TURN180
ENVIRONMENTAL CONSULTANTS
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ENVIRONMENTAL MANAGEMENT PROGRAMME

THE PROPOSED ESTABLISHMENT OF A FILLING STATION AND AN AGRICULTURAL RELATED SALES AND STORAGE AREA ON THE REMAINING EXTENT OF THE FARM OUTSPAN 1960, BLOEMFONTEIN, FREE STATE.

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Site Information:

Farm / Erf Name	: Outspan
Farm Number	: 1960
Farm Portion	: RE
21 Digit Surveyors Code	: F00300000000196000000
District	: Bloemfontein
Metro Municipality	: Mangaung Metropolitan Municipality
Site coordinates (Centre of site)	: 29° 4'16.49"S and 26° 8'34.75"E

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1 Objectives of the Environmental Management Programme (EMPr)

The Environmental Management Programme is intended to provide environmental specifications to put measures in place to mitigate and manage potential environmental impacts arising from the construction and operational phases of the establishment of a filling station and an agricultural related sales and storage area on the remaining extent of the farm Outspan 1960, Bloemfontein, Free State. This EMPr enables the key role players to use a pro-active approach by addressing potential impacts beforehand, thus, limiting the corrective measures needed during the construction and operational phases of the project.
This EMPr deals with the phases as set out below:

1.1 The Planning Phase

The EMPr offers an ideal opportunity to incorporate pro-active environmental management measures in order to ensure that potential harmful impacts are limited and avoided as far as possible. Furthermore, by implementing this EMPr during the planning phase, the necessary corrective actions can be taken to limit future potential impacts which could be detrimental to the environment.

1.2 The Construction Phase

The majority of impacts during the construction phase will pose immediate effects (e.g. noise, dust etc.). The site must be monitored on a regular basis during the entire construction phase in order to identify and mitigate impacts as they occur. These impacts can then be mitigated effectively using the measures as set out in this EMPr.

1.3 The Operational Phase

Pro-active measures used during the planning and construction phases can be used to minimise potential environmental impacts during the operational phase of the project. These measures will also limit the risks related to certain impacts and reduce the intensity of monitoring during the operational phase.

2 Construction Phase, Operational Phase and Responsible Parties

Formal responsibilities are necessary to ensure that procedures and EMPr measures are executed throughout the construction and operational phase by each responsible party. Responsible parties for this project include the following: Project Manager, Site Manager, Contractors, Dedicated Environmental Officer ("**DEO**") and construction workers.

The Project Manager:

- Ensure that the Applicant and on site contractors are aware of all specifications, legal aspects, and standards of procedure relating to the construction phase in terms of environmental protection.

- Ensure that all EMPr measurements and guidelines are communicated to and adhered to by all parties on site.
- Monitor the implementation of the EMPr throughout the construction phase through regular monitoring, inspections and meetings with all applicable parties on site.
- Should be completely familiarised with the Environmental Impact Assessment ("**EIA"**) for the project, the conditions of the Environmental Authorisation ("**EA"**) and other relevant environmental legislation.

The Site Manager:

- Will be familiarised with the EIA/Basic Assessment Report ("**BAR**") for the project.
- Will be familiarised with the conditions regarding the EA for the project.
- Will have sound knowledge of and be familiarised with the EMPr.
- Should be aware of all specifications, legal aspects, and standards of procedure relating to the construction and operational phase in terms of environmental protection and ensure compliance with these.
- Will have an overall responsibility to implement measures as set out in this EMPr.
- Will ensure the relevant audits take place to ensure compliance with this EMPr.
- Will continuously liaise with the project manager, the environmental control officer and other role players on matters concerning the environment.
- Prevent actions that will harm or may cause harm to the environment and take steps to prevent any form of pollution on the site.
- Confine related activities to the demarcated site.

The Dedicated Environmental Officer:

- Should be fully familiar with the EIA Report.
- Be fully familiar with the conditions of the EA.
- Be fully familiar with the EMPr.
- Assume a leading role in performing environmental audits and guiding other staff in the performing of external and internal audits
- Perform monthly environmental reporting for input into Divisional management information reports.
- Be fully up-to-date with all relevant environmental legislation and policies and procedures, and ensure compliance with them.
- Conduct daily inspections to determine compliance with EA using checklists.
- Submit monthly audit update report to External Auditor and Management, showing progress with findings.
- Facilitate reporting, recording, investigation and follow-up of environmental related incidents.

- Facilitate and integrate relevant training programs for personnel covering all activities impacting on the environment
- Ensure that the environmental commitments in this EMPr and the EA are complied with by the contractor and sub-contractors.
- Evaluate operational methods, techniques and procedures, identify environmental risk, draw conclusions and recommend possible solutions.
- Implement and manage the necessary operational Environmental Management Measures.
- Proactively interpret and objectively analyse environmental data and initiate programs to mitigate against the environmental and related risks
- Take appropriate action if the specifications contained in the EMPr are not followed.
- Monitor and verify that environmental impacts are kept to a minimum, as far as possible.
- Ensure that activities on site comply with all relevant environmental legislation.

Contractors and Service Providers:

All contractors (including subcontractors and staff) and service providers are ultimately responsible for:

- Complying with the environmental management specifications where applicable;
- Provide Environmental Method Statements to the Site Manager with regards to how certain activities on-site will be conducted.
- Adhering to any environmental instructions issued by the Site Manager/Project Manager
- Submitting a report, in a format and frequency as decided upon by the Project/Site Manager, which will document all incidents that have occurred during the period before the site meeting
- Arrange that all his employees and those of his subcontractors receive training. Training has to be appropriate for the level of the tasks and functions undertaken.

3 Layout Plan

- A copy of the layout plan must always be available on site.

4 Protection of the Environment

4.1 Awareness Plan

All contractors and employees must be trained and should be informed about the environmental impacts and the prevention thereof. Workers should receive Induction for environmental safety and risk management and regular "Toolbox Talks" should commence to

brief and debrief workers on potential environmental issues in order to prevent an unnecessary environmental impact from occurring.

The following aspects should be taken in consideration:

1. Ensure that development only takes place within the development footprint. Any area cleared outside the scope of the initial EIA/BAR done for the project will trigger another activity in terms of the NEMA 2014 Regulations.

2. All watercourses and/or wetlands are regarded as sensitive areas and must be avoided as far as practically possible. No material/waste products may be dumped into a watercourse and/or wetland.

3. Ensure that hydrocarbons (diesel, oil, and any lubricant) are stored according to best practices.

4. Water utilized for the project may only be abstracted from authorized sources.

5. Ensure that sufficient pollution prevention measures are implemented at the construction area.

6. Good housekeeping on all the sites is very important. Ensure that the construction site is always clean as this will determine the impact on adjacent landowners and passing motorists.

7. General waste skips should be emptied at regular intervals to avoid pollution.

4.2 Protection of Geology and Soil

The geology of the site consists of sedimentary mudstones and layers of sandstone, overlain with clay, covered with deeper sands (refer to the Ecological Assessment in **Appendix D**).

The following aspects should be taken in consideration:

- Topsoil will be removed before construction and stockpiled appropriately and in such a manner to prevent any loss thereof.
    - Topsoil will not be used for any construction purposes.
    - Topsoil may only be used in gardens or for the levelling of the site.
- Soil loss through erosion will be reduced by implementing storm water management practices.
- Equipment and machinery on site will be maintained and drip trays will be used to prevent spillages of petrochemical products which may cause contamination of soil. Any hazardous substances on the site will be stored in a bunded area which consists of an impermeable floor with walls which will have the capacity to contain 110% of the volume of the substance stored therein.

- Any spills of hazardous substances will be cleaned immediately by disposing of the affected soil as hazardous waste.

4.3 Protection of Plant and Animal Life

According to the Ecological Assessment, the vegetation of the site consists of the Bloemfontein Dry Grassland (Gh 5) vegetation type, which is classified as Vulnerable under the National List of Threatened Ecosystems (Notice 1477 of 2009) (National Environmental Management Biodiversity Act, 2004). A small portion of the site consists of this natural vegetation in the form of patches of grassland. However, most of the vegetation is considered to be largely transformed and the site is encroached by trees and shrubs. Numerous exotic weeds and invasive species could also be identified. Two protected species could be identified, namely *Aloe jeppeae* and *Raphionacme hirsute* (Van Rensburg, 2019).

The Ecological Assessment also indicated that mammal activity on the site is low. This is probably due to the isolation of the site and the location of the site within small holdings. Excavated soil mounds of the Common Molerate (*Cryptomys hottentotus*) as well as foraging excavations by Porcupine (*Hystrix africaeaustralis*) could be observed on site. The Common Molerate is adapted to urban areas and the Porcupine is adapted to peri-urban areas and therefore the impact on these species will not be significant (Van Rensburg, 2019).

The following aspects should be taken in consideration:

- No open fires are allowed on the site.
- No animals will be harmed and/or killed on the site. If any animals are encountered, they will be relocated from the site.
- A permit should be obtained to remove the two protected plant species from site. A record of both species must be preserved in a local accredited herbarium and the remaining specimens must be donated to a conservation area.
- Alien plant species on site will be removed to prevent the spread of these plants to the surrounding environment.
- Clearance of vegetation should be limited to the site under construction.

4.4 Protection of Surface Water

There are no surface water features, including wetlands, located on the proposed site. The nearest surface water feature is a possible wetland located 340 m to the southeast of the site. However, there is a longitudinal, poorly defined channel present on site. The vegetation of this channel is dominated by terrestrial species and the channel is therefore most likely an artificial modification (Van Rensburg, 2019).

The following aspects should be taken in consideration:

- An adequate storm water management system should be implemented during the construction and operational phases to accommodate runoff during rain events as well as to divert the water around the development to the surrounding drainage basins.
    - Berms and/or culverts will be constructed around the site, to divert clean water around the site to drain into the natural drainage lines of the environment.
    - Storm water will not be allowed to drain into the natural drainage lines from the construction and operational areas as these areas are regarded as a dirty areas.
- Any hazardous substances will be stored in a bunded area with a capacity to contain 110% of the volume of the substance.
    - The bunded area will have a controlled outlet from which rain water collected therein can be drained and managed as hazardous waste.
- The site will be kept clean and tidy to prevent general waste and littering from occurring in the surrounding surface water resources.
- Spillages of hazardous substances will be cleaned by removing the spill and contaminated soil and disposing of it as hazardous waste.
    - Any incidents on surface water resources during construction will be reported to the relevant authorities within 24 hours of the incident.
- The site will be monitored for any erosion trenches. Trenches will be rectified, and erosion control measures will be implemented.

4.5 Protection of Groundwater

It should be noted that the applicant will not use groundwater during construction or during the operational phase of the activity. In the event that groundwater will be used at any stage of the project a Water Use License should be applied for with DWS and the water use should be authorised by the authority before commencement thereof.

The groundwater of the Bloemfontein area, including the proposed site, consists of a minor aquifer system. Minor aquifers normally yield moderate quantities of groundwater with a variable quantity. According to the Aquifer Classification of South Africa, the Bloemfontein area mostly gets its water from surface water features and not from groundwater. The groundwater quality of the Bloemfontein area is classified as being of moderate quality with a slightly salty taste and having an electrical conductivity of between 70-150 mSm (Department of Water and Sanitation, 2012).

The aquifer in the area is expected to be deep-seated (approximately 90 – 110 meters below ground level ("**mbgl**")) However, the static water level in the area is between 30 and 24 mbgl and is a combination of hydrostatic pressure from below and infiltration water from the surface. A monitoring borehole was drilled on site downstream from the proposed petrol and diesel storage tanks associated with the proposed filling station. "The first 30 mbgl consists of mainly red sand which has high permeability and is estimated that contaminates can spread as fast as 2 m/ day if it comes in contact with the groundwater. It is thus recommended that special precautions need to be taken to prevent surface contamination (spillages and runoff) from infiltrating into the permeable sand and end up in the groundwater." (Van Wyk 2019).

The following aspects should be taken in consideration:

- Spillages of hydrocarbons will be prevented by using drip trays.
- Spillages of any potentially hazardous substances should be cleaned by removing the spill and the contaminated soil and disposing thereof as hazardous waste.
- Potentially hazardous substances will be stored inside a bunded area with an impermeable surface which has the capacity to store more than 110% of the volume of the substance.
- Any tanks and/or pipes will be checked for leakages regularly. If leaks are detected, they should be fixed immediately.
- Quarterly water sample analysis must be conducted on the monitoring borehole in order to test for groundwater contamination.

4.6 Protection of the Air Quality and Regulation of Noise Levels

It is expected that the ambient air quality in the area is good, as the area mainly consists of small holdings and the greater Bloemfontein area is not known for heavy industry. However, construction activities will lead to dust and noise generation. During operation there may also be an increase in noise due to the presence of more people and vehicles.

The following aspects should be taken in consideration:

- If dust proves to become problematic, dust suppression should be implemented on the site to reduce emissions of dust from the site, especially from the movement of vehicles.
- Construction activities, especially activities contributing to dust emissions should be avoided during windy conditions.
- Vehicle movement and speeds at which vehicles travel on the site will be kept to a minimum.
- Waste will not be burned on site and open fires will not be permitted.

- Construction activities contributing to elevated noise levels will be restricted to normal daylight working hours.

4.7 Protection of Site and Surrounding Land Use

The site is currently vacant and not being used for any particular land use. According to the Ecological Assessment the vegetation of the site is also largely transformed. The site is also narrow and isolated from surrounding natural areas, as it is surrounded by small holdings. Thus, there is no real potential to use the site for any other land use.

The following aspects should be taken in consideration:

- Construction and operation activities will only take place within the site boundary to limit disturbance.
- It must be ensured that general and/or construction waste be stored in the correct locations on the site in order to keep the site clean and tidy.
  - The site must be equipped with necessary waste bins.

4.8 Protection of Cultural, Archaeological and Palaeontological Heritage

A Heritage Impact Assessment ("**HIA**") and Palaeontological Impact Assessment ("**PIA**") was conducted for the site. According to the Heritage Impact Assessment (refer to Appendix D) "The site is located within an outcrop area of moderately sensitive sedimentary rocks of the Adelaide Subgroup. However, no outcrop were observed during the inspection of the site which indicated that the underlying geology is capped by well-developed superficial deposits that are largely made up of (palaeontologically sterile) Quaternary wind-blown sands and residual soils" (Rossouw, 2019). There was no aboveground evidence of historically significant structures, rock art, prehistoric structures or clearly marked graves. Historical maps also showed no evidence of buildings, homesteads or associated structures on the site. "However, one isolated feature, which resembles a rubble dump, but what could also be the remnants of an informal grave, has been recorded." A follow-up investigation was conducted by the specialist who indicated that the feature does not bear the same characteristics as those previously identified, unmarked grave sites found around Bloemfontein. "The feature appears to consists of discarded modern building debris (concrete rubble) that has been partially raised by an underground termite mound." The specialist concluded that it is not a grave (Rossouw, 2019).

The following aspects should be taken in consideration:

- If any archaeological objects or palaeontological remains are found, work will stop immediately and SAHRA will be notified.

4.9 Protection of Aesthetics (Visual) Exposure

There has already been an aesthetic impact on the proposed site due to its degraded state and the presence of rubbish dumping, storm water ditches and exotic weeds (refer to the Ecological Assessment in Appendix D). Construction activities will also have a negative aesthetic impact on passing motorists on the R64 road and on the adjacent landowners.

The following aspects should be taken in consideration:

- Alien vegetation should be cleared regularly.
- The site will always be kept clean and neat through correct housekeeping and waste disposal.
- Receptacles should be placed on site for the collection of general waste. These receptacles should be emptied on a regular basis and waste be disposed of at the authorized landfill site in the area.
- Any spills and/or leakages should be cleaned immediately in the correct manner.

5 Inspections and Monitoring

- Ongoing and regular reporting of the progress of implementation of this EMPr will be done.
- It is recommended that an audit be done by an External Environmental Officer once during construction and once during operation.
- Inspections and monitoring shall be carried out on both the implementation of the EMPr and the impact on plant and animal life.
- Visual inspections on erosion and physical pollution shall be carried out on a regular basis.
- Quarterly water sample analysis must be conducted on the monitoring borehole in order to test for groundwater contamination.

6 Compliance Reporting/Submission of Information

- An internal environmental officer will be appointed. The officer is responsible to monitor all the environmental management measures and ensure compliance with the EMPr.
- A compliance assessment will be undertaken by an independent Environmental Control Officer once during construction and once during operation of the site to verify compliance with the EMPr and the EA.

- Any changes of the layout or technology will be submitted to the Free State Department of Economic, Small Business Development, Tourism and Environmental Affairs ("**DESTEA**") for approval.
- Reports confirming compliance with various points identified in the EMPr will be kept and made available when requested.
- Any emergency or unforeseen impact will be reported within 12 hours after identification to the DESTEA telephonically and confirmed in writing.

7 Rehabilitation

It is not anticipated that the proposed project will undergo decommissioning and / or closure. However, should it be decided to rehabilitate the site in future, the site will be rehabilitated to its original state as far as practicable possible, depending on the end land use to be decided upon at that time. The final rehabilitation of the site will, amongst other, include the following activities:

- All infrastructures, equipment and other items used during the operational period will be removed from the site.
- Scrap metal will be sold to be recycled.
- Waste material of any description will be removed entirely from the site and disposed of at a recognized landfill facility in the area.
- Waste will not be permitted to be buried or burned on the site.
- Any concrete surface will be removed and compacted areas will be ripped.
- The site will be profiled with acceptable contours and erosion control measures.
- Topsoil will be returned to its original depth over the area.

Table 1: Mitigation measures and monitoring, responsible person(s) and time frames

Activity	Potential Impact	Mitigation	Responsible Person	Performance Indicators	Time Frame
Construction Phase					
Clearance of site (vegetation and topsoil)	• Erosion • Loss of topsoil • Establishment of invasive alien plant species • Negative aesthetic impact • Unearthing of significant heritage resources • Noise elevation due to clearance of vegetation through the use of machinery • Nuisance due to dust generation •	• Levelling of the site. • Limit construction. activities and movement of construction vehicles to the site under construction. • Stockpile topsoil in an area not prone to erosion for levelling purposes after construction or use in gardens. • Topsoil will not be used for construction purposes. • The site will always be kept clean and neat by housekeeping. • Removal of alien plant species on a regular basis. • Permits are required to remove protected species. • If any objects of archaeological or	DEO	• No erosion • Minimum soil loss • No loss of heritage resources	During construction phase

Activity	Potential Impact	Mitigation	Responsible Person	Performance Indicators	Time Frame
		palaeontological significance are found, SAHRA must be notified immediately and all work must stop. • A speed limit will be enforced on construction vehicles. • Construction will be limited to daytime working hours to limit any disturbance to neighbouring landowners. • Dust control measurements will be investigated if nuisance dust generation proves to be problematic			
Removal of animals	• Loss of animal species	• Monitor site for sensitive species that will have to be relocated. • No hunting and/ or trapping of animals	DEO	• All sensitive species safely relocated from site.	During construction phase
Waste Management	• Littering • General and construction waste • Aesthetic impact	• Building material and general waste must be disposed of at an authorized landfill site and may not be	DEO	No pollution and/or littering	During construction phase

Activity	Potential Impact	Mitigation	Responsible Person	Performance Indicators	Time Frame
		dumped in the veld or on site. • The site will always be kept clean and neat by correct waste disposal measures and housekeeping. • Separate waste skips or bins for the different waste streams must be available on site. Where possible they should be lined and covered.			
Storm Water Management	• Contamination of surface water • Erosion	• Implement appropriate storm water measures in the form of channels, diversion berms, and/or culverts will to prevent any pollution or erosion and to divert any storm water around construction sites	DEO	No erosion No contamination of surface water.	During construction phase
Construction of infrastructure	• Construction activities may lead to dust and noise generation • Negative aesthetic impact • Unearthing of	• Construction should be limited to normal working hours in order to limit the significance of the noise levels • A speed limit will be enforced on construction vehicles	DEO	Minimal noise and dust. Reduced aesthetic impact.	During construction phase

Activity	Potential Impact	Mitigation	Responsible Person	Performance Indicators	Time Frame
	significant heritage resources. • Contamination of soil and groundwater.	• Dust control measurements will be investigated if nuisance dust generation proves to be problematic • The site will always be kept clean and neat by correct waste disposal measures and housekeeping. • If any objects of archaeological or palaeontological significance are found, SAHRA must be notified immediately and all work must stop. • Any hazardous substances on the site will be stored in a bunded area which consists of an impermeable floor with walls which will have the capacity to contain 110% of the volume of the substance stored therein. • Any spills of hazardous substances will be cleaned immediately by disposing of the affected soil as			

Activity	Potential Impact	Mitigation	Responsible Person	Performance Indicators	Time Frame
		hazardous waste. • Quarterly water sample analysis must be conducted on the monitoring borehole in order to test for groundwater contamination.			
EMPr compliance monitoring: Construction Phase	N/A	• Environmental compliance assessment to verify compliance with the EMPr during construction.	Independent Environmental Control Officer	Full compliance with the EMPr and EA, Minimum environmental impacts	Once during construction
Operational Phase					
Waste Management	• Littering • General waste • Aesthetic impact	• General waste must be disposed of at an authorized landfill site and may not be dumped in the veld or on site. • The site will always be kept clean and neat by correct waste disposal measures and housekeeping. • Separate waste skips or bins for the different waste streams must be available on site. Where possible they should be	DEO	No pollution and/or littering	Ongoing during operation

Activity	Potential Impact	Mitigation	Responsible Person	Performance Indicators	Time Frame
		lined and covered.			
Storm Water Management	• Contamination of surface water • Erosion	• Implement appropriate storm water measures in the form of channels, diversion berms, and/or culverts will to prevent any pollution or erosion and to divert any storm water around construction sites construction sites	DEO	No erosion No contamination of surface water	Ongoing during operation
Storage of hazardous substances	• Contamination of groundwater and surface water resources. • Contamination of soil.	• Any hazardous substances on the site will be stored in a bunded area which consists of an impermeable floor with walls which will have the capacity to contain 110% of the volume of the substance stored therein. • Any spills of hazardous substances will be cleaned immediately by disposing of the affected soil as hazardous waste. • Storage tanks and will be	DEO	No contamination of water resources or soil.	Ongoing during operation

Activity	Potential Impact	Mitigation	Responsible Person	Performance Indicators	Time Frame
		checked regularly for leakages. If any are detected, they will be fixed immediately. • Quarterly water sample analysis must be conducted on the monitoring borehole in order to test for groundwater contamination.			
EMPr compliance monitoring: Operational Phase	N/A	• Environmental compliance assessment to verify compliance with the EMPr during operation.	Independent Environmental Officer	Full compliance with the EMPr	Once during operation