



# DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

Woodburn Shopping Centre

**Prepared By**



**GREEN CHOICE**  
CONSULTING

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## ABBREVIATIONS AND ACRONYMS

<b>CLO</b>	Community Liaison Officer
<b>DEDTEA</b>	Department of Economic Development, Tourism & Environmental Affairs
<b>EAP</b>	Environmental Assessment Practitioner
<b>EAPASA</b>	Environmental Assessment Practitioners Association of South Africa
<b>ECO</b>	Environmental Control Officer
<b>EIA</b>	Environmental Impact Assessment
<b>EMPr</b>	Environmental Management Programme
<b>NEMA</b>	National Environmental Management Act (Act No. 107 of 1998)
<b>NEM:AQA</b>	National Environmental Management: Air Quality Act (Act No. 39 of 2004)
<b>NEM:PAA</b>	National Environmental Management: Protected Areas Act (Act No. 57 of 2003)
<b>NEM:WA</b>	National Environmental Management: Waste Act (Act No. 59 of 2008)
<b>NWA</b>	National Water Act (Act No. 36 of 1998)
<b>OHS</b>	Occupational Health & Safety Act (Act No. 85 of 1993)
<b>PM</b>	Project Manager



## CONTENTS

1. Introduction .....	6
1.1 Project Description .....	6
1.2 Aspects and Impacts .....	7
1.3 Site Description .....	8
1.4 Drafters of the Environmental Management Programme .....	9
1.5 Assumptions and Uncertainties .....	9
2. OBJECTIVES AND PURPOSE OF THE EMPR .....	10
3. LEGAL REQUIREMENTS .....	11
3.1 Legal Requirements for the EMPr .....	11
3.2 Additional Applicable Legislation .....	11
4. ROLES AND RESPONSIBILITIES .....	12
5. CONSTRUCTION & OPERATIONAL PHASE EMPR .....	14
5.1 Site Establishment .....	15
5.2 Management of Construction Activities & Workforce .....	22
5.3 Post Construction Activities .....	34
5.4 Operational Activities .....	37
6. MONITORING .....	39
7. CORRECTIVE ACTION .....	40
8. AMENDMENTS .....	41

## LIST OF TABLES

Table 1: Description of Proposed Amendments .....	7
Table 2: Summary of Aspects and Potential Impacts .....	7
Table 3: Roles and Responsibilities .....	12
Table 4: Site Establishment .....	15
Table 5: Management of Construction Activities & Workforce .....	22
Table 6: Management of Post Construction Activities .....	34
Table 7: Management of Operational Activities .....	37



## 1. INTRODUCTION

Shanbar Property Development cc, on behalf of the Natal Rugby Union (the Applicant and Landowner) proposes to extend the Woodburn Shopping Centre, located at 15 Woodhouse Road in the Scottsville area of Pietermaritzburg, KwaZulu-Natal. The proposed extension site is currently being utilised as a rugby stadium, owned by the Natal Rugby Union. This Environmental Management Programme (EMPr) forms part of the submission of the Amendment Report, and is structured in compliant with Appendix 4 of the National Environmental Management Act, 1998 (Act No. 107 of 1998, NEMA) Environmental Impact Regulations, 2014 (as amended, EIA Regulations).

This EMPr includes the following:

- Background to the proposed development;
- Assumptions and uncertainties;
- General objectives and purpose of the EMPr;
- Legal requirements;
- Roles and responsibilities;
- Mitigation and management measures relating to impacts identified with associated timeframes and responsibilities for implementation and monitoring.

### 1.1 Project Description

The proposed Woodburn Shopping Centre extension project will entail:

- The extension of the Woodburn Shopping Centre by a further 3.5 hectares to include additional retail stores, a "drive-thru" restaurant, and parking bays. The building will comprise two levels as per the existing shopping centre to accommodate an underground parking facility.
- An extension of the existing outdoor parking lot to accommodate an additional 375 parking bays.
- The demolishing of an existing seating stand/recreational building and rugby field currently owned by the Natal Rugby Union. The practice fields will remain in place.

The proposed site layout plan is attached as Appendix A.

The abovementioned activities does not trigger any listed activities in terms of the EIA Regulations, however a Part 1 and 2 Amendment process is being undertaken to address any environmental impacts that may arise as a result of the proposed development, as detailed in Table 1 below.



**Table 1: Description of Proposed Amendments**

Authorised Activity	Proposed Amendment	Process
The holder of the current Environmental Authorisation is Shanbar Property Development cc.	The Natal Rugby Union will be the holder of the Environmental Authorisation (the Applicant).	Part 1 Amendment Application form to be submitted to the EDTEA.
The property description currently authorised is Portion 5 of Erf 4346.	Due to recent property consolidations, the property description has changed to Erf 10278.	Part 1 Amendment Application form to be submitted to the EDTEA.
The approved Environmental Authorisation is for the development of a 6500m <sup>2</sup> shopping centre development.	The intention is to extend the existing Woodburn Shopping Centre by an additional 3500m <sup>2</sup> (3.5Ha).	Part 2 Amendment Submission of the Part 2 Amendment Report to the EDTEA for review.

Due to the proximity of the Foxhillspruit Canal to the proposed development, a Water Use Licence application in terms of Section 21 of the National Water Act (Act 36 of 1998, NWA) is currently being undertaken.

## 1.2 Aspects and Impacts

The aspects that may arise as a result of the proposed development and the associated potential impacts assessed in the Amendment Report (refer to section 6.2 of the Amendment Report) are summarised in Table 2 below.

**Table 2: Summary of Aspects and Potential Impacts**

Aspect	Potential Impacts
<b>Construction Phase</b>	
<b>Site Preparation prior to Construction Activities</b> <ul style="list-style-type: none"> <li>Movement of construction equipment onto site.</li> <li>Removal of vegetation and associated disturbances to the soil within close proximity to the Foxhillspruit riparian area.</li> </ul>	<ul style="list-style-type: none"> <li>Indiscriminate movement of construction vehicles and equipment through private property.</li> <li>Transportation of construction materials can result in disturbances to soil and increased risk of sedimentation and/or erosion.</li> <li>Soil and stormwater contamination from oils and hydrocarbons originating from construction vehicles.</li> <li>Loss of freshwater habitat and ecological structure.</li> <li>Exposure of soil leading to increased runoff and erosion, and thus increased sedimentation of the Foxhillspruit canal.</li> <li>Proliferation of alien and/or invasive vegetation as a result of disturbances.</li> </ul>
<b>Ground-Breaking and Earthworks</b> <p>Movement of construction machinery/vehicles within the vicinity of the Foxhillspruit canal; potential leaks and/or spills from construction vehicles and general earthworks (including</p>	<ul style="list-style-type: none"> <li>Disturbances of soil leading to ponding of water as a result of over compaction of soil in some areas; increased alien vegetation and in turn, altered riparian habitat.</li> <li>Altered runoff patterns resulting in increased erosion and sedimentation of the receiving riparian habitat.</li> </ul>



Aspect	Potential Impacts
excavation, infilling and levelling of soil, soil compaction and stockpiling of excess soil).	<ul style="list-style-type: none"> <li>• Potential erosion and formation of preferential flow paths as a result of disturbed soil and inappropriate slopes, resulting in sedimentation of the receiving riparian habitat.</li> <li>• Ground disturbances and dust pollution which may impact water quality of the Foxhillspruit canal.</li> </ul>
<b>Stormwater Management</b> The establishment of stormwater channels and outlet structures.	<ul style="list-style-type: none"> <li>• Alterations to the sediment loads within the Foxhillspruit riparian habitat.</li> <li>• Potential deposition of waste material into the receiving riparian habitat.</li> </ul>
<b>Socio-Economic Impacts</b> All construction activities.	<ul style="list-style-type: none"> <li>• Improved quality of life through temporary employment opportunities.</li> <li>• Noise pollution from construction activities.</li> <li>• Increased traffic congestion due to construction vehicles delivering materials to site.</li> <li>• Safety and security.</li> <li>• Deterioration in air quality from dust that may be created through the construction phase.</li> <li>• Heritage resource disturbance during earthwork activities.</li> </ul>
<b>Operational Phase</b>	
<b>Socio-Economic Impacts</b> Daily operation of the shopping centre.	<ul style="list-style-type: none"> <li>• The replacement of the existing rugby stadium and fields will have a visual impact on neighbouring residents.</li> <li>• Increased traffic congestion.</li> <li>• Noise nuisances due to traffic and patrons.</li> <li>• Potential risk to safety and security.</li> </ul>
<b>Waste Generation</b> Poor waste management and littering.	<ul style="list-style-type: none"> <li>• Illegal dumping and indiscriminate littering.</li> <li>• Pest and vermin issues.</li> </ul>
<b>Groundwater &amp; Surface Water Quality</b> Daily operation of the shopping centre.	<ul style="list-style-type: none"> <li>• Inappropriate disposal of sewerage and wastewater may lead to pollution of the Foxhillspruit canal and local groundwater resources.</li> </ul>
<b>Localised Flooding</b> Daily operation of the shopping centre.	<ul style="list-style-type: none"> <li>• Increased areas of hardstanding results in increased flow of storm water, which may lead to localised flooding.</li> </ul>
<b>Safety &amp; Security</b> Daily operation of the shopping centre.	<ul style="list-style-type: none"> <li>• The extension of the shopping centre may result in additional foot traffic in the area, which may pose a security risk to surrounding landowners.</li> </ul>

### 1.3 Site Description

The Woodburn Shopping Centre is located in Erf 10278, 15 Woodhouse Road in the Scottsville area of Pietermaritzburg. The proposed extension site is fully developed, and is currently utilised as a rugby stadium owned by the Natal Rugby Union. The site is bordered by the Woodburn Shopping Centre to the south, the Foxhillspruit Canal to the west, Boshoff Road to the north, and Woodhouse Road and residences to the east.



## 1.4 Drafters of the Environmental Management Programme

This document was compiled by Sarah Stalberg, an EAPASA registered Environmental Management Programme. Sarah holds an MSc in Environmental Science from the University of KwaZulu-Natal, and has 13 years' experience in environmental management and compliance.

## 1.5 Assumptions and Uncertainties

Whilst due process has been followed in the compilation of this EMPr, there are inherent uncertainties in any such process. The assumptions for the purpose of the EMPr are as follows:

- All technical data and information provided by Shanbar Property Development cc to Green Choice Consulting are accurate and up to date.
- Shanbar Property Development cc and its contractors will implement the measures contained within this EMPr.
- A monitoring and evaluation system will be established to monitor the implementation of this EMPr to ensure that management measures are effective to avoid, minimise and mitigate potential impacts, and corrective action is undertaken to address shortcomings and non-conformances.
- Shanbar Property Development cc and its consultants will adopt a process of continual improvement when managing environmental impacts which may arise from the proposed development.



## 2. OBJECTIVES AND PURPOSE OF THE EMPR

The key objectives of this EMPr are to document appropriate actions and to assign responsibilities for those actions to ensure that any impacts resulting from the construction phase of the proposed sports field are minimised and mitigated. This ensures that the basis on which any decision is taken includes environmental considerations and that the impacts on the surrounding environment are minimised.

This EMPr serves as a stand-alone document to be used by the contractor/s during the construction phase of the project. It is important to note that the EMPr is a dynamic document and updating should occur as and when required.

The purpose of this EMPr is to:

- Outline Shanbar Property Development cc's environmental management commitments for the site during construction.
- Ensure adherence to all relevant environmental, health and safety legislation.
- Act as a performance standard that activities can be monitored against.
- Ensure that appropriate monitoring is undertaken.
- Shanbar Property Development cc is responsible for ensuring adherence to the conditions detailed in the EMPr and the Environmental Authorisation. The project manager, contractor(s) and associated staff are bound by the EMPr, and must use this document as a guide to avoid, minimise and manage environmental impacts.



### 3. LEGAL REQUIREMENTS

#### 3.1 Legal Requirements for the EMPr

Appendix 4 of the NEMA EIA Regulations sets out the minimum requirements for the development of an EMPr. This EMPr has been developed in fulfilment of these requirements for the construction phase of the proposed project.

The implementation of an EMPr for the proposed development is a requirement of the Environmental Authorisation and the provisions for Duty of Care and remediation of environmental damage contained in Section 28 of the NEMA. As such, failure to comply with this EMPr will constitute an offence and Shanbar Property Development cc and/or their contractor may be liable for penalties and/or legal action. Therefore, it is important for all the responsible parties to understand their duties and undertake them with duty and care.

This EMPr, which should form an integral part of the contract documents, informs and guides the contractor as to his duties in the fulfilment of the project objectives, with particular reference to the prevention and mitigation of environmental impacts caused by construction activities associated with the project. The contractor should note that obligations imposed by the EMPr are legally binding in terms of environmental statutory legislation. Further, the EMPr is enforceable through additional conditions to the general conditions of contract that pertain to this project. In the event that any rights and obligations contained in this document contradict those specified in the standard or project specifications then the latter shall prevail. It is expected that the contractor is conversant with all legislation pertaining to the environment, including provincial and local government ordinances, which may be applicable to the contract.

#### 3.2 Additional Applicable Legislation

The following is a list of all additional legislation, policies and/or guidelines of relevant spheres of government that may be applicable to this application:

- National Environment Management: Air Quality Act, 2004 (Act No. 39 of 2004) (NEM: AQA).
- National Ambient Air Quality Standards in Terms of Section 9(1)(a) and (b) of the NEM: AQA.
- National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) (NEM: PAA).
- National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEM: WA).
- National Heritage Resources Act, 1999 (Act No. 25 of 1999).
- KwaZulu-Natal Heritage Act, 2008 (Act No. 4 of 2008).
- Health Act, 1977 (Act No. 63 of 1977).
- Occupational Health & Safety Act, 1993 (Act No. 85 of 1993).
- Msunduzi Municipality by-laws.



#### 4. ROLES AND RESPONSIBILITIES

The successful implementation of this EMPr requires co-operation between Shanbar Property Development cc, the appointed contractors and the appointed Environmental Control Officer (ECO). General roles and responsibilities have been outlined in Table 3, and the project team will be required to comply with the conditions defined herein.

In terms of employment of labour, contractors will be expected to maximise the employment of individuals with the required skills residing in the adjacent residential areas. Shanbar Property Development will make use of local construction companies as far as possible. Contractors outside of the area will only be used to provide skills not readily available in the area.

**Table 3: Roles and Responsibilities**

Responsible Agent	Roles & Responsibilities
Shanbar Property Development cc / Project Manager (PM)	<ul style="list-style-type: none"> <li>• Ensure compliance with relevant environmental legislation.</li> <li>• Ensure that the contractor is duly informed of the EMPr and associated responsibilities and implications of this EMPr prior to commencement of the proposed activity.</li> <li>• Ensure that a copy of this EMPr, agreed method statements and a site layout plan are available on site.</li> <li>• Appoint appropriately qualified and skilled contractors to supervise tasks on site.</li> <li>• Ensure that the contractor is familiar with, understands and adheres to the requirements of this EMPr.</li> <li>• Ensure that all staff, suppliers etc. are familiar with and understand the requirements of this EMPr.</li> <li>• Monitor the appointed contractors' activities with regards to the requirements outlined in this EMPr.</li> <li>• Ensure that the contractor remedies problems timeously and to the satisfaction of the authorities.</li> <li>• Appoint an independent and suitable qualified Environmental Control Officer (ECO).</li> <li>• Liaise with the Department of Economic Development, Tourism &amp; Environmental Affairs (DEDTEA) and interested and affected parties if required.</li> <li>• Maintain overall responsibility and accountability for the site during construction.</li> </ul>
Appointed contractor(s)	<ul style="list-style-type: none"> <li>• Ensure that all construction activities on site are undertaken in accordance with this EMPr.</li> <li>• Inform all employees and sub-contractors of their roles and responsibilities in terms of this EMPr.</li> <li>• Ensure all personnel are aware of environmental issues relating to construction activities being undertaken on site as well as the related mitigation measures that need to be implemented.</li> <li>• Consult with the appointed ECO in the case of any uncertainty regarding environmental management requirements, or any activities not covered in this EMPr which may have a detrimental impact on the environment.</li> </ul>



Responsible Agent	Roles & Responsibilities
	<ul style="list-style-type: none"> <li>• Demonstrate respect and care for the environment in which he is operating.</li> <li>• Ensure that health and safety measures are always implemented on site.</li> <li>• Ensure that any incidents, including spills are reported to Shanbar Property Development cc and the ECO immediately.</li> <li>• The contractor(s) will be responsible for the cost of rehabilitation of any environmental damage that may result from non-compliance with this EMPr, as well as with relevant environmental legislation.</li> </ul>
Environmental Control Officer (ECO)	<ul style="list-style-type: none"> <li>• Provide advice with regards to environmental requirements / best practice when required.</li> <li>• Undertake regular site inspections (or as per the requirements of the Environmental Authorisation) and record key findings. This includes monitoring of the construction site and an evaluation of the implementation, effectiveness and level of compliance of on-site construction activities with this EMPr, the Environmental Authorisation and associated plans and procedures.</li> <li>• Identify areas of non-compliance and recommending measures to rectify them in consultation with Shanbar Property Development cc and the appointed contractor.</li> <li>• Ensure follow up and resolution of all non-compliance.</li> <li>• Immediately report any serious environmental non-compliance to the project manager and relevant authority, and give instruction to the contractor and/or engineer to cease activity, avoid / minimise damage, or rehabilitate environmental damage.</li> <li>• Instruct the contractor to suspend part or all of the works undertaken on site if the contractor and / or subcontractors, construction personnel etc. fail to comply with the requirements of this EMPr.</li> <li>• Prepare audit reports detailing any environmental issues, non-compliances, and actions to be implemented. These reports will be submitted to Shanbar Property Development cc and the Department of Economic Development, Tourism &amp; Environmental Affairs (EDTEA) at intervals stated in the Environmental Authorisation.</li> <li>• Assess the suitability of this EMPr on an ongoing basis.</li> <li>• Ensure that revisions to this EMPr (if required), are communicated to Shanbar Property Development cc, project manager, engineer and contractor, and that all the requirements are understood.</li> <li>• Undertaking a post construction inspection, which may result on recommendations for additional clean up and rehabilitation measures if necessary.</li> </ul>



## 5. CONSTRUCTION & OPERATIONAL PHASE EMPr

The EMPr presented in this document details the mitigation measures identified for the project and delegates responsibilities for implementation of the mitigation activities. The EMPr, specifically the mitigation measures proposed, are intended to achieve the environmental objectives and address all the significant environmental impacts and risks identified in the Amendment Report. The establishment of the necessary infrastructure and machinery on site will be done by the contractor who will be responsible for implementing the majority of the activities, under the management of the Project Manager.

All activities to be managed, mitigation and management measures to be implemented, and the responsible individuals/organisations who should implement these measures, are detailed in subsections which follow. This information is the core of this EMPr and must be adhered to at all times. The subsections which follow may be updated as necessary.



## 5.1 Site Establishment

**Table 4: Site Establishment**

(Please refer to impacts associated with site preparation prior to construction activities in Table 2).

Item	Management / Mitigation Measures	Implementation	Monitoring	Frequency
5.1.1 Site Access	Choice of access routes for construction vehicles will take into account minimum disturbance to riparian areas and residents neighbouring the site.	Contractor, PM	ECO	Once off during design and prior to the establishment of any transport routes.
	Access to sensitive areas on the outskirts of the site will be restricted.	Contractor		Once off during staff induction, continuously monitored throughout construction.
	All areas of increased ecological sensitivity must be marked as such and kept off limits to all unauthorised construction and maintenance vehicles as well as personnel.			
	Impacts will be minimised by using existing roads where possible and avoiding the creation of new routes.	Contractor, PM		
	Disturbance to surrounding areas will be minimised by allowing sufficient space for turning areas.			
	Safe pedestrian crossings will be provided where necessary.			
5.1.2 Construction Camp and Storage Areas	<p>An environmental site management plan (ESMP) will be compiled in consultation with the ECO. This plan will show the positions and extent of all permanent and temporary site structures and infrastructure, including (where appropriate):</p> <ul style="list-style-type: none"> <li>• Contractors' camp and lay down areas.</li> <li>• Excavations and trenches.</li> <li>• Topsoil and spoil stockpiles.</li> <li>• Waste material storage sites.</li> <li>• Spoil areas.</li> <li>• Solid waste storage and disposal sites.</li> <li>• Construction materials stores and batching sites.</li> </ul>	Contractor, PM	ECO	Once off prior to site establishment.



Item	Management / Mitigation Measures	Implementation	Monitoring	Frequency
	<ul style="list-style-type: none"> <li>• Site toilets and ablutions.</li> <li>• Equipment stores.</li> <li>• Hazardous waste storage sites.</li> <li>• Fuel stores.</li> </ul> <p>Choice of the site for the Contractor’s camp requires the Engineer’s and ECO permission and will take into account location of local residents and sensitive environmental areas. Areas of natural vegetation must be avoided where possible.</p> <p>The size of the construction camp will be minimised (especially where it is not possible to avoid natural vegetation).</p> <p>Temporary chemical toilets must be provided. Toilets must be available for all site staff, both at the camp site, and on site. Ablution facilities must be located outside of the 1:100year floodline, away from steep slopes and be protected from disturbance by natural elements. Open areas and the surrounding bush will not be used as ablutions.</p> <p>Appropriate fire prevention facilities will be present at all storage facilities.</p> <p>All construction camps, lay down areas, batching plants and any stores in general will be located outside of the 1:100 year floodline. Choice of location for storage areas must take into account prevailing winds, distance to water bodies and general on-site topography.</p>			<p>Once off prior to site establishment and managed throughout construction to avoid the area from expanding.</p> <p>Once off during site establishment with ongoing maintenance throughout construction.</p>
<p>5.1.3 Waste Management</p>	<p>A fenced waste management area will be set up in accordance with the ESMP within the construction camp to store waste collected from the bins on site.</p> <p>Bins and / or skips for waste will be provided within the construction camp and replaced when the bins and /or skips reach capacity. Bins will be equipped with a closing mechanism to</p>	<p>Contractor</p>	<p>ECO</p>	<p>Once off during site establishment with ongoing monitoring throughout construction.</p>



Item	Management / Mitigation Measures	Implementation	Monitoring	Frequency
	prevent their contents from blowing out and have liner bags for efficient control and safe disposal of waste. Proof of disposal must be retained in the Environmental File for the duration of the construction period.			
	Recycling and the provision of separate waste receptacles for different types of waste will be encouraged.			
	No hazardous waste may be stored in the open or around the work areas, close to streams or wetlands.			
5.1.4 Management of Hazardous Materials  The definition of hazardous substances/materials is those that are potentially:  <ul style="list-style-type: none"> <li>• Poisonous,</li> <li>• Flammable,</li> <li>• Carcinogenic or toxic (e.g. diesel, petroleum, oil, Bituminous products,</li> <li>• Cement,</li> <li>• Solvent based paints,</li> </ul>	Contractors will submit a method statement and plans for the storage of hazardous materials and emergency procedures.	Contractor, PM	ECO	Once off prior to the storage of any material.
	Material Safety Data Sheets (MSDSs) will be readily available on site for all chemicals and hazardous substances, to be used on site. Where possible and available, MSDSs will also include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases or escapes.			
	Staff handling hazardous materials / substances will be made aware of their potential impacts and will follow the appropriate safety measures and be provided with suitable Personal Protective Equipment or clothing.	Contractor		Continuous throughout construction.
	When deciding on storage areas for hazardous substances the proximity of houses, schools etc. will be taken into account. Areas will be located away from sensitive areas such as within 1:100 year floodline of any river or wetland areas.	Contractor, PM		Once off during site establishment with ongoing monitoring throughout construction.
	Hazardous storage and refuelling areas will be bunded with an impermeable liner to protect groundwater quality.	Contractor		
	Fuel tanks will meet relevant specifications and be elevated so that leaks may be easily detected.		ECO, PM	
	Storage areas containing hazardous substances / materials will be clearly signed.		ECO, PM	



Item	Management / Mitigation Measures	Implementation	Monitoring	Frequency
Lubricants, Explosives, <ul style="list-style-type: none"> <li>• Drilling fluids, pesticides, herbicides, LPG.</li> </ul>	Spillages will be cleaned up immediately and contaminants properly drained and disposed of using appropriate solid/hazardous waste facilities (not to be disposed of within the natural environment). Any contaminated soil from the construction site will be removed and disposed of at a registered facility, and the spillage site rehabilitated timeously and appropriately.	Contractor, PM	ECO	Ongoing throughout construction.
5.1.5 Environmental Awareness	The site foreman will receive environmental training on the provisions contained in this EMPr (i.e. construction induction), the Environmental Authorisation and basic environmental awareness information. The foreman will have sufficient understanding to pass this information on to the construction staff.	Contractor, PM	ECO	Once off during site establishment.
	All construction personnel will undergo environmental training prior to commencement of work on site. Proof of the training will be retained in the site environmental file for auditing purposes.	Contractor		Once off during site establishment and throughout construction when new contractors are appointed.
	Provision will be made for environmental issues on the agenda of the monthly construction project meetings.	Contractor, PM		Ongoing throughout construction.
	A general regard for the social and ecological well-being of the site and adjacent areas is expected of the site staff. Workers will be made aware of the following general rules: <ol style="list-style-type: none"> <li>i. No alcohol / drugs to be present on site.</li> <li>ii. No firearms allowed on site or in vehicles transporting staff to / from site, (unless used by security personnel).</li> <li>iii. Prevent excessive noise.</li> <li>iv. Bringing pets onto site is forbidden.</li> <li>v. No harvesting of firewood, muthi plants, crops or any other natural material from the site or from the areas adjacent to it.</li> </ol>	Contractor		Once off during staff induction with ongoing monitoring throughout construction.



Item	Management / Mitigation Measures	Implementation	Monitoring	Frequency
	<ul style="list-style-type: none"> <li>vi. The hunting of birds and animals (including the use of snares) on site and in surrounding areas is forbidden.</li> <li>vii. 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 is forbidden).</li> <li>viii. Trespassing on private / commercial properties adjoining the site is forbidden.</li> <li>ix. Driving under the influence of alcohol is prohibited.</li> <li>x. Access to wetland areas is restricted.</li> <li>xi. Other than pre-approved security staff, no workers shall be permitted to live on site.</li> </ul>			
5.1.6 Storm Water Management	A storm water management plan will be compiled and approved by the Engineer prior to commencement of construction.	Contractor, PM	ECO	Once off prior to site establishment.
5.1.7 Visual Impact, Noise & Social Impacts	Contractors will be expected to maximise the employment of individuals with the required skills residing in the adjacent communities.	Contractor, CLO	ECO	Once off during site establishment and throughout construction when new contractors are appointed.
	The Applicant will make use of local construction companies as far as possible. Contractors outside of the area will only be used to provide skills not readily available in the area.	Contractor, CLO	ECO	Once off prior to site establishment.
	A CLO will be appointed and will be responsible for ongoing communication with I&APs. This includes explaining the construction process and answering any questions/complaints, as may be required.	PM	ECO	Once off prior to site establishment.
	An incident/complaints register will be maintained at the site office and managed by the CLO. This register will have numbered pages and any missing pages will be accounted for by the	Contractor, CLO	ECO	Ongoing throughout construction.



Item	Management / Mitigation Measures	Implementation	Monitoring	Frequency
	Contractor/CLO. This register will be tabled during monthly project team meetings.			
	Queries and complaints will be handled as follows: <ul style="list-style-type: none"> <li>• Document details of such communications.</li> <li>• Submit these for inclusion in incident/ complaints register.</li> <li>• Bring issues to Contractor/Engineer’s attention immediately.</li> <li>• Take remedial action as per Engineer’s instruction.</li> </ul>	CLO	ECO	Throughout construction.
	The Contractor/CLO will inform neighbours in writing of disruptive activities at least 24 hours beforehand. This will take place by way of leaflets distributed or notice boards at affected sites giving the Engineer’s, Contractor’s and CLO’s details or other method approved by the ECO.	Contractor, CLO	ECO	Throughout construction.
	Construction vehicles will be fitted with standard silencers prior to the beginning of construction.	Contractor	ECO	Once off prior to construction and ongoing for any new equipment utilised on site.
	The site will be kept clean to minimise the visual impact of the site. Storage facilities, elevated tanks and other temporary structures on site will be located such that they have as little visual impact on local residents as possible.		ECO, CLO	Once off during staff induction with ongoing monitoring throughout construction.
	Lighting (if required) will be positioned so that it does not pose a nuisance to residents or a danger to road users while still allowing for maximum security.			Once off prior to site establishment with ongoing monitoring throughout construction.
5.1.8 Riverine Habitat	The 32m NEMA Zone of Regulation (ZoR) must be clearly demarcated with danger tape and marked as a 'no-go' area where no construction activities are planned.	Contractor, PM	ECO	Prior to site establishment and ongoing monitoring throughout construction.



Item	Management / Mitigation Measures	Implementation	Monitoring	Frequency
5.1.9 Heritage Resources	Prior to the commencement of construction, all staff will be trained on what possible archaeological or historical objects of value may look like, and to notify the Engineer should such an item be uncovered.	Contractor, CLO	ECO	Once off during staff induction and ongoing throughout construction.
5.1.10 Development & Operational Footprint	All development footprint areas must remain as small as possible and must not encroach onto surrounding more sensitive areas. It must be ensured that the riparian area and the associated regulatory zones are off-limits to construction vehicles and personnel.	Contractor, PM	ECO	Once off during site establishment and ongoing monitoring throughout construction.
	The boundaries of footprint areas are to be clearly defined and it must be ensured that all activities remain within defined footprint areas.			
	All areas of increased ecological sensitivity must be marked as such and be off limits to all unauthorised construction and maintenance vehicles and personnel.			
	The duration of impacts on the freshwater system must be minimised as far as possible by ensuring that the duration of time in which flow alteration and sedimentation will take place is minimised.			
	Edge effects of activities, particularly erosion and alien/weed control need to be strictly managed.			



## 5.2 Management of Construction Activities & Workforce

**Table 5: Management of Construction Activities & Workforce**

(Please refer to impacts associated with site preparation prior to construction activities in Table 2).

Item	Management/Mitigation Measures	Implementation	Monitoring	Frequency
5.2.1 Site Access	Existing roads will be used where possible, avoiding the creation of new routes. Any additional routes and turning areas required by the contractor will be approved by the ECO, in writing based on the route map that will be retained as part of the environmental file. Disturbance to surrounding areas will be minimised by allowing sufficient space for turning areas.	Contractor/PM	ECO	Ongoing throughout construction.
	Speed limits (30 km/hr on dirt roads) will be enforced at all times, and traffic control provided both on public roads and onsite roads.			
	Only authorised roads and access routes will be used. Where construction will obstruct existing access, alternative temporary access routes will be allowed for. Access routes to be designed to minimize impact on the riparian area, residents, and the general environment.			
	All access routes and roads will be adequately maintained in order to minimise erosion and undue surface damage. Rutting and potholing will be repaired and stormwater control mechanisms will be maintained.			
	Runoff from roads will be managed to avoid erosion and pollution problems.			



Item	Management/Mitigation Measures	Implementation	Monitoring	Frequency
	Any gravel or cement spillage on roads will be cleaned up in the same day in which the spill occurred.			
	Any damage to public or private roads caused by the Contractor during the construction phase will be repaired.			
5.2.2 Maintenance of Construction Camp	Run-off from the camp site will not discharge into neighbours' properties.	Contractor	ECO	Ongoing throughout construction.
	The drainage of the camp site will be monitored and managed to avoid standing water and soil erosion.			
	Ablutions will be maintained in a clean state with proof of servicing of chemical toilets kept in the file on site. Ablutions will be moved where appropriate to ensure that they adequately service the work areas. Open areas and the surrounding bush will not be used as ablutions.			
	The construction camp and working areas will be kept clean and tidy at all times.			
	Eating areas must be regularly serviced and cleaned to ensure the highest possible standards of hygiene and cleanliness.			
5.2.3 Staff Conduct	Conduct of staff will be monitored to ensure that the induction training they received regarding the EMPr and environmental practices are adhered to.	Contractor	ECO	Ongoing throughout construction.
5.2.4 Air Quality Control	The production of dust and damage caused by dust will be limited through regular watering of the work areas. Where dust is unavoidable in residential or commercial areas, screening will be required utilising, for e.g. wooden supports and shade cloth.	Contractor	ECO	Ongoing throughout construction.
	Stripping of vegetation and existing material will be limited to necessary working areas. Retain as much			



Item	Management/Mitigation Measures	Implementation	Monitoring	Frequency
	<p>indigenous vegetation as possible outside of the authorised footprint areas.</p> <p>Vehicles and machinery will be kept in good working order and to meet manufacturer’s specifications for safety, fuel consumption etc. Should excessive emissions be observed, the Contractor will have the equipment repaired as soon as possible. This will include reducing emissions from the equipment and adjusting any load it may be carrying.</p> <p>Lime, concrete and other powders must not be mixed during excessively windy conditions.</p>			
<p>5.2.5 Storm water, soil erosion and stockpile areas</p>	<p>The duration of exposure to bare soils on site must be minimised as much as possible.</p> <p>Clearing activities must only be undertaken during agreed working times and permitted weather conditions. If heavy rains are expected, clearing activities must be put on hold. In this regard, the contractor must be aware of the weather forecast.</p> <p>All stockpiles may only be placed within demarcated stockpile areas, which must fall within the demarcated construction area. The contractor shall avoid stockpiling materials in vegetated areas that will not be cleared.</p> <p>Stockpiles must not exceed 2m in height and be located at least 10m from the riparian area. Stockpiling of removed materials may only be temporary (i.e. may only be stockpiled during the period of construction at a particular site) and must be disposed of at a registered waste disposal facility.</p>	<p>Contractor/PM</p>	<p>ECO</p>	<p>Ongoing throughout construction.</p>



Item	Management/Mitigation Measures	Implementation	Monitoring	Frequency
	Wind screening and stormwater control will be undertaken around stockpiles to prevent soil loss from the site.			
	Stockpiled soil must be kept free of weeds and shall not to be compacted.			
	The removed vegetation must be stockpiled outside of the riparian area. The footprint areas of these stockpiles must be kept to a minimum. Should the vegetation not be suitable for reinstatement after the construction phase or be alien/invasive vegetation species, all material must be disposed of at a registered garden refuse site and may not be burned or mulched on site			
	Stockpiles of construction materials must be clearly separated from soil stockpiles to limit any contamination of the soil.			
	Trench dewatering, if required, will be done in such a manner that water does not result in concentrated flow that could cause soil erosion.			
	Given the topography of the site, silt traps must be installed downgradient of the construction works to limit any sediment entering the downgradient riparian areas. Sediment traps must allow for surface runoff should a rainfall event occur.			
	After every rainfall event, the contractor must check the site for erosion damage and rehabilitate this damage immediately.			
	All exposed soil, including stockpiles, must be protected for the duration of the construction phase with a suitable geotextile (e.g. Geojute or hessian			



Item	Management/Mitigation Measures	Implementation	Monitoring	Frequency
	sheeting) to prevent excessive dust generation, erosion and sedimentation of the receiving freshwater environment.			
5.2.6 Water Quality	<p>Discharge of water containing waste or visible suspended materials directly into the riparian area will be prohibited.</p> <p>No vehicles will be washed on site and vehicles are to be serviced at the contractor laydown area. All re-fuelling is to take place as far from the riparian area as possible.</p> <p>No hydrocarbons (oil or fuel etc.) will be allowed to enter sewers, storm water drains or the natural environment. Any accidental oil or fuel spills or leakages will be immediately cleaned with an approved absorbent material, such as 'Drizit' or 'Spill-sorb'. Sand can also be used. Any contaminated soil will be removed to the depth of the contamination. The contaminated material must be disposed of via the hazardous waste disposal stream. Any hydrocarbon spill constitutes an incident that will be captured on the incident/ complaints register.</p> <p>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.</p> <p>Municipal water (or another source approved by the Engineer) must be used for all activities such as dust suppression, concrete mixing, compacting etc.</p>	Contractor/PM	ECO	Ongoing throughout construction.



Item	Management/Mitigation Measures	Implementation	Monitoring	Frequency
5.2.7 Alien Plant Species	<p>Proliferation of alien and invasive species is expected within any disturbed areas. These species must be eradicated and controlled to prevent their spread beyond the project footprint, particularly as the study area is located within a sensitive area. Alien plant seed dispersal within the top layers of the soil within footprint areas, that will have an impact on future rehabilitation, has to be controlled.</p> <p>Removal of the alien and weed species encountered on the property must take place in order to comply with existing legislation (amendments to the regulations under the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) and Section 28 of the National Environmental Management Act, 1998 (Act No.107 of 1998) (NEMA)). Removal of species must take place throughout the construction, operational, closure/decommissioning and rehabilitation/ maintenance phases.</p> <p>Species specific and area specific eradication recommendations:</p> <ul style="list-style-type: none"> <li>• Care must be taken with the choice of herbicide to ensure that no additional impact and loss of indigenous plant species occurs due to the herbicide used.</li> <li>• Footprint areas must be kept as small as possible when removing alien plant species.</li> <li>• No vehicles should be allowed to drive through designated sensitive drainage line and riparian areas during the eradication of</li> </ul>	Contractor/PM	ECO	Ongoing throughout construction.



Item	Management/Mitigation Measures	Implementation	Monitoring	Frequency
	alien and weed species.			
5.2.8 Materials Management	<p>Fresh concrete and cement mortar must not be mixed within 10m of the riparian area. Mixing of cement may be done within the construction camp, may not be mixed on bare soil, and must be within a lined, bound or bunded portable mixer. Consideration must be taken to use ready mix concrete.</p> <p>No mixed concrete shall be deposited directly onto the ground whilst it awaits placing. A batter board or other suitable platform/mixing tray is to be provided onto which any mixed concrete can be deposited whilst it awaits placing.</p> <p>Cement bags must be disposed of in the demarcated hazardous waste receptacles and the used bags must be suitably disposed of.</p> <p>Spilled or excess concrete must be disposed of at a suitable landfill site.</p> <p>Cement products/wash will not to be disposed of or allowed to discharge into the natural environment.</p> <p>Inert building rubble and waste rock will be stored in areas designated for such.</p> <p>Mixing/decanting of all chemicals and hazardous substances must take place either on a tray or on an impermeable surface that is contained by temporary or permanent bunds. Mixing/decanting will not be permitted within wetland areas. Waste from these must then be disposed of to a suitable waste site.</p>	Contractor	ECO	Ongoing throughout construction.
5.2.9	Dumping of waste of any nature, or any foreign material will not be permitted.	Contractor	ECO	Ongoing throughout construction.



Item	Management/Mitigation Measures	Implementation	Monitoring	Frequency
Waste Management	Rubble and waste rock will be disposed with the permission of the ECO at the nearest registered solid waste disposal facility. Proof of safe disposal will be retained for inspection during audits.			
	All remains of excess cement and concrete will be disposed of in the approved manner after the completion of tasks. Solid waste concrete may be treated as inert construction rubble, but wet cement and liquid slurry, as well as cement powder will be treated as hazardous waste.			
	All domestic waste will be collected in adequate numbers of litter bins located as required within the works site and the site camp.			
	Where feasible, collected waste paper, glass and metal will be collected separated and either collected by or delivered to registered recyclers. Proof of safe disposal will be retained for inspection during audits.			
	Litter in and around the work area will not be permitted. Litter bins will be equipped with a closing mechanism to prevent their contents from blowing out, will be emptied weekly and staff will be required to use these bins at all times.			
	No solid waste will be burned or buried on site but will be removed from site weekly or fortnightly and disposed of at an appropriately licenced disposal facility. Skips will be emptied prior to over-flowing. The excavation and use of rubbish pits on site is forbidden. Proof of safe disposal will be retained for inspection during audits.			



Item	Management/Mitigation Measures	Implementation	Monitoring	Frequency
	<p>Hazardous waste will be stored appropriately to ensure that it does not pollute the environment. Designated skips will be provided across the site to store hazardous waste.</p> <p>Hazardous waste not earmarked for reuse, recycling or resale will be disposed of at a registered hazardous waste disposal site. Skips will be emptied prior to over-flowing. Proof of safe disposal will be retained for inspection during audits</p>			
<p>5.2.10 Social Impacts – Visual &amp; Noise</p>	<p>Lighting on the construction site will be designed to avoid impacting on traffic and nearby residences.</p> <p>Visual impact of the site will be reduced by ensuring the site is neat at all times.</p> <p>All staff and contractors on site will conduct themselves in an acceptable manner to ensure that the disturbance to surrounding residents is minimised.</p> <p>Noise impacts will be reduced by maintaining normal working hours (07h00 to 17h00, Mondays to Fridays) and should after hours construction work be required adjacent landowners will be notified 24 hours prior to the activity.</p> <p>A complaints register will be housed at the site office and managed by the Contractor/CLO. This will have numbered pages and any missing pages will be accounted for by the Contractor/ CLO. This register will be tabled during monthly project site meetings.</p>	<p>Contractor</p>	<p>ECO</p>	<p>Ongoing throughout construction.</p>
<p>5.2.11 Cultural Environment</p>	<p>Amafa will be contacted if any archaeological or heritage objects are identified during earthmoving activities and all development must cease until further notice. Should an object be identified during</p>	<p>Contractor</p>	<p>ECO</p>	<p>Ongoing throughout construction.</p>



Item	Management/Mitigation Measures	Implementation	Monitoring	Frequency
	the construction phase, the chance find protocol must be implemented.			
5.2.12 Riparian Areas	<p>Ensure measures are implemented to prevent dirty runoff water entering the receiving freshwater environment.</p> <p>Ensure where necessary, exposed soil in the vicinity of riparian habitat is protected from erosion by means of reinstating natural vegetation following construction, or installation of an appropriate commercially available product such as Geojute or MacMatR.</p> <p>Permit only essential construction personnel within 32m of the riparian area, if absolutely necessary that they enter the regulatory zone.</p> <p>Limit the footprint area of the construction activities to what is absolutely essential in order to minimise environmental damage.</p> <p>During the construction phase, no vehicles must be allowed to indiscriminately drive through riparian areas.</p> <p>Implement effective waste management in order to prevent construction related waste from entering the riparian habitat.</p>	Contractor	ECO	Ongoing throughout construction.
5.2.13 Soil	<p>To prevent the erosion of soil, management measures may include berms, soil traps, hessian curtains and stormwater diversion away from areas particularly susceptible to erosion.</p> <p>Install erosion berms during construction to prevent gully formation. Berms every 50m must be installed where any disturbed soil has a slope of less than 2%, every 25m where the track slopes between 2% and</p>	Contractor/PM	ECO	Ongoing throughout construction.



Item	Management/Mitigation Measures	Implementation	Monitoring	Frequency
	<p>10%, every 20m where the track slopes between 10% and 15% and every 10m where the track slope is greater than 15%.</p> <p>Sheet runoff from access roads must be slowed down by the strategic placement of berms and sandbags.</p> <p>As far as possible, all construction activities must occur in the low flow season, during the drier winter months.</p> <p>Monitor all areas for erosion and incision. Any areas where erosion is occurring in an excessively rapid manner must be rehabilitated as quickly as possible and in conjunction with other role players in the catchment.</p>			
<p>5.2.15 Trenching</p>	<p>During trenching, soil may be stockpiled on the upgradient edges of the excavation in order to limit potential sedimentation of the downgradient Foxhillspruit canal.</p> <p>Mixture of the lower and upper layers of the excavated soil must be kept to a minimum. The soil must be used to backfill the trenches, immediately after inserting the pipeline.</p> <p>The stockpiles must remain as small as possible and may not exceed 2m in height.</p>	<p>Contractor</p>	<p>ECO</p>	<p>Ongoing throughout construction.</p>
<p>5.2.16 Rehabilitation Measures</p>	<p>Measures provided in the previous Wetland Rehabilitation Plan for the development of the Woodburn Shopping Centre must be followed. This plan will be implemented to eradicate as far as possible all alien floral species which are identified within riparian areas.</p>	<p>Contractor</p>	<p>ECO</p>	<p>Ongoing and prior to completion of construction activities.</p>



Item	Management/Mitigation Measures	Implementation	Monitoring	Frequency
	Re-introduction of indigenous vegetation where vegetation is sparse. Appropriate landscaping of the hard features is to be implemented.			
	Erosion control within the riparian habitat to prevent sedimentation, enable natural vegetation to become re-established, and improve water quality. Examples of possible management methods include protection of small areas of exposed soils with suitable geotextiles or organic material (e.g., branches) until such time as vegetation is re-established, appropriate stormwater management practices and installation of erosion berms.			
5.2.17 Safety & Security	Site access must be restricted to site staff and relevant project personnel.	Contractor	ECO	Ongoing throughout construction.
	The materials storage area must be securely fenced by means of portable fences.			
	Hazardous construction materials must be stored in containers or other appropriate enclosed and covered receptacles, and kept under lock and key.			
	Emergency contact numbers of the contractor shall be posted conspicuously in case of an emergency,			



### 5.3 Post Construction Activities

**Table 6: Management of Post Construction Activities**

Item	Management/Mitigation Measures	Implementation	Monitoring	Frequency
5.3.1 Construction Camp	All leftover building materials must be removed from the site.	Contractor	PM, ECO	Once off prior to leave the site.
	Any access roads created will be rehabilitated to their condition prior to the start of construction.			
	Any infrastructure (gates, fences, etc) impacted on by construction activities will be returned to the same or better condition than prior to the start of construction.			
	Once construction infrastructure has been removed spills not previously evident may become visible. These spills will be appropriately addressed and any contaminated material removed from the site and disposed of offsite at an appropriately licensed disposal facility.			
	All construction plant, equipment, storage containers, temporary fencing, temporary services, temporary storage (including fuel stores and other bunded hazardous material storage area) fixtures and any other temporary works will be cleared and completely removed from the site unless otherwise agreed with community members who will take ownership of these materials/ equipment.			
	All temporary chemical toilets are to be emptied, taking care not to spill the contents. The contents are to be disposed of at an appropriate wastewater treatment facility.			
	All fencing surrounding the construction camp is to be disassembled and removed off site.			
5.3.2 Rehabilitation	All soil compacted as a result of construction activities falling outside of project footprint areas must be ripped and profiled. Special attention must be paid to alien and invasive control within these areas. Alien and invasive vegetation control must take place	Contractor	PM, ECO	Once off prior to leave the site.



Item	Management/Mitigation Measures	Implementation	Monitoring	Frequency
	<p>throughout all construction and rehabilitation phases to prevent loss of floral habitat.</p> <p>As much vegetation growth (of indigenous/endemic floral species) as possible must be promoted within the proposed development area in order to protect soil.</p> <p>All areas affected by construction and operation must be rehabilitated upon completion of the specific construction and operation activity throughout the life of the development.</p> <p>Measures provided in the previous Wetland Rehabilitation Plan for the development of the Woodburn Shopping Centre must be followed. This plan will be implemented to eradicate as far as possible all alien floral species which are identified within riparian areas.</p> <p>The use of vegetation screening and natural colours may be employed to reduce the visual impact for neighbouring landowners as far as possible.</p> <p>Only indigenous plant species will be permitted for landscaping purposes.</p> <p>All revegetated areas will require regular watering to ensure plant growth and development.</p>			
<p>5.3.3 Waste Management</p>	<p>All waste including building rubble, litter, domestic waste, spilled concrete, unusable building materials, skips and bins will be removed from the site and appropriately disposed of. Certificates of safe disposal will be maintained for inclusion in the closure audit report.</p> <p>All areas of contaminated substrate are to be excavated. Contaminated material must be disposed of at a permitted disposal site.</p> <p>All plastic liners utilised for pollution control are to be disposed of at an appropriate landfill site.</p>	<p>Contractor</p>	<p>PM, ECO</p>	<p>Once off prior to leave the site.</p>



Item	Management/Mitigation Measures	Implementation	Monitoring	Frequency
	Any concrete structures that have been created for the construction phase of the project are to be broken up and removed off site to an appropriate waste disposal site.			



## 5.4 Operational Activities

**Table 7: Management of Operational Activities**

Please refer to impacts associated with site preparation prior to construction activities in Table 2.

Item	Management/Mitigation Measures	Implementation	Monitoring	Frequency
5.4.1 Social Impacts – Noise & Visual Impact	Noise levels will be that of the existing Woodburn Shopping Centre. The appropriate landscaping within the proposed development would assist in reducing noise levels. The planning of indigenous trees, bushes and shrubs along the boundaries of the proposed development will aid in reducing noise levels generated from the development.	PM	ECO	Annually during operation.
	Appropriate security staff must be employed to manage unruly patrons. All exterior lighting must be directed towards the proposed development. Every effort must be taken to minimise the overspill of lighting from the Shopping Centre.			
5.4.2 Waste Management	An integrated waste management approach based on waste minimisation, including the reduce, reuse and recycle principles should be adopted.	PM	ECO	Annually during operation.
	All domestic waste must be collected weekly, either by the Msunduzi Municipality, or a private waste contractor, and disposed of at an appropriate landfill site. Multiple waste receptacles must be provided throughout the Shopping Centre to encourage patrons to appropriately dispose of their waste, and not resort to littering.			
5.4.3 Ground- and Surface Water Quality	All wastewater and sewerage must enter the Municipal sewerage system.	PM	ECO	Annually during operation.
	Under no circumstances may wastewater be discharged into the Foxhillspruit canal.			



<p>5.4.4 Stormwater Management</p>	<p>The implementation of measures to attenuate peak flood discharge on site is recommended, such as the use of on-site water detention, grass-line swales, storm water infiltration systems, undulation, landscaping, or a combination of the above.</p>	<p>PM</p>	<p>ECO</p>	<p>Annually during operation.</p>
	<p>It must be ensured that storm water drains be kept free of litter at all times. The blockage of these drains will result in the inadequate functioning of the storm water system, increasing the risk of potential flooding.</p>			
	<p>All storm water berms must be inspected after rain events to ensure that they are functioning appropriately.</p>			
	<p>Contingency measures must be in place should the storm water berms collapse during a rainfall event.</p>			



## 6. MONITORING

The key to a successful EMPr is appropriate monitoring and review to ensure effective functioning of the EMPr and to identify and implement corrective measures in a timely manner. In the event where discrepancies are identified, the problem must be investigated and attended to. Results obtained during environmental monitoring must be documented for audit purposes. The Applicant/Developer is to appoint an independent ECO to monitor compliance of this EMPr during site establishment, construction, and post construction activities. During the construction phase the duties and responsibilities of the ECO are to include for but not limited to the under-mentioned:

- Monthly site visits to be conducted with associated written rapid feedback.
- Monitoring should measure environmental compliance for the various activities defined in this EMPr and the Environmental Authorisation.
- Prepare a monthly audit report detailing the findings and measures taken to mitigate non-compliance findings.
- Audit reports to be circulated to the Client, Project Manager and Contractor to action any remedial work required on site.
- Audit report is to be submitted to DEDTEA.
- Conduct a site visit at the end of the construction period to ensure that all remedial work is completed.
- Compile and submit a final close out audit report, before the contractor vacates the site to ensure all remedial work, site clearance and rehabilitation is completed as required.



## 7. CORRECTIVE ACTION

Performance measurement is an essential part of the EMPr. Key purposes of performance measures are to:

- Determine whether the EMPr has been implemented appropriately.
- Check that risk controls have been implemented and are effective.
- Learn from the system failures through incident investigations.
- Provide information that can be used to review and, where necessary, improve aspects of the system.

There are several levels at which corrective action can be implemented. These are listed and described below:

### a) Verbal Instruction

Verbal instructions are likely to be the most frequently used form of corrective action and are given in response to minor transgressions that are evident during routine site inspections. Verbal instructions are also used to create further awareness amongst Contractor workforce, as often the transgressions are a function of ignorance rather than vindictiveness.

### b) Written Instructions

Written instructions will be given following an audit. The written instructions will indicate the source or sources of the problems and proposed solutions to those problems. The implementation of these solutions will be assessed in a follow-up audit and further written instructions issued if required.

At the employer representative's sole discretion, a penalty shall be deducted to remedy issues if written instructions are ignored. Should a contractor not remedy and rehabilitate impacted areas after an environmental incident to the satisfaction of the employer's representative, then the employer's representative shall carry out the necessary actions. Costs to remedy environmental incidents as well as rehabilitation of impacted areas shall be paid by the Contractor/s concerned.

### c) Contract Notice

A contract notice is a more extreme form of written notice because it reflects the transgressions as a potential breach of contract. If there is not an adequate response to a contract notice, then the next step can be to have the contractor removed from the site and the contract cancelled.



## 8. AMENDMENTS

Amendments to the EMPr may be required as the project proceeds. Any proposed amendments to the EMPr, as may be specified in the audit reports, will be confirmed with the PM prior to being issued as a formal amendment, subsequent to approval by the DEDTEA. Copies of the amendments will be issued to recipients of this report as detailed in the report record at the end of this document and forwarded to the DEDTEA.

### Prepared by



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## **APPENDIX A: PROPOSED SITE LAYOUT PLAN**

