

ENVIRONMENTAL MANAGEMENT PLAN

NGOMANKULU / NSUZE BRIDGE CONSTRUCTION

DEA REFERENCE: DC28/0024/2013 KZN/EIA/0001242/2013

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ENVIRONMENTAL MANAGEMENT PLAN

1. INTRODUCTION

Terratest (Pty) Ltd have been appointed by Nkandla Local Municipality to compile the Environmental Management Plan for the proposed Ngomankulu / Nsuze Bridge construction in Ngomankulu near Nkandla, KwaZulu-Natal.

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

2. PROJECT DESCRIPTION

The bridge is proposed to be 54m in length. It will include a 4m wide single lane road way that will be flanked by a pedestrian walkway. The bridge construction activities may include: earthwork; bridge excavation; and cast-in situ concrete activities. The bridge will be supported by two piers spaced 18m apart and abutments on either side of the bridge. F-shaped parapets and balustrades will be established to prevent pedestrians and vehicles from falling over.

3. SITE PLAN

See Appendix A.

4. EXPERTISE OF ENVIRONMENTAL ASSESSMENT PRACTITIONER

Terratest has a long record of undertaking independent environmental scoping processes for a range of clients in compliance with the requirements of the various competent authorities. In this respect we reiterate the declaration of independence made in the application form for this project agreed to and lodged with the competent authority.

The EMP was developed by the following Environmental Assessment Practitioner (EAP):

Sandile Nkomonde (Environmental Scientist)

Sandile is an Honours Graduate in Geography and Environmental Management and has worked at Terratest as an Environmental Scientist. Key projects have been the Basic Assessment for Eskom's Mathondwane-Zaaifontein 88kV Wolf Line Establishment and the Ugu District Municipality's Environmental Management Framework where he was involved as an EAP Assistant and PPP Facilitator. Sandile has also participated in the induction training of site staff for the Eskom Harrison Flats Supply Upgrade project. He conducted a presentation in IsiZulu to the construction staff about the role of the EMP in the project, and helped them understand how the EMP influenced their particular functions.

Sandile has also worked as a research assistant in the Umzimkhulu Waste Management Plan and Landfill Site Identification project as a project assistant, where he has had to independently conduct baseline research for the project, and also produce a comprehensive report of the status quo of the waste stream of Umzimkhulu Municipality.

Sandile has experience in Groundwater Management projects including the Department of Water Affairs' Compulsory Water License Application project for the uMhlathuze River Catchment, and DWA's Groundwater Monitoring programme in the Eastern Cape. He performed the roles of an I&AP liaison, License Applications Database Manager, Geohydrological Field Technician and stakeholder engagement facilitator.

5. SCOPE

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

The first category of the EMP 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 help to reduce the severity of the impacts that the proposed bridge construction may have on the surrounding environment.

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

6. PRINCIPLES

The following principles will apply to the proposed project:

- The Environment consists of both biophysical and social components. The biophysical component describes the fauna and flora entities of the environment, while the social component describes the anthropocentric considerations including human society and human values. Impacts on both these components of the environment should be avoided where possible, or mitigation measures should be considered in order to help minimize the impacts of the development.
- 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 in order to help minimize the impact on any parties affected by the development.
- Minimization of areas disturbed by construction activities will help to reduce the severity of many of the construction related environmental impacts on the environment and also help to reduce the rehabilitation requirements and costs.
- As minimum requirements, all relevant standards relating to, national, provincial legislation, as 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 effort shall be made to minimize, reclaim or recycle 'waste' material.

7. DEFINITIONS

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

- **Cleared surface:** "surface vegetation" will be deemed to be any woody or herbaceous vegetation but exclude grasses, sedges, rushes and reeds. Clearing shall for the purpose of this specification mean the removal of all woody and herbaceous vegetation including stumps, but excluding grass and groundcover vegetation.
- **Independent Environmental Control Officer (ECO):** An independently appointed professional consultant assigned to the project on a full-time basis. The ECO will conduct

monthly audits and will be part of the Project Staff and will advise the Engineer on all environmental matters relating to the works, in terms of this management plan.

- **Engineer:** Assigned Resident Engineer
- **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, I&APs, including landowners, tribal or local authorities and public interest groups.
- **Project Manager:** The person responsible for the co-ordination and integration of activities concerning the project.
- **Rehabilitation:** Rehabilitation is defined as the return of a disturbed area to a state which approximates the state (where possible) before disruption. Rehabilitation for the purposes of this management plan is aimed at post-reinstatement revegetation of disturbed areas and the ensurance of a stable land surface. In attempt to achieve this purpose, disturbed areas should be rehabilitated with the establishment of suitable indigenous vegetation. Revegetation should aim to accelerate the natural succession processes so that the plant community develops in the desired way, i.e. promote rapid vegetation establishment.
- **Riparian vegetation:** Vegetation occurring on the banks of a river or stream (i.e. vegetation fringing a water body).
- **Sedges:** Grass-like plants growing in wetland/marshy areas or adjacent to water.
- **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 (humus) fraction. Where topsoil is referred to, it is deemed to be the soil and grass / ground cover fraction. For the purposes of this management plan, where
- Topsoil is deemed for the purposes of this management plan as the layer of soil from the surface (approximately 300mm) to the specified depth required for excavation.
- **Water body:** Any open body of water including streams, dams, rivers and lakes.
- **Wetland:** A seasonally, temporally, or permanently wet area which also may exhibit a specific vegetation community. It is often marshy in character.
- **Wetland Vegetation:** Vegetation which is indicative of a wetland environment - for example, sedges, rushes, reeds, hydrophilic grasses and ground-covers.

8. CONDITIONS OF ENVIRONMENTAL AUTHORISATION

To be confirmed.

9. ENVIRONMENTAL MANAGEMENT PLAN

Where

E = Engineer,

ECO = Environmental Control Officer, and

C = Contractor.

9.1. Section A: Site Establishment and Preliminary Activities

Issue	Management Guidelines	Monitor	Frequency
<p>A.1 Access to Site</p> <p>Sound environmental principles must be followed whilst establishing access to the site.</p>	A.1.1 Routing		
	The contractor must take into account any limitations identified and recommendations made during compilation of the EMP deciding on an access route to the construction area.	E/ECO	Prior to moving onto site.
	The location of all underground services and servitudes (if any) must be identified and confirmed.	E	Prior to moving onto site.
	Even after consultation with companies / organisations, it is possible that additional service runs may be uncovered and damaged. Should such damage occur, the contractor should immediately inform the relevant utility company / organisation and shall facilitate / undertake a prompt and speedy repair to ensure that nuisance / waste of resources / pollution are all minimised.	C	Monitoring throughout the duration of the project.
	Choice of access routes should take into account minimum disturbance to residents.	E	Prior to moving onto site.
	A.1.2 Access Roads		
	Access must be gained along existing gravel roads and tracks where possible. The site can be accessed from Nkandla by heading south on the P502 road, turn right onto the P152 road (going to Kranskop), and turn right onto the D1599 road which lead to the project site. The site can be also be accessed from Eshowe by heading west on Kangela Street, joining the P502 road (going to Kranskop), and turn right onto the D1599 road which lead to the project site. The route to the project is becomes gravel on the last 3km. Construction vehicles will require access to the site of each of the proposed pylons. Access must be gained along existing gravel roads and tracks wherever possible.	E/ECO	Prior to moving onto site and during construction.
	The western half of the project area is accessed by driving through the river along a reasonably defined track. The track leads to an existing gravel road that curves away from the project site. Any additional access roads constructed must be done with the consent of the Landowner and project ECO. The Contractor must access the site and deliver materials and plant via the existing roads. Sensitivity to the local population must be a priority when travelling on these roads.	E	Prior to moving onto site and during construction.
	No trees / shrubs / groundcover may be removed or vegetation stripped without the prior permission of the Engineer / ECO. Developing access routes may require vegetation clearing; however this exercise must be monitored by the Engineer and ECO for the	E/ECO	On-going.

9.1. Section A: Site Establishment and Preliminary Activities

Issue	Management Guidelines	Monitor	Frequency
	duration of the project. Their permission must therefore be acquired <u>prior to</u> commencing with developing access routes. Access route must be single track and the same access route is to be used by all construction related vehicles. No additional parallel routes or tracks may be created.		
	Agreed turning areas for construction vehicles must be formalised and used by the Contractor. No turning manoeuvres other than at designated places should be permitted.	E	Prior to moving onto site.

Issue	Management Guidelines	Monitor	Frequency
A.2 Setting up Construction Camp Careful planning of the construction camp can ensure that time and costs associated with environmental management and rehabilitation is reduced.	A.2.1 Layout Choice of site for the Contractors Camp requires the Engineers permission and must take into account location of local residents, and must be outside of the 1:100 year flood line. A site plan must be submitted to the Engineer for approval. For this project, camp sites may identified in consultation with the local community	E/C/ECO	During surveys and preliminary investigations, prior to moving onto site.
	The Construction Camp may not be situated on a flood plain, or on slopes with a gradient of greater than 1:3. The camp site must be located on higher ground as there is a potential for the Nsuzze River to flood its banks.	E/C/ECO	During surveys and preliminary investigations, prior to moving onto site.
	If the Contractor chooses to locate the camp site on private land, the Contractor should get prior written permission from both the Engineer and the landowner. In the case of the identified campsite being on Traditional Authority land, permission should be obtained from the appropriate Local Traditional Authority.	E/C/ECO	During surveys and preliminary investigations, prior to moving onto site.
	Onsite accommodation may be required. The construction camp should thus be comprised of: site office; ablution facilities; designated first aid area; eating areas; and dormitories; storage areas; batching plant; refuelling area (if necessary); maintenance area.	E/C	During site set- up.
	Cut and fill must be avoided where possible during the set up of the Construction Camp.	E/C	During site set- up.
	The size of the Construction Camp should be kept to a minimum.	E/C	During site set- up.
	Adequate parking must be provided for staff and visitors.	E/C	During site set- up.
	The Contractor must attend to the drainage of the Camp site to avoid standing water and / or sheet erosion.	C/ECO	Monitoring throughout the duration of the project.
	A.2.2 Ablutions		

9.1. Section A: Site Establishment and Preliminary Activities

Issue	Management Guidelines	Monitor	Frequency
	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 positioned not closer than 50m from any natural water-body. Ablutions must be provided at a ratio of 1:5 per persons on site.	E/ECO	Monitoring throughout the duration of the project.
	The construction of pit latrines ("long drop") toilet is prohibited.	E/ECO	Monitoring throughout the duration of the project.
	Under no circumstances may open areas or the surrounding bush or degraded and built up areas be used as a toilet facility.	E/ECO	Monitoring throughout the duration of the project.
A.2.3 Provision for Camp Waste Disposal			
	Bins and / or skips should be provided at convenient intervals for disposal of waste within the Construction Camp. Bins will be provided at the construction sites and camp sites throughout the duration of the project. The Bins should be lined with plastic waste bags. Waste skips will also be available at camp sites for the temporary storage of waste from camp and construction sites.	ECO	During site set- up and ongoing.
	Where required bins should have liner bags for efficient control and safe disposal of waste. The waste in the bins will be removed and temporarily stored in skips that will be situated at the construction camps. The contractor will be responsible for frequently transporting the waste in the skips to a permitted waste disposal site.	ECO	Monitoring throughout the duration of the project.
A.3 Establishing Storage Areas	A.3.1 General Substances and Materials		
Storage areas can be hazardous, unsightly and can cause environmental pollution if not designed and managed carefully.	Choice of location for storage areas must take into consideration prevailing winds, distance to water bodies and general on site topography. The contractor's storage and camp areas are to be approved by the Engineer.	ECO	During site set- up.
	Storage areas must be designated, demarcated and fenced if necessary. Storage sites must be inaccessible to both the public and the animals, and adequate warning / boundary signals must be placed to be visible to the public.	ECO	During site set- up.
	The use and storage of all materials must be controlled. Care should be taken to help ensure that fuels and chemicals do not leach into the ground. Adequate spillage containment measures must be implemented, such as cut off drains, berms etc. Impermeable liners must be installed at refuelling areas and hazardous chemicals must be 110% bunded. Fuel and chemical storage containers must be set on a concrete plinth and within a containment bund. The necessary fire fighting equipment must be maintained on site to help deal with any fire incidents.	C/ECO	During site set up.
	Storage areas must be secure so as to help minimise the risk of crime. They must be safe from	C/ECO	During site set- up.

9.1. Section A: Site Establishment and Preliminary Activities

Issue	Management Guidelines	Monitor	Frequency
	access by children and animals etc. Perimeter fencing must be installed to help to prohibit children and animals from gaining access to the camp sites or any construction area.		
	All potential hazardous or polluting materials must be stored as far away from oncoming traffic and from drainage inlets as is possible. Where instructed, the contractor must divert drainage from storage areas, away from drainage inlets and / or drainage inlets should be closed.	C/ECO	During site set- up.
A.3.2 Hazardous Substances and Materials			
	<p>Definition of hazardous substances / materials is those that are potentially: poisonous, flammable, carcinogenic or toxic. Some examples of hazardous substances / materials:</p> <ul style="list-style-type: none"> • diesel, petroleum, oil, bituminous products • cement • solvent based paints • lubricants • explosives • drilling fluid • pesticides, herbicides • LPG 	C	During site set up
	Material Safety Data Sheets (MSDSs) must be readily available on site for all chemicals and hazardous substances to be used on site. Where possible and available, MSDSs must additionally include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases or escapes.	C	During site set up
	Hazardous storage and refuelling areas must be bunded with an impermeable liner to help protect groundwater quality. The Contractor must submit a method statement to the Engineer for approval. The containment capacity must be equal to the full amount of material stored plus an additional 10% to help avoid any overspill. Drainage from containment bunds must be controlled by single and tightly fitting timber bungs that must be hammered into outlets. Containment bunds must be drained after inspection by the Site Supervisory personnel. Fuel tanks must meet relevant specifications and be elevated in order to help ensure that leaks may be easily detected. Storage areas containing hazardous substances / materials must be clearly sign posted.	E/ECO	During site set up.
	It is very important that the proximity of houses, schools etc is taken into account when deciding on storage areas for hazardous substances.	E	During site set up.
	Storage areas containing hazardous substance / materials must be clearly sign posted.	ECO	During site set up.
	Staff dealing with these materials / substances must be aware of their potential impacts and follow appropriate safety measures. Contractor must submit a method statement and plans for the storage of hazardous materials and emergency procedures to the Engineer prior to the establishment of the	C/ECO	During staff induction and ongoing as necessary.

9.1. Section A: Site Establishment and Preliminary Activities

Issue	Management Guidelines	Monitor	Frequency
	storage area.		
A.4 Materials Management – Sourcing Materials must be sourced in a legal and sustainable way to prevent off-site environmental degradation.	A.4.1 Source of Materials		
	The contractor should prepare a source statement indicating the sources of all materials (including topsoil, sands, natural gravels, crushed stone, asphalt, clay liners etc.) and submit these to the Engineers for approval prior to commencement of any work.	C/E/ECO	On award of contract.
	Where possible, a signed document from the supplier of natural materials should be obtained confirming that they have been obtained in a sustainable manner and in compliance with the relevant legislation.	C	On receipt of the natural materials.
	Where materials are burrowed (mined), proof must be provided of authorisation to utilise these materials from the landowner / mineral rights owner and the Department of Minerals and Energy.	C	On receipt of the borrowed materials.
A.5 Education of Site Staff on General Environmental Conduct These points need to be made clear to staff on site before the project begins.	A.5.1 Environmental Education and Awareness		
	The ECO is to ensure that all site personnel have a basic level of environmental awareness training. The ECO must submit a proposal for this training to the Contractor for approval. Topics to be covered should include: <ul style="list-style-type: none"> • What is meant by “environment”; • Why the environment needs to be protected and conserved; • How construction activities can impact on the environment; • What can be done to mitigate against such impacts; • Awareness of emergency and spills response provisions; • Social responsibility during construction, e.g. obtaining permission regarding any issues related to adjacent properties; being considerate to local residents. The Contractor “toolbox talks” to present and explain environmental issues to the work teams. Translators are to be used where necessary.	ECO/C	During staff induction and ongoing.
	The ECO should be on hand to explain more difficult / technical issues and to answer questions. The use of pictures and real-life examples is encouraged as these tend to be more easily remembered. Use should be made of environmental awareness posters on site. Construction workers should be made aware that they are not to make excessive noise (e.g. shouting / hooting) as the site is near to residential areas. The need for a “clean site” policy also needs to be explained to the construction workers.	ECO/C	Prior to moving onto site and on an ongoing basis.
	A general regard for the social and ecological well-being of the site and adjacent areas is expected of the site staff. Workers need to be made aware of the following general rules:	C/ECO	Monitoring throughout the duration of the project.

9.1. Section A: Site Establishment and Preliminary Activities

Issue	Management Guidelines	Monitor	Frequency
	<ul style="list-style-type: none"> • No alcohol / drugs to be present on site. • No firearms allowed on site or in vehicles transporting staff to / from site, (unless used by security personnel). • Prevent excessive noise. • Prevent unsocial behaviour. • Bringing pets onto the site is forbidden. • No harvesting of firewood from the site or from the areas adjacent to it. • Construction staff is to make use of the facilities provided for them, as opposed to ad-hoc alternatives. (e.g.: fires for cooking; the use of surrounding bush as a toilet facility is forbidden). • Trespassing on private / commercial / traditional properties adjoining the site is forbidden. • Driving under the influence of alcohol is prohibited. • Other than pre-approved security staff, no workers shall be permitted to live on site. 		
<p>A.6 Dust / Air Pollution</p> <p>Establishment of the camp site and related temporary works can reduce air quality.</p>	<p>A.6.1 Air Quality</p>		
	Vehicles travelling along the gravel access roads must adhere to the speed limits to help avoid creating excessive dust.	C/ECO	Monitoring throughout the duration of the project.
	Camp construction– where necessary, areas that have been stripped of vegetation must be dampened periodically to help avoid excessive dust.	C/ECO	Ongoing – more frequently during dry and windy conditions.
	The Contractor may use fire for cooking and / or heating requirements. LPG gas cookers may also be used. All safety regulations must be followed.	E/C/ECO	Monitoring throughout the duration of the project. Ongoing.
<p>A.7 Soil Erosion</p> <p>The stripping of vegetation during preliminary activities on site may increase the risk of soil erosion.</p>	<p>A.7.1 Conservation of Valuable Soil Resources</p>		
	No unnecessary stripping of vegetation must be undertaken. The time that stripped areas are left open to exposure must be minimised wherever possible. Care should be taken to ensure that lead times are not excessive.	E/ECO	Throughout the duration of the project.
	Wind screening and stormwater control must be undertaken to help prevent soil loss from the site.	E/ECO	During site set up.
	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	Daily monitoring during site set up.
<p>A.8 Stormwater</p> <p>Serious financial and</p>	<p>A.8.1 Stormwater Damage Prevention</p>		
	To help prevent stormwater damage, the increase in storm water run-off resulting from the construction activities must be estimated and the drainage system designed accordingly. The Engineer must develop a	E/E	During surveys and preliminary investigations.

9.1. Section A: Site Establishment and Preliminary Activities

Issue	Management Guidelines	Monitor	Frequency
environmental impacts can be caused by unmanaged stormwater.	drainage plan and must include the location and design criteria of any stream crossings.		
	During site establishment, stormwater culverts and drains are to be located and may be covered with metal grids to prevent blockages if deemed necessary by the Engineer.	C/E	During site set up.
	Temporary cut off drains and berms may be required to capture stormwater and to help promote infiltration.	ECO	During site set up.
A.9 Water Quality	A.9.1 Maintenance of Water Quality		
Incorrect disposal of substances and materials and polluted run-off can have serious negative effects on groundwater or surface water quality.	Storage areas that contain hazardous substances must be bunded with an approved impermeable liner.	E	During site set up.
	Spills in bunded areas must be cleaned up, removed and disposed of safely from the bunded area as soon after detection as possible to help minimise pollution risk and to manage reduced bunding capacity.	E/ECO	Monitoring throughout the duration of the project.
	A designated, bunded area is to be set aside for vehicle maintenance. Materials caught in this bunded area must be disposed of to a suitable waste site or as directed by the Engineer. Washing of vehicles on site is prohibited.	E/ECO	During site set up and ongoing.
	Provision should be made during set up for all polluted run off to be treated to the Engineer's approval before being discharged into the natural drainage line.	E/ECO	During site set up, to be monitored weekly
	All precautions should be taken to prevent pollution of the surface water.		

A.10 Conservation of the Natural Environment	A.10.1 Fauna and Flora		
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.	No vegetation may be cleared without prior permission from the Engineer. Permission / permits will be obtained from DWA and DAFF prior to any clearing of any indigenous trees; if legally required.	E/ECO	During site set up, and ongoing.
	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.	ECO	During site set up.
	Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas.	ECO	Ongoing in camp site, haulage areas.
	Disturbance to birds, animals and reptiles and their habitats should be minimised wherever possible. If animals are sighted, their location and description must be reported to the Engineer and/or the ECO.	E/ECO	During surveys and preliminary investigations and ongoing.
	A.10.2 Sensitive Habitats		
Areas identified by the Engineer or the ECO as being ecologically sensitive and adjacent to any construction work are to be suitably demarcated to	E/ECO	During surveys and preliminary investigations and	

9.1. Section A: Site Establishment and Preliminary Activities

Issue	Management Guidelines	Monitor	Frequency
	help prevent damage by plant and labour. Temporary fencing/ demarcation should be used and should be moved in phases as the construction progresses from one area to the next.		ongoing.

A.11 Set up of Waste Management Procedures	A.11.1 Waste Management		
	The excavation and use of rubbish pits is prohibited. Lined bins with lids will be provided on site to help prevent any informal disposal of waste. Temporary skips may be placed on site for temporary storage of general waste.	ECO/C	Monitoring throughout the duration of the project.
	Burning of waste is prohibited. Waste must be disposed of at a permitted Landfill Site and waybills must be maintained on record.	ECO/C	Monitoring throughout the duration of the project.
	A fenced area must be allocated for waste storage and disposal. Waste from site bins must be disposed of into waste skips situated at camp site. The waste in the skips must be disposed of at a permitted Landfill Site and waybills must be maintained on record. The site is within an exposed open valley area and as such is subject to prevailing winds and weather. Product and equipment packaging, paper, containers and plastics must be carefully managed to help avoid any dispersal.	ECO/C	During site set up.

A.12 Social Impacts – Visual & Noise It is important to take notice of the needs and wishes of those living or working adjacent to the site. Failure to do so can cause disruption to work and increase costs in the form of delays.	A.12.1 Public Participation		
	During the set up phase of the project, the Contractor needs to make contact with the PSC and the people that are interested or affected by the development (IAPs).	E/C	Prior to moving onto site.
	The Contractor should appoint a Community Liaison Officer or the ECO is to deal with all social issues.	E/ECO	Prior to moving onto site.
	The Contractor must obtain the landowners permission to remove any fence, and infringe on any property.	E	Monitoring throughout the duration of the project.
	A.12.2 Noise Impacts		
	Construction vehicles must be fitted with standard silencers prior to the beginning of construction.	ECO	Prior to moving onto site.
	Equipment that is fitted with noise reduction facilities will be used as per operating instructions and maintained properly during site operations.	ECO	Monitoring throughout the duration of the project.
	A.12.3 Visual Impacts		
	Storage facilities, elevated tanks and other temporary structures on site should be located such	E/ECO	During surveys and preliminary

9.1. Section A: Site Establishment and Preliminary Activities

Issue	Management Guidelines	Monitor	Frequency
	that they have as little visual impact on local residents as possible.		investigations and site set up.
	The site is not expected to require visual screening in the form of shade cloth or other suitable materials prior to the beginning of construction.	E/ECO	During surveys and preliminary investigations and site set up.
	Special attention should be given to the screening of highly reflective materials on site (if any).	ECO	During site set up.

A.13 Cultural Environment	A.13.1 Protection of Cultural Environment		
	Prior to the commencement of construction, the ECO should notify staff what possible archaeological or historical objective of value may look like, and to immediately notify the Engineer / Contractor should such an item be uncovered.	E/C/ECO	During site set up and ongoing.

A.14 Safety and Security	A.14.1 Fencing		
	Secure the site in order to help reduce the opportunity for criminal activity in the locality of the construction site.	E	During site set up.
	The site should be fenced to help control the access of people or animals onto the site.	E	During site set up.
	Potentially hazardous areas such as trenches are to be demarcated and clearly marked.	E	During site set up.
	A.14.2 Lighting		
	Lighting on site is to be set out to help provide maximum security and to help enable policing of the site, without creating a visual nuisance to local residents.	E	During site set up.
	A.14.3 Risks Associated with Materials on Site		
	Material stockpiles or stacks, such as pipes must be stable and well secured to help avoid collapse and possible injury to site workers / local residents.	ECO	Monitoring throughout the duration of the project.
	Flammable materials should be stored as far as possible from adjacent residents.	ECO	Monitoring throughout the duration of the project.
	Fire fighting equipment should be present on site at all times as per OHSA.	ECO	Monitoring throughout the duration of the project.
Obstruction to drivers' line of sight due to stockpiles and stacked materials must be avoided.	ECO	Monitoring throughout the duration of the project.	
No materials are to be stored in unstable or high risk	ECO	Monitoring	

9.1. Section A: Site Establishment and Preliminary Activities

Issue	Management Guidelines	Monitor	Frequency
	areas such as in floodplains or on steep slopes.		throughout the duration of the project.
	All IAPs should be notified in advance of any known potential risks associated with the construction site and the activities on it, if it may affect them	ECO	Monitoring throughout the duration of the project.

9.2. Section B: Management of Construction Activities & Workforce

Issue	Management Guidelines	Monitor	Frequency
B.1 Access to Site	B.1.1 Haulage Roads		
	Contractors must ensure that all drains on the access roads are functioning properly and are well maintained.	E/C	Weekly and after heavy rains
	B.1.2 Maintenance of Access		
	Contractors must ensure that access roads are maintained and in good condition by attending to potholes, corrugations and stormwater damage as soon as these develop.	E	Weekly inspection.
	If necessary, staff must be employed to clean surfaced roads adjacent to construction sites where materials have been spilt.	ECO	When necessary.
	Unnecessary compaction of soils by heavy vehicles must be avoided; construction vehicles must be restricted to demarcated areas, haulage routes and turning areas.	ECO	Monitoring throughout the duration of the project.
	Cognisance of vehicle weight / dimensions must be taken when using access constructed out of certain materials (e.g. paved surfaces / cobbled entranceways).	E	Monitoring throughout the duration of the project.

B.2 Maintenance of Construction Camp	B.2.1 Surfaces		
	The Contractor must monitor and manage drainage of the camp site.	C/ECO	Monitoring throughout the duration of the project.
	Run-off from the camp site must not discharge into the neighbours' properties.	C/ECO	Monitoring throughout the duration of the project.
	B.2.2 Ablutions		
	Chemical toilets are to be maintained in a clean state and should be moved to ensure that they adequately service the work areas.	ECO	Weekly inspection.
	The Contractor is to ensure that open areas or the surrounding bush are not being used as a toilet facility.	ECO	Weekly inspection.
	B.2.3 Camp Waste Disposal		
	The Contractor should ensure that all litter is collected from the work and camp areas regularly.	ECO	Monitoring throughout the duration of the project.

9.2. Section B: Management of Construction Activities & Workforce

Issue	Management Guidelines	Monitor	Frequency
	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.	ECO/C	Weekly.
	A registered chemical waste company is to be used to remove waste from chemical toilets on site.	ECO	Monitoring throughout the duration of the project.
B.2.4 Eating Areas			
	Eating areas should be regularly serviced and cleaned to help ensure the highest possible standards of hygiene and cleanliness.	ECO	Daily.
	All litter throughout the site should be picked up and placed in the bins provided.	ECO	Daily.
B.2.5 Housekeeping			
	The Contractor should ensure that the construction camp and working areas are kept clean and tidy at all times.	C	Weekly monitoring.

B.3 Staff Conduct	B.3.1 Environmental Education and Awareness		
	The Contractor must monitor the performance of the construction workers to help 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.	E/ECO	Monitoring throughout the duration of the project.
	B.3.2 Worker Conduct on Site		
	The rules that are explained in the worker conduct section (see section A.5.1 of this EMP), must be followed at all times.	ECO/C	Monitoring throughout the duration of the project.

B.4 Dust / Air Pollution	B.4.1 Air Pollution Prevention		
	Vehicles travelling to and from the construction site must adhere to the speed limits so as to avoid producing excessive dust.	E/ECO/C	Monitoring throughout the duration of the project.
	A speed limit of 40km/hr must be adhered to on all gravel roads. Necessary precautions to reduce air pollution must be taken such as dampening the soil to reduce dust; construction vehicles and plant must be frequently checked and serviced to reduce smoke from any malfunctions.	E/C	Monitoring throughout the duration of the project.

9.2. Section B: Management of Construction Activities & Workforce

Issue	Management Guidelines	Monitor	Frequency
	Access and other cleared surfaces must be dampened whenever necessary and especially in dry and windy conditions to avoid excessive dust.	E/C	Monitoring throughout the duration of the project.
	If dust is significant, screening will be required utilising wooden supports and shade cloth.	E	As directed by Engineer.
	Vehicles and machinery are to be kept in good working order and to meet manufacturers' specifications for safety, fuel consumption etc.	ECO	Monitoring throughout the duration of the project. Ongoing.
	Should excessive emissions be observed, the Contractor is to have the equipment serviced as soon as possible.	E	As directed by Engineer.
	No fires allowed on site except for the controlled burning of firebreaks.	E	Monitoring throughout the duration of the project.
	Stockpiles may cause dust and so must be managed in accordance with the guidelines in Materials Management (section B.9.1)	E	Monitoring throughout the duration of the project.
	All existing vegetation on and adjacent to the development should be retained unless otherwise instructed by the Engineer.	ECO	Monitoring throughout the duration of the project.

B.5 Soil Erosion	B.5.1 Topsoil Stripping and Stockpiling		
	Once an area has been cleared of vegetation, the top layer (nominally 0-150mm or 0-300 mm) of soil should be removed and stockpiled in a designated area.	ECO	Monitoring throughout the duration of the project.
	B.5.2 Exposed Surfaces		
	The full length of the works should not be stripped of vegetation prior to commencing other activities. Only if necessary, vegetation clearing may be conducted at a localised scale, particularly at the pylon sites. The time that stripped areas are exposed should be minimised wherever possible.	E/ECO	Monitoring throughout the duration of the project.
	Topsoiling and re-vegetation should commence immediately after the completion of an activity and at an agreed distance behind any particular work front.	ECO	As each activity is completed.
	Stormwater control (See Section B.6) and wind screening should be undertaken to prevent soil loss from the site.	E	Monitoring throughout the duration of the project.
	Side tipping of spoil and excavated materials shall not be permitted – all spoil material shall be disposed of as directed by the Engineer.	E	Monitoring throughout the duration of the project.

9.2. Section B: Management of Construction Activities & Workforce

Issue	Management Guidelines	Monitor	Frequency
	Battering of all banks should be such that cut and fill embankments are no steeper than previous natural slopes unless otherwise permitted by the Engineer. Cut and fill embankments steeper than previous ground levels should be re-vegetated immediately on completion of trimming or should be protected against erosion using bio-engineered stabilisation measures – deep-rooted vegetation is effective to stabilise steeper embankments.	E/ECO	As the cut and fill is completed.
	All embankments, unless otherwise directed by the Engineer, shall be protected by a cut off drain to prevent water from cascading down the face of the embankment and causing erosion. Terracing of steep slopes is recommended.	E	Immediately after the creation of the embankment / stripping of vegetation.

<p>B.6 Stormwater</p> <p>Construction activities frequently result in diversions of natural water flow resulting in concentration of flow and an increase in the erosive potential of the water. Measures in this section are aimed at reducing the erosive potential of stormwater.</p>	<p>B.6.1 General Principles</p> <p>The Contractor should not in any way modify nor damage the banks or beds of streams, rivers, wetlands, other open water bodies and drainage lines adjacent to or within the designated area, unless required as part of the construction project specification. Where such disturbance is unavoidable, modification of water bodies should be kept to a minimum in terms of: removal of riparian vegetation; and opening of the stream channel. It is understood that two piers will be established within the Nsuze River's channel. Cofferdams will be used to divert water during the establishment of the piers' foundations. Diversion of the water will not be beyond the width of river's natural course.</p>	ECO	Monitoring throughout the duration of the project.
	Earth, stone and rubble is to be properly disposed of so as not to obstruct natural pathways over the site. These materials must not be placed in stormwater channels, drainage lines or rivers.	E	Monitoring throughout the duration of the project.
	There should be a periodic checking of the site's drainage system to ensure that the water flow is unobstructed.	E/ECO	Monitoring throughout the duration of the project.
	Stormwater outfalls should be designed to reduce flow velocity and avoid stream bank and soil erosion.	E	Monitoring throughout the duration of the project.
	<p>B.6.2 Un-channelled Flow</p>		
	During construction un-channelled flow must be controlled to help 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 in contours to slow surface wash and capture eroded soil. The spacing between rows will be dependent on the steepness of the slope.	E/ECO	As surface becomes exposed.

9.2. Section B: Management of Construction Activities & Workforce

Issue	Management Guidelines	Monitor	Frequency
	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.	E/ECO	Monitoring throughout the duration of the project.
B.7 Water Quality 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.	B.7.1 Prevention of Water Pollution		
	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 at a suitable waste site.	ECO	Monitoring throughout the duration of the project.
	Every effort should be made to ensure that any chemicals or hazardous substances do not contaminate the soils, ground and surface water.	ECO	Monitoring throughout the duration of the project.
	Care must be taken to ensure that run-off from vehicle or plant area does not enter the ground water. No washing of vehicles is to be permitted on site.	ECO	Monitoring throughout the duration of the project.
	Site staff should 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 of for any construction related activities. DWA permission must be obtained prior to abstraction of water for activities such as disposal of any type of waste, dust suppression, concrete mixing, compacting etc.	ECO	Monitoring throughout the duration of the project.
	Emergency contact numbers in Section D should be referred to in order to deal with spillages and contamination of aquatic environments.	E/ECO	Monitoring throughout the duration of the project.

B.8 Conservation of the Natural Environment	B.8.1 Flora		
	As the work front progresses the ECO and Contractor are to check that vegetation clearing has the prior permission of the Engineer and that the prior permission from DAFF is obtained.	ECO/E	Monitoring throughout the duration of the project.
	Only trees that have not been marked beforehand may be removed where necessary.	ECO	Monitoring throughout the duration of the project.
	Gathering of firewood, fruit, traditional medicine plants or any other natural material on site or in adjacent areas is prohibited.	ECO	Monitoring throughout the duration of the project.
	Immediate re-vegetation 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.	ECO	Monitoring throughout the duration of the project.
Alien vegetation encroachment onto the site as a	ECO	Twice monthly	

9.2. Section B: Management of Construction Activities & Workforce

Issue	Management Guidelines	Monitor	Frequency
	result of construction activities must be controlled during construction.		monitoring.
	B.8.2 Fauna		
	The hunting of birds and animals on site and in surrounding areas is prohibited. If animals are sighted, their location and description must be reported to the ECO immediately.	ECO	Monitoring throughout the duration of the project.
	Snare and traps on site and in adjacent areas are prohibited. If snares and traps are sighted their location must be reported to the ECO and Contractor.	ECO/E/C	Monitoring throughout the duration of the project.
Destruction or alteration of bird habitat, impact on red Data and other species.	Strict control should be maintained over all activities during construction, in particular heavy machinery and vehicle movements and staff.	ECO/E/C	Monitoring throughout the duration of the project.

B.9 Materials Management	B.9.1 Stockpile Management		
	Stockpiles should not be situated such that they obstruct natural water pathways.	E/ECO	Location as directed by the Engineer.
	Stockpiles should not exceed 2m in height unless otherwise permitted by the Engineer. Topsoil stockpiles are not to exceed 2m in order to maintain there viability.	E/ECO	Monitoring throughout the duration of the project.
	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. Stockpiles may further be protected by the construction of berms or low brick walls around their bases.	ECO	As this becomes necessary.
	Stockpiles should be kept clear of weeds and alien invasive vegetation growth by regular weeding.	ECO	Monthly monitoring.
	B.9.2 Handling of Hazardous Materials		
	All concrete mixing must take place on a designated, impermeable surface. No concrete mixing may take place on bare soil.	ECO	Monitoring throughout the duration of the project.
	In order to help prevent concrete trucks being washed off site in an uncontrolled manner, the chutes of all vehicles transporting concrete to the site must be washed on site. Water and concrete from washing should be directed into an excavated sump, which should be situated within an area to be paved. Material washed into the sump may be excavated and used within the paving works or must be transported to a landfill site registered to accept such waste.	ECO	Monitoring throughout the duration of the project.
	No vehicles transporting, placing or compacting asphalt or any other bituminous product may be washed on site.	ECO	Monthly

9.2. Section B: Management of Construction Activities & Workforce

Issue	Management Guidelines	Monitor	Frequency
	Lime and other powders must not be mixed during excessively windy conditions. The area where the project is proposed is significantly windy; this must be taken into consideration.	C/ECO	Monitoring throughout the duration of the project.
	All substances required for vehicle maintenance and repair must be stored in sealed containers until they can be disposed of / removed from the site.	ECO	Monitoring throughout the duration of the project.
	Hazardous substances / materials are to be transported in sealed containers or bags. All empty bags shall be retained for inspection prior to being removed to an appropriately licensed hazardous waste landfill site. Receipts from the landfill site will be required for inspection.	ECO	Monitoring throughout the duration of the project.
	Spraying of herbicides / pesticides should not take place under windy conditions and must comply with OHSAs specs and other chemical handling laws. The site is exposed and windy; this must be taken into consideration.	ECO / CONT	Monitoring throughout the duration of the project.
	The emergency numbers in Section D should be consulted should any accidents / spillages of hazardous substances and / or materials take place. The Contractor is to outline a methods statement for the dealing of accidents / spillages of hazardous materials. This statement must be handed to the Engineer as well as to DWA should the incident occur near to a body of water.	C/ECO	Monitoring throughout the duration of the project.

<p>B.10 Waste Management</p> <p>Definition: "Refuse" refers to all construction waste (such as rubble, asphalt millings, cement, timber, cans, other containers, wire and nails), household and office waste.</p>	<p>B.10.1 On-Site Waste Management</p>		
	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 help prevent refuse from being blown out by wind (ie. Properly fitting lids – this is a windy area and this factor will be important). The bins from construction sites must be emptied into the waste skips that will be on the camp sites. The waste skips must be emptied frequently and the waste should be disposed of at a landfill site registered to accept such waste. The waste skips must also have lids, covers, tarpaulins to help prevent wind dispersal of waste.	ECO	Monitoring throughout the duration of the project.
	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. All waste receptacles must have properly fitting lids.	ECO	Monitoring throughout the duration of the project.
	Littering on site is forbidden and the site should be cleared of litter at the end of each working day. Wind dispersal may be an issue; this needs to be carefully managed.	ECO	Monitoring throughout the duration of the project.
	<p>B.10.2 Waste Disposal</p>		

9.2. Section B: Management of Construction Activities & Workforce

Issue	Management Guidelines	Monitor	Frequency
	Non – hazardous waste		
	All general waste must be removed from the site and transported to a landfill site registered to accept such waste.	ECO / CONT	Monitoring throughout the duration of the project.
	Waybills proving disposal at each site shall be provided for the Engineers inspection.	E/ECO	Checked at each site meeting.
	Construction rubble shall be disposed of in a pre-agreed, demarcated spoil dumps that have been approved by the Engineer, or at a landfill site registered to accept such waste. (E/ECO	Monitoring throughout the duration of the project.
	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 and water, pollution and nuisance to adjoining areas. Waybills proving correct disposal of chemical toilet waste shall be provided for Engineer's inspection. Adequate records must be maintained.	ECO	Weekly and at the start of builders holidays.
	Hazardous Waste		
	Hazardous waste disposal must be carried out by an approved waste contractor as listed in Section D. Waybills for this should be provided.	ECO	Monitoring throughout the duration of the project.
	A sump (earth or other) must be created for concrete waste. This is to be de-sludged regularly and the cement waste is to be removed to a registered site. No cement may be dumped or disposed of other than at a landfill site registered to accept such waste. Waybills for proof of cement disposal must be kept on site as proof of correct disposal.	E/ECO	Monitoring throughout the duration of the project.

B.11 Social Impacts Regular communication between the Contractor and the IAPs is important for the duration of the contract.	B.11.1 Disruption of Infrastructure and Services		
	The Contractor must obtain the landowners permission to remove any fence, and infringe on any property.	E	Monitoring throughout the duration of the project.
	The Contractor must re-instate any fence moved and make good on damages on any property affected.		Monitoring throughout the duration of the project.
	Contractor's activities and movement of staff is to be restricted to designated construction areas.	E	Monitoring throughout the duration of the project.
	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.	E/ECO	Monitoring throughout the duration of the project.

9.2. Section B: Management of Construction Activities & Workforce

Issue	Management Guidelines	Monitor	Frequency
	The conduct of the construction staff when dealing with the public or stakeholders should 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.	E	Monitoring throughout the duration of the project.
	Disruption of access for local residents must be minimised and must have the <u>prior consent</u> of the Engineer.	E	Monitoring throughout the duration of the project.
	The Contractor is to inform neighbours in writing of disruptive activities at least 24 hours beforehand. This may 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.	E/ECO	At least 24 hrs prior to the activity taking place.
B.11.2 Visual Impacts			
	Lighting on the construction site should be pointed downwards and away from oncoming traffic and neighbouring houses.	ECO	Monitoring throughout the duration of the project.
	The site must be kept clean to minimise the visual impact of the site.	ECO	Weekly monitoring.
	If screening is being used, this must be moved and re-erected as the work front progresses.	ECO	Monitoring throughout the duration of the project.
B.11.3 Noise			
	Machinery and vehicles are to be kept in good working condition for the duration of the project to minimise noise nuisance to neighbours.	ECO/E	Monitoring throughout the duration of the project.
	Notice of particularly noisy activities must be given to residents / businesses adjacent to the construction site.	E/ECO	At least 24 hrs prior to the activity taking place.
	Noisy activities must be restricted to the times given in the Project Specification or General Conditions of Contract.	E	Monitoring throughout the duration of the project.
B.11.4 Communication with Interested and Affected Parties (IAPs)			
	The Contractor and ECO are responsible for on-going communication with those people that are interested / affected by the project.	C/ECO	Monitoring throughout the duration of the project.
	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.
	IAPs need to be made aware of the existence of the complaints book and the methods of communication available to them.	E/ECO	Monitoring throughout the duration of the project.

9.2. Section B: Management of Construction Activities & Workforce

Issue	Management Guidelines	Monitor	Frequency
	<p>Queries and complaints are to be handled by:</p> <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; taking remedial action as per Engineer's instruction. 	ECO	Monitoring throughout the duration of the project.
	<p>Selected staff are to be made available for formal consultation with the PSC and the IAPs in order to:</p> <ul style="list-style-type: none"> Explain the construction process; answer questions. 	ECO	Monitoring throughout the duration of the project.

B.12 Cultural Environment	B.12.1 Protection of Cultural Environment		
	Possible items of historical or archaeological value include old stone foundations, tools, clayware, jewellery remains, fossils etc.	ECO/E	Monitoring throughout the duration of the project.
	Should anything of the above be uncovered, the Research and Professional Services Division of AMAFA should be contacted and work should be stopped immediately. AMAFA's head office is in Ulundi and their Pietermaritzburg office will deal with any queries. Contact: tel: 033 394 6543	ECO/E	As required.

9.3. Section C: Post Construction Activities

Issue	Management Guidelines	Monitor	Frequency
C.1 Construction Camp	C.1.1 Construction Camp Rehabilitation		
	All structures comprising the Construction Camp are to be removed from site.	ECO/E	Project completion.
	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.	ECO/E	Project completion.
	All compacted surfaces within the construction camp area should be deep ripped, all temporary hard surfaces shall be removed, all imported materials removed, and the area shall be rehabilitated in accordance with the Engineer's instruction.	E/C	Project completion.
	The Contractor must arrange the cancellation of all temporary services (if any).	E	Project completion.
C.2 Vegetation	C.2.1 Reinstatement of Vegetation		
	All areas that have been disturbed by construction activities (including the construction camp area) must be cleared of all alien invasive vegetation.	E	Project completion.
	Open areas to be re-planted as per the revegetation specification.	E	Project completion.
	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 which must be destroyed).	E	Project completion.
	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.	E	As per the instructions of the Engineer.
C.3 Land Rehabilitation	C.3.1 Land Rehabilitation		
	All surfaces hardened due to construction activities are to be ripped and imported materials thereon removed.	ECO	Project completion.
	All rubble is to be removed from the site and disposed of at a permitted landfill site. Burying of rubble on site is prohibited.	ECO	Project completion.
	The site is to be cleared of all litter.	ECO	Project completion.
	Surfaces are to be checked for waste products from activities such as concreting or asphaltting and cleared in a manner approved by the Engineer.	ECO	Project completion.
	All embankments are to be trimmed, shaped and replanted to the satisfaction of the ECO.	E/ECO	Project completion.
	The Contractor is to check that all watercourses are free from building rubble, spoil and waste materials.	ECO	Project completion.
C.4 Materials and Infrastructure	C.4.1 Removal of Barriers, Remediation of Damage		
	Fences, barriers and demarcations associated with the construction phase are to be removed from the site unless stipulated otherwise by the Engineer.	E/C	Project completion.

9.3. Section C: Post Construction Activities

Issue	Management Guidelines	Monitor	Frequency
	All residual stockpiles must be removed to spoil or spread on site as directed by the Engineer.	E/C	Project completion.
	All leftover building materials must be returned to the depot or removed from the site.	E/C	Project completion.
	The Contractor must repair any damage that the construction works has caused to neighbouring properties.	E/C	As per the Engineer's instructions.
C.5 General	C.5.1 General Remediation		
	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.	ECO/E/C	On completion of the construction and maintenance phases.
	All areas where temporary services were installed are to be rehabilitated to the satisfaction of the Engineer and the ECO.	ECO/E	On completion of construction.

9.4. Section D: Contact Numbers

Telephone or Fax Numbers

D.1 General Numbers	
Nkandla SAPS (Police)	(Tel) 035-8330053
Community Liaison Officer-	
DWA	(Tel) 0313362900
Waste Tech	(Tel) 460 003 0211 031 902 1526
ROSE Foundation (for the free collection of used lubricating oil)	(Cell) 082 378 8556

References

eThekwini Municipality Generic EMP for Construction Activities (2002).

Appendix A: Site Plan



