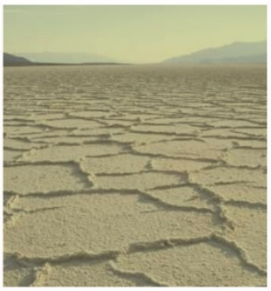
Q4 Fuel Depot Project

ENVIRONMENTAL ASSESMENT IN TERMS OF SECTION 24G OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NO 107 OF 1998)

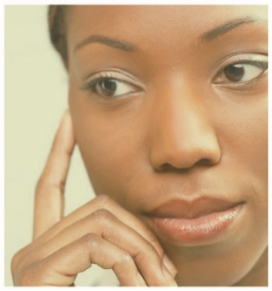
Date February 2020











Q4 Fuel Depot Project

RE APPLICATION TO RECTIFY THE UNLAWFUL COMMENCEMENT OR CONTINUATION OF LISTED ACTIVITIES IN TERMS OF SECTION 24G OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NO 107 OF 1998)

Appendix H
Environmental Management Programme (EMPr)

DATE FEBRUARY 2020

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GLOSSARY OF TERMS

ARCHAEOLOGICAL RESOURCES: This includes (a) material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artefacts, human and hominid remains and artificial features and structures; (b) rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation; wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation; features, structures and artefacts associated with military history which are older than 75 years and the site on which they are found.

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

CONSTRUCTION PROJECT MANAGEMENT TEAM: The team consists of a Project Manager as well as a Safety and Health Officer as required in terms of the Occupation Health and Safety Act and an Environmental Control Officer as required in terms of NEMA.

CONSTRUCTION: means the building, erection or establishment of a facility, structure or infrastructure that is necessary for the undertaking of a listed or specified activity but excludes any modification, alteration or expansion of such a facility, structure or infrastructure and excluding the reconstruction of the same facility in the same location, with the same capacity and footprint.

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

CULTURAL SIGNIFICANCE: This means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance

DEVELOPMENT - This means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of the heritage authority in any way result in a change to the nature, appearance or physical nature of a place or influence its stability and future well-being, including:
- Construction, alteration, demolition, removal or change in use of a place or a structure at a place;
- Carrying out any works on or over or under a place;
- Subdivision or consolidation of land comprising a place, including the structures or airspace of a place;
- Constructing or putting up for display signs or boards;
- Any change to the natural or existing condition or topography of land; and
- Any removal or destruction of trees, or removal of vegetation or topsoil.

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

DEMOLITION: Demolition is the tearing-down of buildings and other structures, the opposite of

construction. Demolition contrasts with deconstruction, which involves taking a building apart while carefully preserving valuable elements for re-use.

DOMESTIC WASTE: Domestic waste means waste, excluding hazardous waste, that emanates from premises that are used wholly or mainly for residential, educational, health care, sport or recreation purposes generated directly by the consumption of products for domestic use.

ENVIRONMENT: In terms of the National Environmental Management Act (NEMA) (No 107 of 1998) (as amended), Environment means the surroundings within which humans exist and that are made up of:
• the land, water and atmosphere of the earth;
• micro-organisms, plants and animal life;
• any part or combination of (i) of (ii) and the interrelationships among and between them; and
• the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing

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

ENVIRONMENTAL ASSESSMENT PRACTITIONER: Means the individual responsible for planning, management and coordination of environmental impact assessments, strategic environmental assessments, environmental management plans or any other appropriate environmental instrument introduced through the EIA Regulations.

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

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

ENVIRONMENTAL MANAGEMENT PROGRAMME: A detailed plan of action prepared to ensure that recommendations for enhancing or ensuring positive environmental impacts and limiting or preventing negative environmental impacts are implemented during the life-cycle of the project. This EMPR focuses on the construction phase and operation (maintenance) phase and of the proposed project.

GENERAL WASTE: General waste means waste that does not pose an immediate hazard or threat to health or to the environment, and includes -
• domestic waste;
• building and demolition waste;
• business waste; and
• inert waste.

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

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

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

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

HERITAGE RESOURCES: This means any place or object of cultural significance, including all human-made phenomena and intangible products that are the result of the human mind. Natural, technological or industrial features may also be part of heritage resources, as places that have made an outstanding contribution to the cultures, traditions and lifestyles of the people or groups of people of South Africa

HERITAGE: That which is inherited and forms part of the National Estate (historical places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999). Holocene - The most recent geological time period which commenced 10 000 years ago.

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

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

INTERESTED AND AFFECTED PARTY is, for the purposes of Chapter 5 of the NEMA and in relation to the assessment of the environmental impact of a listed activity or related activity, an interested and affected party contemplated in Section 24(4)(a)(v), and which includes – a (a) any person, group of persons or organization interested in or affected by such operation or activity; and (b) any organ of state that may have jurisdiction over any aspect of the operation or activity.

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

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

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

PRINCIPAL AGENT: The principal agent is appointed by the Client to oversee the overall project management and the management of the professional project team.

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

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

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

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

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

SCREENING: is the process that determines whether or not a development proposal requires environmental assessment, and if so, what level of assessment is appropriate. Screening is therefore a decision-making process that is initiated during the early stages of the development of a proposal.

SUSTAINABLE DEVELOPMENT: according to World Commission on Environment and Development (1987), this is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

URBAN AREAS: mean areas situated within the urban edge (as defined or adopted by the competent authority), or in instances where no urban edge or boundary has been defined or adopted, it refers to areas situated within the edge of built-up areas.

WASTE: Waste means any substance, whether or not that substance can be reduced, re-used, recycled and recovered – that is surplus, unwanted, rejected, discarded, abandoned or disposed of;
• which the generator has no further use of for the purposes of production;
• that must be treated or disposed of; or
• that is identified as a waste by the relevant Minister by notice in the Gazette, and includes waste generated by the mining, medical or other sector, but—
• a by-product is not considered waste; and
• any portion of waste, once re-used, recycled and recovered, ceases to be waste.

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

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

WATERCOURSE: can be a) a river or spring; b) a natural channel or depression in which water flows regularly or intermittently; c) a wetland, lake or dam into which, or from which, water flows; and/or d)

any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse as defined in the National Water Act, 1998 (Act No. 36 of 1998) and a reference to a watercourse includes, where relevant, its bed and banks.

WETLAND: means land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

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

ACRONYMS

DMR	-	Department of Mineral Resources
DEDECT	-	Department of Economic Development, Environment, Conservation & Tourism, North West Provincial Government
DWS	-	Department of Water and Sanitation
EA	-	Environmental Assessment
ECO	-	Environmental Control Officer
EIA	-	Environmental Impact Assessment
EMPr	-	Environmental Management Programme
EMS	-	Environmental Management System
FDA	-	Fuel Dispensing Area
HIA	-	Heritage impact Assessment
HRA	-	National Heritage Resources Act
HSRA	-	Health and Safety Risk Assessment
I&AP	-	Interested and Affected Parties
LOS	-	Level of Service
NCR	-	Non Conformance Report
NEMA	-	National Environmental Management Act
NWA	-	National Water Act
NHBRC	-	Nation Home Builders Registration council
OHS	-	Occupation Health and Safety
QMS	-	Quality Management System
SAHRA	-	South African Heritage Resource Agency
SANBI	-	South African National Biodiversity Institute
SHE	-	Safety Health and Environmental
WUL	-	Water Use Licence
WULA	-	Water Use Licence Application

1 REGULATORY PROCESS

Q4 Fuel Rustenburg (Pty) Ltd (the applicant) appointed Setala Environmental as the independent Environmental Assessment Practitioner (EAP) to undertake the Environmental Authorisation process in terms of Section 24G of the National Environmental Management Act 107 of 1998 (NEMA), to rectify and undertake the listed activities in terms of Government Notice Regulation (GNR) 327: 51 and 67 of the Environmental Impact Assessment (EIA) regulations.

The Department of Economic Development, Environment, Conservation and Tourism, North West Provincial Government (DEDECT), is the lead authority for this application and the development needs to be authorised by this Department.

The aim of this report is to provide an Environmental Management Programme that would serve as a management tool that will be used to ensure that undue or reasonably avoidable adverse impacts of the construction and operation of a project are prevented and that the positive benefits of the projects are enhanced.

2 LOCATION OF PROJECT

The project is located in Rustenburg X 9 Industrial Area, on the outskirts of the Rustenburg CBD, and falls within the Rustenburg Local Municipality in the North west Province. (Project indicated in red on the Site Location map).

The entire Erf is approximately 2.1633 ha, but the actual target area for the proposed expansion of the Fuel Depot is 0.087 ha. Cobalt Street forms the western boundary and access to the study site.

The GPS coordinates of the main landmarks within the project area are as follows:

- Study site location (approximate centre): 25°38'0.08"S; 27°13'57.85"E.
- Study Site entrance off Cobalt Street: 25°38'0.40"S; 27°13'55.07"E.
- Quarter Degree Square (QDS): 2527CA.
- Quaternary Drainage Area (QDA): A22H.

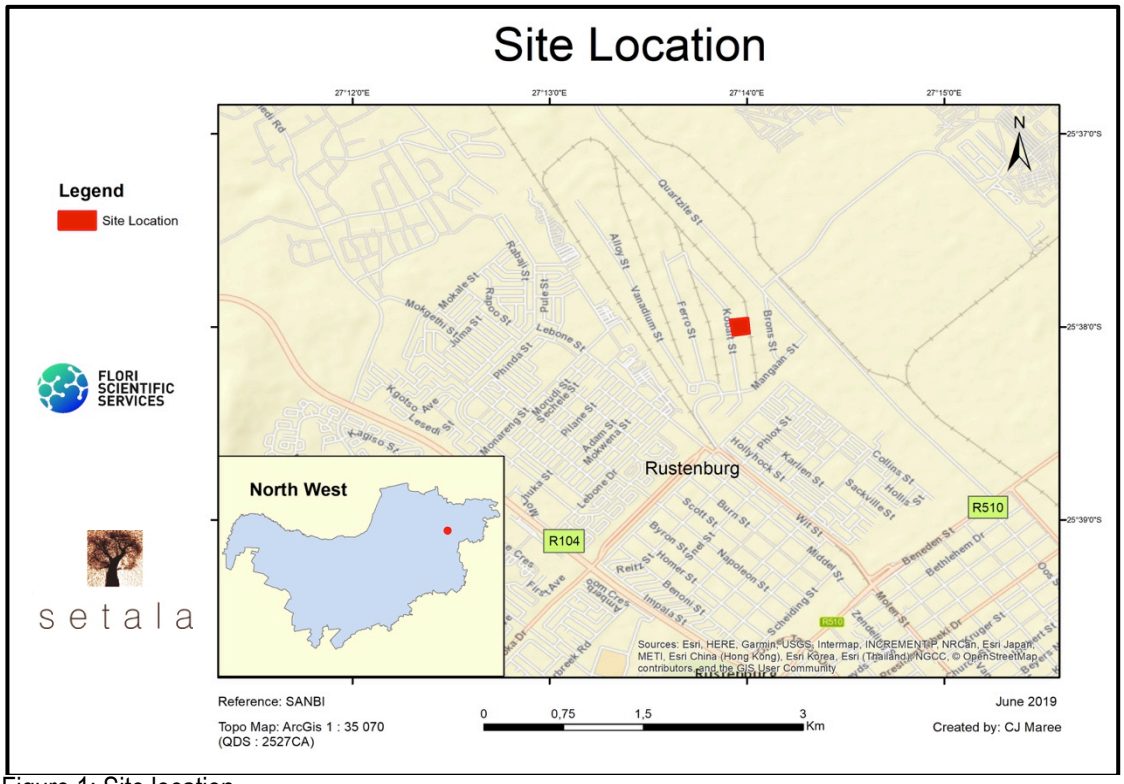


Figure 1: Site location

3 PROPERTY DESCRIPTION

The extension of the fuel depot will be on **Erf 2265,** of the **existing Rustenburg Extension 9**, situated in the Rustenburg Local Municipality, North West Province. The project is on approximately 2.1633 hectares of land. The Surveyor-general 21-digit site (erf/farm/portion) reference number is T0JQ00270000226500000.

Figure 2: Study Site location (Google Earth)

Figure 3: Study site (Close Up)

4 PROJECT DESCRIPTION

Q4 Fuel Rustenburg (Pty) Ltd purchased the business in 2017, with existing facilities and storage tanks of 2 x 23m³. These facilities were constructed in 1991. The Q4 Fuel Rustenburg is currently establishing themselves as a "non-refining wholesaler". The depot will expand on its provision of fuel to customers in the areas surrounding Rustenburg.

This application is for rectification of the unlawful commencement of construction in preparation of the expansion of the fuel depot. In addition it is for authorisation of the expansion of facilities for the storage of fuel and related uses. Q4 Fuel Rustenburg plans to expand on the existing facilities and the existing storage tanks of 2 x 23m³, and proposes to construct 5 x 83m³ tanks; 1 x 23m³ tank and 1 x 14m³ tank.

Planned/ proposed activities

- Five above ground storage tanks, each having a storage capacity of 83m³ (equating to a total of 415m³)
- One above ground storage tank, having a storage capacity of 23m³ (equating to a total of 23m³),
- One above ground storage tank, having a storage capacity of 14m³ (equating to a total of 14m³) will be installed.

The combined capacity of the proposed new fuel tanks on site will thus be 452m³.
The total combined storage capacity on site **will thus not exceed 500m³** (cubic metres).

The full scope of works includes the construction/installation of:

- Expansion of the fuel depot and related uses
- Associated infrastructure including access road, civil services (water, sewer, stormwater reticulation and electricity)

The following facilities could be available:

- Fuel bay - The pump islands are strategically placed on site to prevent traffic flow problems, and to ensure maximum utilization of all servicing points

- Petrol and diesel categories under one roof
- Erection of a suspended forecourt roof above the dispensers to protect customers and dispensing facilities from the elements

➢ Construction of a concreted forecourt
➢ Storage yard for flammable products (e.g. oils and greases)
➢ Parking facility for vehicles
➢ Staff ablution facilities
➢ Ancillary offices
➢ Storage area
➢ State of the art security and camera surveillance will be installed
➢ Communication services will be readily available in the event of emergencies

Access to the site is currently proposed to be obtained from Cobalt street situated to the east of the site. This is an existing entrance. The size of the proposed site is sufficient to be utilised for the proposed activities with ample of free space for the envisaged activities, vehicular movement and entering and exiting of larger trucks.

The final design and layout of the facility will be based on the specifications of Q4 Fuel (Pty) Ltd. A detailed layout for the facility, in compliance with their own internal specification, as well as relevant industry standards, will be compiled by Q4 Fuel Rustenburg. The design will also be in compliance with the minimum development requirements of the local authorities' building regulations and according to the standard Q4 (Pty) Ltd minimum requirements.

The proposed layout of the filling station is indicated in Figure 4 below.

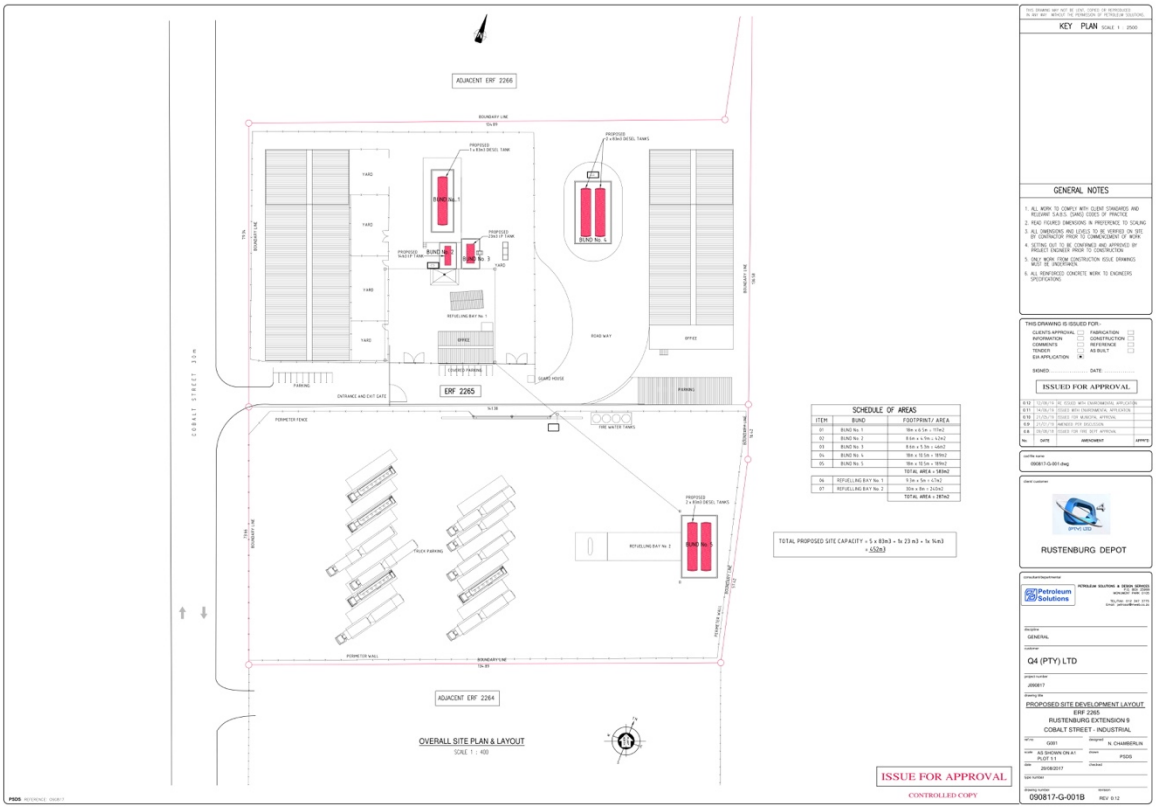


Figure 4: Proposed layout of additional facilities

Activities commenced with

The applicant commenced with the expansion of the storage facility of the fuel depot without Environmental Authorisation.

Figure 5: Activities commenced with: bunded area to the east, and pillars of canopy in area east-west

The physical size of the preferred activity/ (footprint):
Table 1:

Alternative:	Size of the activity:
Alternative 1 (Proposal)	0,087ha

The footprint of the activity will be as follows:
Table 2:

Schedule of areas		
Item	**Bund**	**Footprint/ Area**
1	Bund No 1	18m x 6.5m = 117m^2
2	Bund No 2	8.6m x 4.9m = 42m^2
3	Bund No 3	8.6m x 5.3m = 46m^2
4	Bund No 4	18m x 10.5m = 189m^2
5	Bund No 5	18m x 10.5m = 189m^2
		TOTAL AREA = 583m^2
6	Refuelling Bay No 1	9.3m x 5m = 47m^2
7	Refuelling Bay No 2	30m x 8m = 240m^2
		TOTAL AREA = 287m^2
	TOTAL AREA	**870m^2**

The size of the site (within which the above footprints will occur):
Table 3:

Alternative:	Size of the site (within which the above footprints will occur):
Alternative 1 (Proposal)	2,1633 ha

5 ECOLOGICAL SENSITIVITY OF THE STUDY AREA

Vegetation
The study site is situated within the original extent of Marikana Thornveld, which is a threatened veld type. However, study site is within an industrial area and yard and the entire environment is totally transformed.

Priority species
There are no priority fauna or flora species in the study area.

Protected trees in the study area
There are no protected trees on site.

Watercourses in the study area
There are no watercourses in the study area. There are also no wetlands within a 500m radius of the site.

Priority areas
The study area is not situated within any national priority areas (such as wetlands or protected areas), and is also not within any Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs).

Sensitivity map
There are no 'no-go' zones present and there are no recommended buffer zones.

Below is the sensitivity map of the study site.

Figure 6: Site Sensitivity Map

2 ENVIRONMENTAL MANAGEMENT PROGRAMME

1 PURPOSE OF THE EMPr

An Environmental Management Programme (EMPr) is a stand-alone document used to prescribe management mechanisms/methods for the prevention of undue or reasonably avoidable adverse environmental impacts and for the enhancement of the positive environmental benefits of a development. An EMPr can be based on the National Environmental Management Act (Act No. 107 of 1998, (NEMA), as amended), and also bestows a 'Duty of Care' on those who cause, have caused or may in future cause pollution or degradation of the environment, as per of Section 28(1) of NEMA.

2 OBJECTIVES OF THE EMPr

The EMPr has been compiled to provide recommendations and guidelines for environmental monitoring throughout the construction and operational phase of the proposed Q4 Fuel Depot project. This is done to ensure that all relevant factors are considered, and to ensure for environmentally responsible development.

More specific objectives for this EMPr include:

- Provide details of the applicant;
- Provide an outline of the legal requirements;
- Ensuring compliance with regulatory authority stipulations and guidelines which may be local, provincial, national and/or international;
- The eradication of invasive alien plant species;
- To assign roles and responsibilities to parties involved regarding the implementation of this EMPr;
- To describe a monitoring / stakeholder engagement programme which will enable a review of the success of the EMPr;
- To outline mitigation measures and environmental specifications which are required to be implemented for all phases of the project in order to minimise the extent of environmental impacts, and to manage environmental impacts associated with the proposed project;
- Identifying construction activities that might have detrimental impacts on the environment;
- To identify measures that could optimize beneficial impacts;
- To establish a method of monitoring and auditing environmental management practices during all phases of development;
- Detail specific actions deemed necessary to assist in mitigating the environmental impact of the project;
- Propose mechanisms for monitoring compliance with the EMPr and reporting thereon;
- Specify time periods within which the measures contemplated in the EMPr must be implemented, where appropriate;
- The re-planting of appropriate indigenous vegetation; and
- The effective implementation of construction waste management.

3 SCOPE OF THE EMPr

In accordance with the requirements of the National Environmental Management Act (NEMA) Environmental Impact Assessment (EIA) Regulations, 2014, this EMPr is to be implemented by the Developer as well as any employee, contractor, agent or sub-contractor appointed to act on behalf of the Developer in the execution of the Project, in order to ensure environmental compliance on site.

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

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

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

4 STRUCTURE OF THE EMPr

There are three main phases in the EMPr that provides proposed mitigation and management measures as indicated in Table 1.

Table 4: Phases of the Project Life Cycle

Category	Phase	Description
Category A	Pre-Construction	This section will provide guidelines on pre-construction activities including site establishment and clearance; environmental induction and training and awareness; site access and health and safety.
Category B	Construction	This section will provide guidelines on construction methods and considerations.
Category C	Operation	This section of the EMPr provides management principles for the operation phase of the Development. This will include best practice, procedures and responsibilities as required for various associated activities.
Category D	Decommissioning	This section of the EMPr provides management principles for the decommissioning phase of the Development.

Relevant environmental legislation pertaining to the development is listed in the next section. The Developer, shall be responsible for ensuring compliance with the conditions by any person acting on their behalf, including but not limited to, an agent, contractor, sub contractor, employee or person rendering a service to them.

This EMPr is a dynamic document, which will be updated as required on a continuous basis to ensure environmental best practices. Any amendments made, must be submitted to the applicant's Project Manager for approval.

3 MANAGEMENT AND MONITORING PROCEDURES

1 THE DEVELOPER

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

The Developer will:

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

2 THE CONTRACTOR (INCLUDING SUB-CONTRACTORS)

The Contractor is required to:

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

3 ENVIRONMENTAL CONTROL OFFICER

The ECO will:

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

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

4 OCCUPATIONAL HEALTH AND SAFETY OFFICER

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

- Compilation of a comprehensive project Health and Safety Risk Assessment (HSRA)
- Compilation of health and safety specifications based on risks identified;
- Reviewing and approval of health and safety plan(s) submitted by appointed Principal Contractor(s);

- Conducting monthly health and safety inspections and compiling monthly OHS reports;
- Conducting monthly health and safety audits with audit reports;
- Assisting the Developer/Contractor in the investigation of major accident/incidents;
- Monitoring of site activities for compliance to the Occupational Health and Safety Act (OHSA) and Regulations;
- Establishment and monitoring of project health and safety file;
- Monitoring the Principal Contractor(s') health and safety performance; and
- Preparation of project close-out reports and submission of project health and safety files to the Client.

5 SAFETY, HEALTH AND ENVIRONMENTAL (SHE) OFFICER

The Safety, Health and Environmental Officer will:

- Be fully conversant with the EMPr;
- Be fully conversant with all relevant environmental legislation applicable to the project, and ensure compliance with them;
- Compilation of Method Statements together with the Principal Contractor that will specify how potential environmental impacts in line with the requirements of the EMP will be managed, and, where relevant environmental best practice and how they will practically ensure that the objectives of the EMPr are achieved;
- Convey the contents of this EMPr to the construction site staff and discuss the contents in detail with the Contractor;
- Undertake regular and comprehensive inspection of the site and surrounding areas in order to monitor compliance with the EMPr;
- Take appropriate action if the specifications contained in the EMPr are not followed;
- Monitor and verify that environmental impacts are kept to a minimum, as far as possible;
- Order the removal from the construction site of any person(s) and/or equipment in contravention of the specifications of the EMPr;
- Report any non-compliance or remedial measures that need to be applied to the appropriate environmental authorities, in line with the requirements of the EMPr;
- Submitting a report at each site meeting which will document all incidents that have occurred during the period before the site meeting;
- Ensuring that the list of transgressions issued by the ECO is available on request; and
- Maintain an environmental register which keeps a record of all incidents which occur on the site during construction. These incidents include:
- Public involvement / complaints.
- Health and safety incidents.
- Incidents involving hazardous materials stored on site.
- Non-compliance incidents.

6 TRAINING AND ENVIRONMENTAL AWARENESS

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

The environmental training is aimed at:

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

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

7 MONITORING

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

As part of the contract or work instruction, the applicant will stipulate the period and frequency of monitoring required. This will be determined from applicable permits and authorisations from authorities. The Project Manager will ensure that the monitoring is carried out.

8 REPORTING PROCEDURES

1 DOCUMENTATION

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

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

2 ENVIRONMENTAL REGISTER

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

- Nature of complaint/incident.
- Causes of complaint/incident.
- Party/parties responsible for causing complaint/incident.
- Immediate actions undertaken to stop/reduce/contain the causes of the complaint/incident.
- Additional corrective or remedial action taken and/or to be taken to address and to prevent

reoccurrence of the complaint/incident.
- Timeframes and the parties responsible for the implementation of the corrective or remedial actions.
- Procedures to be undertaken and/or penalties to be applied if corrective or remedial actions are not implemented.
- Copies of all correspondence received regarding complaints/incidents.

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

3 NON-CONFORMANCE REPORT

A Non-Conformance Report (NCR) will be issued to the Contractor as a final step towards rectifying a failure in complying with a requirement of the EMPr. This will be issued by the ECO to the Contractor in writing. Preceding the issuing of an NCR, the Contractor must be given an opportunity to rectify the issue. Should the ECO assess an incident or issue and find it to be significant (e.g. non-repairable damage to the environment), it will be reported to the relevant authorities and immediately escalated to the level of a NCR.

The following information should be recorded in the NCR:
- Details of non-conformance;
- Any plant or equipment involved;
- Any chemicals or hazardous substances involved;
- Work procedures not followed;
- Any other physical aspects.
- Nature of the risk.
- Actions agreed to by all parties following consultation to adequately address the non-conformance in terms of specific control measures and should take the hierarchy of controls into account.
- Agreed timeframe by which the actions documented in the NCR must be carried out.

ECO should verify that the agreed actions have taken place by the agreed completion date, when completed satisfactorily; the ECO and Contractor should sign the Close-Out portion of the Non- Conformance Form and file it with the contract documentation.

4 ENVIRONMENTAL EMERGENCY RESPONSE

The Contractor's environmental emergency procedures must ensure appropriate responses to unexpected / accidental actions / incidents that could cause environmental impacts. Such incidents may include:
- Accidental discharges to land;
- Accidental spillage of hazardous substances (typically oil, petrol, and diesel);
- Accidental toxic emissions into the air; and
- Specific environmental and ecosystem effects from accidental releases or incidents.

The Environmental Emergency Response Plan is separate to the Health and Safety Plan as it is aimed at responding specifically to environmental incidents and must ensure and include the following:
- Construction employees shall be adequately trained in terms of incidents and emergency situations;
- Details of the organisation (i.e. manpower) and responsibilities, accountability and liability of personnel;
- A list of key personnel and contact numbers;
- Details of emergency services (e.g. the fire department / on-site fire detail, spill clean-up services) shall be listed;
- Internal and external communication plans, including prescribed reporting procedures;
- Actions to be taken in the event of different types of emergencies;
- Incident recording, progress reporting and remediation measures to be implemented; and
- Information on hazardous materials, including the potential impact associated with each, and measures to be taken in the event of accidental release.

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

5 METHOD STATEMENTS

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

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

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

The Contractor will be accountable for all actions taken in non-compliance of the approved Method Statements.

The Contractor shall keep all the Method Statements and subsequent revisions on file, copies of which must be distributed to all relevant personnel for implementation.

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

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

6 PUBLIC COMMUNICATION AND LIAISON WITH I&APS

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

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

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

4 COMPLIANCE WITH ENVIRONMENTAL SPECIFICATION

The EMPr forms part of the Contract Documentation and is thus a legally binding document. It is also necessary for the Contractor to make provisions as part of their budgets for the implementation of the EMPr. In terms of this Act an individual responsible for environmental damage must pay costs both to the environment and human health and the preventative measures to reduce or prevent additional pollution and/or environmental damage from occurring. This is referred to as the Polluter Pays Principle. Section 28 of the NEMA embodies the polluter pays principle.

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

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

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

The Developer is responsible for the implementation of the EMPr and for compliance monitoring of the EMPr.

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

5 ENVIRONMENTAL CODE OF CONDUCT

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

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

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

ENVIRONMENTAL RULES

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

6 ENVIRONMENTAL GUIDELINES, STANDARDS AND PERMITS

The following is a summary of the environmental legislation applicable to the proposed project
Table 5: Legislation

Legislation	Sections	Relates to
The Constitution (No 108 of 1996)	Chapter 2	Bill of Rights
	Section 24	Environmental rights.
National Environmental Management Act (No 107 of 1998 [as amended])	Section 2	Defines the strategic environmental management goals and objectives of the government. Applies through-out the Republic to the actions of all organs of state that may significantly affect the environment.
	Section 24	Provides for the prohibition, restriction and control of activities which are likely to have a detrimental effect on the environment.
	Section 28	The developer has a general duty to care for the environment and to institute such measures as may be needed to demonstrate such care.
Environment Conservation Act (No 73 of 1989) and regulations	Sections 19 and 19A	Prevention of littering by employees and subcontractors during construction and the maintenance phases of the proposed project
National Heritage Resources Act (No 25 of 1999) and regulations	Section 32	No person may, without a permit issued by the responsible heritage resources authority destroy, damage, excavate, alter, deface or

		otherwise disturb any archaeological or paleontological site.
	Section 34	No person may, without a permit issued by the South African Heritage Resource Agency (SAHRA) or a provincial heritage resources authority destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority. Grave is widely defined in the Act to include the contents, headstone or other marker of such a place, and any other structure on or associated with such place.
	Section 35	This section provides for Heritage Impact Assessments (HIAs), which are not already covered under the ECA. Where they are covered under the ECA the provincial heritage resources authorities must be notified of a proposed project and must be consulted during the HIA process. The Heritage Impact Assessment (HIA) will be approved by the authorising body of the provincial directorate of environmental affairs, which is required to take the provincial heritage resources authorities' comments into account prior to making a decision on the HIA.
National Environmental Management Biodiversity Act (Act No. 10 of 2004)		Provide for the protection of species and ecosystems that warrant national protection and the sustainable use of indigenous biological resources.
Occupational Health and Safety Act (No 85 of 1993)	Section 8	Control of dust
	Section 9	Control of noise
Occupational Health and Safety Act-Major Hazard Installation Regulations (GN R692, July 2001)	Sections 5 and 6	Control of offensive odours
National Water Act (No 36 of 1998) and regulations	Section 19	General duties of employers to their employees
	Section 20	General duties of employers and self employed persons to persons other than their employees
	Section 21	A Water Use License Application is required for construction activities within the 1:100 year flood lines
National Road Traffic Act (No 93 of 1996)		Road safety.
Town Planning and Townships Ordinance 15 of 1986		Town Planning.
SANS 10103 (Noise Regulations)		The measurement and rating of environmental noise with respect to annoyance and to speech communication.
South African National Standards	Part 1: Storage and	The South African National Standards

SANS 10089-1:2007*SABS 089-1:2007: The Petroleum Industry	distribution of petroleum products in above-ground bulk installations.	(SANS/SABS), applicable to the Petroleum Industry and in particular to the installation of above-ground storage tanks, pumps/ dispensers and pipework at service stations, would be applicable and must be complied with. These standards should be considered as a minimum. Part 1: Covers the layout and design of petroleum bulk depots, and the installation of equipment of the types normally used for the handling, storage and distribution of petroleum products and their derivatives, other than equipment that is used for storage and dispensing on consumer premises (including service stations) and for which relevant standards exist.

7 DETAILED ENVIRONMENTAL MANAGEMENT PROGRAMME

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

The provisions of this EMPr are binding on the Developer during the life of the project. The EMPr must be binding on the applicant or any authority to which responsibility for the construction activities has been delegated to.

It is essential that the EMPr requirements be carefully studied, understood, implemented, and adhered to at all time. To simplify the EMPr requirements, each aspect related to the EMPr has been addressed in the table below. Each action within the EMPr is supported by the priority of when the specific action will need to be implemented. Each of these aspects is briefly described below for ease of reference.

Environmental Measures, Actions and Controls

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

Responsibility

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

Monitoring Frequency

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

1 CATERGORY A: PRE-CONSTRUCTION PHASE

1 AUTHORISATIONS, PERMITS AND LICENCES

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
All necessary authorisations, permits and licences must be obtained by the Developer prior to the commencement of construction.	Developer	Once-off

2 APPOINTMENT OF CONTRACTOR

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

3 PREPARATION OF METHOD STATEMENTS

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
Method Statements must be submitted by the Contractor to the SHE Officer and must be adhered to by the Contractor and Project Engineer/Project Manager. These relate to water and stormwater management requirements, traffic requirements, solid waste management requirements, fuel storage and filling and dispensing of fuel (diesel and petrol), hydrocarbon spills, contaminated water treatment, the storage of hazardous materials, standard emergency procedures, and biohazard control.	Developer	Once-off
The ECO will monitor the implementation of the Statements. All copies of the statements and plans must be submitted to the appointed ECO.		

4 APPOINTMENT OF ECO

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
An Independent ECO must be appointed by the applicant at their cost to monitor the implementation of the EMPr.	Developer	Once-off
Once a nominated environmental auditor has been appointed he/she will be the ECO and must undertake monthly site inspections and provide monthly audit reports for the duration of the construction and rehabilitation phases. Each audit report must contain the results of the full audit. These audit results report on whether the response to the audit item is favourable, un-favourable or not applicable. Not applicable answers are for those aspects of the construction that have not yet started or are not applicable to the contract being considered. Each of the aspects within each stage is allocated a percentage score. The percentage score is the percentage of favourable items against the total number of applicable items. The higher the score, the better the compliance. Complete compliance will result in a 100% score.	ECO	Once-off/Monthly

5 ENVIRONMENTAL TRAINING AND AWARENESS

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

2 CATERGORY B: CONSTRUCTION / INSTALLATION PHASE

1 GEOLOGICAL STABILITY AND EARTHWORKS

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• All site disturbances must be limited to the areas where structures will be constructed.	Engineer Contractor	Ongoing

2 HEALTH AND SAFETY

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
The Contractor must adhere to the prescriptions of the relevant health and safety legislation and standards. The Contractor must familiarise himself and his employees with the contents of the aforementioned legislation. • First Aid contents must be on hand at all times. • The Contractor must implement adequate and mandatory safety precautions relating to all aspects of construction. Such safety measures and work procedures/instructions must be communicated to construction workers. • The wearing of Personal Protective Equipment (PPE) on site is mandatory for all personnel and construction team members. Minimum requirements must include the wearing of an approved safety helmet, safety boots, safety eyewear, safety reflective jackets and dust masks, ear plugs, etc. where appropriate. • PPE signs must be erected on site at the areas where it is required and the integrity and availability of the signs must be maintained. • No one must be allowed on site unless they are wearing approved safety equipment. • Casual visitors must be required to sign a register at the security checkpoint and undergo a site induction by the SHE Officer. The responsible person must then be contacted before the visitor is allowed access to site. No unauthorised visitors are to be allowed on site. • Workers' right to refuse work in unsafe conditions must be respected. • All personnel must be trained in basic site safety procedures. • The Contractor must design, test/exercise appropriate emergency preparedness programmes (plans, schedules, procedures and methods) for addressing environmental accidents, incidents and events such as spills of fuel, oil or lubricants; fires etc. • The Client and/or client's agent will carry out regular audits on the principal contractor at least once per month. Similarly, principal contractors must be responsible for carrying out regular audits on their contractors at least once per month. The results must be tabled for action and discussed at the Health and Safety Committee meetings or the site	Contractor	Ongoing

meetings, as appropriate. • The principal contractor must provide evidence by means of a procedure or chart that he is fully aware of the hierarchy of incidents that can occur e.g. unsafe situations, near misses, HFRI's, first aid box injuries, medical cases, disabling injuries etc. He must keep an incident register of all such incidents, investigate and apply corrective action where required. The client also reserves the right to stop any unsafe work and request incident statistics from the principal contractor.		

3 SITE MANAGEMENT

a. Site Establishment

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
Prior to the establishment of the site camp / office, the Contractor will produce a site layout plan showing the positions of all equipment storage, waste stockpiling, fuel storage areas and other infrastructure for approval of the ECO and SHE Officer. • The construction area must be clearly demarcated on the layout plan, and all other areas must be considered no-go areas for the construction personnel. • Adequate signage must be placed in the area where construction will take place informing the public of the activities taking place. • The site must be secured manned on a 24-hour basis. • The Contractor must take responsibility for the site to conform to all contractual aspects and environmental standards applicable. • The Contractor must provide adequate refuse bins that must be cleaned / emptied and the waste removed from site on a regular basis. • The construction camp must be kept in an orderly state at all times. • Vegetation removed for the site establishment is to be kept to a minimum. • The Contractor must ensure that drainage on the camp site is such to prevent standing water and/or sheet erosion from taking place.	Contractor	Once-off

b. Ablution/Sanitation

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
A minimum of one chemical toilet must be provided per 10 persons.	Contractor	Daily

• The chemical toilets must be strategically placed (easily accessible to workers, preferably no more than a 300 m from the work face). • Chemical toilets should be kept away from sensitive drainage areas and may not be positioned within a 50m buffer zone of any watercourse. • Portable/Chemical toilets should be sealed units that can be cleaned by truck and the waste must be taken to a suitable sewage facility for treatment. Toilets must be used as a first priority. • Chemical toilets should be well maintained and regularly cleaned and sewage should not be allowed to directly access the groundwater. • All ablution activities must take place in these facilities, and the waste material must be stored and disposed of at the registered waste disposal site or collected by a suitable waste contractor on a regular basis. • The Contractor must ensure that toilets are cleaned or emptied regularly and that no spillage occurs during routine maintenance. • All temporary/portable toilets must be secured to the ground to prevent them from toppling due to wind or any other cause. • Unauthorised dumping / spilling of waste from toilets into the environment and burying of waste are strictly prohibited.		

c. Access

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• The construction site must have strict access control to reduce the risks associated with vehicular transportation and pedestrian access on the site. • All no-go areas will be indicated as such with warning signs in all relevant languages. • Adequate drainage and erosion protection in the form of cut-off berms or trenches must be provided around the sites and where necessary. • The construction site must have strict access control to reduce the risks associated with vehicular transportation and pedestrian access on the site. • No vendors or other similar traders must be allowed on the site	Contractor	On-going

d. Fires

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency

• Fire fighting measures such as fire extinguishers must be located on site. • The workforce must be made aware of fire prevention and fire fighting measures. • No open fires shall be allowed on site under any circumstances. • The contractor should have fire-fighting equipment available on all vehicles working on site, especially during the winter months.	Contractor	Daily

e. Vehicle Maintenance Yard

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

f. Traffic Access

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• It is very important that existing access roads be used where at all possible. Existing access tracks must first be upgraded rather than constructing new tracks. • The contractor needs to properly mark all access roads. Markers shall show the direction of travel to which the road leads. • Roads not to be used shall be marked with a “NO ENTRY” sign. • All speed limits must be strictly adhered to at all times. • If there are high volumes of construction traffic along site access roads, dust prevention measures must be implemented to reduce dust creation and travel into adjacent areas.	Contractor	Ongoing

4 GENERAL AND HAZARDOUS SUBSTANCES AND MATERIALS

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• Storage areas must be designated, demarcated and fenced.	Contractor	Ongoing

• Storage areas should be secured, under lock and key, so as to minimise the risk of crime. • Fire prevention facilities must be present at all storage facilities. • Proper storage facilities for the storage of oils, paints, grease, fuels, chemicals and any hazardous materials to be used must be provided to prevent the migration of spillage into the ground and groundwater regime around the storage area(s). These pollution prevention measures for storage should include a bund wall high enough to contain at least 110% of any stored volume. Such a facility must be on an impervious surface. The storage area must be securely fenced and all hazardous substances such as fuel, oils, chemicals, etc., must be stored therein. Drip trays, a thin concrete slab or a facility with PVC lining, must be installed in such storage areas with a view to prevent soil and water pollution. • Any water that collects in the bund must not be allowed to stand and must be removed immediately. • All fuel storage tanks and associated facilities must be designed and installed in accordance with the relevant oil industry standards, SANS codes and other relevant requirements. • Symbolic safety signs depicting No Smoking, No Naked Flames and Danger are to be prominently displayed in and around the fuel storage area. • The capacity of the tank must be clearly displayed and the product contained within the tank clearly identified. • Only empty and externally clean tanks may be stored on the bare ground. All empty and externally dirty tanks must be sealed and stored in an area where the ground has been protected. • If fuel is dispensed from 200 litre drums, the proper dispensing equipment must be used. • The drum must not be tipped in order to dispense fuel. The dispensing mechanism of the fuel storage tank must be stored in a waterproof container when not in use. • All waste fuel and chemical contaminated rags must be stored in leak-proof containers and disposed of at an approved hazardous waste site. • Storage sites will be provided with bunds to contain any spilled liquids and materials. These storage facilities (including any tanks) must be on an impermeable surface that is protected from the ingress of stormwater from surrounding areas in order to ensure that accidental spillage does not pollute local soil or water resources. • Material Safety Data Sheets (MSDSs) must be readily available on site for all chemicals and hazardous substances to be used on site. Where possible the available, MSDSs should additionally include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases or spillages. • Staff dealing with these materials / substances must be aware of their potential impacts and follow the appropriate safety measures. • A suitable Waste Disposal Contractor must be employed to remove waste oil. These wastes must only be disposed of at licensed landfill sites designed to handle hazardous waste. Appropriate weigh bills must be		

provided for all hazardous waste being disposed of. • The Contractor must ensure that his staff are made aware of the health risks associated with any hazardous substances used and has been provided with the appropriate protective clothing/equipment in case of spillages or accidents and have received the necessary training. • Cement / concrete must not be mixed directly on the ground. Dagga boards, mixing trays and impermeable sumps must be used at all mixing and supply points. Unused cement bags are to be stored so as not to be effected by rain or runoff events. • The washing of concrete trucks on site is prohibited. • Used cement bags must be stored in weatherproof containers to prevent windblown cement dust and water contamination. Used cement bags must be disposed of on a regular basis via the solid waste management system, and must not be used for any other purpose. • All visible remains of excess concrete must be physically removed on completion of the plaster or concrete pour section and disposed of. Washing the remains into the ground is not acceptable as groundwater contamination could occur. • No paint products may be disposed of on site. • The Contractor must maintain a record of the sourcing of all materials used during construction.		

5 SPILLS, INCIDENTS AND POLLUTION CONTROL

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• Any spillage, which may occur, must be investigated and immediate action must be taken according to the requirements of the Spill Contingency Plan. This must also be reported to the ECO and SHE Officer. • In the case of a spill of hydrocarbons, chemicals or bituminous material in the Construction camp or on the construction site/ bunding area, the spill should be contained and cleaned up and the material together with any contaminated soil collected and disposed of as hazardous waste to minimize pollution risk and reduce bunding capacity. • Should a pollution incident occur on site the Contractor must: ❖ Implement reasonable measures immediately to contain and minimise the impacts of the incident; ❖ Notify all persons whose health may be affected by the incident; ❖ Undertake clean up procedures immediately; ❖ Notify the Contractor of the incident immediately who will advise the employee as to the measures that should be implemented; ❖ Record the incident in the Environmental Incident Register; and	Contractor SHE Office	Ongoing

❖ Implement measures to prevent similar incidents from occurring in the future. • Concrete mixing must be confined to as few areas as possible and ad hoc mixing is to be avoided. Areas where concrete was mixed must be cleaned up after use. Concrete mixing is to be undertaken on an impervious surface. • Soil and construction material stockpiles are to be bermed to prevent leachate and polluted runoff.		

6 HERITAGE

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• If an artefact on site is uncovered, work in the immediate vicinity must be stopped immediately. • The contractor must take reasonable precautions to prevent any person from removing or damaging any such article and must immediately, upon discovery thereof, inform the Construction Engineer of such discovery, which in turn must contact a registered archaeologist. • Work may only resume once clearance is given in writing by the archaeologist. • If any evidence of archaeological sites or remains (eg, remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, marine shell and charcoal/ash concentrations), unmarked human burials, or other categories of heritage resources are found during the proposed activities, SAHRA APM Unit (Philip Hine, 021 462 4502) must be alerted immediately, and a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contacted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of archaeological significance, a Phase 2 rescue operation might be necessary.	Contractor	Ongoing

7 NOISE

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• Neighbouring landowners must be notified about construction activities. • All construction vehicles and equipment are to be kept in good repair and must be fitted with Standard silencers prior to construction. • Where possible, stationary noisy equipment (for example compressors, generators etc. must be encapsulated in acoustic covers, screens or sheds. Portable acoustic shields must be used in the case where noisy equipment is not stationary (for example drills, angle grinders, chipping hammers). • Construction activities, and particularly the noisy ones, are to be contained to reasonable hours during the day and early evening.	Developer / Contractor	Ongoing

• Machines in intermittent use must be shut down in the intervening periods between work or throttled down to a minimum. • In general, operations must meet the noise standard requirements of the Occupational Health and Safety Act (Act No 85 of 1993). • Construction staff working in areas where the 8-hour ambient noise levels exceed 75dBA must wear ear protection equipment. • Noise levels must be kept within acceptable limits. All noise and sounds generated must adhere to SANS 10103 specifications for maximum allowable noise levels for central business districts. No pure tone sirens or hooters may be utilised except where required in terms of SANS standards or in emergencies. • Noisy operations must be combined so that they occur where possible at the same time. • Noise from labourers must be controlled. • Noise suppression measures must be applied to all construction equipment. Construction equipment must be kept in good working order and where appropriate fitted with silencers which are kept in good working order. Should the vehicles or equipment not be in good working order, the Contractor may be instructed to remove the offending vehicle or machinery from site. • The Contractor must take measures to discourage labourers from loitering in the area and causing noise disturbance. Where possible labour must be transported to and from the site by the Contractor or his subcontractors by the contractors own transport. • Construction activities are to be contained to reasonable hours during normal working hours. • Neighbours are to be given at least three days warning prior to any blasting, piling or other 'noisy' activities. • No vendors or similar informal traders must be allowed to trade on the site.		

8 AIR QUALITY

a. Pollution Management and Odour Control

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

b. Dust Control

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

9 SPOIL, TOPSOIL AND EROSION

a. Topsoil

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• The Contractor must strip and stockpile all soil within the work area for subsequent use at a later stage.	Contractor	Ongoing

• Topsoil removed must be stockpiled in a designated area. Stockpiles must be protected from wind and rain with the use of tarpaulins where necessary. The Engineer is to use his discretion in this regard. • Topsoil must be kept separate from overburden and must not be used for infilling. • Weeds must be eradicated from topsoil prior to spoiling. • The Contractor must exercise suitable precautions with the storage, handling and transport of all materials that could adversely affect the environment. If pollution of any surface or groundwater occurs, it must immediately be reported to this Department and appropriate mitigation measures must be employed.		

b. Spoil

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

c. Soil Erosion and Sedimentation

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• Soil erosion on site must be prevented at all times, i.e. pre, during and post construction activities. Suitable erosion control measures must be implemented in areas sensitive to erosion such as near water supply points and edges of slopes. These measures must include: ❖ Phased construction activities must take place to ensure the removal of vegetation, only as it becomes necessary for work to proceed. This enables erosion and sedimentation to be minimised and centralized in relatively small areas easier to control and to stabilize. Topsoil storage must be as brief as possible and storage must occur in a bunded area away from watercourses as described above. ❖ Vegetative Cover – vegetation reinforces soil and holds it in place thereby reducing erosion. Temporary or permanent vegetation must be planted on all bare soil immediately after any ground disturbance. The prompt rehabilitation of exposed soil areas with indigenous vegetation will ensure that soil is protected from the elements. The unnecessary removal of vegetation especially on steep areas must be prevented.	Contractor	Daily

❖ Taking necessary precautions in terms of design and construction and earthworks, cuts and fills must be taken. Soil stockpiles must be vegetated or covered to reduce soil loss as a result of wind or water to prevent erosion and sedimentation. Disturbed areas must be rehabilitated as soon as possible. ❖ Seeding, anchored mulch, wool binders or erosion control fabrics must be used to provide surface protection and stabilisation until vegetation is established. ❖ The suitable use of sand bags or Hessian sheets must be used to stabilise bare soil. ❖ The suitable use of geo-textiles, turf blankets or mats must be used as slope protection for exposed slopes. ❖ Proper drainage controls such as culverts and cut-off trenches must be used to ensure proper management of surface water runoff to prevent erosion and sedimentation. ❖ Construction vehicles must remain on designated demarcated areas. ❖ Work areas must be clearly defined and demarcated to avoid unnecessary disturbance of areas outside the maintenance area.		

d. Site Establishment, Management and Erosion Control

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• The Contractor must take responsibility for the site to conform to all contractual aspects and environmental standards applicable. • The spoil site must be cleared of all inert waste, rubble, foundations and litter. • Topsoil must be separated from overburden and spoiled separately. • Dumping of any other material, including litter is prohibited. • Litter and general waste is to be removed from the soil and spoiling before stockpiling.		

e. Rehabilitation and Maintenance

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• A period of one year must be allowed for following practical completion, unless otherwise specified. • Control weeds by means of extraction, cutting or other approved methods.	Contractor/ Developer	Weekly

10 WASTE MANAGEMENT

a. General Waste

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

b. Hazardous Waste

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• Hazardous waste produced on site includes: ❖ Oil and other lubricants, diesel, paints, solvent; ❖ Containers that contained chemicals, oils or greases; and	Contractor	Daily

❖ Equipment, steel, other material (rags), soils, gravel and water contaminated by hazardous substances (oil, fuel, grease, chemicals or bitumen). • Hazardous waste is to be disposed of at a Permitted Hazardous Waste Landfill Site. The ECO must identify an approved waste disposal site at the inception of the project. • Hazardous waste bins must be clearly marked, stored in a contained area (or have a drip tray) and covered (either stored under a roof or the top of the container must be covered with a lid). • A hazardous waste disposal certificate must be obtained from the waste removal company as evidence of correct disposal		

c. Industrial Waste

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• Hazardous waste produced on site includes: ❖ Oil and other lubricants, diesel, paints, solvent; ❖ Containers that contained chemicals, oils or greases; and ❖ Equipment, steel, other material (rags), soils, gravel and water contaminated by hazardous substances (oil, fuel, grease, chemicals or bitumen). • Hazardous waste is to be disposed at a Permitted Hazardous Waste Landfill Site. The ECO must identify an approved waste disposal site at the inception of the project. • Hazardous waste bins must be clearly marked, stored in a contained area (or have a drip tray) and covered (either stored under a roof or the top of the container must be covered with a lid).	Contractor	

d. Wastewater

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• All wastewater generated at the proposed development must be disposed of in a suitable manner so as not to cause any surface or subsurface water pollution or health hazard. Wastewater including cement contaminated water must not enter any water course and must be managed by the site manager to ensure that water resources off site are not polluted by activities emanating from the above development. • Contaminated wastewater including cement-contaminated water must not enter any watercourse and must be managed by the Contractor to ensure that water resources off site are not polluted by activities emanating	Contractor	Daily

from the above development. • Used oil and wastewater must be disposed of to a ROSE registered facility. An SDC is to be obtained by the Contractor.		

11 WATER MANAGEMENT

a. Water Pollution Management (including groundwater and soil contamination)

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• The flow direction of any surface water runoff must be established prior to disturbing any area. • Every effort must be made to ensure that any chemicals or hazardous substances do not contaminate the soil or ground water on site. • Dirty water originating from maintenance activities is to be contained and disposed of correctly, to prevent the contamination of soil and/or any watercourses. • Erosion and loss of soil must be prevented by minimising the construction areas exposed to surface water runoff. • Bare areas are to be rehabilitated as soon as the areas become available or after use. • All water consumption on site must be recorded on a daily basis. • The abstraction of water from any water resource for construction purposes and/ or dust suppression must not be permitted without a water use licence / general authorisation from the Department of Water and Sanitation • Drip trays are to be utilised during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants. • Drip trays are to be inspected on a weekly basis for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow. • All construction vehicles will be properly maintained to prevent leaks. • Cement mixing must be confined to a designated area and must be undertaken on an impervious surface. • All fuel stored on site must be kept in a bunded containment area.	Contractor	Ongoing

b. Water Pollution Management (including groundwater and soil contamination) due to spillages

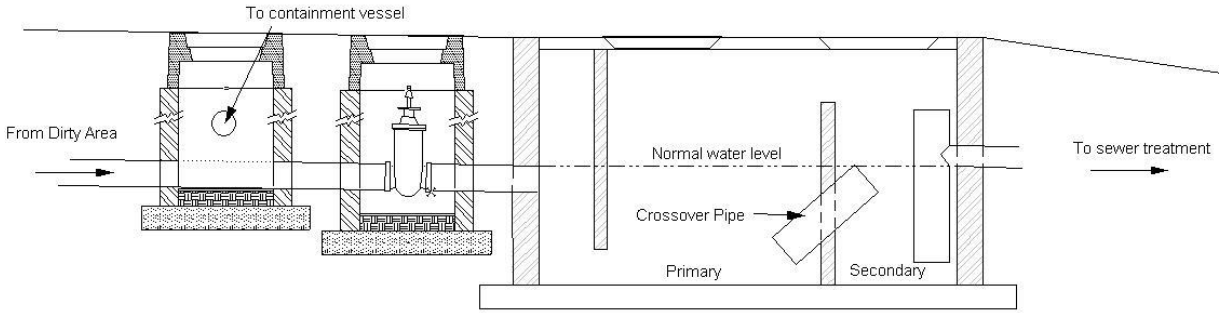
ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
Areas in close proximity to fuel dispensing equipment carry a high environmental risk associated with intensive fuelling activity and the potential for minor spills to accumulate. The following design guidelines should be followed: Drainage Separation Options Drainage separation options may include grading, bunding, kerbing and/or channeling. The ground surfaces within the Fuel Dispensing Area (FDA) and the Tanker Delivery Standing Area will be connected to an oil separator/grease trap, before discharging into a closed sewage treatment plant like Ballam-Waterslot's "GEM sewage treatment plant or similar.  *Figure:* Example of Grease Trap This system consists of four tanks where the fourth tank is a containment tank fitted with pumps for irrigation purposes. Separation is required to assist in maintaining the spill capacity of the containment vessel. Approved Surface Materials All ground surfaces within the FDA shall be constructed of concrete with all gaps and/or cracks filled so that the impervious barrier and integrity is maintained. Asphalt is not considered a suitable equivalent as it can react with hydrocarbons.	Contractor	Once-off

Delineation of FDA

The FDA shall be delineated by painted line-work on the ground. Other methods of delineating the FDA may be used eg. roll-over bunds, different colour concretes, etc.

Spillage containment of FDA

The area shall be graded to a suitable underground containment vessel (i.e. sump/tank) compatible with petroleum products and other likely chemicals. The tank shall have no connections to stormwater or sewer. It is proposed to install a gate valve before the separator with and overflow manhole. This valve should be closed during emergency spills to force the spill to overflow into the containment vessel. This valve must be a quick shut type like a ball valve or similar and be well maintained. It should be clearly marked and visible. Staff must be trained to immediately close this valve in the event of spillage.



TYPICAL SEPARATOR/GREASE TRAP

The tank shall have no connections to stormwater or sewer. The containment vessel shall be constructed of precast concrete with a minimum certified design life of 50 years. All internal concrete surfaces that may be exposed to contact with petroleum hydrocarbons shall be coated with an epoxy resin, to a minimum dry film thickness of 200 microns, applied in accordance with the supplier's recommendations.

Joints shall be made with epoxy or rubber ring seals. Epoxy joints shall be used in accordance with supplier's

recommendations. For joints using a rubber ring seal, the rubber type shall be NBR (nitrile). Material requirements for pipe joints seals used in water and wastewater applications with the exception of natural rubber and polyisoprene compounds. The ring shall be water tight to 90kPa internal pressure. The underground containment vessel shall maintain adequate capacity to contain a volume equivalent to at least the volume of the largest tanker compartment likely to be delivering fuel to the site plus a nominal allowance for windblown rain. Windblown rain allowance in m³ (V_r) should be calculated using the following equation : $V_r = 0.005 \times 3 \times P_o$, where P_o is the total length of the open perimeter of the canopy in meters.		

c. Water Pollution Management (including groundwater and soil contamination)

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• A proper leakage detection system must be installed to prevent contamination of the surrounding soil and ground water in the event of a leak. • All pipework will be double walled and comply with SANS 62- 1 and 2, SANS 1132 (pipework). • All fire extinguishers must comply with SANS 1151 (Portable rechargeable fire extinguishers). • The above-ground installation must comply with SANS 10089 part 1 (storage of dangerous goods in above-ground tanks). • An appropriate storm water management system must be included in the final site layout. • The buildings will comply with the National Building Regulations and Standards Act No. 103 of 1977.	Contractor	Ongoing

12 FAUNA, FLORA AND ECOLOGY

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• Any temporary storage or accommodation facilities to be setup during construction to be within existing disturbed areas only. • No temporary facilities or portable toilets to be setup within 50m of watercourses and riparian zones. • Avoid impeding or diverting waterflow during construction phase. • Ensure a proper Stormwater Management Plan is compiled and implemented. • No fires whatsoever may be made for the burning of vegetation and waste. Firefighting equipment must be readily available on site.		

• Alien vegetation shall be managed and Category 1, 2 and 3 plants shall be controlled to the extent necessary to prevent or to contain the occurrence, establishment, growth, multiplication, propagation, regeneration and spreading of such plants. • Removing of vegetation must be restricted to the immediate area for construction and as instructed by Site Manager. • The cleared vegetation must be disposed of to a suitable disposal site. The burning of vegetation cleared or disposal to adjacent site is prohibited. • Protected trees and species identified by an ecologist or ECO may not be removed or cut without a permit from the relevant provincial Department. • Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas. • Where alien plants have been introduced on to the site during clearing and infilling, they must be removed. • The Contractor must develop an Action Plan for the removal of alien invasive species and submit it to the ECO and Ecologist for approval. • Invader species and weeds must be removed and disposed of in accordance with existing legislation (Conservation of Agricultural Resource Act (No. 43 of 1983) on a regular basis. • The removal of indigenous/endemic shrubs and small trees must be kept to a minimum and only be removed if absolutely necessary. • Close site supervision must be maintained during construction. • Provision of adequate toilet facilities must be implemented to prevent the possible contamination of ground water in the area. Mobile toilets must be provided in order to minimise unauthorised traffic of construction workers outside of the designated areas. • All temporary stockpile areas including litter and dumped material and rubble must be removed in completion of construction. All alien invasive species should be removed from the site to prevent further invasion. • Educational programmes for the contractors' staff must be implemented to ensure that project workers are alerted to the possibility of snakes being found during vegetation clearance. The construction team must be briefed about the management of snakes and other dangerous animals on site. In particular, construction workers are to go through on-going refresher courses to ensure that snakes are not killed or injured when found. • No animal may be hunted, trapped, snared or captured for any purpose. Fences and boundaries should be patrolled weekly in order to locate and remove snares/ traps. • Speed of vehicles should be limited to avoid injury of fauna and allow for sufficient safety margins. • Dangerous animals should be handled by a competent person. • Severe contractual fines must be imposed and immediate dismissal on any contract employee who is found		

attempting to snare or otherwise harm remaining faunal species. • No animals should be intentionally killed or destroyed and poaching should not be permitted on the site.		

b. Vegetation Clearance

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
It is recommended that a contractor should comply with the following parameters: • The contractor or ecologist appointed by the contractor must have the necessary knowledge to be able to identify protected species as well as species not interfering with the operation of the line due to their height and growth rate. • The contractor must also be able to identify declared weeds and alien species that can be totally eradicated. • Only vegetation that could potentially threaten the development in terms of clearance and fire risk must be cleared.	Contractor	

13 STORM WATER MANAGEMENT

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• The Stormwater Management Plan must be implemented to ensure proper management of stormwater on the site during and after construction to ensure that pollutants and sediment are not released into any water resources. • Designs for the buildings and site development in general must avoid concentration of stormwater runoff both spatially and in time and may be required to provide for on-site attenuation of stormwater runoff to limit peak flows to pre-development levels. • Detailed plans to control and prevent erosion by water must be agreed between the contractor and approved ECO prior to the commencement of any works, including site clearance, on any portion of the site. • Removal of vegetation cover must be carried out with care and attention to the effect, whether temporary or long-term, that this removal will have an erosion potential. • Precautions must be taken at all times on building sites to contain soil erosion and prevent any eroded material from being removed from the site. • On-site stormwater control systems, such as swales, berms, and soil fences are to be constructed before any construction commences on the site. As construction progresses, the stormwater control measures are to be monitored and adjusted to ensure complete erosion and pollution control at all times. • Earthworks on sites are to be kept to a minimum. Where embankments have to be formed, stabilization and	Engineer	Daily

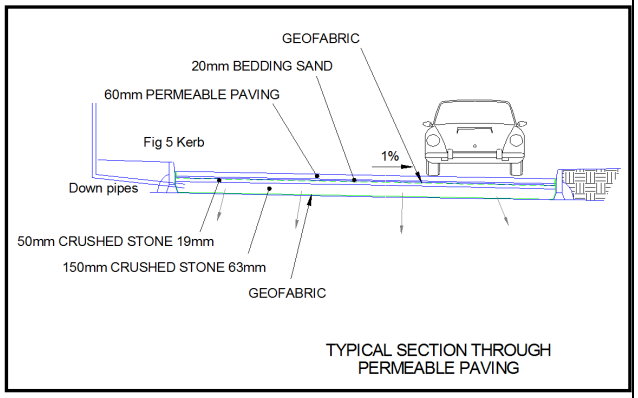
erosion control measures must be implemented immediately.

- Stormwater must not be allowed to pond in close proximity to existing building foundations.
- No materials, fluids or substances are allowed to enter the stormwater system that could have a detrimental effect on the flora, fauna and aquatic life in the water courses and wetlands. Regular monitoring of the sites should be undertaken.
- No stormwater, wash water, or wastewater may be directed towards any permanent water body or wetland without the installation of a suitable filtration system to prevent pollution, including silt, from entering such water body.

Clean water roads and paving

Minor Storm

It is proposed that the stormwater be managed by means of permeable paving, and allow this attenuated water to re-charge the natural ground water. This analysis and design will have to be submitted for approval during SDP stage.



TYPICAL SECTION THROUGH PERMEABLE PAVING

Canopy Overhang

The roof or canopy shall overhang by a horizontal distance of ¼ of the roof height out from the vertical above the boundary of the demarcated FDA.

Canopy Stormwater - Disposal Options

Preference is for stormwater from roofed areas to be collected in tanks for non-potable use (eg. toilet flushing or garden watering). Alternatively, it may be diverted directly to on-site stormwater infrastructure.

14 TRAFFIC AND SAFETY

a. Lane Closures

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

b. Pedestrian Protection

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• Pedestrians to be protected from construction activities at all times. • Pedestrian conflict with site access and construction vehicles to be managed by traffic officer. • The construction site camp must remain fenced for the entire construction period.	Contractor	Daily

c. Maintenance Vehicles

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

• All speed limits must be adhered to.		

d. Road Maintenance

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

15 SOCIAL CONSIDERATIONS

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• Working hours are restricted to 07:00 – 18:00 during weekdays and 08:00-17:00 over weekends if necessary. Should work be required after these hours, the ECO must be notified and any person who resides in close proximity to the site and who may be impacted upon by the disturbance should also be notified. • All neighbouring landowners and those that are disturbed due to construction activities are to be notified of construction activities and provided with regular feedback on the status of construction. • The Contractor is to arrange for a suitable candidate to assist with the appointment of local labour and assist with labour disputes.	Contractor	Ongoing

16 REPORTING AND RECORD KEEPING

a. Complaints Register

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• Complaints received must be registered and recorded by the contractor and also brought to the attention of the contractor. Both parties will respond accordingly. The following information must be recorded in the case of any	Contractor	Ongoing

complaint/incident: _ Time, date and nature of complaint; _ Response and investigation undertaken; and _ Corrective and preventative actions taken and by whom. • All complaints received will be investigated and a response is to be given to the complainant within 7 days.		

b. Environmental Incident Register

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

3 CATEGORY C: OPERATIONAL PHASE

1 HEALTH AND SAFETY

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• Relevant operational staff must receive training on the correct operation of the storage tanks, as well as maintenance and repair procedures when leaks are detected. • An emergency response plan must be available on site and employees must be familiar with the plan. • The correct PPE should be used on the site. • Appropriate Health & Safety signage must be placed on and around the tank. • Fire extinguishers and sand bags must be readily available onsite and easily accessible. • Fire fighting equipment must comply with SANS 1151 (Portable rechargeable fire extinguishers - Halogenated hydrocarbon type extinguishers), and be inspected regularly. • No smoking may be permitted on site. • No cell phones may be used during fuel dispensing. • Overfill and spillages during tanker refueling and fuel dispensing should be prevented by the installation of	Developer	Throughout operational phase

automatic cut off devices. • Tanker delivery drivers must be present during delivery of fuel with the emergency cut off switch and a fire extinguisher. • A closed coupling must be used when fuel is being transferred from the bulk delivery vehicle to the storage facilities to prevent fugitive emissions.		

2 SOIL AND GROUNDWATER CONTAMINATION

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• Storm water originating from the fuel filling surface area must be treated as dirty water. • Stormwater management from the forecourt area should be designed to collect all runoff which should pass through an oil/water separator prior to being discharged. • Clean water and dirty water systems must be separated. • Storm water must be directed away and around the filling sites. • Leak detection systems must be implemented in all fuel storage and transmission lines and tanks. A proper leakage detection system must be installed to prevent contamination of the surrounding soil, ground water as well as the river located north of the site in the event of a leak. • Air monitoring systems must be implemented around the storage tanks. • The spillage of fuels, chemicals and or sewerage water must be immediately reported to the assigned Departments stipulated in the water use licence document and other documents stipulating monitoring practices. • An emergency accidental spillage plan must be in place and workers must be trained to handle such accidents. • No uncontrolled discharges resulting in pollution of the receiving environment and aquifer shall be permitted. • Chemical storage areas should be sufficiently contained, and the use of chemicals should be controlled. • Water seeping into filled levels on site must be prevented. • Water pumped from any sump or temporary dewatering pit should be pumped into a dirty water system and should not be allowed to enter any clean water system, natural drainage line, or the aquifer. • Fuel storage tanks must be constructed according to SABS guidelines, • The above-ground storage tank installation must comply with SANS 10089 part 1 (storage of dangerous goods in above-ground storage tanks).	Developer	Throughout operational phase

• An Emergency Response Plan must be in place for the site, this must clearly describe emergency procedures and include emergency contact numbers. • If contamination or leakage is detected, this Emergency Response Plan must be followed. • Following a leak or accidental spill, a remediation plan must be compiled and executed. • Accidental spills that may occur on the forecourt must be cleaned up immediately using a spill absorbent, which must then be removed by a licenced contractor. • Fuel stock must be monitored on a daily basis and these records must be kept on site. • The forecourt must have an impervious surface, such that fuel and oil products will not leak into the soil • Regular inspection of all pipes, tanks and other associated infrastructure. • Accidental spills that occur outside of the bund area must be contained and prevented from entering the stormwater system. • Spills must be treated with the appropriate spill absorbent. • Where necessary, spill absorbent must be removed by a certified hazardous waste removal company. • The accumulated contents of the oil/water separator must be removed by an accredited company. • The oil/water separator must be inspected regularly to ensure that it is functioning at all times. • Water discharged from the oil/water separator must be monitored to ensure it meets the required standard. • Overfill and spillages during tanker refueling and fuel dispensing should be prevented by the installation of automatic cut off devices. • Tanker delivery drivers must be present during delivery of fuel with the emergency cut off switch. • In the event of the pump dispenser or the hoses being knocked over or ripped off, the fuel supply must be cut off by shear-off valves. • All forecourt staff must undergo appropriate training, which must include training to prevent spillages during fuel dispensing. • The pipelines and other associated infrastructure must be inspected regularly for leaks and to ensure structural integrity		

3 TRAFFIC ASSOCIATED WITH THE BULK DELIVERY OF FUEL

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• Delivery times should be scheduled so that they do not conflict with other deliveries/ removals. • There is to be sufficient turning space for delivery vehicles.	Developer	Throughout operational phase

4 AIR QUALITY

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• Vent pipes to be fitted such that they face away from the neighbouring residential areas. • All delivery vehicles will be adequately maintained to reduce exhaust emissions.	Developer	Throughout operational phase

5 EMPLOYMENT CREATION

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• All recruitment must be in-line with Q4's Employment Equity Policy. • The policy will also promote the employment of women to ensure that gender equality is attained as defined in the Employment Equity Act No 55 of 1998. • Where possible, priority should be given to job seekers from the local area. • Q4 must build the capacity of employees through development plans, technical, health and safety training and provide them with relevant training certificates.	Developer	Throughout operational phase

6 NOISE

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• A grievance procedure will be established whereby noise complaints can be received, recorded and responded to appropriately. • Equipment such as mechanical equipment, extraction fans, refrigerators that are fitted with noise reduction facilities (e.g. side flaps, silencers etc) must be used as per operating instructions and maintained properly. • Noise levels should comply with the SANS Code of Practice 100103 – 0994 (recommended noise levels). • Local by-laws for noise levels must be adhered to. • Noise, especially at night, should be kept to a minimum.	Developer	Throughout operational phase

7 VISUAL

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• Litter and waste should be effectively managed to avoid visual problems in the area. • Buildings and landscaping should receive on-going maintenance to avoid visual decay.	Developer	Throughout operational phase

8 AIR QUALITY

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• The above-ground storage tanks must be designed and installed in accordance with the SANS 10089-1:2007 Code of practice - The petroleum industry, Part 1: The installation of above-ground storage tanks, pumps/dispensers and pipework at service station and consumer installations. SANS standards adequately address various potential air quality impacts via the implementation of required engineering measures. • Vent pipes are to be fitted such that they face away from neighbouring residential areas. • All fuel delivery vehicles must be adequately maintained to reduce exhaust emissions.	Developer	Throughout operational phase

4 CATEGORY D: DECOMMISSIONING PHASE

A decommissioning EMPr has been included below. It must however be noted that this EMPr must be updated prior to decommissioning since a significant amount of time would have lapsed by the time the fuel depot is decommissioned. Q4 Rustenburg must liaise with NW DEDECT prior to confirm decommissioning requirements. A detailed rehabilitation plan should also be developed prior to decommissioning of the tank area.

1 UPDATE EMPr

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• Ensure that the up-dated and approved EMPr is available on site. • Ensure local environmental authorities (NW DEDECT) have been informed about the decommissioning activities. • Ensure that equipment is in place to meet EMPr and excavation plan requirements.	Contractor	Prior to decommissioning phase

• Signed commitment from any sub-contractors to compliance with EMPr.		

2 TRAFFIC IMPACTS ASSOCIATED WITH THE TANK REMOVAL AND REQUIRED MACHINERY

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• Co-ordination of movement of vehicles on and off site to reduce risks and prevent congestion on roads in the vicinity of the site. • No vehicles or machinery should be serviced or refueled onsite. • Peak traffic hours should be avoided. • Large vehicle turning must take place onsite and not in the adjacent roads. • In cases where activities may obstruct traffic, local traffic officials must be contacted.	Contractor	Throughout decommissioning phase

3 NOISE IMPACTS ASSOCIATED WITH DECOMMISSIONING ACTIVITIES

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• Informing surrounding businesses about the decommissioning and the expected duration thereof. • Decommissioning activities to occur during working hours only (8am- 5pm). • Contractors to be conscious of the noise generated during their decommissioning activities, and should limit excessive noise wherever possible. • Where possible, decommissioning equipment should be installed with silencers. • Mechanical equipment with lower sound power levels will be selected to ensure that the permissible occupation noise-rating limit of 85 dBA is not exceeded. • Ear plugs and other applicable Personal Protection Equipment must be used by workers onsite, as required. • The applicant will adhere to local authority by-laws relating to noise control.	Contractor	Throughout decommissioning phase

4 WASTE MANAGEMENT

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency

• Additional covered bins must be made available on site. • All refuse must be removed from site by the contractor and disposed of at a registered facility. • Daily inspection must be undertaken of the proposed site and immediate surrounds. • All excavation rubble must be collected into a skip and disposed of, as and when required. • All hazardous material is transported to a registered hazardous waste site for disposal by a licensed contractor. • The rubble is disposed of at a registered landfill site, with proof of disposal certificates submitted to developer. • Solid waste must be properly managed and disposed of in a licensed waste disposal facility and must comply with relevant legislation.	Contractor	Throughout decommissioning phase

5 DUST CONTROL

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• Dust suppression methods, such as wetting or laying straw, should be applied where there are large tracks of exposed surfaces. • Stockpiles and soil heaps must be covered with tarpaulins or straw to prevent fugitive dust. • All construction vehicles must be appropriately maintained to minimise exhaust emissions	Contractor	Throughout decommissioning phase

6 OCCUPATIONAL HEALTH AND SAFETY

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• The construction site must be fenced off to prohibit unauthorised access and site access must be strictly controlled. • All employees, contractors and sub- contractors to wear appropriate PPE. • Open excavations must be clearly marked. • All employees, contractors and sub- contractors must comply with the relevant Health and Safety Policy. • Appropriate health and safety signage must be displayed on site.	Contractor	Throughout decommissioning phase

7 SOIL CONTAMINATION

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• Waste manifest documentation must be forwarded to developer. • Excavated soil will be screened with a PID to ensure appropriate handling of impacted soil (i.e. bioremediation at an appropriately licensed facility) or reuse of the soil as backfill onsite. Should it be determine that the site has been impacted and the soil and/or groundwater have been contaminated, a Remediation Action Plan must be developed and implement by appropriately qualified personnel	Removal Contractor, Environmental Control Officer, Hazardous Waste Disposal Contractor, Soil specialist and developer	Throughout decommissioning phase

8 GROUNDWATER CONTAMINATION

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• Any contaminated soil must be removed and disposed of by the Hazardous Waste Disposal Contractor to prevent potential impacts on groundwater. • Records must be maintained by the Removal Contractor indicating where the material came from and that it is not contaminated. • If any pollution/ contamination of water resources or soil is detected during the decommissioning of the tanks, the Department of Water and Sanitation need to be informed and appropriate remediation measures should take place.	Removal Contractor, Environmental Control Officer, Hazardous Waste Disposal Contractor and developer	Throughout decommissioning phase

9 IMPACTS ON EXISTING INFRASTRUCTURE, SERVICES AND SERVITUDES

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• Prior to beginning any excavation or drilling activities the person(s) conducting the demolition must be familiar with the location of buried utilities that may be present around the site. These include water, electricity, sewage, gas, compressed air, communication and, close circuit television. • Should existing infrastructure need to be interrupted for decommissioning purposes, prior approval must be received from the relevant parties, before commencing with decommissioning.	Removal Contractor and developer	Throughout decommissioning phase

10 VISUAL IMPACT

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• Fencing of decommissioning area and attaching shade cloth, where necessary. • At the end of the life of the project unneeded structures should be demolished and removed from the site. • Unneeded roads, parking and other paved areas should be broken up and the site re-instated or redeveloped.	Removal Contractor and developer	Throughout decommissioning phase

11 VIBRATIONS

ACTIONS AND CONTROLS	Responsibility	Monitoring Frequency
• Decommissioning activities causing vibration will only be undertaken during working hours only (8am- 5pm). • Equipment will be used as per operating instructions and maintained properly during project works. • The applicant will adhere to local authority by-laws relating to noise control.	Removal Contractor and developer	Throughout decommissioning phase