 8,093m² in extent. However, it is to be noted that the Applicant intends to subdivide the parcel of land so that the petroleum filling station is accommodated on its own parcel of land. The site of the proposed development will have an area of 3,000 – 3,100m². Subdivision can only occur subsequent to the receipt of a positive Environmental Authorization and a successful Rezoning Application (under the KwaZulu-Natal Planning and Development Act; currently being undertaken by Plankonsult, the project Town Planners).

The site is currently zoned for General Commercial purposes in terms of the Harding Town Planning Scheme (1989).

The site is currently owned by Wray Burnet Kettle (6008135057088). Mr Kettle is in the process of signing a Joint Venture agreement with the Applicant to undertake the planned development on his land.

The Applicant intends to undertake the following activities:

- Develop a petroleum filling station, with ancillary infrastructure:
 - Four posted canopy;
 - Four pump islands in forecourt able to service a maximum of eight vehicles concurrently;
 - Five underground petroleum product storage tanks:
 - Each with a capacity of 23,000 litres (combined storage capacity 115 cubic metres).
 - Double-walled composite tanks.
 - Utilised to store three different of petroleum products (diesel (one tank), Unleaded Petroleum 93 (two tanks) and Unleaded Petroleum 95 (two tanks).
 - Tanks will be ventilated. The four tanks containing unleaded petroleum will be joined by a vent stack manifold with a single stack. The diesel tank will be separately ventilated.
 - Double-walled piping;
 - Filler area with five filler points;
 - Spill containment slabs in the filler area and the forecourt, draining to a separator; and,
 - Site stormwater drainage linking to municipal stormwater drain.
- Develop a convenience store – Layout according to Total's BETA Specification (285m²) and fast food outlet (160m²) (an example BETA Shop Layout is provided in Appendix C of the Basic Assessment Report); and,
- Develop access/egress points, and provide a hardened surface and parking facilities.

3. SCOPE

The framework within which this EMPr is developed includes identifying various activities, their occurrence in the construction process and the likely impacts that are associated with those activities. It is therefore necessary to subcategorize the EMPr into Pre-Construction, Construction and Post-Construction activities.

The first category of the EMPr which deals with the pre-construction activities identifies the impacts and mitigation measures that will need to be employed before the construction of the proposed project commences.

The second category deals with the construction activities and the mitigation measures that will need to be applied to reduce the severity of the impacts the proposed development may have on the surrounding environment.

The third category discusses the rehabilitation measures that will need to be implemented once the construction is completed, to ensure that the impact of the proposed rehabilitation on the environment is minimized. Furthermore, it will discuss activities that need to be undertaken to ensure that no environmental degradation occurs as a result of the project.

4. PRINCIPLES

The following principles have informed the compilation of this environmental management programme:

- The environment is considered to be composed of both biophysical and social components.
 - The National Environmental Management Act (Act 107 of 1998) defines 'environment' as meaning 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.
- Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.
- Development must be socially, environmentally and economically sustainable.
- Construction, in general, is a disruptive activity and all due consideration must be given to the environment, particularly the social environment, during the execution of the project to minimize the impact on the affected parties.
- Minimization of areas disturbed by construction activities will reduce the severity of the construction related environmental impacts and reduce rehabilitation requirements and costs.
- As minimum requirements, relevant standards relating to international, national, provincial and local legislation, where applicable, shall be adhered to. This includes requirements relating to waste emissions (e.g. hazardous, airborne, liquid and solid), waste disposal practices, noise regulations, road traffic ordinance etc.
- All reasonable effort is to be made to avoid, minimize, reduce, re-use, recycle and recover waste generated from the proposed development.
- Reasonable measures to avoid pollution and environmental degradation are to be provided for.
- The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling, or minimizing further pollution, environmental damage or adverse health effects must be paid for by the person responsible for harming the environment.
- The responsibility for the environmental, health and safety consequences of the proposed development exists throughout its life cycle.

5. DEFINITIONS

For the purpose of this EMP, the following definitions shall apply:

Alien vegetation: Means all undesirable vegetation, defined as but not limited to, all declared Category 1 and Category 2 plants in terms of the Conservation of Agricultural Resources Act (43 of 1983) (CARA) amended Regulations 15 and 16 as promulgated in March 2001

Cleared surface: "surface vegetation" will be deemed to be any woody or herbaceous vegetation but exclude grasses, sedges, rushes and reeds. Clearing and grubbing shall for the purpose of this specification mean the removal of all woody and herbaceous vegetation including stumps, but excluding grass and groundcover vegetation.

Construction activity: Refers to any action taken by the Contractor, his subcontractors, suppliers or personnel in undertaking the construction work.

Environmental Control Officer: Either an internal staff member of the Engineer / Contractor or an external Environmental Consultant assigned to the project. The Environmental Control Officer will be part of the Project staff and will advise the Engineer on all environmental matters relating to the works, in terms of this EMPr.

Environmental Impact: Any change to the environment, whether desirable or undesirable, that would result directly or indirectly from any construction activity.

Engineer: Still to be appointed.

Hazardous material/substances: This refers to any substance that contains an element of risk and could have a deleterious effect on the environment.

Interested and Affected Parties (I&APs): All persons who may be affected by the project either directly or indirectly, or who have an interest or stake in the area to be affected by the project, IAPs, including landowners, tribal or local authorities, public interest groups etc.

Project Manager: The person responsible for co-ordination and integrating activities across multiple, functional lines.

Topsoil: This is defined as the A horizon of the soil profile. Topsoil is the upper layer of soil from which plants obtain their nutrients for growth. It is often darker in colour, due to the organic (humic) fraction. Topsoil is deemed, for the purposes of this EMPr, as the layer of soil from the surface to the specified depth required for excavation.

Vegetation rehabilitation: This refers to the re-establishment of locally indigenous vegetation with a similar species composition to that which naturally occurs in the area.

6. CONDITIONS OF ENVIRONMENTAL AUTHORISATION

This is a draft EMPr. The conditions of the Environmental Authorisation, pertaining to Compliance and Monitoring, will be recorded in this chapter of the finalised EMPr.

If the proposed development receives a positive Environmental Authorization, the following conditions may be included:

- *Reasonable measures must be undertaken to prevent pollution or degradation to the environment, and this should include measures to:*
 - a) *investigate, assess and evaluate the impact on the environment;*
 - b) *cease, modify or control any act, activity or process that has caused or may cause pollution or degradation to the environmental; and to*
 - c) *remedy the effects of pollution or degradation.*
- *An EMPr that provides the mitigatory measures and management actions to ensure that the impacts of the development on the environment are minimised during the construction phase must be developed.*

- *The applicant is responsible for compliance with the provisions for “Duty of Care and Remediation of Environmental Damage” contained in Section 28 of the National Environmental Management Act, 107 of 1998, where the determination of environmental degradation and the need for remediation will be decided by the DAEA.*
- *The DAEA retains the right to inspect the proposed development during construction, and reserves its rights in terms of Section 28(4) of the National Environmental Management Act to ensure that reasonable measures are taken to prevent minimise or rectify pollution or degradation to the environment.*
- *The applicant is still obliged to obtain any necessary permits, licences or authorisation required in terms of any other relevant and applicable legislation.*
- *DAEA reserves its right in terms of sub-regulation 9(3) of GN No. R1183 of 5 September as amended by GN No. R672 of 10 May 2002, to review or at its discretion, determine new conditions, in such a manner that is lawful and procedurally fair.*
- *Failure to substantially and consistently comply with the conditions / clauses outlined in this EMPr will result in an order to cease construction, to be issued by the DAEA.*
- *Records relating to the compliance / non-compliance with the conditions of this EMPr must be kept in good order.*
- *The DAEARD must be notified within thirty days thereof, of any change of ownership and / or Project Manager of the entire project. Conditions contained within this EMPr must be made available to the new Engineers and / or Contractors and are binding on the new Engineer and or Contractor.*
- *In the event of non-compliance by any Contractor implicated in this activity, the Applicant and/or his successor in title will be held liable.*
- *Failure to comply with any of these conditions shall also be regarded as an offence and may be dealt with in terms of Section 29, 30 and 31 of the Environment Conservation Act, 1989 (Act No. 73 of 1989), as well as any other appropriate legal mechanisms.*

2. Environmental Management Programme

Where E = Engineer & ECO = Environmental Control Officer.

Section A: Site Establishment and Preliminary Activities

Issue	Management Guidelines	Monitor	Frequency
A. 1 Access to Site <i>Sound environmental principles must be followed whilst establishing access to the site.</i>	A.1.1 <u>Routing</u> a) The location of all underground services and servitudes must be identified and confirmed.	E	Prior to moving onto site.
	A.1.2 <u>Survey Points</u> a) Marking of survey points must be done with the Engineers approval.	E	During surveys and preliminary investigations.
	b) Vegetation clearing must be kept to a minimum during the survey operations.	ECO	During surveys and preliminary investigations.
A.2 Setting up Construction Camp <i>Careful programming of the construction camp can ensure that time and costs associated with environmental management and rehabilitation are reduced.</i>	A.2.1 <u>Layout</u> a) The proposed site will act as the Contractors Camp. Should the contractor require additional space, full consultation shall take place with the relevant landowners, and written consent submitted to the Engineer prior to establishment of the construction camp. A site layout programme must be submitted to the Engineer for approval.	E/ECO	During surveys and preliminary investigations, prior to moving onto site.
	b) There will be no overnight accommodation available at the Contractors Camp.	E/ECO	During site set- up.
	c) The size of the construction camp should be kept to a minimum.	E	During site set- up.
	d) Adequate parking must be provided for staff and visitors.	ECO	Ongoing on a weekly basis.
	e) The contractor must attend to the drainage of the camp site to avoid standing water and / or sheet erosion.	ECO	Ongoing
	A.2.2 <u>Ablutions</u> a) Until the conservancy tanks become operational, temporary chemical toilets must be provided by a company approved by the Engineer. These toilets must be made available for all site staff, and should be situated more than 50m from any natural water-body.	ECO	During site set- up.
	b) The construction of "long drop" toilets is forbidden.	ECO	Ongoing.
	c) Under no circumstances may open areas or the surrounding bush or degraded and built up areas be used as a toilet facility.	ECO	Ongoing.
	A.2.3 <u>Provision for Camp Waste Disposal</u> a) Bins and / or skips shall be provided at convenient intervals for disposal of waste within the construction camp.	ECO	During site set- up and ongoing.
	b) Bins should have liner bags for efficient control and safe disposal of waste.	C / E	Ongoing.
c) Recycling and the provision of separate waste			

Section A: Site Establishment and Preliminary Activities

Issue	Management Guidelines	Monitor	Frequency
	receptacles for different types of waste should be encouraged.	ECO	During site set-up and ongoing.
<p>A.3 Establishing Storage Areas</p> <p><i>Storage areas can be hazardous, unsightly and can cause environmental pollution if not designed and managed carefully.</i></p>	<p><u>A.3.1 General Substances and Materials</u></p> <p>a) Choice of location for storage areas must take into consideration prevailing winds, distance to water bodies and general on site topography.</p> <p>b) Storage areas must be designated, demarcated and fenced if necessary.</p> <p>c) Storage areas should be secure so as to minimise the risk of crime. They should be safe from access by children and animals etc.</p> <p>d) Fire prevention facilities must be present at all storage facilities.</p> <p><u>A.3.2 Hazardous Substances and Materials</u></p> <p>a) Hazardous substances are those that are potentially poisonous, flammable, carcinogenic, or toxic. Some examples are: diesel, petroleum, oil, bitumen, cement, solvent based paints, lubricants, explosives, drilling fluids, pesticides, herbicides, LPG.</p> <p>b) Material safety Data Sheets (MSDSs) shall be readily available on site for all chemicals and hazardous substances to be used on site. Where possible and available, MSDSs should additionally include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases or escapes.</p> <p>c) Hazardous storage areas must be bunded with an impermeable liner to protect groundwater and soil from contamination. The Contractor shall submit a method statement to the Engineer for approval.</p> <p>d) Fuel tanks and refuelling will not be permitted on the site.</p> <p>e) Storage areas containing hazardous substance / materials must be clearly sign posted.</p> <p>f) The proximity of houses, schools etc should be taken into consideration when deciding on storage areas for hazardous substances.</p> <p>g) Residents living adjacent to the construction site must be notified of the existence of the hazardous storage area.</p> <p>h) Staff dealing with these materials / substances must be aware of their potential impacts and follow appropriate safety measures.</p> <p>i) Contractors shall submit a method statement and programmes for the storage of hazardous materials and emergency procedures.</p>	<p>ECO</p> <p>ECO</p> <p>ECO</p> <p>ECO</p> <p>E</p> <p>E/ECO</p> <p>E</p> <p>ECO</p> <p>E</p> <p>ECO</p> <p>ECO</p> <p>ECO</p>	<p>During site set-up.</p> <p>During site set-up.</p> <p>During site set-up.</p> <p>During site set-up.</p> <p>During site set-up, thereafter ongoing.</p> <p>During site set up.</p> <p>Ongoing.</p> <p>During site set up.</p> <p>During surveys and preliminary investigations.</p> <p>When moving onto site.</p> <p>During staff induction and ongoing as necessary.</p> <p>Prior to establishment of storage area.</p>
<p>A.4 Materials Management – Sourcing</p> <p><i>Materials must be sourced in a legal and sustainable way to prevent off-site</i></p>	<p><u>A.4.1 Source of Materials</u></p> <p>a) Contractors shall prepare a source statement indicating the sources of all materials (including topsoil, sands, natural gravels, crushed stone, asphalt, etc.) and submit these to the Engineers for approval prior to commencement of any work.</p>	E/ECO	On award of contract.

Section A: Site Establishment and Preliminary Activities

Issue	Management Guidelines	Monitor	Frequency
	c) Prevent excessive noise. d) Prevent unsocial behaviour. e) Bringing pets onto the site is forbidden. f) No harvesting of firewood from the site or from the adjacent areas. g) Construction staff are to make use of the facilities provided for them, as opposed to ad-hoc alternatives, (e.g. fires for cooking, the use of surrounding areas / bush as a toilet is forbidden). h) Trespassing on private / commercial properties adjoining the site is forbidden. i) Driving under the influence of alcohol is prohibited. j) Other than the pre-approved security staff, no workers shall be permitted to live on site.		
A.6 Dust / Air Pollution <i>Establishment of the camp site, and related temporary works can reduce air quality.</i>	A.6.1 Air Quality a) Vehicles travelling along the access road must adhere to the speed limits to avoid creating excessive dust. b) Camp construction– areas that have been stripped of vegetation must be dampened periodically to avoid excessive dust. c) The Contractor must make alternative arrangements (other than fires) for cooking and / or heating requirements. LPG gas cookers / heaters may be used provided that all safety regulations are followed.	ECO ECO E	Ongoing. Ongoing – more frequently during dry and windy conditions. Ongoing.
A.7 Soil Erosion <i>The stripping of vegetation during preliminary activities on site greatly increases the risk of soil erosion.</i>	A.7.1 Conservation of Valuable Soil Resources a) The time that stripped areas are left open to exposure should be minimised wherever possible. Care should be taken to ensure that lead times are not excessive. b) Wind screening and stormwater control should be undertaken to prevent soil loss from the site. c) Procedures that are in place to conserve topsoil during the construction phase of the project are to be applied to the set up phase, i.e. topsoil is to be conserved while providing access to the site and setting up the camp.	E/ECO E/ECO E/ECO	Throughout the duration of the project. During site set up. Daily monitoring during site set up.

Section A: Site Establishment and Preliminary Activities

Issue	Management Guidelines	Monitor	Frequency
<p>A.8 Stormwater</p> <p><i>Serious financial and environmental impacts can be caused by unmanaged stormwater.</i></p>	<p><u>A.8.1 Stormwater Damage Prevention</u></p> <p>a) To prevent stormwater damage, the increase in storm water runoff resulting from the construction activities must be estimated and the drainage system accessed accordingly. A drainage programme must be submitted to the Engineer for approval.</p> <p>b) During site establishment, stormwater culverts and drains are to be located and covered with metal grids to prevent blockages if deemed necessary by the Engineer.</p> <p>c) Temporary cut-off drains and berms maybe required to capture stormwater and promote infiltration, or to divert stormwater flow to avoid gully erosion.</p>	<p>E</p> <p>E</p> <p>ECO</p>	<p>During surveys and preliminary investigations.</p> <p>During site set up.</p> <p>During site set up.</p>
<p>A.9 Water Quality</p> <p><i>Incorrect disposal of substances and materials and polluted run-off can have serious negative effects on groundwater quality.</i></p>	<p><u>A.9.1 Maintenance of Water Quality</u></p> <p>a) Storage areas that contain hazardous substances must be bunded with an approved impermeable liner.</p> <p>b) Spills in bunded areas must be cleaned up, removed and disposed of safely from the bunded area as soon after detection as possible to minimise pollution risk and reduced bunding capacity.</p> <p>c) A designated, bunded area is to be set aside for vehicle washing and maintenance. Materials caught in this bunded area must be disposed of to a suitable waste site or as directed by the Engineer.</p> <p>d) Provision should be made during set up for all polluted runoff to be treated to the Engineers approval before being discharged into the stormwater system (this will be required for the duration of the project).</p>	<p>E</p> <p>E/ECO</p> <p>E/ECO</p> <p>E/ECO</p>	<p>During site set up.</p> <p>During site set up.</p> <p>During site set up.</p> <p>During site set up, to be monitored weekly</p>
<p>A.10 Conservation of the Natural Environment</p> <p><i>Alien plant encroachment is particularly damaging to natural habitats and is often associated with disturbance to the soil during construction activities. Care must be taken to conserve existing plant and animal life on and surrounding the site.</i></p>	<p><u>A.10.1 Fauna and Flora</u></p> <p>a) No vegetation may be cleared without prior permission from the Engineer.</p> <p>b) Trees that are not to be cleared should be marked beforehand with danger tape. The ECO must be given a chance to mark vegetation that is to be conserved before the Contractor begins clearing the site.</p> <p>c) Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas.</p> <p>d) Disturbance to birds, animals and reptiles and their habitats should be minimised wherever possible.</p> <p><u>A.10.2 Sensitive Habitats</u></p> <p>a) Areas identified by the Engineer or the ECO as being ecologically sensitive and adjacent to any construction work are to be suitably demarcated to prevent damage by plant and labour. Temporary bonnox type fencing should be used and should be moved in phases as the construction progresses from one area to the next.</p>	<p>E/ECO</p> <p>E/ECO</p> <p>ECO</p> <p>E/ECO</p> <p>E/ECO</p>	<p>During site set up, and ongoing.</p> <p>During site set up.</p> <p>Ongoing in camp site, haulage areas.</p> <p>During surveys and preliminary investigations and ongoing.</p> <p>During surveys and preliminary investigations and ongoing.</p>

Section A: Site Establishment and Preliminary Activities

Issue	Management Guidelines	Monitor	Frequency
A.11 Set up of Waste Management Procedures	<p>A.11.1 <u>Waste Management</u></p> <p>a) The excavation and use of rubbish pits is forbidden. b) Burning of waste is forbidden. c) A fenced area must be allocated for waste sorting and disposal. d) Individual skips for different types of waste (e.g. 'household' type refuse, building rubble, etc.) should be provided.</p>	<p>ECO ECO ECO ECO</p>	<p>Ongoing. Ongoing. During site set up. During site set up.</p>
A.12 Social Impacts – Visual & Noise <i>It is important to take notice of the needs and wishes of those living of working adjacent to the site. Failure to do so can cause disruption to work and increase costs in the form of delays.</i>	<p>A.12.1 <u>Public Participation</u></p> <p>a) During the set up phase of the project, the Contractor needs to make contact with those people that are interested or affected by the development (I&AP's). b) These people will usually have been identified by the environmental consultant that was assigned to the project.</p> <p>If this wasn't the case, the IAPs can be identified as those who either: - live close by the site; work close to the site; will have their services / infrastructure affected by the project; have a general interest in the project; and, the Councillor for the ward in which the construction is taking place.</p> <p>A.12.2 <u>Noise Impacts</u></p> <p>a) Construction vehicles are to be fitted with standard silencers prior to the beginning of construction. b) Equipment that is fitted with noise reduction facilities will be used as per operating instructions and maintained properly during site operations.</p> <p>A.12.3 <u>Visual Impacts</u></p> <p>a) Storage facilities, elevated tanks and other temporary structures on site should be located such that they have as little visual impact on local resident as possible. b) Special attention should be given to the screening of highly reflective materials on site.</p>	<p>E ECO ECO E/ECO ECO</p>	<p>Prior to moving onto site. Prior to moving onto site. Ongoing During surveys and preliminary investigations and site set up. During site set up.</p>
A.13 Cultural Environment	<p>A.13.1 <u>Protection of Cultural Environment</u></p> <p>Prior to the commencement of construction, all staff need to know what possible archaeological or historical objects of value may look like, and to notify the Engineer / Contractor should such an item be uncovered.</p>	<p>ECO</p>	<p>During site set up and ongoing.</p>
A.14 Safety and Security	<p>A.14.1 <u>Fencing</u></p> <p>a) Secure the site in order to reduce the opportunity for criminal activity in the locality of the construction site.</p>	<p>E</p>	<p>During site set up.</p>

Section A: Site Establishment and Preliminary Activities

Issue	Management Guidelines	Monitor	Frequency
	<p>b) Such a confined site within a residential / commercial area should be fenced and manned to control the access of persons to the site.</p> <p>c) Potentially hazardous areas such as trenches are to be demarcated and clearly marked.</p> <p><u>A.14.2 Lighting</u></p> <p>Lighting on site is to be set out to provide maximum security and to enable policing of the site, without creating a visual nuisance to local residents or businesses.</p> <p><u>A.14.3 Risks Associated with Materials on Site</u></p> <p>a) Material stockpiles or stacks, such as pipes must be stable and well secured to avoid collapse and possible injury to site workers / local residents.</p> <p>b) Flammable materials should be stored as far as possible from adjacent residents / businesses.</p> <p>c) Fire fighting equipment should be present on site at all times as per OHSA.</p> <p>d) Obstruction to drivers' line of site due to stockpiles and stacked materials must be avoided, especially at intersections and sharp corners.</p> <p>e) No materials are to be stored in unstable or high risk areas such as in floodplains or on steep slopes.</p> <p>f) All IAPs should be notified in advance of any known potential risks associated with the construction site and the activities on it.</p>	<p>E</p> <p>E</p> <p>E</p> <p>ECO</p> <p>ECO</p> <p>ECO</p> <p>ECO</p> <p>ECO</p> <p>ECO</p>	<p>During site set up.</p> <p>During site set up.</p> <p>During site set up.</p> <p>Ongoing.</p> <p>Ongoing.</p> <p>Ongoing.</p> <p>Ongoing.</p> <p>Ongoing.</p> <p>Ongoing.</p>
<p>A.15 Design</p>	<p><u>A.15.1 Conservancy Tank</u></p> <p>If not probably managed, conservancy tanks can result in a number of health, aesthetic and environmental problems. Depending on the volume of sewage / wastewater anticipated to be generated by this development together with the design capacity of the conservancy tanks, as well as the rate of removal of the contents of the tanks, this type of system may be unsustainable in the long term. Should it be deemed as being the BPEO, then the following conditions are applicable:</p> <p>a) The tanks must be provided with fresh air inlets and intercepting grease traps.</p> <p>b) The tanks must have airtight manhole covers to allow access to the tanks for the removal and safe disposal of the tanks contents.</p> <p>c) No industrial waste or refuse may be discharged into the conservancy tanks except by written agreement with the Umuziwabantu Local Municipality.</p> <p>d) The size of the conservancy tank must be determined by both the frequency of removal of its contents to the Wastewater Treatment Works and by the quantity of sewage/wastewater anticipated from the above project. Written confirmation must be obtained from the Umuziwabantu Local Municipality stating that it will provide the service of removal of the tank contents.</p>	<p>E</p>	

Section A: Site Establishment and Preliminary Activities

Issue	Management Guidelines	Monitor	Frequency
	<p>b) The installation must comply with local authority bylaws.</p> <p>c) The Underground Storage Tanks must be fitted with an overflow protection device.</p> <p>d) The tanks must be designed so as to reduce the risk of soil and groundwater contamination.</p> <p>e) The Underground Storage Tanks must be dipped daily and reconciled against volume to check for losses due to leakage.</p> <p>f) The condition of the tanks, associated piping and the monitoring wells must be inspected on a regular basis.</p> <p>g) The tanks and product lines must be pressure tested prior to commissioning.</p> <p>A.15.4 <u>Monitoring</u></p> <p>A groundwater monitoring plan must also be submitted for approval to the Department of Water Affairs.</p> <p>A.15.5 <u>Spill Contingency Plan</u></p> <p>a) Spillages occurring at the filler point and dispensing (i.e. offloading) area must be contained and cleaned up. Any water containing waste (wastewater) generated as a result of the spillage and associated clean up, must be disposed of safely and in accordance with environmental legislation. No product must be allowed to be discharged into municipal storm water / sewer system and or surrounding environment.</p> <p>b) A Spill Contingency or Emergency Response Plan must be drawn up and should include the following actions that need to be taken into account in the event of a spill:</p> <ul style="list-style-type: none"> • Stop the source of the spill; • Contain the spill; • Report the spill to the Site Manager. Note that all significant spills must be reported by the Site Manager to the Department of Water Affairs (DWA), KZN DAEA, and the ECO; • Remove the spilled product for treatment or authorised disposal; • In the case of a minor spillage clean the affected area and drum all contaminated material for temporary storage until the waste can be collected and disposed of by a registered hazardous waste disposal contractor. In the case of a significant spillage the KZN DAEA and DWA will advise on appropriate emergency action protocol to be followed for the type of spillage; • The Site Manager is to determine in conjunction with the ECO if there is any soil, groundwater or other environmental impact; • If deemed necessary by the KZN DAEA, DWA or the ECO, remedial follow-up action must be taken; • The incident and remedial action taken must be 	E	Prior to construction commencement.

Section A: Site Establishment and Preliminary Activities

Issue	Management Guidelines	Monitor	Frequency
	<p>documented by the Site Manager and kept on file for reference purposes. If necessary, remedial action must be taken in consultation with Department of Water Affairs and the Department of Environmental Affairs;</p> <ul style="list-style-type: none"> • Compliance with relevant legislative and municipal requirements in terms of health and safety must be ensured; and • A mass balance of products in and out must be prepared. <p>A.15.5 <u>General</u></p> <p>The recommendations made in the Geohydrological Assessment Report entitled “Geohydrological Assessment for Proposed Petrol Filling Station at Harding, KwaZulu-Natal” Reference: 41205R01 by Terratest (Pty) Ltd dated March 2011 must be adhered to.</p>	E	Prior to construction commencement.

Section B: Management of Construction Activities and Workforce

Issue	Management Guidelines	Monitor	Frequency
	<p>B.1.1 Maintenance of Access</p> <p>a) Contractors should ensure that access roads are maintained and in good condition by attending to potholes, corrugations and stormwater damage as soon as these develop.</p> <p>b) If necessary, staff must be employed to clean surfaced roads adjacent to construction sites where materials have been spilt.</p> <p>c) Unnecessary compaction of soils by heavy vehicles must be avoided; construction vehicles must be restricted to demarcated areas, haulage routes and turning areas.</p> <p>d) Cognisance of vehicle weight / dimensions must be taken when using access constructed out of certain materials (e.g. paved surfaces / cobbled entranceways)</p>	<p>E</p> <p>ECO</p> <p>ECO</p> <p>E</p>	<p>Weekly inspection.</p> <p>When necessary.</p> <p>Ongoing.</p> <p>Ongoing.</p>
<p>B.2 Maintenance of Construction Camp</p>	<p>B.2.1 Surfaces</p> <p>a) The Contractor must monitor and manage drainage of the camp site</p> <p>b) Run-off from the camp site must not discharge into neighbours' properties.</p> <p>B.2.2 Ablutions</p> <p>a) Chemical toilets are to be maintained in a clean state and should be moved to ensure that they adequately service the work areas.</p> <p>b) The Contractor is to ensure that open areas or the surrounding bush are not being used as a toilet facility.</p> <p>c) The use of chemical toilet facilities during the construction phase must not cause any pollution to any water resources nor pose a health hazard. In addition, these toilets must be situated out of the 1:100 year floodline of any watercourse</p> <p>B.2.3 Camp Waste Disposal</p> <p>a) The Contractor shall ensure that all litter is collected from the work and camp areas daily.</p> <p>b) Bins and / or skips should be emptied regularly and waste should be disposed of at a registered landfill site. Waybills for all such disposal are to be kept by the Contractor for review by the Engineer / ECO.</p> <p>c) A registered chemical waste company is to be used to remove waste from chemical toilets on site.</p> <p>B.2.4 Eating Areas</p> <p>a) Eating areas should be regularly serviced and cleaned to ensure the highest possible standards of hygiene and cleanliness.</p> <p>b) All litter throughout the site should be picked up and placed in the bins provided.</p>	<p>ECO</p> <p>ECO</p> <p>ECO</p> <p>ECO</p> <p>ECO</p> <p>ECO</p> <p>ECO</p> <p>ECO</p> <p>ECO</p>	<p>Ongoing.</p> <p>Ongoing.</p> <p>Weekly inspection.</p> <p>Weekly inspection.</p> <p>Weekly inspection.</p> <p>Ongoing.</p> <p>Weekly.</p> <p>Ongoing.</p> <p>Daily.</p> <p>Daily.</p>

Section B: Management of Construction Activities and Workforce

Issue	Management Guidelines	Monitor	Frequency
	<p>B.2.5 <u>Housekeeping</u></p> <p>a) The Contractor shall ensure that his camp and working areas are kept clean and tidy at all times.</p>	ECO	Weekly monitoring.
B.3 Staff Conduct	<p>B.3.1 <u>Environmental Education and Awareness</u></p> <p>a) The Contractor must monitor the performance of the construction workers to ensure that the points relayed during their induction have been properly understood and are being followed. If necessary, the ECO and / or a translator should be called to the site to further explain aspects of environmental or social behaviour that are unclear.</p> <p>B.3.2 <u>Worker Conduct on Site</u></p> <p>a) The rules that are explained in the worker conduct section (see section a.5.2 of this EMP), must be followed at all times.</p>	E/ECO ECO	Ongoing monitoring. Ongoing.
<p>B.4 Dust / Air Pollution</p> <p><i>Main causes of air pollution are dust from vehicle movements and stockpiles, vehicle emissions and fires.</i></p>	<p>B.4.1 <u>Air Pollution Prevention</u></p> <p>a) Vehicles travelling to and from the construction site must adhere to the speed limits so as to avoid producing excessive dust.</p> <p>b) Access and other cleared surfaces must be dampened whenever possible and especially in dry and windy conditions to avoid excessive dust.</p> <p>c) If dust is unavoidable, screening will be required utilising wooden supports and shade cloth.</p> <p>d) Vehicles and machinery are to be kept in good working order and to meet manufacturers specifications for safety, fuel consumption etc.</p> <p>e) Should excessive emissions be observed, the Contractor is to have the equipment seen to as soon as possible.</p> <p>f) No fires allowed on site.</p> <p>g) Stockpiles may cause dust and so must be managed in accordance with the guidelines in Materials Management (section B.9.1)</p>	E E E ECO E E E	Ongoing. Ongoing. As directed by Engineer. Ongoing. As directed by Engineer. Ongoing. Ongoing.
B.5 Soil Erosion	<p>B.5.1 <u>Topsoil Stripping and Stockpiling</u></p> <p>Once an area has been cleared of vegetation, the top layer (nominally 150mm) of soil should be removed and stockpiled in a designated area.</p> <p>B.5.2 <u>Exposed Surfaces</u></p> <p>a) The full length of the works shall not be stripped of vegetation prior to commencing other activities. The time that stripped areas are exposed shall be minimised wherever possible.</p> <p>b) Topsoiling and revegetation shall commence immediately after the completion of an activity and at an agreed distance behind any particular work front.</p>	ECO E/ECO ECO	Ongoing. Ongoing. As each activity is completed.

Section B: Management of Construction Activities and Workforce

Issue	Management Guidelines	Monitor	Frequency
	<p>c) Stormwater control (See B.6) and wind screening should be undertaken to prevent soil loss from the site.</p> <p>d) Side tipping of spoil and excavated materials shall not be permitted – all spoil material shall be disposed of as directed by the Engineer.</p> <p><u>B.5.3 General Principles</u></p> <p>a) Measures to prevent excessive soil erosion must be implemented. Extra precautions must be taken as the soils in this area are deemed as highly erodable. If soil erosion cannot be prevented, it must be minimised.</p> <p>b) Erosion control measures to be implemented in areas sensitive to erosion such as near water supply points, edges of slopes, etc. These measures could include the use of sand bags, hessian sheets, retention or replacement of vegetation.</p> <p>c) Stockpiling of soil or any other materials used during the construction phase must not be allowed on or near steep slopes, near a watercourse or water body. This is to prevent pollution or the impediment of surface runoff.</p>	<p>E</p> <p>E</p>	<p>Ongoing.</p> <p>Ongoing.</p>
<p>B.6 Stormwater</p>	<p><u>B.6.1 General Principles</u></p> <p>a) Earth, stone and rubble is to be properly disposed of so as not to obstruct natural pathways over the site. i.e. these materials must not be placed in stormwater channels, drainage lines or rivers.</p> <p>b) There should be a periodic checking of the site's drainage system to ensure that the water flow is unobstructed.</p> <p>c) The use of high velocity stormwater pipelines should be avoided in favour of open, high friction, semi-permeable channels wherever feasible.</p> <p>d) A number of smaller stormwater outfall points should be constructed rather than a few large outfall points.</p> <p>e) Stormwater outfalls should be designed to reduce flow velocity and avoid stream bank and soil erosion.</p> <p>f) The Umuziwabantu Local Municipality must be contacted with regard to any discharges into the stormwater drainage system or municipal sewer system</p> <p><u>B.6.3 Un-channelled Flow</u></p> <p>a) During construction un-channelled flow must be controlled to avoid soil erosion. Where large areas of soil are left exposed, rows of straw / hay or bundles of cut vegetation should be dug into the soil along contours to slow surface wash and capture eroded soil. The spacing between rows will be dependent on slope.</p> <p>b) Where surface runoff is concentrated (e.g. along exposed tracks), flow should be slowed by contouring with hay bales or bundled vegetation generated during on site clearance, or by inserting water directing 'speed' humps (or berms), along the track to channel water into small detention ponds or areas protected with hay bales for flow reduction and sediment capture.</p>	<p>E</p> <p>E/ECO</p> <p>E/ECO</p> <p>E/ECO</p> <p>E</p> <p>E/ECO</p> <p>E/ECO</p> <p>E/ECO</p>	<p>Monitoring throughout the duration of the project.</p> <p>Weekly</p> <p>As surface becomes exposed.</p> <p>Ongoing</p>

Section B: Management of Construction Activities and Workforce

Issue	Management Guidelines	Monitor	Frequency
<p>B.7 Water Quality</p> <p><i>Water quality is affected by the incorrect handling of substances and materials. Mismanagement of polluted run-off from vehicle and plant washing and wind dispersal of dry materials into rivers and watercourses are detrimental to water quality.</i></p>	<p>B.7.1 Prevention of Water Pollution</p> <p>a) Mixing / decanting of all chemicals and hazardous substances must take place either on a tray or on an impermeable surface. Waste from these should then be disposed of to a suitable waste site.</p> <p>b) Every effort should be made to ensure that any chemicals or hazardous substances do not contaminate the soils or ground water on site.</p> <p>c) Care must be taken to ensure that run-off from vehicle or plant washing does not enter the ground water. Wash water must be passed through a three-chamber SOG trap prior to being discharged as effluent to a regular municipal sewer.</p> <p>d) Site staff shall not be permitted to use any water-course or natural water source adjacent to or within the designated site for the purposes of bathing, washing of clothing or for any construction related activities. Municipal water (or another source approved by the Engineer) should instead be used for all activities such as washing of equipment or disposal of any type of waste, dust suppression, concrete mixing, compacting etc.</p> <p>e) The filler point and dispensing (i.e. offloading) area must be hard surfaced to prevent infiltration. All surface water from these areas must be directed through an oil/water separator before being discharged into the onsite conservancy system. All uncontaminated stormwater must be channelled directly through the stormwater system.</p>	<p>ECO</p> <p>ECO</p> <p>ECO</p> <p>ECO</p>	<p>Regular monitoring.</p> <p>Regular monitoring.</p> <p>Regular monitoring.</p> <p>Regular monitoring.</p>
<p>B.8 Conservation of the Natural Environment</p>	<p>B.8.1 Fauna & Flora</p> <p>As the work front progresses the Contractor is to check that vegetation clearing has the prior permission of the Engineer.</p> <p>a) Only trees that have not been marked beforehand are to be removed.</p> <p>b) Gathering of firewood, fruit, muthi plants or any other natural material on site or in adjacent areas is prohibited.</p> <p>c) The hunting of birds and animals on site and in surrounding areas is forbidden.</p> <p>d) Snares and traps on site and in adjacent areas are forbidden.</p> <p>e) Immediate revegetation of stripped areas and removal of aliens by weeding must take place. This significantly reduces the amount of time and money that must be spent on alien plant management during rehabilitation.</p> <p>f) Alien vegetation encroachment onto the site as a result of construction activities must be controlled during construction.</p> <p>g) Where possible, cleared indigenous vegetation should be kept in a nursery for use at a later stage in the site rehabilitation process.</p>	<p>E</p> <p>ECO</p> <p>ECO</p> <p>ECO</p> <p>ECO</p> <p>ECO</p> <p>ECO</p> <p>ECO</p>	<p>Ongoing.</p> <p>Ongoing.</p> <p>Ongoing.</p> <p>Ongoing monitoring.</p> <p>Ongoing monitoring.</p> <p>Ongoing.</p> <p>Twice monthly monitoring.</p> <p>As the work front progresses.</p>

Section B: Management of Construction Activities and Workforce

Issue	Management Guidelines	Monitor	Frequency
B.9 Materials Management	<p>B.9.1 <u>Stockpile Management</u></p> <p>a) Stockpiles should not be situated such that they obstruct natural water pathways.</p> <p>b) Stockpiles should not exceed 2m in height.</p> <p>c) If stockpiles are exposed to windy conditions or heavy rain, they should be covered either by vegetation or cloth (short timeframe), depending on the duration of the project.</p> <p>Stockpiles may further be protected by the construction of berms or low brick walls around their bases.</p> <p>d) Stockpiles should be kept clear of weeds and alien invasive vegetation growth by regular weeding.</p> <p>B.9.2 <u>Handling of Hazardous Materials</u></p> <p>a) All concrete mixing must take place on a designated, impermeable surface.</p> <p>b) No vehicles transporting concrete to the site may be washed on site.</p> <p>c) No vehicles transporting, placing or compacting asphalt or any other bituminous product may be washed on site.</p> <p>d) Lime and other powders must not be mixed during excessively windy conditions.</p> <p>e) All substances required for vehicle maintenance and repair must be stored in sealed containers until they can be disposed of / removed from the site.</p> <p>f) Hazardous substances / materials are to be transported in sealed containers or bags.</p> <p>g) Spraying of herbicides / pesticides should not take place under windy conditions and must comply with OHSAS 18001 specs and other chemical handling laws.</p> <p>h) The Contractor is to provide a method statement for dealing with accidents / spillages of hazardous materials. This statement must be handed to the Engineer as well as to Department of Water Affairs (DWA) should the incident occur near to a body of water.</p> <p>B.9.3 <u>General</u></p> <p>The storage of oils, materials, chemicals, fuels etc. to be used during the construction phase must not pose a risk to the surrounding environment. Such storage areas must be located out of the 1:100 year floodline of any watercourse in the area and unauthorised access to these areas must be controlled. Temporary bunds must be constructed around chemical or fuel storage areas to contain possible spillages.</p>	<p>E/ECO</p> <p>ECO</p> <p>ECO</p> <p>ECO</p> <p>ECO</p> <p>ECO</p> <p>ECO</p> <p>ECO</p> <p>ECO</p> <p>ECO</p>	<p>Location as directed by the Engineer.</p> <p>As this becomes necessary.</p> <p>Monthly monitoring.</p> <p>Ongoing monitoring.</p> <p>Ongoing monitoring.</p> <p>Monthly.</p> <p>Ongoing monitoring.</p> <p>Ongoing monitoring.</p> <p>When being used.</p>
B.10 Waste Management <i>Definition: "Refuse" refers to all construction waste (such as</i>	<p>B.10.1 <u>On-Site Waste Management</u></p> <p>a) Refuse must be placed in the designated skips / bins which must be regularly emptied. These should remain within demarcated areas and should be designed to prevent refuse from being blown out by wind.</p>	<p>ECO</p>	<p>Ongoing monitoring.</p>

Section B: Management of Construction Activities and Workforce

Issue	Management Guidelines	Monitor	Frequency
<p><i>rubble, asphalt millings, cement, timber, cans, other containers, wire and nails), household and office waste.</i></p>	<p>b) In addition to the waste facilities within the construction camp, provision must be made for waste receptacles to be placed at intervals along the work front.</p> <p>c) Littering on site is forbidden and the site shall be cleared of litter at the end of each working day.</p> <p>d) Recycling is to be encouraged by providing separate receptacles for different types of waste and making sure that staff are aware of their uses.</p> <p>B.10.2 Waste Disposal</p> <p><i>Non – hazardous waste</i></p> <p>All waste must be placed in skips and stored in a designated storage/collection area and must be removed from the site and transported to the nearest registered municipal landfill site. The recycling of suitable material (i.e. glass, paper, plastic, etc) should be encouraged</p> <p>a) Waybills proving disposal at each site shall be provided for the Engineers inspection.</p> <p>b) Construction rubble shall be disposed of in a pre-agreed, demarcated spoil dumps that have been approved by the Engineer, or disposed of at a registered municipal landfill site.</p> <p>c) Waste from chemical toilets should be disposed of regularly and in a responsible manner by a registered waste contractor. Care must be taken to avoid contamination of soils, water pollution and nuisance to adjoining areas.</p> <p>d) All waste generated from this project must be disposed of in a suitable manner so as not to cause any surface and groundwater pollution or a health hazard.</p> <p><i>Hazardous Waste</i></p> <p>a) Hazardous waste disposal must be carried out by an approved waste contractor.</p> <p>b) A sump must be created for concrete waste. This is to be de-sludged regularly and the cement waste is to be removed to an approved tip site.</p>	<p>ECO</p> <p>ECO</p> <p>ECO</p> <p>E/ECO</p> <p>E/ECO</p> <p>ECO</p> <p>ECO</p> <p>ECO</p> <p>E/ECO</p>	<p>Ongoing monitoring.</p> <p>Ongoing monitoring.</p> <p>Ongoing monitoring.</p> <p>Checked at each site meeting.</p> <p>Ongoing monitoring.</p> <p>Monitored weekly and at the start of builders holidays.</p> <p>Monitored weekly and at the start of builders holidays.</p> <p>Ongoing.</p>
<p>B.11 Social Impacts</p> <p><i>Regular communication between the Contractor and I&APs is important for the duration of the contract.</i></p>	<p>B.11.1 Disruption of Infrastructure and Services</p> <p>a) Contractors activities and movement of staff to be restricted to designated construction areas.</p> <p>b) Should the construction staff be approached by members of the public or other stakeholders, they should assist them in locating the Engineer or Contractor, or provide a number on which they may contact the Engineer or Contractor.</p> <p>c) The conduct of the construction staff when dealing with the public or stakeholders shall be in a manner that is polite and courteous at all times. Failure to adhere to this requirement may result in the removal of staff from the site by the Engineer.</p>	<p>E</p> <p>E/ECO</p> <p>E</p>	<p>Ongoing.</p> <p>Ongoing.</p> <p>Ongoing.</p>

Section B: Management of Construction Activities and Workforce

Issue	Management Guidelines	Monitor	Frequency
	<p>d) Disruption of access for local residents must be minimised and must have the consent of the Engineer.</p> <p>e) The Contractor is to inform neighbours in writing of disruptive activities at least 24 hrs beforehand. This can take place by way of leaflets placed in the post boxes giving the Engineers and Contractor's details or other method approved by the Engineer.</p>	E	Ongoing.
		E/ECO	At least 24 hrs prior to the activity taking place.
	B.11.2 Visual Impacts		
	a) Lighting on the construction site should be pointed downwards and away from oncoming traffic and nearby houses.	ECO	Ongoing.
	b) The site must be kept clean to minimise the visual impact of the site.	ECO	Ongoing – weekly monitoring.
	c) If screening is being used, this must be moved and re-erected as the work front progresses.	ECO	Ongoing.
	B.11.3 Noise		
	a) Machinery and vehicles are to be kept in good working order for the duration of the project to minimise noise nuisance to neighbours.	ECO	Ongoing.
	b) Notice of particularly noisy activities must be given to residents / businesses adjacent to the construction site. Examples of these include: noise generated by jackhammers; blasting; drilling; dewatering pumps.	E/ECO	At least 24 hrs prior to the activity taking place.
	c) Noisy activities must be restricted to the times given in the Project Specification or General Conditions of Contract.	E	Ongoing.
	B.11.4 Communication with Interested and Affected Parties (IAPs)		
	a) The Engineer and Contractor are responsible for on-going communication with those people that are interested and/or affected by the project.	E/ECO	
	b) A complaints register should be housed at the site office. This should be in carbon copy format, with numbered pages. Any missing pages must be accounted for by the Contractor. This register is to be tabled during monthly site meetings.	ECO	Monthly.
	c) I&APs need to be made aware of the existence of the complaints book and the methods of communication available to them.	E/ECO	Ongoing.
	d) Queries and complaints are to be handled by: <ul style="list-style-type: none"> • documenting details of such communications; • submitting these for inclusion in the complaints register; • bringing issues to the Engineers attention immediately; and, • taking remedial action as per Engineer's instruction. 	ECO	Ongoing.
	e) Selected staff are to be made available for formal consultation with I&APs in order to: explain the construction process and answer questions.	ECO	Ongoing.

Section B: Management of Construction Activities and Workforce

Issue	Management Guidelines	Monitor	Frequency
B.12 Cultural Environment	<p>B.12.1 <u>Protection of Cultural Environment</u></p> <p>a) Possible items of historical or archaeological value include old stone foundations, tools, clayware, jewellery remains, fossils etc.</p> <p>b) Should anything of this nature be uncovered, the Research and Professional Services Division of AMAFA should be contacted and work should be stopped immediately. The contact details are as follows: Tel: (033) 394 6543; Fax: (033) 342 6097.</p>	E	As required.

Section C: Post Construction Activities

Issue	Management Guidelines	Monitor	Frequency
C.1 Construction Camp	<p>C.1.1 <u>Construction Camp Rehabilitation</u></p> <p>a) All structures comprising the construction camp are to be removed from site.</p> <p>b) The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint and fuels, etc. and these should be cleaned up.</p> <p>c) All hardened surfaces within the construction camp area should be ripped, all imported materials removed, and the area shall be topsoiled and re-grassed using the guidelines set out in appropriate revegetation specifications.</p> <p>d) The Contractor must arrange the cancellation of all temporary services.</p>	E E E E	Project completion. Project completion. Project completion. Project completion.
C.2 Vegetation	<p>C.2.1 <u>Reinstatement of Vegetation</u></p> <p>a) All areas that have been disturbed by construction activities (including the construction camp area) must be cleared of all alien invasive vegetation.</p> <p>b) Open areas to be re-planted as per the revegetation specification.</p> <p>c) All vegetation that has been cleared during construction is to be removed from site or used as mulch as per the revegetation specification, (except for seeding alien invasive vegetation).</p> <p>d) The Contractor is to water and maintain all planted vegetation until the end of the defect liability period and is to submit a method statement regarding this to the Engineer.</p>	E E E E	Project completion. Project completion. Project completion. As per the instructions of the Engineer.
C.3 Land Rehabilitation	<p>C.3.1 <u>Land Rehabilitation</u></p> <p>a) All surfaces hardened due to construction activities are to be ripped and imported materials thereon removed.</p> <p>b) All rubble is to be removed from the site to a registered municipal landfill site. Burying of rubble on site is prohibited.</p> <p>c) The site is to be cleared of all litter.</p> <p>d) Surfaces are to be checked for waste products from activities such as concreting or asphaltting and cleared in a manner approved by the Engineer.</p> <p>e) All embankments are to be trimmed, shaped and replanted to the satisfaction of the ECO.</p> <p>f) The Contractor is to check that all watercourses are free from building rubble, spoil and waste materials.</p>	ECO ECO ECO ECO E/ECO ECO	Project completion. Project completion. Project completion. Project completion. Project completion. Project completion.
C.4 Materials and Infrastructure	<p>C.4.1 <u>Removal of Barriers, Remediation of Damage</u></p> <p>a) Fences, barriers and demarcations associated with the construction phase are to be removed from the site unless stipulated otherwise by the Engineer.</p> <p>b) All residual stockpiles must be removed to spoil or spread on site as directed by the Engineer.</p>		Project completion. Project completion.

Section C: Post Construction Activities

Issue	Management Guidelines	Monitor	Frequency
	<p>c) All leftover building materials must be returned to the depot or removed from the site.</p> <p>d) The Contractor must repair any damage that the construction works has caused to neighbouring properties.</p>		<p>Project completion.</p> <p>As per the Engineer's instructions.</p>
C.5 General	<p><u>C.5.1 General Remediation</u></p> <p>a) A meeting is to be held on site between the Engineer, ECO and Contractor to approve all remediation activities and to ensure that the site has been restored to a condition approved by the Engineer, and to the satisfaction of the ECO.</p> <p>b) Temporary road works must be closed and access across these blocked.</p> <p>c) All areas where temporary services were installed are to be rehabilitated to the satisfaction of the Engineer.</p> <p><u>C.5.2 Wastewater Management</u></p> <p>a) The Umuziwabantu Local Municipality must be contacted with regard to any discharges into the stormwater drainage system or municipal sewer system</p> <p>b) The oil/water separator must be properly maintained to prevent blockages and overflows.</p> <p>c) The floor of the wash bay area must be hard surfaced. All drainage arising from the car wash area must be treated as wastewater (i.e. water containing waste) and must therefore also pass through an oil/water separator prior to being discharged into onsite conservancy system.</p> <p><u>C.5.4 Water Resources Management</u></p> <p>a) There must be no unacceptable impact on the quality of both surface and groundwater in the area. If pollution of any surface or groundwater occurs, it must be immediately reported to the Department of Water Affairs and the appropriate mitigation measures must be employed to protect water resources.</p> <p>The Development and its associated infrastructure must be situated out of the 1:100 year floodline and any associated drainage lines. Measures must be implemented to protect any drainage line and water resources from pollution.</p>	<p>ECO/E</p> <p>ECO/E</p> <p>ECO/E</p> <p>ECO/E</p> <p>ECO/E</p> <p>ECO/E</p> <p>ECO/E</p>	<p>On completion of the construction and maintenance phases.</p> <p>On completion of construction.</p> <p>On completion of construction.</p> <p>On-going during operation</p> <p>On-going during operation</p> <p>On-going during operation</p>

Section D: Operational Environmental Management Programme

Issue	Management Guidelines	Monitor	Frequency
<p><i>NOTE: An operational EMPr is to be compiled by a suitably qualified specialist subsequent to the detailed engineering design and prior to the operation of the proposed petroleum filling station. Total's standard operating procedures can be utilised in the preparation of the operational EMPr.</i></p> <p><i><u>This operational EMPr must be approved by the Competent Authority prior to the commencement of operations.</u></i></p>			

Section E: Closure

Issue	Management Guidelines	Monitor	Frequency
<p><i>NOTE: Decommissioning and/or closure of the petroleum filling station and/or the underground storage tanks is not anticipated. However, should this be required for any reason, the Department of Water Affairs must be consulted for guidance. The following conditions are generally required by the Department of Water Affairs.</i></p>			
E.1 Tank Closure/ Decommissioning	a) A soil and groundwater contamination investigation must be conducted to determine the presence, nature and extent of any contamination. This will provide information as to the current status of the site in terms of the level of contamination, which will ultimately influence the level or type of remediation that needs to be undertaken, if any.	ECO	Closure / Decommissioning
	b) The soil and groundwater must be analysed for Benzene, Toluene, Ethyl benzene and Xylene (BTEX's) and for lead based fuel, if this was previously stored in the tank.	E	Closure / Decommissioning
	c) Prior to the tanks and associated piping being closed all residue product must be carefully removed for recycling or safe disposal. Safe disposal certificates must be obtained and kept on record as proof.	E	Closure / Decommissioning
	d) A solid inert material must be used for filling the underground storage tank. Only clean soil must be used for backfilling purposes.	E	Closure / Decommissioning
E.2 Stormwater & Wastewater Management	a) Water used for flushing the pipes and tanks must be disposed off safely if it is not suitable for disposal via the sewer system. The relevant department at the Local Municipality must be contacted with regard to the discharge of water containing waste to the sewer system.	E	Closure / Decommissioning
	b) The water containing waste generated must pass through an oil/water separator prior to discharge to the municipal sewer system.	E	Closure / Decommissioning
	c) It must be ensured that any water containing waste does not contaminate clean stormwater.	ECO	Closure / Decommissioning
E.3 Waste Management	a) All solid waste generated from the removal of the tanks must be handled according to the precautionary principle. This implies that waste (including soils, metals and other material) should be treated as hazardous unless proven otherwise.	ECO	Closure / Decommissioning
	b) All contaminated soil and other material must be disposed of at a permitted landfill site that is authorized to accept such wastes.	E/ECO	Closure / Decommissioning
	c) Waste must not be allowed to be stockpiled on site for extensive periods but must be disposed off as generated.	E	Closure / Decommissioning
	d) Any waste material temporarily stockpiled must be adequately protected from the environment to prevent leaching of potentially harmful contaminants.	E/ECO	Closure / Decommissioning
E.4 Spillages	a) Any spillages during the decommissioning of the tanks must be reported to this Department and other relevant authorities.	ECO	Closure / Decommissioning
E.5 Remediation	a) Clean-up or remediation of any contamination must be done in consultation with this Department.	ECO	Closure / Decommissioning

