Draft Environmental Management Programme for the Cornubia Retail Park

Prepared for Tongaat Hulett Developments

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Tongaat Hulett DEVELOPMENTS

Royal HaskoningDHV
Enhancing Society Together

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Signature

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Glossary of Terms

ACCIDENT: A road vehicle accident.

BUILDING AND DEMOLITION WASTE: Building and demolition waste means waste, excluding hazardous waste, produced during the construction, alteration, repair or demolition of any structure, and includes rubble, earth, rock and wood displaced during that construction, alteration, repair or demolition.

CONTRACTOR: Companies appointed on behalf of the Client to undertake activities, as well as their sub-contractors and suppliers.

DECONSTRUCTION: Deconstruction is the selective dismantlement of building components. Deconstruction has also been defined as "construction in reverse". Deconstruction is commonly separated into two categories; structural and non-structural. Non-structural deconstruction, also known as "soft-stripping", consists of reclaiming non-structural components e.g. doors, windows, and finish materials. Structural deconstruction involves dismantling the structural components of a building.

DEGRADATION: The lowering of the quality of the environment through human activities e.g. river degradation, soil degradation.

DEMOLITION: Demolition is the tearing-down of buildings and other structures, the opposite of construction. Demolition contrasts with deconstruction, which involves taking a building apart while carefully preserving valuable elements for re-use.

DOMESTIC WASTE: Domestic waste means waste, excluding hazardous waste, that emanates from premises that are used wholly or mainly for residential, educational, health care, sport or recreation purposes.

EMERGENCY: An undesired event that results in a significant environmental impact and requires the notification of the relevant statutory body such as a local or provincial authority.

ENVIRONMENT: In terms of the National Environmental Management Act (NEMA) (No 107 of 1998)(as amended), "Environment" means the surroundings within which humans exist and that are made up of:

i. the land, water and atmosphere of the earth;
ii. micro-organisms, plants and animal life;
iii. any part or combination of (i) of (ii) and the interrelationships among and between them; and
iv. the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

ENVIRONMENTAL CONTROL OFFICER: An individual nominated through the Client to be present on site to act on behalf of the Client in matters concerning the implementation and day to day monitoring of the EMPr and conditions stipulated by the authorities.

ENVIRONMENTAL IMPACT: A change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's activities, products or services.

ENVIRONMENTAL MANAGEMENT PROGRAMME: A detailed plan of action prepared to ensure that recommendations for enhancing or ensuring positive environmental impacts and limiting or preventing negative environmental impacts are implemented during the life-cycle of the project.

GENERAL WASTE: General waste means waste that does not pose an immediate hazard or threat to health or to the environment, and includes -

i. domestic waste;

ii. building and demolition waste;
iii. business waste; and
iv. inert waste.

GENERAL WASTE LANDFILL SITE: A waste disposal site that is designed, managed and permitted to allow for the disposal of general waste.

GROUNDWATER: All subsurface water that fills voids between highly permeable ground strata comprised of sand, gravel, broken rocks, porous rocks, etc. and move under the influence of gravitation.

HAZARDOUS WASTE: Hazardous waste means any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment.

HAZARDOUS WASTE LANDFILL SITE: A waste disposal site that is designed, managed and permitted to allow for the disposal of hazardous waste.

IMPACT: A description of the potential effect or consequence of an aspect of the development on a specified component of the biophysical, social or economic environment within a defined time and space.

INCIDENT: An undesired event which may result in a significant environmental impact but can be managed through internal response.

METHOD STATEMENT: A method statement is a written submission by the Contractor to the Engineer in response to the specification or a request by the Engineer, setting out the plant, materials, labour and method the Contractor proposes using to carry out an activity, identified by the relevant specification or the Engineer when requesting a Method Statement. It contains sufficient detail to enable the Engineer to assess whether the Contractor's proposal is in accordance with the Specifications and/or will produce results in accordance with the Specifications.

MITIGATION: Measures designed to avoid, reduce or remedy adverse impacts.

POLLUTION: The National Environmental Management Act, No. 107 of 1998 defined pollution to mean any change in the environment caused by – substances; radioactive or other waves; or noise, odours, dust or heat emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future.

RECOVERY: The controlled extraction of a material or the retrieval of energy from waste to produce a product.

RE-USE: To utilise articles from the waste stream again for a similar or a different purpose without changing the form of properties of the articles.

RECYCLE: A process where waste is reclaimed for further use, this involves the separation of waste from a waste stream for further use and the processing of that separated material as a product or raw material.

REHABILITATION: Rehabilitation is defined as the return of a disturbed area to a state which approximates the state (wherever possible) which it was before disruption.

SAFETY, HEALTH AND ENVIRONMENTAL OFFICER: The SHE officer is a Contractor representative, responsible for the safety, health and environmental aspects on the construction site. The SHE officer will be responsible for the day-to-day monitoring of the EMP and Health and Safety Plan.

WASTE: Waste means any substance, whether or not that substance can be reduced, re-used, recycled and recovered -

i. that is surplus, unwanted, rejected, discarded, abandoned or disposed of;
ii. which the generator has no further use of for the purposes of production;
iii. that must be treated or disposed of; or
iv. that is identified as a waste by the Minister by notice in the Gazette, and includes waste generated by the mining, medical or other sector, but—
v. a by-product is not considered waste; and
vi. any portion of waste, once re-used, recycled and recovered, ceases to be waste.

WASTE DISPOSAL FACILITY: Waste disposal facility means any site or premise used for the accumulation of waste with the purpose of disposing of that waste at that site or on that premises.

WATER POLLUTION: The National Water Act, 36 of 1998 defined water pollution to be the direct or indirect alteration of the physical, chemical or biological properties of a water resource so as to make it – less fit for any beneficial purpose for which it may reasonably be expected to be used; or harmful or potentially harmful (aa) to the welfare, health or safety of human beings; (bb) to any aquatic or non-aquatic organisms; (cc) to the resource quality; or (dd) to property".

WORKFORCE: The entire project team including people employed by the Principal Agent or the Contractor, persons involved in activities related to the project, or person present at or visiting the construction area, including permanent contactors and casual labour.

Acronyms

DAEA	Department of Agriculture, Environmental Affairs
DAFF	Department of Agriculture, Fisheries & Forestry
DWA	Department of Water Affairs
EA	Environmental Authorisation
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
EMS	Environmental Management System
eTM	eThekwini Municipality
ISO	International Organisation for Standardisation
MSDS	Material Safety Data Sheet
NEMA	National Environmental Management Act (No 107 of 1998)(as amended)
OHS	Occupational Health and Safety
PPE	Personal Protective Equipment
ROSE	Recycling Oil Saves The Environment Foundation
SABS	South Africa Bureau of Standards
SANS	South African National Standard
SCP	Stormwater Control Plan
SOP	Standard Operating Procedure
SHE	Safety, Health & Environment
SMP	Stormwater Management Plan
TBA	To Be Announced
THD	Tongaat Hulett Developments

1 INTRODUCTION

1.1 Project Background

Royal HaskoningDHV were appointed by Tongaat Hulett Developments (THD) to act as an independent Environmental Assessment Practitioner (EAP) for the environmental authorisation application for the proposed Cornubia Retail Park Development.

As part of the greater Cornubia Mixed-Use Phased Development, THD propose to establish the Cornubia Retail Park, a retail development in Mount Edgecombe, KwaZulu-Natal. Cornubia is located within the eThekwini Municipality (eTM) and is situated north of Durban (Figure 1). The size of the proposed development is approximately 54 hectares in extent and includes the establishment of the Cornubia Retail Park as well as the M41 Interchange Upgrade. The development site is located in Mount Edgecombe, adjacent to Flanders Drive and the M41.

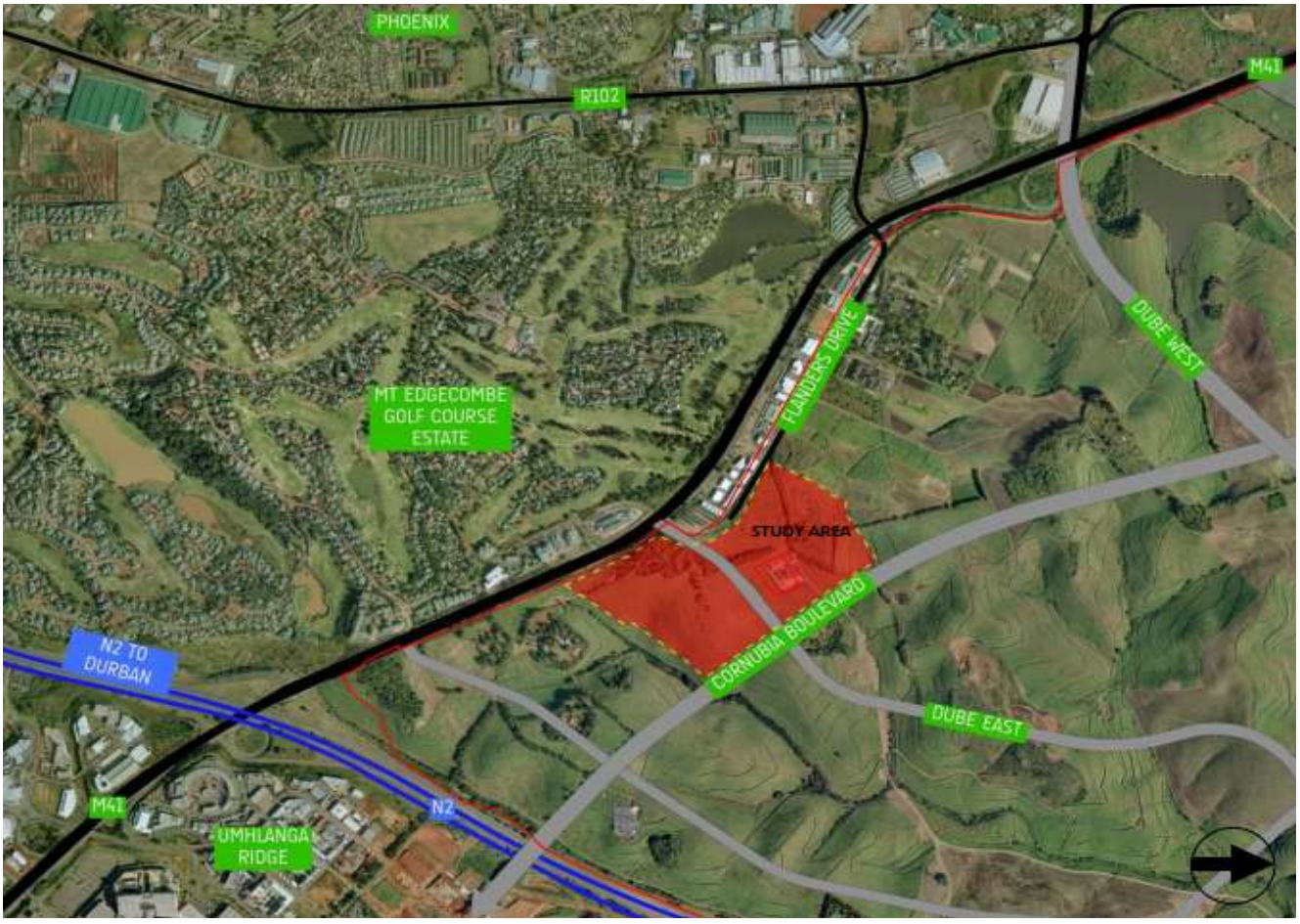

FIGURE 1: LOCALITYMAP OF THE SITE

The proposed Cornubia Retail Park will consist of large-scale retail and commercial buildings developed on earth-worked platforms to cater to the surrounding region. The project includes the construction of new roads and limited upgrading to existing road networks, the installation of new (and/or upgraded) services including gravity sewer lines, water pipelines, electrical cabling and stormwater attenuation.

The above is based upon the broad Cornubia Development Framework Plan for the entire Cornubia Project which was approved and adopted by the eTM for the whole of Cornubia in 2011. Due to the extent of the Cornubia Mixed-Use Development, it is being developed on a phased basis. This EMPr is applicable to the Cornubia Retail Park (Figure 2).

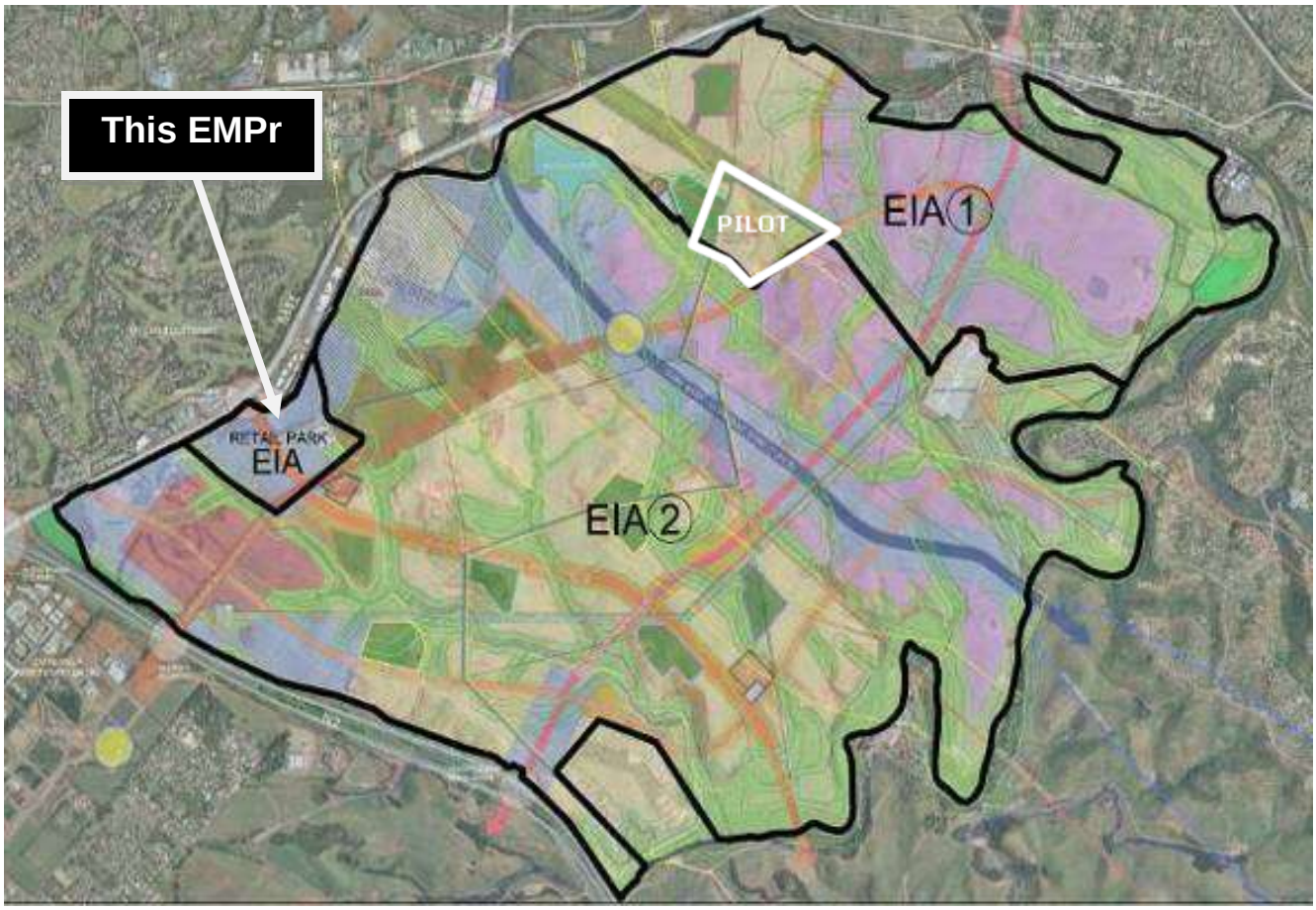

FIGURE 2: EXTENT OF THIS EMPR

1.1.1 Sensitive Environments

FAUNA

The following faunal species can be found within close proximity to the development:

- Painted Reed Frog (Hyperolius marmoratus marmoratus);
- Bronze Caco (Cacosternum nanum);
- African Dater (Anhinga rufa); and
- Weaver Species.

VEGETATION

Indigenous plant species occurring within this area include: *Ficus burkei, Ficus natalensis, Sideroxylon inerme, Maytenus undata, Gymnosporia grandifolia, Turraea floribunda, Clausena anisata, Schotia brachypetala, Ekebergia capensis, Dovyalis rhamnoides* and Capparis *fascicularis var. zeyheri* (Figures 3 and 4)*. S. inerme* is a Nationally Protected tree species according to the National Forests Act (Act No. 84 of 1998).

The following aliven invasive species can be commonly encountered within this area; *Phytolacca dioica* (Pokeberry Tree), *Bougainvillea sp. Macfadyena unguis-cati* (Cat's Claw Creeper), *Plumeria sp.* (Frangipani), *Jacaranda mimosifolia* (Jacaranda), *Chromolaena odorata* (Triffid Weed), *Senna sp. Lantana camara* (Lantanas), *Rubus cuneifolius* (Sand Blackberry), *Rivina humilis* (Coral Berry), *Litsea glutinosa* (Indian Laurel) and *Ipomoea purpurea* (Common Morning Glory).

FIGURE 3: SPECIES OF VEGETATION ALONG THE M41

FIGURE 4: SPECIES OF VEGETATION WITHIN THE CORNUBIA RETAIL PARK SITE

WETLANDS

There are ten wetland units identified within and in the vicinity of the project site. These are presented in Figure 5.

FIGURE 5: LOCATION OF WETLAND UNITS WITHIN THE VICINITY OF THE SITE

The wetlands to be infilled, rehabilitated and the no-go areas as discussed in this EMPr are illustrated in Figure 6.

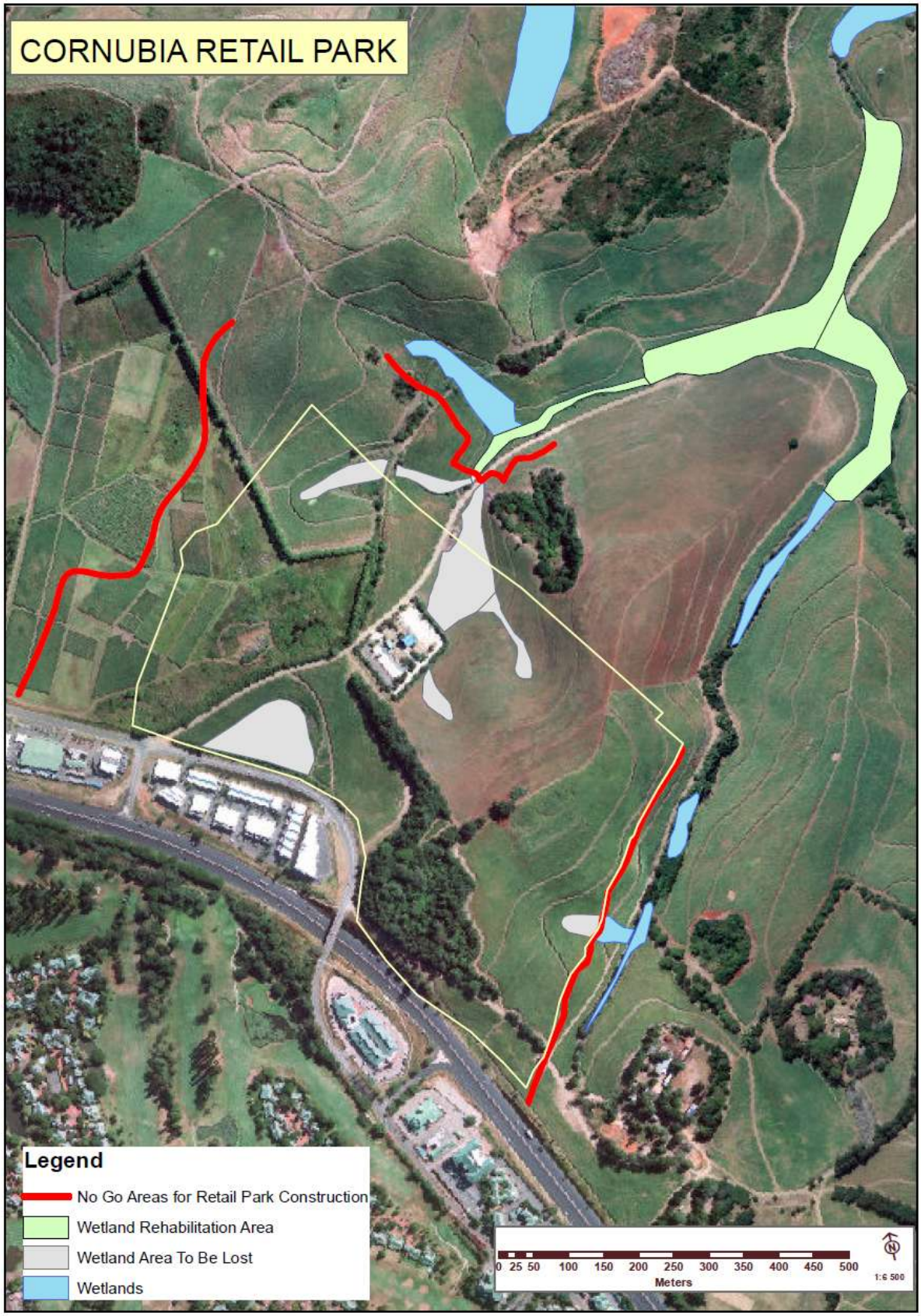

FIGURE 6: WETLAND AREAS AND NO-GO AREAS

1.1.2 Anticipated Impacts

The following key impacts are anticipated for the the Cornubia Retail Park development:

TABLE 1: SUMMARY OF ANTICIPATED IMPACTS

POSITIVE	NEGATIVE
Biophysical Environment	
The assessment of the pre-development environment indicated that the agricultural land capability of the site be classified as good to excellent. However due to the need for provision of affordable housing and services in the northern parts of the eThekwini Municipality, this project is ideally located to address this. The need for the development, in this specific location and context is fundamental with the potential for bringing new land into agriculture in more appropriate locations already being implemented.	Destruction of viable agricultural land.
The design and layout of the proposed development has taken into consideration and integrated the ecological, topography, and hydrological constraints that have been identified.	There will be permanent alteration of the biophysical environment should the specified mitigation measures not be implemented.
Although sensitive environments have been identified within the project area (i.e. wetlands, riparian areas and vegetation pockets), mitigation measures and management plans have been recommended to improve the overall health and functionality of the area at large. The development will enable a substantial quantum of wetland to be rehabilitated and managed which will result in a nett ecological gain.	In-filling of degraded wetlands and vegetation.
Socio-economic Environment	
The creation of substantial employment opportunities during the construction of the project and the creation of substantial economic and employment opportunities on completion of the project. It is expected that the majority of labour and contractors will be sourced locally.	This could lead to the influx of people into the area seeking employment which could place a strain on the existing infrastructure, available housing and the potential development of uncontrolled settlements. In general, there are social ills such as crime, the spread of HIV/AIDS etc. that could take place.
The location of the study area is in prime position to promote and foster economic opportunity, social and physical integration, being in close proximity to the King Shaka International Airport and Dube Trade Port.	
The proposed road upgrades will alleviate traffic congestion in Mount Edgecombe.	

1.2 Purpose of the Environmental Management Programme

In terms of The Constitution of the Republic of South Africa (1996) everyone has the right to an environment that is not harmful to their health or well-being and to have the environment protected, for benefit of present and future generations, through reasonable legislation and other measures that prevent pollution and ecological degradation, promote conservation and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development. The needs of the environment as well as affected parties should thus be integrated into overall project management.

The Environmental Management Programme (EMPr) ensures that construction activities meet the requirements of existing environmental legislation and good environmental practice in terms of international norms and practice. This is achieved by identifying those construction activities for the proposed development that may have a negative impact on the environment; outlining the mitigation measures that will need to be taken and the steps necessary for their implementation and describing the reporting system to be undertaken during construction.

1.3 Objectives of the Environmental Management Programme

The EMPr has the following objectives:

- To ensure compliance with regulatory authority stipulations and guidelines which may be local, provincial, national and/or international.
- To outline functions and responsibilities of responsible persons.
- To state standards and guidelines, which are required to be achieved in terms of environmental legislation.
- To outline mitigation measures and environmental specifications which are required to be implemented for all phases of the project in order to minimise the extent of environmental impacts, and to manage environmental impacts associated with the proposed project.
- To identify measures that could optimize beneficial impacts.
- To prevent long-term or permanent environmental degradation.
- To establish a method of monitoring and auditing environmental management practices during all phases of development.
- Detail specific actions deemed necessary to assist in mitigating the environmental impact of the project.
- Ensure that the safety recommendations are complied with.
- Propose mechanisms for monitoring compliance with the EMPr and reporting thereon.
- Specify time periods within which the measures contemplated in the draft environmental management programme must be implemented, where appropriate.
- To provide an environmental awareness plan.
- Provide rational and practical environmental conditions / requirements to:
    - Minimise disturbance of the natural environment;
    - Ensure water resource protection;
    - Prevent or minimise all forms of pollution;
    - Protect indigenous flora and fauna;
    - Prevent soil and sand erosion and facilitate the re-vegetation of affected areas;
    - Maintenance of newly re-vegetated areas;
    - Restrict noise disturbance;
    - Ensure compliance with all applicable laws, regulations, standards and guidelines for the protection of the environment (specifically the coastal and marine environment); and
    - Adopt the best practical means available to prevent or minimise adverse environmental impacts.
    - Develop waste management practices based on prevention, minimisation, recycling, treatment or disposal of waste.
    - Train the Applicant, its employees and contractors with regard to their environmental obligations.

The EMPr is essentially, a written plan of how the environment is to be managed in practical and achievable terms. An independent Environmental Control Officer (ECO) must be appointed (by the proponent: THD) to

ensure compliance with the EMPr. The EMPr will be considered an extension of the Conditions of Approval as set forth by the KwaZulu-Natal Department of Agriculture and Environmental Affairs (KZN DAEA) and the Department of Water Affairs (DWA). Non-compliance with the EMPr will constitute non-compliance with said Conditions.

1.4 Scope of the Environmental Management Programme

In accordance with the requirements of the National Environmental Management Act (NEMA) Environmental Impact Assessment (EIA) Regulations, 2010, and the requirements of the KZN DAEA, this EMPr is to be implemented by the Applicant as well as any employee, contractor, agent or sub-contractor appointed to act on behalf of the Applicant in the execution of the project, in order to ensure environmental compliance on site.

The specifications outlined in this EMPr are thus applicable to all activities undertaken by the Applicant as well as appointed contractors and all persons involved in the execution of the works including sub-contractors, the workforce, suppliers and volunteers for the duration of construction, operation and future maintenance.

An Environmental Code of Conduct has also been developed that provides a simplified set of rules that should be adhered to by all persons involved with the project at all times. This is to be displayed at strategic points to ensure constant environmental awareness.

The effectiveness of the EMPr is limited by the level of adherence to the conditions set forth in the EMPr by the Developer, the Contractor and Sub-contractors. It is further assumed that compliance with the EMPr will be monitored and audited as set out in this EMPr and contractual clauses.

1.5 Structure of the Environmental Management Programme

The EMPr provides proposed mitigation and management measures for the following phases of the project (refer to Table 2).

TABLE 2: DIFFERENT PHASES OF THE PROJECT LIFE CYCLE

PHASE	DESCRIPTION
Pre-Construction	This section will provide guidelines on pre-construction activities including site establishment and clearance; environmental induction and training and awareness; site access and health and safety.
Construction	This section will provide guidelines on construction methods and considerations.
Rehabilitation	This section of the EMPr provides management principles for the rehabilitation phase of the of the Cornubia Retail Park. This will include best practice, procedures and responsibilities as required for various associated activities.

1.6 The EMPr as a “live” document

The approach adopted for this EMPr is derived from the Deming Cycle (Figure 7), a cycle of continuous improvement that entails the reiterative actions of plan, do, check, act, and critically to then return to the planning phase.

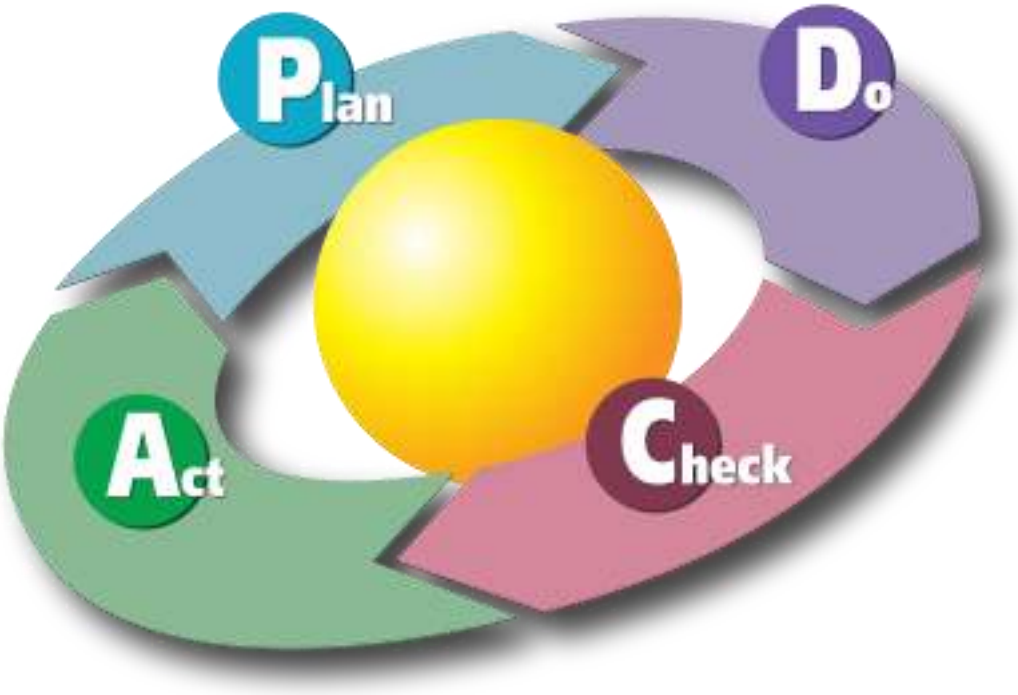

FIGURE 7: DEMING CYCLE OF CONTINUING IMPROVEMENT

1.6.1 Plan

Project-specific planning for the proposed project involves consideration of the legal triggers, the specifics of the proposed development, and the nature of the receiving environment. This provides a starting point for targeted environmental management objectives. Environmental performance indicators are then determined with measurable targets prescribed to monitor the environmental performance of the project. Achieving the targets depends on compliance with this EMPr and the legislative requirements that underpin it.

1.6.2 Do

Throughout the development's life-span, the developer will be required to develop and maintain a Quality Management System – designed to ensure that best management practices are implemented in day-to-day management. Such a QMS should at least include the following information:

- Location and extent of associated infrastructure;
- Associated activities, such as the transportation of people and equipment;
- Resources and experience required (staffing);
- Materials and equipment to be used;
- Management actions;
- Human resources used;
- Construction-monitoring activities;
- Emergency / disaster incident and reaction procedures; and
- Rehabilitation procedures for the impacted environment.

These topics will be cross-linked into the contracts related to the development of the project.

1.6.3 Check

A system of assessing monitoring results has been developed to check the environmental management performance. Continuous assessment facilitates proactive management of the environmental issues. Mitigation measures can then be successfully implemented on an ongoing basis to keep environmental indicators within their target thresholds. Moreover, the assessment system also enables the assessment of the efficacy of the EMPr. Regular auditing of environmental performance is prescribed to prove and preserve accountability.

1.6.4 Act

The assessments and monitoring of the results and findings of the regular audits must be documented within a reporting system. Precautionary mitigation measures and corrective actions will be prescribed and instructions will be given in order to implement these in the field. The findings of monitoring and auditing programmes can also be used to update the EMPr. Although the EMPr is a project-specific document, it is dynamic and should be updated regularly to address the changing circumstances of the scheme.

It must be noted that this EMPr is a dynamic document that should be continually updated, as and when required. Any amendments made must be submitted to the KwaZulu-Natal Department of Agriculture and Environmental Affairs (KZN DAEA) monitoring, compliance and enforcement sub-directorate for approval prior to implementation.

1.7 Applicable Documentation

The following environmental documentation is applicable for the project, and must be read in conjunction with this EMPr:

- Draft Environmental Impact Assessment Report for the Proposed Cornubia Retail Park;
- Environmental Authorisation for the Cornubia Retail Park – *in progress*;
- Water Use License for the Cornubia Retail Park – *in progress*;
- DAFF License for the removal/ relocation of protected trees – *in progress*; and
- Ezemvelo KZN Wildlife Permits for the removal/ relocation of indigenous plants – *in progress*.

1.8 Details of the Project Applicant

The applicant is THD and the details of the responsible person are listed below.

TABLE 3: DETAILS OF THE PROJECT APPLICANT

APPLICANT	TONGAAT HULETT DEVELOPMENTS
Contact Person	Bheki Shongwe
Postal Address	P.O.Box 22319 Glenashley 4022

APPLICANT	TONGAAT HULETT DEVELOPMENTS
Telephone	+27 31 560 1937
Fax	+27 86 679 9243
E-mail	Bheki.Shongwe@tongaat.com

1.9 Details of the Environmental Assessment Practitioner

Royal HaskoningDHV have been appointed by THD as the Independent Environmental Assessment Practitioner (EAP) to undertake the EMPr. The team responsible for the environmental management on this project has been identified below:

TABLE 4: DETAILS OF THE PROJECT TEAM

NAME	ORGANISATION	QUALIFICATION	TELEPHONE	EMAIL
Malcolm Roods	Royal HaskoningDHV	BA (Hons) Geography and Environmental Management	011 798 6442	malcolm.roods@rhdhv.com
Humayrah Bassa	Royal Haskoning DHV	MSc Environmental Science	031 719 5500	humayrah.bassa@rhdhv.com

2 LEGAL FRAMEWORK

Construction will be according to the best industry practices, as identified in the project documents. This EMPr, which forms an integral part of the contract documents, informs the contractor as to his / her 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 and in terms of the 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 will 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. Some of the environmental legislation applicable to the construction and operation of the Cornubia Retail Park include, but are not limited to, the following environmental legislation:

LEGISLATION	SECTIONS	RELATES TO
The Constitution (No 108 of 1996)	Chapter 2	Bill of Rights.
	Section 24	Environmental rights.
National Environmental Management Act (No 107 of 1998 [as amended])	Section 2	Defines the strategic environmental management goals and objectives of the government. Applies through-out the Republic to the actions of all organs of state that may significantly affect the environment.
	Section 24	Provides for the prohibition, restriction and control of activities which are likely to have a detrimental effect on the environment.
	Section 28	The developer has a general duty to care for the environment and to institute such measures as may be needed to demonstrate such care.
EIA Regulations (2010)	GN 543 – Sections 28, 31, 32, 33, 54	Content of scoping reports (Section 28), Environmental Impact Assessment reports (Section 31), specialist report and reports on specialised processes (Section 32), content of draft environmental management programmes (Section 33) and the public participation process (Section 54).
	GN 544 – Listing Notice 1	Activities requiring a Basic Assessment study to be undertaken.
	GN 545 – Listing Notice 2	Activities requiring a Scoping and Impact Assessment study to be undertaken.
	GN 546 – Listing Notice 3	Activities in special geographical areas requiring a Basic Assessment study to be undertaken.
National Environmental Management: Waste Act (No 59 of 2008)		Provides for specific waste management measures and the remediation of contaminated land.
Environment Conservation Act (No 73 of 1989) and regulations	Sections 19 and 19A	Prevention of littering by employees and sub-contractors during construction and the maintenance phases of the proposed project

LEGISLATION	SECTIONS	RELATES TO
National Heritage Resources Act (No 25 of 1999) and regulations	Section 34	No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.
	Section 35	No person may, without a permit issued by the responsible heritage resources authority destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or paleontological site.
	Section 36	No person may, without a permit issued by the South African Heritage Resource Agency (SAHRA) or a provincial heritage resources authority destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority. "Grave" is widely defined in the Act to include the contents, headstone or other marker of such a place, and any other structure on or associated with such place.
	Section 38	This section provides for Heritage Impact Assessments (HIAs), which are not already covered under the ECA. Where they are covered under the ECA the provincial heritage resources authorities must be notified of a proposed project and must be consulted during the HIA process. The Heritage Impact Assessment (HIA) will be approved by the authorising body of the provincial directorate of environmental affairs, which is required to take the provincial heritage resources authorities' comments into account prior to making a decision on the HIA.
National Environmental Management: Air Quality Act (No 39 of 2004)	Section 32	Control of dust
	Section 34	Control of noise
	Section 35	Control of offensive odours
Occupational Health and Safety Act (No 85 of 1993)	Section 8	General duties of employers to their employees
	Section 9	General duties of employers and self employed persons to persons other than their employees
National Water Act (No 36 of 1998) and regulations	Section 19	Prevention and remedying the effects of pollution
	Section 20	Control of emergency incidents
	Section 21 (a)	Abstraction of water
Minerals and Petroleum Resources Development Act (No 28 of 2002)	Section 22	Application for a mining right.
	Section 39	Environmental management programme and environmental management plan.
National Environmental Management Biodiversity Act (Act No.		Provide for the protection of species and ecosystems that warrant national protection and the sustainable use of indigenous biological resources

LEGISLATION	SECTIONS	RELATES TO
10 of 2004)		
National Forests Act (No 84 of 1998) and Regulations	Section 7	No person may cut, disturb, damage or destroy any indigenous, living tree in a natural forest, except in terms of a licence issued under section 7(4) or section 23; or an exemption from the provisions of this subsection published by the Minister in the Gazette.
	Sections 12-16	These sections deal with protected trees, with the Minister having the power to declare a particular tree, a group of trees, a particular woodland, or trees belonging to a certain species, to be a protected tree, group of trees, woodland or species. In terms of section 15, no person may cut, disturb, damage, destroy or remove any protected tree; or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire of dispose of any protected tree, except under a licence granted by the Minister.
Hazardous Substances Act (No 15 of 1973) and regulations		Provides for the definition, classification, use, operation, modification, disposal or dumping of hazardous substances
Asbestos Regulations (2001)	Section 19	Labelling, packaging, transportation and storage of asbestos
	Section 20	Disposal of asbestos
National Road Traffic Act (No 93 of 1996)		Road safety
Ordinance		Town Planning and Townships Ordinance 15 of 1986
SANS 10103 (Noise Regulations)		The measurement and rating of environmental noise with respect to annoyance and to speech communication
KZN Nature Conservation Ordinance (15 of 1974)		Sensitive species are protected under this Ordinance and must be considered.

3 MANAGEMENT AND MONITORING PROCEDURES

3.1 Organisational Structure and Responsibilities

Figure 8 below gives an indication of the organisational and team structure for the project.

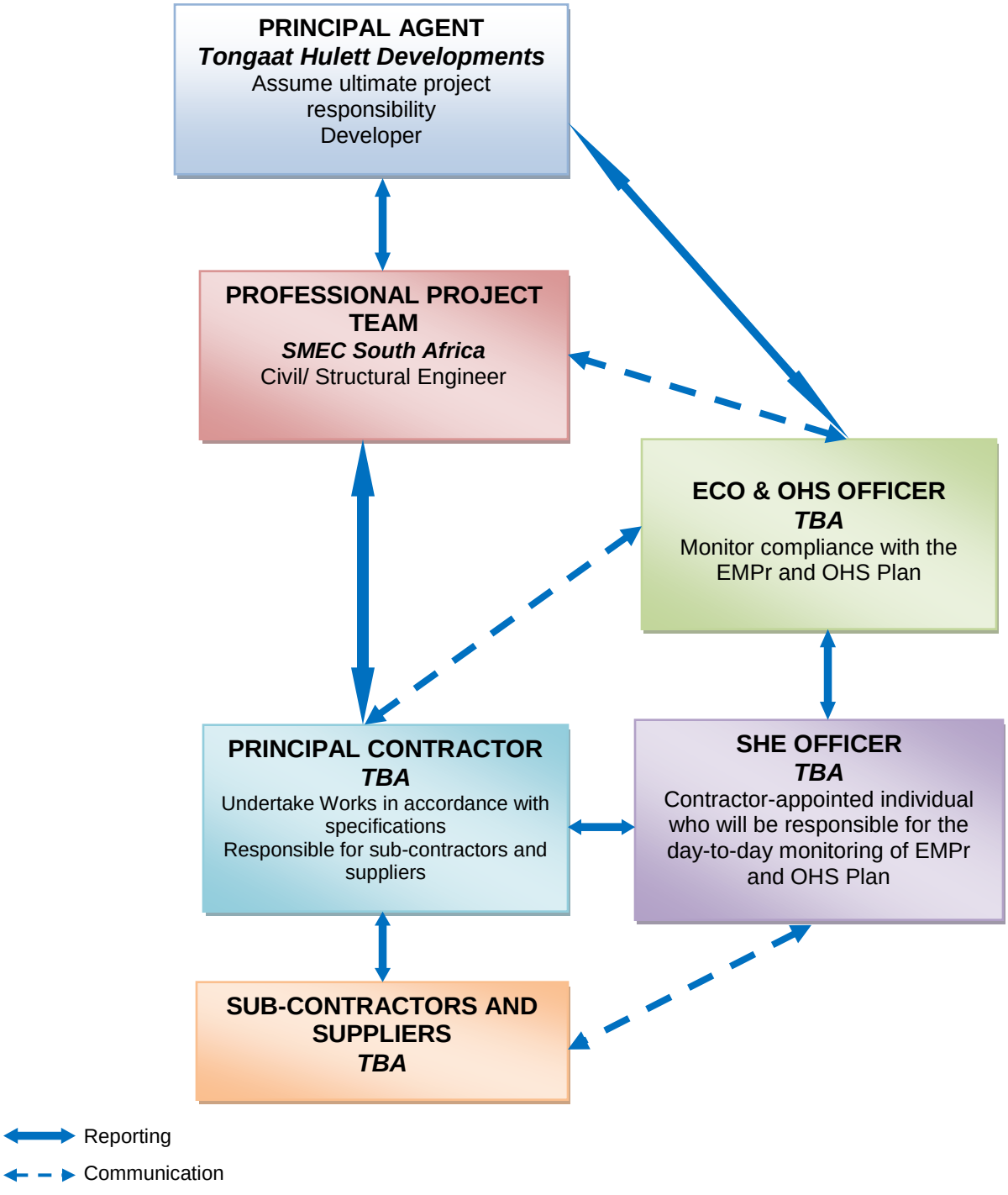

FIGURE 8: PROJECT ORGANISATIONAL STRUCTURE

PRINCIPAL AGENT/ PROJECT MANAGER

The Project Manager is ultimately responsible for ensuring compliance with the environmental specification and upholding THD's environmental commitment to 100% compliance with all National, Provincial and local legislation that relates to management of this environment.

The Project Manager will:

- Arrange information meetings for or consults with I&AP's about the impending construction activities;
- May on the recommendation of the Engineer and / or Environmental Officer order the Contractor to suspend any or all works on site if the Contractor or his Sub-Contractor / Supplier fails to comply with the said specifications; and
- Maintain a register of complaints and queries by members of the public at the site office.

ENGINEER

The Engineer will:

- Enforce the environmental specification on site;
- Monitor compliance with the requirements of the specification;
- Assess the Contractor's environmental performance in consultation with the Environmental Officer from which a brief monthly statement of environmental performance is drawn up for record purposes and to be reported to project meetings; and
- Ensure the documentation, in conjunction with the Contractor, the state of the site prior to construction activities commencing. This documentation will be in the form of photographs or video record.

PRINCIPAL CONTRACTOR (INCLUDING SUB-CONTRACTORS)

The Contractor is required to:

- Be fully conversant with the EMPr;
- Provide information on previous environmental management experience and company environmental policy in terms of the relevant forms contained in the Contract Document.
- Supply method statements timeously for all activities requiring special attention as specified and / or requested by the Project Manager, Environmental Officer and/or Engineer during the duration of the Contract.
- Be conversant with the requirements of this environmental specification/ EMPr. Brief all his/ her staff about the requirements of the environmental specification;
- Comply with requirements of the Environmental Officer in terms of this specification and the project specification, as applicable, within the time period specified.
- Ensure any Sub-Contractors/Suppliers who are utilized within the context of the contract comply with the environmental requirements of the project, in terms of the specifications. The Contractor will be held responsible for non-compliance on their behalf.
- Bear the cost of any delays, with no extension of time granted, should he or his Sub-Contractors / Suppliers contravene the said specifications such that the Engineer orders a suspension of work. The suspension will be enforced until such time as the offending party(ies), procedure, or equipment is corrected.
- Bear the costs of any damages / compensation resulting from non-adherence to the said specifications or written site instructions.
- Comply with all applicable legislation.
- Ensure that he informs the Engineer timeously of any foreseeable activities which will require input from the Environmental Officer.

The Contractor will conduct all activities in a manner that minimizes disturbance to the natural environment as well as directly affected residents and the public in general.

ENVIRONMENTAL CONTROL OFFICER

The ECO will:

- Be fully conversant with the EMPr;
- Be familiar with the recommendations and mitigation measures of the associated EMPr for the project;
- Monitor the implementation of the EMPr during the construction and rehabilitation phases;
- Ensure site protection measures are implemented on site;
- Monitor that the Principal Contractor, sub-contractors, construction teams and the Principal Agent are in compliance with the EMPr at all times during the construction and rehabilitation phases of the project;
- Monitor all site activities monthly for compliance.
- Conduct monthly audits of the site according to the EMPr, and report findings to the Principal Agent/Contractor;
- Attend monthly site meetings;
- Recommend corrective action for any environmental non-compliance at the site;
- Compile a monthly report highlighting any non-compliance issues as well as progress and compliance with the EMPr prescriptions. These monthly reports are to be submitted to the Principal Agent and the KZN DAEA; and
- Conduct once-off training with the Contractor on the EMPr and general environmental awareness.

It must be noted that the responsibility of the ECO is to monitor compliance and give advice on the implementation of the EMPr and not to enforce compliance. Ensuring compliance is the responsibility of the Principal Agent and the SHE Officer.

OCCUPATIONAL HEALTH AND SAFETY OFFICER

The OHS Officer will be responsible for undertaking of the following:

- Compilation of a comprehensive project health and safety risk assessment (HSRA)
- Compilation of health and safety specifications based on risks identified;
- Reviewing and approval of health and safety plan(s) submitted by appointed Principal Contractor(s);
- Conducting monthly health and safety inspections and compiling monthly OHS reports;
- Conducting monthly health and safety audits with audit reports;
- Assisting the Principal Agent/Contractor in the investigation of major accident/incidents;
- Monitoring of site activities for compliance to the Occupational Health and Safety Act and Regulations.;
- Establishment and monitoring of project health and safety file;
- Monitoring the Principal Contractor(s') health and safety performance; and
- Preparation of project close-out reports and submission of project health and safety files to the Client.

SAFETY, HEALTH AND ENVIRONMENTAL (SHE) OFFICER

The Safety, Health and Environmental Officer will:

- Be fully conversant with the EMPr;
- Be fully conversant with all relevant environmental legislation applicable to the project, and ensure compliance with them;
- Compilation of Method Statements together with the Principal Contractor that will specify how potential environmental impacts in line with the requirements of the EMPr will be managed, and, where relevant environmental best practice and how they will practically ensure that the objectives of the EMPr are achieved;
- Convey the contents of this EMPr to the construction site staff and discuss the contents in detail with the Contractor;
- Undertake regular and comprehensive inspection of the site and surrounding areas in order to monitor compliance with the EMPr;
- Take appropriate action if the specifications contained in the EMPr are not followed;
- Monitor and verify that environmental impacts are kept to a minimum, as far as possible;
- Order the removal from the construction site of any person(s) and/or equipment in contravention of the specifications of the EMPr;
- Report any non-compliance or remedial measures that need to be applied to the appropriate environmental authorities, in line with the requirements of the EMPr;

SAFETY, HEALTH AND ENVIRONMENTAL (SHE) OFFICER

- Submitting a report at each site meeting which will document all incidents that have occurred during the period before the site meeting;
- Ensuring that the list of transgressions issued by the ECO is available on request; and
- Maintain an environmental register which keeps a record of all incidents which occur on the site during construction. These incidents include:
  - Public involvement / complaints.
  - Health and safety incidents.
  - Incidents involving hazardous materials stored on site.
  - Non-compliance incidents.

3.2 Training and Environmental Awareness

It is important to ensure that the Contractor has the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and ongoing minimisation of environmental harm. Training needs must be identified based on the available and existing capacity of site personnel (including the Contractors and Sub-contractors) to undertake the required EMPr management actions and monitoring activities. It is vital that all personnel are adequately trained to perform their designated tasks to an acceptable standard.

The environmental training is aimed at:

- promoting environmental awareness;
- informing the Contractor of all environmental procedures, policies and programmes applicable;
- providing generic training on the implementation of environmental management specifications; and
- providing job-specific environmental training in order to understand the key environmental features of the construction site and the surrounding environment.

Training will be done in a verbal format. The training will be a once-off event. In addition to training, general environmental awareness must be fostered among the project's workforce to encourage the implementation of environmentally sound practices throughout its duration. This ensures that environmental accidents are minimised and environmental compliance maximized.

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3.3 Monitoring

A monitoring programme will be in place not only to ensure compliance with the EMPr through the contract/work instruction specifications, but also to monitor any environmental issues and impacts which have not been accounted for in the EMPr that are, or could result in significant environmental impacts for which corrective action is required.

A monitoring programme will be implemented for the duration of the construction phase of the project. This programme will include:

- Monthly audits will be conducted by the ECO for the duration of the construction phase. The ECO shall undertake environmental monitoring on a monthly basis and the audits will consider compliance with the EMPr and licence conditions.
- External auditing may take place at unspecified times by the authorities and/or other relevant authorities.
- An independent, suitably qualified, auditor will need to be contracted to conduct bi-annual environmental audits during the construction phase of the project according to the provisions of the EMPr.

- The Environmental Office must undertake regular site inspections (at least twice weekly) to ensure all legislative requirements are adhered to.
- The ECO must compile a monthly audit report with a rating of the compliance with the EMPr. The ECO must keep a photographic record of any damage to areas outside the demarcated site area. The date, time of damage, type of damage and reason for the damage must be recorded in full to ensure the responsible party is held liable. The Contractor must be held liable for all unnecessary damage to the environment.
- It is recommended that the bi-annual Air Quality monitoring is undertaken by a suitable air quality specialist in order to monitor dust nuisances.

3.4 Reporting Procedures

3.4.1 Documentation

The following documentation must be kept on site in order to record compliance with the EMPr:

- An Environmental File which includes:
  - Copy of the EMPr;
  - Copy of the Environmental Authorisation;
  - Copy of the Water Use License;
  - Copy of all other licenses/permits;
  - Copy of all rehabilitation plans;
  - Copy of the Stormwater Management Plan;
  - Copy of relevant legislation.
  - Environmental Policy of the Main Contractor.
  - Environmental Method statements compiled by the Contractor.
  - Non-conformance Reports;
  - Environmental register, which shall include:
    - Communications Register – including records of Complaints, and, minutes and attendance registers of all environmental meetings.
    - Monitoring Results – including environmental monitoring reports, register of audits, non-conformance reports.
    - Incident book – including copies of notification of Emergencies and Incidents, this must be accompanied by a photographic record.
    - Waste manifests.
- Waste Documentation such as Sewrage Disposal Receipts;
- Material Safety Data Sheets for all hazaroud substances;
- Dust suppression register;
- Water Quality Monitoring reports (if necessary);
- Written Corrective Action Instructions; and
- Notification of Emergencies and Incidents.

3.4.2 Environmental Register

The Principal Agent will put in place an Environmental Register. The contractor will ensure that the following information is recorded for all complaints/incidents:

- Nature of complaint/incident.

- Causes of complaint/incident.
- Party/parties responsible for causing complaint/incident.
- Immediate actions undertaken to stop/reduce/contain the causes of the complaint/incident.
- Additional corrective or remedial action taken and/or to be taken to address and to prevent reoccurrence of the complaint/incident.
- Timeframes and the parties responsible for the implementation of the corrective or remedial actions.
- Procedures to be undertaken and/or penalties to be applied if corrective or remedial actions are not implemented.
- Copies of all correspondence received regarding complaints/incidents.

The above records will form an integral part of the Contractors' Records. These records will be kept with the EMPr, and will be made available for scrutiny if so requested by the Principal Agent.

3.4.3 Non-Conformance Report

A Non-Conformance Report (NCR) will be issued to the Contractor as a final step towards rectifying a failure in complying with a requirement of the EMPr. This will be issued by the ECO to the Contractor in writing. Preceding the issuing of an NCR, the Contractor must be given an opportunity to rectify the issue.

Should the ECO assess an incident or issue and find it to be significant (e.g. non-repairable damage to the environment), it will be reported to the relevant authorities and immediately escalated to the level of a NCR. The following information should be recorded in the NCR:

- Details of non-conformance;
- Any plant or equipment involved;
- Any chemicals or hazardous substances involved;
- Work procedures not followed;
- Any other physical aspects.
- Nature of the risk.
- Actions agreed to by all parties following consultation to adequately address the non-conformance in terms of specific control measures and should take the hierarchy of controls into account.
- Agreed timeframe by which the actions documented in the NCR must be carried out.
- ECO should verify that the agreed actions have taken place by the agreed completion date, when completed satisfactorily; the ECO and Contractor should sign the Close-Out portion of the Non-Conformance Form and file it with the contract documentation.

3.4.4 Environmental Emergency Response

The Contractor's environmental emergency procedures must ensure appropriate responses to unexpected / accidental actions / incidents that could cause environmental impacts. Such incidents may include:

- Accidental discharges to water (i.e. into the watercourse) and land;
- Accidental spillage of hazardous substances (typically oil, petrol, and diesel);
- Accidental toxic emissions into the air; and
- Specific environmental and ecosystem effects from accidental releases or incidents.

The Environmental Emergency Response Plan is separate to the Health and Safety Plan as it is aimed at responding specifically to environmental incidents and must ensure and include the following:

- Construction employees shall be adequately trained in terms of incidents and emergency situations;
- Details of the organisation (i.e. manpower) and responsibilities, accountability and liability of personnel;
- A list of key personnel and contact numbers;
- Details of emergency services (e.g. the fire department / on-site fire detail, spill clean-up services) shall be listed;
- Internal and external communication plans, including prescribed reporting procedures;
- Actions to be taken in the event of different types of emergencies;
- Incident recording, progress reporting and remediation measures to be implemented; and
- Information on hazardous materials, including the potential impact associated with each, and measures to be taken in the event of accidental release.

The Contractor and their sub-contractor(s) must comply with the environmental emergency preparedness and incident and accident-reporting requirements as per the relevant legal requirements.

3.4.5 Method Statements

It is a statutory requirement to ensure the wellbeing of employees and the environment. To allow the mitigation measures in this document to be implemented, task-specific method statements should be developed for each set of tasks.

A Method Statement details how and when a process will be carried out, detailing possible dangers/risks, and the methods of control required.

- Type of construction activity;
- Timing and location of the activity;
- Construction procedures;
- Materials and equipment to be used;
- Transportation of the equipment to / from site;
- How equipment/material will be moved while on site;
- Location and extent of construction site office and storage areas;
- Identification of impacts that might result from the construction activity;
- Methodology and/or specifications for impact prevention / containment;
- Methodology for environmental monitoring;
- Emergency/disaster incident and reaction procedures (required to be demonstrated); and
- Rehabilitation procedures and continued maintenance of the impacted environment.

The Contractor will be accountable for all actions taken in non-compliance of the approved Method Statements. The Contractor shall keep all the Method Statements and subsequent revisions on file, copies of which must be distributed to all relevant personnel for implementation.

As a minimum the following Method Statements will be required to be generated:

- Bunding;
- Construction site and office/yard establishment;
- Cement mixing / concrete batching / bentonite mixing;
- Contaminated water;
- Dust;
- Environmental awareness course(s);
- Environmental monitoring;
- Erosion control;
- Fire, hazardous and/or poisonous substances;
- Fuels and fuel spills (may form part of the item above);
- Storage, handling and decanting of diesel (may form part of the item above);
- Personnel, public and animal safety;
- Rehabilitation of modified environment(s);
- Solid and liquid waste management;
- Sources of materials (including MSDSs);
- Top-soil management; and,
- Wash areas.

3.4.6 Public Communication and Liaison with I&APs

The Developer must ensure that the adjacent landowners are informed and updated throughout the construction phases.

Sufficient signage should be erected around the site (including at the entrance), informing the public of the construction activities taking place. The signboards should include the following information:

- The name of the Contractor.
- The name and contact details of the site representative to be contacted in the event of emergencies or complaint registration.

4 COMPLIANCE WITH THE ENVIRONMENTAL SPECIFICATION

The EMPr forms part of the Contract Documentation and is thus a legally binding document. It is also necessary for the Contractor to make provisions as par of their budgets for the implementation of the EMPr. In terms of this Act an individual responsible for environmental damage must pay costs both to the environment and human health and the preventative measures to reduce or prevent additional pollution and/or environmental damage from occurring. This is referred to as the *Polluter Pays Principle*.

The Contractor is deemed not to have complied with the Environmental Specification / EMPr if:

- There is evidence of contravention of clauses within the boundaries of the site, site extensions and haul / access roads;
- Environmental damage ensues due to negligence;
- The Contractor ignores or fails to comply with corrective or other instructions issued by the Project Manager, ECO or Engineer within a specified time; and
- The Contractor fails to respond adequately to complaints from the public.

Application of a penalty clause will apply for incidents of non-compliance. The contractor will be allowed one offense and a written warning will be issued by the Environmental Officer. Failure to rectify the offense within one (1) working week of the issue of the warning or a repeat offence will result in a fine. This fine will be issued by the Environmental Officer. The penalty imposed will be per incident. Unless stated otherwise in the project specification, the penalties imposed per incident or violation will be:

TABLE 5: FINE SYSTEM TO BE IMPLEMENTED

OFFENSE	AMOUNT
Failure to demarcate working areas	R 10 000
Working outside of the demarcated areas	R 30 000
Failure to strip topsoil with intact vegetation	R 50 000
Failure to stockpile topsoil correctly	R 30 000
Failure to stockpile materials in designated areas	R 10 000
Pollution of water bodies and/or groundwater	R 20 000
Failure to implement storm water management provisions during construction	R 20 000
Failure to control storm water runoff	R 30 000
Downstream erosion	R 30 000
Failure to provide adequate sanitation	R 10 000
Failure to erect temporary fences around trenches	R 10 000
Failure to provide adequate waste disposal facilities and services	R 50 000
Failure to reinstate disturbed areas within the specified time-frame	R 30 000
Any other contravention of the project specific specification	R 10 000

Such fines will be paid by the Contractor to the Developer and will be used in rehabilitation and/ or landscaping.

The Developer is responsible for the implementation of the EMPr and for compliance monitoring of the EMPr. The EMPr will be made binding on all contractors (including sub-contractors) operating on the site and will be included with the Contract. Non-Compliance with, or any deviation from, the conditions set out in this document constitutes a failure in compliance.

5 CONFORMANCE WITH THE ISO 14001 EMS

THD are ISO 14001 compliant. The ISO 14001 Environmental Management System (EMS) is the internationally recognised standard for the environmental management of organisations. It prescribes controls for those activities that have an effect on the environment. These include the use of natural resources, handling and treatment of waste, energy consumption, water resource management and so forth.

This standard specifies requirements for an EMS to enable an organisation to develop and implement a policy and objectives which takes into account legal and other requirements to which the organisation subscribes, and information about significant environmental aspects. It applies to those environmental aspects that the organisation identifies as those which it can control and those which it can influence. It does not itself state specific environmental performance criteria.

All the requirements in ISO 14001 are intended to be incorporated into any EMS. The extent of the application will depend on factors such as the environmental policy of the organisation, the nature of its activities, products and services, the location and the conditions in which it functions. The ISO 14000 family addresses various aspects of environmental management. It provides practical tools for companies and organisations looking to identify and control their environmental impact and constantly improve their environmental performance. The aim of the ISO 14001 standad is to achieve continuous improvement through the cycle outlined in Figure 9.

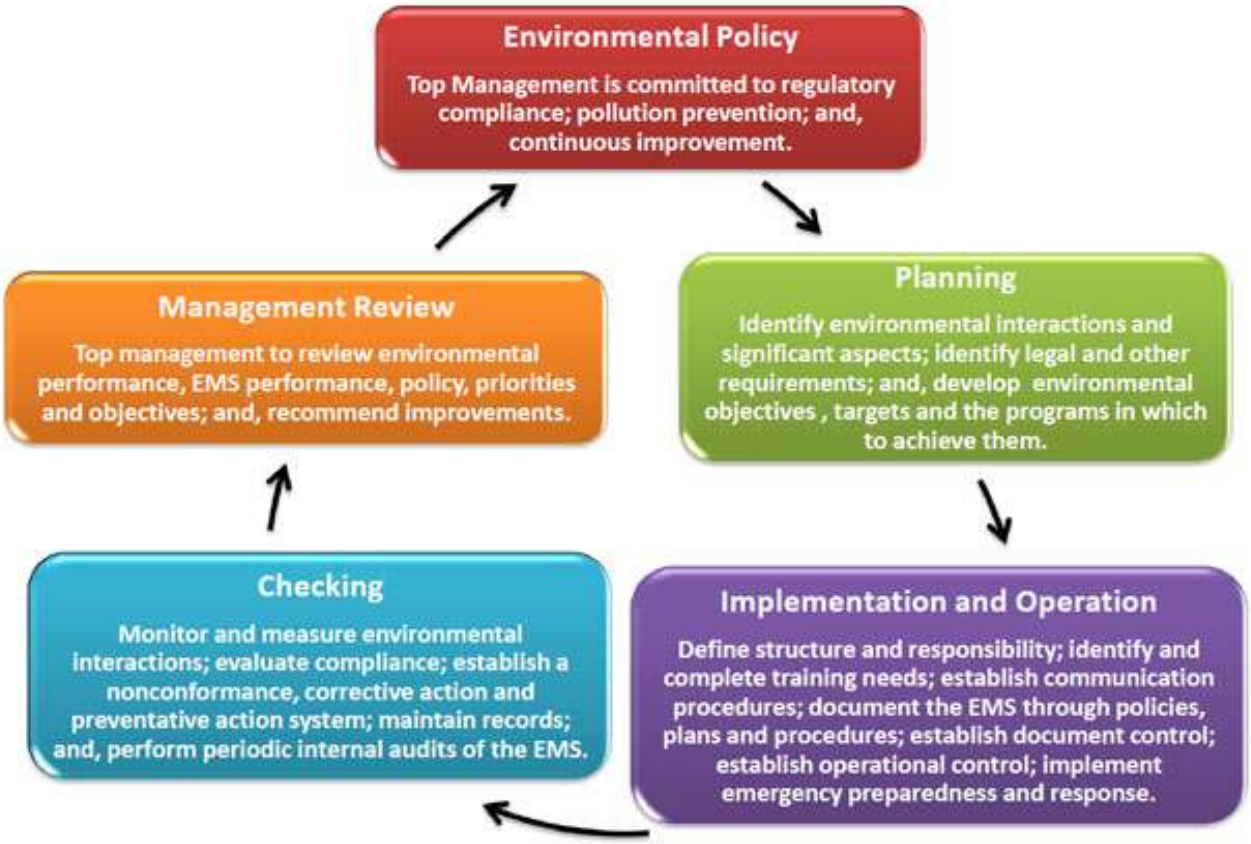

FIGURE 9: THE ISO 14001 EMS CYCLE OF CONTINUOUS IMPROVEMENT

As part of their ISO 14001 certification, THD have a number of Standard Operating Procedures (SOPs) pertaining to environmental management. These are included in Appendix A and this EMPr is aligned with these.

6 DETAILED ENVIRONMENTAL MANAGEMENT PROGRAMME

The EMPr specifies the minimum requirements to be implemented by the Applicant as per the scope of works and scope of the environmental authorisation, in order to minimise and manage the potential environmental impacts and ensure sound environmental management practices. It also provides the framework for environmental monitoring throughout the construction and operational phases.

The provisions of this EMPr are binding on the Applicant during the life of the project. The EMPr must be binding THD or any authority to which responsibility for the construction activities has been delegated to, until such time that the DAEA or applicable environmental authority has formally absolved the Applicant from its responsibilities in terms of this EMPr.

It is essential that the EMPr requirements be carefully studied, understood, implemented, and adhered to at all time.

To simplify the EMPr requirements, each aspect related to the EMPr has been addressed in the table below. Each action within the EMPr is supported by the priority of when the specific action will need to be implemented. Each of these aspects is briefly described below for ease of reference.

ENVIRONMENTAL MEASURES, ACTIONS AND CONTROLS

This section indicates the actions required to either prevent and/or minimise the potential impacts on the environment that is associated with the project.

RESPONSIBILITY

This section indicates the party responsible for implementing the environmental measures and action plans laid out in the EMPr.

MONITORING FREQUENCY

This section indicates when the actions for that specific aspect must be implemented and/or monitored.

PRE-CONSTRUCTION PHASE

6.1 Authorisations, Permits and Licenses

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
All necessary authorisations, permits and licenses must be obtained by the Developer prior to the commencement of construction.	Principal Agent	Once-off

6.2 Appointment of Contractor

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
The Principal Agent must ensure that this EMPr forms part of any contractual agreements with a Contractor(s) and sub-contractors for the execution of the proposed project. The Contractor must make adequate provision in their budgets for the implementation of the EMPr.	Principal Agent	Once-off
The Principal Contractor (including sub-contractors and suppliers) must comply with the relevant provisions of the EMPr, applicable environmental legislation, by-laws and associated regulations promulgated in terms of these laws.		
Tender documents should include statements to include the use of local communities or local community organisation in supplying services and labour to the construction activities.		
Contractors should use labour intensive construction methods where possible. Local labourers should be used for such methods.		

6.3 Preparation of Method Statements

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
Method Statements must be submitted by the Contractor to the SHE Officer and must be adhered to by the Contractor and Project Engineer. These relate to water and stormwater management requirements, traffic requirements, solid waste management requirements, fuel storage and filling and dispensing of fuel (diesel and petrol), hydrocarbon spills, contaminated water treatment, the storage of	Contractor	Once-off

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
hazardous materials, standard emergency procedures, and biohazard control.		
The ECO will monitor the implementation of the Statements. All copies of the statements and plans must be submitted to the appointed ECO.		

6.4 Appointment of ECO

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
An Independent ECO must be appointed at the developers cost to monitor the implementation of the EMPr.	Principal Agent	Once-off
The nomination of the ECO must be given, in writing, at least fourteen days before the start of any work, clearly setting out reasons for the nomination, and with sufficient detail to enable the Developer to make a decision. The developer will, within seven days of receiving the request, approve, reject or call for more information on the nomination. Once a nominated representative of the developer has been approved he/she will be the ECO and must undertake monthly site inspections and provide monthly audit reports for the duration of the construction and rehabilitation phases. Each audit report must contain the results of the full audit. These audit results report on whether the response to the audit item is favorable, un-favourable or not applicable. Not applicable answers are for those aspects of the construction that have not yet started or are not applicable to the contract being considered. Graphs must be produced for each stage of the EMPr; general requirements, requirements during construction and post construction activities. Each of the aspects within each stage is allocated a percentage score. The percentage score is the percentage of favourable items against the total number of applicable items. The higher the score, the better the compliance. Complete compliance will result in a 100% score.	ECO	Once-off/Monthly

6.5 Environmental Training and Awareness

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
Construction staff must be adequately educated by the ECO, and the SHE Officer, as to the provisions included in the EMPr and general environmentally	ECO	Once-off

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
friendly practice.	SHE Officer	
The EA and EMPr forms part of the formal site induction for all contractors, sub-contractors and casual labourers, preferably in their native language. The induction training will, as a minimum, include the following: ▪ the importance of conformance with all environmental policies; ▪ the environmental impacts, actual or potential, of their work activities; ▪ the environmental benefits of improved personal performance; ▪ their roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirement of the Consultant's environmental management systems, including emergency preparedness and response requirements; and ▪ the mitigation measures required to be implemented when carrying out their work activities.		
All contractors, sub-contractors and casual labourers must acknowledge their understanding of the EMPr and environmental responsibilities by signing an induction attendance record.		
The Contractor is expected to have "tool box" talks. These talks must be in accordance with the risks and trends associated with the project. Proof of these talks must be kept on site.	SHE Officer	Weekly

CONSTRUCTION PHASE

6.6 Health and Safety

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
The Contractor must adhere to the prescriptions of the relevant health and safety legislation and standards. The Contractor must familiarise himself and his employees with the contents of the aforementioned legislation.	Contractor SHE Officer	Ongoing
First Aid contents must be on hand at all times.		
The Contractor must implement adequate and mandatory safety precautions relating to all aspects of the deconstruction. Such safety measures and work procedures/instructions must be communicated to construction workers.		
The wearing of Personal Protective Equipment (PPE) on site is mandatory for all		

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
personnel and construction team members. Minimum requirements must include the wearing of an approved safety helmet, safety boots, safety reflective jackets and dust masks, ear plugs, etc where appropriate.		
PPE signs must be erected on site at the areas where it is required and the integrity and availability of the signs must be maintained.		
No one must be allowed on site unless they are wearing approved safety equipment.		
Casual visitors must be required to sign a register at the security checkpoint and undergo a site induction by the SHE Officer. The responsible person must then be contacted before the visitor is allowed access to site. No unauthorised visitors are to be allowed on site.		
Workers' right to refuse work in unsafe conditions must be respected.		
All personnel must be trained in basic site safety procedures.		
The Contractor must design, test/exercise appropriate emergency preparedness programmes (plans, schedules, procedures and methods) for addressing environmental accidents, incidents and events such as spills of fuel, oil or lubricants; fires etc.		
The Client and/or client's agent will carry out regular audits on the principal contractor at least once per month. Similarly, principal contractors must be responsible for carrying out regular audits on their contractors at least once per month. The results must be tabled for action and discussed at the Health and Safety Committee meetings or the site meetings, as appropriate.		
The principal contractor must provide evidence by means of a procedure or chart that he is fully aware of the "hierarchy" of incidents that can occur e.g. unsafe situations, near misses, HFRI's, first aid box injuries, medical cases, disabling injuries etc. He must keep an incident register of all such incidents, investigate and apply corrective action where required. The client also reserves the right to stop any unsafe work and request incident statistics from the principal contractor such as DI's, DIFR and DISR and it is advised that these are maintained.		

6.7 Site Management

6.7.1 Site Establishment

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
Prior to the establishment of the site camp / office, the Contractor will produce a site layout plan showing the positions of all equipment storage, waste stockpiling, fuel storage areas and other infrastructure for approval of the ECO and SHE Officer.	Contractor	Once-off
The construction area must be clearly demarcated on the layout plan, and all other areas must be considered no-go areas for the construction personnel.		
Adequate signage must be placed in the area where construction will take place informing the public of the activities taking place.		
The site must be secured and fenced is necessary to and should be manned on a 24hour basis.		
The Contractor must take responsibility for the site to conform to all contractual aspects and environmental standards applicable.		
The Contractor must provide adequate refuse bins that must be cleaned / emptied and the waste removed from site on a regular basis.		
The construction camp must be kept in an orderly state at all times.		
Vegetation removed for the site establishment is to be kept to a minimum. No trees are to be removed, if possible, with the exception of alien weeds and invader plants.		
A qualified ecologist must mark vegetation such as indigenous trees which are to be conserved or relocated prior to the Contractor commencing with clearing on site.		
The construction camp is to be located a minimum horizontal distance of 200m from any watercourse, above the 1:100 year flood line and away from the wetland habitat and silted dam located on site.		
The Contractor must ensure that drainage on the camp site is such to prevent standing water and/or sheet erosion from taking place.		

6.7.2 Ablution/ Sanitation

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
A minimum of one chemical toilet must be provided per 10 persons.	Contractor	Daily
An SDC is to be obtained and kept on site.		
The chemical toilets must be strategically placed (easily accessible to workers, preferably no more than a 100 m from the work face) and will not be situated within any watercourse.		
Chemical toilets must be secure, clean and functional throughout the maintenance period.		
All ablution activities must take place in these facilities, and the waste material must be stored and disposed of at the registered waste disposal site or collected by a suitable waste contractor on a regular basis.		
The Contractor must ensure that toilets are cleaned or emptied regularly and that no spillage occurs during routine maintenance.		
All temporary/portable toilets must be secured to the ground to prevent them from toppling due to wind or any other cause.		
Unauthorised dumping / spilling of waste from toilets into the environment and burying of waste are strictly prohibited.		

6.7.3 Access

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
The construction site must have strict access control to reduce the risks associated with vehicular transportation and pedestrian access on the site.	Contractor	On-going
Watercourses and steep gradients must be avoided as much as possible.		
No vehicles must drive onto the wetland or other sensitive sites and no-go areas.		
All no-go areas will be indicated as such with warning signs in all relevant languages.		
Adequate drainage and erosion protection in the form of cut-off berms or trenches must be provided around the sites and where necessary.		

6.7.4 Fires

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
No open fires or uncontrolled fires will be permitted on site.	Contractor	Daily
Fire fighting measures such as fire extinguishers must be located on site.		
The workforce must be made aware of fire prevention and fire fighting measures.		

6.7.5 Vehicle Maintenance Yard

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
Heavy machinery and construction vehicles are to be stored in a vehicle maintenance yard which must be illustrated on the construction camp layout map.	Contractor	Once-off
A dedicated maintenance area must be demarcated with an impermeable surface leading to an oil-water separator. No vehicle may be extensively repaired in any place other than in the dedicated maintenance yard.		Ongoing
Washing of vehicles is prohibited on site or at the Construction Camp and Vehicle Maintenance Yard.		

6.8 General and Hazardous Substances and Materials

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
Storage areas must not be within any watercourses or within 100metres of any drainage lines.	Contractor SHE Officer	Daily
Storage areas must be designated, demarcated and fenced.		
Storage areas should be secure, under lock and key, so as to minimise the risk of crime.		
Fire prevention facilities must be present at all storage facilities.		
Proper storage facilities for the storage of oils, paints, grease, fuels, chemicals and any hazardous materials to be used must be provided to prevent the migration of spillage into the ground and groundwater regime around the storage area(s). These pollution prevention measures for storage should include a bund		

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
wall high enough to contain at least 110% of any stored volume. Such a facility must be on an impervious surface. The storage area must be securely fenced and all hazardous substances such as fuel, oils, chemicals, etc., must be stored therein. Drip trays, a thin concrete slab or a facility with PVC lining, must be installed in such storage areas with a view to prevent soil and water pollution		
Any water that collects in the bund must not be allowed to stand and must be removed immediately.		
All fuel storage tanks and associated facilities must be designed and installed in accordance with the relevant oil industry standards, SANS codes and other relevant requirements.		
Symbolic safety signs depicting “No Smoking”, “No Naked Flames” and “Danger” are to be prominently displayed in and around the fuel storage area.		
The capacity of the tank must be clearly displayed and the product contained within the tank clearly identified.		
Only empty and externally clean tanks may be stored on the bare ground. All empty and externally dirty tanks must be sealed and stored in an area where the ground has been protected.		
If fuel is dispensed from 200 litre drums, the proper dispensing equipment must be used.		
The drum must not be tipped in order to dispense fuel. The dispensing mechanism of the fuel storage tank must be stored in a waterproof container when not in use.		
All waste fuel and chemical contaminated rags must be stored in leak-proof containers and disposed of at an approved hazardous waste site.		
Storage sites will be provided with bunds to contain any spilled liquids and materials. These storage facilities (including any tanks) must be on an impermeable surface that is protected from the ingress of storm water from surrounding areas in order to ensure that accidental spillage does not pollute local soil or water resources.		
Material Safety Data Sheets (MSDSs) must be readily available on site for all chemicals and hazardous substances to be used on site. Where possible the available, MSDSs should additionally include information on ecological impacts and measures to minimise negative environmental impacts during accidental		

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
releases or spillages.		
Staff dealing with these materials / substances must be aware of their potential impacts and follow the appropriate safety measures.		
A suitable Waste Disposal Contractor must be employed to remove waste oil. These wastes must only be disposed of at licensed landfill sites designed to handle hazardous waste. Appropriate weigh bills must be provided for all hazardous waste being disposed off.		
The Contractor must ensure that his staff are made aware of the health risks associated with any hazardous substances used and has been provided with the appropriate protective clothing/equipment in case of spillages or accidents and have received the necessary training.		
Cement / concrete must not be mixed directly on the ground. Dagga boards, mixing trays and impermeable sumps must be used at all mixing and supply points. Unused cement bags are to be stored so as not to be effected by rain or runoff events.		
The washing of concrete trucks on site is prohibited.		
Used cement bags must be stored in weatherproof containers to prevent windblown cement dust and water contamination. Used cement bags must be disposed of on a regular basis via the solid waste management system, and must not be used for any other purpose.		
All visible remains of excess concrete must be physically removed on completion of the plaster or concrete pour section and disposed of. Washing the remains into the ground is not acceptable as groundwater contamination could occur.		
No paint products may be disposed of on site.		
Care should be taken of the storage thresholds contained in the EIA Regulations (2010) Listing Notices as well as the Waste Management Activities contained in Category A and B.		
Storage areas must not be within any watercourses or within 100metres of any drainage lines.		
The Contractor must maintain a record of the sourcing of all materials used during construction. The THD Raw Material Sourcing SOP in Appendix A must be adhered to at all times. The Mineral and Petroleum Resources Act must be complied with.		

6.9 Spills, Incidents and Pollution Control

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
Any spillage, which may occur, must be investigated and immediate action must be taken according to the requirements of the Spill Contingency Plan SOP provided in Appendix A. This must also be reported to the ECO and SHE Officer.	Contractor SHE Officer	Ongoing
In the case of a spill of hydrocarbons, chemicals or bituminous material in the Construction camp or on the construction site/ bunding area, the spill should be contained and cleaned up and the material together with any contaminated soil collected and disposed of as hazardous waste to minimize pollution risk and reduce bunding capacity.		
Should a pollution incident occur on site the ECO must: ▪ Implement reasonable measures immediately to contain and minimise the impacts of the incident; ▪ Notify all persons whose health may be affected by the incident; ▪ Undertake clean up procedures immediately; ▪ Notify the Contractor of the incident immediately who will advise the employee as to the measures that should be implemented; ▪ Record the incident in the Environmental Incident Register; and ▪ Implement measures to prevent similar incidents from occurring in the future.		
Concrete mixing must be confined to as few areas as possible and ad hoc mixing is to be avoided. Areas where concrete was mixed must be cleaned up after use. Concrete mixing is to be undertaken on an impervious surface and any run		
Soil and construction material stockpiles are to be bermed to prevent leachate and polluted run.		
In the even of a spoll incident, the Emergency Response SOP included in Appendix A must be followed.		

6.10 Heritage

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
If an artefact on site is uncovered, work in the immediate vicinity must be stopped immediately.	Contractor	On-going
The contractor must take reasonable precautions to prevent any person from removing or damaging any such article and must immediately, upon discovery		

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
thereof, inform the Construction Engineer of such discovery which in turn must contact a registered archaeologist.		
Work may only resume once clearance is given in writing by the archaeologist.		

6.11 Noise

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
The THD Noise Management SOP included in Appendix A must be followed at all times.	Contractor	Daily
Neighbouring landowners must be notified about construction activities.		
All construction vehicles and equipment are to be kept in good repair and must be fitted with Standard silencers prior to construction.		
Where possible, stationary noisy equipment (for example compressors, generators etc. must be encapsulated in acoustic covers, screens or sheds. Portable acoustic shields must be used in the case where noisy equipment is not stationary (for example drills, angle grinders, chipping hammers).		
Construction activities, and particularly the noisy ones, are to be contained to reasonable hours during the day and early evening.		
Machines in intermittent use must be shut down in the intervening periods between work or throttled down to a minimum.		
In general, operations must meet the noise standard requirements of the Occupational Health and Safety Act (Act No 85 of 1993).		
Construction staff working in areas where the 8-hour ambient noise levels exceed 75dBA must wear ear protection equipment.		
Noise levels must be kept within acceptable limits. All noise and sounds generated must adhere to SABS 0103 specifications for maximum allowable noise levels for central business districts. No pure tone sirens or hooters may be utilised except where required in terms of SABS standards or in emergencies.		
Noisy operations must be combined so that they occur where possible at the same time.		

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
Noise from labourers must be controlled.		
Noise suppression measures must be applied to all construction equipment. Construction equipment must be kept in good working order and where appropriate fitted with silencers which are kept in good working order. Should the vehicles or equipment not be in good working order, the Contractor may be instructed to remove the offending vehicle or machinery from site.		
The Contractor must take measures to discourage labourers from loitering in the area and causing noise disturbance. Where possible labour must be transported to and from the site by the Contractor or his sub-contractors by the contractors own transport.		
Construction activities are to be contained to reasonable hours during normal working hours.		
Neighbours are to be given at least three days warning prior to any blasting, piling or other 'noisy' activities.		

6.12 Air Quality

6.12.1 Pollution Management and Odour Control

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
Any oil containing equipment or containers must be managed in a manner to avoid oil exposure to atmosphere to limit evaporation of volatiles to atmosphere.	Contractor	Daily
Odours from chemical toilets and waste must be managed. Removal and disposal of litter and debris must be undertaken during periods of high ventilation. Chemical toilets must be cleared and cleaned at least weekly.		
No fires are to be allowed on site.		
Vehicles must be maintained to avoid excessive emissions and smoke. Similarly equipment must be serviced.		

6.12.2 Dust Control

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
The THD Dust Management SOP included in Appendix A must be adhered to at all times.	Contractor SHE Officer ECO	Daily
Dust track-on from disturbed areas to paved road surfaces should be avoided by making use of one of the following measures to: ▪ Road sweeping. ▪ Chemical dust suppression of disturbed areas to reduce the amount of dust which can be lifted by the wheels of trucks. ▪ Wet suppression to the roads using a light spray. ▪ The washing down of the wheels of trucks before they exit only paved road surfaces.		
If water is abstracted from a water resource for dust suppression, a Water Use Authorisation must be obtained from the Department of Water Affairs.		
Dust liberated to atmosphere should not reduce the visibility for private vehicles making use of the road passing by the site.		
All construction vehicles and equipment are to be kept in good repair.		
Speed limits of a maximum of 40km/hr are to be implemented on site and enforced by the Contractor.		
Dust liberated to atmosphere must not reduce the visibility for vehicles making use of the road passing by the site.		
Shade cloth fencing is to be used to reduce dust aggravation.		
Construction activities are to be contained to reasonable hours during the day avoiding periods of sunrise and sunset.		
In areas where there is a large potential for dust liberation (high wind days) wet suppression using a light spray should be applied to the areas in question.		
A dust suppression register as well as a complaints register needs to be kept.		
All complaints received need to be investigated with remedial action taken communicated to the affected party within 14 days.		

6.13 Spoil, Topsoil and Erosion

6.13.1 Topsoil

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
The Contractor must strip and stockpile all soil within the work area for subsequent use at a later stage.	Contractor Engineer	Ongoing
Topsoil removed must be stockpiled in a designated area and should not exceed 2m in height.		
Stockpiles must be located outside of the 30m wetland buffer. Stockpiles must be protected from wind and rain with the use of tarpaulins where necessary. The Engineer is to use his discretion.		
Topsoil must be kept separate from overburden and must not be used for infilling.		
Weeds must be eardiacted from topsoil prior to spoiling.		
The developer must exercise suitable precautions with the storage, handling and transport of all materials that could adversely affect the environment. If pollution of any surface or groundwater occurs, it must immediately be reported to this Department and appropriate mitigation measures must be employed.		

6.13.2 Spoil

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
Litter and general waste is to be removed from the soil and spoiling before stockpiling.	Contractor	Daily
Spoil sites will be shaped to fit the natural topography.		
Spoil sites must receive a minimum of 75mm topsoil and be grassed with a recommended seed mixture by a qualified ecologist.		
Slopes must not exceed a vertical: horizontal ratio of 1:3.		

6.13.3 Soil Erosion and Sedimentation

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
The THD Erosion Control SOP included in Appendix A must be adhered to. Soil erosion on site must be prevented at all times, i.e. pre, during and post construction activities. Suitable erosion control measures must be implemented in areas sensitive to erosion such as near water supply points and edges of slopes. These measures must include: ▪ Phased construction activities must take place to ensure the removal of vegetation, only as it becomes necessary for work to proceed. This enables erosion and sedimentation to be minimised and centralised in relatively small areas easier to control and to stabilize. Topsoil storage must be as brief as possible and storage must occur in a bunded area away from watercourses as described above. ▪ Vegetative Cover – vegetation reinforces soil and holds it in place thereby reducing erosion. Temporary or permanent vegetation must be planted on all bare soil immediately after any ground disturbance. The prompt rehabilitation of exposed soil areas with indigenous vegetation will ensure that soil is protected from the elements. The unnecessary removal of vegetation especially on steep areas must be prevented. Taking necessary precautions in terms of design and construction and earthworks, cuts and fills must be taken. Soil stockpiles must be vegetated or covered to reduce soil loss as a result of wind or water to prevent erosion and sedimentation. Disturbed areas must be rehabilitated as soon as possible. ▪ Seeding, anchored mulch, wool binders or erosion control fabrics must be used to provide surface protection and stabilisation until vegetation is established. ▪ The suitable use of sand bags or Hessian sheets must be used to stabilise bare soil. ▪ The suitable use of geo-textiles, turf blankets or mats must be used as slope protection for exposed slopes. ▪ Proper drainage controls such as culverts and cut-off trenches must be used to ensure proper management of surface water runoff to prevent erosion and sedimentation. ▪ Construction vehicles must remain on designated demarcated areas. ▪ Work areas must be clearly defined and demarcated to avoid unnecessary disturbance of areas outside the maintenance area. Constant cognisance of the inherent high erosion risk potential of all soils and sites on the property must be taken and appropriate control and preventative measure put in place.	Contractor	Daily

6.13.4 Relocation of Spoil Material

Due to the proposed earth-works, it will be necessary to spoil surplus material at a spoil site. The old Flanders Quarry has been identified as a suitable site for the spoiling of surplus material and will be subject to rehabilitation once spoiling is complete. The region in which spoiling will take place is illustrated in Figure 10.

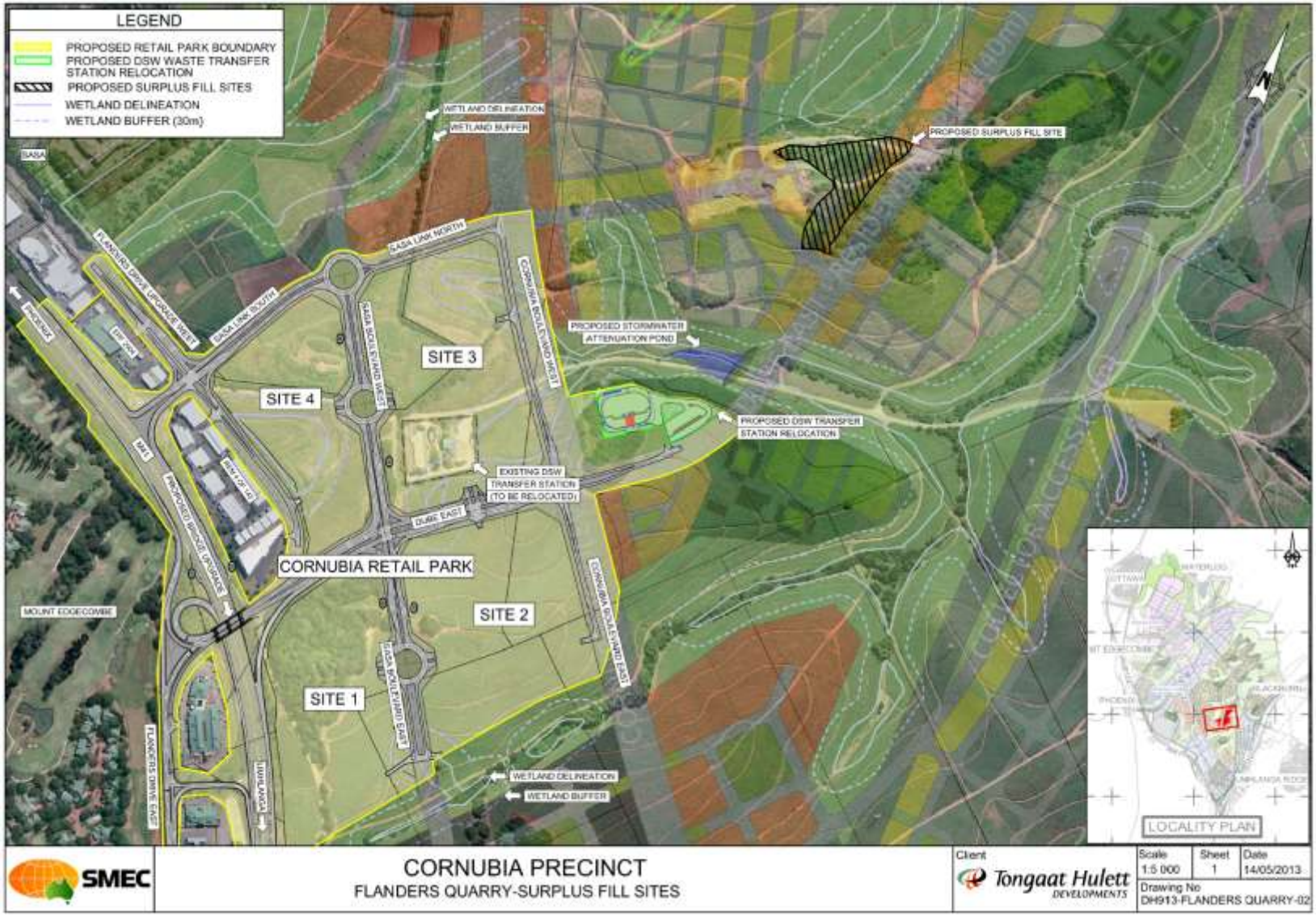

FIGURE 10: LOCATION OF THE SURPLUS SPOIL AREA

6.13.4.1 Site Establishment, Management and Erosion Control

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
The spoil site must not be within 32 metres to any watercourse.	Contractor	On-going
A signboard must be placed in the area where spoiling activities such as clearing and infilling will take place informing the public of the activities taking place.		
The Contractor must take responsibility for the site to conform to all contractual aspects and environmental standards applicable.		
The spoil site must be cleared of all inert waste and rubble, including surplus rock, foundations and litter.		
Topsoil must be separated from overburden and spoiled separately.		
No large rocks or building rubble is permitted to be spoiled at these sites. If building rubble is to be spoiled, a waste management license as per the requirements of the National Environmental Management Waste Act will be required.		
Dumping of any other material, including litter is prohibited.		
Spoil site should not be located within the 1:100 year flood line.		
Litter and general waste is to be removed from the soil and spoiling before stockpiling.		
Spoil sites will be shaped to fit the natural topography.		
Spoil sites must receive a minimum of 75mm topsoil and be grassed with the recommended seed mixture.		
Soil erosion on site must be prevented at all times, i.e. pre, during and post spoiling activities. The THD Erosion Control SOP provided in Appendix A must be adhered to at all times. Suitable erosion control measures must be implemented in areas sensitive to erosion such as near water supply points and edges of slopes. These measures should include: • Phased construction activities should take place to ensure the removal of vegetation, only as it becomes necessary for work to proceed. This enables erosion and sedimentation to be minimised and centralised in relatively small areas easier to control and to stabilize. Topsoil storage should be as brief as possible and storage should occur in a bunded area away from watercourses as described above. • Vegetative Cover – vegetation reinforces soil and holds it in place thereby reducing erosion. Temporary or permanent vegetation should be planted on		

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
all bare soil immediately after any ground disturbance. The prompt rehabilitation of exposed soil areas with indigenous vegetation will ensure that soil is protected from the elements. The unnecessary removal of vegetation especially on steep areas must be prevented. Taking necessary precautions in terms of design and construction and earthworks, cuts and fills must be taken. Soil stockpiles should be vegetated or covered to reduce soil loss as a result of wind or water to prevent erosion and sedimentation. Disturbed areas must be rehabilitated as soon as possible. • Seeding, anchored mulch, wool binders or erosion control fabrics should be used to provide surface protection and stabilisation until vegetation is established. • The suitable use of sand bags or Hessian sheets must be used to stabilise bare soil. • The suitable use of geo-textiles, turf blankets or mats must be used as slope protection for exposed slopes. • Proper drainage controls such as culverts and cut-off trenches should be used to ensure proper management of surface water runoff to prevent erosion and sedimentation. • Construction vehicles must remain on designated roads. • Work areas must be clearly defined and demarcated to avoid unnecessary disturbance of areas outside the development footprint. Constant cognisance of the inherent high erosion risk potential of all soils and sites on the property should be taken and appropriate control and preventative measure put in place.		

6.13.4.2 Rehabilitation and Maintenance

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
Rehabilitation must be undertaken as per the requirements of the Wetland and Open Space Rehabilitation Plan appended to the EMPr.	Contractor/ Applicant	Weekly
A period of one year must be allowed for following practical completion, unless otherwise specified.		
Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access.		
Delay the re-introduction of spoil material to all rehabilitation areas until an acceptable level of revegetation has been reached. Fencing may be used, or the area may be covered by branches.		

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
Revegetation must match the vegetation type which previously existed, unless otherwise indicated in the Contract or specified by the ECO.		
Base the new carrying capacity of rehabilitated land on the status quo rather than the regional estimate.		
Water all transplanted, planted and grassed areas.		
Watering must, commence and continue immediately after the seeds have germinated and growth begins.		
Mow lawns regularly to a height of 50mm above ground level. This promotes adequate coverage.		
Mowing of veld grass is to take place once a year after the grass has shed its seed and not before the grass has fully grown.		
Where mechanical mowing is not possible, an approved method of cutting the grass by hand (e.g. by means of scythe) may be used.		
Prune trees and shrubs at the end of winter so as to stimulate growth. Avoid pruning during the growing season as this stunts growth.		
Control weeds by means of extraction, cutting or other approved methods.		
For planted areas that have failed to establish, replace plants with the same species as originally specified. The same species as originally specified must be used unless otherwise specified by the ECO.		
A minimum grass cover of 80% is required, and individual plants must be strong and healthy growers at the end of the Maintenance Period.		
In the case of sodding, acceptable cover entails that 100% cover is attained by the specified vegetation.		
Bare areas that show no specified vegetation growth after three months of the		
Rehabilitation Work are to be spread with additional topsoil, ripped to a depth of 100mm and re-planted, re-sodded, re-hand sown or re-hydroseeded.		

6.14 Waste Management

6.14.1 General Waste

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
General waste produced on site includes: ▪ Office waste (e.g. food, waste, paper, plastic); ▪ Operational waste (clean steel, wood, glass); and ▪ General domestic waste (food, cardboards, paper, bottles, tins).	Contractor	Daily

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
An adequate number of general waste receptacles, including bins must be arranged around the Construction Camp, on site to collect all domestic refuse, and to minimise littering.		
Bins must be clearly marked and lined for efficient control and safe disposal of waste.		
Different waste bins, for different waste streams must be provided to ensure correct waste separation.		
A fenced area must be allocated for waste sorting and disposal on the site.		
General waste produced on site is to be collected in skips for disposal at a registered landfill site. Hazardous waste in not to be mixed or combined with general waste earmarked for disposal at the municipal landfill site.		
No general waste is to be disposed of at the spoil area.		
Under no circumstances is waste to be burnt or buried on site. The excavation and use of rubbish pits on site is forbidden.		
Waste bins must be cleaned out on a regular basis to prevent any windblown waste and/or visual disturbance.		
All general waste must be removed from the construction areas on a daily basis and disposed of in suitable waste receptacles at the Construction Camp.		
The Contractor must ensure that all general waste is disposed of at an appropriately licensed waste disposal facility. Through exploring practical means for reducing, reusing and recycling waste generated in undertaking the activity, the Contractor must dispose of the minimum amount of waste possible.		

6.14.2 Hazardous Waste

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
Hazardous waste produced on site includes: ▪ Oil and other lubricants, diesel, paints, solvent; ▪ Containers that contained chemicals, oils or greases; and ▪ Equipment, steel, other material (rags), soils, gravel and water contaminated by hazardous substances (oil, fuel, grease, chemicals or bitumen).	Contractor	Daily
Hazardous waste is to be disposed at a Permitted Hazardous Waste Landfill Site.		

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
The ECO must identify an approved waste disposal site at the inception of the project.		
Hazardous waste bins must be clearly marked, stored in a contained area (or have a drip tray) and covered (either stored under a roof or the top of the container must be covered with a lid).		
A hazardous waste disposal certificate must be obtained from the waste removal company as evidence of correct disposal.		

6.14.3 Industrial Waste

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
Hazardous waste produced on site includes: ▪ Oil and other lubricants, diesel, paints, solvent; ▪ Containers that contained chemicals, oils or greases; and ▪ Equipment, steel, other material (rags), soils, gravel and water contaminated by hazardous substances (oil, fuel, grease, chemicals or bitumen).	Contractor	Daily
Hazardous waste is to be disposed at a Permitted Hazardous Waste Landfill Site. The ECO must identify an approved waste disposal site at the inception of the project.		
Hazardous waste bins must be clearly marked, stored in a contained area (or have a drip tray) and covered (either stored under a roof or the top of the container must be covered with a lid).		
A hazardous waste disposal certificate must be obtained from the waste removal company as evidence of correct disposal.		
It may be feasible for the waste to be transported to a central point where it can be collected in bulk by the waste disposal company. It should however be noted that: ▪ Transport of hazardous materials must be done in accordance with legislative control; and ▪ Relevant SABS Codes of Practice should be adhered to.		

6.14.4 Waste Water

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
All waste water generated at the proposed Development must be disposed off in a suitable manner so as not to cause any surface or sub surface water pollution or health hazard. Waste water including cement-contaminated water must not enter any water course and must be managed by the site manager to ensure that the existing water resources on and off site are not polluted by activities emanating from the above development.	Contractor	Daily
Contaminated wastewater including cement-contaminated water must not enter any watercourse and must be managed by the site manager to ensure that the existing water resources on and off site are not polluted by activities emanating from the above development.		
Used oil and wastewater must be disposed of to a ROSE registered facility. An SDC is to be obtained by the Contractor.		

6.15 Water Management

6.15.1 Water Pollution Management (including groundwater and soil contamination)

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
The flow direction of any surface water run-off must be established prior to disturbing any area.	Contractor	Daily
The stockpiling of soil or any other material must not be allowed near a watercourse or water body in order to prevent pollution or impede surface runoff;		
Every effort must be made to ensure that any chemicals or hazardous substances do not contaminate the soil or ground water on site.		
Dirty water originating from maintenance activities is to be contained and disposed of correctly, to prevent the contamination of soil and/or any watercourses.		
Bathing or washing of clothes, equipment or machinery within any watercourse is prohibited.		
Erosion and loss of soil must be prevented by minimising the construction areas exposed to surface water run-off.		

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
Bare areas are to be rehabilitated as soon as the areas become available or after use.		
All water consumption on site must be recorded on a daily basis.		
The abstraction of water from any water recource for construction purposes and/ or dust suppression must not be permitted without a water use license from the Department of Water Affairs.		

6.15.2 Wetland Management

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
A 30m buffer from the edge of the permananet zone must be maintained to all wetlands which will not be infilled.	Contractor	Daily
No clearing or infilling of the remaining wetland is permissible. The wetland must be pegged to demarcate it and prohibit workers of vehicles from entering onto the wetland. The entire boundary of the wetland along the working corridor must be screened off with snow-fencing/shade-cloth or a similar barrier. This barrier must not be easily permeable to humans so as to prevent access to the wetland. The barrier must be on the wetland side of the clearing activities.		
Under no circumstances may any of the construction workers or staff access the wetland. All staff must be informed of this requirement.		
No vehicular access to the wetland is to occur. As per the method statement reviewed, the excavator used may not leave the roadbed to access any part of the wetland. All machinery operators must be made clearly aware of this requirement.		
The use of machinery within the wetland during construction must be limited to only the areas of infilling and/or crossing (ie. road crossings, sewer crossings, etc. for which a water use license has been obtained from DWA). The area of construction must be pegged out and no machinery or personnel are allowed outside of this demarcated area.		
No machinery may cross a wetland as a short-cut between two points. Any contractor who does so must be liable for a fine as a non compliance offence.		
A spill kit must be present on site at all times of operation. The kit must be used immediately should any diesel or hydraulic fluid spills occur. The ECO must be		

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
notified immediately should a spill occur.		
No stockpiling/ banks/ berms in the wetland.		
The full length of works must not be stripped of vegetation at once. The Contractor must submit a clearing and earthworks plan to the SHEQ officer for approval prior to construction occurring. This plan must indicate how clearing and earthworks are going to progress across the site in a phased manner. The unnecessary removal of groundcover on slopes must be avoided.		
The stormwater management system must look to return water to the ground as quickly as possible.		
Flows into wetland areas must be at pre-development velocity so that there are no additional impacts as a result of the maintenance activities on the watercourses.		
A combination of sandbags and silt fences must be established along the edge of the construction phase and repaired immediately when damaged. The berms, sandbags and silt fences must only be removed once vegetation cover has successfully re-colonised the embankments.		
Every effort must be made by the developer to ensure that any ecologically significant areas such as wetlands or marshes are protected during construction activities. A means to ensure continued protection of the sensitive areas after construction must also be implemented.		
Pipes or culverts under the road must not concentrate flow but should aim to allow even movement of water under the road bed across the entire wetland.		
Revegetation must take place immediately after completion of the construction activities. If re-vegetation of exposed surfaces cannot be established immediately due to phasing issues, rows of sand bags or silt fences must be established along the contours at regular intervals to slow runoff and capture eroded soil.		
Once shaped, all exposed/bare surfaces and fill embankments must be vegetated immediately. Embankments steeper than 1:3 must be vegetated using strip sods established at regular intervals (50-100 cm) down the bank and hydro-seeding in between. Embankments with a slope less than 1:3 must be hydro-seeded and the temporary erosion control measures removed only once re-colonisation is successful. In the winter months, the newly grassed areas must be watered daily until re-colonisation is successful.		

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
Runoff from the platforms must not be allowed to flow over the edges of the platform and down the embankments. Ponding must not be allowed to occur. In this regard, platform runoff must be diverted away from the platforms via some sort of diversion structure, preferably an open drain. This runoff must be diverted into the formal storm water network where possible. However, sediment must be removed from the runoff before being discharged into the formal system. This can be achieved by using temporary sediment capture ponds. If no formal storm water system is possible, the diverted runoff must be diverted to a temporary detention pond or temporary outlets armoured against erosion with energy dissipation measures.		
After every rainfall event, the contractor must check the site for erosion damage and rehabilitate this damage immediately. Erosion rills and gulleys must be filled-in with appropriate material and silt fences or fascine work must be established along the gulley for additional protection until grass has re-colonised the rehabilitated area.		
Rehabilitation must take place according to the Wetland and Open Space Rehabilitation Plan provided in Appendix C.		

6.16 Clearing and protection of fauna and flora

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
The extent of the area disturbed should be kept to the minimum required to successfully implement the road maintenance activities, thus minimising the destruction of any fauna and flora.	Contractor	Daily
All remainin wetlands must be demarcated and avoided.		
Removing of vegetation must be restricted to the immediate area for construction.		
No natural vegetation is to be collected for use as firewood.		
No animals are to be disturbed unnecessarily and no animals are allowed to be shot, trapped or caught for any reason.		
Protected trees may not be removed or cut without a permit from the Department of Forestry & Fisheries (DAFF).		

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas.		
Where alien plants have been introduced on to the site during clearing and infilling, they must be removed. The Contractor must develop an Action Plan for the removal of alien invasive species and submit it to the ECO for approval. The THD Control of Alien Vegetation SOP included in Appendix A must be adhered to at all times.		
Invader species and weeds must be removed and disposed of in accordance with existing legislation on a regular basis.		
Seeds must be collected for planting at a nursery to be implemented within Cornubia. A suitable ecologist must undertake this prior to clearing and advice on the need for the relocation of any specific species to this nursery.		
The removal of indigenous/endemic shrubs and small trees must be kept to a minimum and only be removed if absolutely necessary.		
The infilling of Wetland Unit 6b should be undertaken in winter which is the non-breeding season to reduce impacts on bird life. Should this not be possible, a search, rescue and relocation of birds is necessary prior to infilling.		

6.17 Stormwater Management

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
The Stormwater Management Plan as per SMEC Report No DR2012/30 (Appendix B) must be implemented to ensure proper management of stormwater on the site during and after construction to ensure that pollutants and sediment are not released into any water resources. In addition, the THD Stormwater Management SOP included in Appendix A must be adhered to at all times.	Contractor Engineer	Daily
Designs for the buildings and site development in general must avoid concentration of stormwater runoff both spatially and in time and may be required to provide for on-site attenuation of stormwater runoff to limit peak flows to pre-development levels.		
Detailed plans to control and prevent erosion by water must be agreed prior to the commencement of any works, including site clearance, on any portion of the site.		

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
Removal of vegetation cover must be carried out with care and attention to the effect, whether temporary or long term, that this removal will have an erosion potential.		
Precautions must be taken at all times on building sites to contain soil erosion and prevent any eroded material from being removed from the site.		
Landscaping and re-vegetation of areas not occupied by buildings or paving must be programmed to proceed immediately after building works have been completed, or have reached a stage where newly established ground cover is not at risk from the construction works.		
On-site stormwater control systems, such as swales, berms, soil fences and attenuation ponds are to be constructed before any construction commences on the site. As construction progresses, the stormwater control measures are to be monitored and adjusted to ensure complete erosion and pollution control at all times.		
Earthworks on sites are to be kept to a minimum. Where embankments have to be formed, stabilization and erosion control measures must be implemented immediately.		
Stormwater must not be allowed to pond in close proximity to existing building foundations.		
Prior to any physical work proceeding on site, a stormwater control plan (SCP) detailing the proposed stormwater control measures are to be formulated. No work is to be undertaken without an approved SCP.		
The SCP must describe what control measures are to be implemented before and during the construction period, as well as the final stormwater control measures required for the site on completion of site development. Plans must indicate who is responsible for the design of the control measures and who is, or will be, designated as the responsible person on site during each stage of the implementation of the control measures.		
SCPs must show that all the provisions, regulations and guidelines contained in this document have been taken into account.		
In the event of a failure to adequately implement the approved stormwater control plan, the contractor must be responsible for making good all consequential environmental damage at his own cost. The developer is therefore advised to ensure that all members of the professional team and contractors are competent		

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
to undertake the development work and are adequately insured.		
No materials, fluids or substances are allowed to enter the stormwater system that could have a detrimental effect on the flora, fauna and aquatic life in the water courses, wetlands and dams. Regular monitoring of the sites should be undertaken by eThekwini Municipality or their appointed representatives.		
Any site that is required to store any substances that could be regarded as hazardous in terms of water pollution must notify eThekwini Municipalities and must take measures to ensure spillages of the substance(s) can be adequately contained to prevent contamination of the water resources within the development area.		
No stormwater, wash water, or waste water may be directed towards any permanent water body or wetland without the installation of a suitable filtration system to prevent pollution, including silt, from entering such water body.		
Attenuation will take the form of a dry pond at the eastern side of the development.		

6.18 Traffic and Safety

6.18.1 Lane Closures

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
Temporary loading and off-loading areas and holding of construction vehicles must be designed prior to construction activities to ensure that the most preferable access and haulage routes has been identified.	Contractor	Daily
Road signs for all lane closures to be done in accordance to the South African Road Traffic Signs Manual (SARTSM, 1999).		
Construction routes must be clearly defined.		
Disruption to the peak traffic periods 06h00 – 9h00 and 15h00 – 18h00 to be minimised or if possible avoided.		

6.18.2 Pedestrian Protection

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
Pedestrians to be protected from construction activities at all times.	Contractor	Daily
Pedestrian conflict with site access and construction vehicles to be managed by traffic officer.		
The construction site must remain fenced for the entire maintenance period.		

6.18.3 Maintenance Vehicles

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
Access of all maintenance and material delivery vehicles must be strictly controlled.	Contractor	Daily
Holding of all maintenance vehicles to be controlled to ensure that through traffic is not unnecessarily impeded.		
Vehicles and equipment must be serviced regularly to avoid the contamination of the area from oil and hydraulic fluid leaks etc.		
Servicing of vehicles must be done off-site.		
All speed limits must be adhered to.		
Machinery or equipment used on site must not constitute a pollution hazard in respect of the above substances. The Constructor must order such equipment to be repaired or withdrawn from use if they consider the equipment or machinery to be polluting and irreparable.		
Suitably covered receptacles must be available at all times and conveniently placed for the disposal of waste. All used oils, grease or hydraulic fluids must be placed therein and these receptacles will be removed from the site on a regular basis for disposal at a registered or licensed disposal facility.		

6.18.4 Road Maintenance

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
Contractors must ensure that any damage to the pedestrian walkway or holding areas are maintained in good condition by attending to any damages (e.g. road signs or stormwater damage etc.) as soon as these develop.	Contractor	On-going
If necessary, staff must be employed to clean surfaced roads adjacent to construction sites where materials have spilt.		
All temporary road signs to be removed and pavement reinstated at completion of works.		
All covered road signs to be reinstated.		

6.19 Social Considerations

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
All neighbouring landowners and those that are disturbed due to construction activities are to be notified of construction activities and provided with regular feedback on the status of construction.	Contractor	On-going
The Contractor is to arrange for a suitable candidate to assist with the appointment of local labour and assist with labour disputeds.		
Due to the concentration of a workforce in the area over the construction period, the contractor must implement an HIV/AIDS Awareness Programme on site. The contractor must appoint an HIV/AIDS Awareness Officer for the duration of the construction period. Activities for HIV/AIDS awareness and prevention will be broad based, targeting both individuals and groups. They may consist of: ▪ Information posters in public places both on and off site (eating places, bars, guest houses, etc); ▪ Peer educators (reference people) drawn from the local labour force and trained in HIV/AIDS issues for discussions with colleagues (estimate 1 per 30 employees); ▪ Small focus group discussions and information covering key issues should be held; ▪ Inclusion of HIV/AIDS activities at site meetings and other discussions; and ▪ Voluntary Counselling and Testing.		

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
Education will cover: ▪ Stigma and discrimination issues; ▪ Preventative behaviours including partner reduction, condom use, and awareness and importance of treatment of STDs; ▪ Skills including negotiating safer sex, correct condom use, purchase without embarrassment; Referral to local health centres and services available.		

6.20 Reporting & Record Keeping

6.20.1 Complaints Register

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
Complaints received must be registered and recorded by the contractor and also brought to the attention of the contractor. Both parties will respond accordingly. The following information must be recorded in the case of any complaint/incident: ▪ Time, date and nature of complaint; ▪ Response and investigation undertaken; and ▪ Corrective and preventative actions taken and by whom.	Contractor	On-going
All complaints received will be investigated and a response is to be given to the complainant within 7 days.		

6.20.2 Environmental Incidents Register

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
All environmental incidents occurring on the site will need to be recorded in an Environmental Incident Book and brought to the attention of the ECO. The following information must be provided: ▪ Time, date and nature of complaint; ▪ Response and investigation undertaken; and ▪ Corrective and preventative actions taken and by whom.	Contractor	On-going

POST-CONSTRUCTION PHASE – REHABILITATION/MAINTENANCE

6.21 Rehabilitation

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
The applicant is responsible for compliance with the provisions for Duty of Care and Remediation of Damage in accordance with Section 28 of National Environmental Management Act (NEMA), Act No. 107 of 1998.	Contractor	Post-Construction
All remaining maintenance materials, building rubble and waste are to be removed from the site.		
All disturbed surfaces compacted by maintenance activities including the ablutions and loading areas should be ripped to a minimum depth of 30cm to allow organic contaminants to breakdown and promote vegetation establishment.		
Locally appropriate indigenous vegetation must be included in the landscape for the site. The Open Space and Wetland Rehabilitation Plan for Cornubia must be complied with as outlined in **Appendix C**. All recommendations forwarded in this Plan are to be adhered to.		
Final rehabilitation must be completed within a period specified by the Engineer.		

6.22 Monitoring and Maintenance

ACTIONS AND CONTROLS	RESPONSIBILITY	MONITORING FREQUENCY
The conditions of the development must be monitored for a period of one year after the development is complete to ensure that: ▪ Erosion is not taking place; ▪ The stormwater run-off measures are working; ▪ An Environmental Complaints Register should be kept detailing complaints received, date, response and action taken; ▪ Any maintenance where intrusive works are necessary should adhere to the mitigation measures put in place in the EMPr; and ▪ Where such measures are impractical due to the nature, duration and extent of maintenance works, a maintenance method statement should be developed prior to maintenance works being undertaken.	Project Proponent	Daily

7 ENVIRONMENTAL CODE OF CONDUCT

One of the objectives of the EMPr is to ensure that all the workforce, contractors, sub-contractors and construction staff have an understanding of environmental issues and potential impacts on site activities. This environmental code of conduct provides the basic rules that should be strictly adhered to. It is the responsibility of the Contractor to ensure that each contractor, sub-contractor and workforce understand and adhere to the Code of Conduct.

ENVIRONMENTAL CODE OF CONDUCT

ALL PERSONS ARE OBLIGED TO KEEP TO THE RULES OF THIS CODE OF CONDUCT

Ignorance, negligence, recklessness or a general lack of commitment resulting in environmental degradation or pollution shall not be tolerated!

ENVIRONMENTAL RULES

- **Do not waste electricity, water or consumables;**
- **Only use authorised accesses;**
- **Do not litter;**
- **Dispose solid waste to the correct waste containers provided;**
- **Prevent pollution;**
- **Use the toilet facilities provided;**
- **Do not dispose contaminated waste water to the storm water or the environment;**
- **Immediately report any spillage from containers, plant or vehicles;**
- **Do not burn or bury any waste in the sand;**
- **Do not trespass onto private properties;**
- **Strictly leave all animals alone. Never tease, catch or set devices to trap or kill any animal.**
- **Never damage or remove any trees, shrubs or branches unless it forms part of working instructions;**
- **Do not deface, draw or cut lettering or any other markings on trees, rocks or buildings in the area;**
- **Know the fire fighting procedure and locations of fire fighting equipment; and**
- **Know the environmental incident procedures.**

APPENDIX A:
THD STANDARD OPERATING PROCEDURES

APPENDIX B:
STORMWATER MANAGEMENT PLAN

APPENDIX C:
WETLAND AND OPEN SPACE REHABILITATION PLAN


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