TURN180
ENVIRONMENTAL CONSULTANTS
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ENVIRONMENTAL MANAGEMENT PROGRAMME

THE PROPOSED ESTABLISHMENT OF AN EMULSION PLANT ON ERF 1559, HARDUSTRIA, HARRISMITH, FREE STATE

MARCH 2020

DESTEA Ref. No.: EMS/4,6/19/05

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South African Road Binders (Pty) Ltd

Report prepared by:

Environmental Assessment Practitioner (EAP)	:	Louis De Villiers
Assistant to the EAP and project contact person	:	Ansuné Weitsz
Postal Address	:	Suite 221 Private Bag X01 Brandhof 9324
Physical Address	:	21 Dromedaris Street Dan Pienaar Bloemfontein 9301
Tel	:	072 873 6665
Cell	:	072 838 8189/ 072 967 7962
E-mail	:	admin@turn180.co.za ansune@turn180.co.za

Expertise of EAP:

Education:

- B.Sc. Environmental Geography, 2010

Experience:

- 9 years of environmental management experience through conducting Environmental Impact Assessments, compiling Environmental Management Plans and monitoring construction phases of various types of projects.

Applicant:

South African Road Binders (Pty) Ltd

Applicant Contact Person	:	Marius Prinsloo
Postal Address	:	P.O. Box 13125 Noordstad Bloemfontein 9302
Physical Address	:	25 Bloemendal Road Rayton Bloemfontein 9302
Cell	:	082 4508957
Tel	:	051 436 4891
E-mail	:	mprinsloo@taupele.co.za/ admin@taupele.co.za

Site Information:

Erf number	: 1559
21 Digit Surveyors Code	: F01500020000155900000
District	: Harrismith
District Municipality	: Thabo Mofutsanyana District Municipality
Local Municipality	: Maluti-A-Phofung Local Municipality
Site coordinates (Centre of site)	: 28° 17'46.80"S and 29° 8'15.25"E

Contents

List of Tables

1 Project Description

South African Road Binders (Pty) Ltd ("**the applicant**") ("**SARB**") seeks to apply for Environmental Authorisation ("**EA**") with the Department of Economic, Small Business Development, Tourism and Environmental Affairs ("**DESTEA**") in terms of the 2014 Environmental Impact Assessment ("**EIA**") Regulations as amended, under the National Environmental Management Act (Act 107 of 1998) ("**NEMA"**), as well as for an Atmospheric Emission License ("**AEL**") with Province (DESTEA) for the establishment of an Emulsion Plant on erf 1559, Hardustria, Harrismith, Free State ("**site**"). Refer to figure 1 below for the locality of the proposed project.

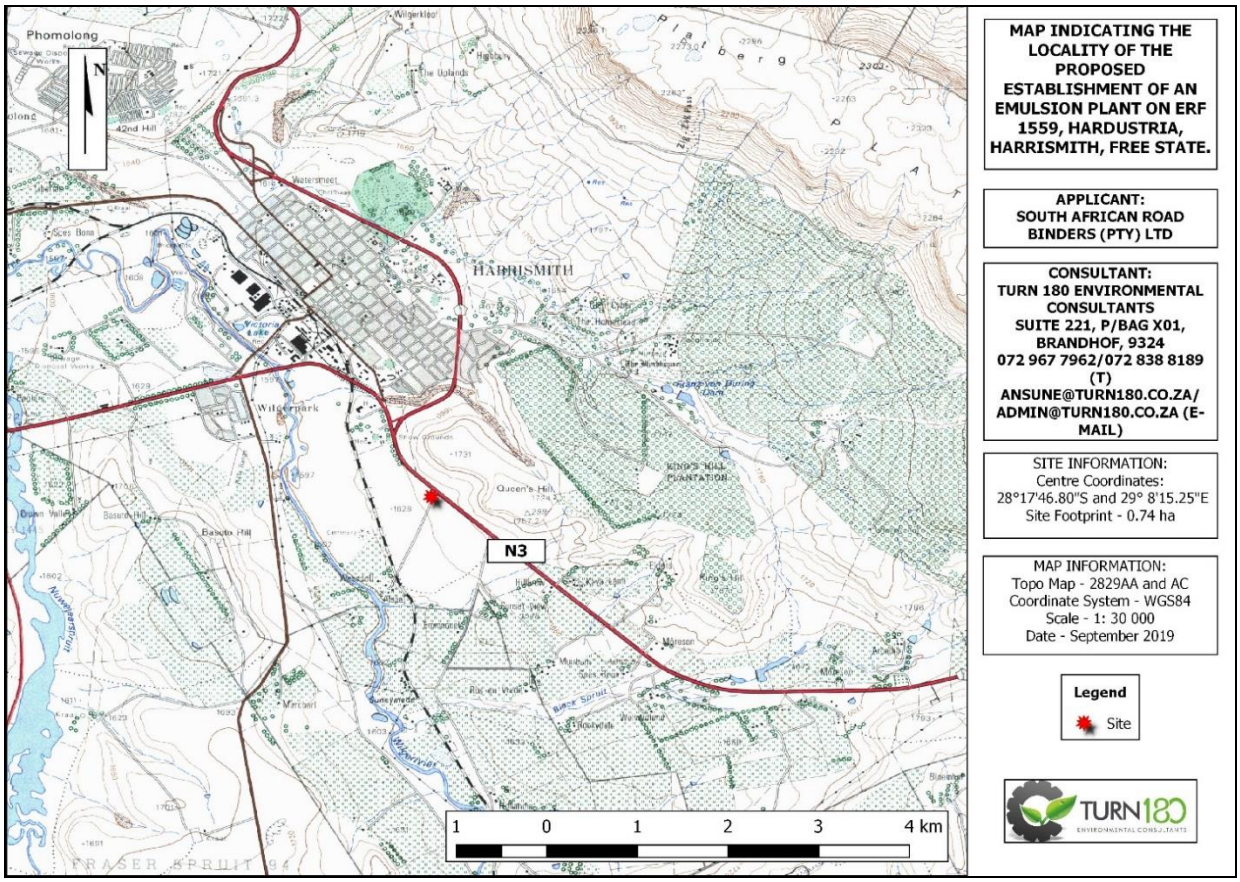

Figure 1: Locality map for the proposed project

The development will entail the establishment of an Emulsion Plant for which approximately 0.74 ha of vegetation will need to be cleared. Bitumen emulsion that is produced during the operational phase of the proposed plant will be sold commercially to be used in projects involving the construction and repair of roads or will be used for the applicant's own projects. The basic operation of the Plant includes mixing heated raw bitumen with water, emulsifiers, chemicals and additives in a colloid mill. The product is then stored in cold storage tanks, ready to be sold or transported to sites. The Emulsion Plant will have the capacity to store approximately a total of 1 102 000 L of dangerous substances. This will include 816 000 L Raw

Bitumen, 9 000 L Diesel, 23 000 L Paraffin and 254 000 L Bitumen Emulsion. Approximately 5 tons of Caustic Soda and 5 000 L of Hydrochloric Acid will also be stored on site. Refer to figure 2 below for the layout of the proposed Plant.

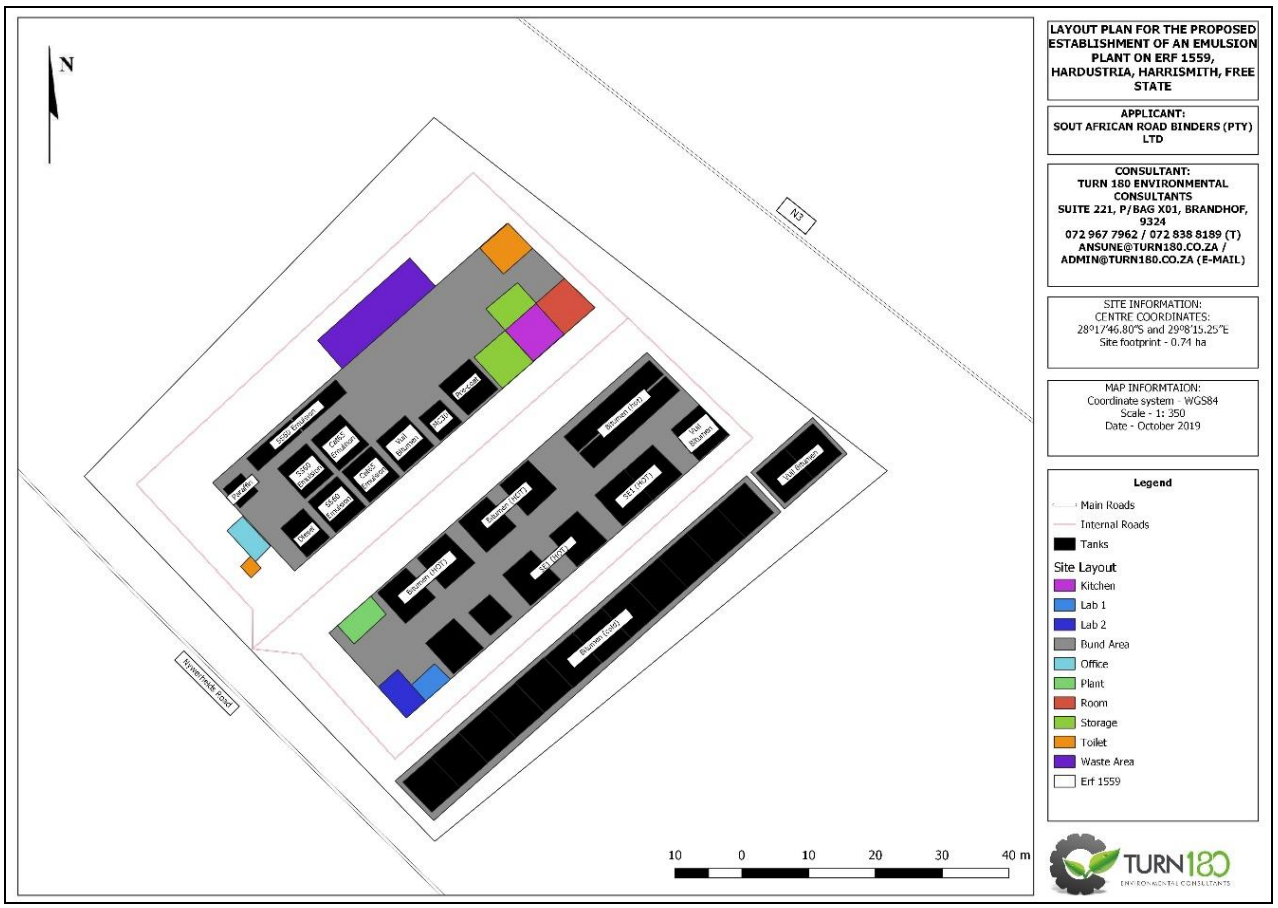

Figure 2 Layout Map for the proposed project.

2 Objectives of the Environmental Management Programme (EMPr)

The Environmental Management Programme intends 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 an Emulsion Plant on erf 1559, Hardustria, Harrismith, 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:

2.1 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.

2.2 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.

2.3 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.

3 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, On Site Environmental Representative, Environmental Control Officer ("**ECO**"), construction workers and employees.

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 EIA/Basic Assessment ("**BA**") for the project, the conditions of the EA and other relevant environmental legislation.

The Site Manager:

- Will be familiarised with the EIA/BA 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 On Site Environmental Representative:

- Should be fully familiar with the EIA/BA Report.
- Be fully familiar with the conditions of the EA.
- Be fully familiar with the EMPr.
- Conduct daily inspections to determine compliance with EA using checklists.
- Facilitate reporting, recording, investigation and follow-up of environmental related incidents.
- 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.

Environmental Control Officer ("ECO"):

- 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.
- Submit monthly audit update report to External Auditor and Management, showing progress with findings.
- 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.

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.

4 Awareness Plan

All contractors and employees must be trained and should 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/BA 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 passing motorists.

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

5 Protection of the Environment

5.1 Protection of Geology and Soil

The geology of the site mainly consists of Tarkastad mudstone and sandstone with narrow dolerite dykes and sills in places. The soil of the site mainly consists of plinthic catena, dystrophic and/or mesotrophic soils (ENPAT, 2001). It should be noted that the proposed project will not include any blasting or deep excavation.

The following aspects should be taken into consideration:

- Topsoil (if any) 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 and will only be used during the levelling of the site.
    - Stockpiles may not exceed a height of 1.5 m.
- 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.

5.2 Protection of Plant and Animal Life

According to the Ecological Assessment, the site falls within the Eastern Free State Sandy Grassland (Gm 4) vegetation type, which is classified as Least Concern according to the National List of Threatened Ecosystems (Notice 1477 of 2009) (National Environmental Management Biodiversity Act, 2004). The site also falls within an Ecological Support Area 1 as per the Free State Biodiversity Management Plan (2015). the site still consists of natural grassland. However, it has been degraded by surrounding activities and on-site disturbance (vehicle turning point, rubbish dumping, overgrazing and industrial activities) and the conservation value of the site is considered to be low. Furthermore, due to the transformed nature of the vegetation, no rare or threatened species were observed on site and it is unlikely that such species would occur on site. However, two protected geophytic species, *Asclepias gibba* and *A. multicaulis* were observed on site (Van Rensburg 2020).

Due to the degraded state of the site and it being located within an industrialised area, it is highly unlikely that a viable mammal population will be present on site. However, it is still likely that some small rodents may be present on site. Due to the degraded condition of the site it is highly unlikely that any rare or endangered species would occur here (Van Rensburg 2020).

The following aspects should be taken into consideration:

- No vegetation clearance may take place outside the developmental footprint.
- 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.
- The necessary permits should be obtained to remove the two protected plant species on site.
- Alien plant species on site will be removed to prevent the spread of these plants to the surrounding environment.
    - Removal of alien plants must adhere to the Alien and Invasive Species Regulations.

5.3 Protection of Surface Water

There are no surface water features, including wetlands, located on the proposed site. The closest watercourse is the Wilge River, which is located approximately 1.3 km to the southwest of the site (ENPAT 2001). However, there are drainage lines in the surrounding area and runoff from site will follow the gradual slope of the site and these drainage lines towards the Wilge River (Van Rensburg 2020).

The following aspects should be taken into 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 will be constructed around the site to divert clean water around the site to drain into the natural drainage lines of the environment.
    - Stormwater will not be allowed to drain into the natural drainage lines from the operational area as this area is regarded as a dirty area.
- 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 rainwater 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.

5.4 Protection of Groundwater

The Harrismith area consists of a minor aquifer system with a moderate vulnerability. Minor aquifers normally yield moderate quantities of groundwater with a variable quantity. These aquifers can normally be found in fractured rocks without a high primary permeability. According to the Aquifer Classification of South Africa, the Harrismith area mainly receives its water from surface water features and not from groundwater. The groundwater quality of the Harrismith 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).

It is not planned that any groundwater be used for the development. If this changes, a Water Use License will be applied for.

The following aspects should be taken into 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 on an impermeable surface inside a bunded area to prevent seepage of the substance and pollution of the groundwater.

5.5 Protection of the Air Quality and Regulation of Noise Levels

There are numerous contributors to atmospheric emissions in the area, as the town of Harrismith is known for its industry. The Hardustria area also has numerous truck stops, including the largest truck stop in Africa, namely the Highway Junction truck stop, which is located approximately 780 m from the proposed site. These truck stops also contribute towards emissions in the form of vehicle exhaust emissions and dust fallout. Therefore, it is expected that the ambient air quality of Harrismith is not in a good condition. However, according to the Atmospheric Impact Report, the impact of modelled concentrations of emissions associated with the emulsion plant are well below the national health-based ambient air quality standards and guidelines (uMoya-Nilu Consulting 2019).

These surrounding activities also contribute to noise in the area. The noise of the Emulsion Plant itself is expected to be low. There are also no residential areas within close proximity of the site and therefore the overall impact of noise is expected to be low.

The following aspects should be taken into consideration:

- Dust suppression should be implemented on the site to reduce emissions of dust from the site, especially from the movement of vehicles.
    - Dust control measures must adhere to Dust Control Regulations.
- Construction and operational 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 and operational activities contributing to elevated noise levels will be restricted to normal working hours.
- The type of tanks that will be used in the emulsion plant will be of such nature to reduce "breathing losses".
- An air emission monitoring programme will be implemented to ensure compliance to air quality standards and guidelines.

5.6 Protection of Site and Surrounding Land Use

Currently the property is vacant and not being used for anything. A portion of the site is transformed by heavy vehicles using it as a turning point and rubbish dumping is also present on site. The site is also located adjacent to communal grazing land and it was observed that overgrazing by domestic stock does occur on site (Van Rensburg 2020).

The site is zoned as "General Industrial" and may need to be rezoned to allow the Emulsion Plant. Town Planners have been appointed who are handling this process. Due to the

property being located within an industrial area and being degraded, the potential to use it for other activities is low.

The following aspects should be taken into 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.

5.7 Protection of Cultural, Archaeological and Palaeontological Heritage

No physical signs of any buildings older than 60 years or any archaeological remains were observed on site. According to the HIA "any surface signs of archaeological remains of any era on the proposed site for the emulsion plant would have been obliterated by the clearing of the natural vegetation and installation of electrical, water and sewerage infrastructure for this suburb." Also, the literature research did not indicate that any activities took place on the property prior to the establishment of the industrial suburb (Philip 2020). Furthermore, no fossiliferous outcrop was found in the proposed site and the overall palaeontological sensitivity is considered to be low (Butler 2020).

The following aspects should be taken into consideration:

- No deep excavation will take place.
- If any archaeological objects or palaeontological remains are found, work will stop immediately, a specialist will be contacted and SAHRA will be notified.
- The Chance Finds Procedure must be implemented to ensure that any subsurface archaeological material that is uncovered during the construction phase be reported and dealt with accordingly.

5.8 Protection of Aesthetics (Visual) Exposure

The site is located within an industrial area and is degraded. The site is also surrounded by numerous other industries and businesses. However, the proposed site is located directly next to the N3 national road and therefore may have a negative aesthetic impact on passing motorists.

The following aspects should be taken into consideration:

- Alien vegetation should be cleared regularly.
- Waste should be disposed of in the correct manner regularly.

- Separate skips and/or bins should be available for the separate waste streams.
- Any spills and/or leakages should be cleaned immediately in the correct manner.

6 Inspections and Monitoring

- Ongoing and regular reporting of the progress of implementation of this EMPr will be done.
- It is recommended that an audit is done monthly during construction and once during operation by the independent Environmental Control Officer.
- 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.

7 Compliance Reporting/Submission of Information

- An on site environmental representative should be appointed. This person 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 monthly 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 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.

8 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 recognised 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 • Contamination of soil • Loss of vegetation • Establishment of invasive alien plant species • Negative aesthetic impact on passing motorists • Unearthing of significant heritage resources	• The site will be levelled in such a manner to allow storm water to be diverted around the site and drain into the surrounding storm water channels. • No ponding may occur on 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 correct housekeeping.	On Site Environmental Representative and Project Manager	• No erosion • Minimum soil loss • No loss of heritage resources • No loss of protected plant species	During construction phase

Activity	Potential Impact	Mitigation	Responsible Person	Performance Indicators	Time Frame
		• Removal of alien plant species on a regular basis. • If any objects of archaeological or palaeontological significance are found, SAHRA must be notified immediately and all work must stop. • The necessary permits should be obtained to remove protected species.			
Removal of animals	• Relocation of all animal life on site	• Monitor site for sensitive species that will have to be relocated. PLEASE NOTE: No sensitive species were identified during the Ecological Assessment.	On Site Environmental Representative and Project Manager	All sensitive species safely relocated from site.	During construction phase
Waste Management	• Littering • Dumping of construction waste on site. • Aesthetic impact • Mismanagement of sewage	• Building material and general waste must be disposed of at an authorised landfill site and may not be dumped in the veld or on site. • The site will always be	On Site Environmental Representative and Project Manager	No pollution and/or littering	During construction phase

Activity	Potential Impact	Mitigation	Responsible Person	Performance Indicators	Time Frame
		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	• Erosion. • Contamination of groundwater and surface water resources (through dirty storm water from construction site).	• Appropriate storm water management measure in the form of channels, diversion berms, and/or culverts should be constructed to prevent any erosion and to divert any storm water around construction sites.	On Site Environmental Representative and Project Manager	• No erosion • No contamination of water sources • No clean storm water entering the site	During construction phase
Construction of infrastructure (Emulsion Plant)	• Construction activities may lead to dust and noise generation • Negative aesthetic impact on passing motorists • Unearthing of significant heritage resources.	• 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 • Dust control measurements will be investigated if nuisance dust generation proves	On Site Environmental Representative and Project Manager	• Minimal noise and dust. • Reduced aesthetic impact.	During construction phase

Activity	Potential Impact	Mitigation	Responsible Person	Performance Indicators	Time Frame
		to be problematic • Dust control measures must adhere to Dust Control Regulations. • 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.			
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	Monthly during construction
Operational Phase					
Waste Management	• Littering • General waste • Aesthetic impact	• Waste bins for the collection of general waste must be available on site. • General waste must be disposed of at an authorised landfill site and may not be dumped in the veld or	On Site Environmental Representative and Project Manager	No pollution and/or littering	Ongoing during operation

Activity	Potential Impact	Mitigation	Responsible Person	Performance Indicators	Time Frame
		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	• Erosion. • Contamination of groundwater and surface water resources (through dirty storm water from operational site or seepage/spills from hazardous substances).	• Storm water management measures implemented during the construction phase should be maintained. • Dirty storm water from the operational area is not allowed to enter natural drainage lines. • Runoff from rainfall events may not enter the operational area • Any spills of hazardous substances should be cleaned immediately.	On Site Environmental Representative and Project Manager	• No erosion • No contamination of water sources • No spills	Ongoing during operation
Storage of hazardous substances	• Contamination of groundwater and surface water resources.	• Any hazardous substances on the site will be stored in a bunded area which	On Site Environmental Representative and Project	No contamination of water resources or soil.	Ongoing during operation

Activity	Potential Impact	Mitigation	Responsible Person	Performance Indicators	Time Frame
	• Contamination of soil.	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 will be inspected regularly for leakages. If any are detected, they will be fixed immediately.	Manager		
Operation of Emulsion Plant	• Emissions into the atmosphere • Negative aesthetic impact on passing motorists • Establishment of invasive alien plant species	• The type of tanks that will be used in the emulsion plant will be of such nature to reduce "breathing losses". • An air emission monitoring programme and dust fallout monitoring programme will be implemented to reduce the potential	On Site Environmental Representative and Project Manager	• Keeping to Atmospheric Emission Standards and Dust Regulations • Clean and neat site • No alien invasive species	Ongoing during operation

Activity	Potential Impact	Mitigation	Responsible Person	Performance Indicators	Time Frame
		impact. • Dust control measures must adhere to Dust Control Regulations. • Removal of alien plant species on a regular basis. • Removal of alien plants must adhere to the Alien and Invasive Species Regulations. • The site will always be kept clean and neat by housekeeping.			
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 and EA	Once during operation