

ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) FOR THE PROPOSED CONSTRUCTION OF THORNVILLE DEVELOPMENT TO INCLUDE FUEL SERVICE STATION AND RETAIL CENTRE ON PORTION 104 (OF 30), OF THE FARM LELIEFONTEIN NO.1175, THORNVILLE, KWAZULU – NATAL.



MONDLI
CONSULTING

DC22/0015/2023 - Proposed construction of
Thornville Retail Centre and Fuel Service Station

ABSTRACT

This is the draft Environmental Management Programme for the proposed development. It consists of recommended mitigation measures against the potential negative environmental impacts associated with the proposed development. Responsible parties and time frames for implementation of recommended measures are indicated within the EMPr.

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Prepared For

Thornville Square Holdings (Pty) Ltd

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A. ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP) WHO PREPARED THE ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr):

1. An EMPr must comply with section 24N of the Act and include -

(a) Details of -

(i) the EAP who prepared the report:

Business Name of EAP	Mondli Consulting Services		
Physical Address	6 Joseph Avenue, New Era House, Suite 9, Durban North		
Postal Address	P O Box 22536, Glenashley		
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(ii) The expertise of the EAP (including curriculum vitae)

Name of representative of the EAP	Education qualifications	Professional affiliations	Experience at environmental assessments (yrs)
BM Mthembu	Diploma in Nature Conservation Master's Degree (Environmental Studies Dissertation, Geography) Bachelor of Laws (LLB)	EAPASA registered EAP: No. 2019/168 in accordance with the prescribed criteria of Regulation 15(1) of section 24 H Registration Authority Regulation. Society of South African Geographers (Membership No. 28/09).	Has been involved in environmental and conservation field for over 20 yrs. Conducted EIAs for over 20 years including Strategic Environmental Assessment. Has been involved in the review and commenting on development projects impacting on the environment.
A Mhatu	Bachelor of Science Degree Ecology, Environment & Conservation and Geography	SACNASP Registered (Membership No. 125863).	Has over 9 years experience in conducting EIAs and EIA related work.

B. A DETAILED DESCRIPTION OF THE ASPECTS OF THE ACTIVITY THAT ARE COVERED BY THE EMPr AS IDENTIFIED BY THE PROJECT DESCRIPTION;

Thornville Development (“The Square of Thornville”) is proposing the construction of Fuel Service Station, with convenience shop, including associated structures and infrastructure comprising fuel storage tanks [4 x 23 000 litres petrol], 3 x 23 000 litres diesel totaling 161 000 litres, all underground, 4 x pump islands and 8 bowsers, lubricants, gas, paraffin, concrete paving & canopy at the forecourt, Retail Centre with anchor shop with line shops comprising pharmacy, bottle store and restaurants. The Centre will also have the Gymnasium, tyre shop, taxi rank and Bus terminal.

The proposed development will include removal of vegetation as part of the site clearance/preparation. There are degraded wetlands in the proximity of the site that need protection by buffers.

Aspects of the proposed activity covered by the EMPr therefore include access to site, site camp set up, staff education and awareness training, removal of vegetation, wetlands, soil erosion, pollution, stormwater management, soil contamination, alien plant invasion, noise, ground water contamination as well as health and safety.

Area/Footprint

The site on which the proposed development is located has a total area of 2.8328m² as per the title deed. The development footprint of the proposed development is estimated at 7000m².

C. A MAP AT AN APPROPRIATE SCALE WHICH SUPERIMPOSES THE PROPOSED ACTIVITY, ITS ASSOCIATED STRUCTURES, AND INFRASTRUCTRE ON THE ENVIRONMENTAL SENSITIVITIES OF THE PREFERRED SITE, INDICATING ANY AREAS THAT SHOULD BE AVOIDED, INCLUDING BUFFERES

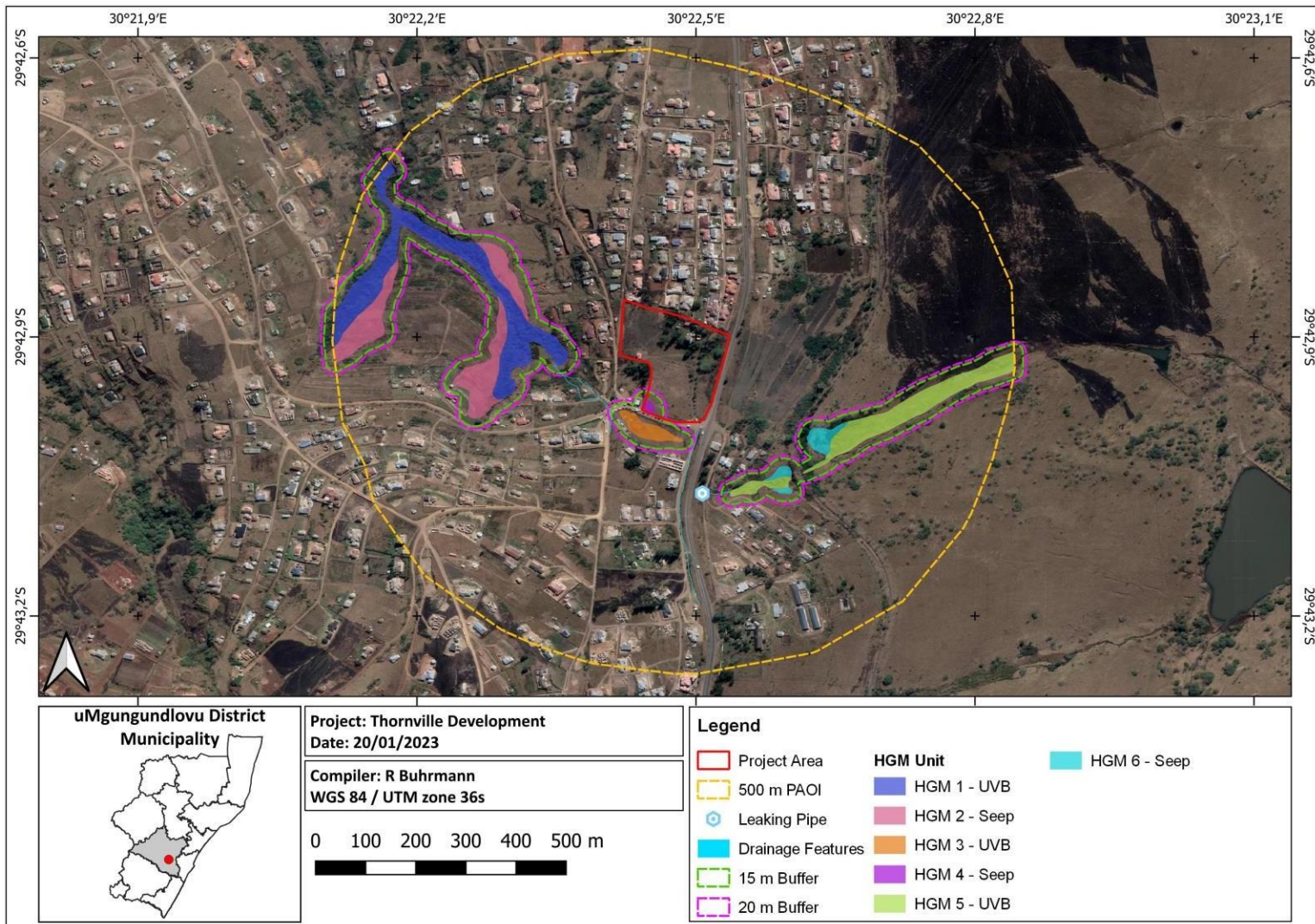


Figure 1: Map formulated through wetland study which shows the applicable wetland buffers

D. A DESCRIPTION OF THE IMPACT MANAGEMENT OBJECTIVES, INCLUDING MANAGEMENT STATEMENTS, IDENTIFYING THE IMPACTS AND RISKS THAT NEED TO BE AVOIDED, MANAGED AND MITIGATED AS IDENTIFIED THROUGH THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS FOR ALL PHASES OF THE DEVELOPMENT

Impact management objectives include ensuring that the development takes place in line with the Environmental Management Programme (EMPr), EIA Regulations and National Environmental Management Act (NEMA) No. 107 of 1998 as amended for all phases of the project. Impact management provides for the avoidance, reduction and/or rectification of potential negative impacts on the environment to ensure that the project is environmentally sustainable and its implementation does not result in unacceptable levels of loss of ecological integrity and biodiversity of the affected area and surrounding environment. The impact management objectives for the proposed development will be focused on protection of vegetation, groundwater resources, wetlands, management of impacts associated with storage and handling of fuel.

The monitoring deals with conformance and non-conformance measured against the EMPr. Any non-compliance observed during the construction period will be followed by an immediate remedial intervention. The environmental audit and monitoring will primarily focus on evaluating the measure of compliance with statutory requirements within the project site. The Developer is primarily responsible for ensuring compliance to the EMPr and other requirements and standards applicable for the operational phase of the proposed development.

The identified impacts and risks will be managed and mitigated throughout the following phases of development:

(i) Planning and design

There are no significant impacts that are expected during this phase of the proposed development. However, it is important that the potential impacts for the construction and operational phases are well considered during the planning and design phase to ensure that where possible, the design and/or layout are altered to reduce impacts and necessary financial provisions are made for all mitigation and rehabilitation measures that need to be implemented throughout the different project phases.

(ii) Pre-construction activities

Vegetation Removal

Vegetation clearance is considered as a pre-construction activity conducted for the preparation of the site for the actual construction works.

Ablution Facilities

Failure to provide ablution facilities prior to commencement of construction activities will lead to workers not having access to ablution facilities during the construction phase especially during the initial days/weeks of construction activities.

Provision of clean drinking water

Workers may be forced to consume water that is not clean or safe to drink if no plan is put in place to provide clean drinking water for the construction phase.

Environmental Awareness

Without the provision of environmental awareness training prior to the commencement of construction activities, workers will most likely be ignorant of environmental issues and act in ways that will cause environmental degradation including littering. This will take the form of an environmental induction.

Vegetation Retention

Vegetation will need to be retained during the construction phase to reduce disturbance of the project to the surrounding environment. The site and no-go areas will therefore need to be clearly demarcated before construction.

Waste Management Plan

Without a proper waste management plan being put in place, handling and disposal of waste during construction and operational phase will result in negative environmental impacts which will affect ecosystem functionality and can also affect human health.

(iii) Construction Activities

- **Vegetation Removal**

Some vegetation will be removed when clearing space for construction of the structures for the proposed facility. This will result in disturbance of plant communities and habitat within the site.
- **Habitat Destruction**

Removal of vegetation within and around the site may affect wildlife.
- **Soil Erosion**

Soil will be exposed to erosion as a result of vegetation removal and earthworks.
- **Pollution**

Littering by workers, failure to store waste accordingly on site and failure to dispose of waste in an area permitted to handle and dispose of such waste will result in pollution within the affected area.
- **Soil contamination**

Failure to store hazardous substances such as fuel in the correct manner will most likely lead to such substances leaking/spilling resulting in soil contamination. Mixing of concrete on the ground without use of liners/mixing trays will also result in soil contamination.
- **Surface and groundwater contamination**

Contamination of surface runoff and soil with hazardous substances may lead to pollutants contaminating stormwater channels and groundwater.
- **Nuisance: noise and dust**

Noise emissions from construction workers, vehicles and earthworks can be loud enough to be a nuisance for the surrounding community. Dust emissions will be as a result of use of the gravel road to access the site for the proposed development. Dust emissions from earthworks are expected to be low.
- **Spread of alien plants**

Removal of vegetation exposes soil which when left for an extended period of time can be invaded by alien plant species.
- **Visual Impact**

This impact can occur where the presence of the structures for the proposed development affect the sense of place and general appearance of the area where the proposed development will be located.
- **Socio - economic**

This is a positive impact that will occur as a result of the employment opportunities that will benefit the locals during the construction phase.
- **Health and Safety**

The different activities to be performed during the construction phase may pose health and safety risks for workers including tasks such as handling of potentially hazardous substances, operation of plant and vehicles, working at high height levels and working with electric wires and equipment.

- **Traffic Impacts**

Movement of construction vehicles and plant to and from the site will add to existing traffic normally experienced around the site; and lead to increased traffic especially where plant and heavy vehicles are concerned.

(iv) Rehabilitation of the environment after construction

- **Alien Plants**

Alien plants may continue to spread if left uncontrolled.

- **Soil Erosion**

Soil erosion may occur where the site is not properly landscaped and vegetated post-construction.

(v) Where relevant, operation activities;

Some of the impacts that can occur during the operation phase include:

- Adhoc clearing of vegetation during routine maintenance of the facility.
- Contamination of ground and surface water which can result from fuel storage.
- Illegal killing of local fauna.
- Harvesting of local indigenous fauna for medicinal use.
- Introduction of diseases through the failure to control pest animals.

E. A DESCRIPTION OF PROPOSED IMPACT MANAGEMENT ACTIONS, IDENTIFYING THE MANNER IN WHICH THE IMPACT MANAGEMENT OUTCOMES CONTEMPLATED IN PARAGRAPH (D) WILL BE ACHIVED, AND MUST, WHERE APPLICABLE, INCLUDE ACTIONS TO-

(i) Avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation

1. Planning and Design Phase

The design and layout of the proposed development must be holistically considered and all amendments necessary must be made prior to the commencement of construction to ensure that the design and layout implemented will have the least negative impacts.

The project team must also ensure that sufficient resources are allocated for mitigation measures required in the different project phases to be implemented especially in terms of allocation of financial resources which can often be a limiting factor.

2. Pre-Construction Phase

Ablution Facilities

- Provision of ablution facilities must be planned in such that workers will have access to clean and safe ablution facilities from the first day of work.
- Establishment of long-drop toilets is strictly forbidden.

Provision of clean drinking water

- The provision of clean drinking water for workers must be provided for. This is generally the responsibility of the Contractor for the construction phase and therefore this must form part of the agreements between the Developer and Contractor.

Environmental Awareness

- Pre-construction environmental awareness must be conducted with the Contractor, Developer, ECO and EDTEA. This will include: -
 - Highlight of the conditions of the Environmental Authorization;
 - Explanation of the EMPr and mitigation measures contained therewith;
 - Explanation of responsibilities for the implementation of mitigation measures within the EMPr and
 - Signing of the EMPr by Contractor.
- All parties that will be part of the construction activities must be inducted prior to commencement of works.
- Environmental Inductions can also be made part of the toolbox talks once construction has commenced.
- The Approved EMPr must be kept on site at all times to ensure monitoring by organs of state with jurisdiction on site.

Vegetation retention

- The site must be clearly marked out including working and no-go areas.
- Removal of vegetation must be limited to the necessary areas within the development footprint.
- An ECO must be appointed well before this point to be afforded sufficient time to notify EDTEA of the intended commencement of construction. Parallel to this, a specialist with the relevant knowledge and experience must be appointed to conduct the site inspection.

Waste Management Plan

A waste management plan for the operational phase must be drawn up with clear details on how all waste types will be handled and disposed of. This Waste Management plan must be adhered to and failure to follow procedures within this plan will constitute a non-compliance which is punishable through fines and may result in instruction to cease all activity on the site.

3. Construction Phase• **Vegetation Removal**

- Vegetation removal must be minimized.
- The construction area must be demarcated and all areas beyond the demarcated area must be treated as no-go areas.

- The appointed ECO must be given the chance to mark indigenous vegetation on site prior to the commencement and removal of vegetation.
 - Where indigenous vegetation as marked needs to be removed, the correct procedure must be followed.
 - All areas cleared for construction purposes must be re-vegetated with indigenous vegetation/grass upon completion of construction works with no areas to be left bare.
- **Soil Erosion**
 - Soil erosion must be reduced by controlling the amount of space that is cleared of vegetation.
 - Cleared areas must be developed as soon as possible and not left bare for extended periods of time.
 - Stormwater management on site must be such that the erosion potential of the stormwater is reduced or the stormwater is directed away from exposed surfaces.
 - Areas where vegetation had been removed for construction purposes must be promptly re-vegetated once the work on that particular section has been completed. Vegetation used must be indigenous trees or grass.
- **Pollution**
 - All workers must undergo environmental induction which must include best practice allowed on site such as waste disposal at the designated areas.
 - All waste within the site must be stored in a designated waste storage area. Closed bins must be used for storage of general waste.
 - Waste from the site must be regularly disposed of at the nearest landfill site and waybills/receipts must be kept as proof of safe waste disposal.
 - Waste must not under any circumstances be left to accumulate on site.
 - Waste on site may not be buried or burned.
 - All disposal of construction waste must be approved by the ECO and Engineer and must in such a manner that it does not culminate in on-site or off-site environmental degradation.
- **Soil contamination**
 - There must be designated storage areas for potentially hazardous substances which must be equipped with a fire extinguisher. All storage of potentially hazardous substances including paint must be in line with the provisions of Hazardous Substances Act (Act 15 of 1973).
 - A bunded area must be established where high amounts of fuel are to be stored on site and such bunded area must be able to store the full capacity of the storage container(s) placed on it.
 - A spill kit must be provided on site and used to clean up any minor spills that occur on the site. Such soil must be stored as hazardous waste and be disposed of as advised by the Appointed ECO.
 - Spills must be reported to the Department of Water and Sanitation, Msunduzi Local Municipality, Umgungundlovu District Municipality and KZN Department of Economic Development, Tourism and Environmental Affairs.
 - All vehicles must be kept in good working condition and any spills/leaks observed must be attended to immediately. Drip trays must temporarily be placed under vehicles observed to be leaking until such time that they are serviced if they cannot be fixed immediately.
 - Drip trays must be provided and used accordingly when dealing with fuel and other hazardous substances.
 - Concrete mixing must only take place on mixing trays or on impermeable liners.

- Concrete trucks must not be washed out or cleaned on the site or any other area near the site, unless such cleaning will not cause any environmental harm.
- **Nuisance: Noise and dust**
 - Noise Control Regulations (Regulations 154, 10 January 1992) of the Environmental Conservation Act (Act No. 73 Of 1989) must be adhered to.
 - Noise levels on site must be kept as low as possible at all times throughout the construction phase.
 - Construction workers must not play loud music on site.
 - Construction operations must be restricted to daylight period, Monday to Saturday, and must adhere to legally stipulated hours (7.00 – 18.00).
 - The residents near the site must be informed when the construction phase of the proposed development is about to commence.
 - All construction vehicles and plant must adhere to the recommended speed limits for the road used to get to the site.
 - Where necessary, a water cart must be used to spray water on the road to suppress dust.
- **Spread of alien plants**
 - Where alien plant species are observed growing on cleared spaces, they must be mechanically removed.
 - Exposed areas must be re-vegetated with indigenous plants upon completion of activities on the affected areas.
- **Visual Impact**
 - Vegetation around the site must not be disturbed.
 - Disturbance of the surrounding environment must be minimized.
- **Socio - economic**
 - The ward councilor must be engaged for the appointment of locals.
 - The terms and conditions of employment must be clearly explained to those appointed including how much they will earn, when they will be paid and the payment method.
 - Use of local labour must be maximized as far as is allowed by the budget.
 - The Contractor along with the Developer must consider any possible form of certification for the workers to endorse the skills they displayed. Additionally, some of the workers may be sent to train for skills such as First Aid, the skill which they can use within the community but can also help with improving their chances of getting employed.
 - Employee rights according to the Employment Act must be respected at all times.
 - Local companies must be considered for supply of materials and services required provided that they meet the requirements.
- **Health and Safety**
 - All requirements of the Occupational Health and Safety Act (Act No. 85 of 1993) must be complied with.
 - Only workers with the required licenses may be permitted to operate plant, machinery and vehicles.
 - All workers must be provided with the necessary Protective Clothing (PPE) for the tasks they are expected to complete.
 - Standard road safety measures must be followed by all plant and vehicle drivers.

- Extra caution must be exercised in areas with high number of pedestrians, in particular around schools where there could be crossing children.
- Workers must at all times be provided with clean drinking water.
- Clean and hygienic mobile toilets must be provided for workers throughout the construction phase. Such toilets must regularly be serviced by an approved service provider to ensure that they are clean and safe to use at all times.
- Emergency procedures must be explained to all workers in case of occurrences such as a fire breakout.

- **Heritage Impact**

Where heritage resources are uncovered during the construction phase, the measures below must be implemented:

- Amafa must be contacted if any heritage objects are identified during earthmoving activities, and all development must cease until further notice.
- Amafa must be contacted if any graves or heritage objects are identified during construction and the following procedure is to be followed:
 - Stop construction
 - Report finding to local police station
 - Report to Amafa to investigate
- Sources of all-natural materials (including topsoil, sands, natural gravels, crushed stone, asphalt etc) must be obtained in a sustainable manner and in compliance with the heritage legislation.
- Should any Palaeontological Material be uncovered, a Palaeontologist must be called in to investigate.

4. Rehabilitation of the environment after construction and where applicable post closure;

- **Alien Plants**

- Landscaping post-construction must include re-vegetation with indigenous grass/trees.
- The ECO must be consulted to ensure that no alien plant species are planted as part of the rehabilitation.

- **Soil Erosion**

- All surfaces disturbed must be stabilized and re-vegetated accordingly.
- Stormwater from the site must be channeled to avoid on-site and off-site erosion.

5. Operational Phase

- Installation, operation and maintenance of fuel storage tanks and septic tank wastewater system must be done according to applicable standards and guidelines to eliminate potential negative impacts.
- No-go areas should be sign posted and communicated to all staff.
- Routine maintenance should be conducted along the proposed boundary fence.
- All hazardous waste must be adequately stored and disposed of at suitable facility.
- No dumping of waste must be allowed at any point in time.

- All stormwater drains must comply with South African legislations to avoid water and soil contamination on the surrounding environment.

F. THE METHOD OF MONITORING THE IMPLEMENTATION OF THE IMPACT MANAGEMENT ACTIONS CONTEMPLATED IN PARAGRAPH (E)

1. Planning, Design and Pre-Construction Phase

During these phases, environmental issues will need to be considered for decision making; and therefore reported on any planning/pre-construction meetings that are held in connection with the development.

An Environmental Control Officer must be appointed prior to the commencement of construction activities.

The ECO will be responsible for monitoring compliance to pre-construction measures and liaising with EDTEA with regards to the conditions of the EA for the Development.

2. Construction Phase

The appointed Environmental Control Officer must:-

- Conduct monthly site audits and monitor activities on site against what is set out in the EMPr and against conditions of the EA.
- Compile Environmental Compliance Reports which must be submitted to EDTEA.
- Findings of the audit conducted must be communicated to the project committee including the Contractor, Engineer and Developer. The ECO must highlight any non-compliances identified and actions to be taken to rectify the non-compliances and remedy the impacts of the non-compliance.

Monitoring must also be conducted by EDTEA who may visit the site whenever necessary to monitor compliance to the EMPr and EA.

The Contractor must appoint one of the workers to be responsible for the day to day monitoring of compliance to impact mitigation measures as contain within the EMPr. This is the person that will deal closely with the ECO and communicate any challenges faced in implementation of mitigation measures with the ECO.

The Contractor must obtain receipts/waybills for waste disposal and service of toilets. Such must be kept on file at all times for the ECO or officials to view upon request as proof of safe waste disposal and proof for safe and regular toilet servicing.

G. THE FREQUENCY OF MONITORING THE IMPLEMNETATION OF THE IMPACT MANAGEMENT ACTIONS CONTEMPLATED IN PARAGRAPH (E)

An on-site assessment / monitoring must be conducted every two weeks (twice a month) for the duration of the construction period. A single audit report for each month must be submitted to EDTEA as per contact details for their compliance and monitoring section.

Additionally, issues relating to environmental compliance must be discussed on the project meeting platform to ensure that the importance of compliance and environmental preservation is made clear to the team and that relevant parties are directed to take necessary action for on-site compliance.

H. AN INDICATION OF PERSONS WHO WILL BE RESPONSIBLE FOR THE IMPLEMENTATION OF THE IMPACT MANAGEMENT ACTIONS

- Appointed ECO (Environmental Control Officer) – overall responsibility of environmental reporting, training and awareness and the overseer of the implementation of the whole EMPr and Specialists recommendations.
- Contractor / Site Engineer – responsible for all engineering or building related work on site, and project implementation.
- Thornville Square Holdings (Pty) Ltd (Developer) – ensure adherence to the EMPr.
- EDTEA (Compliance Section) – inspections.

I. THE TIME PERIODS WITH WHICH THE IMPACT MANAGEMENT ACTIONS CONTEMPLATED IN PARAGRAPH (E) MUST BE IMPLEMENTED

All the stipulated mitigation measures are relevant for compliance throughout the different phases.

For example: Mitigation measures for impacts related to construction activities must be implemented throughout the construction phase of the development.

The mitigation measures, responsibilities and time frames are indicated in the tables below for each of the different project phases.

Pre- Construction Phase

Activity	Management / Mitigation	Responsibility	Frequency / Timing
A1 - Legislation, permits, agreements and EA requirements	All members of the project team must adhere to all environmental legislation relevant to the project.	Contractor/Developer and ECO	Pre-, during and post construction.
	<ol style="list-style-type: none"> 1. The EMPr must be kept on site at all times. 2. All members of the project team must be provided with adequate environmental training. 3. All mitigation measures that must be set up prior to construction must be implemented. 4. Monitoring and control programmes must be put in place to manage alien invasive plants. 5. The working area is to be clearly demarcated and all construction work is to be kept within the demarcated area. 	Contractor/Developer and ECO	Ongoing
A2 - Access to site <i>Sound environmental principles must be followed</i>	A2.1 Routing		
	a. Access route must be clearly marked and disturbance outside these areas is not permitted. Choice of access routes must take into account minimum disturbance to surrounding environment.	Contractor/Engineer and ECO	Prior to moving onto site and during construction
	b. The location of all underground services and servitudes must be identified and confirmed before construction commences (if any).		
A3 – Setting up the construction camp/site <i>Careful planning of the construction camp can ensure that time and costs associated with</i>	A3.1 Layout & Location	Contractor/ECO and Engineer	Pre-Construction/Site Set Up
	a. If the Contractor chooses to locate the campsite on private land, he must get prior permission from both the Engineer and the landowner.		
	b. The size of the construction camp must be minimized (especially where vegetation has had to be cleared for the site camp).		

<i>environmental management and rehabilitation are reduced.</i>	c. The construction camp must be properly fenced with a 1.8m high bonnox (or similar type) fence, secured and kept in a clean and orderly state at all times.	Contractor/ECO and Engineer	
	d. The position of the camp must be confirmed by the Engineer and the ECO.	Contractor/ECO and Engineer	
	e. The Contractor must attend to the drainage of the campsite to avoid sheet erosion and / or standing water.	Contractor/ECO and Engineer	
A3.2 Ablutions			
	a. Temporary chemical toilets must be provided by an accredited service provider approved by the Contractor.	Contractor/ECO and Engineer	During set-up and On-going
	b. The construction of a “long-drop” is not allowed.		
	c. A toilet must be placed close to working areas at all times during the construction phase for easy access of workers.		
A3.3 Provision for Camp Waste Disposal			
	a. Bins and / or skips must be provided at convenient intervals for the disposal of waste within the camp. The bins must be covered. Bins should have liner bags for efficient and safe disposal of waste.	Contractor/ECO and Engineer	During site set-up and on-going
	b. Bins/waste receptacles used must be covered to ensure that they are wind and scavenger proof. The excavation and use of rubbish pits is forbidden. Burning of waste is also forbidden.		
	c. Recycling and the provision of separate waste receptacles for different types of waste should be encouraged. Where possible, plastics, paper, glass and cans should be separated from other domestic waste for recycling. If waste is to be recycled, appropriately labelled waste receptacles must be made available.		

	d. Any potentially hazardous containers must be punctured or disabled prior to disposal.		
A4 – Education of site staff on general and environmental conduct	A4.1 – Education		
<i>These points need to be made clear to all staff on site before the project begins</i>	<p>a. The Contractor must ensure that all site personnel have a basic level of environmental awareness training. Environmental awareness posters must be used on site. The Contractor must submit a proposal for this training to the ECO for approval. Topics to be covered must include:</p> <ol style="list-style-type: none"> 1. What is meant by “environment”; 2. Why the environment needs to be protected and conserved; 3. How construction activities can impact the environment; 4. What can be done to mitigate against such impacts; 5. Awareness of emergency and spills response provisions; 6. Social responsibility during construction e.g. being considerate to local residents. <p>It is the contractor’s responsibility to provide the site foreman with environmental training and to ensure that the foreman has sufficient understanding to pass this information onto the construction staff. This can be done with the assistance of the ECO.</p>	Contractor/ECO and Engineer	During staff induction and on-going
	b. Staff operating equipment shall be adequately trained and sensitized to any potential hazards associated with their tasks	Contractor/ECO and Engineer	During staff induction, followed by on-going monitoring
	c. The Engineer / ECO must be on hand to explain more difficult / technical issues and to answer questions which may be raised.		
	d. The use of pictures and real-life examples is encouraged as these tend to be more easily understood and remembered.		
	e. No operator shall be permitted to operate critical items of mechanical equipment without having been trained by the Contractor and certified competent by the Project Management.		

	<p>f. All employees must undergo the necessary safety training.</p>		
	<p>A4.2 – Worker conduct on site</p>	<p>Contractor/ECO and Engineer</p>	<p>During staff induction, followed by on-going monitoring</p>
	<p>a. A general regard for the social and ecological well-being of the site and adjacent areas is expected of the site staff. Workers need to be made aware of the following rules:</p> <ul style="list-style-type: none"> a. No alcohol / drugs to be present on site, no vehicles or machinery are to be operated whilst under the influence of alcohol or drugs. b. Prevent excessive noise to minimize disturbances to local residents. c. No firearms allowed on site or in vehicles transporting staff to / from the site (unless used by security personnel). d. Bringing pets onto site is forbidden. e. Construction staff are to make use of facilities provided for them, as opposed to ad-hoc alternatives (e.g. fires for cooking, the use of surrounding bush as a toilet facility is strictly forbidden). No fires to be permitted on site. The use of gas-operated cookers for preparation of food on site must be encouraged. f. Trespassing on private / commercial properties adjoining the site is forbidden. g. Only pre-approved security staff and workers shall be permitted to live on the construction site. h. No worker may be forced to do work that is potentially dangerous or for what he / she is not trained to do. i. The staff conduct rules are described in a separate table of Rules (Section F of the EMP). This is aimed at providing staff with the basic information regarding worker conduct on site) 		

A.5 Cultural Environment	A.5.1 Protection of Cultural Environment		
	<p>Prior to the commencement of construction, all the staff needs to know what possible archaeological or historical objective of value may look like, and to notify the Engineer / Contractor should such an item be uncovered.</p> <p>If any artefacts or graves are uncovered during construction, all work on site is to cease and AMAFA as well as the ECO is to be notified for comment. Construction may only commence once approval by AMAFA is granted.</p>	ECO / PM / C	During site set up and on-going.
A.6 Flora and Fauna of Conservation Concern	A.6.1 Search and Rescue		
	a. Should any protected plant species of conservation concern be found on site, the ECO must arrange for a permit before construction commences on site. This applies to pruning or transplanting.	ECO/ Appointed Specialist /C	Prior to clearance of vegetation
	b. A suitably qualified horticultural specialist must be appointed for the transplanting of plant species of conservation concern, should there be any.		
	c. A search and rescue must also be conducted for faunal (animal) species of conservation concern of the site prior to the commencement of site clearance/vegetation removal.		
	d. No plant species (SCC or common) should be harvested or removed from site without approval from the ECO or Applicant in writing.		
	e. If any protected species die during the translocation process, specimen loss must be offset at a ratio of 1:3.		
f. Environmental awareness training must be conducted by the ECO before any new staff commence with work on site.	ECO	Ongoing	

Construction Phase

Activity	Management / Mitigation	Responsibility	Frequency / Timing
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<p>Vegetation Removal</p>	<ul style="list-style-type: none"> • Vegetation removal must be minimized. • The construction area must be demarcated and all areas beyond the demarcated area must be treated as no-go areas. No clearance of vegetation must be allowed to take place outside of the construction footprint. • The appointed ECO must be given the chance to mark indigenous vegetation on the site prior to the commencement of any vegetation clearance. • Where indigenous vegetation as marked needs to be removed, the correct procedure must be followed. • All areas cleared for construction purposes must be re-vegetated with indigenous vegetation/grass upon completion of construction works with no areas to be left bare. 	<p>Contractor/Developer and ECO</p>	<p>Pre-, during and post construction.</p>
<p>Fauna Protection</p>	<ul style="list-style-type: none"> • Any excavations or holes must be checked regularly for fauna that may have either occupied the area or may fallen in accidentally. The design of deep excavations should consider nearby fauna (especially reptiles). • Any lighting must not point outwards toward any natural habitat and should be focused downwards or towards the development. • No killing of fauna must be tolerated. • Should any fauna species of conservation concern be observed during the construction phase, the Competent Authority must be informed and construction works must cease until such a time that investigation is conducted and concluded. • Any recorded mortalities of the aforementioned species should be reported to the CA and construction should be halted pending an investigation. 	<p>ECO/Contractor</p>	<p>Construction Phase and Ongoing</p>

<p>Soil Erosion</p>	<ul style="list-style-type: none"> • Soil erosion must be reduced by controlling the amount of space that is cleared of vegetation. • Cleared areas must be developed as soon as possible and not left bare for extended periods of time. The Contractor must at all times be aware of the weather forecast for the area and as such all clearing activities must be postponed when high rainfall is expected. • Topsoil monitoring (depth and soil testing) must take place prior to soil stripping and backfilling. The ECO must determine if the quality of soil is satisfactory, prior to backfilling. • Topsoil must be sequentially removed in accordance with the requirements on site. • All topsoil must be adequately stored: <ul style="list-style-type: none"> ○ On a Flat surface; ○ Below two metres; ○ Suitably covered if stored for prolonged periods of time. ○ Separate from sub-soil and other stockpiles. ○ Not near watercourses • Stormwater management on site must be such that the erosion potential of the stormwater is reduced or the stormwater is directed away from exposed surfaces. • All temporary embankments that are considered sensitive to erosion must be adequately retained and supported (sandbags, fascine work, retaining blocks etc.). • Silt traps must be used to control silt from being washed off site and into the surrounding watercourse / wetlands or natural habitat. • Areas where vegetation had been removed for construction purposes must be promptly re-vegetated once the work on that particular section has been completed. Vegetation used must be indigenous trees or grass. 	<p>Contractor/Engineer and ECO</p>	<p>Throughout the Construction Phase</p>
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	<ul style="list-style-type: none"> • All temporary erosion and sediment control measures must be monitored for the duration of the construction phase and repaired immediately when damaged. All temporary erosion and sediment control structures must only be removed once vegetation cover has successfully recolonised the affected areas. • After every rainfall event, the contractor must check the site for erosion damage and rehabilitate this damage immediately. Erosion rills and gullies must be filled-in with appropriate material and silt fences or fascine work must be established along the gully for additional protection until vegetation has re-colonised the rehabilitated area. 		
<p>Pollution</p>	<ul style="list-style-type: none"> • All workers must undergo environmental induction which must include best practice allowed on site such as waste disposal at the designated areas. • All waste within the site must be stored in a designated waste storage area. Closed bins must be used for storage of general waste. • Waste from the site must be regularly disposed of at the nearest landfill site and waybills/receipts must be kept as proof of safe waste disposal. • Waste must not under any circumstances be left to accumulate on site. • Waste on site may not be buried or burned. • All disposal of construction waste must be approved by the ECO and Engineer and must in such a manner that is does not culminate in on-site or off-site environmental. 	<p>Contractor/Engineer and ECO</p>	<p>Throughout the Construction Phase</p>

<p>Soil contamination</p>	<ul style="list-style-type: none"> • There must be designated storage areas for potentially hazardous substances which must be equipped with a fire extinguisher. All storage of potentially hazardous substances including paint must be in line with the provisions of Hazardous Substances Act (Act 15 of 1973). • A bunded area must be established where high amounts of fuel are to be stored on site and such bunded area must be able to store the full capacity of the storage container(s) placed on it. • A spill kit must be provided on site and used to clean up any minor spills that occur on the site. Such soil must be stored as hazardous waste and be disposed of as advised by the Appointed ECO. • Spills must be reported to the Department of Human Settlements, Water and Sanitation, Msunduzi Local Municipality, Umgungundlovu District Municipality and KZN Department of Economic Development, Tourism and Environmental Affairs. • All vehicles must be kept in good working condition and any spills/leaks observed must be attended to immediately. Drip trays must temporarily be placed under vehicles observed to be leaking until such time that they are serviced if they cannot be fixed immediately. • Drip trays must be provided and used accordingly when dealing with fuel and other hazardous substances. • Concrete mixing must only take place on mixing trays or on impermeable liners. • Concrete trucks must not be washed out or cleaned on the site or other area near the site, unless such cleaning will not cause any environmental harm. 	<p>Contractor/ECO and Engineer</p>	<p>During site set up and on going</p>
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<p>Nuisance: Noise and Dust</p>	<ul style="list-style-type: none"> • Noise Control Regulations (Regulations 154, 10 January 1992) of the Environmental Conservation Act (Act No. 73 Of 1989) must be adhered to. • Noise levels on site must be kept as low as possible at all times throughout the construction phase. • Construction workers must not be allowed to play loud music on site. • Construction operations must be restricted to daylight period, Monday to Saturday, and must adhere to legally stipulated hours (7.00 – 18.00). • The residents near the site must be informed when the construction phase of the proposed development is about to commence. • All construction vehicles and plant must adhere to the recommended speed limits for the road used to get to the site. • Where necessary, a water cart must be used to spray water on the road to suppress dust. 		
<p>Spread of alien plants</p>	<ul style="list-style-type: none"> • An Alien Plant Eradication plan must be drawn up and implemented throughout the construction phase. • Where alien plant species are observed growing on cleared spaces, they must be mechanically removed. • Exposed areas must be re-vegetated with indigenous plants upon completion of activities on the affected areas. 	<p>Contractor/Engineer and ECO</p>	<p>Throughout the Construction Phase</p>
<p>Visual Impacts</p>	<ul style="list-style-type: none"> • Vegetation around the site must not be disturbed. • Disturbance of the surrounding environment must be minimized. • The aesthetics of the facility must be in line with the requirements of the Municipality. 	<p>Contractor/Engineer and ECO</p>	<p>Throughout the Construction Phase</p>

<p>Socio-Economic</p>	<ul style="list-style-type: none"> • The local leadership including the ward councilor must be engaged for the appointment of locals. • The terms and conditions of employment must be clearly explained to those appointed including how much they will earn, when they will be paid and the payment method. • Use of local labour must be maximized as far as is allowed for within the budget for the development. • The Contractor along with the Developer must consider any possible form of certification for the workers to endorse the skills they displayed. Additionally, some of the workers may be sent to train for skills such as First Aid skill which they can use within the community but can also help with improving their employability. • Employee rights according to the Employment Act must be respected at all times. 	<p>Contractor/Engineer and Developer</p>	<p>Throughout the Construction Phase and for the duration of the project activity</p>
<p>Health and Safety</p>	<ul style="list-style-type: none"> • All requirements of the Occupational Health and Safety Act (Act No. 85 of 1993) must be complied with. • All necessary signage must be displayed within and around the site. • Only workers with the required licenses may be permitted to operate plant, machinery and vehicles. • All workers must be provided with the necessary Protective Clothing (PPE) for the tasks they are expected to complete and use of such PPE must be enforced. • Standard road safety measures must be followed by all plant and vehicle drivers. • Extra caution must be exercised in areas with high number of pedestrians, in particular areas near schools where children may be crossing the streets. • Workers must at all times be provided with clean drinking water. 	<p>Contractor/Engineer/Health and Safety Officer and ECO</p>	<p>Throughout the Construction Phase</p>

	<ul style="list-style-type: none"> • Clean and hygienic mobile toilets must be provided for workers throughout the construction phase. Such toilets must regularly be serviced by an approved service provider to ensure that they are clean and safe to use at all times. • Emergency procedures must be explained to all workers in case of occurrences such as a fire breakout. 		
<p>Heritage Impact</p>	<p>Where any heritage resources are uncovered during the construction phase, the measures below must be implemented.</p> <ul style="list-style-type: none"> • Amafa must be contacted if any heritage objects are identified during earthmoving activities, and all development must cease until further notice. • Amafa must be contacted if any graves or heritage objects are identified during construction and the following procedure is to be followed: <ul style="list-style-type: none"> ▪ Stop construction ▪ Report finding to local police station ▪ Report to Amafa to investigate • Sources of all-natural materials (including topsoil, sands, natural gravels, crushed stone, asphalt etc) must be obtained in a sustainable manner and in compliance with the heritage legislation. • No archaeological sites, nor artefacts, were noted in the study area, therefore no further mitigation is required. <p>Should any Palaeontological Material be uncovered a Palaeontologist must be called in to investigate.</p>	<p>Contractor/Engineer and ECO</p>	<p>Throughout the Construction Phase</p>

Operation Phase

Activity	Management / Mitigation	Responsibility	Frequency / Timing
<p>Health and Safety Impacts</p>	<ul style="list-style-type: none"> • Fire extinguishers must be made available according to the standards taking into consideration the size of the development in terms of the number of and positioning of the fire extinguishers. • All employees must be familiar with emergency evacuation procedures. • Where possible the facilities must be equipped with a sprinkler system in case of a fire incident. • Each of the buildings must be equipped with a first aid equipment that is sufficient for the number of employees/occupants according to the Occupational Health and Safety Act and associated guidelines. <p>All components of the development involved in selling food items must adhere to applicable safety standards for food storage and preparation.</p>	<p>Developer</p>	<p>Throughout the Operational Phase</p>

<p>Operation of Fuel Station and associated facilities</p>	<ul style="list-style-type: none"> • SANS 10089-3 must be adhered to with regards to installation, modification, and decommissioning of underground storage tanks, pumps/dispensers and pipework. • The leak detection system will be accordingly installed. Other applicable standards may include but not be limited to: <ul style="list-style-type: none"> ○ SANS 10400 TT 53 (Section 1-6) ○ SANS 10131 ○ SANS 10108 ○ SANS 11535 • The UST is to be inspected before installation for damage and repair to be done according to SABS 1535 (Class – reinforced polyester coated steel tanks, including jacketed tanks, for the underground storage of hydrocarbons and oxygenated solvents and intended for burial horizontally). • SANS 10089 Parts 2 & 3 which requires: <ul style="list-style-type: none"> ○ The installation of a leak detection system including observation and monitoring wells situated around the tank to facilitate early warning that a leak has arisen. ○ The provision of a plastic sheet below the tank that slopes towards an observation well. ○ Installation of leak detectors on pressure systems. • The UGST must be dipped daily and reconciled against volume to check for loses due to leakage. • The tanks and product lines must be pressure tested prior to commissioning. • The plastic sheet below the tanks will be installed as a preventative measure in case of a leak. • Contain spill by using PEAT and SORB cushion (PEAT and SORB are environmentally friendly oil absorbent products / fine material suitable for most spills). • Most petroleum companies have well-established procedure to follow in the event of a spill (oil, fuel or other), like acting immediately on receiving information, which includes: <ul style="list-style-type: none"> ○ The time date and location of the spill. ○ Estimation of the volume of product involved in litres. ○ The type of product involved. ○ Any other pertinent information 	<p>Developer</p>	<p>Construction and throughout operation phase</p>
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	<ul style="list-style-type: none"> • The tank pit must be lined with a heavy-duty HDPE liner and only free draining granular fill must be used to backfill this excavation. • The base of the tank pit must be V-shaped and graded to a sump to allow collection of any hydrocarbon product leaking from filler and dip point manholes. • Tank pit monitoring wells must be installed down into the base of the tank pit within the liner to check for any hydrocarbon leaks or subsoil spillage. • A concrete cover slab must be cast over the tank pit area to protect the UGST's. This slab must be dish shaped to capture any surface fuel spillage and contaminated run-off. • The stormwater generated on the forecourt area, tank pit area and fuel fillers must be captured in a grid drain linked to a sealed separator system, to prevent contamination from accidental spillages overflowing, as this might migrate into the down gradient streamline. • The separator system must be monitored and cleared regularly to prevent free-phase hydrocarbon liquids from discharging off site. • Runoff from the fuel forecourt and car wash must be collected into the separator system and not be discharged into the natural stormwater channel or surrounding environment. • A plan will be submitted to Msunduzi Local Municipality for approval prior to construction commencing relating to management of water, sediments and stormwater in relation to the storage tanks and pipe work. This will be lodged together with building plans for proper alignment with existing municipal stormwater plans approved by municipal engineers. 		
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<p>Groundwater Contamination</p>	<ul style="list-style-type: none"> • The sewer system and underground fuel storage tanks must be monitored for leaks and should any leaks be picked up; they must be urgently attended to. • Waste disposal must take place accordingly through municipal waste disposal or other method. Waste must not in any case be buried or burned or disposed of on the surrounding environment or in any manner that may be harmful to the environment. 	<p>Contractor/Engineer and ECO</p>	<p>Throughout the Operational Phase</p>
<p>Fragmentation and ecological disturbance impacts</p>	<ul style="list-style-type: none"> • Controlling both direct and indirect impacts of the proposed development will be key in ensuring the sustainability of this development. • Mitigating noise and light impacts will be difficult to enforce during the operation of the site, however lighting design to avoid casting light onto wetlands systems as habitats. Edge impacts and alien plant infestation impacts can be quite easily controlled through maintenance activities. • Edge effects whilst unavoidable should be carefully controlled by applying mitigation techniques early, and loss of ecosystem function should be controlled by careful monitoring and avoidance of any activities from taking place outside of the proposed development footprint. 	<p>Developer/Engineer</p>	<p>Construction and Operation Phase</p>
<p>Erosion and Stormwater Management</p>	<ul style="list-style-type: none"> • All stormwater from hardened areas (roof and paved areas) should be collected and discharged in a carefully controlled manner according to the engineer's specifications. • Under no circumstances should water be allowed to discharge onto the ground near the foundations. It is further recommended that concrete aprons be constructed around the perimeter of the structures if there no rigid or flexible pavement. 	<p>Developer</p>	<p>Construction and Operation Phase</p>

Decommissioning Phase

The activity is not expected to have a decommissioning phase. However, upon completion of the construction phase:

The ECO must inform EDTEA of the upcoming completion of the construction phase.

A final site assessment must be conducted to ensure that:

- All rubble and any other waste has been removed from the site and properly disposed of.
- All disturbed areas have been re-vegetated accordingly.
- All areas which may have been contaminated have been cleared of contaminants and all other possible contaminants which will not be used for the operation phase have been removed from the site.
- All temporary services which had been commissioned for the purpose of the construction phase must be decommissioned without any harm to the environment.
- A final report must be submitted to EDTEA on rehabilitation measures implemented and recommendation on whether any further action is required.

EDTEA will need to be informed of the intended commencement of the operational phase as set out in the EA issued for the project.

J. CONCLUSION

According to the National Environmental Management Act, 1998 everyone must take reasonable measures to ensure that they do not pollute the environment. In this regard the reasonable measures will include informing and educating employees about environmental risks of their activities and instill a sense of environmental consciousness.

It is therefore, crucial that all recommendations are adopted and effected to the letter during all phases of this development as part of the mitigation measures. It must also be kept in mind that the Environmental Management Programme is a live document, that need adjustment as the need arise, as long as such changes are in the interest of the environment.