APPENDIX H – ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

THE PROPOSED DEVELOPMENT OF A FUEL STATION WITH A CONVENIENCE STORE AND RESTAURANT ON REMAINDER OF PORTION 25 OF THE FARM VLAKFONTEIN, 523 JR, CITY OF TSHWANE

PROJECT # : EM00010_JCJ_EMPR_V0.0_21_05_18
GDARD # : Gaut 002/18-19/E0022
DATE : 21 May 2018
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ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)
JCJ DEVELOPMENTS

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LIST OF ABBREVIATIONS

AST	Above Ground Storage Tank
BAR	Basic Assessment Report
CA	Competent Authority
COTMM	City of Tshwane Metropolitan Municipality
CSA	Constitution of South Africa (Act No. 108 of 1996)
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
ESM	Environmental Site Manager
GA	General Authorisation
GDARD	Gauteng Department of Agriculture and Rural Development
GN/GNR	Government Notice
HSO	Health and Safety Officer
HCS	Hazardous Chemical Substances
I&APs	Interested and Affected Parties
NEMA	National Environmental Management Act, 1998 (Act no 107 of 1998 (as amended)
NEM:BA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (as amended)
NEM:AQA	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) (as amended)
NEM:WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (as amended)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 1999)
NVFFA	National Veld and Forest Fire Act, 1989 (Act No. 101 of 1989)

NWA	National Water Act, 1998 (Act No. 36 of 1998)
OHSA	Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)
PPE	Personal Protective Equipment
PPP	Public Participation Process
SAHRA	South African Heritage Resources Agency
SANS	South African National Standard
SCP	Storm Water Control Plan
SDS	Safety Data Sheet
UST	Underground Storage Tanks
IWUL	Integrated Water Use License

GLOSSARY OF TERMS

Applicant: Any person who applies for an environmental authorisation or environmental process in terms of the Environmental Impact Assessment (EIA) Regulations 2014, and the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) (as amended). The Applicant for this project is JCJ Developments.

Archaeological: Means -

(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;

(c) 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 respectively in sections 3, 4 and 6 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), 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; and

(d) features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found.

Biodiversity: The variability among living organisms from all sources including, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part and also includes diversity within species, between species, and of ecosystem.

Building and demolition waste: Waste (excluding hazardous waste) produced during the construction, alteration or demolition of structures.

Construction activities: Activities associated with physical disturbance to the land, including the storage, machinery, equipment and materials.

Construction phase: The construction phase is the period of commencement of physical disturbance to the land, excluding rehabilitation activities, such as re-vegetation and replacing of topsoil

Container: Disposable or re-usable vessel in which waste is placed for the purpose of storing, accumulating, handling, transporting, treating or disposing of that waste and which includes bins, bin liners and skips.

Contaminated water: Any water contaminated by activities carried out by the Developer, e.g. waste water and runoff from plant, personnel wash areas and spills, etc.

Contractor: Persons/organisations contracted by the Developer to provide a service.

Corrective (or remedial) action: Response required to address an environmental challenge that is in conflict with the requirements of the EMPr. The need for corrective action may be determined through monitoring, audits or management review.

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

Disposal: The burial, deposit, discharge, abandoning, dumping, placing or release of waste into or onto any land.

Domestic waste: Waste (excluding hazardous waste) that emanates from premises that are used wholly or mainly for residential, educational, health care, sport or recreation purposes (including garden and park wastes as well as municipal and food waste).

Emergency: An unexpected sudden occurrence, including a major emission, fire or explosion leading to serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed.

Ecology: The branch of biology that deals with the relations of organisms to one another and to their physical surroundings.

Environment: The surroundings within which humans live and that consist of:

(i) The land, water and atmosphere of the earth;

(ii) Micro-organisms, plant and animal life;

(iii) Any part or combination of (i) and (ii) and the interrelationships among and between them; and

(iv) The physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

Environmental Audit: A systematic, documented verification process of objectively obtaining and evaluating evidence to determine whether specified environmental activities, events, conditions, management systems, or information about these matters conform with audit criteria and communicating the results of this process to the Developer.

Environmental Impact Assessment (EIA): means a systematic process of identifying, assessing and reporting environmental impacts associated with an activity and includes Basic Assessment and S&EIR.

Environmental Management Programme (EMPr): A legally binding working document, which stipulates environmental and socio-economic mitigation measures which, must be implemented by several responsible parties throughout the duration of the project.

General waste: Waste that does not pose an immediate threat or hazard to health or to the environment, and includes:

(a) Domestic waste;

(b) Building and demolition waste;

(c) Business waste;

(d) Inert waste; and

(e) Any waste classified as non-hazardous waste in terms of the regulations made under section 69 of NEM:WA.

Groundwater: Water that lies beneath the surface of the earth, which fills voids between permeable ground strata comprised of sand, gravel, broken rocks and porous rocks; and move under the influence of gravity.

Hazardous waste: 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 environmental and includes hazardous substances, materials or object within business waste, residue deposits and residue stockpiles.

Impact: The potential effect or consequence of an aspect of the development on a specified component of the biophysical, social or economic environmental spheres within a defined time and space.

Integrated Environmental Management (IEM): A way of managing the environment by including environmental factors within all stages of the development. This includes thinking about physical, social, cultural and economic factors and consulting with all the people affected by the proposed developments.

Registered Interested and Affected Parties (I&APs): In relation to an application, means an interested and affected party whose name is recorded in the register opened for that application in terms of Regulation 42.

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

Pollutant: A contaminant at a concentration high enough to endanger the environment or the public health.

Pollution:

National Water Act, 36 of 1998*: "Water pollution means the direct or indirect alteration of the physical, chemical or biological properties of a water resource so as to make it –*

(a) less fit for any beneficial purpose for which it may reasonably be expected to be used; or

(b) harmful or potentially harmful –

(i) to the welfare, health or safety of human beings;

(ii) to any aquatic or non-aquatic organisms;

(iii) to the resource quality; or

(iv) to property".

National Environmental Management Act, No. 107 of 1998:- *"pollution means any change in the environment caused by –*

(i) substances;

(ii) radioactive or other waves; or

(iii) 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."

Recycle: A process where waste is reclaimed for further use, which involves the separation of waste from a waste stream for further use and the processing of separate materials as a product or raw material.

Re-use: To utilise articles, a portion of or a specific part of any substances, material or object from the waste stream for a similar or different purpose without changing the form or properties of such substance, material or object.

SANS 10234: Latest edition of the South African National Standard Globally harmonised System of the Classification and Labelling of Chemicals (GHS).

SANS 10089 -3: The installation, modification, and decommissioning of underground storage tanks, pumps/dispensers and pipework at service stations and consumer installations.

SANS 1535: Glass-reinforced Polyester-coated Steel Tanks for the Underground Storage of Hydrocarbons and Oxygenated Solvents and Intended for Burial Horizontally.

SANS 10400: The application of National Building Regulations.

SANS 5667 - 1: Water quality-Sampling.

SANS 10103: The measurement and rating of environmental noise with respect to annoyance and to speech communication.

SANS 10108: The classification of hazardous locations and the selection of apparatus for use in such locations

Storage: The accumulation of waste in a manner that does not constitute a treatment or disposal of the waste.

Storage: The accumulation of waste in a manner that does not constitute a treatment or disposal of the waste.

Underground Storage Tanks (UST): A tank and any underground piping connected to the tank that has at least 90 % of its combined volume underground.

Waste:

(a) any substance, material or object, that is unwanted, rejected, abandoned, discarded or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered and includes all wastes as defined in Schedule 3 of NEM:WA [as amended]; or

(b) any other substance, material or object that is not included in Schedule 3 of NEM:WA [as amended] that may be defined as a waste by the Minister by notice in the Gazette,

but any waste or portion of waste, referred to in paragraphs (a) and (b), ceases to be a waste-

(i) once an application for its re-use, recycling or recovery has been approved or, after such approval, once it is, or has been re-used, recycled or recovered;

(ii) where approval is not required, once a waste is, or has been re-used, recycled or recovered;

(iii) where the Minister has, in terms of section 74, exempted any waste or a portion of waste generated by a particular process from the definition of waste; or

(iv) where the Minister has, in the prescribed manner, excluded any waste stream or a portion of a waste stream from the definition of waste.

Waste generator: Any person whose actions, production processes or activities including, waste management activities, results in the generation of waste.

Waste management services: Means waste collection, treatment, recycling and disposal services.

1. Project particulars

Table 1: Key project information

Project name	The proposed development of a fuel station with a convenience store and restaurant on remainder of Portion 25 of the farm Vlakfontein, 523 JR, City of Tshwane Metropolitan Municipality.
Client details	JCJ Developments (Reg No: 2013/161997/07) PostNet Suite 532, Private Bag x18, Lynwood Ridge, 0040 Contact: Francois Eicker C 082 341 8263 E francois@jcjdevelopments.co.za
EAP details and experience	**I-CAT Environmental Solutions (Reg. No. 2012/058514/07)** PostNet Suite 577 Private Bag X37 Lynnwood Ridge 0040 Contact: Leon JV Rensburg / Rachelle Stofberg/ Melissa Heunis T +27 (0)86 112 4288 F +27 (0) 86 552 3872 E environmental@i-cat.co.za **Experience:** I-CAT Environmental Solutions (Pty) Ltd is a leading environmental management company with its primary focus in supplying products and services to assist companies in sustainable Environmental Management. I-CAT's Environmental Division provides a comprehensive range of services and we help our clients to achieve cost savings, resource conservation and increased efficiency, in conjunction with improvements in environmental performance. Divisional services include: ✓ Licensing and Permitting in terms of NEMA, MPRDA, NWA, NEMAQA, NEMWA ✓ Legal and Performance Auditing ✓ Compliance Monitoring (water, noise and dust). ✓ Sustainability and Integrated Reporting **Lourens JV Rensburg – Project Director and Quality Reviewer** Lourens is the Environmental Divisional Director of I-CAT Environmental Solutions. Lourens boasts a range of certificates and degrees in environmental management, electrical engineering, SQL database development, MCSE, project management, carbon accounting and energy efficiency. His skills include; business development, marketing strategy and consulting, energy efficiency and sustainable energy technology, project management, conducting and reviewing of EIAs, Audits and GAP Analysis. **Rachelle Stofberg – Senior Environmental Specialist** Rachelle holds a BSc. degree in Conservation Ecology as well as a Master's degree in Environmental Management, both

	obtained at the University of Stellenbosch. She started her environmental career in 2009 and has experience in environmental licensing, research, environmental monitoring and auditing, the Environmental Impact Assessment process, waste, water, air management and licensing as well as in environmental control work and auditing for construction works. She has worked in the public and private sectors with specific experience in mining, industrial, road, water, waste and power distribution infrastructure type developments. **Leon Janse van Rensburg – Environmental Consultant** Leon holds a B.Sc. Honors in Environmental Management degree through the University of South Africa and completed his B.Sc. Agric degree through the University of Stellenbosch. Leon has experience in environmental licensing, auditing, reporting and environmental impact mitigation research, with focus on the industrial and mining sector. **Melissa Heunis – Environmental Technician** Melissa has gained experience within the Climate Change and Sustainability services discipline, and is currently employed as an Environmental Assessment Practitioner. She has been involved in conducting sustainability, waste, Environmental Compliance, EMPr Performance Assessment and Integrated Water Use License audits. She also gained experience in dust monitoring, assisting in compilation of IWMP's for state and mining industries and execution of the Environmental Authorisation process within the fuel and waste industries.

2. Objectives of the EMPr

The EMPr has been compiled to provide recommendations according to which construction and operational activities of the proposed development have to be undertaken. The EMPr ensures that sound environmental practices are abided to throughout the construction and operational phases of the proposed development. The EMPr makes recommendations which have to be implemented by all responsible parties and staff. It informs all relevant parties and staff of their responsibilities and legal obligations specifically relating to management and mitigation of potential environmental impacts.

The objectives of the EMPr are to:

- Ensure compliance with regulatory authority stipulations and legislation which may be local, provincial, national and/or international;
- Ensure that there is sufficient allocation of resources on the project budget so that the scale of EMPr related activities (mitigation measures) are consistent with the significance of the project's impacts;
- Verify environmental performance through information on impacts as they occur;
- Respond to unforeseen events;
- Provide feedback for continual improvement on environmental performance;
- Identify a range of mitigation measures which could reduce and mitigate the potential impacts to minimal or insignificant levels;
- Detail specific actions deemed necessary to assist in mitigating the environmental impact of the project;
- Identify measures that could optimise beneficial impacts;
- Create management structures that addresses the concerns and complaints of the I&APs with regard to the development;
- Establish a method of monitoring and auditing of environmental management practices during all phases of the development;
- Ensure that safety recommendations are complied with; and
- Specify time periods within which mitigation measures contemplated in the final EMPr should be implemented, where appropriate.

3. Format and structure of report

This EMPr has been compiled in accordance with the requirements of Regulation 23 (4) (Appendix 4) of Government Notice No. R982 (EIA Regulations, 2014) (Republic of South Africa, 2014a).

Table 2: EMPr content

Requirement of the EIA Regulations	*Report compliance*
4 (a) *Details of:* *(i) The EAP who prepared the EMPr; and* *(ii) The expertise of the EAP, including a curriculum vitae;*	Table 1
4 (b) A detailed description of the aspects of the proposed project as identified by the project description;	Section 5
4 (c) A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Figure 1
4 (d) A description of the impact management objectives, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated for all phases of the development including- *(i) Planning and design;* *(ii) Pre-construction activities* *(iii) Construction activities* *(iv) Rehabilitation of the environment after construction and where applicable post closure; and* *(v) Where relevant, operation activities;*	Section 9
4 (e) A description and identification of impact management outcomes required for the identified aspects;	Section 9
4 (f) A description of proposed impact management actions, identifying the manner in which the impact management objectives and outcomes will be achieved, and must, where applicable, include actions to – (i) Avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) Comply with any prescribed environmental management standards or practices; (iii) Comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) Comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable;	Section 9
4 (g) The method of monitoring the implementation of the impact management actions;	Section 9
4 (h) The frequency of monitoring the implementation of the impact management actions;	Section 9
4 (i) An indication of the persons who would be responsible for the implementation of the impact management actions;	Section 9
4 (j) The time period within which the impact management actions must be implemented;	Section 9

4 (k) The mechanism for monitoring compliance with the impact management actions;	Section 9
4 (m) An environmental awareness plan describing the manner in which- *1. The Developer intends to inform his or her employees of any environmental risks which may result from their work; and* *2. Risk must be dealt with in order to avoid pollution or the degradation of the environment*	Section 10

4. Introduction

I-CAT Environmental Solutions (Pty) Ltd was appointed as independent Environmental Assessment Practitioner (EAP) by JCJ Developments (Pty) Ltd to undertake the Environmental Authorisation (EA) process for the proposed development of a fuel station with a convenience store and restaurant on remainder of Portion 25 of the farm Vlakfontein, 523 JR, City of Tshwane Metropolitan Municipality.

The proposed development requires the following authorisations:

- EA in terms of the National Environmental Management Act (NEMA), 1998 (No. 107 of 1998) and the Environmental Impact Assessment (EIA) Regulations, 2014 from the Competent Authority (CA), Gauteng Department of Agriculture and Rural Development (GDARD) (Republic of South Africa, 1998a). The proposed development triggers the following listing notice and respective activity:
    - *Activity 14, GN 983: The development of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic meters or more but not exceeding 500 cubic meters.*
- Integrated Water Use License Application (IWULA) in terms of the National Water Act, 1998 (Act No. 36 of 1998) (NWA) from the CA, Department of Water and Sanitation (DWS) Bronkhorstspruit Office (Republic of South Africa, 1998c).

The EMPr gives effect to Integrated Environmental Management (IEM) as per Section 23 of NEMA. The IEM is enforced by Chapter 5 of NEMA which gives effect to Section 24 of the Constitution and the sustainable development agreements of the Rio Earth Summit, 1992. The purpose of IEM is to promote the application of environmental management tools addressed at achieving integrated environmental management of activities. The EA process of which the EMPr forms part of, is one of the advocated management tools used to achieve integrated environmental management (Department of Environmental Affairs, 2016).

This EMPr has been compiled in terms of Section 24N (2) of NEMA and Appendix 3 of the EIA Regulations, 2014. The EMPr becomes a legally binding document on the Applicant, should

the EA be issued, in addition to other conditions stipulated in the EA/record of decision. The EMPr remains a live document and makes provision for updating and finalisation during the detailed design and planning phase, and incorporation of any comments received during the Public Participation Process (PPP).

5. Nature and location of proposed activities

5.1 Site particulars

Table 3: Location and site particulars

SITE / ERF	Remainder of Portion 25 of the farm Vlakfontein, 523 JR, City of Tshwane Metropolitan Municipality
LOCATION (INCLUDING GPS)	Corner of R25 and Dam Roads, Bronkhorstspruit (GPS: 25°51'29,4"S; 28°42'4,2"E)
FARM	Vlakfontein
PORTION	25
OWNER	Hendry Bendeman
EXISTING INFRASTRUCTURE ON SITE	78 ℓ AST and a guard house.
METROPOLITAN MUNICIPALITY	City of Tshwane Metropolitan Municipality

5.2 Nature

JCJ Developments (Pty) Ltd proposes a development consisting of a fuel station with a convenience store and restaurant on remainder of Portion 25 of the farm Vlakfontein, 523 JR, City of Tshwane Metropolitan Municipality. The site has been previously disturbed by agricultural activities, and 3 107 m^2 of remainder of Portion 25 of the farm consists of a fuel depo with a 78 ℓ AST. Remainder of Portion 25 of the farm containing the fuel depo has been rezoned on 19/01/2016 from "Undetermined" to "Special".

The development site is 17 290 m^2 in extent and the proposed development will consist of a development footprint of 13 747 m^2. The Applicant proposes to install Underground Storage Tanks (UST) comprising of 120 000 ℓ for the storage of fuel at the proposed fuel station containing diesel and petrol tanks. The storage tanks will be installed as per the requirements of SANS 10089-3:2010. The design will meet standard filling station designs, consisting of a forecourt with a canopy and fuel pumps. The fuel station will contain a Vele Café, convenience store, ablution blocks and ATM facilities (Refer to Figure 1).

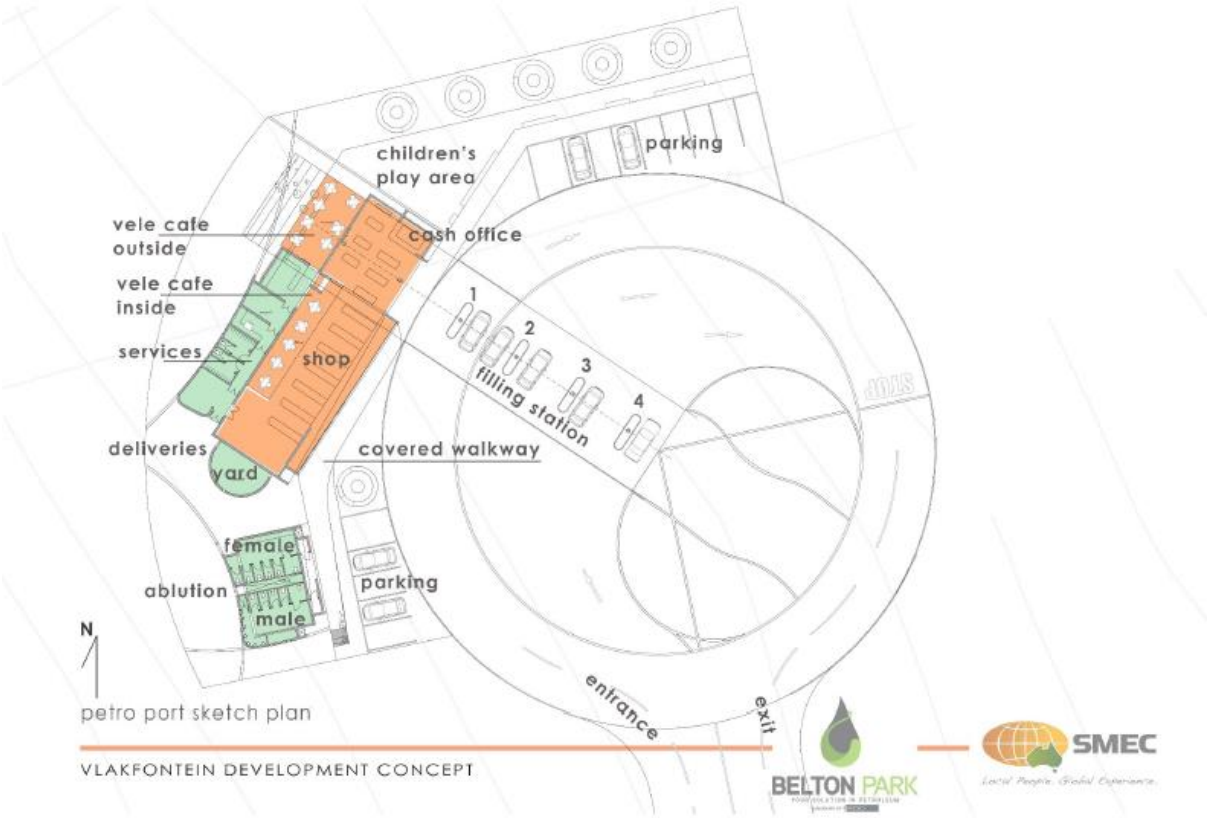

Figure 1: Vlakfontein fuel station

The site context informed the design in terms of architectural language and building placement. Aesthetically the design was informed by the sculptural context (natural and man- made). The placement of the buildings was determined by the position of the existing diesel tank on site and the visibility of the fuel station from the main roads. It is proposed that the fuel station be placed in the north western corner of the site. The services of the buildings are positioned to the west and the public façade is orientated towards the petrol pumps for accessibility purposes.

It is proposed that the development will be served by one primary access point. The primary access is proposed off Dam Road, west of the proposed development (SMEC, 2018b). Refer to Figure 2, for site locality map of the proposed development.

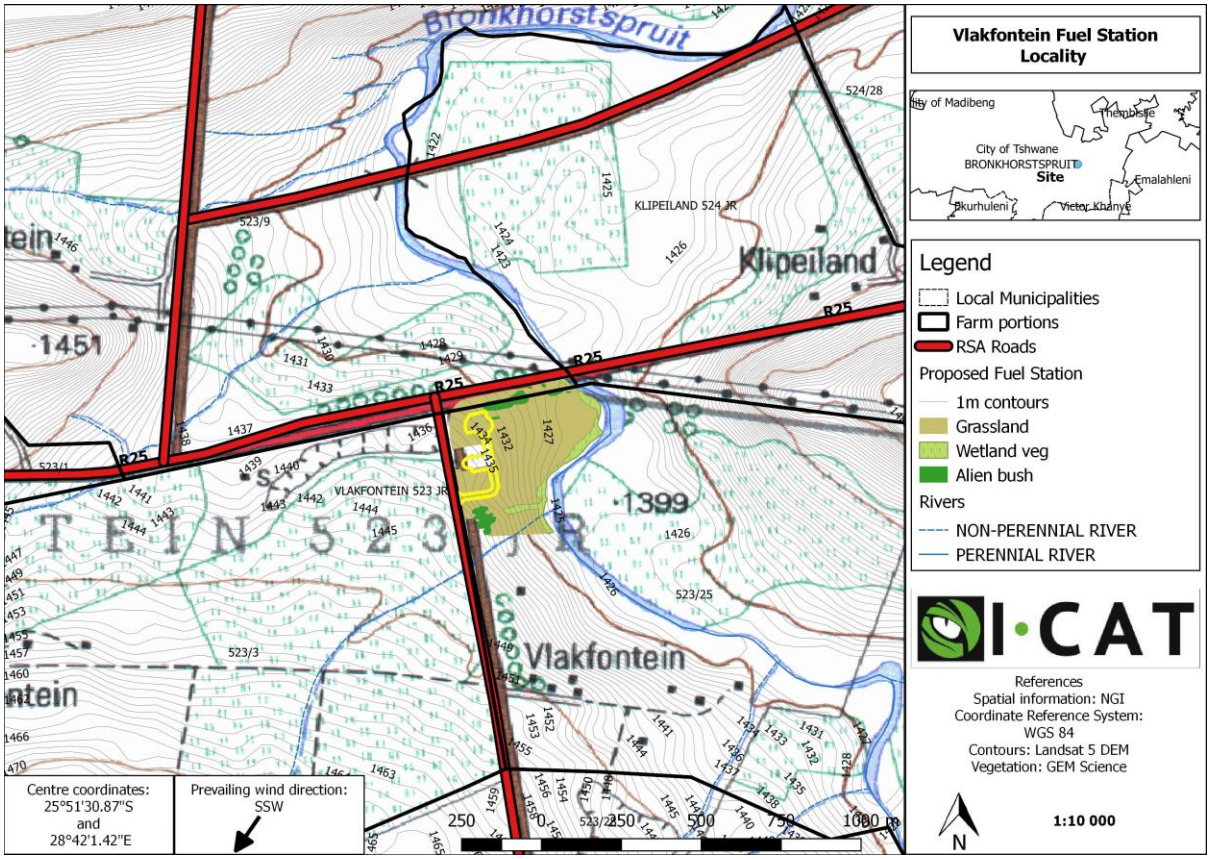

Figure 2: Vlakfontein fuel station site locality map.

The infrastructure requirements at the site include:

- Concrete forecourt and canopy;
- Stand-by generators;
- Pump islands and dispensers;
- Convenience store;
- Restaurant;
- ATM;
- Staff change rooms and first aid facilities;
- Firefighting equipment and facilities;
- JOJO tanks for storage of potable water from existing boreholes (2 x 10 000 ℓ);
- Electricity supply from Eskom;
- Storm water infrastructure and a contamination sump;
- Conservancy tank;
- Rest rooms;

- Paved access roads and parking facilities;
- Site access point (via Dam Road; and
- Underground storage tanks (120 000 ℓ).

5.3 Design and infrastructure

All fuel tanks and pumps will comply with provincial and national legislation, SANS 10089-3:2010 and the proposed development will follow the recommendations of the EMPr during both construction and operational phases. Compliance with said will minimise the probability of adverse environmental and health impacts from occurring on site (MSBR Consulting, 2017).

5.3.1 Tanks

The tank island conforms with SANS 10089-3:2010 (The installation, modification, and decommissioning of USTs, pumps/dispensers and pipework at service stations and consumer installations). The total fuel capacity will be 120 000 ℓ, which will comprise of both diesel and petrol tanks.

The USTs will be situated at a distance from buildings, roadways or other structures as to comply with relevant provisions of SANS 10400. The USTs will consist of glass fibre-reinforced polyester coated steel tanks. Manholes will be of minimum internal diameter to prevent the ingress of surface or groundwater or the leaking of fuel into the surrounding environment. Observation wells will be installed at a vertical position in order to accommodate monitoring procedures (MSBR Consulting, 2017).

5.3.2 Pumping island, dispensers and drainage

Submersible pumps capable of supplying 60 ℓ/min of petroleum will be installed. Fuel dispensers will consist of 6 pumps each containing 1 x 93 unleaded petrol, 1 x 95 unleaded petrol and 1 x diesel on both sides.

Submersible pumps, dispensers and suction pumps will comply with relevant legislation. Each submersible pump will have a leak detector to prevent any environmental pollution. Each dispenser will be fitted with an emergency shut-off valve. Each dispenser and pump will be surrounded by a concreate or brick pump island to protect the base.

All surface areas at the pump island will be paved with concrete to form an impervious layer to prevent any environmental contamination with hydrocarbons (MSBR Consulting, 2017).

5.3.3 Tank gauging system

Each tank will have a connection through which the contents of the tank can be manually or automatically gauged. The tank gauging system will be used for inventory management, leak detection, water contamination and environmental monitoring (MSBR Consulting, 2017).

5.3.4 Storm water management

There is currently no formal storm water infrastructure in the vicinity of the proposed development site. The general drainage pattern of the proposed development is from the west towards the east with the Bronkhorstspruit River on the eastern boundary of the proposed development site (SMEC, 2018a).

5.3.4.1 External/bulk storm water

The City of Tshwane Metropolitan Municipality (COTMM) requires a 5 m storm water servitude on the northern boundary of the development site, alongside the R25 towards the Bronkhorstspruit River. This is to cater for the future storm water runoff from the property once it is developed (SMEC, 2018a).

5.3.4.2 Internal storm water

Bulk storm water pipelines will be constructed to convey storm water runoff from the hardened areas of the proposed development as well as internal and external access roads. Storm water runoff from inlets will be conveyed in a piped drainage system and will discharge in the Bronkhorstspruit River. Energy dissipaters will be used at outlet structures to prevent any erosion. The storm water pipes will be constructed in servitudes along the southern and northern boundary of the development site. Refer to Figure 3 which indicates the positions of pipes 1 -4.

Storm water mentioned above will not include runoff from the filling area which may contain petroleum contaminants. This contaminated runoff will drain to a sump for containment from where it will be collected by a registered hazardous waste water contractor to be disposed of accordingly.

Storm water runoff from the undeveloped areas of the property or catchments upstream of the proposed development will be conveyed underneath the proposed access road through two storm water culverts placed at the low points of these catchments (Catchments D and E as indicated in Figure 3 below).

The internal roads leading to the proposed fuel station will be surfaced and will be designed to act as storm water collectors and conveyors. The vertical alignment of the roads will be designed in order for storm water to be conveyed to the natural low points of the roads and surrounding topography to channel or discharge the storm water into to proposed drainage systems.

An underground storm water drainage system will be constructed to accommodate the minor floods of a 1:2 year storm event, to ensure that road traffic flow is not disrupted by the floods. Major floods that cannot be accommodated in the minor storm water drainage system will be conveyed on the road surface (SMEC, 2018a).

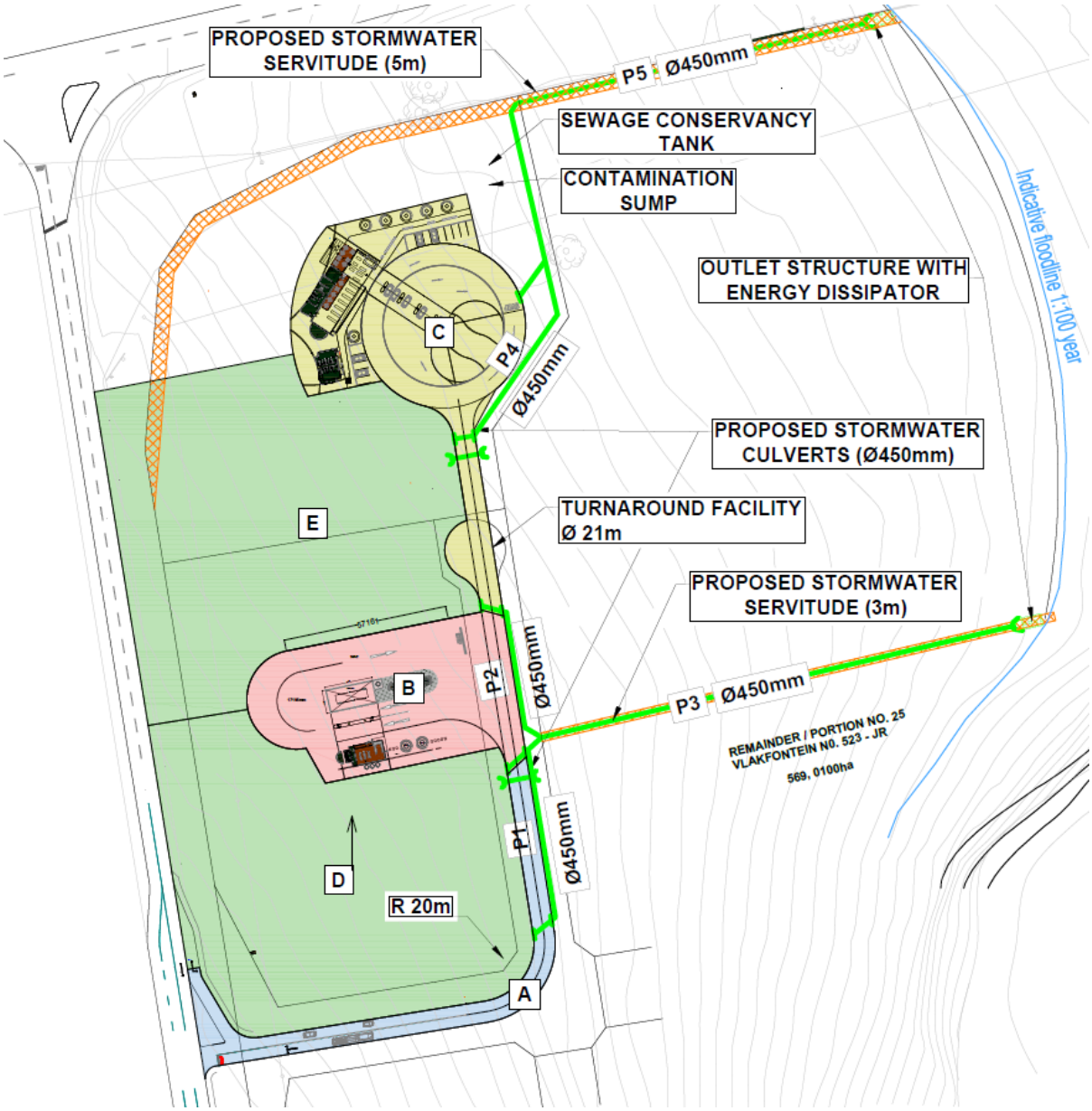

Figure 3: Storm water layout

5.3.4.3 Catchment area

The development site was subdivided into sub-areas A-E, as illustrated in Figure 3 above. Areas A-C are paved areas. Areas D-E is undeveloped areas and will not contribute to change in pre and post developed flow. The run-off coefficient for these areas will therefore not be influenced by development and will not be paved (SMEC, 2018a).

5.3.5 Contamination management

Areas surrounding the tank islands of the filling station may be contaminated with grease, oil, petrol and other hydrocarbon contaminants. These contamination areas include the service area in the vicinity of the fuel pumps as well as the bulk filling areas of the USTs. The floor surface of the contamination areas will be sloped towards grid covered traps which will drain the contaminated water to a holding sump.

The perimeter of the contamination areas will be slightly elevated to prevent storm water from entering the contamination areas. The contaminated water will be removed and taken off site to an approved treatment facility at determined intervals. The holding sump will be designed to retain oil and grease for at least one day until it is removed. Table 4 indicates the estimated contaminated water amounts and the sump size. Refer to Figure 4 below for an indication of the contamination drainage and storage layout (SMEC, 2018a).

Table 4: Contamination generation

Contaminated Location	Area	Estimated contamination generation	Minimum Sump volume (2 days storage)	Suggested Sump size (l x b x d)
Fuel pumps and service area	500 m^2	1.0 ℓ /m^2/day	1.0 m^3	1.5m x 1.5 x 1m 2.25 m^3

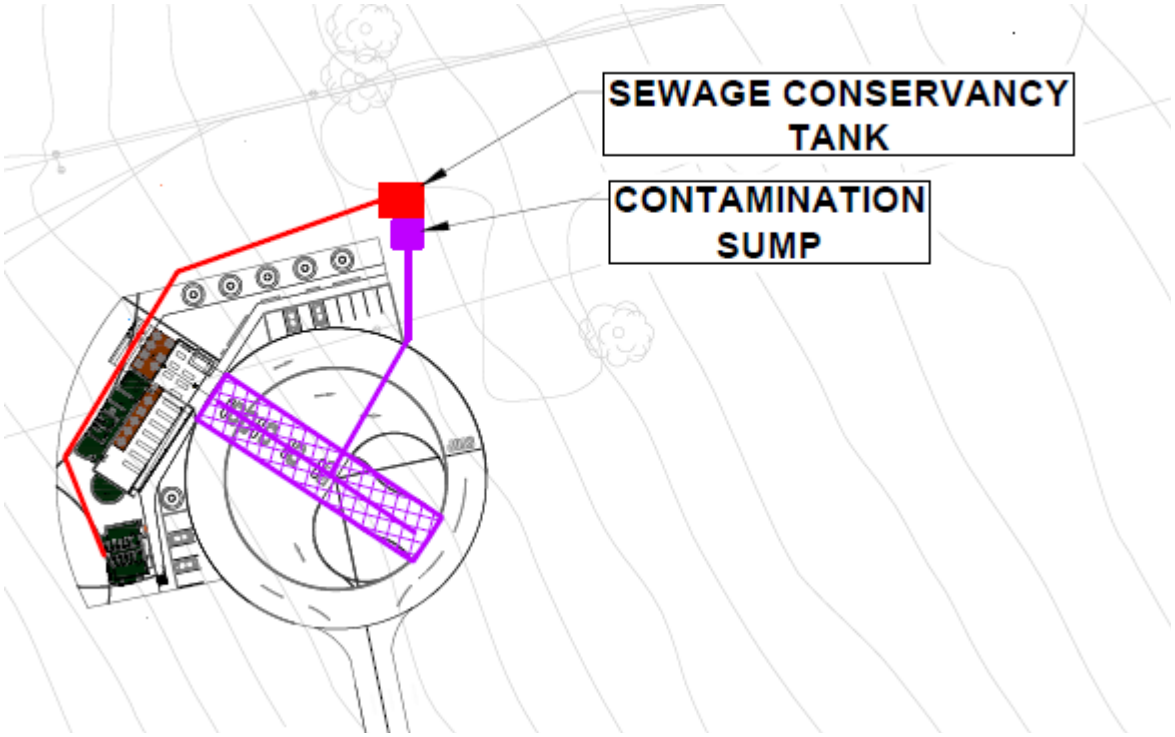

Figure 4: Contamination management layout

5.3.6 Electricity

Electricity to the site is supplied by Eskom (Refer to Annexure A for letter of acceptance).

5.3.7 Water and sanitation

The development site does not have any municipal water or sanitation infrastructure works. Due to a lack in municipal water and sanitation infrastructure groundwater will be utilized for potable use and a conservancy tank will be installed for the purpose of sewerage and waste water disposal (SMEC, 2018a).

5.3.7.1 Sewage

The proposed fuel station will be serviced internally with a gravity sewer pipe and a conservancy tank as illustrated in Figure 5 below. The sewage will be collected on a daily basis by a registered contractor for safe disposal and treatment (SMEC, 2018a).

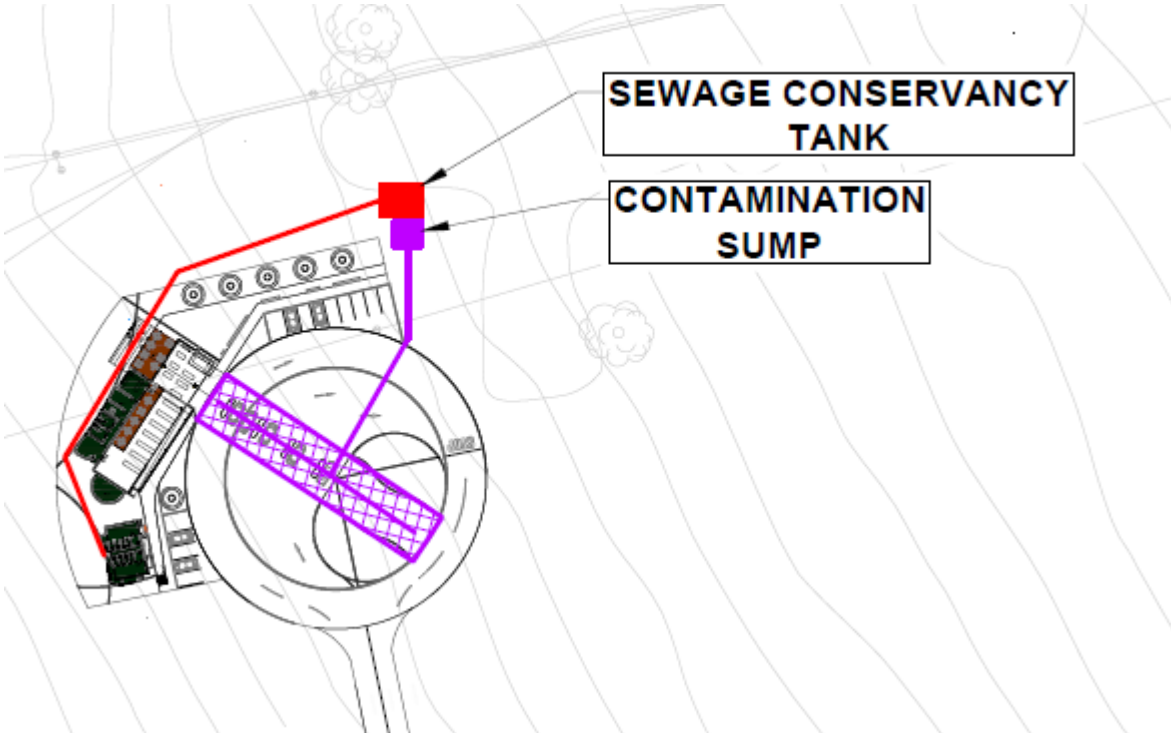

Figure 5: Sewer layout

The estimated sewage flow form the proposed development will be approximately 7,5 kℓ/day. Table 5 below indicates the sewage flow and required conservancy tank specifications (SMEC, 2018a).

Table 5: Sewer flows

Land Use	Area (m2)	Unit Flow	Total Flow	Min required volume of conservancy tank (2 day storage)	Proposed size of Conservancy tank (l x b x h)
Filling Station	750	1 kℓ/100m^2	7500 ℓ/day	15 m^3 15 000 ℓ	4 x 4 x 2 (24 m^3) (0.5 m freeboard depth)

5.3.7.2 Water

The Groundwater Abstraction Assessment conducted by GPT in September 2017 concludes that one borehole is suitable for abstraction as it delivers a yield of 0.75 ℓ/s. It was recommended that an 8 hour pumping cycle with a 16 hour recovery period be implemented on site (Geo Pollution Technologies, 2017; SMEC, 2018a).

The estimated water demand for the proposed development was calculated at 9 kℓ/day. As such a total amount of 18 kℓ/day groundwater storage capacity will be required at the fuel station (Refer to Table 6).

Table 6: Water demand

Land Use	Area (m2)	Unit Flow	Hourly Peak factor	Estimated Water Demand	Required Storage area (48 hours)	Recommended water storage
Filling Station	750	1.2 kℓ/100m2	3.3	9 000 ℓ/day	18 m3 18 000 ℓ	2 x 10 000 ℓ Water tanks

Refer to Annexure B for the water balance consisting of total water abstracted and all water uses in and around the proposed fuel station.

5.3.8 Site access

Access form the R25 on the northern boundary of the development site is prohibited due to Gautrans restrictions. The proposed access will be from the existing Road 02254, Bronkhorstspruit Dam Road, 320 m south of the R25/Dam Road intersection (Refer to Figure 6). The access intersection will be designed as per the Gauteng Department of Transport, Roads and Works' guidelines and standards with an exclusive right turn lane. This access has been approved by earlier for the existing fuel depot (SMEC, 2018a, 2018b).

It is a requirement form the COT that the access road should consist of a turnaround facility at the end of the proposed access road as indicated in Figure 6. The proposed access road will consist of a 7,4 m wide single carriage road. The road will be a Class 4a and will require a minimum road reserve width of 25 m. The portion of the access road after the left turn approaching the truck depo and proposed fuel station will be a Class 4b road with a 20 m road reserve. The road with will remain at 7,4 m (SMEC, 2018a).

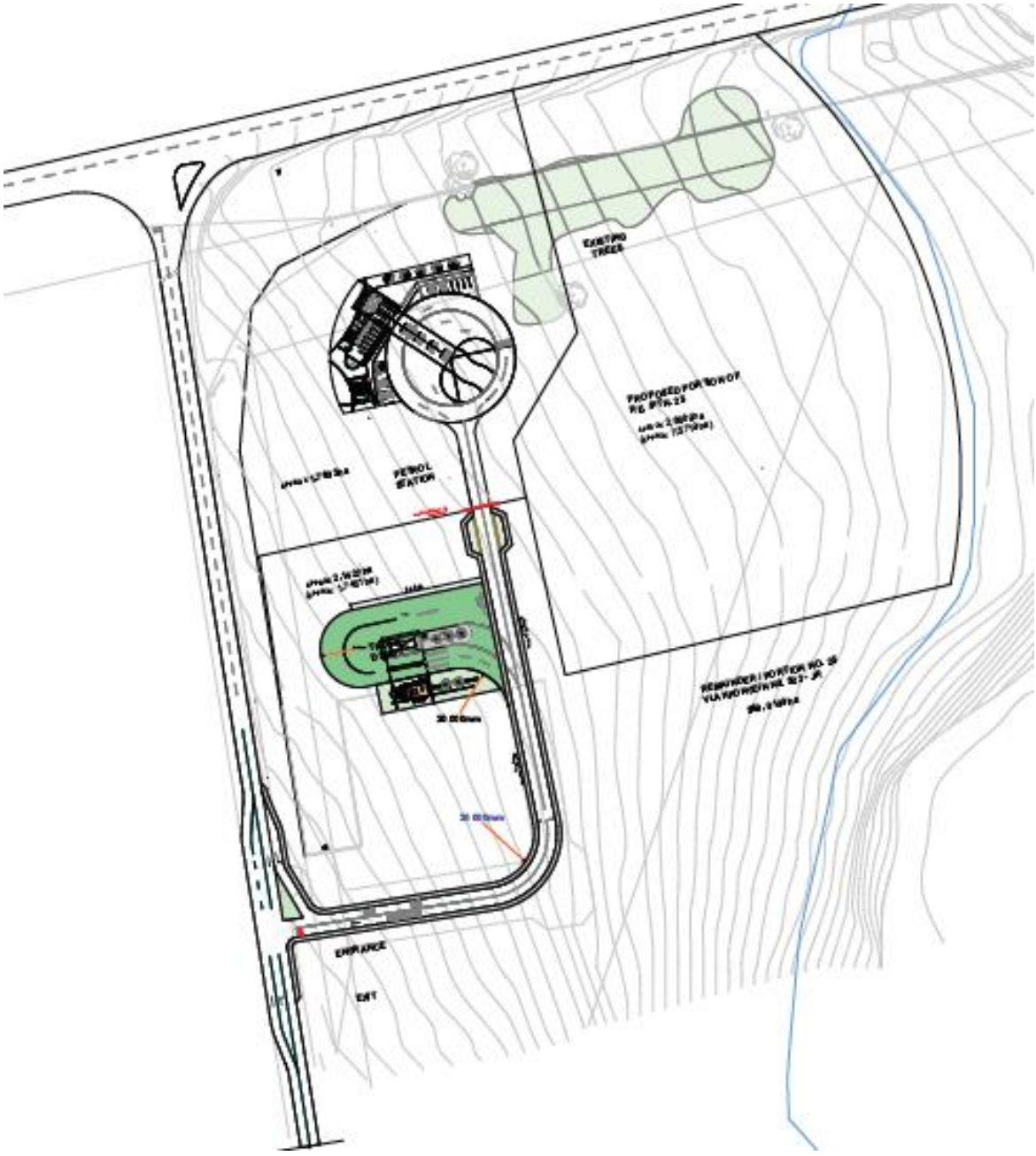

Figure 6: Proposed access

A 120 m exclusive right turn lane including taper on the south approach is proposed as shown in Figure 7 below. The proposed right turn lane will provide additional protection for vehicles accessing the filling station from the south approach. Further to this, a 120 m deceleration lane is proposed from the north approach to comply with the Gautrans Standard (SMEC, 2018b).

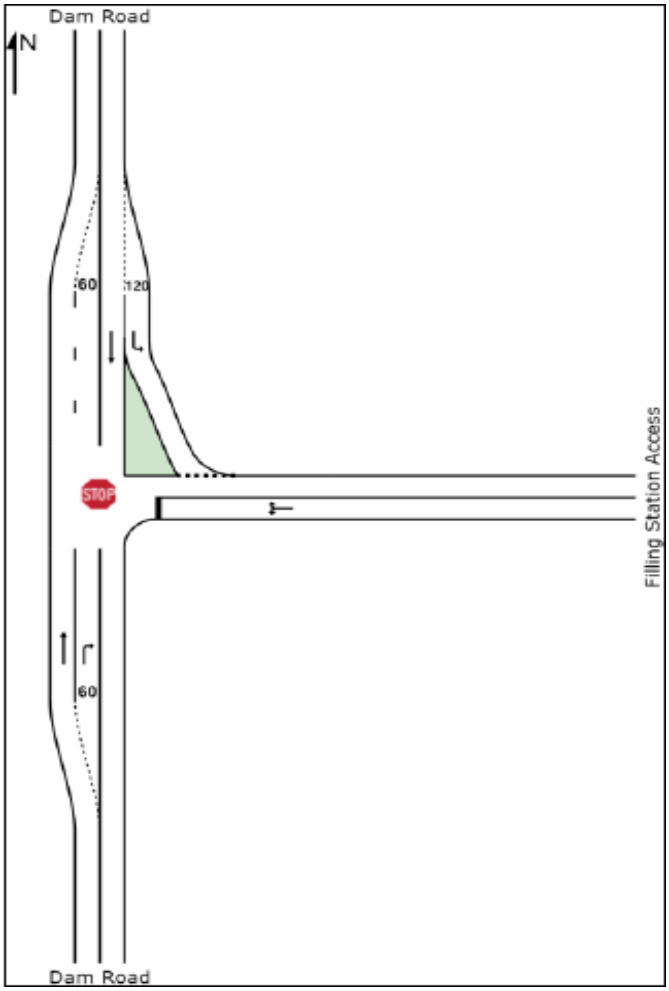

Figure 7: Access layout.

5.4 Service infrastructure

The following service infrastructure is existing or have to be made provision for at the site.

Table 7: Service infrastructure

Electricity
Transmission lines are present at site. Electricity will be provided by Eskom.
Water and Sanitation
Groundwater will be abstracted from a borehole present on site and stored in JOJO tanks for potable and other uses. A conservancy tank will be installed for disposal of raw sewage and domestic waste water which will be removed by a registered contractor for safe disposal and treatment.
Access
The site will be accessed via Dam Road.
Waste Management
Waste disposal contractors for both hazardous and general waste will be appointed to dispose of solid waste at appropriate, registered landfill sites.

6. Implementation of the EMPr

The EMPr details a variety of management measures that will serve to mitigate the scale, intensity, duration or significance of the potential impacts associated with the proposed development.

The EMPr has been compiled to provide recommendations and guidelines according to which compliance monitoring can be undertaken during the construction and operational phases of the proposed development.

The EMPr informs all relevant parties and all other staff employed on site as to their duties in the fulfilment of the legal requirements during all the phases of the proposed development, with particular relevance to the prevention and mitigation of anticipated potential environmental impacts.

6.1 Roles and responsibilities

The Applicant is responsible for the implementation of the EMPr and for internal compliance monitoring of the EMPr. The EMPr will be made binding on all contractors operating on the site and will be included to the official contract documentation of each of the principal contractors to be appointed.

The Applicant must appoint an internal Environmental Site Manger (ESM), to uptake the duties of internal Environmental Control Officer (ECO), who will monitor and facilitate compliance with the EMPr and other conditions of approval as they relate to environmental matters in the construction and operational phase of the development. Details of the management and implementation structures for this EMPr, as applicable to the construction and operational phases showing official communication and reporting lines (including instructions, directives and information), are presented in Figure 8 and Table 8.

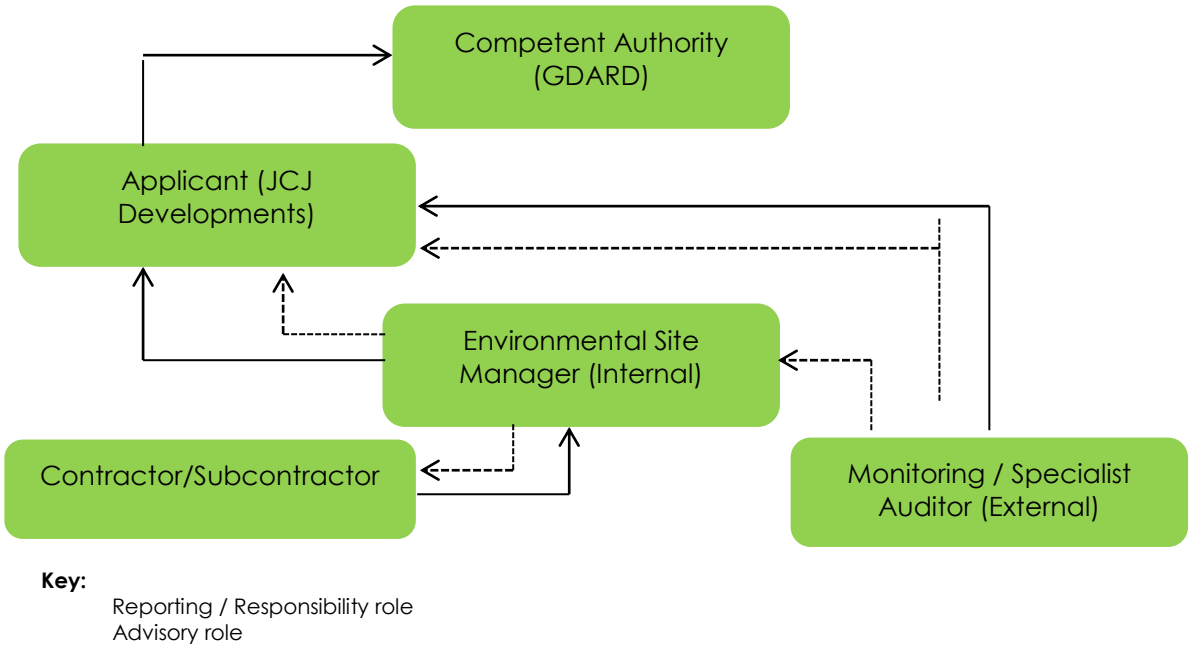

Figure 8: Roles and Responsibilities

Table 8: Roles and responsibilities

Stakeholder / Party	Responsibilities
Competent Authority	GDARD is the authority responsible for: o Authorising the Basic Assessment (BA); o GDARD has the overall responsibility for ensuring that the Applicant complies with the conditions of the EA, and EMPr; o Provide comments on the BAR and EMPr; o Approval of any amendments to the EMPr (if required); and o Performing random site inspections to confirm compliance with all licenses and management thereof.
Applicant	The Applicant must: o Ensure compliance with the EMPr, and conditions of the EA if/when issued by GDARD; o Ensure that all applicable and relevant permits and authorisations are obtained before commencement of construction; o Appoint an internal ESM prior to the commencement of construction activities; o Ensure that there are sufficient resources (financial, time, human) to manage and monitor the environmental impacts related to the construction and operational phases; o Ensure that all contractors are appropriately briefed prior to the commencement of any work on site and that their appointment

	includes environmental requirements as relevant; o Ensure that he/she is kept fully informed of the performance of the project against the requirements of the EMPr, and EA; o Ensure that corrective action is taken to rectify non-compliances according to the EA / EMPr as required; o Ensure that any proposed changes to the operations are communicated in writing to the Authorities and should such changes require amendments to the EA / EMPr it be done accordingly; o Give written notice to GDARD prior to the commencement of construction and operation on site; o Provide any party (as requested / required) with a copy / access to the EMPr, and EA (including monitoring and audit reports); and o Keep hardcopies of the EMPr, and EA on site at all times.
Environmental Site Manager (Internal)	The ESM's responsibilities include the following: o Facilitation and monitoring (weekly) of of compliance with the EMPr requirements, including the EA conditions; o Act as an advisor to the construction contractor on environmental issues during preparation and construction; o Training of staff and contractors, and to raise awareness on environmental requirements and aspects relating to the site and onsite activities; o Record keeping of environmental incidents/issues on site; o Upkeep of complaints register; o Ensure that all environmental incidents reported are dealt with timeously and effectively; o Completing start-up and site closure checklists; o Completing a monthly summary report detailing levels of compliance; and o Keeping a photographic record of progress on site from an environmental perspective for the ECO (external).
Contractor	Contractors are required to: o Prepare site specific method statements in line with the EMPr, and conditions of the EA (as required); o Be conversant with the requirements of the EMPr, and EA; o Brief workers regarding any environmental requirements; o Bear the costs of any damages/ compensation resulting from non-adherence

	to the EMPr or written site instructions (as specified in the contractor agreement); o Comply with all applicable legislation; o Keep record of any complaints raised by the public and record any comments and responses, in response to the complaints; o Inform the ESM of any incidents or complaints received; and o Conduct all activities in a manner that minimises disturbances to and impacts on the environment and surrounding residents.
Monitoring/Specialist Auditor /Environmental Control Officer (ECO) (External)	o Facilitation and monitoring of EMPr requirements and EA conditions; o Keeping a photographic record of progress on site from an environmental perspective; o Conduct regular site visits (as stipulated in the EA and EMPr) during the construction and operational phase to be able to report and respond to any environmental issues; o Report compliance and non-compliance issues to the CA as applicable; o Advise the Applicant on environmental issues; o Review incidents records that may pertain to the environment and reconcile the entries with the observations made during site inspection, monitoring and auditing; o Recommend corrective actions when required for aspects of non-compliance with the EMPr, and EA; and o Compile annual audit reports for submission to the CA as per the EA conditions.

7. Key legislation relevant to the project

All management and mitigation measures stipulated in the EMPr must comply with relevant national and provincial legislation, and regulations. Section 28 of NEMA places a duty of care on all individuals in terms of the protection of the environment, prevention of pollution and mitigation of negative environmental impacts. Table 6 lists the key legislation which has relevance to the proposed development. It should be noted that only the most relevant legislation is listed in the table below, and does not exempt parties from complying with any other legislation that may have relevance to this project.

Table 9: Legislative framework

ACT, POLICY, REGULATION, BY-LAW	SECTION / REGULATION	DESCRIPTION	APPLICABILITY TO THE ACTIVITY
Constitution of the Republic of South Africa (Act no. 108 of 1996) [as amended]	S 24	*"Everyone has the right-* *(a) To an environment that is not harmful to their health or well-being; and* *(b) To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that-* *(i) Prevent pollution and ecological degradation;* *(ii) Promote conservation; and* *(iii) Secure ecologically sustainable development and use of natural resources while promoting a justifiable economic and social development"* (Republic of South Africa, 1996).	The Applicant has the overall responsibility to prevent pollution and ecological degradation throughout the life cycle of the project and to protect the environment for the benefit of natural resources for present and future generations. All stages of the project will be managed in accordance with a detailed EMPr as well as the conditions of the relevant authorisations/ permits. The objectives of the EMPr are to: Ensure compliance with regulatory authority stipulations and guidelines which may be local, provincial, national and/or international; Ensure that there are sufficient allocation of resources on the project budget so that the scale of EMPr related activities (mitigation measures) are consistent with the significance of the project's impacts; Verify environmental performance through information on impacts as they occur; Respond to unforeseen events;

			Provide feedback for continual improvement on environmental performance; Identify a range of mitigation measures which could reduce and mitigate the potential impacts to minimal or insignificant level; Detail specific actions deemed necessary to assist in mitigating the environmental impacts of the project; Identify measures that could optimise beneficial impacts; Create management structures that addresses the concerns and complaints of the I&APs with regards to the development; Establish a method of monitoring and auditing of environmental management practices during all phases of the development; Ensure that safety recommendations are complied with; and Ensure to keep to specific time periods within which the measures contemplated in the final EMPr should be implemented, where possible.
National Environmental Management Act 107 of 1998 (NEMA) and the Environmental Impact Assessment Regulations (2014) (as amended)	S28 S24	NEMA places a general duty of care on any person who causes pollution, to take reasonable measures to prevent such pollution from occurring. Section 24 provides for environmental authorisations. The environmental impact of listed activities has to be considered, investigated, assessed and reported to the competent authority (CA). No person may commence with an identified activity without prior Environmental Authorisation from the CA (Section 24F).	The Applicant has the overall responsibility to prevent pollution throughout the life cycle of the project. All stages of the project will be managed in accordance with a detailed EMPr as well as the conditions of the relevant authorisations/permits. The Applicant is undertaking a Basic Assessment Environmental Authorisation Process in accordance with the requirements defined in the EIA Regulations (2014). Should the CA issue the EA, the Applicant shall ensure compliance with the conditions and requirements of the EA and EMPr. The conditions of the EA shall be included into the

			Final EMPr.
National Heritage Resources Act, 1999 (No. 25 of 1999)	S5 S6 S34 S35 S36 S38	General principles for heritage resources management. Principles for management of heritage resources. Structures. Archaeology, paleontology and meteorites. Burial grounds and graves. Heritage resources management (Republic of South Africa, 1999).	The Applicant has the responsibility to manage and conserve the national estate including archaeology, paleontology, meteorites, structures and burial grounds and graves. During construction all operations should be halted should any of the said heritage resources be encountered.
National Environmental Management: Air Quality Act 39 0f 2004 (NEM:AQA)	S27 S 32 S 34 S35	Use and prohibition of controlled fuels. Control of dust. Control of noise. Control of offensive odors (Republic of South Africa, 2004a).	The Applicant must comply with the relevant standards, regulations and requirements of NEM:AQA relating to the sale of controlled fuels, dust pollution, noise pollution and offensive odors.
National Dust Control Regulations, 2013 (GN 827)	S 3 S 6	Dust fall standard. Measures for control of dust (Republic of South Africa, 2013a).	Dust generated during the construction phase of the proposed development must be managed and controlled in accordance with the requirements of these regulations.
National Noise Control Regulations, 1998 (PN 627)	S 3 S4 S5	General prohibition. Prohibition of disturbing noise. Prohibition of noise nuisance (Republic of South Africa, 1989).	The Applicant must ensure that noise pollution during all phases of the proposed development is avoided and managed as far as practically possible. The Applicant must ensure that no construction equipment is used outside of the stipulated hours as per these Regulations.
National Water Act, 1998 (Act No. 36 of 1998) [as amended]	S 19	Prevention of and remedying effect of pollution.	The responsibility of the protection of water resources lies with the Applicant. The contamination of storm water, surface water

	S20 S21	Control of emergency incidents. Water use (Republic of South Africa, 1998c).	and groundwater must be avoided. Discharge into the natural environment must be in accordance with the relevant allowable limits. The Applicant will apply for an Integrated Water Use Licence (IWUL) in terms of this Act for the following activities: (a) - Taking water from a water resource; (g) - Disposing of waste in a way that can detrimentally impact on a water resource. Should the Competent Authority issue the IWUL the Applicant must ensure compliance with the conditions stipulated in the Licence.
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) [as amended]	S 16 S17 S 22 S26 S27	General duty in respect of waste management. Reduction, re-use, recycling and recovery of waste. Storage of general waste. Prohibition of unauthorized disposal. Littering (Republic of South Africa, 2008).	Waste activities (generation, storage, recycling, re-use, recovery and disposal) during all phases of the proposed development must be managed according to the requirements of NEM:WA and its Regulations.
Waste Classification and Management Regulations 2013 (R 634)	S5 S6 S7 S10	Safety datasheets. Waste management: General. Waste treatment. Records of waste generation and management.	The Applicant must ensure compliance with the requirements of these Regulations by managing all wastes as per the Regulations. Safety data sheets (SDS) must be prepared for all hazardous waste as stipulated in these Regulations as relevant.

	S13	Offenses and penalties (Republic of South Africa, 2013c).	
National Norms and Standards for the Storage of Waste 2013 (R. 926)	S5 S7 S8 S9 S10 S11 S13 S14 S15 S18 S19	Registration. Construction and design. Access and notices. Operation. General requirements storage containers. Minimum requirements for aboveground storage facilities. Training. Emergency preparedness plan. Monitoring and inspection. Reporting. Records (Republic of South Africa, 2013b).	The Applicant must comply with the requirements of these Norms and Standards for storage of all wastes on site (as relevant).
Veld and Forest Fire Act, 1998 (No. 25 of 1998)	S12 S13 S17 S18	Duty to prepare and maintain firebreaks. Requirements for firebreaks. Readiness for firefighting. Actions to fight fires (Republic of South Africa, 1998b).	The Applicant will ensure compliance with the requirements of this Act by obtaining the necessary firefighting equipment and protective clothing. The Applicant will ensure that all staff is trained in the case of a fire emergency as per Section 17 of the Act.
Hazardous Substances Amendment Act, 1992 (No.53 of 1992)	S2	Declaration of grouped hazardous substances.	The Applicant must ensure to handle, sell and store hazardous substances during the construction and operational phases in

	S3 S4 S16	Sale of Group I and Group III, and letting, use, operation, application and installation of Group III hazardous substances. Licensing. Liability of employer or principle (Republic of South Africa, 1992).	accordance with this Act.
Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) (OHSA) [as amended]	S8 S9 S13 S14	General duties of employers to their employees. General duties of employers and self-employed persons to persons other than their employees. Duty to inform. General duties of employees at work (Republic of South Africa, 1993).	It is the responsibility of the Applicant to provide for the health and safety of persons at work and for the health and safety of persons on site, the protection of persons other than persons at work, against hazards to health and safety arising out of or in connection with the activities of persons at work. All employees and contractors must be informed of the hazards attached to their health and safety with regards to any work performed. Necessary training and induction must be conducted at regular intervals.
National Environmental Management: Biodiversity Act, 2004 (No. 10 of 2004)	S52 S57 S65 S69 S71 S73 S75	Ecosystems that are threatened or in need of protection. Restricted activities involving listed threatened or protected species. Restricted activities involving alien species. Duty of care relating to alien species. Restricted activities involving listed invasive species. Duty of care relating to listed invasive species. Control and eradication of listed invasive species (Republic of South Africa, 2004b).	The Applicant must ensure to protect biological diversity within the Republic of South Africa and eradicate and manage alien invasive species as per this Act.

National Environmental Management :Biodiversity Act: Alien and Invasive Species Regulations R598 of 2014	S2 S3 S4 S5 S6	Category 1a Listed Invasive Species. Category 1b Listed Invasive Species. Category 2 Listed Invasive Species. Category 3 Listed Invasive Species. Restricted activities (Republic of South Africa, 2014b).	The Applicant will ensure compliance with these Regulations by managing and eradicating Invasive species as per the Regulations.
Promotion of Access to Information Amendment Act, 2002 (Act No. 2 of 2000)	S 9	Objectives of the Act (Republic of South Africa, 2000).	It is the responsibility of the Applicant to give effect to the constitutional right of access to any information as required.
Hazardous Chemical Substances Regulations, 1995 (GN 1179)	S 3 S 4 S 5 S9 S 9A S10 S 11 S 12 S14 S 15	Information and training. Duties of persons who may be exposed to hazardous chemical substances. Assessment of potential exposure. Records. Handling of hazardous chemical substances. Control of exposure to hydrocarbons. Personal protective equipment and facilities. Maintenance and control measures. Labelling, packaging, transportation and storage. Disposal of hazardous chemical substances (Republic of South Africa, 1995).	Hazardous substances will be stored and utilized on site and the Applicant must ensure that these chemicals are stored, handled and disposed of in the correct manner as to avoid environmental and health impacts from occurring. An emergency management plan must be kept up to date and readily available.
City of Tshwane	S 22 (1)	Littering.	The Applicant must ensure to prevent any form

Metropolitan Municipality Solid Waste By-Laws	S 23 (1)	Dumping and abandoning (City of Tshwane Metropolitan Municipality, 2016).	of littering, dumping or abandoning of waste as per this municipal By-law in association with the NEM:WA.

8. Affected environment and anticipated environmental impacts

The proposed site is surrounded by the following (See Figure 12 below):

North: The R25 and disturbed land, used for agricultural activities. Beyond this lies the Bronkhorstspruit River.

East: Bronkhorstspruit River. Beyond the Bronkhorstspruit River lies agricultural land.

South: A fuel depo with a 78 ℓ AST. Beyond this lies agricultural land and a residential area.

West: Dam Road. Beyond the informal road lies agricultural land.

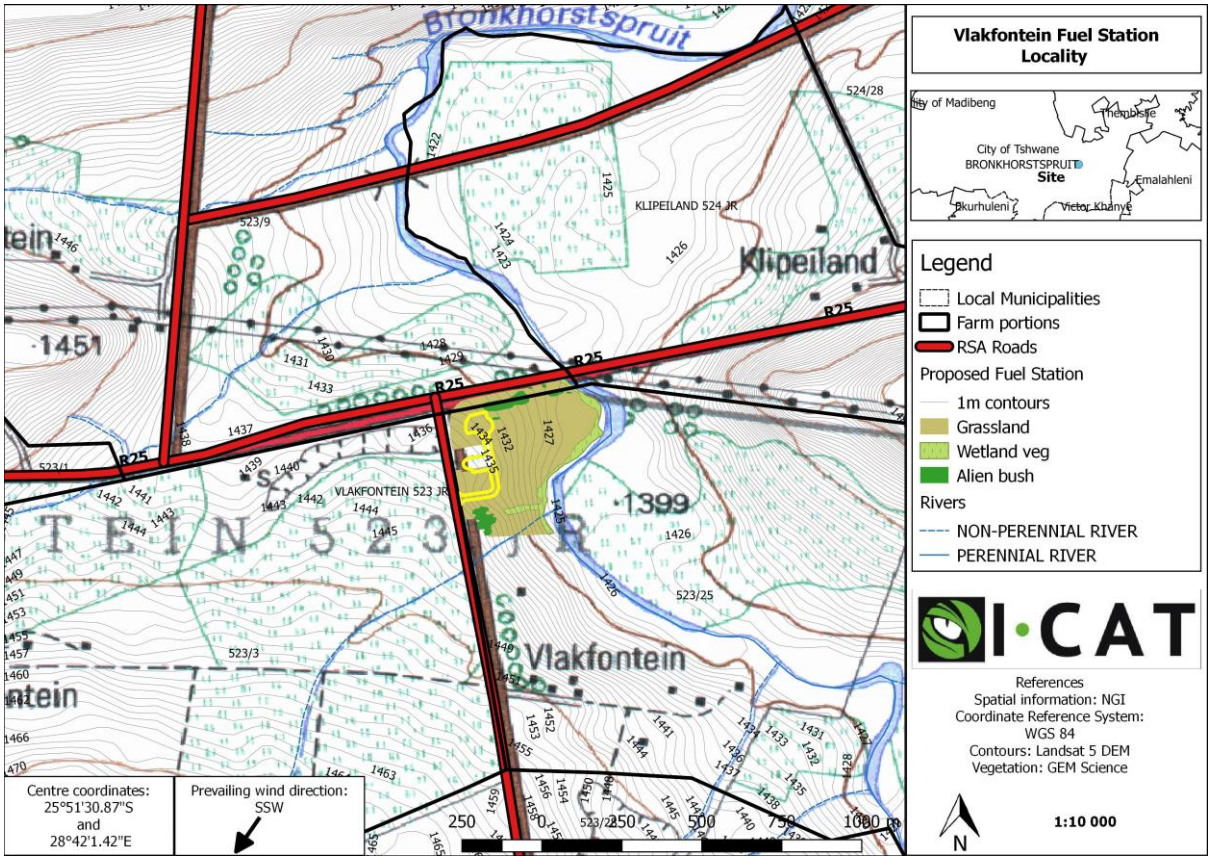

Figure 9: Locality map and surrounding land use

The potential impacts resulting from the proposed development were identified using input from the following:

- Developer;
- Technical Engineering Information;
- Specialists;
- Pre-Application Meeting with GDARD;
- Literature reviews;

- Applicant;
- Town Planner;
- Interested & Affected Parties
- Site visit; and
- Relevant legislation.

The physical, biological, social, economic and cultural aspects of the environment could be affected by various activities associated with the operations which may result in the following potential impacts:

- Water quality and quantity (-)
- Soil quality (-)
- Air pollution (dust pollution and other emissions) (-)
- Waste (-)
- Noise pollution (-)
- Aesthetic quality (-)
- Health and safety (-)
- Socio-economic (+)
- Traffic (-)
- Biodiversity (-)

Table 10: Construction phase impacts (Preferred alternative)

Construction Phase Impact Ratings											
Aspect	**Extent**	**Magnitude**	**Duration**	**Probability**	**Reversibility**	**Irreplaceable loss of resources**	**Mitigation**	**Confidence**	**Cumulative**	**Significance pre-mitigation**	**Significance post-mitigation**
Soil Quality											
Contamination through the accidental spillage of petroleum/ hydrocarbon products, or waste on site	Site	Low	Short term	Possible	Reversible	Low	High	Sure	Medium	Low (-)	Very Low (-)
Compaction of the soil surface due to heavy machinery.	Footprint	Short term	Long term	Definite	Reversible	Low	Medium	Certain	Low	Low (-)	Low (-)
Soil erosion and loss of topsoil due to vegetation clearance during the construction phase.	Site	Medium	Short term	Probable	Reversible	Low	Low	Certain	Low	Low (-)	Very Low (-)

Water Quality/Quantity											
Impact on the groundwater levels due to ground water abstraction from boreholes	Local	Medium	Short term	Probable	Reversible	Low	High	Certain	Medium	Medium (-)	Low (-)
Increase in the velocity of storm water run-off across the site due to vegetation clearance.	Site	Medium	Short term	Definite	Reversible	Low	High	Certain	Medium	Low (-)	Low (-)
Siltation of natural water bodies due to soil erosion	Site	Low	Short term	Possible	Reversible	Low	High	Certain	Low	Low (-)	Very Low (-)
Possible accidental spillages and Incorrect handling of construction materials, general and hazardous waste and hazardous materials may enter into the stormwater/ Bronkhorstspruit/	Site	Medium	Short term	Possible	Reversible	Low	High	Certain	Low	Low (-)	Very Low (-)

groundwater.											
Biodiversity											
Vegetation clearance, and faunal displacement, and habitat loss	Site	Low	Long term	Definite	Irreversible	Medium	Medium	Certain	Medium	Medium (-)	Low (-)
Waste											
Generation, storage, handling and disposal of general, hazardous and building rubble waste on site	Site	Low	Short term	Definite	Reversible	Low	High	Certain	Low	Very Low (-)	Very Low (-)
Noise											
Increase in noise levels during construction activities	Site	Low	Short term	Probable	Reversible	Low	High	Certain	Low	Very low (-)	Very Low (-)

Air quality											
Increased dust emissions due to material handling during the construction phase	Site	Low	Construction phase	Definite	Reversible	Low	Medium	Certain	Low	Low (-)	Very Low (-)
Health and Safety											
Environmental emergencies occurring on-site.	Site	Medium	Construction phase	Possible	Reversible	Low	High	Certain	Low	Low (-)	Very Low (-)
Fire and chemical exposure during construction activities	Site	High	Construction phase	Unlikely	Reversible	Medium	High	sure	Low	Low (-)	Very Low (-)
Aesthetic Quality											
Lack of housekeeping and waste management during construction activities	Site	Low	Construction phase	Probable	Reversible	Low	High	Certain	Low	Very low (-)	Very Low (-)
Traffic											
Increase in traffic due to construction activities	Site	Low	Construction phase	Probable	Reversible	No Loss	High	Certain	Low	Very low (-)	Very Low (-)
Social – economic development											
Local jobs and skills development during the	Local	Medium	Construction phase	Definite	N/A	No Loss	N/A	N/A	N/A	Medium (+)	N/A

construction phase											

Table 11: Operational phase impacts (Preferred alternative)

Operational Phase Impact Ratings											
Aspect	**Extent**	**Magnitude**	**Duration**	**Probability**	**Reversibility**	**Irreplaceable loss of resources**	**Mitigation**	**Confidence**	**Cumulative**	**Significance pre-mitigation**	**Significance post-mitigation**
Soil Quality											
Contamination of soil through disposal of general or hazardous waste or accidental spillages of petroleum products or other hazardous substances on site	Site	Medium	Medium term	Possible	Reversible	Low	Medium	Certain	Low	Medium (-)	Low (-)
Contamination of soil due to tank failure.	Site	High	Medium term	Unlikely	Reversible	Medium	Medium	Sure	Medium	Medium (-)	Low (-)

Water Quality											
Impact on the groundwater levels due to water abstraction from boreholes.	Local	Medium	Medium term	Possible	Reversible	Low	Medium	Certain	Medium	Medium (-)	Low (-)
Contamination of ground and surface water resources due to tank failure.	Local	High	Medium term	Unlikely	Reversible	Medium	Medium	Sure	Medium	Medium (-)	Low (-)
Impacts on surface water (river) quality due to dirty water run-off from the site operations	Local	Medium	Medium term	Possible	Reversible	Low	High	Certain	Low	Low (-)	Very Low (-)
Increased velocity of storm water runoff due to impermeable paved surfaces	Site	Medium	Long term	Definite	Reversible	Low	Medium	Certain	Low	Medium (-)	Low (-)
Possible accidental spillage and incorrect handling of general and hazardous waste and	Site	Medium	Medium term	Possible	Reversible	Low	High	Certain	Low	Low (-)	Very Low (-)

other hazardous materials.											
Waste											
Generation, storage, handling and disposal of general and hazardous waste on site	Local	Medium	Medium term	Definite	Reversible	Low	Medium	Certain	Low	Medium	Low (-)
Noise											
Increase in noise levels during operational phase	Site	Low	Long term	Probable	Reversible	No Loss	High	Certain	Low	Low (-)	Very Low (-)
Health and Safety											
Environmental emergencies occurring on-site.	Site	Medium	Construction phase	Possible	Reversible	Low	High	Certain	Low	Low (-)	Very Low (-)
Fire and chemical exposure	Site	High	Medium term	Possible	Reversible	Medium	High	Certain	Low	Medium (-)	Low (-)
Aesthetic Quality											
Reduction of natural aesthetic	Site	Low	Medium term	Possible	Reversible	Low	High	Certain	Low	Very low (-)	Very Low (-)

quality/value of the site and surroundings											
Traffic											
Possible increase in traffic	Site	Low	Long term	Probable	Reversible	No Loss	High	Certain	Low	Low (-)	Very Low (-)
Social – economic development											
Economic injection into the municipal area.	Local	Medium	Medium term	Probable	N/A	No Loss	N/A	N/A	N/A	Medium (+)	N/A
Job and skills development to surrounding local communities	Local	Medium	Medium term	Definite	N/A	No Loss	N/A	N/A	N/A	Medium (+)	N/A

9. Management specifications and mitigation measures

9.1 Construction Phase

This EMPr is specific to the proposed development. The proposed environmental management and mitigation measures for the construction phase are collated in Table 12 – 19 below.

9.1.1 Soil quality

Table 12: Soil quality mitigation and management measures

Legislative requirements		NEMA S28 ,NEM:WA S16, & S27				
Objectives		Avoid soil contamination. Avoid soil erosion. Avoid soil compaction.				
Performance indicators		Zero spillages/waste contaminating soil on site. Minimal loss of topsoil.				
Aspect / Impact	**Significance Pre-mitigation**	**Mitigation and Management Measures**	**Significance Post-mitigation**	**Time period for implementation**	**Monitoring frequency and (responsibility)**	**Reporting: frequency, (responsibility) and requirements**
Soil Quality Contamination through the accidental spillage of hazardous substances, or waste on site.	Low (-)	**General** 1. All hazardous substances shall be stored within a demarcated area on site. 2. The hazardous substances storage area should be locked when not in use and equipped with adequate health safety signage, as required by relevant legislation and regulations. 3. All hazardous substances must be recorded in a hazardous material register. 4. All hazardous substances must be stored in accordance with their SDS requirements. 5. All hazardous substances shall be stored in containers with lids, which are kept firmly shut to avoid spillage. 6. All containers must be kept in such a condition as to be reasonably safe from damage and to prevent leakage. 7. A SDS for all hazardous materials e.g. paints, thinners, oils, etc. must be kept on site and updated regularly. 8. Where bunds are used (if applicable), they should be able to contain 110 % of the	Very Low (-)	Immediately	Weekly (ESM)	Monthly internal compliance reporting (ESM) Monthly external compliance reporting (ECO). Upkeep of hazardous substances register (ESM).

		volume of the substance stored in the event spillages should occur. The bund should be fitted with a drainage control valve which is to remain closed except when the bund is being emptied. 9. Temporary storage of hazardous waste must be avoided insofar possible. 10. A designated bin for all hazardous waste must be made available on site. 11. Cement must be stored in appropriate structures with impermeable flooring. 12. Underground storage tanks must be inspected by an engineer before installation.				
		Handling and decanting 1. All excess hazardous chemicals, hydrocarbons and contaminated containers must be removed and collected by a certified hazardous waste removal company and disposed at a certified hazardous waste disposal site (if applicable). A safe disposal certificate should be issued on disposal. 2. Should decanting be necessary the spill precaution as recommended on the SDS must be adhered to. 3. Decanting of liquids will only be done over drip trays. 4. Containers into which decanting is being done must be of the same material as the original substance container. 5. PPE as recommended on the SDS must be used when decanting hazardous substances.		As required	Weekly visual inspections (ESM)	N/A
		Spillage incidents 1. Development and implementation of emergency procedures to respond to the spillage of hydrocarbon based chemicals. 2. Hazardous chemical spill kits should be present and accessible on site at all times. 3. All construction materials prone to spillage are to be stored on appropriate structures with impermeable flooring. 4. All hazardous material spills must be cleaned up immediately. Where spills occur, compromised soil/vegetation shall be treated		As required	Weekly visual inspections (ESM)	N/A

		as hazardous waste and disposed of accordingly. 5. A register in which a record is maintained of the volume, nature, location, date, time and the clean-up action in the event of a spillage incident is to be kept on site. 6. All construction vehicles, machinery and equipment must be maintained to prevent leaks. 7. Vehicles and machinery have to be repaired and serviced over drip trays. 8. Portable toilet facilities should be inspected once a week to prevent leakage or spillages into the natural environment.				
Physical soil characteristics Compaction of the soil surface due to heavy machinery.	Low (-)	**Soil compaction** 1. No heavy machinery should be allowed on natural areas that fall outside the proposed development footprint.	Low (-)	Immediately	Daily visual inspections (ESM)	Monthly internal compliance reporting (ESM). Monthly external compliance reporting (ECO).
Soil erosion Soil erosion and loss of topsoil due to vegetation clearance during the construction phase.	Low (-)	**Soil erosion** 1. Temporary storm water canals and cut-off trenches should be erected to adequately divert water away from the construction site and activities. 2. Netting should be erected around the construction site to prevent wind erosion. 3. Top soil and sub-soil stockpiles should be kept separated and adequately covered with geotextile liners to prevent it from eroding. 4. Construction schedules should be prepared to indicate when specific areas may be cleared for construction. 5. The top 20 cm of top soil should be preserved for rehabilitation and landscaping purposes. 6. Vegetation clearing should be limited to areas that will be developed. 7. The extent of exposed soils at any one time should be limited.	Very Low (-)	Immediately	Daily visual inspections (ESM)	Monthly internal compliance reporting (ESM). Monthly external compliance reporting (ECO).

9.1.2 Water quality/quantity

Table 13: Storm water, surface water and groundwater quality/quantity mitigation and management

Legislative requirements		NEMA S28; NWA S19, S20; NEM:WA S16 & 27				
Objectives		Prevent contamination of clean storm water run-off from the site to prevent pollution of the receiving environments. Prevent localised flooding on site by ensuring that the storm water infrastructure are not impeded e.g. through sediment build up and debris and remains functional. Prevent surface water and ground water contamination. Prevent excessive drawdown of the groundwater reserve.				
Compliance indicators		Stormwater infrastructure is visibly free of significant litter, sediment, oil, paint residues and other contaminants. The quality of the stormwater is in line with the relevant water quality limits. Surface and groundwater quality meets the national monitoring requirements and limits. Zero spillages on site. Water abstraction volumes aligns with the limits stipulated in the IWUL.				
Aspect / Impact	**Significance Pre-mitigation**	**Mitigation and Management Measures**	**Significance Post-mitigation**	**Time period for implementation**	**Monitoring frequency and (responsibility)**	**Reporting: frequency, (responsibility) and requirements**
Storm water/ surface water and ground water quality Possible accidental spillages and incorrect handling of construction materials, general and hazardous waste. Hazardous materials may enter the stormwater/ Bronkhorstspruit/ groundwater	Low (-)	**General** 1. All hazardous substances shall be stored within a demarcated area on site. 2. The hazardous substances storage area should be locked when not in use and equipped with adequate health safety signage, as required by relevant legislation and regulations. 3. All hazardous substances must be recorded in a hazardous material register. 4. All hazardous substances must be stored in accordance with their SDS requirements. 5. All hazardous substances shall be stored in containers with lids, which are kept firmly shut to avoid spillage. 6. All containers must be kept in such a condition as to be reasonably safe from damage and to prevent leakage. 7. A SDS for all hazardous materials e.g. paints, thinners, oils, etc. must be kept on site and updated regularly. 8. Where bunds are used (if applicable), they should be able to contain 110 % of the volume of the substance stored in the event spillages should occur. The bund should be	Low (-)	Immediately	Weekly (ESM)	Monthly internal compliance reporting (ESM). Monthly external compliance reporting (ECO). Upkeep of hazardous substances register (ESM).

		fitted with a drainage control valve which is to remain closed except when the bund is being emptied. 9. Temporary storage of hazardous waste must be avoided insofar possible. 10. A designated bin for all hazardous waste must be made available on site. 11. Cement must be stored in appropriate structures with impermeable flooring. 12. Vehicles should be parked on impermeable surfaces to prevent hydrocarbon spillages. 13. The Bronkhorstspruit watercourse should be declared a no-go area for contractors.				
		Handling and decanting 1. All excess hazardous chemicals, hydrocarbons and contaminated containers must be removed and collected by a certified hazardous waste removal company and disposed at a certified hazardous waste disposal site (if applicable). A safe disposal certificate should be issued on disposal. 2. Should decanting be necessary the spill precaution as recommended on the SDS must be adhered to. 3. Decanting of liquids will only be done over drip trays. 4. Containers into which decanting is being done must be of the same material as the original substance container. 5. PPE as recommended on the SDS must be used when decanting hazardous substances.		As required	As required (ESM)	N/A
		Spillage incidents 1. Development and implementation of emergency procedures to respond to the spillage of hydrocarbon based chemicals. 2. Hazardous chemical spill kits should be present and accessible on site at all times. 3. All construction materials prone to spillage are to be stored on appropriate structures with impermeable flooring. 4. All hazardous material spills must be cleaned up immediately. Where spills occur,		As required	As required	N/A

		compromised soil/vegetation shall be treated as hazardous waste and disposed of accordingly. 5. A register in which a record is maintained of the volume, nature, location, date, time and the clean-up action in the event of a spillage incident is to be kept on site. 6. All construction vehicles, machinery and equipment must be maintained to prevent leaks. 7. Vehicles and machinery have to be repaired and serviced over drip trays. 8. Portable toilet facilities should be inspected once a week to prevent leakage or spillages into the natural environment.				
Surface water quality Siltation of natural water bodies due to erosion of soil	Low (-)	**Erosion** 1.Refer to table 12 for soil erosion management and mitigation measures.	Very Low (-)	Immediately	Daily visual inspections (ESM)	Monthly internal compliance reporting (ESM). Monthly external compliance reporting (ECO).
Storm water Increase in the velocity of storm water run-off across the site due to vegetation clearance.	Low (-)	**Storm water** 1. Divert storm water run-off away from the construction site by erecting adequate storm water infrastructure. 2. All areas surrounding constructed infrastructure that have been subjected to soil compaction must be ripped if applicable. 3. Keep storm water infrastructure clear from littering or any other construction material. 4.Do regular maintenance on storm water infrastructure. 5.Where necessary stone walls and gabions must be constructed. 6.Re-vegetation should take place as soon as practically possible.	Low (-)	Immediately	Weekly visual inspections (ESM)	Monthly internal compliance reporting (ESM). Monthly external compliance reporting (ECO). Internal IWUL Audit Report (ESM). External IWUL Audit Report (External auditor).
Groundwater Impact on the groundwater levels due to ground water	Medium (-)	**Groundwater abstraction** 1. Ensure compliance with the abstraction volumes that are permitted as per the IWUL. 2. Ensure that all conditions of the IWUL are met.	Low (-)	Immediately	Quarterly groundwater monitoring (ESM)	Quarterly reporting on groundwater monitoring results. Internal IWUL Audit Report

abstraction		3. Quarterly groundwater monitoring must be conducted as per the conditions of the IWUL. 4. No new boreholes may be drilled other than those approved by the IWULA and prior to authorization from DWS.				(ESM). External IWUL Audit Report (External auditor).

9.1.3 Biodiversity

Table 14: Fauna and flora management and mitigation

Legislative requirements		CSA S 24; NEMA S 28; NEMBA S52, S69, S73, S75				
Objectives		Avoid habitat and species loss. Avoid the spread of alien and invasive species.				
Compliance indicators		Natural areas outside the development footprint are not disturbed. No evidence of hunting or snares on site Eradication of all alien and invasive species found onsite.				
Aspect / Impact	**Significance Pre-mitigation**	**Mitigation and Management Measures**	**Significance Post-mitigation**	**Time period for implementation**	**Monitoring frequency and (responsibility)**	**Reporting: frequency, (responsibility) and requirements**
Biodiversity Vegetation clearance, faunal displacement and habitat loss	Medium (-)	**Flora** 1. Ensure that workers do not unnecessarily trample vegetation whilst constructing fences, trenches, and or other infrastructure. 2. Vegetation clearing should be limited to only the areas that will be developed on. 3. Any areas which are marked with a high sensitivity value should be avoided and no unnecessary movement in these areas should occur. 4. The development footprint of infrastructure should be kept to a minimum to reduce disturbance to vegetation. **Fauna** 1. Ensure that no form of hunting, poaching, snaring or trapping of animals take place within the site or surrounding areas. 2. Muffles for soundproofing of the machinery must be used as far as practically possible. 3.The fence surrounding the construction site must be checked regularly for trapped animals. 4.Snare register should be developed. 5.If an animal is found in a trapped snare; Report the incident to your direct supervisor;	Low (-)	Immediately Immediately	Weekly visual inspections (ESM) Weekly visual inspections (ESM)	Monthly internal compliance reporting (ESM). Monthly external compliance reporting (ECO). Monthly internal compliance reporting (ESM). Monthly external compliance reporting (ECO).

		Supervisor to report incident to ESM; and ESM to record the incident in Environmental Incident Register ESM to contact local SPCA / Vet to assess the situation and remove the animal and provide the necessary medical care; If the animal is found to be dead, under no circumstances may it be slaughtered for its meat and the meat given to any person; Dead animals must be removed by the SPCA / Vet for incineration and proof of safe disposal to be kept by the ESM.				

9.1.4 Waste

Table 15: Waste management and mitigation

Legislative requirements		CSA S 24; NEMA S 28; NWA S19; NEM:WA S16, S17, S22, S26 & S27				
Objectives		To manage waste in a manner that prevents detrimental impacts to the environment and human health. Promote waste minimisation (reduction), reuse and recycling of waste generated on the site. Avoid littering and pollution. Ensure that all wastes are stored, handled and disposed of as per the regulatory requirements.				
Compliance indicators		No litter/illegal dumping visible anywhere on the site. Overall good housekeeping. No evidence of waste in storm water infrastructure. Responsible disposal of wastes and implementation of waste reduction, recycling and re use opportunities.				
Aspect / Impact	**Significance Pre-mitigation**	**Mitigation and Management Measures**	**Significance Post-mitigation**	**Time period for implementation**	**Monitoring frequency and (responsibility)**	**Reporting: frequency, (responsibility) and requirements**
Waste Generation, storage, handling and disposal of general and hazardous waste on site	Very Low (-)	**General housekeeping** 1. The site and surrounding areas are to be maintained in a clean, orderly, presentable condition at all times. 2. Burning and burying of waste on site is not permitted. 3. Waste stream identification and classification (if applicable). 4. All waste generated shall be separated into the relevant waste streams (i.e. general waste, hazardous waste; recyclables). 5. Compliance with SANS 10234 requirements shall be adhered to (as required). In such instances, the following will apply: o SDSs shall be kept for any hazardous waste in accordance with SANS 10234 requirements; o SDSs must be prepared in accordance with SANS 10234 for the product that the waste originates from; o SDSs must be prepared in accordance with SANS 10234 reflecting the details of the specific hazardous waste/s or hazardous chemicals in the waste; and o All SDSs must be kept on file. 6. Keep records of safe disposal of hazardous waste by independent contractors. **Waste management (collection, storage and**	Very Low (-)	Immediately Classification (as required)	Weekly visual inspections (ESM) Weekly visual inspections (ESM)	Monthly internal compliance reporting (ESM). Monthly external compliance reporting (ECO). N/A

		handling) 1. A central waste storage and transition area shall be established and maintained; 2. This central waste storage and transition area shall be surfaced and adequately demarcated; 3. Portable wheelie bins shall be placed in demarcated areas; 4. Wheelie bins shall be color coded and labelled to identify the waste stream for which it is intended. Colour coding is as follows: o General Waste _ Green (Waste type labelling) o Hazardous Waste _ Red (Waste type labelling) o Recycables _ White (Waste type labelling) 5. - Signs with English wording. 6. - All waste containers on-site (bins, skips, drums, etc.) will be clearly labelled to show which wastes can be disposed of into each bin. 7. The general waste (domestic) shall be removed by an independent service provider as shall be disposed of at a licensed waste landfill site. 8. All hazardous waste shall be removed (within 30 days) by a licensed waste service provider and shall be disposed of at a licensed waste landfill site and records of safe disposal shall be supplied to the Applicant by the Contractor.		Immediately	Weekly visual inspections (ESM)	Upkeep of waste SOP's and Waste Management Plan Monthly internal compliance reporting (ESM). Monthly external compliance reporting (ECO).
		Waste specific management measures *General Waste:* 1. All domestic waste generated shall be disposed of into specifically demarcated and labelled bins for collection by an independent service provider. 2. No staff shall be allowed to deposit waste / litter anywhere on the site except into the bins provided. 3. Under no circumstances shall domestic waste be dumped in any unauthorised landfill site / waste site.		Immediately	Weekly (ESM)	Keep records of safe disposal by independent contractor (ESM)

		4. Hazardous waste should be kept separate from general waste. *Building rubble:* 1. The Contractor shall ensure that the contractors camp and working area is cleaned regularly. 2. Clean rubble shall be temporarily stockpiled in a waste skip / central stockpile (away from any drainage / sensitive areas) . *No plastics, shrink wrap, paint buckets or any other debris that does not constitute clean building rubble, shall be stored at such stockpile sites. *Timber:* 1. Should timber be generated from construction activities it must be collected and stored within the central waste storage/ transition area 2. Wooden waste should not be mixed with other types of waste. 3. The timber shall be kept free of any water (rain) and other hazardous contamination. 4. The timber shall be collected and recycled insofar possible. *Scrap metal:* 1. All ferrous and non-ferrous scrap metal shall be separated at source and stockpiled in the waste storage area. 2. Scrap metal must not be mixed with other wastes. 3. Recycling of metal is encouraged. *Hazardous Waste:* 1. All hazardous waste generated shall be kept separate and shall not be mixed with general waste. 2. All hazardous waste shall be stored within a sealed drum on an impermeable surfaced area within the central waste storage and transition area. 3. All hazardous waste should have a SDS and such waste shall be disposed of as per the				

		product SDS. 4. Hazardous waste shall be collected by a licensed waste service provider and be disposed of at a licensed landfill site with certificates of safe disposal. 5. The total quantity of hazardous waste stored at the site at any one time shall not exceed 35 m^3. *Hazardous liquid oil:* 1. All used oil shall be stored in approved sealed containers. 2. All oil generated from the equipment shall be decanted into approved containers, returned to a central point designated for the correct storage of hazardous liquids and collected by an approved waste collection company. 3. Under no circumstances may any oil be released directly into the natural environment. The design, construction and operation of all equipment and facilities, required for the effective collection, containment, control and disposal of used oil shall at all times comply with environmental legislation and standards to prevent pollution and/or contamination of the environment. 4. All oil storage areas shall be bunded in accordance with the SANS specifications: - Minimum requirements for the volumetric capacity of the containment area (SANS 10131:2004); - Design capacity (SANS 10089-1:2003); and - Building material used (SANS 10227). 5. Care shall be exercised when decanting old oil into containers to prevent spillages. *Hydrocarbons (petrol and diesel fuels):* 1. All redundant liquid types shall be placed in clearly marked, sealed containers, (preferably the containers the material was supplied in) and sent to the flammable store area prior to disposal. Redundant fuels shall be stored separately to prevent: • Chemical reaction or fires;				

		• Toxic fumes/gases; and • Pollution to the environment. 2. Where possible, recycling should be implemented. 3. An authorised and permitted hazardous waste removal contractor shall remove all redundant fuels from the Hazardous Waste Site, to a permitted hazardous waste disposal site.				

9.1.5 Air Quality – Emissions, Noise and Dust

Table 16: Air Quality – Emissions, noise and dust management and mitigation

Legislative requirements		CSA S24; NEMA S28; NEM:AQA S32, S34, S35; National Dust Control Regulations S3, S6 & National Noise Control Regulations S3, S4, S5				
Objectives		Prevent nuisance to surrounding land-users. Ensure sound environmental management of air quality. Management of fugitive dust sources.				
Compliance indicators		No records/complaints of excessive noise or dust creating a nuisance to surrounding members of the public. Compliance with the National Dust Regulations as applicable. No complaints of disruptive odours.				
Impact/ Aspect	**Significance Pre-mitigation**	**Mitigation and Management Measures**	**Significance Post-mitigation**	**Time period for implementation**	**Monitoring frequency and (responsibility)**	**Reporting: frequency, (responsibility) and requirements**
Noise Increase in noise levels during construction activities	Low (-)	**General** 1. Excessively noisy machinery must only be used during regular operating hours and not after hours where possible. 2. Construction activities should only take place during normal working hours. 3. Any noise complaints received must be recorded in a complaints register. 4. The Contractor shall adhere to the local by-laws and regulations regarding the noise and associated hours of operations. 5. Noise levels should comply with the SANS Code of Practice 100103 - 0994. 6. Equipment should be fitted with noise reduction devices as far a reasonably possible. 7. A complaints register must be kept on site containing: • Name of complainant	Very Low (-)	Immediately As required	Daily visual inspections (ESM) As required (ESM)	Monthly internal compliance reporting (ESM). Monthly external compliance reporting (ECO). Upkeep of complaints register (ESM)

		• Physical address • Telephone number • Date and time of complaint 8. Provision of appropriate PPE. 9. Training of staff on the use of PPE and the dangers involved in excessive noise exposure.		Immediately	Daily (ESM)	Monthly Internal health and safety audits and reporting.
Dust Increased dust emissions due to material handling during the construction phase	Very Low (-)	1. Generation of dust shall be minimized and dust nuisance for the surrounding community shall be kept to a minimum wherever possible. 2. Reasonable measures must be undertaken to ensure that any exposed areas and material stockpiles (if any) are adequately protected against the wind. 3. Dust screens of a suitable height should be erected wherever possible. 4. All exposed surfaces should be minimised in terms of duration of exposure to wind. 5. Potable water shall not be used for the dust suppression of soil or sand stockpiles (if required). 6. Speed limits should be implemented to limit the amount of dust pollution. 7. Vegetation should only be cleared according to the construction schedule and just before construction commences on a specific portion of the site. 8. All sand stockpiles must be covered. 9. Construction materials transported to site must be covered when necessary to prevent it from blowing of vehicles.	Very Low (-)	Immediately	Daily visual inspections (ESM)	N/A

9.1.6 Health and Safety

Table 17: Health and Safety: Fire and emergency management and mitigation

Legislative requirements		OHS S8, S9, S13 & S14				
Objectives		To facilitate efficient response to emergency situations that may arise on the site. Create a safe working environment for all workers on site. Train all contractors and employees on health and safety risks relevant to the construction phase.				
Performance indicators		No emergency incidents. No health concerns. No environmental emergencies occurring onsite.				
Aspect / Impact	**Significance Pre-mitigation**	**Mitigation and Management Measures**	**Significance Post-mitigation**	**Time period for implementation**	**Monitoring frequency and (responsibility)**	**Reporting: frequency, (responsibility) and requirements**
Health and Safety Fire and chemical exposure during construction activities	Low (-)	**Fire prevention** 1. Contractor/s shall take all reasonable and active steps to avoid increasing the risk of fire through their activities on site. 2. All workers (including sub-contractors) on-site will be made aware of possible fire risk associated with construction activities on site. 3. The Developer shall ensure that the basic fire-fighting equipment is available on site and to the satisfaction of the local firefighting services. 4. No fires for heating purposes shall be allowed. 5. The Contractor shall be liable for all costs incurred by the organisations sub-contracted to extinguish all fires started by any person(s) under their control.	Very Low (-)	Immediately	N/A	N/A
		Response to fire incidence on-site 1. An Emergency Plan (including Fire Protection, Response and Evacuation Plan) is to be prepared and conveyed to all staff on the site. This shall identify: - a fire marshal for the site; - all potential fire hazards; - fire-fighting equipment to be provided on site; - procedure in case of a fire; - a fire evacuation route and plan; and - emergency contact numbers.		Immediately	Monthly (ESM)	Upkeep of SOPs on response to emergencies. Upkeep of Emergency Response Plan.
		2. Key staff members will be trained to deal with the control of fire-fighting equipment on site and to assist with evacuations as required. 3. All staff is to be familiar with the position of fire		Immediately	N/A	Keep records of safety inductions.

		control equipment on site and response and evacuation procedures. This should be covered in the inductions for all new site staff and visitors. 4. In the case of a fire occurring on site, the following actions are to be taken immediately: - Contact Local Fire Department response unit. - Warn adjacent landowners of potential danger. **Safety and security** 1. All Construction activities undertaken on site should be carried out in accordance with all the requirements stipulated by the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) (OHSA). 2. All personnel (Developer/ contractors) working on site shall wear the applicable PPE as required by the activity being undertaken. 3. No personnel, except for security staff (if applicable), are allowed to stay / live on the site. Security staff is to be provided with accommodation and ablution facilities and communication equipment. 4. The Developer must ensure safety representatives and managers are appointed and trained for all on-site work construction activities. All contractors/sub-contractors should appoint a safety officer .All applicable safety standards and regulations should be enforced Training should include emergency procedures. 5. Potentially hazardous areas must be clearly demarcated with adequate signage. 6. Emergency contact details for the police, security company, ambulaance and fire department must be available at all times.		Immediately	Monthly visual inspections (ESM)	N/A
Health and Safety Environmental emergencies occurring on-site	Low (-)	**Emergency management** 1. All accidents must be recorded in a register. Data about the accident must be provided within 24 hours after occurrence. 2. Appropriate recording documents must be available on site together with a designated Health and Safety Officer. 3. Appropriate authorities and law enforcement officers must be consulted in such instances if	Very low (-)	Immediately	Monthly (ESM)	Monthly internal Health and Safety performance audits and reporting (ESM). Upkeep of incident reports (ESM).

		required. 4. Steps must be identified to prevent recurrence of similar incidents. These steps must be recorded and monitored. 5. Actions taken to address the occurrence of the incident and measures to avoid the recurrence of such must be recorded. 6. Emergency contact details for the police, security company and fire department must be available at all times in case of an emergency situation. 7. The application of the OHSA and associated regulations must be ensured. This includes the distribution and use of protective clothing and equipment to at least include safety shoes, overalls gloves, dust masks, and where appropriate ear muffs and eye/face protection shields (if required). 8. The Safety Officer is to present emergency procedures during the mandatory Health and Safety induction presented to all new site staff, contractors and visitors. 9. Appropriate SHE signs (symbolic safety signs) must be displayed on site. 10. The following requirements would be the minimum for the safety program: • Orientation of new employees including safety training and emergency contingency planning. • Thorough investigation and documentation of all accidents to ascertain the cause and future methods of preventing recurrence. • Mandatory first aid training for all staff members. • Regularly scheduled safety meetings. • Fire prevention and fire-fighting instructions. • Routine inspection and testing procedure for all safety and emergency equipment and protective devices, and routine walk through inspections conducted by the operator through all areas to identify and correct potential unsafe conditions.				

		• Posting for safety bulletins and posters required by regulatory agencies and other materials concerning accident prevention and hazardous conditions. • The Applicant shall abide by all local, provincial and national safety requirements. • The Applicant shall provide for a fires aid station and emergency medical response station for injured staff.				

9.1.7 Aesthetic Quality

Table 18: Aesthetic quality – mitigation and management

Legislative requirements	NEMA S28 ,NEM:WA S16, & S27 & NWA S19
Objectives	To facilitate efficient housekeeping on site.
Compliance indicators	Zero spillages/littering. No illegal dumping incidents.

Aspect / Impact	Significance Pre-mitigation	Mitigation and Management Measures	Significance Post-mitigation	Time period for implementation	Monitoring frequency and (responsibility)	Reporting: frequency, (responsibility) and requirements
Aesthetic quality Lack of housekeeping and waste management during construction activities	Very Low (-)	**General** 1. The site and surrounding areas are to be maintained in a clean, orderly, presentable condition at all times. 2. Burning and burying of waste on site must be strictly prohibited. 3. All construction and demolition waste must be collected by an authorised waste disposal contractor.	Very low (-)	Immediately	Weekly visual site inspections (ESM)	Monthly internal compliance reporting (ESM). Monthly external compliance reporting (ECO).

9.1.8 Traffic

Table 19: Traffic management and mitigation

Legislative requirements		NRTA				
Objectives		Construction vehicles do not affect traffic on the R25 provincial road				
Performance indicators		No records/complaints of traffic incidents / queries from the public / neighbours No accidents or damage of property				
Aspect / Impact	**Significance Pre-mitigation**	**Mitigation and Management Measures**	**Significance Post-mitigation**	**Time period for implementation**	**Monitoring frequency and (responsibility)**	**Reporting: frequency, (responsibility) and requirements**
Traffic Increase in traffic due to construction activities	Very Low (-)	**General** 1. Ensure that construction vehicles are not congesting main roads during peak hours. 2. Ensure that adequate road signage is placed at all roads affected by the construction activities.	Very Low (-)	Immediately	N/A	N/A

9.2 Operational phase

This EMPr is specific to the proposed development. The proposed environmental management and mitigation measures for the operational phase are collated in Table 20 - 26 below.

9.2.1 Soil quality

Table 20: Soil quality mitigation and management measures

Legislative requirements		NEMA S28 , NEM:WA S16, & S27				
Objectives		Avoid soil contamination.				
Compliance indicators		Zero spillages/waste contaminating soil on site.				
Aspect / Impact	**Significance Pre-mitigation**	**Mitigation and Management Measures**	**Significance Post-mitigation**	**Time period for implementation**	**Monitoring frequency and (responsibility)**	**Reporting: frequency, (responsibility) and requirements**
Soil Quality Contamination of soil through disposal of	Medium (-)	**General** 1. All hazardous substances shall be stored within a demarcated area on site. 2. The hazardous substances storage area	Low (-)	Immediately	Weekly (ESM)	Monthly internal compliance reporting (ESM). Monthly external compliance

general or hazardous waste or accidental spillages of petroleum products or other hazardous substances on site.		should be locked when not in use and equipped with adequate health safety signage, as required by relevant legislation and regulations. 3. All hazardous substances must be recorded in a hazardous material register. 4. All hazardous substances must be stored in accordance with their SDS requirements. 5. All hazardous substances shall be stored in containers with lids, which are kept firmly shut to avoid spillage. 6. All containers must be kept in such a condition as to be reasonably safe from damage and to prevent leakage. 7. A SDS for all hazardous materials e.g. paints, thinners, oils, etc. must be kept on site and updated regularly. 8. Where bunds are used (if applicable), they should be able to contain 110 % of the volume of the substance stored in the event spillages should occur. The bund should be fitted with a drainage control valve which is to remain closed except when the bund is being emptied. 9. Temporary storage of hazardous waste must be avoided insofar possible. 10. A designated bin for all hazardous waste must be made available on site. 11. UST must be installed according to the specifications of SANS 10089, SANS 11535 and SANS 10731. **Handling and decanting** 1. All excess hazardous chemicals, hydrocarbons and contaminated containers must be removed and collected by a certified hazardous waste removal company and disposed at a certified hazardous waste disposal site (if applicable). A safe disposal certificate should be issued on disposal. 2. Should decanting be necessary the spill precaution as recommended on the SDS must be adhered to. 3. Decanting of liquids will only be done over drip trays.		As required	As required (ESM)	reporting (ECO). Upkeep of hazardous substances register (ESM). N/A

		4. Containers into which decanting is being done must be of the same material as the original substance container. 5. PPE as recommended on the SDS must be used when decanting hazardous substances. 6. Overfill and spillages during underground tank refueling and fuel dispensing should be prevented by the installation of automatic cut off devices.				
		Spillage incidents 1. Development and implementation of emergency procedures to respond to the spillage of hydrocarbon based chemicals. A spill response and clean-up contractor must be contacted immediately to assist in clean-up operations. An independent hydrogeologist must be commissioned to determine the lateral and vertical extent of the contamination plume. The Department of Water and Sanitation must be notified immediately of spillages larger than 200 liters. 2. Hazardous chemical spill kits should be present and accessible on site at all times. 3. All hazardous material spills must be cleaned up immediately. Where spills occur, compromised soil/vegetation shall be treated as hazardous waste and disposed of accordingly. 4. A register in which a record is maintained of the volume, nature, location, date, time and the clean-up action in the event of a spillage incident is to be kept on site. 5. Leak detectors with an automatic cut off valve have to be installed. 6. A subsoil cut off drain should be installed to channel any seepage from the underground storage tanks to a sump. 7. The fuel supplier must ensure that sufficient training is presented to all operators of the refueling area. Training must include general site operation, spill response, emergency procedures, and site safety. 8. Concrete containment slabs must be constructed around filler points and the		Immediately As required Immediately	Routine inspections (ESM and engineer) As required (ESM) Routine inspections (ESM and engineer)	N/A Monthly internal compliance reporting (ESM). Monthly external compliance reporting (ECO). Upkeep of emergency response procedures. Inspection reports (Engineer).

Soil quality Contamination of soil due to tank failure.	Medium (-)	dispensing area. 1. Ensure that UST are inspected on a regular basis by a registered engineer. 2. Leak detectors with an automatic cut off valve have to be installed. A subsoil cut off drain should be installed to channel any seepage from the underground storage tanks to a sump.	Low (-)	As required	Routine inspections (ESM and engineer)	Inspection reports (Engineer).

9.2.2 Water quality

Table 21: Storm water, surface water and ground water quality mitigation and management

Legislative requirements		NEMA S28; NWA S19, S20; NEM:WA S16 & 27				
Objectives		Prevent contamination of clean storm water run-off from the site to prevent pollution of the receiving environment. Prevent localised flooding on site by ensuring that the storm water infrastructure is not impeded e.g. through sediment build up and debris and remains functional. Prevent surface water and ground water contamination. Prevent excessive drawdown of the groundwater reserve.				
Compliance indicators		Stormwater infrastructure is visibly free of significant litter, sediment, oil, paint residues and other contaminants. The quality of the stormwater is line with the relevant water quality limits. Surface and groundwater quality meets the national monitoring requirements and limits.				
Aspect / Impact	**Significance Pre-mitigation**	**Mitigation and Management Measures**	**Significance Post-mitigation**	**Time period for implementation**	**Monitoring frequency and (responsibility)**	**Reporting: frequency, (responsibility) and requirements**
Storm water/ surface water and ground water quality Possible accidental spillage and incorrect handling of general and hazardous waste and other hazardous materials may enter into the stormwater/ Bronkhorstspruit/	Low (-)	**General** 1. All hazardous substances shall be stored within a demarcated area on site. 2. The hazardous substances storage area should be locked when not in use and equipped with adequate health safety signage, as required by relevant legislation and regulations. 3. All hazardous substances must be recorded in a hazardous material register. 4. All hazardous substances must be stored in accordance with their SDS requirements. 5. All hazardous substances shall be stored in containers with lids, which are kept firmly shut to avoid spillage. 6. All containers must be kept in such a condition as to be reasonably safe from	Very Low (-)	Immediately	Weekly visual inspections (ESM)	Monthly internal compliance reporting (ESM). Monthly external compliance reporting (ECO). Upkeep of hazardous substances register (ESM).

groundwater.		damage and to prevent leakage. 7. A SDS for all hazardous materials e.g. paints, thinners, oils, etc. must be kept on site and updated regularly. 8. Where bunds are used (if applicable), they should be able to contain 110 % of the volume of the substance stored in the event spillages should occur. The bund should be fitted with a drainage control valve which is to remain closed except when the bund is being emptied. 9. Temporary storage of hazardous waste must be avoided insofar possible. 10. A designated bin for all hazardous waste must be made available on site. 11.Underground storage tanks must be installed according to the specifications of SANS 10089, SANS 11535 and SANS 10731. 12. Underground storage tanks must be inspected by an engineer before installation. **Handling and decanting** 1. All excess hazardous chemicals, hydrocarbons and contaminated containers must be removed and collected by a certified hazardous waste removal company and disposed at a certified Hazardous waste disposal site (if applicable). A safe disposal certificate should be issued on disposal. 2. Should decanting be necessary the spill precaution as recommended on the SDS must be adhered to. 3. Decanting of liquids will only be done over drip trays. 4. Containers into which decanting is being done must be of the same material as the original substance container. 5. PPE as recommended on the SDS must be used when decanting hazardous substances. 6. Overfill and spillages during underground tank refueling and fuel dispensing should be prevented by the installation of automatic cut off devices. **Spillage incidents**		As required Immediately	As required (ESM) Routine inspections (ESM)	N/A N/A

		1. Development and implementation of emergency procedures to respond to the spillage of hydrocarbon based chemicals. A spill response and clean-up contractor must be contacted immediately to assist in clean-up operations. An independent hydrogeologist must be commissioned to determine the lateral and vertical extent of the contamination plume. The Department of Water and Sanitation must be notified immediately of spillages larger than 200 liters. 2. Hazardous chemical spill kits should be present and accessible on site at all times. 3. All hazardous material spills must be cleaned up immediately. Where spills occur, compromised soil/vegetation shall be treated as hazardous waste and disposed of accordingly. 4. A register in which a record is maintained of the volume, nature, location, date, time and the clean-up action in the event of a spillage incident is to be kept on site. 5. Dirty surface water and spillages at the site operations must be channeled into a sump or oil-water separator. 6. Leak detectors with an automatic cut off valve have to be installed. 7. A subsoil cut off drain should be installed to channel any seepage from the underground storage tanks to a sump. 8. The fuel supplier must ensure that sufficient training is presented to all operators of the refueling area. Training must include general site operation, spill response, emergency procedures, and site safety. 9. Concrete containment slabs must be constructed around filler points and the dispensing area. 10. Surface water management infrastructure needs to contain oil traps and drains to intercept dirty water before entering the aquatic ecosystem.		As required Immediately	Weekly visual inspections (ESM) Routine inspections (ESM and engineer)	N/A N/A
Groundwater Impact on the	Medium (-)	**Groundwater abstraction** 1. Ensure compliance with the abstraction	Low (-)	Immediately	Quarterly groundwater	Quarterly reporting on

groundwater levels due to water abstraction from boreholes		volumes that are permitted as per the IWUL. 2. Ensure that all conditions of the IWUL are met. 3. Quarterly groundwater monitoring must be conducted as per the conditions of the IWUL.			monitoring (ESM)	groundwater monitoring results (external EAP) Annual internal IWUL Audit reporting (ESM) Annual external IWUL Audit reporting (External Auditor)
Surface water Impacts on surface water (river) quality due to dirty water run-off from the site operations	Low (-)	**Surface water quality** 1. Divert storm water run-off away from the site by erecting adequate storm water infrastructure. 2. Position revetment structures along the eastern parts of the site to prevent dirty storm water run-off from flowing into the river/wetland. 4. No dirty water from the containment sump should be discharged into the natural environment. 5 All run-off from the forecourt area has to be channelled into the containment sump.	Very Low (-)	Immediately	Monthly surface water monitoring (ESM)	Monthly reporting on surface water monitoring results (ESM). Annual internal IWUL Audit reporting (ESM) Annual external IWUL Audit reporting (External Auditor)
Storm water Increased velocity of storm water runoff due to impermeable paved surfaces	Medium (-)	**Storm water** 1. Divert storm water run-off away from the site by erecting adequate storm water infrastructure. 2. All areas surrounding constructed infrastructure that have been subjected to soil compaction must be ripped. 3. Keep storm water infrastructure clear from litter or any other material. 4. Do regular maintenance on storm water infrastructure. 5. Re-vegetation of cleared areas should take place as soon as practically possible. 6. Storm water control measures must be implemented including: • Channels and inlets; • Storm water pipes • Storm water culverts • Containment sump • Energy dissipating structures.	Low (-)	Immediately	Monthly visual inspections (ESM)	Monthly internal compliance reporting (ESM). Monthly external compliance reporting (ECO).
Ground and surface water	Medium (-)	1. Ensure that Underground Storage Tanks are inspected on a regular basis by a registered	Low (-)	As required	Routine inspections (ESM and engineer)	Inspection reports (Engineer).

quality Contamination of ground and surface water resources due to tank failure.		engineer. 2.Leak detectors with an automatic cut off valve have to be installed. 3. A subsoil cut off drain should be installed to channel any seepage from the underground storage tanks to a sump.				

9.2.3 Waste

Table 22: Waste management and mitigation

Legislative requirements		CSA S24; NEMA S28; NWA S19; NEM:WA S16, S17, S22, S26 & S27;				
Objectives		To manage waste in a manner that prevents detrimental impacts to the environment and human health. Promote waste minimisation (reduction), reuse and recycling of waste generated on the site. Avoid litter and pollution. Ensure that all waste are stored, handled and disposed of as per the regulatory requirements.				
Compliance indicators		No litter/illegal dumping visible anywhere on the site. Overall good housekeeping. No evidence of waste in storm water infrastructure. Responsible disposal of wastes and implementation of waste reduction, recycling and re use opportunities.				
Aspect / Impact	**Significance Pre-mitigation**	**Mitigation and Management Measures**	**Significance Post-mitigation**	**Time period for implementation**	**Monitoring frequency and (responsibility)**	**Reporting: frequency, (responsibility) and requirements**
Waste Generation, storage, handling and disposal of general and hazardous waste on site.	Medium (-)	The National Environmental Management: Waste Act (Act No. 59 of 2008) and any associated Regulations and Norms and Standards must be adhered to at all times. **General housekeeping** 1. The site and surrounding areas are to be maintained in a clean, orderly, presentable condition at all times. 2. Burning and burying of waste on site is not permitted. 3. Waste stream identification and classification: • All waste generated shall be separated into the relevant waste streams (i.e. general waste, hazardous waste; recyclables); • Compliance with SANS 10234 requirements shall be adhered to (as required). In such instances, the following will apply:	Low (-)	Immediately Classification (as required)	Weekly visual inspections (ESM) Weekly visual inspections (ESM)	Monthly internal compliance reporting (ESM). Monthly external compliance reporting (ECO). N/A

		o SDSs shall be kept for any hazardous waste in accordance with SANS 10234 requirements; o SDSs must be prepared in accordance with SANS 10234 for the product that the waste originates from; o SDSs must be prepared in accordance with SANS 10234 reflecting the details of the specific hazardous waste/s or hazardous chemicals in the waste; and o All SDSs sheets must be kept on file. 4. Keep records of safe disposal of waste by independent contractors. **Waste management (collection, storage and handling)** 1. A central waste storage and transition area shall be established and maintained; 2. This central waste storage and transition area shall be surfaced and adequately demarcated. 3. Portable wheelie bins shall be placed outside at a demarcated area; 4. Wheelie bins shall be color coded and labelled to identify the waste stream for which it is intended. Color coding is as follows: o General Waste _ Green (Waste type labelling) o Hazardous Waste _ Red (Waste type labelling) o Recyclables _ White (Waste type labelling) 5. Signs with English wording. 6. All waste containers on-site (bins, skips, drums, etc.) will be clearly labelled to show which wastes can be disposed into each bin. 7. The general waste (domestic) shall be removed by a contractor and shall be disposed of at a licensed general waste landfill site. 8. All hazardous waste shall be removed (within 30 days) by a licensed waste service provider and shall be disposed of at a licensed hazardous waste landfill site and records of safe disposal shall be supplied to the Applicant		Immediately	Weekly visual inspections (ESM)	Upkeep of waste SOP's and Waste Management Plan.

		by the Contractor. **Waste specific management measures** *General Waste:* 1. All domestic waste generated shall be disposed of into specifically demarcated and labelled bins for collection by a contractor. 2. No staff shall be allowed to deposit waste / litter anywhere on the site except into the bins provided. 3. Under no circumstances shall domestic waste be dumped in any unauthorised landfill site / waste site. *Hazardous Waste:* 1. All hazardous waste generated shall be kept separate and shall not be mixed with general waste. 2. All hazardous waste shall be stored within a sealed drum on an impermeable surfaced area within the central waste storage and transition area. 3. All hazardous waste should have SDS and such waste shall be disposed of as per the product SDS. 4. Hazardous waste shall be collected by a licensed waste service provider and be disposed of at a licensed landfill site with certificates of safe disposal. 5. The total quantity of hazardous waste stored at the site at any one time shall not exceed 35 m^3. *Hazardous liquid oil:* 1. All used oil shall be stored in approved sealed containers. 2. All oil generated from the equipment shall be decanted into approved containers, returned to a central point designated for the correct storage of hazardous liquids and collected by an approved waste collection company. 3. Under no circumstances may any oil be released directly into the natural environment. The design, construction and operation of all		Immediately	Weekly visual inspections (ESM)	Keep records of safe disposal by independent contractors (ESM)

		equipment and facilities, required for the effective collection, containment, control and disposal of used oil shall at all times comply with environmental legislation and standards to prevent pollution and/or contamination of the environment. 4. All oil storage areas shall be bunded in accordance with the SANS specifications: - Minimum requirements for the volumetric capacity of the containment area (SANS 10131:2004); - Design capacity (SANS 10089-1:2003); and - Building material used (SANS 10227). 5. Care shall be exercised when decanting old oil into containers to prevent spillage. *Hydrocarbons (petrol and diesel fuels):* 1. All redundant liquid types shall be placed in clearly marked, sealed containers, (preferably the containers the material was supplied in) and sent to the flammable store area prior to disposal. Redundant fuels shall be stored separately to prevent: • Chemical reaction or fires; • Toxic fumes/gases; and • Pollution to the environment. 2. Where possible, recycling should be implemented. 3. An authorised and permitted hazardous waste removal contractor shall remove all redundant fuels from the hazardous waste site, to a permitted waste disposal site.				

9.2.4 Health and Safety

Table 23: Health and Safety: Fire and emergency management and mitigation

Legislative requirements		OHS S8, S9, S13 & S14				
Objectives		To facilitate efficient response to emergency situations that may arise on the site. Create a safe working environment for all workers on site. Train all contractors and employees on health and safety risks relevant to the Operational Phase.				
Performance indicators		No emergency incidents. No health concerns. No environmental emergencies occurring onsite.				
Aspect / Impact	**Significance Pre-mitigation**	**Mitigation and Management Measures**	**Significance Post-mitigation**	**Time period for implementation**	**Monitoring frequency and (responsibility)**	**Reporting: frequency, (responsibility) and requirements**
Health and Safety *Fire and chemical exposure*	Medium (-)	**Fire prevention** 1. Employees shall take all reasonable and active steps to avoid increasing the risk of fire through their activities on site. 2. All workers (including sub-contractors) on-site will be made aware of possible fire risk associated with activities on site. 3. The Applicant shall ensure that the basic fire-fighting equipment is available on site and to the satisfaction of the local firefighting services. 4. No smoking shall be allowed on site except in designated smoking areas. **Response to fire incidence on-site** 1. An Emergency Plan (including Fire Protection, Response and Evacuation Plan) is to be prepared and conveyed to all staff on the site. This shall identify: - a fire marshal for the site; - all potential fire hazards; - fire-fighting equipment to be provided on site; - procedure in case of a fire; - a fire evacuation route and plan; and - emergency contact numbers. 2. Key staff members will be trained to deal with the control of fire-fighting equipment on site and to assist with evacuations as required. 3. All staff is to be familiar with the position of fire control equipment on site and response and evacuation procedures. This should be covered in the inductions for all new site staff and visitors.	Low (-)	Immediately Immediately	Monthly visual inspections (ESM) Monthly visual inspections (ESM)	N/A Keep records of safety inductions Upkeep of Emergency Response Plan.

		4. In the case of a fire occurring on site, the following actions are to be taken immediately: - Contact Local Fire Department response unit. - Warn adjacent landowners of potential danger. **Safety and security** 1. All activities undertaken on site should be carried out in accordance with all the requirements stipulated by the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) (OHSA). 2. All personnel (Developer/ contractors) working on site shall wear the applicable PPE as required by the activity being undertaken. 4. All applicable safety standards and regulations should be enforced. Training should include emergency procedures. 5. Potentially hazardous areas must be clearly demarcated with adequate signage. 6. Emergency contact details for the police, security company and fire department must be available at all times.		Immediately	Monthly visual inspections (ESM)	N/A
Health and Safety Environmental emergencies occurring on-site	Low (-)	**Emergency management** 1. All accidents must be recorded in a register. Data about the accident must be provided within 24 hours after occurrence. 2. Appropriate recording documents must be available on site together with a designated Health and Safety Officer. 3. Appropriate authorities and law enforcement officers must be consulted in such instances if required. 4. Steps must be identified to prevent recurrence of similar incidents. These steps must be recorded and monitored. 5. Actions taken to address the occurrence of the incident and measures to avoid the recurrence of such must be recorded. 6. Emergency contact details for the police, security company and fire department must be available at all times in case of an emergency situation. 7. The application of the OHSA and regulation must be ensured. This includes the distribution	Very Low (-)	Immediately	Monthly	Monthly internal Health and Safety performance audits and reporting.

		and use of protective clothing and equipment. 8. The Safety Officer is to present emergency procedures during the mandatory Health and Safety induction presented to all new site staff, contractors and visitors. 9. Appropriate SHE signs (symbolic safety signs) must be displayed on site. 10. The following requirements would be the minimum for the safety program: • Orientation of new employees including safety training and emergency contingency planning. • Thorough investigation and documentation of all accidents to ascertain the cause and future methods of preventing recurrence. • Mandatory first aid training for all staff members. • Regularly scheduled safety meetings. • Fire prevention and fire-fighting instructions. • Routine inspection and testing procedure for all safety and emergency equipment and protective devices, and routine walk through inspections conducted by the operator through all areas to identify and correct potential unsafe conditions. • Posting for safety bulletins and posters required by regulatory agencies and other materials concerning accident prevention and hazardous conditions. • The Applicant shall abide by all local, provincial and national safety requirements. 11. The Applicant shall provide for a fires aid station and emergency medical response station for injured staff.				

9.2.5 Aesthetic Quality

Table 24: Aesthetic quality – mitigation and management

Legislative requirements		NEMA S28 ,NEMWA S16, & S27 & NWA S19				
Objectives		To limit the loss of aesthetic quality of the site				
Compliance indicators		Zero spillages/littering No illegal dumping incidents No invasive species on site				
Aspect / Impact	**Significance Pre-mitigation**	**Mitigation and Management Measures**	**Significance Post-mitigation**	**Time period for implementation**	**Monitoring frequency and (responsibility)**	**Reporting: frequency, (responsibility) and requirements**
Aesthetic quality Reduction of natural aesthetic quality/value of the site and surroundings.	Very Low (-)	**General** 1. The site and surrounding areas are to be maintained in a clean, orderly, presentable condition at all times. 2. Ensure that landscaping provides for indigenous species in the gardens surrounding the site operations to minimize visual intrusion. **Waste management** Refer to table 22 for waste management measures.	Very low (-)	Immediately	Weekly visual inspections (ESM)	Monthly internal compliance reporting (ESM). Monthly external compliance reporting (ECO).

9.2.6 Traffic

Table 25: Traffic management and mitigation

Legislative requirements		NRTA				
Objectives		Traffic from the operational phase on and around the site does not cause congestions.				
Performance indicators		No records/complaints of traffic incidents / queries from the public / neighbours. No accidents or damage of property.				
Aspect / Impact	**Significance Pre-mitigation**	**Mitigation and Management Measures**	**Significance Post-mitigation**	**Time period for implementation**	**Monitoring frequency and (responsibility)**	**Reporting: frequency, (responsibility) and requirements**
Traffic Increase in traffic	Low (-)	**General** 1. All complaints must be recorded in a complaints register.	Very Low (-)	As required	As required (ESM)	Upkeep of complaints register (ESM).

9.2.7 Noise

Table 26: Noise management and mitigation

Legislative requirements		CSA S24; NEMA S28; NEM:AQA S34; National Noise Control Regulations S3, S4, S5				
Objectives		Prevent nuisance to surrounding land owners.				
Performance indicators		No records/complaints of excessive noise creating a nuisance to surrounding members of the public.				
Impact/ Aspect	**Significance Pre-mitigation**	**Mitigation and Management Measures**	**Significance Post-mitigation**	**Time period for implementation**	**Monitoring frequency and (responsibility)**	**Reporting: frequency, (responsibility) and requirements**
Noise Increase in noise levels during operational phase	Low (-)	**General** 1. Any noise complaints received must be recorded in a complaints register. 2. Noise levels should comply with the SANS Code of Practice 100103 - 0994. 3. A complaints register must be kept on site containing: • Name of complainant • Physical address • Telephone number • Date and time of complaint 4. No sound amplification equipment such as sirens, loud hailers or hooter to be used on site except during emergencies. 5. Noise levels shall be kept within acceptable limits, and staff must abide to National applicable legislation and by-laws pertaining to noise.	Very Low (-)	Immediately Immediately	As required (ESM) As required (ESM)	N/A Upkeep of complaints register (ESM)

10. Environmental training and awareness

The ESM must ensure that all contractor/s and employees are familiar with the EMPr requirements and have a basic level of environmental awareness training. All contractors/staff have to indicate that they understand the EMPr and that they will undertake to comply with the conditions therein. All new staff members shall undergo induction that includes environmental awareness programs prior to commencement of work on site. Topics to be covered in the training should include inter alia:

- What is meant by "environment";
- Why the environment needs to be protected and conserved;
- Energy conservation;
- Water conservation;
- Recycling, reuse and reduce;
- Prevention of pollution;
- Worker conduct on site which includes a general regard for the social and ecological well-being of the site and adjacent areas;
- Occupational health and Safety issues.

11. Monitoring and auditing

Environmental monitoring and compliance auditing should occur throughout the entire lifecycle of the fuel station both internally (ESM) and externally (ECO/Auditor). The frequency of monitoring and auditing will be set out in the EA and WULA conditions and must be adhered to during all times. Monitoring is required to ensure compliance with the management and mitigation measures contained in the EMPR.

12. Reporting on compliance

The ESM/HSE shall maintain detailed records of parameters monitored. These detailed records shall demonstrate the effectiveness and commitment to the management actions implemented in order to mitigate potentially negative environmental impacts. A database/report should be kept for management works implemented at the frequencies stipulated by the environmental management system of the landfill.

References

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SMEC (2018b) *Traffic Impact Assessment*.

Annexure A – Eskom acceptance letter

Eskom

STANDARD CONDITIONS OF SUPPLY FOR SMALL SUPPLIES WITH CONVENTIONAL METERING

ANNEXURE 'A'
(Rev June 2015)

IMPORTANT NOTICE

In terms of Section 49 of the Consumer Protection Act 68 of 2008 the CUSTOMER's attention is drawn to the notice set out hereunder which is referred to in various clauses in this Agreement which contains either a limitation of risk or liability of ESKOM, or constitute an assumption of risk or liability by the CUSTOMER or an indemnification of ESKOM.

By signing here the CUSTOMER acknowledges that he/she/it has made itself/herself/himself aware of each individual clause contemplated in this notice and has raised concerns (including queries about technical terms mentioned in the Agreement and/or requested that the CUSTOMER be given an opportunity to consult an expert regarding the technical terms), if any with ESKOM in respect of the goods, its component parts and/or related services, assumes an obligation to ensure proper usage as described in the instructions or as used generally, its component parts and/or related services and is aware that the signature and/or initial made next to the indicated clauses and below this notice limits the liability of ESKOM.

1. The CUSTOMER acknowledges that, by signing here and initialling here below and next to the clause which refers to this notice that the CUSTOMER has read the content of the said clause(s) and agree to be bound by the contents thereof;

2. The CUSTOMER is herewith informed further to read the whole Agreement carefully and raise any and all concerns relating to this Agreement with ESKOM at the time of the conclusion of this Agreement to avoid confusion and/or uncertainty in respect of its provisions.

Signed at Pretoria on 21-10-15 [date].

(ESKOM) (CUSTOMER)

PROJECT REFERENCE: BHS154340925

Note: In the text of this Annexure an additional place is made for an initial of both parties next to the specific clause.

Annexure B – Water balance