



Mc CORMICK PROPERTY DEVELOPMENT



DRAFT ENVIRONMENTAL MANAGEMENT PLAN FOR THE PROPOSED ESTABLISHMENT OF A FILLING STATION AT MAAKE PLAZA SHOPPING CENTRE ON PART OF THE REMAINDER OF THE FARM RITA 668-LT, TZANEEN AREA, LIMPOPO PROVINCE

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POLYGON

ENVIRONMENTAL PLANNING



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ACRONYMS AND ABBREVIATIONS:	
AGES	Africa Geo-Environmental Services
BCT	Bakgaga Community Trust
BID	Background Information Document
DRDLR	Department of Rural Development and Land Reform
DWA	Department of Water Affairs
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMP	Environmental Management Plan
ESR	Environmental Scoping Report
GTM	Greater Tzaneen Municipality
Ha	Hectare
HIA	Heritage Impact Assessment
I&AP	Interested and/or Affected Party
LDEDET	Limpopo Department of Economic Development, Environment and Tourism
LIHRA	Limpopo Heritage Resources Agency
LPG	Liquid Petroleum Gas
MPD	Mc Cormick Property Development
MHI	Major Hazard Installation
NEMA	National Environmental Management Act (1998)
NEMWA	National Environmental Management: Waste Act (2008)
NWA	National Water Act (1998)
OHSA	Occupational Health and Safety Act (No 85 of 1993)
RAL	Roads Agency Limpopo
RSA	Republic of South Africa
SAHRA	South African Heritage Resources Agency
SCBA	Self-contained breathing apparatus
SDS	Safety Data Sheet
TSA	Total South Africa

1. INTRODUCTION AND PROJECT DESCRIPTION

1.1. Introduction

Polygon Environmental Planning CC was appointed by Mc Cormick Property Development (MPD) to conduct an Environmental Impact Assessment (EIA) for the proposed establishment of a filling station at the existing Maake Plaza shopping centre on part of the Remainder of the farm Rita 668-LT. The proposed development site is situated in the Maake area in the Greater Tzaneen Municipality (GTM), which forms part of the Mopani District of the Limpopo Province. The site of approximately 0.17 ha in extent forms part of the Maake Plaza premises.

An application for environmental authorisation has been submitted to the Limpopo Department of Economic Development, Environment and Tourism (LDEDET), the decision-making authority in this regard, and both the scoping and impact assessment phases of the EIA have been concluded. The results of the EIA are contained in the Environmental Impact Report (EIR) which accompanies this Environmental Management Plan (EMP), whilst measures for the prevention, minimisation and/or mitigation of potential impacts of the proposed shopping centre are set out in this EMP.

The draft EMP, together with the draft EIR are currently available for review and comment by the public and by Interested and/or Affected Parties (I&APs) from 2 June to 5 August 2010.

1.2. Site Description

The filling station is proposed to be developed on a section of land in the north-western corner of the premises of Maake Plaza shopping centre, which in turn is situated on the south-eastern corner of the junction of the R36 (Tzaneen - Lydenburg road) and the D4075 road which leads from the R36 into Rita and Maake. The proposed filling station site is approximately 1 700m² (0,17 ha) in extent and currently consists of landscaped gardens.

The land belongs to the Republic of South Africa (RSA) and is managed by its Department of Rural Development and Land Reform (DRDLR, previously the Department of Land Affairs – DLA). The Bakgaga ba Maake tribe, represented by the Bakgaga Community Trust (BCT), are the custodians of this land and the applicant, MPD, is leasing the proposed site from the Bakgaga ba Maake Traditional Authority.

The site is zoned as Business 2, which makes provision for *inter alia* a filling station. No re-zoning will therefore be required for establishment of the proposed filling station. Surrounding land use is a mixture of mainly commercial and residential uses which are partly informal and partly formalised

1.3. Project Description

It is proposed that a filling station with an underground fuel storage capacity of 115m³ and an associated convenience shop be developed on the premises of Maake Plaza shopping centre to serve visitors to the centre, members of the local community and passing traffic. The forecourt is to contain customer parking bays and four pump islands. The filling station will not be fenced off from the rest of the shopping centre and is proposed to share the shopping centre's main entrance. Please refer to

the proposed layout map in Appendix B of the accompanying Environmental Impact Report (EIR), in conjunction with which this EMP should be read.

Water to the proposed facility is to be obtained from an existing borehole situated approximately 400m from the site, which also serves Maake Plaza shopping centre. **Ablutions** at the facility are to be connected to the sewerage system which has been established on the site of Maake Plaza shopping centre, and which consists of a septic tank and oxidation ponds. **Electricity** is available at the site and will be provided by the GTM on behalf of Eskom.

Solid waste generated at the proposed facility is proposed enter the municipal waste stream. Waste will be sorted into recyclable and non-recyclable materials, with non-recyclable waste to be collected by the GTM and disposed of at the municipal landfill site, and recyclable waste collected by a recycling contractor on a regular basis, as is currently done with the shopping centre's waste. The recycling contractor will distribute the different types of recyclable waste to relevant recycling facilities. Solid waste will be temporarily stored in a refuse cage in the walled yard behind the convenience store, where it will await collection by the GTM.

Access to the proposed filling station site is to be from the main entrance to the shopping centre and taxi rank, which is from the D4075 road. This is required in terms of the BB2 standards (*Guidelines for Accesses to Filling Stations*) published by the Gauteng Department of Public Transport, Roads and Works (Gautrans).

2. OBJECTIVES OF THE ENVIRONMENTAL MANAGEMENT PROGRAMME

The purpose of the Environmental Management Plan is to provide measures for the mitigation and management of potential negative impacts and the optimisation of potential positive impacts that may be associated with the proposed filling station, during the construction, operational and potential de-commissioning phases.

In addition to recommending measures for impact prevention, mitigation and/or management, this EMP provides the structure according to which environmental monitoring must be done – not only over the short term during construction, but also over the long term during the operation of the filling station.

3. LEGISLATIVE FRAMEWORK

In terms of Regulation No. R. 387 of the EIA Regulations (2006), published in terms of section 24(5) read with section 44 of the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998), environmental authorization is required for this proposed project. To this end, an EIA was required to be conducted. The following listed activities are applicable to this proposed project:

Table 3.1: Applicable controlled activities in terms of the EIA regulations

R. 386 ACTIVITY NR	ACTIVITY DESCRIPTION
3	The construction of filling stations, including associated structures and infrastructure, or any other facility for the underground storage of a dangerous good, including petrol, diesel, liquid petroleum gas or paraffin.

Table 3.2: Applicable national and provincial legislation

LEGISLATION	RELEVANT SECTIONS	PERTAINS TO
Constitution Act (No 108 of 1996)	Chapter 2, Section 24	Bill of Rights: Environmental rights
Conservation of Agricultural Resources Act (Act No 43 of 1983), as amended	Part 5	Prohibition of the spreading of weeds
	Part 6	Control measures
Development Facilitation Act (No 67 of 1995)	Chapter 1	General principles for land development and conflict resolution.
Limpopo Environmental Management Act, 2003 (No 7 of 2003)	Schedule 2, 3, 11 and 12	Lists of protected animals and plants
National Environmental Management Act (No 107 of 1998) and regulations	R. 386 and 387	Environmental Impact Assessment
	Section 2	Guiding principles
	Section 23	General objectives
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
National Environmental Management: Biodiversity Act (No 10 of 2004)	Section 57	Restricted activities involving listed threatened or protected species
	Sections 65–69	Regulation of activities involving alien species
	Sections 71, 73 and 75	Regulation of activities involving invasive species
National Environmental Management: Waste Act (No 59 of 2008)	Chapter 3	Reduction, re-use, recycling and recovery of waste
	Chapter 5	Storage, collection and transportation of waste
	Chapter 6	Treatment, processing and disposal of waste
National Heritage Resources Act (No 25 of 1999)	Section 34	Protection of structures older than 60 years
	Section 35	Protection of archaeological and palaeontological sites and material as well as meteorites
	Section 36	Conservation of burial grounds and graves
	Part IV	Control of environmental pollution, including waste management and prohibition of littering)
National Water Act (No 36 of 1998)	Section 19	Prevention and remedying effects of pollution, particularly where pollution of a water resource occurs or might occur as a result of activities on land
	Section 20	Control of pollution of water resources following an emergency incident
	Chapter 4	Governs water use

	(Sections 21-55)	
Occupational Health and Safety Act (No 85 of 1993)	All	Provides for the health and safety of persons at work and in connection with the use of plant and machinery, and protection against health and safety hazards.
State Land Disposal Act (No 48 of 1961)	Section 2	Disposal of state land by the president.
Petroleum Products Act (No 120 of 1977)		Licensing for operation of a filling station.
Promotion of Administrative Justice Act (No 3 of 2000)	The whole	The right to administrative action that is lawful, reasonable and procedurally fair, and to the right to written reasons for administrative action as contemplated in section 33 of the Constitution; and to provide for matters incidental thereto.

The following municipal by-laws are applicable to the proposed development.

Table 3.3: Applicable municipal by-laws

BY-LAW	PERTAINS TO
Greater Tzaneen Municipality (GTM) Flammable Liquids By-Law (2004)	Control of flammable liquids.
GTM Refuse By-Law (2004)	Handling and disposal of refuse.
GTM Drainage By-Law (2004)	Matters pertaining to drainage, including drains & manholes, sewerage, storm water, wastewater fittings & fixtures, and other related matters.
GTM Waste Management Plan (2006/07)	Strategies and programmes for waste minimization; collection, transportation, disposal and treatment of waste; pollution control.
GTM Corporate Disaster and Emergency Plan (date of compilation unknown)	To outline policy and procedures for the both the proactive disaster prevention and the reactive disaster response and mitigation phases of Disaster Management. It is intended to facilitate multi sectoral coordination in both pro-active and reactive programmes.

The following SANS standards are applicable and will be adhered to in the establishment of this proposed facility:

Table 3.4: Applicable SANS standards

Standard:	Pertains to:
SANS 10400	Fire fighting equipment
SANS 1123	Piping
SANS10062	
SANS 10142	Electrical installation
SANS 1012	

SANS 10108	
SANS 10089-2	
SANS 1109	
SANS 1535: 2005	Tank standards
SANS 1830: 2006	Piping standards
SANS 10131 part 2	Pumps and underground tanks
SANS 1186	
SANS 10089	
SANS 10089-3	Stop switch
SANS 1186-1	Symbolic safety signs: "No Smoking" and "No Open Flame"

In addition to design standards to which the proposed facilities must adhere, certain safety standards are also required to be adhered to during transport of fuel to the proposed filling station:

Table 3.5: SANS standards applicable to transport of fuel

Standard:	Pertains to:
SANS 1518	Transport of dangerous goods – design, construction, testing, approval and maintenance of road vehicles and portable tanks
SANS 10228	The identification and classification of dangerous goods for transport
SANS 10229-1	Transport of dangerous goods – packaging and large packaging for road and rail transport Part 1: Packaging
SANS 10231	Transport of dangerous goods – operational requirements for road vehicles
SANS 10232-1	Transport of dangerous goods – emergency information systems Part 1: Emergency information system for road transport
SANS 10233	Transport of dangerous goods – intermediate bulk containers for road and rail transport
SANS 10263	The warehousing of dangerous goods – enclosed storage areas and covered and uncovered outdoor storage yards

Table 3.6: Applicable provincial guidelines

Guideline:	Issued by:	Pertains to:
EIA Administrative Guideline: Guideline for the Construction and Upgrade of Filling Stations and Associated Tank Installations (2002)*	Gauteng Department of Agriculture, Conservation, Environment and Land Affairs (GDACEL)	Specifies minimum requirements for the establishment of filling stations.
BB2 standards: Guidelines for Accesses to Filling Stations	Gauteng Department of Public Transport, Roads and Works (Gautrans)	Access to Filling Stations

* The then Gauteng Department of Agriculture, Conservation, Environment and Land Affairs' (GDACEL's) (now GDACE - Gauteng Department of Agriculture, Conservation and Environment) EIA Administrative Guideline for the construction and upgrade of filling stations and associated tank installations (2002) has been adopted by L DEDET, as there is no equivalent guideline or legislation

relating particularly to the Limpopo province. The guidelines and requirements contained in this guideline are therefore also considered to be applicable to the Limpopo province.

4. MANAGEMENT AND MITIGATION MEASURES:

CONSTRUCTION PHASE

Responsibility: Impact prevention, mitigation and/or management measures during the construction phase are ultimately the responsibility of the developer, although the lead contractor will be responsible for the day-to-day implementation of the EMP, and different components may be implemented by different sub-contractors, for instance erosion control measures will mostly be the responsibility of the earthworks contractor.

Timeframe: The measures specified in the following sections for minimisation and mitigation of construction-phase impacts will be limited to the construction phase, after which the recommended operational phase measures will become applicable.

Monitoring: Environmental compliance monitoring should be done by an independent Environmental Control Officer (ECO) on a bi-weekly basis. Should any instances of non-compliance be found, this must be brought to the attention of the contractor or site foreman, along with recommended measures for rectifying the non-compliance. Monitoring reports, indicating the level of compliance with the specifications of the EMP, must be submitted to LDEDET by the ECO at six-monthly intervals and at the end of the construction phase.

Table 4.1: Mitigation measures applicable to anticipated construction-phase impacts

ASPECT	ISSUE / IMPACT / RISK	OBJECTIVE	RECOMMENDED MITIGATION MEASURES
<i>1. Soils</i>			
1.1. Soil erosion	Clearing of vegetation during earthworks will make the site susceptible to soil erosion in case of rains during the period that bare soil is exposed.	1.1.1. Limit the risk of soil erosion.	It is recommended that earthworks and site preparation be undertaken during the drier winter season.
			Limit the area cleared of vegetation to as small an area at a time as possible. Where possible, the site should be cleared in stages to limit the area exposed at any one time.
			If possible, storm water should be channelled away from the exposed area for the duration of construction.
			Soil stockpiles (if any) must <u>not</u> be placed in the natural flow path of storm water and must be protected from possible erosion, e.g. through covering of the stockpiles with tarpaulin or hessian, and limiting the height and angle of the stockpile. Soil stockpiles should not exceed 2 m in height.
		1.1.2. Effectively remediate erosion if it does take place.	Should any signs of erosion be found, remedial action such as backfilling, compaction and re-vegetation should be taken immediately to avoid exacerbation of the erosion.
			Any erosion channel(s) that may develop should be backfilled and compacted as soon as possible, and the area(s) restored to a proper condition. The contractor should ensure that cleared areas are effectively stabilised to prevent and control erosion.
On steep slopes, to secure soils until such time as vegetation has re-established, geo-textiles or terraforce bricks can be used.			
<p>It is the responsibility of the Contractor to ensure that cleared areas are effectively stabilised to minimise erosion. The following are examples of methods that can be employed to this end:</p> <ul style="list-style-type: none"> - mulch or chip cover; - straw stabilising; - watering (with or without added dust control substances such as soil 			

ASPECT	ISSUE / IMPACT / RISK	OBJECTIVE	RECOMMENDED MITIGATION MEASURES
			<ul style="list-style-type: none"> binders and anti-erosion compounds); - planting/sodding; - hand seeding/ sowing; - hydroseeding; - mechanical cover or packing structures; - gabions; - hessian cover; - geofabric or shade net silt fences.
1.2. Soil contamination	Possible contamination of soil by wastewater during construction	1.2.1. Prevent infiltration of sewage into soil.	<p>No pit latrines are allowed on the site. Workers must be provided with portable chemical toilets which form a sealed, closed system, or alternatively must be provided with temporary toilets linked to the existing sewerage system which serves Maake Plaza shopping complex.</p> <p>Sanitation facilities must be provided at a ratio of 1 toilet per 15 workers.</p> <p>Chemical toilets must be placed on level ground to prevent possible leakage.</p> <p>Waste from the chemical toilets must be disposed of at a licensed sewerage works, such as the sewerage plant in Tzaneen.</p> <p>Emptying of chemical toilets and transport of waste from these units to the sewerage works must take place in such a way that no waste is spilled.</p> <p>Chemical toilets should be emptied and cleaned at regular intervals to prevent overflowing of these units, and must be done by a reputable contractor or by the municipality.</p> <p>There are no drainage lines on or directly surrounding the site, therefore is no risk of toilets being placed within the 1:100 year flood line of any drainage line.</p> <p>Workers must be discouraged from using the veld for sanitary purposes.</p> <p>Sufficient washing facilities must be provided for workers. Wash areas must be placed and erected in such a manner that the surrounding areas, including soil and groundwater, are not polluted.</p>

ASPECT	ISSUE / IMPACT / RISK	OBJECTIVE	RECOMMENDED MITIGATION MEASURES
			Any soil contaminated during construction must be removed to a suitable disposal site.
		1.2.1. Prevent spillage of water potentially contaminated by cement, paint, turpentine, etc.	There are no surface water sources on the proposed development site. However, the Contractor must still prevent the discharge of any pollutants, such as cement, concrete, lime, chemicals, fuels or contaminated water which might infiltrate into the ground, resulting in deterioration of groundwater quality.
			Mixing of cement must take place on an impermeable surface (e.g. concrete slab) which should preferably be bunded.
			Potentially contaminated water may not be allowed to flow into the storm water drainage system or to infiltrate into the soil.
		1.2.3. Efficiently respond to any spillage	In case of any spillage, the ECO must be informed so that he/she can investigate the incident and recommend appropriate mitigation measures.
			Any significant spillage must be reported to the Department of Water Affairs (DWA), who may need to conduct a site visit to determine the significance of the spillage and to recommend mitigation measures. The incident must also be reported to the Limpopo Department of Economic Development, Environment and Tourism (LDEDET) by the ECO.
			Measures must be implemented to prevent a recurrence of a spillage event.
1.3. Loss of fertile topsoil	Fertile topsoil will be lost to construction.	Topsoil must be reused in landscaped areas.	Removed topsoil must be stored for later use in landscaping. It should not be used as backfill material.
			Prolonged stockpiling of topsoil should be avoided in favour of returning the topsoil directly to an area to be landscaped.
2. Water			
2.1. Water quality	Possible leakage or spillage of sewage from portable toilets during construction phase, or contamination of water by runoff	2.1.1. Prevent spillage of sewage.	Refer to 1.2.1.
		2.1.2. Prevent spillage of water potentially contaminated	Refer to 1.2.2.

ASPECT	ISSUE / IMPACT / RISK	OBJECTIVE	RECOMMENDED MITIGATION MEASURES
2.2. Storm water	containing construction-related substances such as cement or paint.	by cement, paint, turpentine, etc.	
	Storm water may cause soil erosion on cleared construction site.	2.1.3. Efficiently respond to any spillage	Refer to 1.2.3.
		2.2.1. Minimize water-related soil erosion	If possible, storm water should be channelled away from the exposed area for the duration of construction.
3. Flora and Fauna			
3.1. Temporary loss of habitat	Habitat is currently provided by existing trees onsite, which will be lost to construction. Trees will be planted elsewhere onsite to replace those that will be lost, but it will be some time before these trees are sufficiently mature to provide in the food and nesting requirements of e.g. birds and insects.	3.1.1. Minimize disturbance to fauna dependent on onsite trees.	Site preparation and construction should start in the autumn or winter seasons, when birds are unlikely to be nesting.
			Replacement trees should be planted elsewhere on the site as soon as possible, preferably in spring or summer directly after completion of earthworks.
3.2. Fauna	Possible killing of certain fauna, such as insects, snakes (or other reptiles), or spiders out of fear.	3.2.1. Prevent killing of fauna	Educate labourers as to the importance of not simply killing all snakes and other fauna that is perceived as dangerous.
			Keep contact details in the site office for someone who can be called if catching and relocation of snakes, spiders or other unwanted species is needed.
	Possible killing of non-target fauna through poisoning of pests such as rats or insects.	3.2.2. Limit the use of chemicals to avoid unwanted negative impacts on non-target organisms	Use of chemicals (pesticides, etc) must be restricted to the absolute minimum, as such chemicals can have negative effects on non-target organisms such as birds feeding on poisoned rats or insects.
If pesticides, herbicides, insecticides, etc are used, blanket application must be avoided in favour of spot application.			
			Target-specific chemicals must be used (if chemicals have to be used), rather

ASPECT	ISSUE / IMPACT / RISK	OBJECTIVE	RECOMMENDED MITIGATION MEASURES
			than broad-spectrum types of pesticides, etc.
4. Air quality			
4.1. Air quality	Possible air pollution in the form of emissions from construction vehicles and equipment.	4.1.1. Limit air pollution	It must be ensured that all vehicles entering the site and machinery used in construction activities are in good working order to prevent unnecessary emissions. Vehicles should not be allowed to idle for unnecessarily long periods of time.
	Potentially high dust levels during earthworks and site establishment.	4.1.2. Limit levels of airborne dust	The size of the surface area cleared of vegetation at any one time should be kept to a minimum and removal of vegetation should be avoided until such time as clearing is required on that specific section of the site. If necessary, exposed soil must be watered down at regular intervals to reduce levels of air-borne dust. The Contractor must take all reasonable measures to minimise the generation of dust resulting from construction activities. Where possible, soil stockpiles (if any) should be located in sheltered areas where they are not exposed to the erosive effects of the wind. Soil stockpiles should furthermore be covered if possible (e.g. hessian cover or tarpaulin). All exposed surfaces shall be re-vegetated or paved as soon as is practically possible after construction.
5. Waste management			
5.1. Solid waste management	General solid waste generated at the construction site must be disposed of at a licensed disposal site.	5.1.1. Safely dispose of all solid waste.	All solid waste must be disposed of at the Tzaneen landfill site or another licensed waste disposal site.
			Waste may <u>not</u> be dumped on or near the site, <u>nor</u> may it be burned or buried.
			Any soil contaminated during construction must be removed to a suitable disposal site.
			In the event of any hazardous waste being generated, this may <u>not</u> be disposed of with the general waste, but rather must be collected and disposed of by

ASPECT	ISSUE / IMPACT / RISK	OBJECTIVE	RECOMMENDED MITIGATION MEASURES
			suitably licensed hazardous waste contractors.
		5.1.2. Provide sufficient refuse bins and discourage littering.	Sufficient refuse bins are to be provided across the construction area for disposal of general solid waste.
			Refuse bins must be emptied regularly.
			Workers must be instructed as to the importance of not littering.
			Litter, such as there may be, must be picked up on a daily basis and disposed of in the bins provided.
6. Visual impacts			
6.1. Visual impact of construction site	A construction site may present a negative visual impact due to removal of vegetation, a site that might not be neat, etc.	6.1.1. The construction site must be kept as neat and tidy as possible.	Construction workers should be alerted to the importance of not littering. Apart from the potential environmental impacts of littering, it is unsightly and has a negative visual impact.
			Sufficient waste bins must be provided onsite and must be emptied regularly.
			Litter must be picked up as and when necessary.
			Any building rubble should not be allowed to accumulate onsite, but must at regular intervals be removed to the Tzaneen landfill site or other licensed disposal site, or to other construction sites where it may be used as fill.
			Stockpiles of soil or excavated material should be used for backfilling, rehabilitation or landscaping and may not be allowed to remain onsite after construction unless they are shaped to blend into the surrounding topography and re-vegetated.
7. Noise			
7.1. Noise caused by construction activities	Construction-related noise is expected to relate mostly to construction vehicles and machinery involved in earthworks and delivery of materials.	7.1.1. Minimize disturbance to neighbours and to customers of Maake Plaza shopping centre.	Construction activities should only take place during daylight hours and where possible only during normal working hours (08:00 to 17:00 Monday to Friday and 08:00 to 13:00 Saturdays).
			Should noisy activities need to take place outside of accepted normal working hours, neighbouring inhabitants must be notified of this at least 24 hours prior to these activities taking place.

ASPECT	ISSUE / IMPACT / RISK	OBJECTIVE	RECOMMENDED MITIGATION MEASURES
			No blasting is anticipated to be required for this site.
			Any complaints about noise must be attended to in a reasonable manner and the ECO informed of the complaint.
			A complaints register should be maintained, in which any complaints regarding noise are noted.
8. Socio-economic aspects			
8.1. Job creation and economic benefit to local community	Temporary employment opportunities are anticipated to be created during construction, both directly (construction workers) and indirectly (suppliers, service providers, informal traders alongside site).	Maximise local employment and economic benefit.	Where possible, construction workers as well as support personnel such as security guards are to be sourced from the local community (Maake area).
			A Community Liaison Officer (CLO) may need to be appointed to manage the process of procurement of labour from the local community for construction work.
			Construction materials should, where possible, be sourced from within 50km of the site, in order to support the local economy and to reduce the environmental implications of long-distance transport of construction materials.
			Where possible, services required during the construction process, such as rental of chemical toilets, plant hire, etc. Should be sourced from the local area, i.e. from within approximately 50km of the site, in order to support the local economy.
			Informal traders should be allowed to trade alongside the site during the construction phase in order to capitalise on the construction workers who will be likely to purchase food from these traders. However, it must be ensured that informal traders put up shop in safe positions, outside of the construction area itself. Furthermore, no alcohol may be allowed to be sold at these stalls.
8.2. Security	Risk of criminal elements being attracted to the site or construction workers becoming rowdy and violent.	Limit criminality and violence.	No fire-arms to be allowed onsite.
			No alcohol to be allowed onsite.
			Only workers employed on the site may be allowed onto the site and particularly into the construction camp (if any). No friends or other associates of workers may loiter on the site, enter the camp or spend the night onsite.

ASPECT	ISSUE / IMPACT / RISK	OBJECTIVE	RECOMMENDED MITIGATION MEASURES
<i>9. Health and Safety</i>			
9.1. Fire	Construction activities pose a risk of fire, particularly during “hot” activities such as welding, refuelling of equipment / machinery, and if there are open fires (for heating / cooking)	9.1.1. Prevent occurrence of fire.	<p>Extreme caution should be exercised where open flames are used and/or where there is the potential for sparks, such as in the case of blow torches. These activities should only take place in designated areas which are clear of vegetation and other flammable material.</p> <p>Smoking to be restricted to designated smoking areas situated away from flammable materials.</p> <p>No open fires allowed on the site except in designated areas. This includes fires for purposes of cooking, warmth or any other purpose. Vessels should be provided for fires so that labourers do not need to make open fires.</p>
		9.1.2. Effectively and efficiently respond to fire if it does occur.	<p>Emergency numbers (e.g. fire station, doctor, ambulance service and local hospital) must be posted in a highly visible location at the site as well as being available in the safety file in the site office.</p>
			<p>Adequate fire fighting equipment must be available at the site at all times during the construction phase. Such equipment must be clearly visible and easily accessible. Equipment must be available in all areas where construction is taking place as well as in any construction camps and cooking areas.</p>
			<p>It must be ensured that fire-fighting equipment is in good order.</p>
			<p>At least one person trained in the use of the fire extinguishing equipment must be onsite at all times.</p>
			<p>If a site / construction camp is established, the camp must be situated in a position with a low fire risk, e.g. not close to any highly flammable substances (e.g. fuel) nor close to large amounts of dry vegetation, as activities will take place in the camp which may pose a fire hazard, e.g. workers spending the night onsite will use this camp to make fires for cooking and/or heating, and this will most likely also be the designated smoking area (safe for smoking).</p>

ASPECT	ISSUE / IMPACT / RISK	OBJECTIVE	RECOMMENDED MITIGATION MEASURES
9.2. Health and Safety	Workers may be injured onsite during construction.	9.2.1. Apply security measures and ensure that the specifications of the Occupational Health and Safety Act (1993) are adhered to.	The site must be fenced off and access restricted to those involved in construction. Unauthorized persons may be accidentally injured or may cause damage to the site, as they are not aware of the EMP and other relevant documents, e.g. in terms of safety.
			A first-aid kit should be available and readily accessible onsite at all times. At least one person trained in basic first aid should be onsite at all times when construction is taking place, in case of an accident during construction activities.
			Workers may not be forced to do dangerous work.
			Any relevant necessary safety clothing / equipment must be provided to workers.
			Any trenches or holes that cannot be filled in directly, must be clearly cordoned off by means of danger tape (or similar) to reduce the risk of accident.
			Any relevant specifications forming part of the Occupational Health and Safety Act must be complied with.
10. Traffic			
10.1. Traffic disruption	Slow-moving construction-related vehicles may disrupt traffic and pose a risk of road accidents.	10.1.1. Minimize disruption of traffic by construction-related activities.	As far as possible, heavy vehicles associated with construction should not travel to and from the site during peak times (07:00 – 09:00 and 16:00 to 18:00), to minimise impacts on traffic.
			Vehicles associated with construction should as far as possible not be allowed to obstruct the road. They should not stop in the road (wholly or partially) but rather pull off the road or park on the site.
		10.1.2. Limit risks in terms of road safety.	Should construction-related vehicles need to temporarily be parked in or on the shoulder of the road adjacent to the site, appropriate warning signs must be placed at appropriate distances from the vehicles so as to alert oncoming traffic.
11. Construction camp			
11.1. If a construction camp is	Socio-economic impacts.	Minimize negative socio-economic impacts that may be associated with construction	Workers will not be allowed to remain onsite overnight, apart from a small number tasked with security of the site and equipment. The majority of workers are anticipated to be hired from the local area, and will therefore sleep at their

ASPECT	ISSUE / IMPACT / RISK	OBJECTIVE	RECOMMENDED MITIGATION MEASURES
established, bio-physical and socio-economic impacts may be associated with it		camp.	own homes. No alcohol to be allowed in the camp, whether by day or by night. No firearms to be allowed in the camp. No loud music will be allowed within the site / construction camp outside of working hours, so as not to disturb neighbours. Only workers with positive identification (proving that they are working on the site) may enter the construction / site camp or spend the night there. Friends or relatives (or any other acquaintances) of workers will not be allowed into the site camp at any time. The camp must be clearly fenced off and have a lockable gate in order to enforce entry control.
	Bio-physical impacts.	Minimize negative bio-physical impacts that may be associated with construction camp.	The site is not affected by any drainage line or flood line, therefore there is no risk of the site camp being established within any 1:100 year flood line. The camp must be situated in a position with a low fire risk, e.g. not close to any highly flammable substances (e.g. fuel) nor close to large amounts of dry vegetation, as activities will take place in the camp which may pose a fire hazard, e.g. workers spending the night onsite will use this camp to make cooking and/or heating fires, and this will most likely also be the designated smoking area.

5. MANAGEMENT AND MITIGATION MEASURES: OPERATIONAL PHASE

Responsibility: Responsibility for impact prevention, mitigation and/or management measures during the operational phase ultimately rests with the site operator, viz. Total SA, but day-to-day implementation of mitigation / management measures will be the responsibility of the filling station manager.

Timeframe: The measures specified in the following sections for minimisation and mitigation of operational-phase impacts, will be applicable for the entire duration of operation of the filling station.

Monitoring: Groundwater quality monitoring should be done directly down-slope of the site on a six-monthly basis, and the results reported to DWA. Should any groundwater contamination be detected, corrective measures will need to be implemented in consultation with relevant specialists and officials from DWA.

It would be advisable that the EMP be revisited at intervals of 5 years to ensure that changes in site conditions or operation are addressed, as well as to incorporate any new or amended legislation that may be applicable.

Table 5.1: Mitigation measures applicable to anticipated operational-phase impacts

ASPECT	ISSUE / IMPACT / RISK	OBJECTIVE	RECOMMENDED MITIGATION MEASURES
<i>1. Soils</i>			
1.1. Soil erosion	Replacement of vegetated cover by "hard" surfaces (e.g. paving) results in increased peak storm water runoff, which may result in increased soil erosion rates at points where storm water is concentrated and flows from paved areas onto "soft" surfaces.	1.1.1. Limit the risk of soil erosion so that erosion rate is not elevated above the pre-construction natural rate.	<p>It must be ensured that storm water does not reach excessive speeds, as that would increase the potential for soil erosion.</p> <p>Storm water runoff must not be concentrated in any one place or channel where it flows over unpaved (erodible) surfaces.</p> <p>Storm water must be appropriately channelled away from erosion-prone areas such as bare / cleared areas.</p> <p>Storm water must be efficiently channeled into the storm water management infrastructure such as drains (operational phase).</p> <p>Suitable areas of the currently paved area can be replaced by permeable paving to allow storm water runoff to infiltrate, to some extent, into the soil. However, an engineer should be consulted in this regard to ensure that such water infiltration will not compromise stability or cause corrosion fuel storage tanks.</p> <p>Unpaved areas must be vegetated to reduce soil loss due to erosion.</p> <p>Storm water drains must be cleared on a regular basis during the summer rainy season to prevent blockages from impairing the efficacy of the drains.</p>

ASPECT	ISSUE / IMPACT / RISK	OBJECTIVE	RECOMMENDED MITIGATION MEASURES
		1.1.2. Effectively remediate erosion if it does take place.	Should any signs of erosion be found, remedial action such as backfilling, compaction and re-vegetation should be taken immediately to avoid exacerbation of the erosion.
1.2. Soil pollution	Possible leakage, accidental spillage or overfilling of fuel tanks may result in pollution of surrounding soil.	<p>1.2.1. Limit the risk of spillage, leakage and overfilling and detect any leakage as soon as possible.</p> <p>1.2.2. Effectively and efficiently respond to spillage, leakage or overfilling if it does take place.</p>	<p>Groundwater collecting around the underground fuel tanks must be pumped out.</p> <p>As part of the SABS 089-3 requirements, secondary containment features must be installed around the filler points and on top of the tanks. These units are sealed and facilitate the recovery of product in the event of an overflow or spill.</p> <p>A Leak is detected immediately by means of reconciliation of delivery and use/sales.</p> <p>Monitoring wells (installed as per SABS 089-3 regulations) that are installed with the tanks serve as an early warning system.</p> <p>Tanks must be fitted with on-line leak detection, for purposes of pro-actively detecting any potential product loss.</p> <p>Leaks are also detected by means of visual inspection, smell and record keeping of fuel volumes.</p> <p>Water finding tests must be done on a daily basis, before and after fuel delivery, and fuel loss or gain reported in order to detect any leakage.</p> <p>The forecourt will be covered by an impermeable concrete slab, preventing infiltration of spilled oil (from cars) or fuel (from pumping) into the soil.</p> <p>Storm water from the forecourt will be channelled into four catch pits, from where it go to an oil separator / grease trap via an underground UPVC pipe. Water entering the storm water drainage system will therefore be clear.</p> <p>Water used in extinguishing fires may not be allowed to enter the storm water drainage system, as it may be contaminated. Such fire water must be stored for safe disposal by a suitable firm.</p> <p>Oil separator to be inspected and cleaned weekly to ensure continued efficient functioning.</p> <p>Filter and dip manholes must be clear of fuel and water. If not, there might be a leakage which must be investigated.</p> <p>During fuel delivery, wheel chocks must be placed in front of the delivery truck's wheels to prevent it rolling away and risking crash or spillage.</p> <p>Valves must be closed and hoses properly drained before being disconnected from the filler, and the filler caps properly fitted and locked after delivery.</p> <p>Pump sumps and containment manholes will serve as containment tools in the event of a leak.</p> <p>"Spill sorb" kits must be available onsite at all times for cleaning up minor spills.</p>

ASPECT	ISSUE / IMPACT / RISK	OBJECTIVE	RECOMMENDED MITIGATION MEASURES
			<p>If emergency personnel are unavailable, contain spilled material.</p> <p>Small spills: On hard surfaces, the spilled product should be covered and adsorbed with biodegradable absorbent materials. Soil may be used in the absence of other suitable materials. Scoop up material and place in a sealed, liquid-proof container for disposal by hazardous waste contractors.</p> <p>Spills on soil would require the determination of the lateral and vertical extent of the contamination and then based on the risk that the contamination pose to the receiving environment, remedial actions will be implemented.</p> <p>Large spills: Dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.</p> <p>Avoid dispersal of any spilled material and runoff and contact with soil, waterways, drains and sewers.</p> <p>Should there be any loss of containment from fuel tanks, or spillage during filling up of tanks, DWA, LDEDET and GTM must be notified.</p> <p>Remedial action must take place as soon as possible after spillage / leakage. Remediation must take place under the supervision of a suitable expert.</p> <p>Groundwater samples must be taken directly downslope from the spill site to determine whether any contamination of the groundwater resource has taken place. The results of the sampling must be submitted to DWA.</p> <p>A report on the spillage / leakage and the remedial action taken must be submitted to DWA, LDEDET and GTM once remediation has been completed.</p> <p>Records must be kept of any and all spillage / leakage events.</p>
2. Water			
2.1. Water quality	Possible leakage, accidental spillage or overfilling of fuel tanks may result in pollution of the groundwater resource.	2.1.1. Limit the risk of spillage, leakage and overfilling and prevent infiltration of contaminated storm water	Refer to 1.2.1.
		2.1.3. Efficiently respond to spillage, leakage or overfilling.	Refer to 1.2.2.
2.2. Water use	Water is abstracted from a nearby borehole. The filling station is anticipated to place additional strain on the groundwater resource.	2.2.1. Minimize the volume of water used for and by the filling station (including associated gardens and convenience	Daily records should be kept of water use patterns so that it can be determined when most water is being used. This will make it easier to compile a plan for changes in irrigation patterns to reduce water use.
			A soil moisture meter should be installed so that irrigation only takes place when

ASPECT	ISSUE / IMPACT / RISK	OBJECTIVE	RECOMMENDED MITIGATION MEASURES
		shop).	<p>soil moisture drops to a pre-set level, in order to prevent unnecessary irrigation.</p> <p>Irrigation should take place in the early evening (dusk) in summer and in mid-morning in winter to limit evaporation losses.</p> <p>Pavement should be cleaned through sweeping, not through hosing down these areas.</p> <p>Low-flow taps and water fixtures should be installed in ablution facilities.</p> <p>Leaking taps or shower heads must be fixed as soon as possible to avoid unnecessary wastage of water.</p>
2.3. Storm water	Replacement of vegetated cover by "hard" surfaces (e.g. paving) results in increased peak storm water runoff, which may result in increased soil erosion rates.	2.3.1. Effectively and efficiently manage storm water so that it is channelled into the storm water management infrastructure quickly and without being concentrated over "soft" surfaces, in order to prevent soil erosion.	Refer to 1.1.1.
3. Flora and Fauna			
3.1. Alien vegetation	Exotic plant species which are often introduced into gardens or landscaping are generally not as well suited to local conditions as are locally indigenous species and are not always as readily utilised by local faunal species as a habitat or food source.	3.1.1. Use only locally indigenous plant species for landscaping and prevent the spread of alien species.	<p>As far as is practicable, only locally indigenous plant species should be utilised in gardening / landscaping.</p> <p>Use of exotic species (if utilised at all) must be limited to species that are not considered invasive. Declared weeds (Category 1, 2 or 3) may not be planted.</p> <p>Should any specimens of alien invasive species be found on the site, these should be eradicated using appropriate methods. DWA's Working for Water programme can be contacted for guidance as to suitable methods.</p>
3.2. Use of chemicals	The use of garden chemicals, such as chemical fertilizers,	3.2.1. Limit the use of chemicals in order to prevent /	Where possible, organic fertilizers, pesticides and herbicides must be used instead of chemicals.

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	pesticides and herbicides, may lead to pollution of the soil or of water resources. It can also harm or kill non-target organisms such as birds, thereby causing unnecessary collateral damage.	limit negative impacts on soil, water or wildlife.	<p>If chemical herbicides, pesticides or fungicides must be used, broad-spectrum products must be <u>avoided</u>. Instead, target-specific products must be used to avoid harming non-target organisms.</p> <p>Spot application is preferable to blanket application.</p>
3.3. Fauna	Possible killing of certain fauna, such as insects, snakes (or other reptiles), or spiders out of fear.	3.3.1. Prevent killing of fauna (apart from pests such as cockroaches).	<p>Educate staff to recognise dangerous species of snakes, spiders, etc. so that they do not kill harmless species.</p> <p>Teach staff appropriate methods of catching and relocating unwanted organisms such as snakes.</p> <p>Keep contact details in the filling station manager's office for someone who can be called if catching and relocation of snakes, spiders or other unwanted species is needed.</p>
	Disturbance of fauna by outdoor lighting.	3.3.3. Minimize disturbance to fauna.	<p>Outdoor lights must be shielded to prevent light wastage and minimize the filling station's contribution to light pollution which interferes with animals' (and humans') circadian rhythms.</p> <p>Unnecessary lights must be turned off at night.</p> <p>Security lighting should have motion sensors so that the lights are only turned on when motion is detected and are not on all the time.</p> <p>Outdoor lights should utilize low-pressure sodium lights instead of incandescent or fluorescent bulbs, as the former have a lower operating heat and therefore attract (and kill) fewer insects.</p>
4. Waste management			
4.1. Solid waste management	General solid waste generated at the filling station needs to be safely disposed of.	4.1.1. Safely dispose of all solid waste.	All solid waste must be temporarily kept in suitable bins in the refuse yard (in accordance with relevant municipal by-law) until it is collected by the municipal waste collection service for disposal at the local landfill site.

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			<p>Waste may not be dumped on or near the site.</p> <p>Hazardous waste may not be disposed of on any site, including the municipal landfill site. If hazardous waste is generated, this must be collected and disposed of by suitably licensed hazardous waste contractors.</p>
		4.1.2. Minimize the volume of solid waste that needs to be disposed of at the landfill site.	<p>In purchasing stock for the convenience shop, consideration should be given to purchasing products in recyclable packaging rather than material that is not recyclable.</p> <p>Solid waste must be sorted at source into recyclable and non-recyclable waste, which will subsequently be collected by a recycling contractor. Public waste bins should make provision for general waste (e.g. food scraps and wrappings) and recyclable waste (aluminium cans, paper and bottles). Bins in the convenience shop and its kitchen should be further specialised so that recyclable waste is sorted into cans, paper and bottles at source. Larger waste bins in the refuse yard, where waste is temporarily stored until such time as it is collected by the municipal waste collection service, must also make provision for such sorted waste, by using different bins for the different types of waste. Bins can be in different colours to make sorting easier.</p> <p>It is anticipated that a Tzaneen-based recycling contractor who collects recyclables from Maake Plaza, will collect recyclable waste generated by the proposed filling station as well.</p> <p>It is recommended that a compost heap be established for disposal of garden refuse such as grass clippings. However, if implemented, the compost heap must be properly managed to prevent unpleasant odours or the attraction of pests such as flies. The compost heap must also be shielded from vision so prevent a negative visual impact.</p>
		4.1.3. Provide sufficient refuse bins and discourage littering.	A sufficient number of waste bins must be provided in the public areas of the filling station as well as in sections used only by staff.

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			<p>Bins must be clearly visible and marked to make it easy for the public to use them.</p> <p>Bins must be emptied regularly to prevent them overflowing as well as to prevent unpleasant smells from emanating from the bins.</p> <p>Separate bins must be provided for recyclable and non-recyclable waste and clearly marked as such. At each bin position, a bin each for recyclable and non-recyclable waste must be provided to make separate disposal convenient.</p> <p>Bins should preferably be equipped with a closing mechanism (e.g. swing bins) to prevent the contents blowing out.</p> <p>Signs should be put up to discourage littering.</p> <p>Staff should be trained in the importance of not littering, and must also discourage filling station patrons from littering.</p>
		4.1.4. Prevent unsafe disposal of hazardous waste	<p>In the event of any hazardous waste being generated onsite, for instance Compact Fluorescent Light (CFL) bulbs or spent batteries, these must be stored separately from general waste and arrangements must be made with a suitable contractor to collect it for disposal at a licensed hazardous waste landfill or recycling by a suitable firm.</p> <p>In case of spillage of fuel, any contaminated soil must be considered hazardous waste, and must be disposed of by a suitably licensed hazardous waste removal contractor for disposal at an appropriately licensed site.</p>
5. Electricity use			
5.1. Electricity usage	The filling station will use electricity, thereby placing additional pressure on the electricity supply infrastructure.	5.1.1. Minimize electricity usage.	<p>Unnecessary lights should be turned off at night.</p> <p>Security lighting around the premises should have motion sensors so that the lights are only turned on when motion is detected and are not on all the time.</p> <p>Outdoor lights should be shielded to eliminate upward wastage of light, thereby not only cutting down on light pollution, but also concentrating light on the desired locations, making it possible to use lower wattage lights and thereby reducing</p>

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			electricity use.
			Fluorescent lighting (indoor) and low pressure sodium lighting (outdoor) are preferably to incandescent bulbs, as they use less electricity than incandescent bulbs due to a lower operating temperature.
5.2. Security of electricity supply	Power interruptions may cause inconvenience to customers and may lead to the fuel pumps and the convenience shop not being able to serve customers whilst the power is out.	5.2.1. Ensure constant electricity supply.	A stand-by electricity generator should be available at the filling station to provide power during power outages.
5.3. Electrical safety	Electrical problems may cause explosions or fire.	5.3.1. Prevent explosions or fire caused by electrical problems.	Refer to 9.1.1.
6. Visual impacts			
6.1. Daytime visual impacts	The establishment of the filling station will introduced new structures onto the landscape, with concomittant visual impact.	6.1. Present an aesthetically pleasing facility which does not detract visually from the surrounding landscape.	Discourage littering
			Perform regular maintenance on structures, paving, etc, to prevent unsightly dilapidation.
			Maintain the gardens properly and neatly.
6.2. Night-time visual impacts	Lights from the filling station will contribute to the glow of light that intrudes upon the night-time darkness.	6.2.1. Minimize light pollution.	Outdoor lights must be shielded to prevent upward and outward light wastage (inadvertent lighting of areas that do not need to be lit) and to concentrate light only onto the required areas. This will minimise the development's contribution to light pollution.
			Lightbox signage should be shielded to prevent upward wastage of light without compromising the visibility of the signage.
			Flood lighting of the entire premises should be avoided. Rather, it should be determined which areas really do need to be lit at night for security or marketing purposes, and only the minimum level of lighting required to fulfil this purpose

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			<p>should be provided (lower wattage lighting may, for instance, be just as effective).</p> <p>Unnecessary lights must be turned off at night.</p> <p>Security lighting around the premises should have motion sensors so that the lights are only turned on when motion is detected and are not on all the time.</p>
7. Noise			
7.1. Noise caused by the activities at the filling station	The noise of vehicles visiting the filling station, music playing from vehicles and from the filling station or convenience shop, and the voices of customers all contribute to noise associated with the filling station.	7.1.1. Minimize disturbance to neighbours and to customers of Maake Plaza shopping centre.	<p>During the night-time (from 20:00 to 07:00) no loud music may be played at the filling station. If customers play loud music from their vehicles during this time or are generally rowdy, staff should address them and request them to turn down the volume.</p> <p>Music levels during the day time must be such that it does not disturb neighbours. Should neighbouring businesses complain about noise levels, such complaints must be addressed in a reasonable manner.</p> <p>Delivery of fuel by tankers will take place only by day.</p> <p>No alcohol should be allowed on the premises, to minimise rowdiness by drunken customers or even off-duty staff.</p>
8. Economic aspects			
8.1. Financial impact on nearby filling stations	The establishment of the proposed filling station is likely to draw a portion of the customers away from other existing filling stations.	8.1.1. Minimize financial impact on other existing filling stations	Should the filling station at a later stage be proposed to be extended beyond the currently proposed capacity or the throughput (litres pumped per month) be increased, this should be discussed with the proprietors of the other local filling stations and the projected changes in sales at Total should be presented to these proprietors to enable them to gauge the potential impact on their own facilities. Any market feasibility study undertaken for any such proposed expansion project should then also be made available to the surrounding filling station owners / managers.
9. Fire / explosion			
9.1. Explosion or fire	The risk exists of sparks triggering an explosion and/or fire, as	9.1.1. Fire fighting equipment and protection	An emergency response plan must be prepared before commissioning of the filling station, and all staff trained therein.

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	petroleum and diesel are flammable.		<p>Ignition sources (e.g. lit cigarettes) must be kept away from fuel tanks or pumps at all times.</p> <p>Signs must be affixed in prominent, highly visible positions warning customers not to smoke, light matches / lighters or use cell phones near the fuel pumps.</p> <p>All electric equipment within 6m of the pumps or tanks must be flame-proof.</p> <p>Relevant warning signs must be affixed at tanks and pumps (refer to relevant Safety Data Sheets for list and examples of signs to be put up).</p> <p>Sufficient fire extinguishers must be available at the filling station at all times and must be placed in highly visible, easily accessible positions.</p> <p>Fire fighting equipment must be kept in the correct positions, e.g. CO₂ for electrics, dry powder for forecourt).</p> <p>Fire fighting equipment must be serviced at least every year and the last service date displayed on the equipment.</p> <p>Fire fighting equipment must be inspected monthly, and the associated register completed.</p> <p>All staff must be trained in basic fire fighting and the use of the fire extinguishers.</p> <p>Fire drills must be conducted at least once annually.</p> <p>An emergency stop switch must be in place to isolate the forecourt.</p> <p>Staff must know the function of the emergency stop switch.</p> <p>A fireman's switch must be in place for all neon / high-voltage fittings.</p> <p>The filling station operator must liaise with the local authority about the Major Hazard Installation (MHI) regulations. MHI plans must be finalised and kept on file at the filling station.</p> <p>Distribution boards must be clearly marked and all circuit breakers clearly labelled as per Total South Africa (TSA) standards.</p> <p>Certificates of compliance must be available for all electrical work, including new and additions to existing installation on site.</p>

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			Portable electrical tools and equipment must be checked monthly and inspection results recorded in a register.
			Compressor cage must be kept free of combustible material.
			Liquid Petroleum Gas (LPG) storage cage must be well-ventilated and must be located at least 3m away from drains, manholes, basement or any other areas in which leaking gas could accumulate.
			A dry powder fire extinguisher must be available near the LPG storage cage.
			Gas cylinders must be stored upright in an approved cage, away from any heat or ignition sources and with appropriate safety signage on the cage.
			Fire extinguishing equipment must be in place close to the fuel offloading point.
			During fuel delivery, wheel chocks must be placed in front of the delivery truck's wheels to prevent it rolling away and risking crash or spillage.
			If <u>illuminating paraffin</u> is kept onsite, it must be stored in a segregated approved area which is cool and well-ventilated.
			For illuminating paraffin: To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment.
		9.1.2. Effectively and efficiently respond to explosion or fire if it does occur.	In case of fire, use water spray (fog), foam, dry chemicals, or CO ₂ .
			If illuminating paraffin is kept onsite, please note that both the liquid and vapour are flammable. Vapour may cause flash fire. Vapours may accumulate in low or confined areas, travel considerable distance to source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.
			Illuminating paraffin is toxic to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
			Fire fighters should wear appropriate protective equipment and self-contained

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			breathing apparatus (SCBA) with a full face piece operated in positive pressure mode. Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment Emergency numbers (e.g. fire station, doctor, ambulance, local hospital) must be posted in a highly visible location at the filling station, and the numbers must be checked from time to time to make sure that they are still correct.
10. Health and Safety			
10.1. Health risk of exposure to hazardous substances	Human contact with hazardous substances (inhalation, ingestion, skin contact or eye contact) can lead to injury or illness	10.1.1. Minimize exposure of staff or customers to hazardous substances or fumes.	Vents from fuel tanks must be placed in a safe place and must comply with SANS 10089-3. Vents pipes to be installed at a level of 3.8m above ground to limit the risk to human health of possible fugitive emissions. Areas where refilling of tanks takes place must be in an open, well-ventilated area away from the roofed area where customers fill up with fuel. Vehicles should not be allowed to idle for long periods of time while waiting to be served, in order to reduce the amount of exhaust fumes generated. Customers' attention should be drawn to this rule by means of appropriate signage and staff should enforce the rule by addressing customers who do not comply. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours below their respective occupational exposure limits. Ensure that eyewash stations and safety showers are proximal to the work-station location. Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Chemical-resistant, impervious gloves or gauntlets complying with an approved

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			standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
			Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.
			Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
			Relevant warning signs must be affixed at tanks and pumps (refer to relevant Safety Data Sheets (SDSs) for list and examples of signs to be put up).
			SDSs must be stored with the relevant products.
			Staff must be briefed as to the importance of the SDSs and aware of the steps to be taken in terms of these documents.
			Liquid Petroleum Gas (LPG) storage cage must be well-ventilated and must be located at least 3m away from drains, manholes, basement or any other areas in which leaking gas could accumulate.
			No children may be allowed to play near the tanks, pumps or gas storage areas.
			There should be no foul odour after fuel delivery; an odour may indicate a spillage or leakage.
			Filling station Safety Committee meetings must be held on a monthly basis.
		10.1.2. Effectively and efficiently respond to any medical emergency situation (general).	A sign with the basic medical emergency response steps and medical emergency numbers (e.g. ambulance, local doctors and nearest hospital) must be in a highly visible position.
			A complete first aid kit, which complies with the Occupational Health and Safety Act (1993) must be available in the filling station manager's office. Its contents must be checked regularly to ensure that it remains fully stocked and that products have not expired.

ASPECT	ISSUE / IMPACT / RISK	OBJECTIVE	RECOMMENDED MITIGATION MEASURES
	Exposure to petrol / diesel fumes may cause cancer, depending on duration and level of exposure		<p>At least one staff member trained in basic first aid (and with a valid first aid certificate) must be onsite at all times (during every shift) in order to be able to provide basic assistance in case of a medical emergency.</p> <p>New staff members must be inducted as to the steps to be taken in case of injury or illness.</p> <p>Emergency numbers must be checked from time to time to ensure that they are still correct, e.g. that the designated doctor still practises in the area.</p> <p>Even if there has not been an accident, staff who feel unwell must seek medical attention as they may have unknowingly been exposed to fuel / fumes.</p>
		10.1.3. Provide appropriate care in case of inhalation	<p>If inhaled, remove to fresh air.</p> <p>If breathing is difficult, give oxygen.</p> <p>If not breathing, give artificial respiration.</p> <p>Get medical attention.</p>
		10.1.4. Provide appropriate care in case of ingestion	<p>If swallowed, do NOT induce vomiting unless directed by medical personnel.</p> <p>Never give anything by mouth to an unconscious person.</p> <p>Aspiration hazard if swallowed - can enter lungs and cause damage.</p> <p>Get medical attention.</p>
		10.1.5. Provide appropriate care in case of skin contact	<p>In case of contact, immediately flush skin with plenty of water.</p> <p>Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse.</p> <p>Get medical attention.</p>
		10.1.6. Provide appropriate care in case of eye contact	<p>In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.</p> <p>Get medical attention if irritation occurs.</p>
		10.1.7. Avoid long-term, high-level exposure of staff to fumes	<p>Rotate staff between positions with different levels of exposure, e.g. pump attendant, convenience shop cashier or managerial positions, to prevent continual exposure to low levels of fumes.</p>

ASPECT	ISSUE / IMPACT / RISK	OBJECTIVE	RECOMMENDED MITIGATION MEASURES
			Also refer to 9.2.1.
	Exposure to illuminating paraffin may cause cancer or heritable genetic damage	10.1.8. Avoid exposure to illuminating paraffin	Avoid exposure of staff or customers to illuminating paraffin.
10.2. Injury / medical emergency	Staff or customers may suffer injury due to for instance slipping and falling, or due to possible crime, or due to possible explosion or fire.	10.2.1. Minimize the risk of injuries or emergency situations as far as it is within the filling station management's control.	Refer to 9.1.1 and 9.2.1.
	Pre-existing medical conditions may also lead to injury or medical emergencies that are not associated with the filling station but may take place at the facility, e.g. epileptic seizure, asthma attack, diabetic coma, etc.	10.2.2. Effectively and efficiently respond to any medical emergency situation (general).	Refer to 9.2.2.
10.3. Occupational Health and Safety Act	The conditions of the Occupational Health and Safety Act (OHSA, No 85 of 1993) must be complied with	10.3.1. Staff must be aware of their rights in terms of OHSA.	A copy of the OHSA should be affixed in a visible position at the filling station.
		10.3.2. Compliance with OHSA must be ensured.	Occupational Health and Safety Audits should be undertaken at regular intervals.
11. Air Quality			
11.1. Potential air pollution	Fumes from storage tanks and dispensers, and exhaust fumes from waiting vehicles, may lead to illness to those who are exposed to it. It may also contribute to photochemical smog.	11.1.1. Minimize fugitive emissions	There must be a liquid-tight connection between the fill pipe and transfer hose during refilling of storage tanks by tankers.
			A vapour transfer system should be in place (either a vapour-tight vapour return line or a coupling on the vapour return line that makes a vapour-tight connection with the fitting on the delivery tanker's vapour return hose).
			If storage tanks are to be filled by gravity, an automatic stopper must be provided

ASPECT	ISSUE / IMPACT / RISK	OBJECTIVE	RECOMMENDED MITIGATION MEASURES
			to close off the flow when fuel in the tank reaches a certain level, in order to prevent overflow.
			Underground storage tanks must be fitted with vapour-tight caps.
		11.1.2. Limit emission of exhaust fumes	Vehicles should not be allowed to idle for long periods of time while waiting to be served, in order to reduce the amount of exhaust fumes generated. Customers' attention should be drawn to this rule by means of appropriate signage and staff should enforce the rule by addressing customers who do not comply.
		11.1.3. Limit health risk of emissions.	Refer to 1.1.1.

6. MANAGEMENT AND MITIGATION MEASURES: *DE-COMMISSIONING PHASE*

It is not anticipated at this stage that the proposed filling station will be decommissioned within the near future. However, provision must be made for the event that decommissioning may take place at some time in the future. Decommissioning may take one of two forms:

- Decommissioning the site's use as a filling station, i.e. the fuel storage tanks would be removed but the built structures would remain intact, e.g. the convenience shop might still be used as such. This type of decommissioning may be permanent (all tanks are removed) or temporary (tanks are left intact for possible future reinstatement, but made safe); or
- Decommissioning of the filling station as well as demolition of associated facilities / structures.

Should the filling station be decommissioned, the measures recommended in the sections below (as well as other measures which may be recommended at that stage) will have to be implemented all through the process of destroying / removing the structures and facilities until rehabilitation of the site has been completed.

Decommissioning of a filling station would need to be conducted with great care and under strict supervision by a specialist in this field, as there may be risks in terms of fire and fuel leakage in particular. Should the facility be decommissioned, the decommissioning should be planned in consultation with the relevant authorities, most importantly the environmental and water authorities (at this stage LDEDET and DWA, respectively).

The filling station owner must appoint an environmental consultant to advise on applicable legislation and appropriate measures for impact mitigation and management. Legislation in place at the time of decommissioning must be complied with. This will include environmental and water-related legislation, occupational health and safety legislation, and any other applicable legislation, by-laws and standards. If decommissioning is planned, a detailed decommissioning EMP must be compiled, taking into account the conditions on and around the site at that time, as well as applicable legislation. The following sections contain generic measures that will need to be adhered to, but specific measures will have to be developed at that time to address any issues or conditions that may not be present at this stage.

Please note that certain of the management and mitigation measures contained in the table below will only be applicable if the facility as a whole is to be demolished, and will not apply if only the fuel storage tanks are removed.

Table 6.1: Impact mitigation and management measures to be implemented during the decommissioning phase

ASPECT	ISSUE / IMPACT / RISK	OBJECTIVE	RECOMMENDED MITIGATION MEASURES
<i>1. Soils</i>			
1.1. Soil erosion	If structures are to be demolished and cleared, the site will be susceptible to soil erosion in case of rains during the period that bare soil is exposed.	1.1.1. Limit the risk of soil erosion.	If structured are to be demolished and the site cleared, it is recommended that this be undertaken during the drier winter season.
		1.1.2. Effectively remediate erosion if it does take place.	Should any signs of erosion be found, remedial action such as backfilling, compaction and re-vegetation should be taken immediately to avoid exacerbation of the erosion.
			Any erosion channel(s) that may develop should be backfilled and compacted as soon as possible, and the area(s) restored to a proper condition. The contractor should ensure that cleared areas are effectively stabilised to prevent and control erosion.
			The site must be re-vegetated directly after site clearing, using locally indigenous species. Refer to 3.1.1 and 3.1.2.
1.2. Soil contamination	Possible contamination of soil by fuel (from storage tanks or pipe work) or wastewater (generated by workers onsite).	1.2.1. Prevent spillage of fuel.	Fuel storage tanks must be pumped out completely before they are removed from the ground.
			The emptied tank and pipe work must be removed carefully, under the supervision of a specialist in this field who can provide technical guidance
			It must be ensured that there is no residual contamination of the site, e.g. petrol or diesel contamination of soil or water.
			Once the tanks have been removed, samples of soil and groundwater should be taken to check for subsurface contamination. The samples should be analysed for the parameters appropriate to the type of product stored (petrol and diesel).
		Should soil or groundwater contamination be found, additional investigations (possibly including a risk assessment) should be carried out to determine the need for remediation (extent and method of remediation required).	
1.2.2. Safely dispose of possibly contaminated waste	Tanks and pipework used to store hydrocarbons or chemicals, together with residual product, wastewater, sludge and decommissioning fill should be		

ASPECT	ISSUE / IMPACT / RISK	OBJECTIVE	RECOMMENDED MITIGATION MEASURES
			<p>regarded as hazardous waste, and must be disposed of by suitably licensed hazardous waste contractors at a hazardous waste disposal site. It may not be disposed of with general waste at the local municipal landfill site or at any other dumping site not geared for hazardous waste.</p> <p>Empty containers in which hazardous substances such as fuel, motor oil, paraffin, etc had been stored, may not be given to community members or discarded on or around the site, nor may it be disposed of at any dumping site not classified as a hazardous waste disposal site.</p> <p>The operator must ensure that the waste disposal contractor is aware of all appropriate health and safety regulations pertaining to fire and explosion risks, as flammable substances (petrol and diesel) were stored in these tanks and pipes.</p>
		1.2.3. Prevent infiltration of sewage into soil.	<p>If waterborne sewerage is not available, workers must be provided with portable chemical toilets which form a sealed, closed system. Sanitation facilities must be provided at a ratio of 1 toilet per 15 workers, and the contents must be disposed of at a licensed sewerage works, such as the sewerage plant in Tzaneen.</p> <p>Sufficient washing facilities must be provided for workers. Wash areas must be placed and erected in such a manner that the surrounding areas, including soil and groundwater, are not polluted.</p>
		1.2.4. Efficiently respond to any spillage	<p>In case of any spillage, the ECO must be informed so that he/she can investigate the incident and recommend appropriate mitigation measures.</p> <p>Any significant spillage must be reported to DWA, who may need to conduct a site visit to determine the significance of the spillage and to recommend mitigation measures. The incident must also be reported to LDEDET by the ECO.</p> <p>Measures must be implemented to prevent a recurrence of a spillage event.</p>
		1.2.5. If tanks and other equipment are only	<p>It is <u>not</u> recommended that tanks and/or pipe work be left underground if the filling station is temporarily decommissioned. Even though tanks are made safe,</p>

ASPECT	ISSUE / IMPACT / RISK	OBJECTIVE	RECOMMENDED MITIGATION MEASURES
		temporarily decommissioned and left intact, they must be made safe to avoid soil or groundwater pollution	<p>the possibility exists that they will be forgotten and not removed if the site fails to be reinstated at a later stage. They will then pose a long-term pollution risk, exacerbated by the fact that they might not be monitored (for leakage / spillage) because of the site not being in use anymore.</p> <p>If the filling station is decommissioned only temporarily and the tanks left intact, the tanks must be filled with water or with hydroscopic foam. In case of water, the water level must be checked regularly; any drop in the level in the tank might indicate a leakage, which must then be investigated further and sealed.</p> <p>If fuel dispensers are left intact (only suitable for short-term decommissioning), they must be electronically isolated, all suction lines drained back and any flexible connectors disconnected. The dispenser suction entries should be plugged off and the suction and any vapour lines capped off in the under pump cavity. The dispenser should also be protected from vandalism.</p> <p>The oil interceptor chamber must be emptied by a suitably licensed hazardous waste contractor, and the chambers replenished with clean water.</p>
2. Water			
2.1. Water quality	Possible leakage or spillage of sewage from portable toilets during construction phase, or contamination of water by runoff containing construction-related substances such as cement or paint.	2.1.1. Prevent spillage of fuel.	Refer to 1.2.1.
		2.1.2. Safely dispose of possibly contaminated waste	Refer to 1.2.2.
		2.1.3. Prevent spillage of sewage.	Refer to 1.2.3.
		2.1.4. Efficiently respond to any spillage	Refer to 1.2.4.
2.2. Storm water	Storm water may cause soil erosion on cleared construction site.	2.2.1. Minimize water-related soil erosion	If possible, storm water should be channelled away from the exposed area for the duration of the decommissioning phase.
3. Flora and Fauna			
3.1.	If the facilities are to be demolished	3.1.1. Rehabilitate the site to a	Prepare soil for re-vegetation, e.g. by removing potentially contaminated soil (for

ASPECT	ISSUE / IMPACT / RISK	OBJECTIVE	RECOMMENDED MITIGATION MEASURES
Rehabilitation of site	and the site cleared, rehabilitation of the site will be required.	state approximating the pre-development state or a condition similar to undeveloped areas nearby.	disposal at a suitable site), "ripping" compacted soil and adding organic material.
			Re-establish locally indigenous vegetation under the guidance of an ecologist. Re-vegetation can take the form of seeding (or hydro-seeding) broad areas with a mix of indigenous grass seeds, and planting of individual indigenous trees and shrubs. Methods and timing of rehabilitation must be prescribed by an ecologist based on site conditions at the time, and species composition should be dictated by the vegetation communities in open areas in the vicinity.
		3.1.2. Prevent colonisation by alien invasive species	No alien plant species may be established on the site during rehabilitation.
			Any alien vegetation on the site must be eradicated before seeding / planting of indigenous vegetation. The site must be regularly monitored for re-growth of alien invasive species, and any new seedlings etc eradicated using methods appropriate for the particular species, whether mechanical, chemical or biological.
4. Waste management			
4.1. Solid waste management	Solid waste generated at the site must be disposed of at a suitably licensed disposal site.	4.1.1. Remove general solid waste to a landfill site.	General solid waste must be disposed of at the Tzaneen landfill site or another licensed waste disposal site.
			Rubble resulting from demolition (if structures are to be demolished) can be used as fill at nearby construction sites (if any), or otherwise disposed of at a licensed landfill site such as the municipal landfill in Tzaneen. Waste may <u>not</u> be dumped on or near the site.
		4.1.2. Dispose of hazardous waste at a suitable disposal site	Refer to 1.2.2.
			The oil interceptor chamber must emptied by a suitably licensed hazardous waste contractor, and the chambers replenished with clean water. Any soil that might be contaminated by fuel or other hazardous substances must be removed and disposed of at a hazardous waste disposal site by suitably licensed contractors. Contaminated soil may <u>not</u> be disposed of at the general landfill site.

ASPECT	ISSUE / IMPACT / RISK	OBJECTIVE	RECOMMENDED MITIGATION MEASURES
<i>5. Health and Safety</i>			
5.1. Fire	Construction activities pose a risk of fire, particularly during “hot” activities such as welding, refuelling of equipment / machinery, and if there are open fires (for heating / cooking)	5.1.1. Prevent occurrence of fire.	<p>The electrical installation should be disconnected by an electrician who will apply the appropriate degree of disconnection (up to removal of the main intake box).</p> <p>Extreme caution should be exercised where open flames are used and/or where there is the potential for sparks, such as in the case of blow torches. These activities should only take place in designated areas which are clear of vegetation and other flammable material.</p> <p>Smoking to be restricted to designated smoking areas situated away from flammable materials.</p> <p>No open fires allowed on the site except in designated areas. This includes fires for purposes of cooking, warmth or any other purpose. Vessels should be provided for fires so that labourers do not need to make open fires.</p>
		5.1.2. Effectively and efficiently respond to fire if it does occur.	<p>Emergency numbers (e.g. fire station, doctor, ambulance service and local hospital) must be posted in a highly visible location at the site as well as being available in the safety file in the site office (if any).</p> <p>Adequate fire fighting equipment must be available at the site at all times during the construction phase. Such equipment must be clearly visible and easily accessible. Equipment must be available in all areas where construction is taking place as well as in any construction camps and cooking areas.</p> <p>It must be ensured that fire-fighting equipment is in good order.</p> <p>At least one person trained in the use of the fire extinguishing equipment must be onsite at all times.</p> <p>If a site / construction camp is established, the camp must be situated in a position with a low fire risk, e.g. not close to any highly flammable substances (e.g. fuel) nor close to large amounts of dry vegetation, as activities will take place in the camp which may pose a fire hazard, e.g. workers spending the night onsite will use this camp to make fires for cooking and/or heating, and this will most likely also be the designated smoking area (safe for smoking).</p>

ASPECT	ISSUE / IMPACT / RISK	OBJECTIVE	RECOMMENDED MITIGATION MEASURES
5.2. Health and Safety	Workers may be injured onsite during construction.	5.2.1. Apply security measures and ensure that the specifications of the Occupational Health and Safety Act (1993) are adhered to.	A first-aid kit should be available and readily accessible onsite at all times. At least one person trained in basic first aid should be onsite at all times when construction is taking place, in case of an accident during construction activities.
			Workers may not be forced to do dangerous work.
			Any relevant necessary safety clothing / equipment must be provided to workers.
			Any relevant specifications forming part of the Occupational Health and Safety Act must be complied with.
	During emptying or removal of fuel storage tanks or containers of other hazardous substances, workers may be exposed to these substances which may cause illness or injury.	5.2.2. Prevent exposure of workers to hazardous substances.	Removal of storage tanks must be overseen by an experienced and suitably qualified specialist.
			All workers must wear relevant protective gear such as chemical-resistant gloves, goggles for eye protection, etc.
		5.2.3. Provide appropriate care in case of inhalation	If inhaled, remove to fresh air.
			If breathing is difficult, give oxygen.
			If not breathing, give artificial respiration.
			Get medical attention.
		10.1.4. Provide appropriate care in case of ingestion	If swallowed, do NOT induce vomiting unless directed by medical personnel.
			Never give anything by mouth to an unconscious person.
			Aspiration hazard if swallowed - can enter lungs and cause damage.
			Get medical attention.
10.1.5. Provide appropriate care in case of skin contact	In case of contact, immediately flush skin with plenty of water.		
	Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse.		
	Get medical attention.		
10.1.6. Provide appropriate care in case of eye contact	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.		
	Get medical attention if irritation occurs.		

ASPECT	ISSUE / IMPACT / RISK	OBJECTIVE	RECOMMENDED MITIGATION MEASURES
5.3. Security	Risk of criminal elements being attracted to the site	5.3.1. Limit criminality and violence.	No fire-arms to be allowed onsite.
			No alcohol to be allowed onsite.
			Only workers employed on the site may be allowed onto the site and particularly into the construction camp (if any). No friends or other associates of workers may loiter on the site, enter the camp or spend the night onsite.
6. Site camp			
6.1. If a site camp is established, bio-physical and socio-economic impacts may be associated with it	Socio-economic impacts.	6.1.1. Minimize negative socio-economic impacts that may be associated with construction camp.	Workers will not be allowed to remain onsite overnight, apart from those responsible for security.
			No alcohol to be allowed in the camp, whether by day or by night.
			No firearms to be allowed in the camp.
	Bio-physical impacts.	6.1.2. Minimize negative bio-physical impacts that may be associated with construction camp.	No loud music will be allowed within the camp outside of working hours, so as not to disturb neighbours.
			Friends or relatives (or any other acquaintances) of workers will not be allowed into the site camp at any time.
			The camp must be clearly fenced off and have a lockable gate in order to enforce entry control.
			The site is not affected by any drainage line or flood line, therefore there is no risk of the site camp being established within any 1:100 year flood line.
			The camp must be situated in a position with a low fire risk, e.g. not close to any highly flammable substances (e.g. fuel) nor close to large amounts of dry vegetation, as activities will take place in the camp which may pose a fire hazard, e.g. workers spending the night onsite will use this camp to make cooking and/or heating fires, and this will most likely also be the designated smoking area.

7. ENVIRONMENTAL COMPLIANCE MONITORING

7.1. Environmental Control Officer and Monitoring

Environmental compliance during the construction phase is the responsibility of the developer, though the contractors and sub-contractors will be responsible for the day-to-day implementation of the EMP. The developer must ensure that the contractor and sub-contractors are supplied with a copy of the approved EMP and the authorization issued by L DEDET.

An Environmental Control Officer (ECO) must be appointed before commencement of construction / site preparation activities, and must remain on the project for the duration of the construction phase in order to oversee the implementation of and compliance with the EMP and any other environmental requirements, such as that which may be contained in the environmental authorisation. The ECO will be responsible for the following:

- Compiling six-monthly monitoring / compliance reports during the construction phase for submission to L DEDET and DWA. If construction takes place in less than six months, only one monitoring report will be submitted, which will be at the end of the construction phase.
- Formulating, and overseeing the implementation of, remedial and/or management measures in case of negative impacts or environmental damage that may not have been anticipated and provided for in the EMP. Such measures may need to be developed in consultation with relevant authorities, specialists or stakeholders, as the case may be.
- Providing guidance and assistance to all participants in implementing and complying with the EMP.
- Keeping a permanent written and photographic record of activities during the construction phase, in particular (but not limited to) any instances of non-compliance.
- Maintaining a complaints register and an incident register, in which any complaints or incidents during the construction phase are noted along with a description of how the incidents or complaints were mitigated.
- Must be fully conversant with the contents of the Environmental Impact Report and this EMP.
- Must be fully conversant with the environmental authorization for the project and any conditions that may be stipulated therein.

The EMP and authorization must be available at the site camp during the whole of the construction phase. During the operational phase, these documents must be kept in the filling station manager's office. If the site is to be decommissioned, a copy of the decommissioning EMP must be available at the site office for the duration of this phase.

6.2. Compliance with the Environmental Management Plan

- All persons employed by the developer or their sub-contractors must abide by the requirements of the EMP and environmental authorisation. Any members of the construction, operation or maintenance workforce found to be in breach of any of the specifications contained within the EMP may be ordered to leave the site and/or to pay a fine.
- Complaints about irresponsible behaviour or actions that cause or may cause environmental damage or pollution must be reported to the ECO, who in turn will notify LDEDET.
- The designated ECO is to keep an Environmental Register in which any and all environmental incidents, transgressions of the EMP or authorization and/or comments or complaints received

from the public and affected parties will be recorded. Six-monthly monitoring reports are also to form part of the Register. The Register must be available for perusal by representatives of LDEDET if necessary.

- The Contractor shall be responsible for and shall bear the cost of any delays or corrective or remedial actions required as a result of non-compliance with the specifications and clauses of the EMP.
- The developer or their contractors may not direct a person to undertake any activity which would cause them to breach the specifications contained within the EMP.
- Should a contractor be in breach of any of the specifications contained in the EMP, the developer must, in writing, instruct the responsible Contractor regarding corrective and/or remedial action required, specify a timeframe for implementation of these actions, implement a penalty and/or indicate that work shall be suspended should non-compliance continue.

6.3. Environmental Awareness Plan

- At the outset of the construction phase, the ECO must present an environmental awareness plan to the lead contractor and a training workshop must be presented to the construction workers, with specific concentration on those aspects that directly affect the workers or in which workers will be directly involved.
- A copy of the construction-phase environmental awareness plan must be available onsite at all times during construction.
- At the outset of the operational phase (following completion of construction), the ECO must present an operational-phase environmental awareness plan to the filling station manager. This must be presented to the filling station staff and must also form part of the induction programme for new employees.
- A copy of the operational-phase environmental awareness plan must be available in the filling station manager's office as well as being posted in the staff quarters (operational phase).
- In case of decommissioning, a decommissioning environmental awareness plan must be compiled by the ECO and presented to the lead contractor responsible for overseeing the decommissioning or destruction activities. A training workshop must also be presented to the workers, and a copy of the environmental awareness plan must be available onsite at all times until decommissioning and site rehabilitation have been completed.

8. REFERENCES

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ENVIRONMENTAL COMPLIANCE CHECKLIST (CONSTRUCTION PHASE)

CONSTRUCTION PHASE ENVIRONMENTAL COMPLIANCE CHECKLIST			
IMPACT	COMPLIANT / NON-COMPLIANT	REMEDIAL ACTION	COMMENTS
<i>Soils</i>			
Did earthworks and site preparation commence during winter?			
Was the area cleared of vegetation limited to as small an area at a time as possible?			
Is storm water channelled away from the exposed area?			
Are soil stockpiles protected from erosion?			
Are there any signs of soil erosion?			
Is appropriate erosion protection in place in at-risk areas?			
Is topsoil stockpiled separately from sub-soil for later use in rehabilitation or landscaping?			
Are soil stockpiles protected against erosion?			
<i>Sanitation and Water Quality</i>			
Do construction workers make use of pit latrines?			
Do workers use the veld for ablutions?			
Are sufficient toilet facilities provided?			
Is the waste from the toilets disposed of at a suitable treatment plant?			
Has there been a leakage or spillage of sewage?			
Are sufficient washing facilities available for workers?			
Is potentially contaminated water (possibly containing e.g. cement, turpentine, etc) being released directly onto exposed soil or allowed to enter the storm water drainage system?			
<i>Fauna and Flora</i>			
Did site establishment start in autumn / winter?			
Have trees been planted to replace those lost to construction?			
Have workers been educated as to the importance of not simply killing all snakes, spiders and other perceived dangerous faunal species?			
Are contact details for snake removers available in site office?			
Is hunting or snaring taking place onsite?			
Are chemicals being used onsite?			
If yes, are chemicals applied by spot application or blanket application?			
Are the chemicals target-specific?			

Air Quality			
Are vehicles or machines allowed to idle for unnecessarily long periods of time?			
Are there excessive levels of airborne dust?			
Are exposed areas being watered down?			
Are soil stockpiles covered or water down to prevent wind-borne erosion?			
Have exposed surfaces been re-vegetated or paved?			
Solid Waste Management			
Are sufficient refuse bins available and are they emptied regularly?			
Is there litter on or around the site?			
Is general solid waste and construction rubble disposed of at a licensed landfill site?			
Has any hazardous waste been generated, and if so, has it been properly disposed of at a suitable site?			
Visual Aspects			
Is the site neat and tidy?			
Noise			
Are construction activities limited to daylight hours and in particular "normal" working hours (08:00 to 17:00 Monday to Friday and 08:00 to 13:00 Saturdays)?			
If any noisy activities have needed to take place outside of accepted normal working hours, were neighbouring inhabitants notified at least 24 hours beforehand?			
Have any complaints been received regarding noise? If so, has the complaints register been completed?			
Socio-Economic Aspects			
Have workers been sourced mainly from the local community (Maake area)?			
Has a Community Liaison Officer (CLO) been appointed?			
Are construction materials, support services, etc procured from within 50km of the site?			
Are informal traders allowed to trade alongside the site, and are their stalls in a safe position?			
Are fire-arms prohibited onsite?			
Is alcohol prohibited onsite?			
Is access to the site (and particularly the site camp) restricted to people employed on the			

project?			
Health and Safety			
Are "hot" activities restricted to designated areas which are clear of vegetation and other flammable material?			
Is smoking restricted to designated smoking areas situated away from flammable materials?			
Are there open fires?			
Have emergency numbers been posted in a highly visible location at the site as well as being available in the safety file in the site office?			
Is adequate fire fighting equipment available in a highly visible, easily accessible location?			
Has at least one person onsite been trained in the use of the fire fighting equipment?			
Is a first aid kit available onsite and has at least one person been trained in basic first aid?			
Site Camp			
Has a site / construction camp been established?			
If yes, is the camp in a position with a low fire risk?			
Is the camp clearly fenced off and does it have a lockable gate?			
Are only authorised workers spending nights onsite?			
Is alcohol prohibited in the camp?			
Are firearms prohibited in the camp?			
Is loud music and rowdiness prohibited in the camp?			
Traffic			
Are construction-related vehicles obstructing the road or disrupting traffic?			
Are appropriate warning signs in place if construction-related vehicles obstruct the road?			

COMPLAINT RECORD SHEET AND REGISTER

CONSTRUCTION OF A FILLING STATION AT MAAKE PLAZA SHOPPING CENTRE ON PART OF THE REMAINDER OF THE FARM RITA 668-LT, MAAKE, TZANEEN AREA, LIMPOPO

Complaint record sheet	Complaint nr:	
	Date:	
Raised by (name and surname):		
Capacity (e.g. community member):		
Complaint received by (name and surname):		
Complaint received via (personal communication / fax / e-mail / telephone):		
Type of complaint (e.g. noise, pollution, etc):		
Complaint:		
Mitigation measures (including proposed date of implementation):		
Notes:		

Signed:

ECO

Site manager

Date

INCIDENT RECORD SHEET AND REGISTER

CONSTRUCTION OF A FILLING STATION AT MAAKE PLAZA SHOPPING CENTRE ON PART OF THE REMAINDER OF THE FARM RITA 668-LT, MAAKE, TZANEEN AREA, LIMPOPO

Incident record sheet	Incident nr:	
	Date:	
Description of incident:		
Photographs of incident (if applicable):		
Mitigation measures (including proposed date of implementation):		
Notes (if any):		

Signed:

ECO

Site manager

Date

