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UPDATED ENVIRONMENTAL MANAGEMENT PROGRAMME

In terms of the **National Environmental Management Act**
(Act No. 107 of 1998, as amended) & 2014 **Environmental Impact Regulations** (as amended)

for

PARKDENE FILLING STATION

on

Erf 11221, Parkdene, George



Prepared for Applicant: Look Forward Construction (Pty) Ltd

Date: 23 January 2023

Primary EAP: Mrs Louise-Mari van Zyl

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Case Officer: Shireen Pullen

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APPROVAL FOR RELEASE

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PURPOSE OF THIS REPORT:**Updated Environmental Management Programme****APPLICANT:****Look Forward Construction (Pty) Ltd****CAPE EAPRAC REFERENCE NO:****GEO139c/06****SUBMISSION DATE****23 January 2023**

UPDATED ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)

in terms of the

National Environmental Management Act

(NEMA, Act No. 107 of 1998, as amended) & **Environmental Impact Regulations** (2014, as amended)

for

PARKDENE FILLING STATION

on

Erf 11221, Parkdene, George

Submitted for:

Department Decision-making

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ORDER OF REPORT

Environmental Management Plan

Appendix 1	:	Locality Plans
Appendix 2	:	Site Development Plans / Layouts / Drawings
Appendix 3	:	Environmental Guidelines for Construction
Appendix 4	:	EMP Quick Reference Guide
Appendix 5	:	EAP Company Profile
Appendix 6	:	Environmental Authorisation
Appendix 7	:	Recycling of Construction Material
Appendix 8	:	List of applicable plant species

TABLE OF CONTENTS

1	INTRODUCTION.....	1
1.1	Purpose of the EMPr.....	1
1.2	Status of the EMPr.....	2
1.3	Development Site	2
2	DEVELOPMENT DESCRIPTION.....	3
3	PROJECT PHASING	5
3.1	PRE-CONSTRUCTION PHASE.....	5
3.2	Construction Phase.....	5
3.3	Operational Phase	5
3.4	Closure and Decommissioning Phase.....	6
4	LEGISLATIVE REQUIREMENTS	6
4.1	National Environmental Management Act (NEMA, Act 107 of 1998)	6
4.2	National ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT (NEM:BA) (ACT 10 OF 2004).....	7
4.3	National Environmental Management: Waste Act (NEM:WA, Act 59 of 2008).....	8
4.4	National Waste Management Strategy.....	8
4.5	National Energy Regulator of South Africa (NERSA)	8
4.6	National Electricity Regulation Act (Act 4 of 2006)	9
4.7	SANS 10400 Application of the National Building Regulations.....	9
4.8	SANS 1535.....	9
4.9	SANS 10089.....	9
4.10	SANS 1830.....	9
4.11	National Building Regulations	9
4.12	Conservation of Agricultural Resources Act (CARA)	10
4.13	National Veld and Forest Fire Act (Act 101 of 1998)	10
4.14	National Heritage Resources Act (Act 25 of 1999)	10
4.15	Occupational Health and Safety Act (Act 85 of 1993).....	11
4.16	NATIONAL WATER ACT (NWA, ACT 36 OF 1998).....	11
5	RESPONSIBILITIES	13
5.1	Holder of the EA	13
5.2	Engineers, Contractors & Service Providers	14
5.3	Ecological Control Officer (ECO).....	15

5.4	Eco site visit frequency	16
5.5	Environmental Induction and Training	16
6	PRE-CONSTRUCTION DESIGN CONSIDERATIONS	16
6.1	Stormwater Management Preparation.....	17
6.2	Water Resource Protection	17
6.3	Energy Resource Protection	19
7	CONSTRUCTION PHASE REQUIREMENTS	21
7.1	Establishment of Contractors Site Camp.....	21
7.2	Demarcation of Work and No-go Areas.....	22
7.3	Site Clearance Plan	24
7.4	Erosion Control	24
7.5	Stormwater Management (construction)	27
7.6	Earthworks.....	27
7.7	Fire management and protection	27
7.8	Noise And Emission Control	28
7.9	Waste Management.....	29
7.9.1	Solid Waste	31
7.9.2	Construction Rubble and Waste.....	31
7.9.3	Scrap Metal	31
7.9.4	Hazardous Waste	31
7.10	Sanitation.....	32
7.11	Concrete Batching	32
7.12	Fuel & Chemical Storage	33
7.13	Dust Management.....	35
7.14	Rehabilitation	36
7.15	Use of local labour	36
7.15.1	Targets	36
7.15.2	Record Keeping	37
7.15.3	Site Security	37
7.16	Heritage Requirements	38
7.17	Method Statements.....	38
7.18	Health And Safety	39
7.19	Implementation Schedule.....	41

7.20	Construction Phase Monitoring	41
8	OPERATIONAL PHASE ENVIRONMENTAL MANAGEMENT REQUIREMENTS	42
8.1	Waste Management.....	42
8.1.1	Recycling	42
8.1.2	Petroleum Product Waste Management.....	42
8.1.3	Fat, Oil & Grease Trap (FOG) for Restaurant.....	42
8.1.4	Garden & Biodegradable Refuse	43
8.2	Fire Risk Prevention and Management Control.....	43
8.3	Fuel and Forecourt Management.....	43
8.3.1	Fuel Deliveries	43
8.3.2	Underground Fuel Tanks	44
8.4	POLLUTION PREVENTION & CONTROL.....	44
8.4.1	Emergency Fuel Spills	44
8.4.2	Air Pollution	45
8.4.3	Noise Pollution.....	45
8.5	Stormwater Management.....	45
8.6	Isolate Forecourt Stormwater Run-off	46
8.7	Prevent Contaminated Water From Leaving the Forecourt	47
8.8	Prevent Rainwater Entering the Forecourt	48
8.9	Install Rainwater Tanks.....	48
8.10	Operational Phase Health & Safety.....	48
9	DECOMMISSIONING PHASE ENVIRONMENTAL MANAGEMENT REQUIREMENTS...	50
9.1.1	Abandonment of Underground Storage Tanks	50
10	ENVIRONMENTAL IMPACTS & MITIGATIONS.....	50
10.1	Mitigations	52
11	NON-COMPLIANCE	55
11.1	Procedures	56
11.2	Offences and Penalties.....	56
12	MONITORING AND AUDITING	57
12.1	Monitoring timeframes summary.....	57
12.2	Environmental Audits	58
12.3	Audit Reports Frequencies and Format.....	58
13	REFERENCES.....	60

LIST OF FIGURES

Figure 1: Development site, Erf 11221, Parkdene, George, 2022.....	3
Figure 2: Photos of site taken 2011 & 2021.....	3
Figure 3: Site Development Plan / Layout (2022).	4
Figure 4: Schematic illustration of Underground Storage Tanks (USTs).....	4
Figure 5: EMPr implementation organisational structure.	13
Figure 6: Examples of shade netting demarcation.....	23
Figure 7: Example of a typical stormwater inlet structure within a road surface (MVD, 2010). ..	46
Figure 8: Example of typical energy dissipating structures at stormwater pipe outlet (MVD, 2010).	46
Figure 9: Schematic illustration of a typical forecourt separator (Vela VKE, 2011).	47

LIST OF TABLES

Table 1: Checklist in terms of Appendix 4 of Regulation 982 of 2014 EIA Regulations.	10
Table 2: Site Clearance Methodology.	24
Table 3: Socio-Economic Mitigations to maximise positive impacts.	37
Table 4: Staff Record example.	37
Table 5: Mitigations / Recommendations.	52
Table 6: Monitoring Timeframe Summary.....	57
Table 7: Audit Reports Timeframe Summary.....	58
Table 8: Environmental Audit Requirements.....	58

ENVIRONMENTAL MANAGEMENT PROGRAMME REQUIREMENTS

Appendix 4 of Regulation 982 of the 2014 EIA Regulations specify the required contents of an Environmental Management Programme (EMPr). The checklist below serves as a summary of how these requirements were incorporated into this EMPr.

Table 1: Checklist in terms of Appendix 4 of Regulation 982 of 2014 EIA Regulations.

Requirement	Description
Details and expertise of the EAP who prepared the EMPr; including curriculum vitae.	Ms Louise-Mari van Zyl for Cape Environmental Assessment Practitioners. See Appendix 4.
A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description.	Section 1
A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that must be avoided, including buffers	Appendix 1 & 2
A description of the impact management objectives, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all the phases of the development including – (i) Planning and design; (ii) Pre-construction activities; (iii) Construction activities; (iv) Rehabilitation of the environment after construction and where applicable post closure; and (v) Where relevant, operation activities.	Section 6 – Pre-Construction Phase Section 7 – Construction Phase Section 8 – Operation Phase Section 9 – Decommissioning Phase Section 10 – Environmental Impacts & Mitigations.
A description and identification of impact management outcomes required for the aspects contemplated above.	Section 6 – Pre-Construction Phase Section 7 – Construction Phase Section 8 – Operation Phase Section 9 – Decommissioning Phase Section 10 – Environmental Impacts & Mitigations.
A description of the proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated above will be achieved and must, where applicable include actions to –	Section 6 – Pre-Construction Phase Section 7 – Construction Phase Section 8 – Operation Phase

Requirement	Description
(i) Avoid, modify, remedy control or stop any action, activity or process which causes pollution or environmental degradation; (ii) Comply with any prescribed environmental management standards or practises; (iii) Comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) Comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable.	Section 9 – Decommissioning Phase Section 10 – Environmental Impacts & Mitigations.
The method of monitoring the implementation of the impact management actions contemplated above.	Section 5 Section 10
The frequency of monitoring the implementation of the impact management actions contemplated above.	Section 5 Section 10
An indication of the persons who will be responsible for the implementation of the impact management actions.	Section 5
The time periods within which the impact management actions must be implemented.	Not Applicable
The mechanism for monitoring compliance with the impact management actions.	Section 5 Section 10
A program for reporting on compliance, taking into account the requirements as prescribed in the Regulations.	Section 5 Section 10
An environmental awareness plan describing the manner in which – (i) The applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) Risks must be dealt with in order to avoid pollution or the degradation of the environment.	Section 5 - Responsibilities Section 6 – Pre-Construction Phase Section 7 – Construction Phase Section 8 – Operation Phase Section 9 – Decommissioning Phase Section 10 – Environmental Impacts & Mitigations.
Any specific information that may be required by the competent authority.	EA Conditions in relevant Sections throughout EMPr.

ABBREVIATIONS AND ACRONYMS

BSP	Biodiversity Sector Plan - to inform land use planning, environmental assessments, land and water use authorisations, as well as natural resource management, undertaken by a range of sectors whose policies and decisions impact on biodiversity.
CARA	Conservation of Agricultural Resources Act (Act 43 of 1983) - provides for control over the utilization of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith.
CBA	Critical Biodiversity Area - areas required to meet biodiversity targets for ecosystems, species and ecological processes, as identified in a systematic biodiversity plan.
DFFE	National Department of Forestry, Fisheries & the Environment – the national authority responsible for the sustainable environmental management and integrated planning.
DEA&DP	Department of Environmental Affairs and Development Planning – the provincial authority for sustainable environmental management and integrated development planning. The competent authority is this case.
DWS	Department of Water & Sanitation Affairs – National authority mandated to enforce the National Water Act (NWA).
EA	Environmental Authorisation – Authorisation obtained on completion of an Environmental Impact Assessment in terms of the National Environmental Management Act (NEMA).
ECA	Environment Conservation Act, 1989 - To provide for the effective protection and controlled utilization of the environment and for matters incidental thereto.
ECO	Ecological Control Officer – independent site agent appointed to observe and enforce the implementation of environmental policies and principles on a development site.
EIA	Environmental Impact Assessment - a process of evaluating the likely environmental impacts of a proposed project or development, taking into account inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse.
EMPr	Environmental Management Programme – an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented and that positive benefits of the projects are enhanced.
GIS	Geographic Information System - system designed to capture, store, manipulate, analyse, manage, and present all types of geographical data.
GPS	Global Positioning System - a radio navigation system that allows land, sea, and airborne users to determine their exact location, velocity, and time 24 hours a day, in all weather conditions, anywhere in the world.
NEMA	National Environmental Management Act (Act 107 of 1998, as amended) – national legislation that provides principles for decision-making on matters that affect the environment.
NEM:BA	National Environmental Management: Biodiversity Act (Act No.10 of 2004) – provides for the management and conservation of South African biodiversity within the framework of NEMA.

NFA	National Forestry Act (Act No.84 of 1998) - provides for the protection of forests, as well as specific tree species within South Africa.
NSBA	National Spatial Biodiversity Assessment – aims to assess the state of South Africa's biodiversity based on best available science, with a view to understanding trends over time and informing policy and decision-making across a range of sectors.
NWA	National Water Act (Act No.36 of 1998) - ensures that South Africa's water resources are protected, used and managed.

1 INTRODUCTION

Cape Environmental Assessment Practitioners (Cape EAPrac) was appointed by the Applicant, Look Forward Construction (Pty) Ltd. to update the Environmental Management Programme (EMPr) associated with the **Parkdene Filling Station** on Erf 11221, Parkdene, George (on the corner of Sandkraal Road / Nelson Mandela Boulevard and Main Road) (*Figure 1 & 4 below*), in terms of the National Environmental Management Act (NEMA, Act 107 of 1998, as amended) and the 2014 EIA Regulations (as amended).

The original EMPr, submitted as part of the original Environmental Application in 2012, was updated with the Conditions of the Environmental Authorisation (EA) in 2013. This latest update, serves to capture the amendments to the Filling Station layout in 2021/2022. This EMPr will be used to promote and ensure environmental monitoring and control during all phases (construction, operation & possible decommissioning) of the proposed filling station development

The Parkdene Filling Station was granted Environmental Authorisation (EA) on 14 November 2012 by the Department of Environmental Affairs & Development Planning (DEA&DP), as the competent authority. An amendment of the EA was granted on 21 August 2017 (Amendment), changing the contact details of the Holder of the EA and authorising the extension of the EA validity period by a further 5-years. Another amendment of the EA was submitted in 2022 to extend the EA validity period by a further 5-years and to change the layout of the proposed facility.

The originally approved Site Development Plan (SDP) / Layout of the Filling Station (2012) has been changed to accommodate the new bus stops built by the Municipality adjacent to the site, and in accordance to current marketing best practice i.t.o. exposure to Nelson Mandela Boulevard / Sandkraal Road, with due consideration of the current site context (access points, building lines, existing services, petrochemical infrastructure & particularly delivery truck maneuvers), as recommended in the updated TIA (2021) and recommendations from the Local Authority.

This EMPr contains **management requirements** and **recommendations** made by *Cape EAPrac*, the appointed specialists, as well as in terms of the regulations contained in the **National Environmental Management Act** (NEMA, Act 107 of 1998), and best practice principles. This EMPr has been updated to include the conditions of **Environmental Authorization** (EA) as issued by the Department of Environmental Affairs & Development Planning on 14 November 2012 & Addendum to EA issued on 21 August 2017.

This updated EMPr also includes the recommendations stipulated in the updated Services Report (2022), Socio-economic Impact Assessment (2022) and Traffic Impact Assessment (2021).

Section 28 of NEMA provides for the **Duty of Care** principle that “...obliges every person who causes, has caused or may cause significant environmental degradation to take reasonable measures to prevent such degradation from occurring, continuing or recurring”. This clause forms the underpinning philosophy of this EMPr.

A “**Quick Reference**” guide for construction activities is attached as **Appendix 2** and must be read in conjunction with the relevant sections of this report. Please note, the quick reference guide cannot be read in isolation and must be read in conjunction with this EMPr.

1.1 PURPOSE OF THE EMPr

The purpose of this EMPr is to ensure that the **environmental impacts and management** of the various phases of the project on the receiving environment are **managed, mitigated**, and kept to a **minimum** (i.e., the **outcome** of implementing the EMPr). This includes ensuring that the mitigation measures described in the Basic Assessment Report (BAR, 2012), the Environmental Impact Report (EIR, 2022) and the associated specialist reports implemented.

The EMPr must provide easily understood and clearly defined actions that must be implemented during each phase of the proposed development. The EMPr is a dynamic document that is flexible and responsive to new and changing circumstances.

The document is **binding** on the **Applicant**, all **contractors** and **sub-contractors** and **visitors** to the site. It must be included as part of any **documents / agreements**, as well as **contractual documents** between the Applicant and any contractors. Copies of this EMPr must be kept **on site** and all **senior personnel** are expected to familiarize themselves with the content of this EMPr.

Any changes or deviations to this EMPr must be authorised by the competent authority.

1.2 STATUS OF THE EMPR

The EMPr must form part of all **contract documents** including all tender and final documents. The programme must be read in conjunction with the contract documents including the Specifications and where applicable, the Bill of Quantities. Where a conflict exists between the Specifications and Bill of Quantities and the EMP, the matter shall be brought to the attention of the Applicant, consulting engineer and the ECO for resolution. The rates included for each activity in the Bill of Quantities shall include for compliance with the Environmental Management Program.

It is of utmost importance that this EMPr be read in conjunction with the **Environmental Authorisation** (EA) and any subsequent EA Addendum or Amendment. **This EMPr has been updated with Conditions of the Environmental Authorisation (2012), its Amendment (2017) & specialist recommendations (2022).**

The acceptance of the EMPr by the **Department of Environmental Affairs & Development Planning** will confer a **legal obligation** to comply with the specifications of the EMPr on the project Applicant and the appointed contractors. Any **substantial** changes, updates or upgrades to the EMPr must be submitted to and approved by the Department.

The EMPr is valid for the duration of the project with each applicable phase corresponding to the identified requirements.

1.3 DEVELOPMENT SITE

The development site is located on the corner of Sandkraal / Nelson Mandela Boulevard and Main Road, Parkdene, George (Figure 4). The site is currently accessed by vehicles from an entrance on Main Street, George. The development site has existing Business Zone rights.

The site falls within the jurisdictional area of the George Municipality and within the urban edge of George. The site forms part of a mixed commercial and residential section of the Parkdene area, George.

The development site covers an area of approximately 4 995m² and is located in Parkdene, approximately 3,5 kilometres South-East of the Central Business District of George.



Figure 1: Development site, Erf 11221, Parkdene, George, 2022.



Figure 2: Photos of site taken 2011 & 2021.

2 DEVELOPMENT DESCRIPTION

Erf 11221 is approximately 4 995m² in size and zoned Business Zone IV, with the operation of the filling station as primary use right. The Revised SDP / Layout (2021) remains within the same scope / extent as the original development proposal (2012), described as follows:

A filling and service station with service facilities for the dispensing of both octane (petrol) and diesel fuels, for passenger, light delivery, and heavy vehicles. A Filling Station to dispense both octane (petrol) and diesel fuels, for passenger, light delivery, and heavy vehicles. The total covered development footprint (762.10m²) includes:

- Installation of five (5) Underground Storage Tanks (USTs);
 - Depth: 2 to 2.5 metres below natural ground level;
 - Capacity: ~115m³ (~115 000 litres);
- Hard-surfaced fuel dispensing Forecourt and tanker refuelling area;
- Main building (309.92m²), including:
 - a convenience shop, public toilets, freezer/chiller room, storeroom, kitchen freezer/chiller, prep area, servery area, cashiers' cubicle, offices, staff toilets, attendants' cubicle, attendants' change rooms, ATM room.
- Twenty-nine parking bays with two disabled bays;
- Hard-surfaced internal access and service roads;
- Access:
 - Entrance only off Main Street;
 - Full access off Golf Street.



Figure 3: Site Development Plan / Layout (2022).

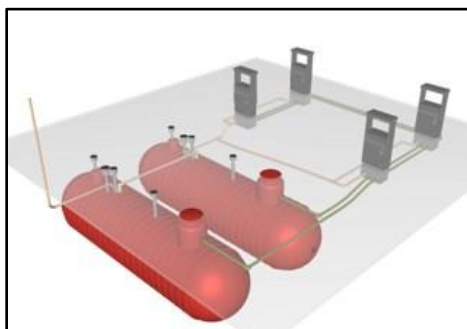


Figure 4: Schematic illustration of Underground Storage Tanks (USTs).

{Condition 6 of EA applicable}:

6. Any changes to, or deviations from the scope of the description set out in section B above must be accepted or approved, in writing, by the competent authority before such changes or deviations may be implemented. In assessing whether to grant such acceptance/approval or not, the competent authority may request such information as it deems necessary to evaluate the significance and impacts of such changes or deviations and it may be necessary for the holder to apply for further authorisation in terms of the applicable legislation.

3 PROJECT PHASING**3.1 PRE-CONSTRUCTION PHASE**

The pre-construction phase refers to the design phase of the project. This will ensure that any requirements and best practice mechanisms are built into the planning / design phase to be developed in the construction and operational phase. In terms of this application, the pre-construction can be considered as the engineering & technical designs and mitigations.

{Condition 4 of the EA stipulates that seven calendar day notice, in writing, must be given to the competent authority prior to the commencement of construction activities. This notice must make clear reference to the site details & EA reference, and provide proof of compliance with Conditions 2, 3, 8 & 12}.

3.2 CONSTRUCTION PHASE

The construction phase of the development refers to the **actual construction** of the proposed filling station facility, including all earthworks and bulk services construction (access roads, service infrastructure etc.). The construction programme will be included with this EMPr once it has been finalized. Extensions due to delays are always a possibility and in the event that the end date for construction is extended, this EMPr must still be considered binding. This EMPr focuses on the construction phase of the development as described above.

3.3 OPERATIONAL PHASE

The Operational Phase relates to the ongoing management required to ensure sustainable development within designated urban areas. The operational phase of the development will commence once operation of the filling station takes place (i.e. once a service provider / Fuel Retailer takes occupation of the constructed premises).

Operation Phase compliance with this EMPr is required by, but not limited to, the following entities:

- Tenants;
- All contractors (deliveries, waste removal, service providers, etc.);
- All personnel; and
- Users of the facility.

The Applicant must ensure that the Operational Phase maintains the underpinning principles 'Duty-of-Care-to-the-Environment' and ideals of sustainable development.

3.4 CLOSURE AND DECOMMISSIONING PHASE

Decommissioning refers to the process of removing the operating assets of any development after completion of the operating life cycle.

Closure of a service station is subject to financial considerations related to rehabilitation of the site and prevalent to the economic climate and technological development, and as such it is difficult to predict such action. As such, specific management recommendations are not included in this EMP. Should decommissioning occur in the future, compliance with all **relevant legislation** as well as the development of specific decommissioning management plans, must be implemented.

4 LEGISLATIVE REQUIREMENTS

The Project Applicant is required to comply with all necessary legislation and policies applicable to the development and management of the development. These include but are not limited to:

4.1 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NEMA, ACT 107 OF 1998)

The National Environmental Management Act (**NEMA**, Act 107 of 1998, as amended), makes provision for the identification and assessment of **activities** that are potentially detrimental to the environment and which require authorisation from the competent authority (in this case, the provincial Department of Environmental Affairs & Development Planning (DEA&DP)) based on the findings of an Environmental Impact Assessment (EIA).

NEMA embraces the notion of sustainable development as contained in the Constitution of South Africa (Act 106 of 1996) in that everyone has the right:

- to an environment that is not harmful to their health or wellbeing; and
- to have the environment protected for the benefit of present and future generations through reasonable legislative and other measures.

NEMA aims to provide for cooperative environmental governance by establishing principles for decision-making on all matters relating to the environment and by means of Environmental Implementation Plans (EIP) and Environmental Management Plans/Programmes (EMPr), of which this EMPr is one.

Principles contained in Section 2 of the NEMA, amongst other things, prescribe that environmental management must:

- In order of priority aim to: avoid, minimise or remedy disturbance of ecosystems and loss of biodiversity;
- Avoid degradation of the environment and avoid jeopardising ecosystem integrity;
- Pursue the best practicable environmental option by means of integrated environmental management;
- Protect the environment as the people's common heritage;
- Control and minimise environmental damage; and

- Pay specific attention to management and planning procedures pertaining to sensitive, vulnerable, highly dynamic or stressed ecosystems.

It is incumbent upon the landowner, to ensure that the abovementioned principles, entrenched in this EMP are upheld and complied with.

4.2 NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT (NEM:BA) (ACT 10 OF 2004)

This Act controls the management and conservation of South African biodiversity within the framework of NEMA. Amongst others, it deals with the protection of species and ecosystems that warrant national protection, as well as the sustainable use of indigenous biological resources. Sections 52 & 53 of this Act specifically make provision for the protection of critically endangered, endangered, vulnerable and protected ecosystems that have undergone, or have a risk of undergoing, significant degradation of ecological structure, function or composition as a result of human intervention through threatening processes.

The National List of Threatened Ecosystems (Notice 1477 of 2009, Government Gazette No. 32689, 6 November 2009) was gazetted in 2014 and the Revised List gazette 18 November 2022 (Notice 2747 of 2022, Gov.Gazette No.47526, 18 Nov.2022). The list of threatened terrestrial ecosystems supersedes the information regarding terrestrial ecosystem status in the National Spatial Biodiversity Assessment (NSBA) 2004 & 2011.

The ecosystem status of the mapped vegetation type (Garden Route Granite Fynbos) found in the site area in general, at the time of the original environmental assessment was classified as 'Endangered'. This ecological threat status was subsequently elevated to 'Critically Endangered' in 2014 and subsequently Gazetted the same on 18 November 2022.

The site verified conditions remain the same as previously assessed: transformed, with no natural habitat remaining. As such the threat status does not apply given that no natural habitat remains on site.

The site is **not located within a Critical Biodiversity Area (CBA)**, Ecological Support Area (ESA) or Protected Area (PA). Although mapped within a strategic water source area, there are also **no watercourses or aquatic features** on or near the property and as such, there are no expected aquatic ecosystem impacts.

In addition to the management of ecosystems, this Act makes provision for the management and control of alien invasive vegetation. This includes the listing of invasive species that are a threat to natural ecosystems. These species must be strictly controlled and / or eradicated.

The site is **transformed**, with only a few indigenous plants noted. The sparse vegetation is dominated by Kikuyu grass, alien invasive plants (garden escapees) and weedy pioneers, which must be removed and only indigenous vegetation permitted for landscaping by the within the open spaces of the Filling Station.

The site is located within an existing urban context, with no remnant natural terrestrial or aquatic vegetation or habitat remaining on or within close proximity to the site. The EAP submits that this have not changed since the previous authorization.

4.3 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT (NEM:WA, ACT 59 OF 2008)

NEM:WA was instituted to reform the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecological sustainable development; to provide for institutional arrangements and planning matters; to provide for national norms and standards for regulating the management of waste by all spheres of government; to provide for specific waste management measures; to provide for the licensing and control of waste management activities; to provide for the remediation of contaminated land; to provide for the national waste information system; to provide for compliance and enforcement and to provide for matters connected therewith.

In short NEM:WA deals with the handling, treatment, processing, recycling, re-use and/or storage of both 'general' and 'hazardous' waste products. The storage and handling of Fuel associated with the Filling Station is not considered a 'waste' product and thus a process in terms of NEM:WA is not applicable.

4.4 NATIONAL WASTE MANAGEMENT STRATEGY

The National Waste Management Strategy presents the South African government's strategy for integrated waste management for South Africa.

It deals among others with: Integrated Waste Management Planning, Waste Information Systems, Waste Minimisation, Recycling, Waste Collection and Transportation, Waste Treatment, Waste Disposal and Implementing Instruments.

It is advisable that integrated waste management system be adopted, which includes waste minimization, waste recycling and the proper storage and disposal of waste, which does not impact on the health of the environment and human health.

4.5 NATIONAL ENERGY REGULATOR OF SOUTH AFRICA (NERSA)

The National Energy Regulator (NERSA) is a regulatory authority established as a juristic person in terms of Section 3 of the National Energy Regulator Act, 2004 (NER, Act No. 40 of 2004). NERSA's mandate is to regulate the Electricity, Piped-Gas and Petroleum Pipeline industries in terms of the Electricity Regulation Act, 2006 (Act No. 4 of 2006), Gas Act, 2001 (Act No. 48 of 2001) and Petroleum Pipelines Act, 2003 (Act No. 60 of 2003).

NERSA's Strategic Objectives are:

- To implement relevant energy law efficiently and effectively;
- To implement relevant energy regulations efficiently and effectively;
- To identify, develop and implement relevant energy rules efficiently and effectively;
- To establish the credibility, legitimacy and sustainability of NERSA as an independent and transparent energy regulator;
- To create an effective organisation that delivers on its mandate and purpose; and
- To evaluate the Energy Regulator's effectiveness.

NERSA's mandate is further derived from written government policies as well as Regulations issued by the Minister of Minerals and Energy. NERSA is expected to proactively take necessary regulatory actions in anticipation of and in response to the changing circumstances in the energy industry.

4.6 NATIONAL ELECTRICITY REGULATION ACT (ACT 4 OF 2006)

This Act aims to establish a national regulatory framework for the electricity supply industry; to make the National Energy Regulator the custodian and enforcer of the national electricity regulatory framework; to provide for licenses and registration as the manner in which generation, transmission, distribution, trading and the import and export of electricity are regulated; and to provide for matters connected therewith.

This proposal will produce electricity and distribute it into the national grid and as such all applicable provisions in this Act must be adhered to.

4.7 SANS 10400 APPLICATION OF THE NATIONAL BUILDING REGULATIONS

The application of the National Building Regulations contains performance parameters relating to fire safety, sanitation systems, moisture penetration, structural safety, serviceability and durability. It also takes into account how the above can be established to reflect social expectations in a manner which supports sustainable development objectives.

4.8 SANS 1535

SANS 1535 contain the standards as prescribed by the South African Bureau of Standards (SABS) required for Glass Reinforced Polyester Coated Steel Tanks for Underground Storage of Hydrocarbons and Oxygenated Solvents Intended for Burial Horizontally. These norms and standards must be applied.

4.9 SANS 10089

SANS Part 3 contains the industry standards for the installation of USTs, pumps/dispensers and pipe work at service stations and consumer installations as prescribed by the South African Bureau of Standards.

4.10 SANS 1830

SANS 1830 contains industry standards for flexible piping to be used for underground purposes at serve stations.

4.11 NATIONAL BUILDING REGULATIONS

The National Building Regulations and Building Standards Act as amended must be complied with. This act addresses, inter alia:

- Specifications for draftsmen, plans, documents and diagrams;
- Approval by local authorities;
- Appeal procedures;
- Prohibition or conditions with regard to erection of buildings in certain conditions;
- Demolition of buildings;
- Access to building control officers;
- Regulations and directives; and
- Liability.

4.12 CONSERVATION OF AGRICULTURAL RESOURCES ACT (CARA)

The Conservation of Agricultural Resources Act aims to provide for the conservation of natural agricultural resources by maintaining the production potential of land, combating and preventing erosion and weakening or destruction of water resources, protecting vegetation and combating weeds and invader plant species.

4.13 NATIONAL VELD AND FOREST FIRE ACT (ACT 101 OF 1998)

The purpose of the National Veld and Forest Fire Act is to **prevent and combat veld, forest and mountain fires** throughout the RSA and to provide institutions, methods and practices for achieving this purpose. Institutions include the formations of such bodies as **Fire Protection Associations** (FPA's) and Working on Fire. The Act provides the guidelines and constitution for the implementation of these institutions as well as their functions and requirements.

All landowners are required in terms of this Act to prepare and maintain **firebreaks** on the boundary of their property and any adjoining land. Only the Minister may exempt a landowner from providing firebreaks.

In areas that are considered a high fire risk, especially in vegetation types that tend to be fire driven ecosystems, it is recommended that a fire management plan is put in place, or the owner becomes a member of the local FPA and fall under the umbrella of the regional fire management strategy.

Since the property is inside the urban edge of George, the need to belong to an FPA and provide for firebreaks will not be applicable. However, it is advised that adequate fire protection is implemented during the construction and operational period.

4.14 NATIONAL HERITAGE RESOURCES ACT (ACT 25 OF 1999)

The purpose of the National Heritage Resources Act is to:

- Introduce an integrated and interactive system for the management of the national heritage resources;
- Promote good government at all levels,
- Empower civil society to nurture and conserve their heritage resources so that they may be bequeathed to future generations;
- To lay down general principles for governing heritage resources management throughout South Africa;
- To introduce an integrated system for the identification, assessment and management of the heritage resources of South Africa;
- To establish the South African Heritage Resources Agency together with its Council to co-ordinate and promote the management of heritage resources at national level;
- To set norms and maintain essential national standards for the management of heritage resources in South Africa and to protect heritage resources of national significance;
- To control the export of nationally significant heritage objects and the import into South Africa of cultural property illegally exported from foreign countries;
- To enable the provinces to establish heritage authorities which must adopt powers to protect and manage certain categories of heritage resources;

- To provide for the protection and management of conservation-worthy places and areas by local authorities; and
- To provide for matters connected therewith.

There have not been any activities identified in terms of this Act, however it does not relieve the Applicant from undertaking due diligence of these regulations.

{Condition 15 of the EA applicable}:

15. Should any heritage remains be exposed during excavations or any actions on the site, these must immediately be reported to the Provincial Heritage Resources Authority of the Western Cape, Heritage Western Cape (in accordance with the applicable legislation). Heritage remains uncovered or disturbed during earthworks must not be further disturbed until the necessary approval has been obtained from Heritage Western Cape. Heritage remains include: archaeological remains (including fossil bones and fossil shells); coins; indigenous and/or colonial ceramics; any articles of value or antiquity; marine shell heaps; stone artifacts and bone remains; structures and other built features; rock art and rock engravings; shipwrecks; and graves or unmarked human burials.

A qualified archaeologist must be contracted where necessary (at the expense of the applicant and in consultation with the relevant authority) to remove any human remains in accordance with the requirements of the relevant authority.

4.15 OCCUPATIONAL HEALTH AND SAFETY ACT (ACT 85 OF 1993)

The Act provides for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work.

In terms of this Act, a **Health and Safety Officer (HSO)** and Protocol must be implemented on the site during construction. The appointment of a Health and Safety Officer is the responsibility of the Applicant and contractor, and is included in this report to ensure due diligence on construction sites. It is the responsibility of the appointed HSO to conduct any required audits and as such only the appointment of an HSO will be audible in terms of this document.

{Condition 14 of EA applicable}:

14. All procedures and equipment used within the site should comply with the Occupational Health and Safety Act (Act 85 of 1983) and should also comply with the SANS 10089 Part 3's particulars for the industry standards associated with pumps and dispensers to ensure that the equipment used is accord to these standards, thereby reducing any avoidable vapour emissions.

4.16 NATIONAL WATER ACT (NWA, ACT 36 OF 1998)

The National Water Act (NWA) gives effect to the constitutional right of access to water. The Act's overall purpose is to ensure that South Africa's water resources are protected, used and managed

in ways which take into account a number of factors, including inter-generational equity, equitable access, redressing the results of past racial and gender discrimination, promoting sustainable and beneficial use, facilitating social and economic development, and providing for water quality and environmental protection.

The NWA makes persons who own, control, occupy or use land responsible for taking measures to prevent pollution of water resources, and empowers Government authorities to take measures to enforce this obligation.

Since no water resources are being affected by this development, this Act is not applicable.

5 RESPONSIBILITIES

The various role players in the implementation of an authorised development are required to undertake various activities and responsibilities. The Department of Environmental Affairs and Development Planning is the overriding authority regarding this activity.

The following figure shows the organizational structure details for the implementation of the Environmental Authorisation and this EMPr. The structure illustrates the reporting procedures for stakeholders in the implementation of this EMPr.

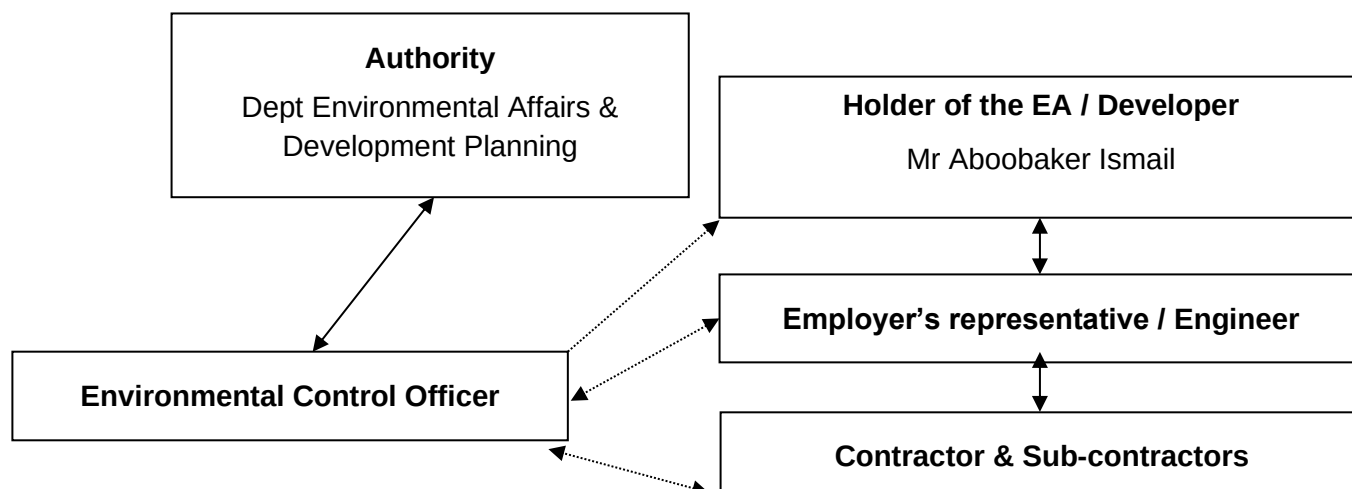


Figure 5: EMPr implementation organisational structure.

5.1 HOLDER OF THE EA

The Holder of the EA / property owner is the overseeing entity responsible for ensuring that all activities undertaken on the property comply with the Environmental Authorisation (EA) and associated Environmental Management Programme (EMPr) (& any other approval / licence / permit).

The responsibilities of the holder of the EA / property owner include, but are not limited to the following:

- Ensure that **all tender documentation** include reference to, and the need for compliance with, the EA and EMPr as well as any other legally binding documentation, which include and are not limited to:
 - the Municipal Approval/s;
 - DMRE Site & Retail Licences.
- Be conversant with the EA, EMPr & all legally binding documentation, and ensure that all Contractors, Sub-contractors, Engineers (and future senior site managers / personnel) are made aware of, and understand the conditions and recommendations, contained in the abovementioned documentation;
- Ensure that all Contractors, Sub-contractors and Engineers (during construction activities) are made aware of their 'Duty of Care to the Environment' and that any damage or degradation of the natural environment within the bounds of the property will be not be tolerated and must be dealt with / remedied at the cost of the perpetrator;

- Take remedial and/or disciplinary action in circumstances where persons are found to be in contravention of the abovementioned legally binding documentation.

{Condition 5 of EA applicable}:

5. The holder is responsible for ensuring compliance with the conditions by any person acting on his/her behalf, including an agent, sub-contractor, employee or any person rendering a service to the holder.

{Condition 7 of EA applicable}:

7. The applicant must notify the competent authority in writing, within 24 hours thereof if any condition herein stipulated is not being complied with.

{Condition 10 of the EA applicable}:

10. The applicant must submit an application for amendment of the environmental authorisation to the competent authority where any detail with respect to the environmental authorisation must be amended, added, substituted, corrected, removed or updated. Further, the rights granted by this environmental authorisation are personal rights (i.e. not attached to a property, but granted to a natural or juristic person). As such, only the holder may undertake the activities authorised by the competent authority. Permission to transfer the rights and obligations contained herein must be applied for in the following manner:

5.2 ENGINEERS, CONTRACTORS & SERVICE PROVIDERS

The Engineers, Contractors, Sub-contractors and Service Providers are often the parties responsible for physically carrying out the relevant activities for which the majority of the recommendations in this EMPr are intended. Service Providers and Contractors include: services, building contractors, 'handy-men' and engineers overseeing the installation and maintenance of services etc.

The responsibilities of these parties include but are not limited to the following:

- Be conversant and compliant with the EA, the EMPr, any relevant License, Permit or any other legally binding documentation relevant to their operations;
- Have a responsibility to adhering to any conditions and recommendations laid out in above mentioned documentation;
- Prevent actions that may cause harm to the environment;
- Be responsible for any remedial activities in response to an environmental incident within their scope of influence;
- Liaise with the holder of the EA and ECO in complying with the EMPr, and in the event that any industry regulated standards are in contradiction with the EMPr or any other authorisations.
- Review and amend any construction activities to align with the EMPr and Best Practice Principles;
- Ensure compliance of all site personnel and / or visitors to the EMPr and any other authorisations. **{Condition 11 of the EA is applicable here}:**

11. Non-compliance with a condition of this environmental authorisation or EMP may result in suspension of this environmental authorisation and may render the holder liable for criminal prosecution.

5.3 ECOLOGICAL CONTROL OFFICER (ECO)

It is recommended that a suitably qualified **Environmental Control Officer** (ECO) be appointed to oversee all activities for the duration of the construction phase of the project. **{Condition #12 of the EA}**.

12. The holder must appoint a suitably experienced environmental control officer ("ECO"), for the construction phase before commencement of any land clearing or construction activities to ensure compliance with the EMP and the conditions contained herein.

The ECO must have a minimum of a tertiary level qualification in the natural sciences field. The ECO must have at least 3 years' experience and proven competency as an ECO.

The responsibilities of the ECO include, but are not limited to, the following responsibilities:

- Provide environmental **induction training** to contractors on site prior to construction activities commencing, and as / when new contractor or sub-contractor staff are employed;
- Provide maintenance, **update and review** of the EMP if necessary;
- **Liaison** between the Project Holder of the EA, Contractors, Authorities and other lead stakeholders on all environmental concerns, including the implementation of the EMPr;
- Compilation of **Environmental Control Reports (ECR)** to ensure compliance with the EA, EMPr and duty of care requirements, where necessary;
- Compilation of the **Environmental Audit Report** or Environmental Completion after completion of construction (or as otherwise defined in the Environmental Authorisation), where necessary;
- Ensuring / guiding and monitoring **compliance** with the EA and **EMPr** and any legally binding documentation;
- Facilitating consultation with relevant environmental authorities (e.g. DEA&DP, DFFE, CapeNature or Municipality);
- Provide **guidance and interpretation** of the EA and EMPr where necessary;
- Issuing site instructions to the Contractor for **corrective actions** required;
- The ECO is required to conduct regular site visits for the duration of construction period, in order to ensure the contractor receives the necessary induction and that all procedures are in place. Additional visits may be undertaken in the event of any unforeseen environmental accidents;
- Additional visits may be undertaken in the event of any unforeseen environmental accidents;
- The duration and frequency of these visits may be increased or decreased at the discretion of the ECO;
- Attendance of **site meetings** (if required);
- Maintain a **record of environmental incidents** (e.g. spills, impacts, legal transgressions etc.) as well as corrective and preventative measures taken. This information must also be included in the ECR;

- Maintain a **public complaints register** in which all complaints and action taken must be recorded. This information must also be included in the ECR.
- The ECO has the authority to **stop work** on site if he / she consider that any actions of non-compliance of the EMP, authorisations or General Duty of Care are taking place.

5.4 ECO SITE VISIT FREQUENCY

The following site frequency for ECO site visits has been determined:

- The ECO is required to conduct **twice weekly** site visits during initial site clearing and demarcation activities, **weekly** during bulk excavations and then **bi-monthly** for the **remainder of the construction** period, in order to ensure the contractor receives the necessary induction and that all procedures are in place. It is advisable that this should coincide with site meetings.
- 3 months post construction and site handover in order to inform the Completion Statement.

Ad hoc site visits may be undertaken in the event of any incidents or specific requests from the project holder of the EA or project team.

5.5 ENVIRONMENTAL INDUCTION AND TRAINING

The ECO and Holder of the EA in consultation with the main Contractor shall ensure that adequate environmental **awareness training** of senior site **personnel takes place and that all construction workers receive an induction** presentation on the importance and implications of the EA and EMPr. The presentation shall be conducted, as far as is possible, in the employees' language of choice. The Contractor must provide a translator from their staff for the purpose of translating should this deemed necessary.

As a minimum, training should include:

- Explanation of the **importance of complying** with the EA and EMPr and the employees Accountability;
- Discussion of the potential **environmental impacts** of construction activities;
- The **benefits** of improved personal performance;
- Employees' **roles and responsibilities**, including emergency preparedness;
- Explanation of the **mitigation measures** that must be implemented when carrying out their activities;
- Explanation of the specifics of this **EMPr** and its specification (no-go areas, etc.)
- Explanation of the **management structure** of individuals responsible for matters pertaining to the EMPr.

Should the staff turnover be high and with additional appointment of sub-contractors, it may be necessary to do additional induction training sessions.

The Contractor must keep records of all environmental training sessions, including names, dates and the information presented.

6 PRE-CONSTRUCTION DESIGN CONSIDERATIONS

It is recommended that sustainable design considerations are implemented during the planning phase to ensure that the impacts associated with the development are avoided, minimized or managed before construction commences.

{Condition of EA applicable}:

2. The listed activities, including site preparation, may not commence within 20 (twenty) calendar days of the date of issue of this environmental authorisation. In the event that an appeal notice and subsequent appeal is lodged with the competent authority, the effect of this environmental authorisation may be suspended until such time as the appeal is decided.

6.1 STORMWATER MANAGEMENT PREPARATION

Management Statement / Outcome			Impacts & Risks Avoided		
To prepare the site to minimise the negative impacts of stormwater			Damage to the environment caused by stormwater runoff		
Management Actions					
Apply the principles of Low Impact Development (LID) in the design of the drainage systems. Final design of the stormwater system must take place prior to construction to ensure timeous implementation.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Site Plans	Once off	Architect / Engineer	Prior to construction	Audit	Once off

6.2 WATER RESOURCE PROTECTION

Water conservation is of vital importance. Our water resources are under extreme pressure from pollution and development and all efforts to minimize usage should be implemented. No potable water may be used for the irrigation of gardens or outdoor uses.

Management Statement / Outcome			Impacts & Risks Avoided		
To minimise the use of scarce water resources by improving consumption methods			Unsustainable or wasteful use of water for construction and operation purposes		
Management Actions					
Rainwater harvesting must be incorporated into the designs. All rainwater tanks must be shown on building plans.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Site Plans	Once off	Architect	Prior to construction	Audit	Once off

Water efficiency must be incorporated into the design of the units.

Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Site Plans	Once off	Architect	Prior to construction	Audit	Once off

Dual Flush Toilets

Conservative estimates have shown that a saving of more than 22 000 liters per household can be achieved annually with the installation of dual flush toilets (Aquanotion, 2008). All households and ablution facilities should be fitted with dual flush systems.

Low flow Taps

Low flow taps use aerators to reduce the flow of the water. These are either built into the faucet or added as an aftermarket product. The faucets in bathrooms should have a peak flow of less than 10 liters per minute.

It is not necessary to install aerators in kitchen sinks as they are seldom run without a plug. All bathroom basins must be fitted with low flow faucets.

Geyser and pipe insulation

Apart from the savings in terms of energy as detailed below, insulating geysers and pipes save water, as shorter periods of running the tap to get hot water are required.

All structures should have insulation on geysers and all hot water pipes.

Rainwater Tanks

Rainwater tanks should be installed to collect runoff water from hard surfaces such as building roofs. Tanks can be installed above ground or underground depending on the architectural requirements. These tanks will provide water for outdoor activities such as water of gardens or outdoor cleaning of the facility.

Above groundwater tanks can be screened with architectural input.

Consideration should be given to the implementation of solar pumps at each rainwater tank, in order to more effectively supply the water to where needed. The overflow from rainwater tanks should be directed into the storm water system. All water sources situated externally on buildings (i.e. outdoor taps) should be fed from these rainwater tanks.

Other water saving measures applicable to the operating of the filling station includes the following:

- Check taps and toilets regularly for drips and leaks, and repair them promptly;
- Washers should be replaced regularly; and
- Water free solvents can be considered for washing windscreens and windows.

Waterwise Landscaping

Waterwise landscaping principles must be incorporated into the detailed landscaping plans. The following principles apply to waterwise gardening:

- Grow water-wise plants – generally the best suited plants are those indigenous to the area, as they seldom need additional watering;
- Group plants according to their water needs – this avoids wasting water on plants that don't need it;
- Consider the quality and type of the lawn. Lawns use unacceptable amounts of water, so consider reducing lawn areas to a minimum. Use tougher, low-water lawn types such as Buffalo (coastal areas) or Kweek (inland) rather than Kikuyu.
- Improve the soil and mulch. Soil water-holding capacity is improved by higher organic matter content. Mulching (covering the soil with a thick layer of bark, compost, straw etc.) keeps the soil much more moist.
- Plant in the right season – For winter rainfall areas this is in autumn and early winter so the plants have a chance to develop their root systems before the dry season. In summer rainfall areas it is spring and early summer for the same reason.
- Water correctly – avoid watering during the heat of the day or in windy conditions.

The best irrigation system is drip irrigation – it uses 25% of water used by normal irrigation systems with the same effect, and can even be placed under lawns.

6.3 ENERGY RESOURCE PROTECTION

The provision of energy has become a controversial topic lately and has led to the reconsideration of energy usage. Energy saving practices can provide cost savings to the supplier / operator as well as encouraging the practice of sustainable business in owners, staff and users of a facility. Staff should also be made aware of these protocols and understand the principles behind the practices. Many of such reconsiderations require inclusion during the design phase of the development.

Management Statement / Outcome			Impacts & Risks Avoided		
To minimise the use of energy resources by improving consumption methods			Excessive and unnecessary energy consumption		
Management Actions					
Incorporate energy efficiency into the design of the facility					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Energy saving checklist	Once off	Owner	Ad hoc	Audit	Once off
Solar heating water systems Solar heated water systems are an innovative way of producing hot water without putting additional pressure on gas or municipal power supply. The developer and design team should implement this system on all buildings to be constructed as part of the development.					
Energy Efficient Lighting In terms of Best Practice, it is required that energy saving lighting fixtures be used throughout the entire development. It is therefore specified that Light Emitting Diode (LED) or Compact Fluorescent (CF) lighting be used as opposed to incandescent lighting. This is required for all internal and external lighting, including street lighting. Proximity switches should be used in areas where lighting for pedestrians is required.					

NO external High Pressure Sodium (HPS) or Metal Halide (MH) spot or floodlights should be installed.

CF lighting uses quantities of mercury in the bulbs and tubes which pose serious environmental hazards. The mercury from one CF bulb can pollute many thousand litres of water if not treated correctly (Eden District Municipality, 2011). CF lighting (energy saving bulbs and tubes) must be correctly disposed of at registered Hazardous waste sites. Companies like Pick n Pay and Woolworths offer facilities to collect CF bulbs for recycling and disposal. The following should be considered when handling CF bulbs (eHow Home, 2011):



Disposing of Burnt-Out Bulbs

- Seal the bulb inside two plastic bags, or one thick freezer bag, before disposal.
- Find the nearest recycling station that handles hazardous materials. Check with your city's municipal office to see if there is a recycling program in your town.
- Take the bulbs to the recycling station. Ask the people there about the process of giving them your bulbs and follow all their instructions.
- Tell everyone you know who is using energy efficient bulbs how to properly dispose of them as the use of these bulbs is growing.

Energy Efficient Appliances

Energy efficient appliances are becoming widely available. Follow the Energy Guide labels on appliances to help selection of correct models. Any appliance that has to heat up water or air will use more energy, as will an appliance that boasts additional extras such as ice making, dispensing and auto defrosting on fridges or heat drying on dishwashers.

Solar Energy – Generation of electricity

Solar energy is created by light and heat which is emitted by the sun, in the form of electromagnetic radiation. With modern technology, it is possible to capture this radiation and turn it into usable forms of energy such as electricity.

Solar Cooling Systems

Where required, the design team should consider the use of solar cooling systems such as absorption and adsorption chillers as opposed to conventional air conditioning units (potentially for the restaurant / administration facilities). The appointed electrical and civil engineers can give input on this.

Evaporative Cooling Systems

Consideration should be given to evaporative cooling systems as these cut down considerably on energy usage for appliances such as air conditioners. Furthermore, the system ensures that fresh air circulates within housing units, which improves on environmental health risks.

Fresh air is drawn from outside the house (the hotter the better) and passes through moistened pads which cools it down and filters it before flowing through outlets in the house.

There are certain parameters required for evaporative cooling systems, which should be thoroughly investigated prior to installation.

Ensure that the buildings are adequately **insulated** so as to avoid dependence on high energy heating and cooling systems. Insulation and ventilation on heat generating equipment is also recommended. Design consideration should also take into account building angles, which will allow natural cooling and heating effects to take place.

Where required, the design team should consider the use of solar cooling systems such as absorption and adsorption chillers as opposed to conventional air conditioning units (potentially for the restaurant / administration facilities). The appointed electrical and civil engineers can give input on this.

Geyser and pipe insulation

Apart from the savings in terms of energy as detailed below, insulating geysers and pipes save water, as shorter periods of running the tap to get hot water are required.

All structures should have insulation on geysers and all hot water pipes.

Other general energy saving measures that are recommended for the filling station includes the following:

- All electrical equipment should be **correctly maintained and checked** for efficiency to ensure optimal use of energy. Only necessary equipment should be used at any given time. Low energy equipment and items that can use renewable energy should be encouraged;
- Continued **maintenance and monitoring** of compressed air system is recommended. This will ensure that leaks are detected promptly, thus avoiding unnecessary running of compressors and the additional electrical use;
- **Switch off** lights and equipment when they are not required. Installation of energy efficient lighting, fridges and other equipment wherever possible is recommended;
- Canopy lighting uses large quantities of electricity. Spot lighting at required places such as at fuel pumps can minimise the impact of canopy lighting;
- Increase **air conditioner thermostat** set point by 1 to 2°C in warm weather, and decrease it slightly in cool weather. Extreme change variations between the thermostat set point and the ambient air temperature requires higher energy consumption. Use of Evaporative Cooling Systems should be investigated and possibly used in considering high energy Air Conditioners;
- **Install electrical usage meters** to measure and monitor consumption; and
- Use of **skylights** in convenience centers will minimise the need for lighting during the day.

7 CONSTRUCTION PHASE REQUIREMENTS

These Construction Phase requirements are aimed at using Best Practice Principles and/or implementation of specialist recommendations to manage the impacts on the environment during the construction of the development.

7.1 ESTABLISHMENT OF CONTRACTORS SITE CAMP

The Contractors Site Camp must be established in consultation with the ECO and, if located on private property, with the permission of the relevant landowner. The site camp should not be erected on any areas considered sensitive and no indigenous vegetation may be removed, damaged or disturbed without consent from the ECO. The following points are applicable:

- The Contractors Site Camp must be situated **within the development area**. Site Camps that are allowed off site may only be erected once written permission from the landowner is obtained and any other necessary authorisations are in place.
- The site camp must be clearly demarcated and **fenced off** with shade netting.

- **Topsoil** from the site camp area must be stripped and **stockpiled** for **reuse** during rehabilitation. This must be done to ensure no contamination of the topsoil while the site camp is in use.
- All construction **material** must be **stored in the site camp**, unless otherwise approved by the ECO.
- **No personnel may overnight** in the site camp, except in the case of a night watchman / security.
- **Fires** for cooking and/or heating are **only** allowed **within the site camp**.
- **Fuel** may only be stored **in the site camp**.
- Storage of **waste** must take place **within the site camp** and must be **removed** on a regular basis.
- The site camp must be provided with sufficient **ablution facilities** (toilets and potable water) of which the content must be disposed of regularly and at the suitable facilities.

{Condition 9 of EA applicable}:

9. A copy of the environmental authorisation and the EMP must be kept at the site where the listed activities will be undertaken. Access to the site referred to

in section C above must be granted and the environmental authorisation and EMP must be produced to any authorised official representing the competent authority who requests to see it for the purposes of assessing and/or monitoring compliance with the conditions contained herein. The environmental authorisation and EMP must also be made available for inspection by any employee or agent of the applicant who works or undertakes work at the site.

7.2 DEMARCATION OF WORK AND NO-GO AREAS

The demarcation of **no-go areas** is of extreme importance to ensure that damage is restricted to the future developed area and that areas outside this demarcated area are protected and not damaged unnecessarily.

Management Statement / Outcome			Impacts & Risks Avoided		
To clearly define the work area and avoid impacting on non-works areas.			Negative construction impacts on natural and rehabilitated areas		
Management Actions					
Clearly identify and demarcate the development area, area of works and spoiling areas.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance

Method Statement	Once off	Developer / contractor	Pre implementation	Audit	Once off
Fuel and chemicals may only be stored in a designated work area.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method Statement	Once off	Developer / contractor	Pre implementation	Audit	Once off
Provide on-site sanitation and rest areas for personnel.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method Statement	Once off	Developer / contractor	Pre implementation	Audit	Once off

The process for this is as follows:

- The exact footprint of the construction areas to be **surveyed and pegged**;
- The contractor in conjunction with the ECO must walk and inspect the areas determined and **mark the full extent of the area to be disturbed** (allowing sufficient space for the construction activity);
- This disturbance is to be **clearly marked** with a double strand of wire with danger tape placed between strands as detailed in **Appendix 1, Figure 1**;
- All areas outside this demarcated area are considered as **“no-go” areas** for any construction activity including movement of staff;
- Construction staff must be briefed as part of the **environmental induction** on the requirements regarding the no-go areas; and,
- Non-compliance with no go demarcation will be penalised.

The entire boundary of the development site must be demarcated by erecting shade netting of 1.5metres high.



Figure 6: Examples of shade netting demarcation

7.3 SITE CLEARANCE PLAN

Site clearance should be undertaken in a systematic manner within the demarcated areas to minimize the impacts of construction on the site. The following table provides a methodology to implementing site clearance according to this EMP and the EA.

Table 2: Site Clearance Methodology.

No	Action	Scheduling
1	Survey approved layout on site.	Prior to Site Clearance
2	Establish site camp and material stockpile sites (incl. waste disposal area, portable toilets etc. The construction camp and necessary ablution facilities meant for construction workers must not be in any of the delineated watercourses or wetland areas (including 20m buffer).	Prior to Site Clearance
3	Demarcate work areas using correct demarcation methods.	Prior to Site Clearance
4	Demarcate protected areas as no-go areas .	Prior to Site Clearance
5	Erosion control measures must be put in place prior to any construction activities that would result in soil being exposed.	Prior to Site Clearance
6	Weather forecasts from the South African Weather Bureau of up to three days in advance must be monitored on a daily basis to avoid exposing soil, works or materials during a storm event. This must be considered in conjunction with tide tables for beach construction work.	Construction
7	Commence with mechanical vegetation clearing within the demarcated work areas only.	Construction
8	Vegetation clearing should occur in parallel with the construction progress to minimise erosion and/or run-off. Large tracts of bare soil will either cause dust pollution or quickly erode and then cause sedimentation in the stormwater system / lower portions of the catchment.	Construction
9	Any biomass from the clearing activities must be stockpiled within the development footprint at an area / areas approved by the ECO. It is recommended that the biomass must be chipped in situ and stockpiled within designated areas within the footprint. Alternatively it must be removed and taken to an approved disposal site for biomass. NO DUMPING IS ALLOWED.	Construction
10	Any cleared areas that will not be immediately constructed or planted, must be covered with the wood chips or other mulch to prevent wind erosion.	Construction

7.4 EROSION CONTROL

Management Statement / Outcomes	Impacts & Risks Avoided
To minimise the quantity of soil lost during construction due to land-clearing.	Avoid overland flow by capture and store water from roof Avoid siltation by installing silt traps Prevent stormwater from concentrating in streams and scouring slopes, banks, etc.
Management Actions	

Schedule measures to avoid and reduce erosion by phasing the work program to minimise land disturbance in the planning and design stage.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records
Keep the areas of land cleared to a minimum, and the period of time areas remain cleared to a minimum					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records
Base control measures to manage erosion on the vulnerability of cleared land to soil loss, paying particular attention to protecting slopes.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records
Mulch, roughen and seed cleared slopes and stockpiles where no works are planned for more than 28 days, with sterile grasses.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records
Keep vehicles to well-defined haul roads.					

Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Site plan	As required	Contractor	As required	Audit	Final site plan
Stabilise & Rehabilitate cleared areas promptly.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Visual / photographic	As required	Contractor	Continuously during construction	Audit	Final Rehabilitation statement
Any areas that are identified by the ECO as being prone to erosion must be suitably protected. During construction, the Contractor shall protect all areas susceptible to erosion by installing necessary temporary and permanent drainage works as soon as possible and by taking any other measures necessary to prevent storm water from concentrating in streams and scouring slopes, banks, etc. Any erosion channels developed during construction on steep slopes must be backfilled, compacted and restored to an acceptable condition. Consideration and provision shall be made for the following methods (or combination thereof): brushcut packing, mulch or chip cover, straw stabilising, watering, planting/sodding, soil binders and anti-erosion compounds, mechanical cover or packing structures (including the use of geofabric, log/pole fencing, etc.). Traffic and movement over stabilised areas shall be restricted and controlled, and damage to stabilised areas shall be repaired and maintained to the satisfaction of the ECO. Any excavations for bulk services on slopes steeper than 1:4 should where possible, take place at right angles to the slope to avoid having to cut a 'road' into the slope. Any excavations into the slope by mechanical means will need to be temporarily shored up to prevent slumping. Such shoring can take the form of untreated wooden boards pegged into the slope. The necessary compaction of the replaced sand over the trench and disturbed slope must be undertaken. The brushwood removed from the excavation should be replaced over the disturbed area to prevent wind and water erosion and facilitate the rehabilitation process. The temporary shoring can be left in place, which will eventually rot and be absorbed into the soil. In areas where construction activities have been completed and where no further disturbance would take place, rehabilitation and re-vegetation should commence as soon as possible. A suitable rehabilitation method statement must be submitted to the ECO for approval. The Contractor shall, as an ongoing exercise, implement erosion and sedimentation control measures to the satisfaction of the ECO.					

7.5 STORMWATER MANAGEMENT (CONSTRUCTION)

Management Statement / Outcome		Impacts & Risks Avoided			
To minimise the generation of contaminated stormwater.		Minimise sedimentation, erosion and / or undercutting of the coastal interface			
Management Actions					
Minimise the quantity of stormwater entering cleared areas.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method Statement	Once off	Developer / contractor	Pre implementation	Audit	Once off
After the site has been demarcated with shade netting, it is recommended that the Northern and Eastern boundaries of the site be protected by silt fencing to avoid stormwater damage.					
Sand bagging can be applied on these boundaries in event where heavy rainfalls are expected.					

7.6 EARTHWORKS

Earthworks are required for the construction of a foundation for the various facilities required for the filling and service station. The site currently identified for the plant is currently vacant and covered by vegetation species of low conservation value.

It is recommended that the topsoil of the designated area is stripped to a depth of approximately 150mm and stockpiled separately from the remaining spoil.

During the earthworks, security must be implemented to prevent unauthorised access of any open excavations (both for human and animal safety) using signage, danger tape or any other barrier agreed upon.

7.7 FIRE MANAGEMENT AND PROTECTION

Care must be taken to ensure that none of the construction activities result in fires. Precautions must be undertaken to protect habitation, biodiversity and against loss of life and infrastructure.

The following points must be considered with regards to fire protection on site:

- **NO OPEN FIRES** are allowed **anywhere** on the construction site, except for cooking purposes and then only in the site camp under controlled conditions;
- **Cigarette butts** may not be thrown in the veld, but must be disposed of correctly in suitable receptacles. It is recommended that smoking areas are identified and demarcated and sand filled receptacles provided for smokers. Smoking should then only be allowed in these areas;
- In case of an emergency, the **contact details** of the local fire and emergency services must be readily available;

- Contractors must ensure that basic **firefighting equipment** is available on site as per the specifications defined by a qualified health and safety consultant;
- **Biomass** generated from removal of invasive and indigenous vegetation (where applicable) should be removed from site and **not burned in situ**; and
- Fire risk on site is a point of discussion that must take place as part of the **environmental induction**.

7.8 NOISE AND EMISSION CONTROL

Management Statement / Outcomes			Impacts & Risks Avoided		
To ensure nuisance from noise and vibration does not occur.			Nuisance impacts to neighbours and visitors.		
Management Actions					
Fit and maintain appropriate mufflers on earth-moving and other vehicles on the site.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
As required	Initially when vehicle or machinery is introduced to the site and thereafter monthly. As required if complaints registered.	Contractor	During construction and operation	Audit	As required
Enclose noisy equipment such as generators and pumps.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
As required	Initially when vehicle or machinery is introduced to the site and thereafter monthly. As required if complaints registered.	Contractor	During construction	Audit	As required

Provide noise attenuation screens, where appropriate.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
As required	Initially when vehicle or machinery is introduced to the site and thereafter monthly. As required if complaints registered.	Contractor	During construction	Audit	As required
Where an activity is likely to cause a noise nuisance to nearby residents, restrict operating hours to between 7 am and 6 pm weekdays and 7 am to 1 pm Saturday, except where, for practical reasons, the activity is unavoidable.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
As required	As required if complaints registered.	Contractor	During construction	Audit	As required
The Contractor shall be responsible for compliance with the relevant legislation with respect to noise <i>inter alia</i> Section 25 of ECA. Emission control in vehicles will be reduced by implementing the above mentioned noise control methods. Furthermore the following should be taken into account: All diesel vehicles should be correctly maintained and serviced to minimise unnecessary exhaust emissions; Any vehicles with smoking exhausts should be tested for emissions and repaired immediately; Speed limits must be adhered to; and, Vehicles and other diesel driven machinery should be switched off when not in use.					

7.9 WASTE MANAGEMENT

Management Statement / Outcome	Impacts & Risks Avoided
To minimise the waste load discharged to the environment.	Improve waste disposal methods during construction Reduce waste volumes to landfill sites
Management Actions	
Reduce wastes by selecting, in order of preference, avoidance, reduction, reuse and recycling.	

Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Record of volumes of material removed	As required	Contractor	As required	Audit	Records
Maintain a high quality of housekeeping and ensure that materials are not left where they can be washed or blown away to become litter.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Photographic	Weekly	Contractor	As required	Audit	Records
Provide bins for construction workers and staff at locations where they consume food.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Photographic	Weekly	Contractor	As required	Audit	Records
Conduct ongoing awareness with staff of the need to avoid littering.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Induction	Once off	Contractor	As required	Audit	Attendance register

An integrated waste management approach should be adopted on site. Only approved waste disposal methods are allowed. The Contractor shall ensure that all site personnel are instructed in the proper disposal of all waste. The Contractor shall ensure that **sufficient disposal facilities** are available. **{Condition #13 of the EA}:**

13. An integrated waste management approach, which is based on waste minimisation and incorporates reduction, recycling, re-use and disposal, where appropriate, must be employed. Any solid waste must be disposed of at a landfill licensed in terms of the applicable legislation.

Recycling must be encouraged on site and recycling bins must be provided and clearly marked. It is recommended that local community leaders are contacted to identify groups or individuals who may benefit from the disposal of recyclable material and scrap metal.

Disposal of all waste materials must be done at suitable facilities. **No dumping** of any waste material on or off site is permitted.

The disposal of all **general waste** must take place at a landfill licensed in terms of Section 20 of the Environmental Conservation Act, 1989 (Act No. 73 of 1989) and the National Environmental Management: Waste Act, 2008 (NEM:WA, Act No 59 of 2008).

7.9.1 *Solid Waste*

The Contractor shall ensure that all facilities are maintained in a **neat and tidy** condition and the site shall be kept **free of litter**. Measures must be taken to reduce the potential for litter and negligent behavior with regard to the disposal of all refuse. At all places of work the Contractor shall provide **litterbins, containers** and **refuse collection facilities** for later disposal.

Solid waste may be temporarily stored on site in a **designated area** approved by the ECO prior to collection and disposal. Solid waste must be removed on a **weekly basis** to a licensed waste disposal site. The Contractor shall supply the Project Proponent and ECO with **certificates of disposal**. Recyclable waste should be recycled if at all possible.

Waste storage **containers** shall be covered, tip-proof, weatherproof and scavenger proof. The **waste storage area** shall be **fenced off** to prevent wind-blown litter.

No burning, on-site burying or dumping of waste shall occur. Used (empty) **cement bags** shall be collected and stored in **weatherproof containers** to prevent windblown cement dust and water contamination. Used cement bags may not be used for any other purpose and shall be disposed of on a weekly basis via the solid waste management system.

7.9.2 *Construction Rubble and Waste*

All construction waste must be disposed of at an approved site (no construction rubble may be spoiled anywhere on site). No illegal dumping of construction material may take place.

7.9.3 *Scrap Metal*

Recycling of scrap metal is recommended. Scrap metal must be disposed of off-site at suitable facilities or arrangements made for community involvement in the recycling.

7.9.4 *Hazardous Waste*

All hazardous waste (including bitumen, etc.) shall be disposed of at an approved **hazardous landfill site**. The Contractor shall provide **disposal certificates** to the ECO.

Unused or rejected tar or bituminous products must be returned to the supplier's production plant. Under no circumstances may the spoiling of tar or bituminous products on the site, over embankments, or any burying, be allowed.

Used oil, lubricants, grease and cleaning materials, etc. from the maintenance of vehicles and machinery shall be collected in holding tanks and sent back to the supplier or removed from site by a specialist oil recycling company for disposal at an approved hazardous waste site.

7.10 SANITATION

Chemical ablution facilities must be available for the use by construction staff for the duration of the construction period. The following must therefore be implemented:

- Toilet and washing facilities must be **available** to the site personnel at all times;
- These must be situated **within** the construction area (preferably at the site camp) at an area approved by the ECO;
- One toilet for every **10 personnel** is required;
- For linear construction areas, at least one toilet must be mobile to allow for distribution along the route as the work commences. Toilets should be located at least within 300m of a construction crew along a linear route;
- The facilities must be **serviced** on a regular basis to **prevent any spillage**;
- The servicing contractor must **dispose of the waste** in an approved manner;
- The ECO must be provided with the **service providers'** details and the **service schedule** for the site;
- The toilets should be **secured** to ensure that they do not blow over in windy conditions;
- All toilet facilities must be **removed** from site on completion of the contract period; and,
- Should the construction period be interrupted by a **builders break**, the toilets should be emptied prior to the break.

7.11 CONCRETE BATCHING

Management Statement / Outcome			Impacts & Risks Avoided		
Cement powder has a high alkaline pH that may contaminate and adversely affect both soil pH and water pH negatively. A rapid change in pH can have consequences on the functioning of soil and water organisms as well as on the botanical component.			Minimises negative impacts to vegetation and soils on areas that will not be hard surfaced.		
Management Actions					
All concrete batching must take place on an area that is to be hard surfaced as part of the development.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records
Concrete mixing areas must have bund walls or a settling pond in order to prevent cement run off. Once the settling ponds dry out, the concrete must be removed and dispatched to a suitable disposal site.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance

Method statement	As required	Contractor	As required	Audit	Method statement records
When using Readymix concrete, care must be taken to prevent spills from the trucks while offloading. This form of batching is preferable for large constructions as no on site batching is required and there is a lesser likelihood of accidental spills and run off. Trucks may not be washed out on site.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records
Batching at satellite sites must be done on a batching plate i.e. wood or metal sheet, to prevent soil contamination. In order to prevent cement run off, both under normal circumstances and in event of rain, batching plates must be used.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records

7.12 FUEL & CHEMICAL STORAGE

Management Statement / Outcome			Impacts & Risks Avoided		
To ensure that fuel and chemical storage is safe, and that any materials that escape do not cause environmental damage.			Avoid hydrocarbon pollution to soil and watercourses / coastal environments		
Management Actions					
Minimise fuels and chemicals stored onsite.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records
Install bunds and take other precautions to reduce the risk of spills.					

Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records
Implement a contingency plan to handle spills, so that environmental damage is avoided.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records

Should a temporary fuel storage facility be required, the Contractor must ensure that he/she complies with legislation and that the following measures are in place:

- Temporary **fuel storage** must take place **within the contractors site camp** in an area approved by the ECO;
- **No** storage of fuel may take place during the construction phase, on any other portion of the site;
- Mobile fuel units used to refuel plant on site must make use of **drip trays** when refueling;
- Where possible, **double lined storage tanks** should be used;
- All storage tanks must be **ISO 9001** certified;
- Storage facilities should not be located within a watercourse flood plain, near a wetland area or where there is a potential for any spilled fuel to enter a watercourse or groundwater;
- Fuel storage facilities should be located on **flat ground**. No cut and fill should take place immediately on or adjacent to fuel storage areas;
- **Bund walls** must be constructed to contain at least 110% of the total capacity of the storage tanks;
- Bund walls must be constructed of **impermeable material or lined** to ensure that petroleum products cannot escape;
- A suitable material should be placed in the base of the bund walls to soak up any **accidental spillages**;
- A sealable tap system may be implemented to drain water collecting in the bund walls. The tap must be at the base of the bund wall and **drainage** must be **supervised** to ensure that no pollutants are tapped out;
- The tanks should be locked and **secured** when not in use;
- Automatic **shut-off nozzles** are required on all dispensing units;
- Storage tanks should be drained **within one week** of completion of activities (unused fuel can be used by the contractor on other work sites or returned to the supplier). If the construction program extends over the Christmas period shutdown, the contractor must ensure that storage tanks are emptied prior to this period;

- All storage tanks, containers and related equipment should be regularly **maintained** to ensure the safe storage and dispensing of fuel. The Engineer is to sign off on the condition suitability of the storage tanks;
- Defective hoses, valves and containment structures should be promptly **repaired**;
- Vehicle and equipment **fueling** should be undertaken on a hard impermeable surface or over drip pans to ensure spilled fuel is captured and cleaned up; and
- The area must be totally **rehabilitated** on completion of the contract and all contaminated material must be taken to a registered dumping site for that purpose.

7.13 DUST MANAGEMENT

The movement of construction vehicles and removal of existing vegetation from the route will create dust that could impact on the surrounding vegetation and cause inconvenience to neighbouring property owners.

Management Statement / Outcome			Impacts & Risks Avoided		
To ensure there is no health risk or loss of amenity due to emission of dust to the environment.			Ensure land coverage with biomass chips / vegetation / damping to minimise dust		
Management Actions					
Implement a dust prevention strategy, developed at the project planning stage					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method Statement	Once off	Developer / contractor	Pre implementation	Audit	Once off
The strategy should include the following amongst others: • Speed control to minimise dust on site. • During dry, dusty periods haul roads should be kept dampened to prevent excess dust. No potable water or seawater may be used for damping haul roads. • Exposed stockpile materials must be adequately protected against wind (covered), and should be sited taking into consideration the prevailing wind conditions. • Trucks bringing in materials must be covered to prevent dust and small particles escaping and potentially causing damage to people and property. • Please see attached Appendix 1, Figure 4 showing a diagrammatic representation of the management of haul roads.					

7.14 REHABILITATION

Any disturbed area that is not designated for roads or buildings must be rehabilitated using rescued plant material. No alien vegetation may be used for any rehabilitation work.

Management Statement / Outcome			Impacts & Risks Avoided		
To ensure that degradation to existing botanical components are minimised and that any rehabilitation is undertaken with conservation orientated approach.			To minimise the disturbance to existing flora To minimise the introduction and/or spread of weed species		
Management Actions					
Retain the existing sensitive tree groupings. These must be demarcated to avoid damage during construction.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor / Owner	Continuously	Audit	Visual / photographic
Rehabilitation and landscaping may only make use of indigenous vegetation.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Visual / photographic	As required	Contractor / Owner	Continuously	Audit	Visual / photographic
A Rehabilitation Method Statement must be approved by the ECO. Ideally rehabilitation of plant material should take place prior to the rainy season in order that the plants establish sufficiently. However, in areas that may be a concern for erosion, irrigation may be justified to establish a vegetative barrier against erosion.					
It is anticipated that limited rehabilitation will be required for this proposal as the area designated for the filling and service station is already transformed.					

7.15 USE OF LOCAL LABOUR

It is strongly recommended that the contractor make use of local labour as far as possible for the construction phase of the project.

7.15.1 Targets

- The target should be to have the majority of semi-skilled labour local to the George Municipal area.
- An average total of 80% or higher should be maintained for the region.
- The contractor should endeavor to source local suppliers that are BEE compliant.
- The contractor must ensure that suitable procurement policies are in place that supports local economic growth.

- Locally manufactured products must be used as far as possible.

Table 3: Socio-Economic Mitigations to maximise positive impacts.

The project developer should use locally sourced inputs where feasible in order to maximize the benefit to the local economy. Sub-contracting of local construction companies to occur as far as possible for the construction of facilities.
Organise local community meetings to advise the local labour on the project that is planned to be established and the jobs that can potentially be applied for. Where feasible, effort must be made to employ locally in order to create maximum benefit for the local households & communities.
In order to maximise the positive impact, it is suggested that the project company provide training courses for employees where feasible to ensure that employees gain as much as possible from the work experience. Facilitate the transfer of knowledge between experienced employees and the staff. Perform a skills audit to determine the potential skills that could be sourced in the area.
The project developer should make effort to use locally sourced inputs where feasible in order to maximize the benefit to the local economy. Local Small and Medium Enterprises are to be approached to investigate the opportunities for supplying inputs required for the maintenance and operation of the facility, as far as feasible.
Where feasible, effort must be made to employ locally in order to create maximum benefit for the communities.
Employing locally will increase benefit to local households and the local area.

7.15.2 Record Keeping

Records should be kept of all personnel under the main contract as well as those under any subcontractors employed by the contractor.

The main contractor must provide the breakdowns of their contract as well as all sub-contractors. The following criteria for classification must be recorded and submitted to the ECO and the Engineer:

Table 4: Staff Record example.

Staff Type	Local to the George Municipal Area.		Regional		Outside of Southern Cape	
	Number	Percentage	Number	Percentage	Number	Percentage
Semi-skilled						
Operators						
Artisans						
Junior Management						
Senior Management						
Professionals						

Apart from the labour records detailed above, financial records should be kept indicating the financial contribution to the local economy through the input into wages and the use of local suppliers.

7.15.3 Site Security

Theft and other crime associated with construction sites is not only a concern for surrounding residents and businesses, but also the developer and the contractor.

Considering this, contractors need to be proactive in order to curtail theft and crime on and resulting from the construction site. It is recommended that the contractor develop a jobsite security plan prior to commencement of construction. This jobsite security plan should take into account protection of the construction site from both internal and external crime elements, as well

as the protection of surrounding communities from internal crime elements. All incidents of theft or other crime should be reported the South African Police Service, no matter how seemingly insignificant. Additional measures to be implemented to mitigate criminality include the installation of perimeter fenceline (with pedestrian gates (lockable at night) & open vehicle access points), additional lighting (to illuminate site, accesses & bus stop).

It is recommended that a 24-hour security be appointment on site during construction and operation of the facility and increased patrol in the neighbourhood.

7.16 HERITAGE REQUIREMENTS

Management Statement / Outcome			Impacts & Risks Avoided		
To minimise the impacts of development, operation and maintenance of the Project on the heritage values in the Project area.			Ensure heritage impacts are minimised, and impacts outside of the approved disturbance area are avoided.		
Management Actions					
No disturbance of heritage values outside of the approved disturbance area.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Site records	Ad hoc	Contractor	Ad hoc	Audit	Once off
No archeological studies have been undertaken for this proposal, however, as earthworks are proposed for the foundations of the filling station, there is always the possibility of unearthing artifacts and / or remains. As a general principle, the legislation governing Heritage Resources requires the following: Should any heritage remains of potential cultural value be exposed during excavations, these must be immediately reported to the ECO and the Provincial Heritage Resource Authority of the Western Cape, namely Heritage Western Cape in terms of the national Heritage Resources Act (Act No. 25 of 1999). Heritage remains uncovered or disturbed during earthworks may not be disturbed further until the necessary approval has been obtained from Heritage Western Cape. Should any archaeological remains including (but not limited to) fossil bones, fossil shells, coins, indigenous ceramics, colonial ceramics, marine shell heaps, stone artefacts, bone remains, rock art, rock engravings and any antiquity be discovered during construction, they must be immediately reported to the ECO and Heritage Western Cape and not disturbed further until the necessary approval has been obtained. Should any human remains be uncovered, they must immediately be reported to the ECO and the HWC archaeologist, who can be contacted on (021) 483 9685. Construction in the area must cease immediately and the site may not be disturbed further until the necessary approval has been obtained. The above is also summarized in {Condition #15 of the EA}.					

7.17 METHOD STATEMENTS

Management Statement / Outcome	Impacts & Risks Avoided
To ensure efficient communication mechanisms in the implementation of environmental performance requirements	Prevention of potential impacts are avoided during construction by means of correct communication

Management Actions					
Method statements are written submissions by the Contractor to the ECO in response to the requirements of this EMPr or to a request by the ECO. The Contractor shall be required to prepare method statements for several specific construction activities and/or environmental management aspects.					
Method monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	Ad hoc	Contractor	As required	Audit	Once off
The Contractor shall not commence the activity for which a method statement is required until the Engineer and ECO has approved the relevant method statement. In cases where such activities have commenced before the appointment of the ECO, method statements may be requested if the ECO is not satisfied that activities are being undertaken in terms of this EMP. Method statements must be submitted at least five (5) days prior to the date on which approval is required (start of the activity). Failure to submit a method statement may result in suspension of the activity concerned until such time as a method statement has been submitted and approved. An approved method statement shall not absolve the Contractor from any of his obligations or responsibilities in terms of the contract. However, any damage caused to the environment through activities undertaken without an approved method statement shall be rehabilitated at the contractor's cost. Additional method statements can be requested at the ECO's discretion at any time during the construction phase. The method statements shall cover relevant details with regard to: • Construction procedures and location of the construction site. • Start date and duration of the construction period. • Materials, equipment and labour to be used. • How materials, equipment and labour would be moved to and from the site as well as on site during construction. • Storage, removal and subsequent handling of all materials, excess materials and waste materials of the procedure. • Emergency procedures in case of any reasonably potential accident / incident which could occur during the procedure. • Compliance / non-compliance with the EMP specification and motivation if non-compliant. • Based on the specifications in this EMPr, the following method statements are required as a minimum (more method statements may be requested as required at any time under the direction of the ECO): • Demarcation of No-Go areas • Site clearing • Concrete & Concrete batching • Hazardous substances and their storage. • Materials requirements & Sourcing. • Solid waste control system. • Fire control and emergency procedures • Petroleum, chemical, harmful and hazardous materials storage, if any. • Stormwater Management and Erosion Control.					

7.18 HEALTH AND SAFETY

The contractor must ensure compliance with the Occupational Health and Safety (No. 85 of 1993). Of key importance is the following (Section 8 of the aforesaid act);

8. General duties of employers to their employees

- (1) *Every employer shall provide and maintain, as far as is reasonably practicable, a working environment that is safe and without risk to the health of his employees.*
- (2) *Without derogating from the generality of an employer's duties under subsection (1), the matters to which those duties refer include in particular-*
 - (a) *the provision and maintenance of systems of work, plant and machinery that, as far as is reasonably practicable, are safe and without risks to health;*
 - (b) *taking such steps as may be reasonably practicable to eliminate or mitigate any hazard or potential hazard to the safety or health of employees, before resorting to personal protective equipment;*
 - (c) *making arrangements for ensuring, as far as is reasonably practicable, the safety and absence of risks to health in connection with the production, processing, use, handling, storage or transport of articles or substances;*
 - (d) *establishing, as far as is reasonably practicable, what hazards to the health or safety of persons are attached to any work which is performed, any article or substance which is produced, processed, used, handled, stored or transported and any plant or machinery which is used in his business, and he shall, as far as is reasonably practicable, further establish what precautionary measures should be taken with respect to such work, article, substance, plant or machinery in order to protect the health and safety of persons, and he shall provide the necessary means to apply such precautionary measures;*
 - (e) *providing such information, instructions, training and supervision as may be necessary to ensure, as far as is reasonably practicable, the health and safety at work of his employees;*
 - (f) *as far as is reasonably practicable, not permitting any employee to do any work or to produce, process, use, handle, store or transport any article or substance or to operate any plant or machinery, unless the precautionary measures contemplated in paragraphs (b) and (d), or any other precautionary measures which may be prescribed, have been taken;*
 - (g) *taking all necessary measures to ensure that tire requirements of this Act are complied with by every person in his employment or on premises under his control where plant or machinery is used;*
 - (h) *enforcing such measures as may be necessary in the interest of health and safety;*
 - (i) *ensuring that work is performed and that plant or machinery is used under the general supervision of a person trained to understand the hazards associated with it and who have the authority to ensure that precautionary measures taken by the employer are implemented; and*
 - (j) *causing all employees to be informed regarding the scope of their authority as contemplated in section 37 (1) (b).*

The Occupational Health and Safety Act aims to provide for the health and safety of persons at work and for the health and safety of persons in connection with the activities of persons at work and to establish an advisory council for occupational health and safety.

The **main contractor** must **ensure compliance** with the Occupational Health and Safety Act. The **main contractor** must ensure that all **sub-contractors** comply with the Occupational Health and Safety Act. **{Condition #14 of the EA}**.

7.19 IMPLEMENTATION SCHEDULE

This portion of the EMP is applicable to **all construction activities** for the required portion on DR 1526 that is being upgraded. It will remain in place for the duration of the construction phase.

TASK	RESPONSIBILITY	TIMEFRAME
Appointment of Contractors	Project Proponent / Contracting Engineer / Client	Prior to Construction
Demarcation of No Go Areas	ECO / Contracting Engineer	From Appointment
Establishment of Site Camp	Contractors / Contracting Engineer	Prior to Construction commencing
Environmental Awareness & Induction	ECO	From Appointment
Health and Safety Protocol	Contractor / Health and Safety Officer	Duration of contract
Attendance of Site Meetings	Project Proponent / Contracting Engineer / Contractor / ECO / Health and Safety Officer	Monthly for the duration of the contract (or as otherwise arranged).
Ablution Facilities	Contractor	Duration of contract
Waste Management	Contractor	Duration of contract
Cement Batching	Contractor	Duration of contract
Fuel Storage	Contractor	Duration of contract
Noise Control	Contractor	Duration of contract
Dust Management	Contractor	Duration of contract
Compliance with Noise Regulations	Contractor	Duration of contract
Erosion Control	Contractor	Duration of contract
Fire Management	Contractor / Project Proponent	Duration of contract
Audit Reports	ECO	Monthly for duration of contract
Non-compliance	ECO / Relevant Authority	Duration of contract
Compliance with all environmental management requirements	All role players	Duration of contract

7.20 CONSTRUCTION PHASE MONITORING

Monitoring of the construction progress must be done by means of **photographic documentation** (both random and fixed point photography) by the ECO. This information must be included in the Environmental Control Report (ECR) as described in Section 4.1.

Furthermore, it is recommended that an audit, six months after completion of construction is undertaken to monitor the rehabilitation of the site and to assess any possible impacts that may have occurred. This audit should be considered as the Environmental Completion Statement.

8 OPERATIONAL PHASE ENVIRONMENTAL MANAGEMENT REQUIREMENTS

The Operation Phase of the proposal commences once the construction activities have ceased and occupancy of the filling station takes place (i.e. once a service provider takes occupation of the constructed premises).

The facility will consist of five USTs with a combined capacity of 125m³ for the dispensing of both octane (petrol) and diesel fuels. Various amenities (restaurant, take-away / pizza and a 24-hour convenience store) will also be provided for. This section of the report deals with certain requirements during the Operational Phase to ensure long term environmental sustainability.

8.1 WASTE MANAGEMENT

Effective management of general waste contributes to a more **sustainable implementation of landfill sites** and the management thereof. Sorting of recyclable materials at source, i.e. in each facility forming part of the service station, will cause less backlog at the landfill site and decreases the availability of material, thus allowing for more effective and safer management of the landfill site.

8.1.1 Recycling

It is recommended that **recycling bins** are placed at a central point in the development, with access for all residents to encourage recycling of most of the general waste that is produced. Bins need to be adequately marked for ease of reference. The facility can enter into an agreement with a local recycling organization for collection of these materials (and possibly link with some of the established residential developments in the surrounding area).

See [Appendix 2](#) for a reference document on what can be recycled and how recycling works.

8.1.2 Petroleum Product Waste Management

Petroleum products are classified as **hazardous** and as such any waste products of these materials during Operation must be **handled, stored and disposed** in the correct manner.

Systems for the recycling of many of these products are available and must be undertaken. Staff must be adequately trained and informed of the nature of the waste material and its handling. The following must be taken into consideration:

- Waste material such as oil, coolants, battery water and fuel products must be stored in **separate containers and clearly labeled**;
- All waste that can be **recycled**, must be recycled; and
- Only **registered contractors** may remove the waste products from the site.

Waste management around the shopfront and restaurant facilities should encourage and implement the recycling of solid waste.

8.1.3 Fat, Oil & Grease Trap (FOG) for Restaurant

A fat, oil & grease (FOG) trap is required. The FOG trap retains all fats, oils and grease from the restaurant and prohibits these substances from flowing into the sewer network. **This FOG trap to be**

cleaned on a weekly basis by the restaurant personnel and checked monthly by the restaurant's manager.

8.1.4 Garden & Biodegradable Refuse

The extent to which landscaping around the service station will be implemented, is unknown. However, should a landscaped area be considered and in the event that outside contractors provide the maintenance of the area, the following will be applicable:

Garden refuse (such as prunings and grass clippings) may not be disposed of in the open space areas. Unwanted germination of seed in natural areas is to be prevented at all costs.

Kitchens produce a large amount of biodegradable refuse.

Both the garden and biodegradable refuse must feed into the Municipal waste handling system and may not be disposed of at the site, or any nearby location.

No burning of garden waste will be permitted on site. Only dumping at a recognized landfill site will be allowed.

8.2 FIRE RISK PREVENTION AND MANAGEMENT CONTROL

In terms of environmental aspects of fire management, due to the fact that much of the area is going to be hard surfaced or landscaped, there is little impact on biodiversity in the area.

However, fire management when dealing with flammable and combustible materials in close proximity to urban development is of extreme importance.

All staff must be adequately trained and informed of the procedures for dealing with a potential problem. Contact details for local Disaster Management Services and Fire Department must be clearly and easily visible to both staff and members of public.

8.3 FUEL AND FORECOURT MANAGEMENT

The overall management objectives of Operational Phase section of the EMP is to understand the environmental risks and responsibilities associated with the operation of service stations, and to take action to improve the management aspects. Once construction activities are completed, the greatest potential impact on the surrounding environment is the possible **contamination by petroleum products**. Environmental performance by suppliers is becoming more recognized and has positive financial benefits to companies that have proven track records in sustainable and principled development and operation.

8.3.1 Fuel Deliveries

Fuel deliveries pose the highest risk period for large scale accidental fuel spills. Extra vigilance by both staff and the delivery personnel must be observed. The following should be taken into consideration:

- During **fuel deliveries** the tanker driver must be present at all times;
- The underground storage tanks and the delivery tanker must be fitted with **emergency cut-off switches**;

- **Vapour recovery equipment** (if available) should be implemented to avoid air pollution and to minimise fuel loss;
- Tankers must off-load in the forecourt containment area (bund area) where **land or storm water pollution** can be minimized. Spill containment must be available nearby in the event of an accidental spill;
- Tankers must be **maintained and regularly serviced** to ensure that no components leak or are damaged. The fuel station operator should be able to direct queries regarding the state of the tankers to the relevant company; and
- Adequate **Health and Safety mechanisms** must be implemented during fuel deliveries.

8.3.2 Underground Fuel Tanks

Underground fuel tanks must comply with the relevant standards for design, construction and maintenance of filling stations and USTs (South African Bureau of Standards, SANS 089, SANS 1535, and SANS 1830).

Installation of tanks must include suitable **containment measures** to ensure that leakages are avoided.

Once the tanks are operational, the following must be taken into account:

- **Regular monitoring** of fuel levels will ensure early detection of leakage;
- Electronic gauges and / or probes must be regularly **checked and maintained**; and
- Any indication of **leakages** must be directed to the relevant management structure immediately. The contact details of the responsible individual must be easily available to the relevant personnel.

8.4 POLLUTION PREVENTION & CONTROL

8.4.1 Emergency Fuel Spills

Petrol and diesel spills are one of the greatest hazards faced by filling station operators. **Emergency procedures** for spills should be **clearly defined and easily visible** to both staff and members of the public. This should include contact details of emergency personnel.

Spill prevention should be ensured by correct design of the forecourt area. This would include adequate bunding and drainage.

A spill kit should be developed and kept on site. The kit should be properly equipped and clearly marked. All staff should be trained in emergency spill procedures and know where the spill kit is located. In general, the response to the spill should include the following:

- **Switch off all pumps using the cut-off switch.** This switch should be within easy access of console attendants;
- **Keep the public away from the spill area;**
- **Contain the spill** using brooms or a sand/soil dam to prevent contamination of the storm water system. Use absorbents to soak up as much of the spill as possible;
- Materials specifically for dealing with leaks (e.g. Drizit, Zorbit) can be applied;
- Call the local **Disaster Management** agents if a major spill occurs;

- Contact a **Waste Contractor** who is licensed to dispose of the used absorbents;
- Absorbents used to mop up fuel are flammable and considered hazardous waste, these must be disposed of correctly by a registered contractor;
- Should the spill access a storm water system, appropriate measures must be implemented to prevent **downstream contamination**. It is strongly recommended that a professional is identified and appointed to deal with such contamination. The details of this individual / company must be included in the Emergency Spill procedures;
- An Emergency Response Plan will be available at the facility.

8.4.2 Air Pollution

Fuel vapours are a source of air pollution at a service station, as are the exhaust fumes from vehicles making use of the facility. Awareness campaigns should be implemented to inform vehicles users of the impacts of exhaust emissions and methods to reduce these impacts. Fuel vapours from the facility can be managed by implementing the following:

- **Minimise vapour leaks.** This reduces air pollution and fuel loss;
- **Fuel nozzles** should be fitted with cut off mechanisms once the back pressure reaches a certain level indicating a full tank;
- Underground **tank seals** must be regularly checked to ensure good condition. Caps must be appropriately sealed; and
- **Vent pipes** must be constantly monitored to ensure that they are working effectively.

8.4.3 Noise Pollution

Noise pollution at a service station can be very offensive and invasive to neighbouring land uses. Every effort should be made to reduce noise nuisance, especially during **early mornings or late night**. The following should be taken into consideration:

- **Avoid** loud background noise that is clearly audible away from the forecourt;
- **Secure drain grates** to avoid noise caused by vehicles driving over them; and
- Avoid receiving fuel and other deliveries at night.

8.5 STORMWATER MANAGEMENT

The Best Practice Guidelines for Water Resource Protection stipulate that stormwater drainage systems must be designed in such a way that stormwater run-off is conveyed in a controlled manner that will not negatively affect upstream, adjacent or downstream properties and other watercourse users.

The civil engineers proposed that surface water run-off from hard-surfaced and paved areas drain along the road surfaces and be channeled through inlets into existing piped stormwater system.

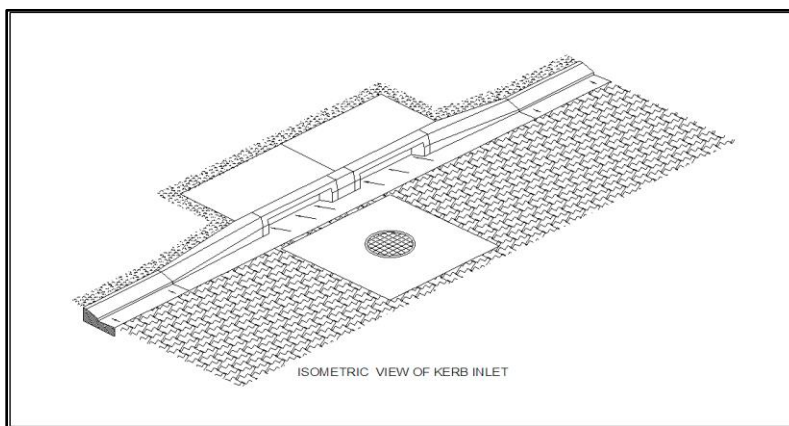


Figure 7: Example of a typical stormwater inlet structure within a road surface (MVD, 2010).

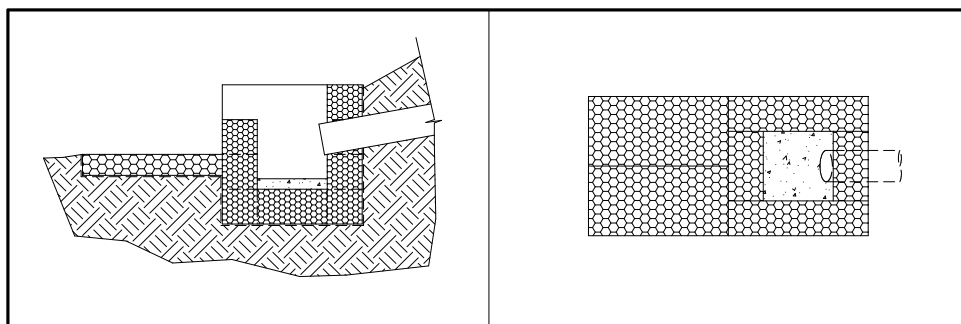


Figure 8: Example of typical energy dissipating structures at stormwater pipe outlet (MVD, 2010).

A stormwater contamination risk commonly associated with filling station includes the collection of hydrocarbon and other petroleum pollutants by surface water run-off, potentially ending in stormwater systems. To avoid potential contamination of surface water, stormwater management principles specifically applicable to the operating of the filling station will need to be implemented.

Various design and stormwater management principles can be incorporated to avoid the described risk. These principles include the following:

8.6 ISOLATE FORECOURT STORMWATER RUN-OFF

It is proposed that stormwater run-off from the forecourt dispensing area **be separated** from stormwater run-off from the remainder of the facility, due to the risk of pollutants associated with the dispensing area, contaminating the storm water system.

By **separating** the clean run-off from potential contaminated run-off, the risk can be adequately management.

A **forecourt separator** will be installed:

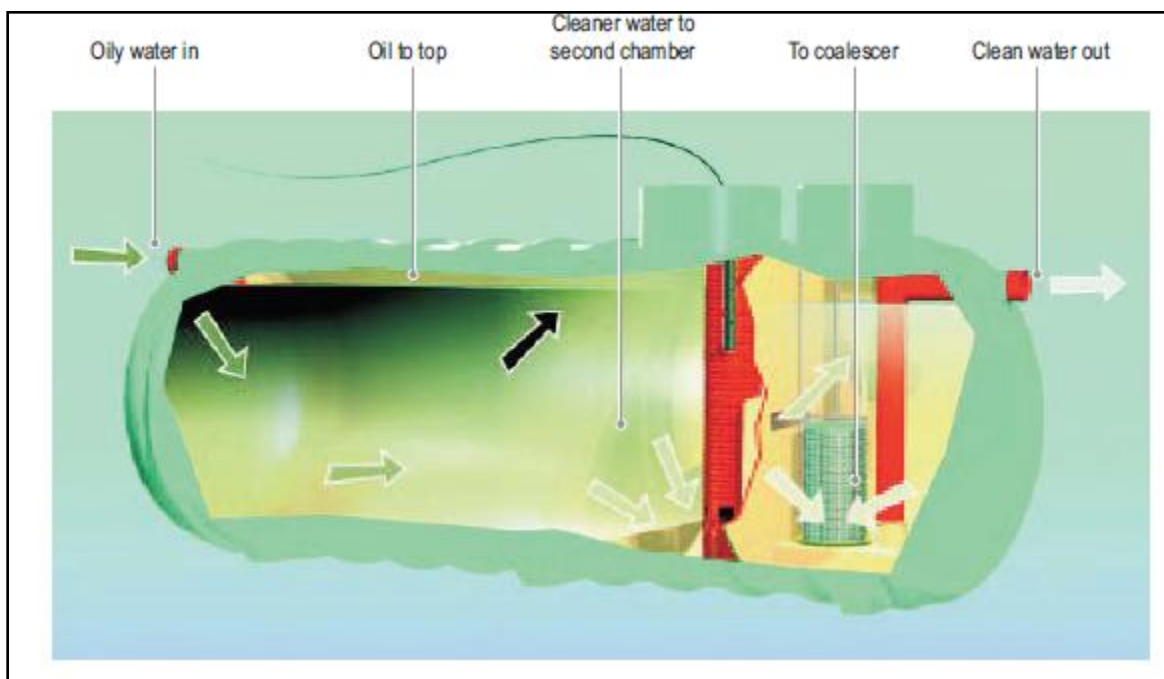


Figure 9: Schematic illustration of a typical forecourt separator (Vela VKE, 2011).

The forecourt separator will intercept hydrocarbon pollutants such as petroleum and oil and prevent their entry to the stormwater drainage system. The outflow of the separator will discharge into the sewer and not into the stormwater system.

The separator will be designed to function in the following manner:

- Contaminated water enters the separator;
- Liquid is retained for a sufficient period of time to ensure that the lighter than water pollutants (e.g. oils and petrol), separate and rise to the surface of the water and are retained within the separator;
- Decontaminated water is discharged (into the sewer system); and
- Retained oil must be emptied from the separator once the level of oil is reached and discharged of at a suitable facility.

8.7 PREVENT CONTAMINATED WATER FROM LEAVING THE FORECOURT

Measures should be taken to ensure that no contaminated or potentially contaminated surface water leaves the forecourt / contaminated area, finding its way into the stormwater system. Such measures include the following:

- Stormwater drains should not be located near the forecourt area;
- The stormwater system must be designed in such a way that the **uncontaminated** rainwater be directed **away** from the forecourt canopy into the stormwater drains;
- The underground areas of both the forecourt and fuel delivery area must be bunded with impermeable material to prevent run-off;
- All bunded areas must be regularly checked to ensure good condition and functioning;
- The forecourt separator must be well maintained and regularly checked to ensure that it is functioning effectively;
- All cleaning and washing should be confined to the bunded forecourt area; and

- Avoid hosing down of the forecourt, rather consider sweeping or vacuuming the area, using absorbent material and water free solvent to remove grime and to keep the premises clean.

8.8 PREVENT RAINWATER ENTERING THE FORECOURT

The correct design of the hard-surfaced forecourt can ensure that potential contaminated stormwater run-off do not result in surface water contamination. The following should be considered and implemented:

- The forecourt area should be covered with a roof that has an overhand of at least 10°;
- The hard-surfaced forecourt floor should be designed with a minimum slope of at least 2%, allowing any rain or other surface water (potentially contaminated with hydrocarbon pollutants) to drain towards central inlets linked to the sewage system; and
- Regular checks must be done for leaking roofs or stormwater pipes that may be discharging water onto the forecourt or into the bunded area.

8.9 INSTALL RAINWATER TANKS

Rainwater drainage from the forecourt canopy and other roof buildings will be harvested and stored for storage in rainwater tanks.

With the majority of the rainwater from roofed areas captured in rainwater tanks, a minimal volume of rainwater will drain to the stormwater system.

8.10 OPERATIONAL PHASE HEALTH & SAFETY

Potential health and safety risks for the general public have been identified as a possible operational phase impact. An **Emergency Response Plan** must be available and the staff will be informed / trained on how to implement the emergency plan (*a service provider still needs to be confirmed, at which stage the Emergency Response Plan of the specified service provider will be included for implementation*).

Typical risks associated with service stations include the following:

- Fire;
- Fuel spillage;
- Physical injury;
- Medical emergencies;
- Crime incidences.

The potential impact (especially fire risks and fuel spillages) can be avoided to a high degree, provided that the following mitigation measures are implemented:

FIRE & FUEL SPILLAGE RISKS:

- The facility will need to comply with all relevant norms relating to the design, construction and maintenance of filling stations to avoid circumstance which could expose the general public to health and safety risks;
- The South African Bureau of Standards codes: SANS 089, SANS 1535, SANS 1830 must be implemented;
- The Occupational Health & Safety Act (Act 85 of 1993) must be implemented where relevant;

- An **emergency switch** must be installed – allowing all pumps to be switched off immediately in case of an emergency;
- On-site fire extinguishers must **be available at all times** and must be regularly checked and maintained;
- Refilling of the USTs **must not be unattended**;
- Automatic cut-off devices must be installed on all refueling equipment to avoid fuel spillages;
- **Regular monitoring** on all equipment for fuel leakages;
- All staff must be **adequately trained** and **informed** of the procedures for dealing with a potential fire and fuel spillage problems;
- Product spills can be soaked up with **sand or sawdust**;
- **No water** must be used for petro or electrical fires;
- **Trained staff** can attempt to extinguish the blaze with the proper equipment;
- Buildings must be **evacuated**;
- **Contact details** for local Disaster Management Services and Fire Department must be clearly and easily visible to both staff and members of public;

PHYSICAL INJURY & MEDICAL EMERGENCIES:

- Designated staff must be trained in first aid techniques;
- All new staff must be given basic first aid training as part of induction training;
- First aid kits to an acceptable standard must be readily available;
- Contact details for the nearest doctor and hospital must be readily available and clearly visible.

CRIME INCIDENTS:

In an attempt to mitigate security / criminal activities on site, the site is to be fenced (with vehicle accesses open & two pedestrian gates to be locked at night), additional lighting & full time security personnel on site to oversee access points, the ATM, Restaurant & Shop.

- Contact details for the nearest police station must be readily available and clearly visible;
- Contact / report the incidence with the nearest police station;
- Ask customers to move away from the problem area;
- Lock all pumps as soon as possible.

The above information typically forms part of an **Emergency Response Plan**. As a service provider still needs to be confirmed, at which stage a specific Emergency Response Plan in accordance with the service provider's requirements will be developed.

In addition to the above, the filling station must erect warning signs for motorists to be careful of pedestrians and school children using the Sandkraal / Main Road, given the filling station's proximity to schools and busy roads. **{As recommended in the Environmental Process and approved accordingly}**.

9	DECOMMISSIONING REQUIREMENTS	PHASE	ENVIRONMENTAL	MANAGEMENT
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9.1.1 Abandonment of Underground Storage Tanks

Underground storage tanks that are no longer in use or have not been used to store flammable or combustible liquids for a continuous period of two years should be considered abandoned.

Abandoned or broken underground tanks must be removed by experienced contractors.

The likelihood of contaminated soil around the tanks is often high and this must be correctly removed and disposed of. Groundwater is at risk from contamination by defunct tanks and it is advised that monitoring of the groundwater should be undertaken if large quantities of fuel have been lost.

A Decommissioning Plan must be prepared for the decommissioning phase, stipulating the necessary management and monitoring for the specific decommissioning activity.

The forecourt underground area as well as the area surrounding the USTs will be bunded / encased with an impermeable material. With decommissioning, soil contamination will be restricted to these two contained areas.

Careful removal and proper disposal of any petroleum products, USTs and pipework will be necessary to avoid unnecessary contamination. Any hazardous waste must be disposed off at a recognized hazardous waste disposal facility.

With closure of the site, it is recommended that a **contamination assessment** be undertaken to determine if any contamination has taken place, which will indicate whether any rectification and site rehabilitation will be needed. Considering the design of the facility (underground encasings) it will possible to restrict the contamination assessment to the two described areas.

Any other legislative requirements at the time of decommissioning should be complied with.

10 ENVIRONMENTAL IMPACTS & MITIGATIONS

The following impact assessments / studies were undertaken for the proposal:

Planning, Civil Engineering, Socio-Economic and Traffic Impact Assessment.

The following positive & negative environmental impacts of the proposed activity were identified and considered during the EIA process, based on which the associated mitigation measures were recommended for implementation (to reduce negative impacts & enhance positive ones).

Planning, design and construction phase

- Earthworks associated with the filling station facility construction (negative impact)
- Pollution of soil and water (ground & surface) sources and soil erosion (negative impact)
- Economic benefits from construction phase (positive impact)
- Construction Phase Traffic (negative impact)
- Dust as result of site clearing and construction vehicles (negative impact)
- Construction Phase Noises (negative impact)

- Transforming a vacant site to a built environment (negative impact)
- Temporary stimulation of the national and local economy (positive impact)
- Temporary increase employment in the local economies (positive impact)
- Contribution to skills development in the local economy (positive impact)
- Improved Standard of living (positive impact)
- Sense of Place (negative impact)

Operational phase

- Traffic volumes impact (negative impact)
- Contamination of underlying aquifer and subsequent reduced groundwater quality (negative impact)
- Surface water pollution (negative impact)
- Light pollution (neutral impact)
- Potential health and safety impacts for the general public (neutral impact)
- Vapour leaks resulting in potential odours (negative impact)
- Impact on feasibility of other existing filling stations (negative impact)
- Noise pollution (negative impact)
- Impact on the suburban sense-of-place (low negative impact)
- Visual impact (neutral impact)
- Fire & Explosion risks (negative impact)
- Risk for traffic related incidents for children and learners in the area (neutral impact)
- Sustainable increase in production and GDP nationally and locally (positive impact)
- Sustainable increase in production of local economy (positive impact)
- Creation of sustainable employment positions (positive impact)
- Improved Standard of Living (positive impact)
- Impact on skills development (positive impact)
- Sustainable increase in National and Local Government Revenue (positive impact)
- Impact on daily movement patterns (positive impact)
- Sense of Place (negative impact)

Decommissioning and closure phase

- Potential contamination of soil and water resources (negative impact)
- Loss of revenue and job opportunities (negative impact)
- Decommissioning phase noise impact (negative impact)

10.1 MITIGATIONS

Table 5: Mitigations / Recommendations.

MITIGATION	Condition of Approval	Included in EMPr	Construction Phase	Operational Phase	Decommissioning Phase
Mitigations / Recommendations					
Earthworks Applicant must appoint an ECO to oversee construction.	✓	✓	✓		
Clearly demarcate areas where construction activities will take place		✓	✓		
Pollution Actively maintain all construction vehicles to avoid leaks.		✓	✓		
Construction vehicles must be in a good / acceptable condition.		✓	✓		
Appropriate erosion structures must be installed to prevent erosion.		✓	✓		
Where applicable, fuels must be stored in secured and bunded facilities to avoid leaks.		✓	✓		
Preparing of the underground storage area must be lined with an impermeable coating (i.e. suitable plastic).		✓	✓		
Construction Phase Traffic Prohibit construction vehicles to park on neighbouring properties or road reserves.		✓	✓		
Limit construction traveling times to normal working hours (e.g. Monday – Friday, 07h00 – 18h00 and Saturdays, 08h00 – 13h00). Construction should be avoided on Sundays & Public holidays.		✓	✓		
Comply to traffic regulations and management to ensure minimal impact on traffic.		✓	✓		
Dust Construction vehicles must adhere to speed limits and minimisation of haul roads must be implemented. Haul roads must be kept dampened. Comply to policies regarding noise and dust regulation methods close to roads and other existing infrastructure.		✓	✓		
Exposed stockpile materials must be protected against wind.		✓	✓		
Trucks bringing in materials must be covered to prevent dust.		✓	✓		
Construction Phase Noises Provide baffle and noise screens to noisy machines.		✓	✓		
Ensure machinery is properly maintained.		✓	✓		
Provide absorptive linings to the interior of engine compartments.		✓	✓		
Switch off machinery when not in use.					
Reduce impact noise by careful handling of equipment and machinery.		✓	✓		
Other Bunds should be placed around refuelling, fuel storage and servicing areas.		✓	✓		
Chemical toilets (1 toilet / 10 persons).		✓	✓		
No mixing of cement / concrete on bare ground.		✓	✓		
Instruct workers properly of the environment.		✓	✓		
Transforming a vacant site to a built environment Always keep the construction site neat and tidy to reduce this impact.		✓	✓		

MITIGATION	Condition of Approval	Included in EMPr	Construction Phase	Operational Phase	Decommissioning Phase
<u>Temporary stimulation of the national and local economy</u> The project developer should use locally sourced inputs where feasible.		✓	✓		
Sub-contracting of local construction companies as far as possible.		✓	✓		
<u>Temporary increase employment in the local economies</u> Organize local community meetings to advise the local labour on the project and the jobs that can potentially be applied for. Effort must be made to employ locally.		✓	✓		
<u>Contribution to skills development in the local economy</u> It is suggested that the project company provide training courses for employees. Facilitate the transfer of knowledge between experienced employees and the staff. Perform a skills audit to determine the potential skills that could be sourced in the area.			✓		
<u>Improved Standard of Living</u> Local employment.		✓	✓		
<u>Safety and Security</u> 24-hour security on site and increased patrol in the neighbourhood.		✓	✓	✓	
Perimeter fenceline on Erf boundary with open vehicle accesses		✓	✓	✓	
Installation of two pedestrian gates that can be locked at night.		✓	✓	✓	
Installation of additional LED lighting to illuminate site, access points & bus stop.		✓	✓	✓	
<u>Impacts on daily movement patterns</u> Comply to traffic regulations and management. Limit travelling times of construction vehicles in peak times.		✓	✓		
<u>Traffic volumes impact (operational phase)</u> The full access along Golf Street must be widened to 12.9m and inside radius of 7.9m.		✓	✓	✓	
Access off Main Street is limited to entrance only (8.5m and radii of 3.4m and 4.0m) and a full access provided off Golf Street.		✓	✓	✓	
A turning radius at the intersection of Main Street and Golf Street needs widening;		✓	✓	✓	
Sufficient Universal Accessible (UA) sidewalks need to be provided for. Additional sidewalks must be created and link to existing sidewalks on both sides of Main Street and Golf Street already been built by the Municipality to accommodate increased pedestrian traffic.		✓	✓	✓	
<u>Contamination of underlying aquifer and subsequent reduced groundwater quality</u> Capturing spilt fuel before it infiltrates into the subsurface.		✓		✓	
Adequate bunding of the USTs, forecourt dispensing area and fuel tank delivery area.		✓		✓	
Monthly monitoring of fuel sales vs holding capacity.		✓		✓	
USTs must be constructed from corrosion-proof materials. Should any UST corrosion be detected, the UST must be replaced immediately.		✓		✓	
Adhering to industry norms relating to the design, construction and maintenance of filling station and USTs.		✓		✓	
Regular inspection of forecourt paving at the filling points.		✓		✓	
<u>Surface Water Pollution</u> Stormwater drains should not be located near the forecourt.		✓		✓	
A forecourt separator must be installed.		✓		✓	
The total forecourt underground area should be bunded with impermeable material.		✓		✓	

MITIGATION	Condition of Approval	Included in EMPr	Construction Phase	Operational Phase	Decommissioning Phase
All clearing and washing should be confined to the bunded forecourt area.		✓		✓	
Avoid hosing down the forecourt. Rather consider sweeping or vacuuming.		✓		✓	
Regularly check for leaking roofs or stormwater pipes.		✓		✓	
Check the bund around the forecourt regularly.		✓		✓	
Stormwater drains must be kept free of litter and other debris.		✓		✓	
The FOG trap retains all fats, oils and grease from the restaurant and prohibits these substances to flow into the sewer network. This FOG trap to be cleaned on a weekly basis by the restaurant personnel and checked monthly by the restaurant's manager.	✓	✓	✓	✓	
Light pollution The facility may not have any flashing lights and all external lighting should be downwards to limit light pollution.		✓		✓	
Potential health and safety impacts for the general public The facility will need to comply with all relevant norms relating to the design, construction and maintenance of the filling station.		✓		✓	
Emergency response plan will need to be available and the staff will need to be informed / trained on how to implement it.		✓		✓	
Vapour leaks Fuel nozzles should be fitted with cut off mechanisms.		✓		✓	
Underground tank seals must be regularly checked.		✓		✓	
Implementing Automatic Tank Gauging rather than manual stock monitoring.		✓		✓	
Vent pipes must be constantly monitored.		✓		✓	
All procedures & equipment used should comply with the Occupational Health and Safety Act (Act 85 of 1983).		✓		✓	
Compliance with the SANS 10089.		✓		✓	
Awareness campaigns should be implemented at the proposed facility to inform vehicle users of the impacts of exhaust emissions and methods to reduce these impacts.		✓		✓	
Noise Pollution Avoid loud background music that is clearly audible away from the forecourt.		✓		✓	
Secure drain gates to avoid noise caused by vehicles driving over them.		✓		✓	
Avoid receiving fuel and other deliveries at night.		✓		✓	
Fire & Explosion risks Compliance with Acts, Guidelines, Policies and Municipal By-Laws (including but not limited to the Health & Safety Act, Community Fire & Safety By-Law, National Building Regulations etc.).		✓		✓	
On-site fire extinguishers available.		✓		✓	
Monthly monitoring on all equipment for fuel leakages.		✓		✓	
All staff must be adequately trained and informed of the procedures for dealing with a potential fire/emergency.		✓		✓	
Refilling of the USTs must always be attended.		✓		✓	

MITIGATION	Condition of Approval	Included in EMP	Construction Phase	Operational Phase	Decommissioning Phase
Automatic cut-off devices must be installed on all refuelling equipment to avoid fuel spillages.		✓		✓	
An Emergency Plan will be available and contact details for local Disaster Management Services and Fire Department must be clearly and easily visible to both staff and members of public.		✓		✓	
<u>Risk for traffic related incidents</u> It is proposed that the filling station erect warning signs at entrance and exist points warning motorists that it is a high-risk zone for children crossing the streets.		✓		✓	
Access off Main Street is limited to entrance only, exit cannot be allowed, and a full access is proposed off Golf Street.		✓		✓	
<u>Increase in production of local economy, Employment positions, Improved Standard of Living</u> Employ locally.		✓		✓	
<u>Potential contamination of soil and water resources (possible decommissioning & closure phase)</u> Adherence to a Decommissioning Plan, including appropriate management and monitoring to avoid contamination.		✓			✓
The forecourt underground area & area surrounding the USTs will be bunded/encased with an impermeable material. With decommissioning, soil contamination will be restricted to these two contained areas.		✓			✓
Careful removal and proper disposal of any petroleum products, USTs and pipework will be necessary. Any hazardous waste must be disposed of at a recognized hazardous waste disposal facility.		✓			✓
It is recommended (closure phase) that a contamination assessment be undertaken to determine if any contamination has taken place, which will indicate whether any rectification and site rehabilitation will be needed. Considering the design of the facility (underground encasings) it will be possible to restrict the contamination assessment to the two described areas.		✓			✓
<u>Loss of revenue and job opportunities</u> Similar commercial facility to be established to provide the job opportunities and revenue as noted under the facility.		✓			✓
<u>Decommissioning phase noise impact</u> The same as in the construction phase mitigation.		✓			✓

11 NON-COMPLIANCE

Any person is liable on conviction of an offence in terms of sub regulation (1) of the National Environmental Management Act to imprisonment for a period not exceeding two years or to a fine not exceeding an amount prescribed in terms of the Adjustment of Fines Act, 1991 (Act No. 101 of 1991).

Apart from a fine resulting from any legal mechanism, the ECO may impose a **penalty** for **non-compliance** in terms of this Environmental Management Plan. The procedure detailed below is for a spot fine in terms of this EMP and does not detail the procedure for fining in terms of any other legal mechanism.

{Condition #11 of the EA states: Non-compliance with a condition of this environmental authorisation or EMP may result in suspension of this environmental authorisation and may render the holder liable for criminal prosecution.}

11.1 PROCEDURES

The contractor shall comply with the environmental specifications and requirements of this EMP and Section 28 of NEMA, on an on-going basis and any failure on his part to do so will entitle the ECO to **impose a penalty**.

In the event of non-compliance the following recommended process shall be followed:

- The competent authority shall issue a **Notice of Non-compliance** to the Holder of the EA, stating the nature and magnitude of the contravention.
- The Holder of the EA shall **act to correct the transgression** within the period specified in by the authority.
- The Holder of the EA shall provide the authority with a **written statement** describing the actions to be taken to discontinue the non-conformance, the actions taken to mitigate its effects and the expected results of the actions.
- In the case of the Holder of the EA failing to remedy the situation within the predetermined time frame, the competent authority may recommend halting the activity.
- In the case of non-compliance giving rise to physical environmental damage or destruction, the competent authority shall be entitled to undertake such **remedial works** as may be required to make good such damage **at the cost** of the Project applicant.
- In the event of a dispute, difference of opinion, etc. between any parties in regard to or arising out of interpretation of the conditions of the EMP, disagreement regarding the implementation or method of implementation of conditions of the EMP, etc. any party shall be entitled to require that the issue be referred to **specialists and / or the competent authority** for determination.
- The competent authority shall at all times have the right to **stop work** and/or certain activities on site in the case of non-compliance or failure to implement remediation measures.

11.2 OFFENCES AND PENALTIES

Any avoidable non-compliance with the conditions of the EMP shall be considered sufficient ground for the imposition of a penalty.

Possible offences, which should result in the issuing of a contractual penalty, include, but are not limited to:

- Unauthorised entrance into no-go areas;
- Catching and killing of wild animals;
- Open fires outside of the contractor camp site;
- Unauthorised damage to natural vegetation;
- Unauthorised camp establishment (including stockpiling, storage, etc.);
- Hydrocarbons / hazardous material: negligent spills / leaks and insufficient storage;
- Ablution facilities: non-use, insufficient facilities, insufficient maintenance;
- Insufficient solid waste management (including clean-up of litter, unauthorised dumping etc);
- Erosion due to negligence / non-performance;

- Excessive cement / concrete spillage / contamination'
- Insufficient fire control and unauthorised fires;
- Not installing (during construction) or monitoring, emptying or maintaining (during operation) Fat, Oil & Grease (FOG) trap from Restaurant - The FOG trap retains all fats, oils and grease from the restaurant and prohibits these substances to flow into the sewer network. **This FOG trap to be cleaned on a weekly basis by the restaurant personnel and checked monthly by the restaurant's manager. Weekly & monthly records** of checking & emptying FOG trap/s MUST be kept site. Non-compliance with this, will result is Restaurant owner &/ manager will result in fines / penalties being issued to these parties.
- Non-induction of staff.

12 MONITORING AND AUDITING

Monitoring is an important tool in determining the effectiveness of management actions by measuring changes in the environment. These could be in the form of fixed point photography where an area is photographed on a regular / seasonal basis to ascertain changes, monitoring of a particular aspect such as landscape integrity parameters, recordings of animal movement from fixed point etc. The most important aspect of any monitoring programme is **consistency and continuity**. This will ensure a level of scientific accuracy to determine baselines / thresholds and measure changes / deviations, which then drive management reactions.

Any required monitoring reports must be made available to the competent authority, as required.

The type and frequency of monitoring must include:

- During construction photographs must be taken from pre identified fixed points and a comprehensive record maintained;
- Incident Reports;
- Site meeting minutes during construction;
- During Operation - Monitoring records (weekly & monthly – name, date & signature) checking and emptying the Fat, Oil & Grease (FOG) trap/s from the restaurant, which prohibit these substances to flow into the sewer network. **This FOG trap to be cleaned on a weekly basis by the restaurant personnel and checked monthly by the restaurant's manager.**

12.1 MONITORING TIMEFRAMES SUMMARY

Table 6: Monitoring Timeframe Summary.

MONITORING TIMEFRAMES		
Type	Frequency	Criteria
ECO visits	As per section 5.4	Site photographs / site diary
Record keeping	Monthly	Site photographs, method statements, site meeting minutes (if applicable)
	6 month post construction	Completion Statement
Auditing	One year post construction	Compliance with the EA, EMP, municipal permits and any other approvals

12.2 ENVIRONMENTAL AUDITS

A final construction phase Completion Statement must be submitted within 6 months of completion of construction / site handover.

This Completion Statement must include the monitoring results as above, where applicable to construction.

An Environmental Audit should be undertaken two (2) years post construction.

12.3 AUDIT REPORTS FREQUENCIES AND FORMAT

The table below provides a summary of the timeframes for the various Audit Reports specified in the EA.

Table 7: Audit Reports Timeframe Summary

ENVIRONMENTAL AUDIT TIMEFRAMES		
Type	Frequency	Criteria
Final Construction Audit	Two years post construction	Audit on operational aspects of the EA and EMPr

In terms of the 2014 EIA Regulations, Audit Reports must be submitted to the registered Interested & Affected Parties within 7 days of submission to the competent authority.

In order to comply with the 2014 EIA Regulations, any audits must be undertaken using the following format:

Table 8: Environmental Audit Requirements.

Appendix 7 of Regulation 326 of the 2014 EIA Regulations, as amended contains the required contents of an Environmental Audit Report. The checklist below serves as a summary of how these objectives & requirements were incorporated into this Audit Report.	
Objective	Description
The objective of the environmental audit report is to -	
(a) Report on – (i) the level of compliance with the conditions of the environmental authorisation and the EMPr, and where applicable, the closure plan; and (ii) the extent to which the avoidance, management and mitigation measures provided for in the EMPr, and where applicable, the closure plan achieve the objectives and outcomes of the EMPr, and closure plan.	
(b) Identify and assess any new impacts and risks as a result of undertaking the activity.	
(c) Evaluate the effectiveness of the EMPr, and where applicable, the closure plan.	
(d) Identify shortcomings in the EMPr, and where applicable, the closure plan.	

Appendix 7 of Regulation 326 of the 2014 EIA Regulations, as amended contains the required contents of an Environmental Audit Report. The checklist below serves as a summary of how these objectives & requirements were incorporated into this Audit Report.

Objective	Description
(e) Identify the need for any changes to the avoidance, management and mitigation measures provided for in the EMPr, and where applicable, the closure plan.	
Requirement	Description
(1) An Environmental audit report prepared in terms of these Regulations must contain -	
(a) Details of – (i) The independent person who prepared the environmental audit report; and (ii) The expertise of independent person that compiled the environmental audit report.	
(b) A declaration that the independent auditor is independent in a form as may be specified by the competent authority.	
(c) An indication of the scope of, and the purpose for which, the environmental audit report was prepared.	
(d) A description of the methodology adopted in preparing the environmental audit report.	
(e) An indication of the ability of the EMPr, and where applicable the closure plan to – (i) Sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an on-going basis; (ii) Sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the closure of the facility; and (iii) Ensure compliance with the provisions of environmental authorisation, EMPr, and where applicable, the closure plan.	
(f) A description of any assumptions made, and any uncertainties or gaps in knowledge.	
(g) A description of an consultation process that was undertaken during the course of carrying out the environmental audit report.	
(h) A summary and copies of any comments that were received during any consultation process.	
(i) Any other information requested by the competent authority.	

Any other requirements of the EA or any other authorisations must be incorporated into an Audit where necessary.

13 REFERENCES

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Appendix 1

Locality Plans

Appendix 2

Site Development Plans / Layouts /
Drawings

Appendix 3

Diagrammatic representation of
required environmental control
mechanisms.

Appendix 4

EMPr – Quick Reference Guide

NB – This Quick reference guide cannot be read in isolation and must be considered along with total EMP document.

<u>SPECIFICATION:</u>	<u>EMP REF</u>
ENVIRONMENTAL EDUCATION	5.5
<u>OBJECTIVES:</u> To achieve environmental awareness among construction site personnel of the procedures to be followed to comply with the EMP.	
<u>GOALS:</u> Ensure that every site employee receives basic environmental awareness training within one week of commencing work on the site.	
<u>RESPONSIBILITIES:</u> - The Contractor is responsible for making Environmental Appointments to ensure that the specifications of the EMP are complied with. - The Contractor is responsible for ensuring that all of his staff, sub-contractors and workers receive basic environmental awareness training within their first week. A record of the names & dates of personnel receiving this training is to be maintained. - The ECO must be available, if necessary, to provide environmental induction training to site management staff. - The ECO shall monitor the contractor's compliance with the requirement to provide sufficient environmental awareness training to all site staff. - The ECO shall check that the content of the environmental training is appropriate & is of a sufficiently high standard, & recommend adjustments where necessary.	
<u>PROCEDURES:</u> - Prior to camp establishment a workshop/site induction meeting shall be held to discuss the environmental issues and procedures to be complied with during the work contract. Attendees shall be the Developer, the Main Contractor, Site manager, foremen and ECO, as well as all appointed site officers. - All employees of the Contractor, including sub-contractors and their employees, that spend more than 1 day a week or four days in a month on site, are required to attend an Environmental Induction session before construction commences. This session shall cover all aspects related to the EMP. - Accurate attendance registers of these sessions shall be kept by the Contractor and filed. - Ad hoc or additional training shall be undertaken by the Contractor if required to by the ECO, for specific activities that may potentially impact the environment, or if the work is being undertaken in sensitive environments. - Environmental signage is to be displayed on the site including – “no smoking”, “fire hazards”, etc. - A basic outline of the Environmental Awareness Training to be given to workers is provided in the form of a “Do’s and Don’ts” poster, which shall also be displayed in the site camp or office.	
<u>RECORDS AND DOCUMENT CONTROL:</u> - Records of Environmental Appointments - Records of Environmental Awareness Training	

<u>SPECIFICATION:</u>	<u>EMP REF:</u>
SITE ESTABLISHMENT AND DEMARCATION	7.1 & 7.2
<u>OBJECTIVES:</u> Minimise negative environmental impacts by reducing the construction “footprint”.	
<u>GOALS:</u> - Ensure that the Site Establishment and Fire Prevention Plans are adhered to. - Ensure that the Minimum Requirements is implemented. - Demarcate “No-Go” areas with two-strand wire fencing and danger tape zig zagged through it. - Make all construction workers aware of the restrictions on “no-go” areas	
<u>PROCEDURES:</u> <i>Prior to Site & Campsite Establishment</i> - Submit a Site Establishment Plan to the ECO for approval prior to work commencing on site. The plan should indicate the locations of construction infrastructure including the campsite and it’s contents and layout, wash areas, workshop washing, batching area, toilets, stores, site office, material and topsoil stockpile areas. This plan must be approved by the ECO. - Prepare and keep a fire prevent plan on-site. The plan should describe what fire prevention and protection measures will be applied on the site, including a list of fire fighting equipment available. - Ensure that all the stipulations of the Minimum Requirements Checklist are implemented and signed off by the ECO. <i>Establishment of the Site</i> - All construction activity is to be restricted to within the site boundaries, as well as all plant, labour and materials. Any deviation from this requires written permission from the ECO. - No unauthorized entry, stockpiling, dumping or storage of equipment or materials (imported or excavated) outside site boundaries is permitted. - Should no alternative means of completing specified work be available other than to utilise “no-go” areas, permission to enter these demarcated areas must be provided in writing by the ECO. <i>Establishment of the Campsite</i> - The location of the campsite must be in accordance with the approved Site Establishment Plan. Any deviation from this requires written permission from the ECO. - The campsite is to contain at a minimum the following: - Stores (including materials and fuels stores) - Areas for storing vehicles, plant & equipment - Waste containment facilities - No vehicle washing facilities may be established on the site or in the campsite.	
<u>RECORDS AND DOCUMENT CONTROL:</u> - Provide ECO with Method Statement detailing Site Location and Layout. - The Site Establishment Plan & Fire Prevention Plan is to be filed.	

<u>SPECIFICATION:</u>	<u>EMP REF:</u>
CONSTRUCTION ACTIVITIES & WORKS	7
<u>OBJECTIVES:</u> - Minimise the impact of construction activities on the immediate and surrounding natural and social environment. - Prevent contamination of the ground, groundwater, wetlands, river, streams and downstream properties and surrounding environment from construction activities.	
<u>GOALS:</u> Institute the following at the commencement of construction works: - Procedurally correct cement/concrete batching works & - Sufficient and functional equipment washing facilities.	
<u>RESPONSIBILITIES:</u> - The Engineer is to monitor the technical aspects of the construction process and liaise with the ECO where activities could have a detrimental effect on the environment. - The Contractor is to carry out the construction works according to the environmental specifications, as well as other applicable specifications and laws. He is to provide the necessary materials, equipment & training to comply with EMP procedures. - The ECO must be available to assist the Contractor in providing environmental awareness training, and finding environmentally viable solutions to construction impacts.	
<u>PROCEDURES:</u>	
Construction Times - Construction works shall take place at the following times: 7h00 to 18h00 Monday to Friday 8h00 to 14h00 on Saturdays; - No work on public holidays - If work outside of these hours is planned, permission from the ECO must be sought. Depending on the type & duration of work being undertaken, letter drops to surrounding residents may be required.	
<i>Site Works (Preparation, clearing and stabilisation)</i> - Site clearing is to be limited to only the area necessary for the carrying out of the specified works. - A Method Statement must be approved for soil stripping before construction commences. - Topsoil stockpiles shall not exceed 1m in height and 2m in width, and shall be protected from wind erosion and runoff by covering with a suitable fabric approved by the ECO. - Once earthworks are complete, the disturbed areas are to be stabilised.	
<i>Batching and Mixing Areas</i> - No mixing of concrete or cement directly on the ground is permitted. - Mortar (dugga) boards are to be provided to prevent spillage from concrete mixing. - Cement/concrete batching & mixing work areas are to be kept clean at all times and the area is to be lined with plastic to prevent ground contamination, and bermed with sand or bricks to prevent runoff. Visible remains and aggregate shall be physically removed and immediately disposed of as solid waste. Location of mixing and batching works outside of the campsite area is to be approved by the ECO, and indicated on the Site Establishment Plan. - Bulk cement silos & batching storage areas are to be lined with plastic or concrete, & screened & contained, by fencing such as ready-fence panels, to ensure that no windblown cement dust or water contamination occurs.	
<i>Work Areas</i> Bricklayers & plasterers are to minimize any cement spill or runoff in their work area, & ensure that the work area is cleaned of all cement spillage at the end of each workday.	

- Both used & unused cement bags are to be stored in weatherproof containers so as not to be affected by rain or runoff.
- Should work be undertaken in areas where services have been completed, storm water catch pits are to be closed with hessian/bidum or other suitable pervious material to prevent sand and contaminants from entering the storm water system.
- The Contractor is to ensure that all reasonable measures are taken to limit erosion and sedimentation from construction activities. Erosion protection measures could include cut-off drains and/or berms.

Equipment Cleaning Areas & Activities

- No washing of vehicles or equipment is permitted on site.
- All wastewater resulting from batching of concrete is to be collected in conservancy tanks, cleaning pits or sumps, to be disposed of as contaminated water.
- Plastic or concrete lined cleaning pits are to be installed to facilitate washing of all cement & painting equipment. The size & number of pits must be sufficient to handle expected outputs from concrete batching, cement mixing & painting. A functional, non-leaking, water point must be installed at each pit. (Disposal of contaminated water - see *Specification 5*).
- Contaminated soil resulting from concrete/cement spills is to be removed immediately after the spillage has occurred and placed on the appropriate rubble stockpile.
- No contaminated runoff is to be permitted to enter the storm water system.
- Ready-mix trucks are not permitted to clean chutes at the work site. Cleaning into foundations, or dedicated cleaning pits or sumps is permitted.

RECORDS AND DOCUMENT CONTROL:

- Details of any incidents are to be recorded by the ECO.

<u>SPECIFICATION:</u>	<u>EMP REF:</u>
WASTE MANAGEMENT	7.9, 8.1
<u>OBJECTIVES:</u> • Reduce the amount of waste produced by construction activities. • Prevent pollution of surrounding natural and residential areas. • Promote the reuse and recycling of materials.	
<u>GOALS:</u> • Institute regular daily work area clean-ups, and weekly site clean-ups. • Reduce materials wastage. • Institute efficient waste management practices by employing good-housekeeping rules.	
<u>RESPONSIBILITIES:</u> • The Contractor is to institute and enforce an effectively functioning waste management system for the duration of the contract. • The ECO is to regularly evaluate that the waste management practice is adequate and advise on procedures for optimum efficiency.	
<u>PROCEDURES:</u>	
<i>Solid Waste Management:</i> • A construction refuse collection structure shall be erected immediately on the commencement of construction work. The minimum requirement for a refuse collection structure is as follows: ○ 4 Ready-fence panels (3m x 1.8m) with shadecloth or hessian attached to the panels, one panel being movable to provide access. The structure shall have a roof (ready fence panel, or similar) to contain waste materials in windy conditions. The floor of the structure shall be lined (with DPC plastic or similar) to prevent ground contamination from leachate such as cement powder residue. ○ If construction refuse skips are utilised, they are to be covered with shadecloth (or similar) to ensure the containment of waste. • Refuse bins with lids shall be provided for household waste (lunch litter) and placed in eating areas, and any other areas where deemed necessary to control littering. • Refuse bins are not permitted to overflow and are to be emptied regularly. • Recycling shall be instituted where possible – 44 gallon drums in the campsite for glass and tins as a minimum. Cardboard, paper (other than cement bags) and boxes shall be separated from other refuse and a separate structure be built for this purpose. • No littering of any kind is permitted on site. Any accumulation of litter must be cleaned up immediately by the Contractor or responsible party. • Building rubble is to be kept separate from other construction waste. Rubble is to be kept clean of brick ties, plastics, papers and cement bags at all times. • Accumulation of large stockpiles of rubble and waste is not permitted. Waste is to be removed at regular intervals (at least once a week). • Building rubble stockpiles and refuse structures shall be positioned to permit easy access by rubble removal trucks. • All waste is to be disposed of at an approved landfill site. • No burning or burying of waste is permitted on site.	
<i>Wastewater Management:</i> • The disposal of wastewater produced construction works or cleaning pits is to be carried out as follows: ○ The top 60% of the wastewater may be disposed down the sewerage system, ○ The remaining water and sludge must be disposed of a registered landfill site with solid waste. • No washing of vehicles is permitted on site or in the campsite.	

Ablution Facilities:

- Sufficient ablution facilities shall be provided –1 toilet per 15 workers maximum. Should any deviation from this be necessary written permission from the ECO shall be required.
- Chemical toilets are to be serviced weekly. The Contractor is to ensure that no spillage occurs, and that the contents are removed from site according to approved methods.
- All toilets are to be secured to prevent them from being blown over, and have properly closing doors.
- Chemical toilets are to be emptied prior to temporary site closure for a period longer than 4 days.
- No long drops are permitted.
- No ablution anywhere on the work site or surrounding area is permitted – this is a finable offence.

Hazardous Waste:

- Hazardous waste such as oil, diesel, petrol, chemicals, paints and solvents are to be disposed of separately from general waste and taken to an approved hazardous waste disposal site.
- Hazardous waste materials are to be stored in secondary containers (e.g. secured collection drums) until disposal to hazardous waste.
- Drip trays used to collect spillage from equipment; vehicles and plant must be regularly emptied into the appointed secondary container (which could also include diesel tank bunding if available on site) and replaced under the vehicle.
- A “cover” / roof must be placed over the diesel tank, to minimize the production of contaminated water in the drip area as a result of rain.

Waste Management Practice:

- The Contractor shall delegate a specific waste management job description to an individual or team, if directed by the ECO.
- Areas impacted by construction activities must be regularly maintained. This includes the cleaning of roads, pavements and the rehabilitation of impacted landscaped areas.
- The contractor shall provide sheltered eating areas with waste containers in the campsite for all construction personnel. The site office can be used for this purpose.

RECORDS AND DOCUMENT CONTROL:

- Details of any incidents are to be recorded in by the ECO. (Examples of incidents related to waste management could include overflowing waste containment areas, accumulation of rubble; incorrect or negligent disposal of the products of hydrocarbon spills; spillage of toilet cleaning chemicals etc.)
- Copies of hazardous waste disposal receipts are to be filed
- Method statements are to be filed in the Site EMP File.

<u>SPECIFICATION:</u>	<u>EMP REF:</u>
WATER RESOURCE MANAGEMENT	6.2, 7.4, 7.5, 7.11, 8.5, 8.9
<u>OBJECTIVES:</u> • Reduce incidents of wastage of water on site.	
<u>GOALS:</u> • To use water resources sparingly & recycle/reuse where possible.	
<u>RESPONSIBILITIES:</u> • The Contractor is to ensure that water resource management is implemented. • The ECO is to regularly audit water resource management practice on the site.	
<u>PROCEDURES:</u>	
<i>Work site operations</i> • Leaking water taps and hosepipes are to be repaired immediately. • Running water taps and hosepipes are not to be left unattended. • Unused water standpipes are to be secured from leakage. • Taps are to be attached to secured supports and used in preference to standpipes with no valve mechanism to open and close water supply. All hose and taps to be utilised during construction are to be fitted with the correct & appropriate plumbing fittings.	
<i>Dust suppression measures</i> • Watering with potable water as a dust suppression measure is prohibited. It is preferable that material stockpiles be covered rather than watered. • Road Environmental Dust Suppressants (REDS) may be required to be implemented at the discretion of the ECO.	
<i>Abstraction</i> • Water for the construction & operation of the filling station supplied by a Water Services Provider (WSP) i.e. the George Municipality, must be in terms of an agreement between developer / landowner and the WSP & charges must be paid directly to the WSP. • Should the Applicant wish to apply for a water use authorisation for new water use(s), such as drilling a borehole & abstracting water, application must be made electronically by logging onto the Department of Water & Sanitation (DWS) website at http://www.dws.gov.za/e-WULAAS. • Well point provisions also require a Method Statement approved by the ECO/Engineer, as well as approval from the Department of Water & Sanitation (DWS) via the Breede Gouritz Catchment Management Agency (BGCMA).	
<u>RECORDS AND DOCUMENT CONTROL:</u> • Copies of water use permit approvals are to be filed. • Details of any incidents are to be recorded. • Method statements are to be filed in the Site EMP File.	

<u>SPECIFICATION:</u>	<u>EMP REF:</u>
DUST AND NOISE CONTROL	7.8, 7.13, 8.4
<u>OBJECTIVES:</u> Minimise dust and noise generation from construction activities.	
<u>GOALS:</u> - Comply with all Occupational Health & Safety regulations. - Undertake to minimize dust generation without excessive water usage. - Create awareness around construction activities that could potentially cause noise or dust disturbance, or light pollution to the surrounding residential area.	
<u>RESPONSIBILITIES:</u> - The Contractor is to take all reasonable measures to minimise dust and noise generation on site, by implementing appropriate dust suppression and noise control measures where such impacts are unavoidable. - The Contractor is to advise the ECO should construction activities be expected to cause excessive dust, noise or light pollution. A Method Statement may be required by the ECO. - The Contractor is to maintain an incident record with regard to issues arising out of dust and noise generation. Should these issues escalate, detailed monitoring of noise and wind conditions by the Contractor may be called for by the ECO. - The ECO has the authority to issue a stop works order for inadequate dust and noise control measures, & shall maintain a complaints register. The Engineer may be requested to, in consultation with the Contractor and ECO, to revise a particular construction specification to limit dust, noise or light generation.	
<u>PROCEDURES:</u>	
<i>Dust – generated by works</i> - Removal of vegetation is to be avoided until such time that soil stripping is required. - Should construction work in such stripped areas not be commencing within a short period of time (one week) the exposed areas shall be re-vegetated or stabilised. - Soil stabilising measures could include rotovating in straw bales (at a rate of 1 bale/ 20m²), applying chemical soil binders, mulching or brush packing the disturbed area, or creating windbreaks using brush, bales or shade cloth fences. - Sand stockpiles are to be covered with hessian, shade cloth or DPC plastic. - Stockpiles are to be located in sheltered areas and the usable/cut face orientated away from the direction of the prevailing wind for that season. - Excavating, handling or transporting erodible materials in high wind or when dust plumes visible shall be avoided. - If high winds prevail the ECO or Engineer shall decide whether cessation of activities is required, and if necessary they shall have the authority to temporarily stop certain of the works until wind conditions become more favourable.	
<i>Dust – generated by roads and vehicle movement</i> - Vehicle speeds shall not exceed 40km/h along gravel roads or 20km/h on unconsolidated or non-vegetated areas. Dust plumes created by vehicle movement are to be monitored. - If access and haul roads are generating dust beyond acceptable levels dust suppression measures must be initiated. These include, but are not limited to the following: - Reduction of travelling speeds along the road. - Restriction of vehicle or plant usage. - Application of chemical soil binders. - Application of a suitable sacrificial road surfacing.	
<i>Noise</i> All noise and sounds generated by plant or machinery must adhere to SABS 0103 specifications for the maximum permissible noise levels for residential areas.	

- All plant and machinery are to be fitted with adequate silencers.
- No sound amplification equipment such as sirens, loud hailers or hooters may be used on site except in emergencies.
- No amplified music is permitted on site.
- No noisy work is to be conducted over the weekends or public holidays, or outside of 07h00- 17h00 on weekdays.
- If work is to be undertaken outside of normal work hours, permission must be obtained from the ECO and Local Authority. Prior to commencing any such activity the Contractor is also to advise the potentially affected neighbouring residents. Dates, times and the nature of the work to be undertaken are to be provided. Notification could include letter-drops.

RECORDS AND DOCUMENT CONTROL:

- Copies of Council approval to work outside of normal working hours are to be filed.
- Details of any incidents are to be recorded.
- Method statements are to be filed in the Site EMP File.

<u>SPECIFICATION:</u>	<u>EMP REF:</u>
FIRE PROTECTION	7.7 & 8.2
<u>OBJECTIVES:</u> - Take all necessary precautions to reduce the risk of fire on the site. - Put into place appropriate fire fighting equipment to deal with a fire.	
<u>GOALS:</u> Draw up and institute a Fire Protection Plan on the site in case of a fire break-out.	
<u>RESPONSIBILITIES:</u> - The Contractor is responsible for drawing up and implementing a Fire Protection Plan. - The ECO is to audit adherence to the Fire Plan.	
<u>PROCEDURES:</u>	
<i>Fire Prevention Plan</i> - The Fire Protection Plan is to be submitted to the ECO with the Site Establishment Plan prior to the commencement of works on site, & filed in the Site EMP File. - A Fire Protection Plan shall include the following: - Identification of all potential fire hazards. - Identification of fire fighting equipment to be provided on site. - Details of training for site staff in fire fighting techniques, and frequency of fire drills. - Contact details of local fire brigade. - The number of people to be trained is to be consistent with the size & nature of the site.	
<i>Fire fighting equipment</i> - Basic fire-fighting equipment is to be placed at strategic locations on site (e.g. at the site office, flammable material store and watchman's container), and maintained in good working order to the satisfaction of the local fire authorities. - A fire evacuation route is to be clearly demarcated & kept clear of obstruction at all times.	
<i>Precautions</i> - Emergency numbers are to be clearly displayed on the outside of the site office. - No open fires are permitted outside the contractors' site where they are not allowed to be left unattended. - Smoking is prohibited near places where any readily combustible or flammable materials are present. Notices to be prominently displayed prohibiting smoking in such areas. - Welding, flame cutting and other hot work is only to be undertaken in places where the necessary safety precautions are in place (i.e. not near potential sources of combustion. A fire extinguisher must be immediately accessible at such work sites). - All flammable materials are to be stored in a suitable, lockable storage area. - Combustible materials may not accumulate on the construction site. - Cooking is to be restricted to bottled gas facilities in the existing building. This facility is to be supervised and strictly controlled. Fire extinguishers must be readily available in these areas.	
<u>RECORDS AND DOCUMENT CONTROL:</u> - A copy of the Fire Prevention Plan is to be filed. - Details of any incidents are to be recorded.	

<u>SPECIFICATION:</u>	<u>EMP REF:</u>
ENVIRONMENTAL PROTECTION	7 & 8
<u>OBJECTIVES:</u> Minimise disturbance to surrounding flora and fauna and archaeological sites.	
<u>GOALS:</u> - Limit the amount of earthworks to only what is necessary to undertake the works. - Ensure the proper protection of fauna and flora. - Ensure that the topsoil for this area is stored as per specifications in this EMP.	
<u>RESPONSIBILITIES:</u> - The Contractor is to ensure that all natural features and vegetation identified by the ECO or LA are not damaged or disturbed by construction activity. - The Contractor is to inform all workers about protective measures to be undertaken when working with or near any natural environments or features. - The ECO is to audit the effectiveness of protective procedures undertaken.	
<u>PROCEDURES:</u> - The Contractor shall not deface, paint, mark or damage any natural features (e.g. rock outcrops, tree trunks etc.) in or around the site. - The use of indigenous “waterwise” plants is encouraged, and invasive alien species is prohibited. - Trapping, poisoning & shooting of animals, & the collection of eggs is strictly forbidden. - Disturbance of animals such as snakes on site is not permitted. - No livestock is permitted on site. Domestic animals are to be kept under control. - No natural water sources on or around the site may be used for the purpose of swimming, washing of bodies, clothes or machinery. - If any remains or artifacts are discovered on site during earthworks, the Contractor shall stop works immediately and contact the ECO, who will ensure that the SAHRA is notified. No work in this area can continue until authorised to do so by SAHRA. - The site boundaries are to be pegged out on site and no construction-related activities (including access, location of toilets, stock piling of materials or parking of vehicles) may take place outside of the site boundaries.	
<u>RECORDS AND DOCUMENT CONTROL:</u> Details of any incidents are to be recorded. (Examples of incidents to be recorded could include damage to vegetation; wildlife found on the site; transgressions into “no-go” areas, discovery of objects of archaeological or historical value etc.)	

<u>SPECIFICATION:</u>	<u>EMP REF:</u>
FUEL, FLAMMABLES & STORES	7.12, 8.3, 8.4, 8.7
<u>OBJECTIVES:</u> Prevent accidents and spillages when handling and storing fuels and flammables.	
<u>GOALS:</u> Maintain a 'no-incident' record & institute all applicable Health & Safety Regulations.	
<u>RESPONSIBILITIES:</u> - The Contractor is to ensure that - fuels and flammable materials are stored in adequate facilities and handled correctly; - storage needs to be approved by the Chief Fire Officer of the local authority, via a permit issued in terms of the Community Fire Safety Bylaw. - staff handling these substances receive the appropriate training and PPC & PPE; - the necessary fire-fighting equipment and signage is in place.	
<u>PROCEDURES:</u>	
<u>Refueling</u> - No vehicles/machines are to be refueled on site except at designated refueling locations. - If refueling on site, or from drums, the ground must be protected and proper dispensing equipment is to be used (i.e. hand pumps and funnels). Drums may not be tipped over.	
<u>Storage</u> - All fuels and flammable materials are to be stored safely and clearly labeled. - Ensure that the required MHDS are kept on file in the site office - Safety signage ("No Smoking", "No Naked Lights" and Danger"), & product identification signs, are to be clearly displayed on fuel stores and tanks. - These temporary tanks must be bunded with an impermeable lining, and the capacity of the bunding shall be 110% of the total volume of the tanks. - The tanks shall be situated on a concrete hard standing surface. - Adequate precautions shall be provided to prevent spillage during the filling of any tank and during the dispensing of the contents. - The capacity of the tank shall be clearly displayed and the product contained within the tank clearly identified using the emergency information system detailed in SABS 0232 part 1. - Tanks on site shall not be linked or joined via any pipe work, but shall remain as separate entities. - The tanks and bunded areas shall be covered by a roofed structure to prevent the bunded area from filling up with rainwater. - Enretech, or similar must be placed in the bunding to absorb spills and water. - Empty fuel tanks and storage containers are to be sealed and stored in an area where the ground is protected by an impermeable lining. - Fuel and flammable materials are to be kept under lock and key at all times. - Storage areas for flammable materials are to comply with standard fire safety regulations. - Adequate fire-fighting equipment shall be available close at hand. - No smoking is permitted within the vicinity of the stores.	
<u>RECORDS AND DOCUMENT CONTROL:</u> Details of any incidents are to be recorded. (Examples of incidents to be recorded could include fuel spills, theft from stores, fire caused by negligent use etc.)	

<u>SPECIFICATION:</u>	<u>EMP REF:</u>
POLLUTION PREVENTION & REMEDIATION	GENERAL 8.4
<u>OBJECTIVES:</u> Protect the immediate and surrounding environment from pollution events.	
<u>GOALS:</u> - Institute pollution prevention when construction activities could result in pollution events. - Have sufficient pollution remediation materials on site to deal with minor pollution events.	
<u>RESPONSIBILITIES:</u> - The Contractor is to undertake a risk assessment to determine when and where the possibility exists of pollution events occurring. He is also to ensure that adequate pollution prevention measures are instituted and provide pollution control materials. - The ECO is to undertake compliance monitoring, and provide advise if required.	
<u>PROCEDURES:</u>	
<i>Pollution prevention</i> - Plant and vehicles are to be serviced regularly and are to be repaired immediately upon developing leaks or other breakages. - If static plant is to be stored for longer than 6months it shall be located in a lined (plastic or concrete) and bunded area to prevent pollution from storm water runoff. - Use drip trays and/or bunding where losses cannot be prevented but are likely to occur. - Appropriately sized drip trays are to be provided for all plant and machinery. - Drip trays are to be inspected daily for leaks & emptied when necessary, more frequently during rain events to prevent overflow. Oil & diesel spills are considered hazardous and disposal of such contaminants is required to follow the procedures set out in the EMP. - Drip trays to be supplied for all repair work undertaken on site and in the campsite. - Stand – by generators will be accommodated at the pump station. The pump station will allow full operation of the pump stations in times of power outages and thereby prevent spillages.	
<i>Air pollution prevention</i> No open fires are permitted on site.	
<i>Spill remediation</i> - Appropriate equipment to deal with fire or pollution incidents is to be readily available on site. Including sandbags, fire extinguishers, absorbent material (sufficient to treat a minimum of 200ℓ of hydrocarbon liquid spill), drip trays for plant /machinery leaks, drums/containers for contaminated water & products of drip trays or minor spills. - Soil contaminated with hazardous substances, fuel or oil shall be bio-remediated with Enretech or similar product and disposed of as required by the manufacturer in consultation with a specialist consultant.	
<u>RECORDS AND DOCUMENT CONTROL:</u> Details of any incidents are to be recorded. (Details of the type of pollution event and method of containment and remediation or rehabilitation are to be provided).	

<u>SPECIFICATION:</u>	<u>EMP REF:</u>
PLANT & ANIMAL RESCUE, LANDSCAPING & REHABILITATION	7.3, 7.14, APP 8
<u>OBJECTIVES:</u> Provide installation guidelines for the revegetation and landscaping of impacted areas	
<u>GOALS:</u> Create an aesthetically pleasing environment that compliments the surrounding natural environment and residential fabric.	
<u>RESPONSIBILITIES:</u> - The Landscape Architect is to ensure that all landscaping installation is undertaken according to specifications. - The landscaping Plan shall be implemented prior to the occupation of the first unit. - The ECO is to monitor the compliance of the Contractor and Landscaping Contractor to the specifications of the EMP.	
<u>PROCEDURES:</u>	
<i>Landscaping and Revegetation</i> Landscaping and revegetation requires specialist input and should be drawn up by a Landscape Architect (LA). This specification therefore, only provides procedures, which govern the methods that the landscaping specifications are implemented. - Only planting as specified in the approved Landscape Plan shall be implemented. - The use of indigenous “waterwise” plants is encouraged, invasive alien species is prohibited. - Imported topsoil and compost is to be weed free. - The installation of landscaping should only occur once all construction activities in the specified area have ceased. - All landscaped areas shall be considered ‘no-go’ areas. - A maintenance contract shall be implemented according to the LA’s specification. - Alien species must be removed.	
<i>Rehabilitation</i> - In the event of damage to the environment occurring as a result of negligent actions, or non-compliance with the EMP, by the Contractor during construction, the ECO may require that rehabilitation of the area be carried out. - Should such rehabilitation be called for, the Contractor, in consultation with the ECO, shall be required to appoint a suitably qualified person to undertake the necessary rehabilitation. This appointment, and the works necessary will be at the Contractors cost, and no extension of time will be granted.	
<i>Plant & Animal Rescue</i> - The ECO must conduct thorough plant and animal Search and Rescue prior to commencement of any construction on any given area. - It is recommended that construction activities commence from areas of most disturbance towards most natural areas in order to allow mobile fauna chance to escape. - Removal of any fauna from the site must be done so with accompanying permits. - All rescued plant material must be kept on site at a temporary nursery and reused for rehabilitation. - Should such rehabilitation be called for, the Contractor, in consultation with the ECO, shall be required to appoint a suitably qualified person to undertake the necessary rehabilitation. This appointment, and the works necessary will be at the Contractors cost, and no extension of time will be granted.	
<u>RECORDS AND DOCUMENT CONTROL:</u> - Details of any incidents are to be recorded. (Incidents may include the removal of incorrect species, damage to historic or other features during clearing or landscaping installation etc.). - Copies of any permits obtained must be kept on site.	

<u>SPECIFICATION:</u>	<u>EMP REF:</u>
SAFETY & SECURITY	4.15, 7.15, 8.10
<u>OBJECTIVES:</u> - Employ the highest standards of safety on the site. - Ensure that while site security is undertaken, impacts on the environment minimised.	
<u>GOALS:</u> - Maintain a “no-accident” record for the duration of the contract. - Comply with all the regulations of the Occupational Health and Safety Act.	
<u>RESPONSIBILITIES:</u> The Contractor is to ensure that all safety and security issues are dealt with, and that precautionary procedures are in place. The procedure detailed below are suggested in terms of this EMP. The contractor must however ensure that they comply with all provisions of the Occupational Health and Safety Act.	
<u>PROCEDURES:</u>	
Safety Plan - Emergency contact numbers are to be displayed conspicuously on the outside of the Site office: These include 1) the Fire Department, 2) the Police & 3) the Ambulance service. - Contact numbers for Contractor, Site manager, Engineer & ECO are also to be displayed. The Contractor is to comply with the <i>Occupational Health & Safety Act (1993)</i> and the <i>Construction Regulations (2003)</i> in all respects.	
Safety (Fire Safety & Hazardous Materials) - All structures that are vulnerable to high winds must be secured, including toilets. - All manhole openings are to be covered and clearly demarcated with danger tape. - Any open excavations deeper than 0,5m are to be clearly demarcated with danger tape. - Road safety precautions shall be implemented when works are undertaken on or near public roads to ensure traffic safety. - Necessary safety gear appropriate to the task being undertaken is to be provided to all site personnel (e.g. hard hats, safety boots, masks etc.). - No unauthorized firearms are permitted on site. - If a site is to be closed for longer than a week then the Contractor is to comply with the specifications to be followed in the Site Closure Checklist.	
Security - Night watchmen are to be provided with adequate cooking and heating facilities, a suitable method of disposing of wastewater, and access to communication equipment. - Valuable plant and equipment is to be stored so as to prevent it from being stolen. - Access to fuel stores is to be strictly controlled.	
Training - The Contractor is to ensure that his personnel are aware of procedures to be followed in case of emergencies such as fire, hydrocarbon spill or leaks. The correct use and need for PPE must also be covered. - Night watchmen are to be included in environmental education training.	
<u>RECORDS AND DOCUMENT CONTROL:</u> - Details of any incidents are to be recorded. (Incidents may include theft, traffic accidents on or near the site, even if not related to construction activities). - Any criminal activities must be reported to the local SAPS.	

<u>SPECIFICATION:</u>	<u>EMP REF:</u>
SITE COMMUNICATION	GENERAL 5
<u>OBJECTIVES:</u> - Institute functional communication between site personnel, Engineer, Developer & ECO. - Avoid undue negative impacts by implementing an effective communication structure. - Provide a mechanism for issuing site instructions, fines and penalties.	
<u>GOALS:</u> Establish a record of communication on site; including site instructions & penalties.	
<u>RESPONSIBILITIES:</u> - The Developer, Engineer and/or Contractor are to ensure that the ECO is included in site meeting proceedings. - The Contractor is to inform the ECO if any planned activities could potentially have a negative impact on the immediate and/or surrounding environment. - The ECO is responsible for advising the Contractor of any potential environmental impacts that come to his/her attention, and workshop possible solutions.	
<u>PROCEDURES:</u>	
<i>Site Meetings</i> - Regular site meetings shall be established at the commencement of site works. The frequency of meetings is to be dictated by the amount and type of work being undertaken at the time, and may alter during the contract. - Minutes are to be taken and distributed within a reasonable time following the meeting.	
<i>Environmental Site Instruction Book (ESI Book)</i> - A duplicate ESI Book, as a minimum, is to be made available to the ECO at all times. - Any instructions of an environmental nature are to be put in writing by the ECO. - Should instructions have cost implications for the contract beyond the expected cost related to the carrying out of duties to ensure compliance with the EMP, these will be discussed with the Engineer, and the way forward recorded in the ESI Book. - Instructions and actions are to be acknowledged in writing & dated by the Contractor. - Outstanding items are to be discussed at Site Meetings and non-compliances recorded. - Outstanding items can also be subject to penalties. - The ESI Book can also be used to issue warnings for non-compliance with specifications. - The ESI Book can also be utilised by the Contractor, to inform the ECO of activities that may have detrimental impacts on the environment. Any actions discussed by the ECO & Contractor to mitigate these impacts can then also be recorded.	
<i>Penalty Book</i> - A separate book is to be held on site throughout the construction contract for the issuance of penalties & fines. Again, a duplicate book is required as a minimum. - All penalties/fines are to be issued in writing by the ECO & signed for by the Contractor. - Copies of fines are to be forwarded to the Developer, who will be responsible for deducting the amounts from the Contractor's payment certificates.	
<i>Written Approval</i> - In situations where written approval from the ECO is required, this may take the form of: - A formal letter from the ECO. - Written acknowledgement of a request noted in the ESI book by the Contractor. - Written permission in the ESI Book of a verbal request from the Contractor.	
<u>RECORDS AND DOCUMENT CONTROL:</u> - The ESI & Penalty Books are to be retained on site, & utilised by the ECO & Contractor. - The Engineer or Developer will be responsible for site meetings and related minutes. - Minutes of Site Meetings are to be filed in the Site EMP File.	

<u>SPECIFICATION:</u>	<u>EMP REF:</u>
METHOD STATEMENTS	7.17
<u>REASON FOR METHOD STATEMENTS:</u> - Written method statements are required for any activities that have been identified as potentially harmful to the environment, or when work is to be undertaken in environmentally sensitive areas. - To provide construction detail for activities not outlined in this EMP, or those that deviate from the specifications contained herein.	
<u>PURPOSE AND OBJECTIVES:</u> - The purpose of the Method Statement is to assist the Contractor and ECO in determining what, if any, impacts the activity might have on the environment. - The objective of the Method Statement would then be to determine what mitigation could be undertaken to minimise the potential negative impacts.	
<u>GOALS:</u> - Prevent damage or disturbance to the environment, particularly if in environmentally sensitive areas. - Create awareness in how to approach and implement work procedures that are environmentally sensitive such that they have minimum impact on the surrounding environment. - Provide a construction procedure that can be viably implemented on site. - Provide a standard by which the construction activity can be audited against.	
<u>RESPONSIBILITIES:</u> - The ECO has the authority to call for Method Statements to be prepared for activities being undertaken in environmentally sensitive areas or that require more detail than provided in specification of this EMP. - The ECO is responsible for approving submitted Method Statements, in consultation with the LOCAL AUTHORITY, where necessary. - The Contractor will draw up Method Statements when required to do so by the ECO.	
<u>PROCEDURES:</u> - Method Statements will be drawn up by the contractor, and produced within a reasonable time as required by the ECO. - No activity may commence, except in the case of emergencies, prior to the approval of the Method Statement. Doing so may result in the issuing of a penalty. - The ECO is to comment on & respond with any changes and/or additions within 1 week. - The ECO may also seek additional advice from the local authority before issuing final approval. - Work shall be carried out in accordance with the specifications of the Method Statement, and compliance auditing will be carried out by the ECO. - Approved Method Statements shall be added to the Site EMP. - Method Statements are to include the following information: What work is to be undertaken How the work will be carried out (work process, methods & materials to be used) Where work will be done (describe locality, provide diagram) Timeframe of work (begin and estimated completion dates, together with time sequence of actions) - Describe the process to follow to ensure that no damage, disturbance or pollution to the environment occurs. Describe the remedial process that will be undertaken if any damage/pollution occurs. - Describe the emergency procedure to follow in case of fire/accident/spillage related to the work being undertaken. - Method Statements that may be required, but not limited to, are listed below: Access routes – location, upgrading, construction, and rehabilitation of temporary haul routes Alien plant clearing – method of control or eradication of alien vegetation Blasting – method and associated safety logistics for blasting Bunding – method of bunding for static plant and bulk fuel storage	

- **Cement/concrete batching** – location, layout and preparation of cement batching works and/or mixing areas
- **Demolition** –method, handling and disposal of demolished and hazardous materials; noise and dust mitigation; safety issues.
- **Hazardous and poisonous substances** – handling/storage; emergency/spillage/ fire procedures; herbicide/pesticide and poisonous substance use; disposal methods for hazardous building materials if found
- **Piling, jacking and thrust boring-** piling operation method (e.g. driven or bored), in situ casting or pre-cast pile structures
- **Rock breaking-** details of chemical applications used for rock breaking
- **Rehabilitation** – rehabilitation of disturbed areas, revegetation post-construction
- **Settlement ponds and sumps** – layout and preparation for ponds and sumps
- **Sources of materials-** when applicable, details of materials imported to the site
- **Sensitive environments** – construction of boundary walls adjacent to wetland
- **Traffic** – traffic safety measures for entry/exit onto and off public road
- **Vegetation clearing-** method of clearing during site establishment
- **Water abstraction-** methods of abstraction and utilisation of water from natural water sources

RECORDS AND DOCUMENT CONTROL:

Copies of approved Method Statements are to be inserted into the Site EMP File, and list updated.

<u>SPECIFICATION:</u>	<u>EMP REF:</u>
PENALTIES & INCENTIVES	11
<u>OBJECTIVES:</u> Enforcement of the specifications of the EMP.	
<u>GOALS:</u> Provide a structure for the issuance of penalties or fines, the collection of these fines, and the destination of these monies.	
<u>RESPONSIBILITIES:</u> - The ECO is responsible, for the issuing of penalties or fines in respect of non-compliance with the specifications contained in the EMP. - The ECO shall record these penalties/fines in the Penalty Book and provide a copy to the Developer. - The Developer shall be responsible for the collection of these fines and ensuring that these monies are paid over to the nominated environmental organisation. - The Relevant AUTHORITY or ELC shall verify that the monies are paid over to the nominated organisation prior to issuing final clearance for the development. - The Contractor shall be responsible for the payment of the fines and any corrective measures stipulated. - The Owner / Filling Station Manager responsible for regular monitoring & maintenance of forecourt separator will intercept hydrocarbon pollutants such as petroleum and oil and prevent their entry to the stormwater drainage system. - The Owner / Manager of Restaurant responsible to monitoring (weekly by staff & monthly by manager) and emptying (weekly) of Fat, Oil & Grease (FOG) trap from Restaurant – records to be kept on site for provision to Department, as required.	
<u>PROCEDURES:</u> Spot Fines and Penalties <u>Spot fines</u> may be issued by the ECO to an individual or the Contractor for non-compliance with the EMP. - Spot fines may be imposed immediately on the non-compliance, and the amount will be at the discretion of the ECO and will be dependant on the severity of the impact on the environment. <u>Penalties</u> may be issued by the ECO for activities, or lack of action, on the part of the Contractor to ensure that the specifications of the EMP are upheld. - In the case of penalties, the ECO may issue a warning prior to fining which states a time period by which the non-compliance is to be corrected. - Penalties can be issued over and above the costs of rehabilitating damage done to the environment. Such corrective measures shall be for the Contractors cost and cannot be claimed for in the Contract Bill and no extension of time shall be granted for undertaking such work. - Repeated offences may result in the suspension of all or part of the works, or the removal from site, personnel and/or equipment committing the non-compliance. - Where possible and applicable, sub-contractors or individual perpetrators will be identified on the record of the penalty or fine. - The passing down of penalties by the Contractor to sub-contractors or individuals, shall be at the Contractor's own discretion. - For each subsequent offence of the same nature the penalty or fine may be doubled in value to a maximum of R5000. - Penalties or fines issued for non-compliance to the EMP do not prevent any prosecution under any other law. - The ECO may suspend all, or part of the works, if it is deemed that damage to the environment will result from continuing with the activity. The suspension can be enforced until the activities, procedure or equipment is corrected. (No extension of time will be granted for such delays and all costs for corrective and/or rehabilitation measures will be borne by the Contractor). - Stop works orders are to be recorded in the Environmental Site Instruction Book and the Council, Developer, Engineer advised immediately thereof.	

- The following list of non-compliances may result in the suspension of all or part of the works:
 - Where the ECO is of the opinion that activities may have a severely negative or irreversible impact on the environment.
 - Commencing work prior to the approval of the Method Statements
 - Repeatedly failing to adhere to corrective measures recorded in the ESI Book, or those issued subsequent to penalties.
 - Repeated non-compliance with the specifications of the EMP.
- Details of the non-compliance and subsequent penalty or fine are to be recorded in the Penalty Book as follows:
 - Fine No: For record keeping purposes.
 - Date of Issue: Day/Month/Year
 - Non-compliance: Details of the transgression with reference to the EMP procedure or ESI to be provided.
 - Amount: In Rands
 - Corrective measures: Details of remedial or rehabilitative actions to be carried out. Warnings can be given of further penalties to be issued, should non-compliance with the stipulated corrective measures not be undertaken within a specified time period.
- Copies of fines are to be forwarded to the Developer, who will be responsible for deducting the amounts from the Contractor's payment certificates.

Collection of Penalties & Fines:

- All penalties & fines issued by the ECO are to be copied to the Developer, to be subtracted from the Contractor's monthly payment certificate.
- The Developer shall maintain a record of the amounts deducted. This record is to be verified by the ECO.
- All monies collected by the Developer as a result of penalties or fines during the contract shall be donated to an environmental organisation, nominated by the local authority.
- Proof of payment to the nominated organisation will be a requirement of Final Clearance, and is included as an item in the Final Site Clearance Checklist.

Incentives

- The ECO may consider issuing an Environmental Certificate Award to teams or individuals who carry out their work in an environmentally responsible manner, and are co-operative with regards to environmental issues.
- The Certificate is to be prepared and presented by the ECO, and a copy provided for the Site EMP File.

RECORDS AND DOCUMENT CONTROL:

- The Penalty Book is to remain on site at all times, and copies of the fines sent to the Developer, for deduction from the Payment Certificate.
- The Penalty Book or copies of the Penalties are to be added to the Site EMP File at the end of the contract.
- Copies of Environmental Certificates are to be filed in the Site EMP File.

<u>SPECIFICATION:</u>	<u>EMP REF:</u>
MONITORING & REPORTING	7.15, 7.20, 12
<u>OBJECTIVES:</u>	
• Provide a detailed record of the carrying out of construction activities in respect of the environment. • Provide a record of compliance should disputes arise, or claims against the Contractor be levied.	
<u>GOALS:</u>	
• Improved environmental management during the construction process.	

RESPONSIBILITIES:

- The **Contractor** is to ensure that all construction activities are carried out in compliance with the specifications of the EMP.
- The **Contractor** is also required to keep the Site EMP File up to date by filling in the required Record Sheets and Incident Report.
- The **ECO** is required to undertake regular on-site monitoring of construction activities and carry out audits of compliance, on a monthly basis.
- The **Owner / Manager of Restaurant** responsible to monitoring (weekly by staff & monthly by manager) and emptying (weekly) of Fat, Oil & Grease (FOG) trap from Restaurant – records to be kept on site for provision to Department, as required.

PROCEDURES:

- Construction activities, in respect of the environmental aspects thereof, are to be documented and recorded by the Contractor as indicated in the EMP.
- On-site monitoring is to be carried out on a regular basis by the ECO. Site records are to be kept of these visits.
- Photographic records of environmental issues and site activities as related to environmental parameters are to be maintained by the ECO for the duration of the contract.
- Monthly audit reports are to be carried out by the ECO and submitted to the Developer and local authority, and provide a copy for the Site EMP File.
- The Site EMP File must be updated by the Contractor and provided to the Developer for his records at the end of the contract.
- The ECO is to maintain a duplicate EMP File.
- During Operation: Maintenance of forecourt separator to intercept hydrocarbon pollutants such as petroleum and oil and prevent their entry to the stormwater drainage system.
- During Operation: Record (names, date, signature) of checking & emptying (weekly & monthly) the Fat, Oil & Grease (FOG) trap from Restaurant to be kept on site for provision to Department,

RECORDS AND DOCUMENT CONTROL:

- Site notes are to be held by the ECO.
- The ESI Book and Penalty Book are to remain on site at all times.
- The **Site EMP File** is to remain on site at all times, and be updated regularly.
- A duplicate EMP File is to be held by the ECO.
- **Audit Reports** are to be kept on record.

Appendix 5

EAP Company Profile

Appendix 6

Copy of Environmental Authorisation

Appendix 7

Recycling of construction materials

Appendix 8

List of applicable plant species