



ANNEXURE "D"

SPENCER GORE DEVELOPMENTS (PTY) LTD

**PROPOSED MIXED RESIDENTIAL AND COMMERCIAL
DEVELOPMENT ON LOT GARDEN PARK No. 15308, ERF 893
AND REM OF ERF 908, WESTVILLE**

EIA/5929

ENVIRONMENTAL MANAGEMENT PLAN



ENVIRONMENTAL PLANNING AND DESIGN
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1 INTRODUCTION

1.1 GENERAL

Spencer Gore propose the construction of a mixed use development on Lot Garden Park No. 15308, Erf 893 and Rem of Erf 908, Westville.

The proposed development site is located within the Westville residential suburbs. It is bordered by the N2 Freeway to the east and the M13 Freeway to the south.

1.2 PROPOSED ACTIVITY

The proposed developments will consist of the following;

The development area can be divided into the following areas;

- ?? The southern area that sits between the N2 on the eastern side, the M13 to the south and existing residential development to the west. The development area consists of a main platform area that is linked across a minor valley to a smaller development area to the north. Commercial / Retail development is proposed on the main development platform. Residential development comprised of apartment units is proposed on the smaller platform to the north.
- ?? The western area which abuts existing residential development on Grace Avenue. Residential development comprises single residential curtilages that are on average about 450m² in extent.
- ?? The northern / north-eastern development area which abuts the Palmiet River to the north and is linked to the western area by a road bridge and is separated from the southern area by a valley line. Residential development comprises a mix of single residential curtilages on the less steep areas being the crest of the spur and sectional title simplex and duplex units at a density of 30 units per Ha.

The project will be developed in a series of phases. Various phases will be sold by the applicant (Spencer Gore) to other developers. The requirements of a Record of Decision that may be issued by the Department of Agriculture and Environmental Affairs as well as the requirements of this Environmental Management Plan will be binding on all developers of the listed sites. The applicant shall ensure that all requirements of the Department of Agriculture and Environmental Affairs Record of Decision of the 24th May 2005 and this Environmental Management Plan are included within sales agreements. As developers transfer portions of land to purchasers, they shall also ensure that requirements of these documents are transferred through sales agreements.

1.3 EXISTING ENVIRONMENT

The site is bisected by one main valley that runs in a south to north direction. Two minor valleys also run in an east to west direction into the main valley. The main valley falls towards the tributary of the Palmiet.

The valley slopes are generally about 1:3 and in some areas slightly steeper. They flatten out towards the top of the valley sides to provide flatter areas at the edges of the site.

The valleys are generally between 20 – 30m deep.

The valley floors contain areas of wetlands and perennial streams that drain into the Palmiet system.

The valley sides are generally covered with areas of thicket and woody vegetation the majority of which is comprised of alien weed species.

Ridgelines to the south of the site are also covered with woody vegetation the majority of which is comprised of alien weed species. Ridges to the north of the site are relatively flat and are largely covered with grassland species.

From discussion with neighbours, parts of the site and particularly the southern ridgelines have been utilised in the recent past as an informal settlement.

1.4 PURPOSE OF THE ENVIRONMENTAL MANAGEMENT PLAN

In accordance with the Integrated Environmental Management Guidelines published by the Department of Environmental Affairs and Tourism (DEAT) in 1992, the purpose of an Environmental Management Plan (EMP) is ***“to describe how negative environmental impacts will be managed, rehabilitated or monitored and how positive impacts will be maximised”***. In addition, the Discussion Document issued in April 1998 on National Strategy for IEM in South Africa defines an EMP as ***“a detailed plan and programme for the implementation, by an activity initiator, of the conditions contained in the conditions agreement [or Record of Decision (ROD)]”***.

This document serves as an Environmental Management Plan for the construction phase of the proposed project.

The EMP for the Construction Phase of the development documents the methods by which the potential impacts, as identified in the environmental application, are to be mitigated.

In an EMP, various mitigation measures are organised into a well-formulated plan which serves as a guide for the construction of a development. As such, it should be viewed as a dynamic document that may require updating or revision during the life of the development. In such circumstances, conditions for alteration of the document should be referred to key stakeholders.

An effective EMP will be a practical document which precisely sets out both the goals and actions required in mitigation.

Though the term ‘Mitigation’ can be broad in definition, it means in this context to ‘allay, moderate, palliate, temper or intensify.’ Mitigation of a negative impact means that its significance is reduced. Mitigation of a positive impact means that its significance is increased or optimised. It generally should include consideration of the following:

- ✂✂Avoiding impacts by not undertaking certain actions;
- ✂✂Minimising impacts by limiting aspects of an action;
- ✂✂Rectifying impacts by rehabilitation or restoration of the affected environment;
- ✂✂Compensating for impacts by providing substitute resources or environments;
- ✂✂Minimising impacts by optimising industrial processes, structural elements and other design features.

Some impacts may need ongoing monitoring or management. These requirements should be outlined, along with appropriate feedback procedures. Monitoring of impacts may include:

- ✂✂A check that actions are in line with conditions of approval;
- ✂✂A check that mitigation measures are being implemented during the construction phase;
- ✂✂Monitoring of selected environmental variables;
- ✂✂The duration for which monitoring should continue after the completion of construction, or during which phases such monitoring should take place;
- ✂✂Details for monitoring actions;
- ✂✂Delegation of responsibility for undertaking monitoring;
- ✂✂Procedures to be followed if thresholds are exceeded or problems identified;

☞☞The indication of the responsible authority.

1.5 METHODOLOGY

The methodology adopted is that of an *Environmental Management Plan* (EMP) as described in the Integrated Environmental Management (IEM) Guidelines published by the Department of Environment Affairs in 1992.

The EMP has been structured to include:

- ☞☞Specific goals of the *Environmental Management Plan*
- ☞☞Details of management actions
- ☞☞Party responsible for carrying out management recommendations
- ☞☞Timing and duration of management actions
- ☞☞Personnel, training and financial obligations
- ☞☞Guidelines for monitoring and auditing of compliance

1.6 LIMITATIONS AND ASSUMPTIONS

The most significant assumption in terms of the EMP is that it is based upon the eThekweni Municipality Standard Environmental Management Plan. This standard document has been amended to take account of feedback during the EIA process.

Failure to identify significant impacts during the EIA process would necessarily compromise the basis of this document.

The effectiveness of the EMP is limited by the level of adherence to the conditions set forth in this report by the Developer and the various contractors. It is further assumed that compliance with the EMP will be monitored and audited on a regular basis as set out in the EMP.

2 ENVIRONMENTAL MANAGEMENT COMPLIANCE

2.1 ENVIRONMENTAL OFFICERS

Developers of each phase shall assign a senior member of site personnel as an Environmental Liaison Officer (ELO) for the duration of the construction period.

The ELO is to monitor the activities of the Contractor and all subcontractors, and is to ensure that mitigation measures contained in this document are adhered to. The ELO is to liaise with the Environmental Control Officer (ECO) on a regular basis so as to inform the ECO of the adherence to and effectiveness of the prescribed management measures. The ECO shall be an independent consultant employed by the Spencer Gore. Any new, or amendments to existing, mitigation measures to address areas of concern notified by the ECO are to be acted on as necessary by the Contractor.

Developers will be responsible for maintaining communication channels with I&APs throughout the Construction Phase. A record of all correspondence with I&APs should be kept by the Contractor noting the date, details of the I&AP, details of correspondence, details of any issues discussed and details of any follow-up action taken. All communications with I&APs received by the ELO or other members of the Development Team shall be referred to the ECO who shall ensure that these are properly recorded and the appropriate action taken. Details of the Interested and Affected Parties involved in the Environmental Process are included in **Appendix I**.

2.2 EMP COMPLIANCE MONITORING AND AUDITS

The ELO shall monitor the works on a day to day basis and shall report any problems in terms of adherence to the EMP directly to the ECO.

Environmental Audits will be undertaken by the ECO and the ELO on a monthly basis during the Construction Phase. The ELO shall have all necessary documentation available during the audits. The results of these audits will be included in EMP Compliance Reports to be submitted to the Department of Agriculture and Environmental Affairs (DAEA), the Department of Water Affairs and Forestry and to the eThekweni Municipality Department of Environmental Management (EDEM). DAEA and EDEM, may also be involved in monitoring procedures as necessary.

2.3 EMP COMPLIANCE

The EMP will be considered an extension of the *Conditions of Approval* as set forth by DAEA. Non-compliance with the EMP will constitute non-compliance with said *Conditions*.

The EMP will be made binding on all contractors operating on the site and will be included within the *Contractual Clauses*. According to the DAEA *Standard Conditions for EIA Approval*, non-compliance with, or any deviation from, the conditions set out in the document constitutes a failure in compliance with the approval.

Such failure in compliance will be dealt with in terms of Sections 29, 30, and 31 of the Environment Conservation Act (Act No. 73 of 1989), as well as, any other appropriate legal mechanisms.

It should be noted that in terms of the Environment Conservation Act, those responsible for Environmental Damage (in this case the Contractor) must pay the repair costs both to the environment and human health and the preventative measures to reduce or prevent further pollution and / or environmental damage (The polluter pays principle).

3 ENVIRONMENTAL MANAGEMENT REQUIREMENTS

SECTION A: SITE ESTABLISHMENT AND PRELIMINARY ACTIVITIES													
		Monitor	Frequency										
A.1 Access to Site <i>Sound environmental principles must be followed whilst establishing access to the site.</i>	A.1.1 Routing a) The Contractor must take into account any limitations identified and recommendations made during the environmental studies when deciding on an access route to the construction site. b) The location of all underground services and servitudes must be identified and confirmed. c) Choice of access routes and timing of access should take into account minimum disturbance to residents and businesses neighbouring the site.	Engineer(E)/ Environmental Control Officer (ECO)	Prior to moving onto site.										
	A.1.2 Haulage Roads (On Site) a) All on site roads for construction access must be planned and approved by the Engineer and ECO ahead of construction activities. They should not be created on an ad-hoc basis.	E	Prior to moving onto site and during construction.										
	b) Roads must follow natural contours to reduce stormwater erosion.	E	Prior to moving onto site.										
	c) Roads must have as little cut and fill as possible.	E	Prior to moving onto site.										
	d) Road widths and the radii of curves are to be reduced to the minimum required.	E	Prior to moving onto site.										
	e) No trees / shrubs / groundcover may be removed or vegetation stripped without the prior permission of the Engineer/ECO.	E/ECO	Before and during construction.										
	f) Agreed turning areas for haulage vehicles are to be formalised and used by the Contractor. No turning manoeuvres other than at the designated places shall be permitted.	E	Prior to moving onto site.										
	g) Contractors shall construct formal drainage on all temporary haulage roads in the form of side drains and mitre drains to prevent erosion and point source discharge of run-off.	E	Prior to moving onto site.										
	h) Scour check walls must be constructed in the side drains as follows:	E											
	<table border="1"> <thead> <tr> <th>Gradient of Road</th> <th>Scour Check Spacing</th> </tr> </thead> <tbody> <tr> <td><4%</td> <td>Not required</td> </tr> <tr> <td>5%</td> <td>20m</td> </tr> <tr> <td>8%</td> <td>10m</td> </tr> <tr> <td>10%</td> <td>5m</td> </tr> </tbody> </table>	Gradient of Road	Scour Check Spacing	<4%	Not required	5%	20m	8%	10m	10%	5m		
	Gradient of Road	Scour Check Spacing											
	<4%	Not required											
	5%	20m											
	8%	10m											
10%	5m												
i) Scour checks can be constructed from rocks available on site or using driven wooden pegs. Smaller rocks must be placed on the invert of side drain upstream and downstream of the scour checks.	E	On construction of temporary roads.											
j) Haulage roads must allow for the natural flow of water where required.	E	On construction of haulage roads.											

SECTION A: SITE ESTABLISHMENT AND PRELIMINARY ACTIVITIES

		Monitor	Frequency
	<p>k) All stream/ river crossings and temporary bridges shall be built to the Engineer's approval.</p> <p>h) Access routes for dam construction shall be surveyed in detail prior to confirmation of the route. The alignment shall be amended as necessary to avoid all indigenous trees and to minimise required cut and fill.</p> <p>A.1.3 <u>Survey Points</u></p> <p>a) Roads or trails that are cut to provide temporary access for survey work must be minimised.</p> <p>b) Marking of survey points must be done with the Engineer's approval.</p> <p>c) Vegetation clearing must be kept to a minimum during survey operations.</p>		<p>On construction of haulage roads.</p> <p>During surveys and preliminary investigations.</p> <p>During surveys and preliminary investigations.</p> <p>During surveys and preliminary investigations.</p>
<p>A.2.Setting up Construction Camp</p> <p><i>Careful planning of the construction camp can ensure that time and costs associated with environmental management and rehabilitation are reduced.</i></p>	<p>A.2.1 <u>Layout</u></p> <p>a) Choice of site for the Contractor's camp requires the Engineer's permission and must take into account location of local residents, ecologically sensitive areas, flood zones, slip/unstable zones and areas to be retained for conservation. A site plan must be submitted to the Engineer for approval.</p> <p>b) The construction camp may not be situated on a floodplain or on slopes greater than 1:3.</p> <p>c) If the Contractors Camp must be located on site.</p> <p>d) In most cases, on-site accommodation will not be required. The construction camp can thus be comprised of:</p> <ul style="list-style-type: none"> - site office - ablution facilities - designated first aid area - eating areas - staff lockers and showers (where water and waterborne sewers are available) - storage areas - batching plant (if required) - refuelling areas (if required) - maintenance areas (if required) - crushers (if required) <p>e) Cut and fill must be avoided where possible during the set up of the construction camp.</p> <p>f) The size of the construction camp should be minimised (especially where natural vegetation or grassland has had to be cleared for its construction).</p> <p>g) Adequate parking must be provided for site staff and visitors.</p> <p>h) The Contractor must attend to drainage of the camp site to avoid standing water and / or sheet erosion.</p>	<p>E/ECO</p> <p>E/ECO</p> <p>E</p> <p>E</p> <p>E</p> <p>E/ECO</p> <p>E</p> <p>ECO</p>	<p>During surveys and preliminary investigations and prior to moving onto site.</p> <p>During surveys and preliminary investigations. During surveys and preliminary investigations.</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>Ongoing, on a weekly basis.</p>

SECTION A: SITE ESTABLISHMENT AND PRELIMINARY ACTIVITIES

		Monitor	Frequency
	<p>A.2.2 <u>Ablutions</u></p> <p>a) Where waterborne sewerage is not available, temporary chemical toilets must be provided by a company that has been approved by the Engineer. Such toilets must be available for all site staff, both at</p> <p>the camp site, and on site as agreed by the Engineer. Toilets should be no closer than 50m from any natural water bodies.</p> <p>b) The construction of “long drop” toilets is forbidden.</p> <p>c) Under no circumstances may open areas or the surrounding bush be used as a toilet facility.</p> <p>A.2.3 <u>Provision for Camp Waste Disposal</u></p> <p>a) Bins and / or skips shall be provided at convenient intervals for disposal of waste within the construction camp.</p> <p>b) Bins should have liner bags for efficient control and safe disposal of waste</p> <p>c) Recycling and the provision of separate waste receptacles for different types of waste should be encouraged.</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>Ongoing.</p> <p>Ongoing.</p> <p>During site set-up and ongoing.</p> <p>Ongoing.</p> <p>During site set-up and ongoing.</p>
<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>A.3.1 <u>General Substances and Materials</u></p> <p>a) Choice of location for storage areas must take into account 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 minimize the risk of crime. They should also be safe from access by children / animals etc.</p> <p>d) Fire prevention facilities must be present at all storage facilities.</p> <p>e) If electrical equipment for substations is stored on site a fire break will be required around the storage area.</p> <p>f) Burning of fire breaks is to be carefully planned and managed with the assistance of the eThekweni Fire Department.</p> <p>A.3.2 <u>Hazardous Substances and Materials</u></p> <p>a) Definition of hazardous substances / materials are those that are potentially: poisonous, flammable, carcinogenic or toxic.</p> <p>b) Some examples of hazardous substances / materials:</p>	<p>ECO</p> <p>ECO</p> <p>ECO</p> <p>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.</p> <p>During site set-up and ongoing maintenance of fire break.</p> <p>During burning of fire break</p>

SECTION A: SITE ESTABLISHMENT AND PRELIMINARY ACTIVITIES

		Monitor	Frequency
	<ul style="list-style-type: none"> - diesel, petroleum, oil, bituminous products - cement - solvent based paints - lubricants - explosives - drilling fluids - pesticides, herbicides - LPG 		
	c) 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.	E/ECO	During site set-up.
	d) Hazardous storage and refuelling areas must be bunded with an impermeable liner to protect groundwater quality. The Contractor shall submit a method statement to the Engineer for approval.	E/ECO	During site set-up.
	e) The storage of fuel on site must be in accordance with SABS 10131	E	During site set-up.
	e) Storage areas containing hazardous substances / materials must be clearly signed.	ECO	During site set-up.
	f) 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 surveys and preliminary investigations.
	g) Residents living adjacent to the construction site must be notified of the existence of the hazardous storage area.	ECO	When moving onto site or as the relevant materials arrive on site.
	h) Staff dealing with these materials / substances must be aware of their potential impacts and follow the appropriate safety measures.	ECO	During staff induction and ongoing as necessary.
	i) Contractors shall submit a method statement and plans for the storage of hazardous materials and emergency procedures.	ECO	Prior to establishment of storage area.
A.4. Materials Management – Sourcing	A.4.1 <u>Source of Materials</u>		
<i>Materials must be sourced in a legal and sustainable way to prevent off-site environmental degradation.</i>	a) Contractors shall 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 Engineer for approval prior to commencement of any work.	E/ECO	On award of contract.
	b) 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 relevant legislation.	ECO	On receipt of natural materials.
	c) Where materials are borrowed (mined), proof must be provided of authorisation to utilise these materials from the landowner / mineral rights owner and the Department of Minerals and Energy.	ECO	On receipt of borrowed materials.

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		Monitor	Frequency
<p>A.5. Education of Site Staff on General and Environmental Conduct</p> <p><i>These points need to be made clear to all staff on site before the project begins.</i></p>	<p>A.5.1 <u>Environmental Education and Awareness</u></p> <p>Ensure that all site personnel have a basic level of environmental awareness training. The Contractor must submit a proposal for this training to the ECO for approval. Topics covered should include:</p> <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. being considerate to local residents. 	ECO	During staff induction and ongoing.
	<p>It is the Contractor's responsibility to provide the site foreman with no less that 1 hour's environmental training and to ensure that the foreman has sufficient understanding to pass this information onto the construction staff.</p>	ECO	Prior to moving onto site.
	<p>a) Translators are to be used where necessary.</p>	ECO	Ongoing.
	<p>b) The Engineer / environmental control officer should be on hand to explain more difficult / technical issues and to answer questions.</p>	ECO	Ongoing.
	<p>c) The use of pictures and real-life examples is encouraged as these tend to be more easily remembered.</p>	ECO	Ongoing.
	<p>d) Use should be made of environmental awareness posters on site.</p>	ECO	Ongoing
	<p>e) Construction workers should be made aware that they are not to make excessive noise (e.g. Shouting / hooting) when the site is near to commercial / residential areas.</p>	ECO	During staff induction, followed by ongoing monitoring.
	<p>f) The need for a “clean site” policy also needs to be explained to the construction workers.</p>	ECO	Induction, ongoing monitoring.
	<p>A.5.2 <u>Worker Conduct on Site</u></p> <p>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:</p> <ul style="list-style-type: none"> a) No alcohol / drugs to be present on site. b) No firearms allowed on site or in vehicles transporting staff to / from site, (unless used by security personnel). c) Prevent excessive noise. 	ECO	During staff induction, followed by ongoing monitoring.

SECTION A: SITE ESTABLISHMENT AND PRELIMINARY ACTIVITIES			
		Monitor	Frequency
	<ul style="list-style-type: none"> d) Prevent anti-social behaviour. e) Bringing pets onto the site is forbidden. f) No harvesting of firewood from the site or from the areas adjacent to it. 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 bush as a toilet facility are forbidden). h) Trespassing on private / commercial properties adjoining the site is forbidden. i) Driving under the influence of alcohol is prohibited. j) Other than 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>	<ul style="list-style-type: none"> a) Vehicles travelling along the access roads must adhere to speed limits to avoid creating excessive dust. b) Camp construction / haulage road 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 may be used provided that all safety regulations are followed. 	<p>ECO</p> <p>ECO</p> <p>E</p>	<p>Ongoing.</p> <p>Ongoing – more frequently during dry and windy conditions.</p> <p>Ongoing.</p>
A.7. Soil Erosion <i>The stripping of vegetation during preliminary activities on site greatly increases the risk of erosion.</i>	<ul style="list-style-type: none"> 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. 	<p>E/ECO</p> <p>E/ECO</p> <p>E/ECO</p>	<p>Throughout the duration of the project.</p> <p>During site set up.</p> <p>Daily monitoring during site set-up.</p>
A.8. Stormwater <i>Serious financial and environmental impacts can be caused by unmanaged stormwater.</i>	<ul style="list-style-type: none"> a) To prevent stormwater damage, the increase in storm water run-off resulting from construction activities must be estimated and the drainage system assessed accordingly. A Stormwater Management plan must be prepared by a Registered Civil Engineer and must be submitted to the Department of Water Affairs and Forestry (Water Quality Management) and to the eThekweni Municipality (Coastal and Stormwater Management Unit) for approval prior to commencement of each area of construction. The stormwater Management Plan must include the location and design criteria of any temporary stream crossings (siting and return period etc). 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. (e.g. due to demolition work). c) Temporary cut off drains and berms may be required to capture stormwater and promote infiltration. 	<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>

SECTION A: SITE ESTABLISHMENT AND PRELIMINARY ACTIVITIES

<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>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 run off to be treated to the Engineer's approval before being discharged into the stormwater system. (This will be required for the duration of the project.)</p>	<p>Monitor E</p> <p>E/ECO</p> <p>E/ECO</p> <p>E/ECO</p>	<p>Frequency During site set up.</p> <p>During site set-up</p> <p>During site set up.</p> <p>During set up, to be monitored weekly.</p>
	<p>e) Measures to ensure that water quality is maintained during construction of pipe bridges and dams shall include;</p> <ul style="list-style-type: none"> ⚡ The watercourse shall not be diverted from its normal position. ⚡ Up to half of the width of the bed of the water course in its normal condition may be blocked at any one time. ⚡ Care shall be taken to ensure that spoil from excavations in the river bed do not enter the water course. ⚡ All plant that is to be utilised for earthworks / pipe laying in the river bed shall be checked for oil and hydraulic fluid leakage. If any such leakage is found, the plant shall be removed from site for immediate repair. ⚡ Any concrete work in the river bed shall be undertaken within a coffer dam. Concrete shall be sufficiently cured to prevent exposure of aggregate when the stream course is returned over the concrete work.. ⚡ Care shall be taken to ensure that wet concrete or dry materials used for concrete production do not enter the water course. ⚡ All concrete mixing shall occur a minimum of 30m from the edge of the water course in its normal position and outside all areas that might be interpreted as floodplain. Approval from the ECO must be gained for concrete mixing areas adjacent to water courses. <p>f) The ELO shall maintain a visual check on water quality downstream of any crossing. Should excessive turbidity, floating matter, fuel or dead organisms be seen, the ECO shall be informed immediately.</p>	<p>E/ECO</p>	<p>During set up, to be monitored weekly.</p>

SECTION A: SITE ESTABLISHMENT AND PRELIMINARY ACTIVITIES

<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>A.10.1 <u>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. (Particular attention must be paid to imported material).</p> <p>d) Disturbance to birds, animals and reptiles and their habitats should be minimised wherever possible.</p> <p>e) An invasive alien plant removal programme shall be put in place to;</p> <p>?? clear alien plants from all areas to be set aside for conservation on an on going basis.</p> <p>?? To remove alien invasive plants from construction area during the construction phase of the project..</p> <p>The programme shall be approved by the Environmental Management Dept of the eThekweni Municipality and the KZN Department of Agriculture (Directorate of Land Use and Soil Management) prior to construction commencing.</p> <p>The long term management of areas set aside for conservation shall become the responsibility of the managing bodies / companies of development areas. Areas involved and management measures required shall be confirmed in sale agreements to the developers of each area.</p> <p>f) Prior to the commencement of construction of each development area, a detailed landscape plan, specification and ongoing maintenance requirements shall be prepared for approval by the Environmental Management Dept of the Municipality and Ezemvelo KZN Wildlife. The developer shall ensure that ongoing maintenance requirements are passed on to the developers, management company or body corporate for each development area through sale agreements. Landscape Plans shall include landform, planting, and management and shall address;</p> <p>??Possible visual impact particularly where buildings will otherwise be prominent on skylines from key viewpoints outside the site.</p> <p>??Habitat creation particularly for the Dwarf Black Headed Chameleon (Bradypodion melanocephalum).</p> <p>??Rehabilitation and management of undeveloped areas.</p> <p>??Stabilisation of cut and fill slopes.</p> <p>??Rehabilitation of wetlands.</p> <p>??The ornamental use of indigenous plant material within developed areas.</p>	<p>E/ECO</p> <p>E/ECO</p> <p>ECO</p> <p>E/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 site set-up and ongoing.</p> <p>During site set-up and ongoing.</p>
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SECTION A: SITE ESTABLISHMENT AND PRELIMINARY ACTIVITIES

	<p>A.10.2 <u>Sensitive Areas</u></p> <p>Areas which are identified by the Engineer or the environmental control officer as being ecologically sensitive and which are 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. Sensitive areas will include;</p> <p>?? all areas within the 1:100 year floodline and / or 50m buffer areas from the edges of all water courses, which ever is the greater distance.</p> <p>?? A 15m buffer zone from all temporary wetland areas.</p> <p>?? A 20m buffer zone from all seasonal wetland areas.</p> <p>?? A 30m buffer zone from all permanent wetland areas.</p> <p>?? Conservation servitudes as agreed with the Environmental Management Department of the eThekwini Municipality.</p>	E/ECO	During surveys and preliminary investigations and ongoing.
	<p>A.10.3 Chameleon Search and Rescue</p> <p>Prior to the clearance of any area for construction a search and rescue operation for the Dwarf Black Headed Chameleon (<i>Bradypodion melanocephalum</i>). The following process shall be coordinated by the ECO;</p> <p>?? KZN Wildlife and the Environmental Management Department of the eThekwini Municipality shall be given 7 days notice of the search and rescue operation and a meeting shall be held if required.</p> <p>?? Appropriate reserve areas shall be identified and chameleon proof fences shall be erected in a manner that would prevent the relocated chameleons accessing the construction area.</p> <p>?? A search and rescue team approved by KZN Wildlife and the Environmental Management Department of the eThekwini Municipality shall be appointed. The search and rescue team shall assess their time requirement and report to the ECO who shall inform the applicant.</p> <p>?? The search and rescue team shall undertake the work and shall inform the ECO when their operation is complete.</p>	ECO	Prior to commencement of site clearance.
	<p>A.10.3 <u>Chameleon Reserve Areas</u></p> <p>Reserve areas shall be created prior to the commencement of the chameleon search and rescue operation. Appropriate areas shall be agreed with KZN Wildlife and the Environmental Management Dept of the Municipality. The reserve shall comprise of an area outside any development activities, with appropriate vegetation, a suitable surface area and a chameleon proof fence to prevent the chameleons returning to the development area.</p> <p>Ongoing management of the reserve areas shall be undertaken by the developer to ensure that appropriate vegetation is retained. The responsibility for management of each area shall be handed on to management bodies / companies of development areas. Areas involved and management measures required shall be confirmed in deeds of sale to the developers of each area.</p>	E/ECO	Prior to site set-up.

SECTION A: SITE ESTABLISHMENT AND PRELIMINARY ACTIVITIES

	<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 IAP's should be notified in advance of any known potential risks associated with the construction site and the activities on it.</p> <p>Examples of these are:</p> <ul style="list-style-type: none"> - stringing of power lines - blasting - earthworks / earthmoving machinery on steep slopes above houses / infrastructure - risk to residences along haulage roads / access routes 	<p>ECO</p> <p>ECO</p>	<p>Ongoing.</p> <p>24hrs prior to the activity in question.</p>
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SECTION B: MANAGEMENT OF CONSTRUCTION ACTIVITIES AND WORKFORCE			
		Monitor	Frequency
B.1. Access to Site	B.1.1 <u>Haulage Roads</u>		
	a) Contractors shall ensure that all side and mitre drains and scour check walls on access and haul roads are functioning properly and are well maintained.	E	Weekly and after heavy rains.
	B.1.2 Maintenance of Access		
	a) Contractors should ensure that access roads are maintained in good condition by attending to potholes, corrugations and stormwater damage as soon as these develop.	E	Weekly inspection.
	b) If necessary, staff must be employed to clean surfaced roads adjacent to construction sites where materials have been spilt.	ECO	When necessary.
	c) Unnecessary compaction of soils by heavy vehicles must be avoided; construction vehicles must be restricted to demarcated access, haulage routes and turning areas.	ECO	Ongoing.
	d) Cognisance of vehicle weight / dimensions must be taken when using access constructed out of certain materials. e.g. paved surfaces / cobbled entranceways.	E	Ongoing.
B.2. Maintenance of Construction Camp	B.2.1 <u>Surfaces</u>		
	a) The Contractor must monitor and manage drainage of the camp site to avoid standing water and soil erosion.	E	Ongoing.
	b) Run-off from the camp site must not discharge into neighbours' properties.	E	Ongoing.
	B.2.2 <u>Ablutions</u>		
	a) 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.
	b) 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 <u>Camp Waste Disposal</u>		
	a) The Contractor shall ensure that all litter is collected from the work and camp areas daily.	ECO	Ongoing.
	b) Bins and/or skips should be emptied regularly and waste should be disposed of at a registered landfill site. Waybills for all such disposals are to be kept by the Contractor for review by the Engineer / ECO.	ECO	Weekly.
	c) A registered chemical waste company is to be used to remove waste from chemical toilets on site.	ECO	Ongoing
	B.2.4 <u>Eating Areas</u>		
a) Eating areas should be regularly serviced and cleaned to ensure the highest possible standards of hygiene and cleanliness.	ECO	Daily.	
b) All litter throughout the site should be picked up and placed in the bins provided.	ECO	Daily.	

SECTION B: MANAGEMENT OF CONSTRUCTION ACTIVITIES AND WORKFORCE			
		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>	<p>Monitor</p> <p>E/ECO</p>	<p>Frequency</p> <p>Weekly monitoring.</p>
B.3. Staff Conduct	<p>B.3.1 <u>Environmental Education and Awareness</u></p> <p>a) The Contractor must monitor the performance of 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>	<p>E/ECO</p> <p>ECO</p>	<p>Ongoing monitoring.</p> <p>Ongoing.</p>
<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>a) Vehicles travelling to and from the construction site must adhere to speed limits so as to avoid producing excessive dust.</p> <p>b) A speed limit of 30km/hr must be adhered to on all dirt roads.</p> <p>c) Access and other cleared surfaces must be dampened whenever possible and especially in dry and windy conditions to avoid excessive dust.</p> <p>d) Where dust is unavoidable in residential or commercial areas, screening will be required utilising wooden supports and shade cloth.</p> <p>e) Vehicles and machinery are to be kept in good working order and to meet manufacturers specifications for safety, fuel consumption etc.</p> <p>f) Should excessive emissions be observed, the Contractor is to have the equipment seen to as soon as possible.</p> <p>g) No fires are allowed on site except for the burning of firebreaks.</p> <p>h) Stockpiles may cause dust and so must be managed in accordance with the guidelines in Materials Management in section B.9.1.</p>	<p>E</p> <p>E</p> <p>E</p> <p>E</p> <p>ECO</p> <p>E</p> <p>E</p> <p>E</p>	<p>Ongoing.</p> <p>Ongoing.</p> <p>Ongoing.</p> <p>As directed by Engineer.</p> <p>Ongoing.</p> <p>As directed by Engineer.</p> <p>Ongoing.</p> <p>Ongoing.</p>
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>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>ECO</p> <p>E/ECO</p>	<p>Ongoing.</p> <p>Ongoing</p>

SECTION B: MANAGEMENT OF CONSTRUCTION ACTIVITIES AND WORKFORCE

		Monitor	Frequency
	<p>a) Topsoiling and revegetation shall commence immediately after the completion of an activity and at an agreed distance behind any particular work front.</p> <p>b) Stormwater control (See B.6) and wind screening should be undertaken to prevent soil loss from the site.</p> <p>c) 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>Monitor</p> <p>Monitor</p> <p>ECO</p> <p>E</p> <p>E</p>	<p>Frequency</p> <p>Frequency</p> <p>As each activity is completed.</p> <p>Ongoing</p> <p>Ongoing</p>
	<p><u>DESTABILISATION OF SLOPES</u></p> <p>Figure 1: Problems caused by side tipping</p> <p>d) Battering of all banks shall 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 shall be re-vegetated immediately on completion of trimming or shall be protected against erosion in accordance with the Engineer's instructions.</p>	<p>E/ECO</p>	<p>As the cut and fill activity is completed.</p>
	<p>e) 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.</p> <p>f) All earthworks shall be undertaken in accordance with the Geotechnical Engineer's recommendations</p>	<p>E</p>	<p>Immediately after the creation of the embankment / stripping of vegetation.</p>

SECTION B: MANAGEMENT OF CONSTRUCTION ACTIVITIES AND WORKFORCE

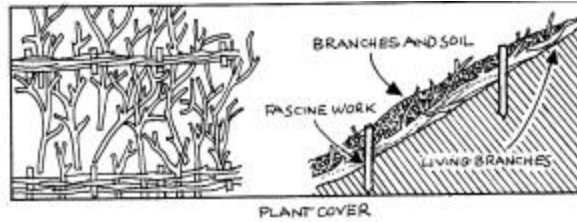


Figure 2: Brush packing of plant material to guard against loss of topsoil during heavy rains.

- b) Where surface run-off is concentrated (e.g. along exposed roadways/tracks), flow should be slowed by contouring with hay bales or bundled vegetation generated during site clearance operation. If the area must be used for construction vehicles, berms may be used instead. The berms must be at least 30cm high and well compacted. The berms should channel concentrated flow into detention ponds or areas protected with hay bales for flow reduction and sediment capture.

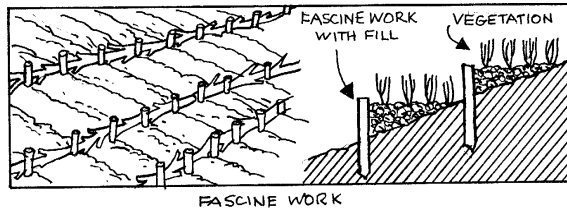


Figure 3: Fascine work to guard against erosion and washaways.

B.7. Water Quality

Water quality is affected by the incorrect handling of substances and materials. Soil erosion and sediment is also detrimental to water quality. 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.

- 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.
- b) Every effort should be made to ensure that any chemicals or hazardous substances do not contaminate the soil or ground water on site.
- 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.
- d) Site staff shall not be permitted to use any stream, river, other open water body or natural water source adjacent to or within the designated site for the purposes of bathing, washing of clothing or for any construction or 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.
- e) Emergency contact numbers in Section D should be referred to in order to deal with spillages and contamination of aquatic environments.

Monitor

Frequency

E/ECO

Ongoing.

ECO

Regular monitoring.

ECO

Regular monitoring.

ECO

Regular monitoring.

ECO

Regular monitoring.

E/ECO

SECTION B: MANAGEMENT OF CONSTRUCTION ACTIVITIES AND WORKFORCE

	<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 OSHA specs and other chemical handling laws.</p> <p>h) 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 method statement for the dealing of accidents / spillages of hazardous materials. This statement must be handed to the Engineer as well as to DWAF should the incident occur near to a body of water.</p>	<p>ECO</p> <p>ECO</p> <p>E/ECO</p> <p>ECO</p>	<p>Ongoing monitoring.</p> <p>Ongoing monitoring.</p>
<p>B. 10. Waste Management</p> <p><i>Definition: "Refuse" refers to all construction waste (such as rubble, asphalt millings, cement bags, waste cement, timber, cans, other containers, wire and nails), household and office waste.</i></p>	<p>B.10.1 On-Site Waste Management</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>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>10.2 Waste disposal</p> <p>Non-hazardous Waste</p> <p>All waste must be removed from the site and transported to a landfill site as listed in Section D.</p> <p>a) Waybills proving disposal at each site shall be provided for the Engineer's inspection.</p> <p>b) Construction rubble shall be disposed of in pre-agreed, demarcated spoil dumps that have been approved by the Engineer, or at disposal sites as listed in Section D.</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 and water, pollution and nuisance to adjoining areas.</p> <p>Hazardous Waste</p> <p>a) Hazardous waste disposal must be carried out by an approved waste Contractor as listed in Section D. Waybills for this should be provided.</p>	<p>ECO</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>Ongoing monitoring.</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>Ongoing.</p>

SECTION B: MANAGEMENT OF CONSTRUCTION ACTIVITIES AND WORKFORCE			
	b) 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 tip site as approved by Durban Solid Waste or listed in Section D.	E/ECO	
B.11. Social Impacts <i>Regular communication between the Contractor and Interested and Affected Parties (I&AP's) is important for the duration of the contract</i>	<p>B.11.1 Disruption of Infrastructure and Services</p> <p>a) Contractor's 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 other 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>d) Disruption of access for local residents must be minimised and must have the Engineer's permission</p> <p>e) The Contractor is to inform neighbours in writing of disruptive activities at least 24 hours beforehand. This can take place by way of leaflets placed in the postboxes giving the Engineer's and Contractor's details or other method approved by the Engineer.</p> <p>B.11.2 <u>Visual Impacts</u></p> <p>a) Lighting on the construction site should be pointed downwards and away from oncoming traffic and nearby houses.</p> <p>b) The site must be kept clean to minimise the visual impact of the site.</p> <p>c) If screening is being used, this must be moved and re-erected as the work front progresses.</p>	<p>E</p> <p>E/ECO</p> <p>E</p> <p>E</p> <p>E/ECO</p> <p>ECO</p> <p>ECO</p> <p>ECO</p>	<p>Ongoing.</p> <p>Ongoing.</p> <p>Ongoing</p> <p>Ongoing.</p> <p>At least 24 hrs prior to the activity taking place.</p> <p>Ongoing.</p> <p>Ongoing – weekly monitoring. Ongoing</p>
	<p>B.11.3 <u>Noise</u></p> <p>a) Machinery and vehicles are to be kept in good working order for the duration of the project to minimize noise nuisance to neighbours.</p> <p>b) Notice of particularly noisy activities must be given to residents / businesses adjacent to the construction site.</p> <p>Examples of these include:</p> <ul style="list-style-type: none"> - noise generated by jackhammers - blasting - drilling - dewatering pumps <p>c) Noisy activities must be restricted to the times given in the Project Specification or General Conditions of Contract.</p>	<p>ECO</p> <p>E/ECO</p> <p>E</p>	<p>Ongoing.</p> <p>At least 24 hrs prior to the activity taking place.</p> <p>Ongoing</p>

SECTION B: MANAGEMENT OF CONSTRUCTION ACTIVITIES AND WORKFORCE

	<p>B.11.4 <u>Communication with Interested and Affected Parties (I&AP's)</u></p> <p>a) The Engineer and Contractor are responsible for on-going communication with those people that are interested in / affected by the project.</p> <p>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.</p> <p>c) I&AP's need to be made aware of the existence of the complaints book and the methods of communication available to them.</p> <p>d) 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 complaints register - bringing issues to Engineer's attention immediately - taking remedial action as per Engineer's instruction <p>e) Selected staff are to be made available for formal consultation with I&AP's in order to:</p> <ul style="list-style-type: none"> - explain construction process - answer questions 	<p>E/ECO</p> <p>ECO</p> <p>E/ECO</p> <p>ECO</p> <p>ECO</p>	<p></p> <p>Monthly</p> <p>Ongoing</p> <p>Ongoing</p> <p>Ongoing</p>
<p>12. Cultural Environment</p>	<p>a) Possible items of historical or archaeological value include old stone foundations, tools, clayware, jewellery, remains, fossils etc.</p> <p>b) Should something of this nature 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 PMB office will deal with any queries within the eThekweni Municipality. Should any artefacts be found the PMB office should be contacted on telephone no 033-3946543, fax 033-3426097..</p>	<p>E</p>	<p>As required.</p>

SECTION C: POST CONSTRUCTION ACTIVITIES			
		Monitor	Frequency
C.1 Construction Camp	a) All structures comprising the construction camp are to be removed from site.	E	Project completion
	b) The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint etc. and these should be cleaned up.	E	Project completion
	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 the revegetation specification that forms part of this document.	E	Project completion
	d) The Contractor must arrange the cancellation of all temporary services.	E	Project completion
C.2 Vegetation	a) All areas that have been disturbed by construction activities (including the construction camp area) must be cleared of alien vegetation.	E	Project completion
	b) Open areas are to be re-planted as per the revegetation specification.	E	Project completion
	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 vegetation).	E	Project completion
	d) Developers are to water and maintain all planted vegetation until the end of the defects liability period and is to submit a method statement regarding this to the Engineer.	E	As per the instructions of the Engineer.
	e) Landscape management – Management of landscape works within development areas shall be ongoing to ensure that vegetation is healthy and continues to fulfil design objectives and to prevent the establishment of alien invasive plant species. The developer shall ensure that the responsibility for this work is passed on to the management companies or body corporate for each development area. Should this not be undertaken, the work may be contracted by the Municipality and charged to the relevant body corporate or company.		
	f) Management of Conservation Areas – The developer shall ensure that a programme of alien plant management is agreed with the Environmental Management Department of the Municipality and the responsibilities for undertaking alien plant within the conservation areas is passed on to the management companies or body corporate for each development area and is ongoing throughout the operational period. Should this not be undertaken, the work may be contracted by the Municipality and charged to the relevant body corporate or company.		
C.3 Fauna	All areas that have been disturbed by construction activities (including the construction camp area) must be cleared of alien vegetation.	E	Project completion

SECTION C: POST CONSTRUCTION ACTIVITIES			
C.4 Land Rehabilitation	a) All surfaces hardened due to construction activities are to be ripped and imported materials thereon removed.	ECO	Project completion
	b) All rubble is to be removed from the site to an approved disposal site as listed in Section D or approved by the Engineer. Burying of rubble on site is prohibited.	ECO	Project completion
	c) The site is to be cleared of all litter.	ECO	Project completion.
	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.	ECO	Project completion.
	e) All embankments are to be trimmed, shaped and replanted to the satisfaction of the Engineer.	E/ECO	Project completion
	f) Borrow pits are to be closed and rehabilitated in accordance with the DME-approved management plan for each borrow pit. The Contractor shall liaise with the Engineer regarding these requirements.	E	Project completion
	g) The Contractor is to check that all watercourses are free from building rubble, spoil materials and waste materials.	ECO	Project completion
C.5 Materials and Infrastructure	a) Fences, barriers and demarcations associated with the construction phase are to be removed from the site unless stipulated otherwise by the Engineer.	E	Project completion
	b) All residual stockpiles must be removed to spoil or spread on site as directed by the Engineer.	E	Project completion
	c) All leftover building materials must be returned to the depot or removed from the site.	ECO	Project completion
	d) The Contractor must repair any damage that the construction works has caused to neighbouring properties.	E	As per the Engineer's instructions
C.6 Water Quality	The developer shall ensure that a qualified civil engineer shall inspect the detention ponds on an annual basis to detail necessary maintenance / management work to ensure that the ponds function as intended.	E	Ongoing after project completion
C.5 General	a) The developer shall be responsible for management and maintenance of all conservation servitudes, natural areas, services and landscape works associated with each development area until a relevant body is in place to hand over such responsibilities to. Such bodies may include a homeowners association in the case of residential development or owners / management company in the case of commercial development areas.	ECO	Project completion
	(b) A meeting is to be held on site between the Engineer, ECO and the Contractor to approve all remediation activities and to ensure that the site has been restored to a condition approved by the Engineer.	ECO/E	On completion of the construction & maintenance phases
	(c) Temporary roads must be closed and access across these blocked.	ECO/E	On completion of construction

SECTION C: POST CONSTRUCTION ACTIVITIES

	(d) Access or haulage roads that were built across watercourses must be rehabilitated by removing temporary bridges and any other materials placed in / or near to watercourses. Revegetation of banks or streambeds must be as necessary to stabilise these and must be approved by the Engineer.	ECO/E	On completion of construction
	(e) All areas where temporary services were installed are to be rehabilitated to the satisfaction of the Engineer.	ECO/E	On completion of construction

SECTION D: CONTACT NUMBERS AS AT OCTOBER 2002

D.1 General Numbers	
eThekwini Police	Emergencies : Tel: 031-361 00 00 General Enquiries: Tel: 031-300 33 99
eThekwini Fire Department	Emergencies : Tel: 031-361 00 00
eThekwini Electricity	Help line: Tel: 0801 313111
eThekwini Water	Help line: Tel: 0800 323235
eThekwini Waste Water (Emergencies and General Enquiries)	Help line: Tel: 0800 323235
eThekwini Environmental Management Branch	Tel: 031-300 2517
Department of Water Affairs and Forestry (DWAF) (To report accidental spillages / incidents of pollution of water bodies.)	Mr Linn Gravelet-Blondin 24 hour pager no: Tel 031-368 3636 (will ask for code: 4674); Cell: 082 808 9916. or DWAF Water Quality Division: Tel: 031- 336 2761 (office hours).
Abzorbit (24 Hour response for oil and chemical spills on land or water, bioremediation, distributors of PEAT SORB)	24 hr Emergency Response Toll Free: 0800 303 303 Doug: 083 269 8790 Gerald: 083 2536618
PRUNIT (This is a plant resources project run by DSW and can be contacted for clearing of indigenous plants that will not be required on site. Alien clearing is not offered by PRUNIT.)	Lindsay Strachan Tel: 031-263 1372 Richard Wynn Tel: 082 415 8093
FFS Refiners (for the free collection of used lubricating oil)	Tel: 031-465 1466
ROSE Foundation (for the free collection of used lubricating oil)	Tel: 0800 107 107

D.2 Waste Management Contact Details	
Durban Soil Waste (DSW) Disposal Branch - Help Line (Contact for locations and facilities offered at refuse sites within the eThekwini Municipality)	Tel : 031 - 2631371 Fax: 031 - 2631 310
DSW Business Branch (Contact for arranging refuse collection from the construction site)	Tel: 031 - 3024825 Fax: 031 - 2631122

D.3 Permitted Hazardous Waste Sites & Hazardous Waste Contractors	
Bulbul Drive, Chatsworth (Waste Services) This site handles general and low hazardous waste.	Waste Services: Tel: 031 -460 4600
Shongweni (Enviroserv Waste Management) This site handles general and low hazardous waste.	Site (Kevin Nadasen): Tel: 031 -769 1134 Enviroserv: Tel: 031-902 1526

D.4 DSW Permitted General Waste Sites (for All Non-Hazardous Waste)	
Bisasar Road - Springfield	Tel: 031 - 263 1371
La Mercy	Tel: 083 469 8034
Mariannahill	Tel: 031 - 7008929
Kwamgenwa (South Coast)	Morgan Nadasen: Tel: 031 - 4625320

D.5 DSW Non-Managed Disposal Sites (for Building Rubble, Spoil Material, Garden Refuse)	
Shallcross (near Chatsworth)	Tel: 031 - 7007829
Wyebank (Kloof)	Tel: 031 - 7007829

SECTION D: CONTACT NUMBERS AS AT OCTOBER 2002

D.6 Garden Refuse Sites

Bellair Road (This is a full recycling facility and accepts materials such as glass, plastic, used appliances, steel, & copper.)

Canehaven Drive (Phoenix)

Chatsworth (Aggitarius Street)

Glanville Road (Woodlands)

Malacca Road (Durban North / Effingham)

Merebank (Travencore Road)

Riverside Road

Tara Road (Bluff)