DRAFT ENVIRONMENTAL SCOPING REPORT:

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

NOVEMBER 2019

Report prepared by:

REGISTRATION NUMBER: 2018/110720/07

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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

EXECUTIVE SUMMARY

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**").

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.

The proposed development is also scheduled as a Macadam preparation process that also needs an AEL in terms of the National Environmental Management Air Quality Act (Act 39 of 2004) (**"NEM:AQA"**).

The following activities will be applied for:

GN. R. 893 of the NEM: AQA 2013 Regulations:

- Category 2: Subcategory 2.4: Storage and Handling of Petroleum Products: "*All permanent immobile liquid storage facilities at a single site with a combined storage capacity of greater than 1000 cubic meters*."
- Category 5: Mineral Processing, Storage and Handling, Subcategory 5.10: Macadam Preparation - "*Permanent facilities used for mixtures of aggregate; tar or bitumen to produce road-surfacing materials."*

GN. R. 325 of the NEMA 2014 Regulations as amended:

- *Activity 4 – "The development and related operation of facilities or infrastructure, for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic metres."*

- Activity 6 – "*The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent*".

The site is located within an industrial area of the town of Harrismith and is currently vacant. The zoning of the site is currently "General Industrial". An application for rezoning is in process, due to the Emulsion Plant requiring a "Noxious Industrial" zoning.

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). However, it should be noted that the site is situated within an industrial area of the town and thus the site is degraded. The area that will be cleared is also smaller than 1 ha (0.74ha). An Ecological Assessment will be conducted as part of the EIA phase.

Furthermore, there are no wetlands or watercourses on the site. The nearest surface water feature is the Wilge River, which is located approximately 1.3 km to the southwest of the site. The groundwater of the Harrismith area consists of a minor aquifer system which has a vulnerability rating of moderate. According to the Aquifer Classification of South Africa, the Harrismith area mostly gets its water from surface water features and not from groundwater. The groundwater quality of the 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 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).

The site is situated within the Upper Vaal Water Management Area and is located in Rainfall Zone C8A and has a Mean Annual Rainfall (**"MAR"**) between 600 mm and 700 mm per annum. The site also falls within the C81E Quaternary Catchment. Furthermore, the property is located in Evaporation Zone 12A with a Mean Annual Evaporation (**"MAE"**) of between 1 200 mm to 1 300 mm. Mean maximum daily temperatures vary from 26°C in the summer to 16°C in winter and the prevailing wind direction in the area is a West North Westerly wind.

The main economic activities in Harrismith centres around industry. Industrial activities include agro-processing, metal fabrication and textile fabrication (SANEC 2012). Therefore, there are numerous contributors towards air emissions and the ambient air quality in Harrismith is not expected to be very good. During operation the Emulsion Plant does not generate a lot of noise and the emissions into the atmosphere are minimal. Thus, the impact of the proposed

project on these aspects is expected to be low. However, an Atmospheric Impact Assessment will be conducted as part of the EIA phase of the project.

As mentioned, the proposed site is vacant and disturbed due to it being located within an industrial area. Thus, there are no buildings older than 60 years on the proposed site and it is highly unlikely that there are any heritage objects or palaeontological remains on site. A Heritage and Paleontological Impact Assessment will be conducted as part of the EIA process.

Alternatives

The preferred site for the proposed development is erf 1559, Hardustria, Harrismith, Free State. The applicant has an agreement with the landowner to utilise the site. Please refer to the Lease Agreement in **Annexure 5.**

The following alternatives were considered during the study:

- Location Alternatives: There are two other vacant properties (erf 4919 and erf 1560) situated on either side of the preferred site (erf 1559), which could be investigated as alternatives. Both these properties have the same environmental condition as the preferred site and all three properties are located in an industrial area. However, these other two properties are not considered feasible due to numerous reasons discussed later on in this report.
- Design / Layout alternative: There is no feasible design/layout alternative for this project that will be assessed
- Technological alternative: There is no feasible technological alternative for this project that will be assessed.
- No Go alternative: The "no-go" alternative will be considered throughout the assessment of the proposed project.

(The alternatives will be discussed in more detail in Section 5 of this report)

Baseline Assessments

A baseline site assessment was undertaken by Mr. Louis De Villiers (**"EAP"**) and Ms. Ansuné Weitsz (**"EAP Assistant"**) to identify and assess any potential impacts associated with establishing the proposed Emulsion Plant. This was followed by numerous discussions with specialists and the operations manager.

Desktop studies regarding sensitive environmental features located in close proximity to the site have also been done.

Public Participation

The Public Participation Process ("**PPP**") was conducted according to the 2014 EIA Regulations, as amended.

Comments, responses and proof of notifications sent during the PPP are included in Section 7 and **Annexure 3** of this Scoping Report (refer to attached document in **Annexure 3**).

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1 Introduction

This Scoping Report forms part of the Scoping and Environmental Impact Assessment ("**S&EIA**") process currently underway in accordance with the 2014 EIA Regulations, as amended. The purpose of the S&EIA process is to assess all impacts which may occur as a result of the activities associated with the proposed project and provide mitigation and management measures to be implemented throughout all phases of the project to prevent and/or reduce the impacts. The S&EIA process is also followed to obtain EA and an AEL to ensure legal compliance before establishing the Emulsion Plant.

1.1 Background to the Proposed Site

The proposed development will take place on erf 1559, Hardustria, Harrismith, Free State (refer to figure 1 below and the Locality Map in **Annexure 2**). The site measures 0.74 ha and is currently vacant and not being used for anything. The applicant has a lease agreement with the landowner in order to establish the Plant on this property (please refer to the lease agreement attached in **Annexure 5**). The site is currently zoned as "General Industrial" and may need to be rezoned in order to allow the Emulsion Plant, which falls under "Noxious Industrial". Town Planners have been appointed who are handling this process.

21 Digit Surveyor General Code for erf 1559:	**F01500020000155900000**

Coordinates of the corners of the site:

Corner	Latitude (S)	Longitude (E)
A	28° 17'44.55"S	29° 8'15.16"E
B	28° 17'46.55"S	29° 8'13.20"E
C	28° 17'48.54"S	29° 8'15.19"E
D	28° 17'46.50"S	29° 8'17.64"E

The coordinates of the proposed Emulsion Plant site:

	Latitude (S)	Longitude (E)
Centre of site	28° 17'46.80"S	29° 8'15.25"E

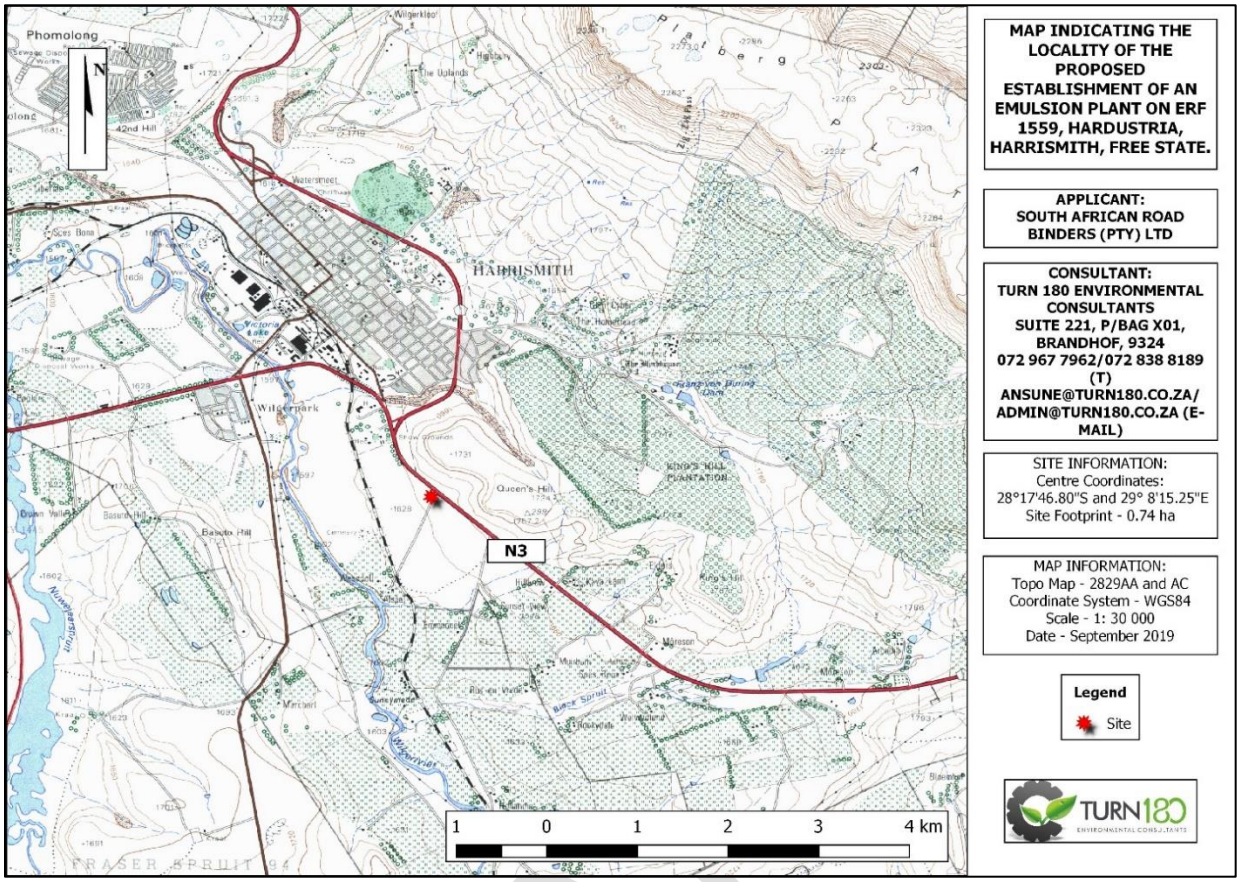

Figure 1: Locality Map for the proposed project

1.2 Regional setting

Province: Free State Province

District Municipality: Thabo Mofutsanyana District Municipality

Local Municipality: Maluti-A-Phofung Local Municipality

1.3 The Applicant

Applicant: South African Road Binders (Pty) Ltd

Address: 25 Bloemendal Road
Rayton
Bloemfontein
9302

1.4 The Environmental Assessment Practitioner ("EAP")

Company: Turn 180 Environmental Consultants

EAP: Louis De Villiers

Postal address:	Suite 221 Private Bag X01 Brandhof 9324
Contact person:	Ansuné Weitsz
Tel:	072 873 6665
Cell:	072 838 8189/072 967 7962
E-mail:	ansune@turn180.co.za / admin@turn180.co.za

1.5 Specialists:

Ecological Assessment	DPR Ecologists (Mr. Darius Van Rensburg)
Heritage Assessment	Ms. Loudine Philip
Palaeontological Assessment	Banzai Environmental
Air Quality Assessment	uMoya-NILU Consulting (Pty) Ltd

Refer to **Annexure 1** attached hereto for the expertise of the project team to conduct the relevant studies. Specialist studies will be conducted in the EIA Phase and reports will be included in the EIA Reports.

2 Project description

2.1 Emulsion production process

The development will entail the establishment of an Emulsion Plant. Bitumen emulsion, that is produced during the operational phase of the proposed Plant, will be sold commercially for road construction projects involving the construction and repair of public roads or will be used by the applicant for their own road construction projects.

The basic operation includes raw bitumen being pumped into a Polymer Modifier Plant where polymer is added to the bitumen. The addition of polymers improves the paving properties of bitumen, making it more suitable to handle high stress. The finished product gets pumped into hot storage tanks. In chemical mixing tanks, water, emulsifiers, chemicals and additives are mixed. The hot bitumen (140°C) and the prepared "soap" are both pumped into the Emulsion Plant or colloid mill where they get mixed. The finished bitumen emulsion is pumped into storage tanks. (Please refer to figure 2 below for a diagram indicating the basic process of the Emulsion Plant).

The Emulsion Plant will operate approximately 12 hours a day, 300 days per year. Raw materials that can be used to produce the emulsion mix may include raw bitumen, Vinex powder (emulsifier), caustic soda flakes, EM44 (emulsifier), 33.3 % hydrochloric acid, paraffin, E11(emulsifier), Indulin Latex, Alvaloy Polymer and water. The products resulting from this process are different bitumen emulsions that include SS60, CAT65, MC30, PRECOAT, S-E1 and A-E2. In total, approximately 16 tons of bitumen emulsion (any type) is produced per hour.

Specific processes for these products:

SS60 @ 10 ton/h

Bitumen goes from hot storage (@140°C) to the mill inside the plant (@5900 litre/h). Inside the mill, it gets mixed with water (4100 litre/h) and 1% Vinex and Caustic Soda dilution 320 kg/h. Bitumen gets shredded and emulsified and then stored in cold storage ready to send to site.

CAT65 @ 6 ton/h

Bitumen goes from hot storage (@140°C) to the mill inside the plant (@ 3870 litre/h) Inside the mill, it gets mixed with water (2130 litre/h) and EM44 (@18kg/h) and hydrochloric acid (@18kg/h). Bitumen gets shredded and emulsified and then stored in cold storage ready to send to site.

S-E1

Mix containing bitumen (28 tons) and 500kg of Alvaloy polymer.

A-E2

Mix containing bitumen (29 tons) and 725kg Alvaloy polymer.

PRECOAT

Mix containing bitumen 15.636 tons and paraffin 11.250 tons, diesel 3.003 tons and EM44 165kg.

MC30

Mix containing bitumen 21.150 tons and paraffin 8.856 tons.

Some other products also get made as the demand requires and these include CAT70, PRIME and ACE2. 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, 9000 L Diesel, 23 000 L Paraffin and 254 000 L Bitumen Emulsion. Approximately 5 tons of Caustic Soda and 5000 L of Hydrochloric Acid will also be stored on site.

Some emissions are generated during the production of bitumen emulsion. The primary fugitive emission sources for the Emulsion Plant operations include storage tanks containing hot bitumen, diesel storage tanks, paraffin storage tanks and diesel burners. Key emissions include NO_x, SO_2, CO and Volatile Organic Compounds (VOCs). However, these emissions are very low and were well below the limits set for the listed activity 5.10: Macadam Preparation for the previous emission monitoring conducted on the plant when it was located at a different site. Nonetheless, an air emission monitoring program will be implemented to verify compliance with the air emission standards in terms of the NEM:AQA.

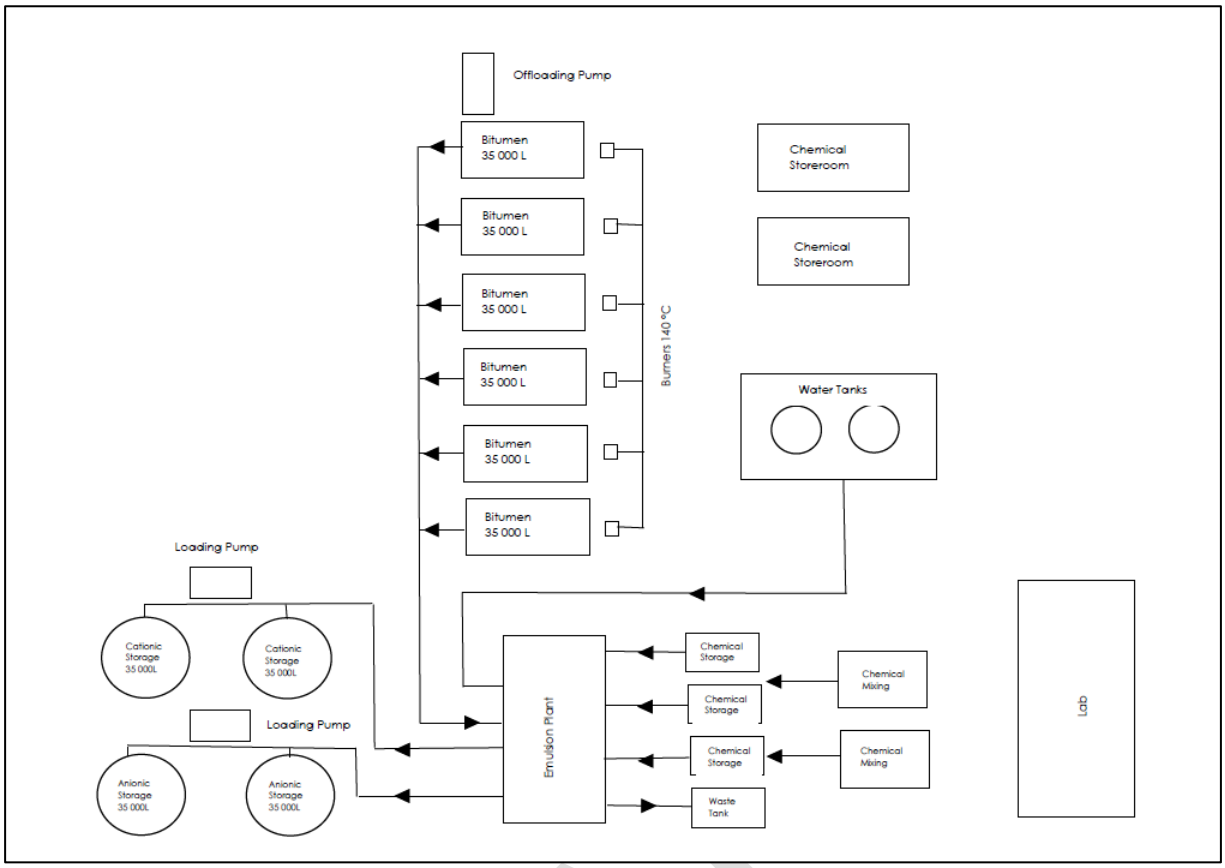

Figure 2: Basic process flow diagram for the Emulsion Plant.

3 Legal requirement status

The aim of this section is to provide an overview of the legal framework and administrative requirements applicable to the licensing of the activity to ensure compliance with environmental legislation.

- **NEMA;**

  A S&EIR process must be followed in terms of the 2014 EIA Regulations as amended in 2017 and in terms of the 2013 NEM: AQA Regulations. The following activities are being applied for:

Number and date of the relevant notice	Activity No(s) in terms of the relevant notice	Description of each listed activity
GN. R. 893 of the NEM: AQA 2013 Regulations	Category 2 Subcategory 2.4	Category 2: Subcategory 2.4: Storage and Handling of Petroleum Products: "*All permanent immobile liquid storage facilities at a single site with a combined storage capacity of greater than 1000 cubic meters*."
GN. R. 893 of the NEM: AQA 2013 Regulations	Category 5 Subcategory 5.10	Category 5: Mineral Processing, Storage and Handling, Subcategory 5.10: Macadam Preparation - "*Permanent facilities used for mixtures of aggregate; tar or bitumen to produce road-surfacing materials.*"
GN. R. 325 7 April 2017	Activity 4	"*The development and related operation of facilities or infrastructure, for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic metres*."
GN. R. 325 7 April 2017	Activity 6	"*The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent.*"

- **NHRA**;

  The site has not been given any formal protection by the SAHRA or the Free State Heritage Authority under the NHRA. A Heritage and Paleontological Impact Assessment will be undertaken during the EIA process by a specialist to determine the historical value of the proposed site and all findings will be communicated to SAHRA and the Free State Heritage Authority.

4 Project motivation

4.1 Need and desirability of the Project

The Emulsion Plant produces bitumen emulsion for use in tarring of roads and is therefore very important for construction and rehabilitation of roads. This benefits society directly by improving access and connectivity for communities and businesses. It would also benefit society by providing local people with jobs. The site is located in a favourable position, as Harrismith is located at a major junction of the N5 national road and the N3 national road, which ensures mobility in all directions. It is also located relatively close to the export harbour at Durban (SANEC 2012), from which the applicant receives their raw bitumen which is used in the emulsion production process.

4.2 Socio-economic value of the activity

It is estimated that the project will have an approximate capital value of R10 245 000 upon completion. Approximately 10 new employment opportunities will be created by the establishment of the Emulsion Plant, namely 1 Plant Supervisor, 1 Plant Operator, 1 Clerk (weigh bridge, admin, sales, stock), 1 Clerk (debtors and creditors), 2 Skilled Labourers, 2 Unskilled Labourers, 1 Domestic Cleaner and 1 Fork Lift Operator.

4.3 Benefits and negative aspects of the project

<u>The Project will benefit society in that:</u>

- Job opportunities for local people will be created (at least 10 new jobs as indicated above).
- Upgrading/construction of roads will improve access and connectivity for communities and businesses.
- The project will have a positive impact on Harrismith's economy.

<u>Negative aspects associated with the Project include the following:</u>

- The Emulsion Plant may have a negative aesthetic impact on adjacent landowners and passing motorists using the N3 national road. However, it should be noted that the proposed site is located in an industrial area and is already degraded.
- The Emulsion Plant may release some emissions into the atmosphere, which will have an impact on ambient air quality. However, an Atmospheric Impact Assessment will be conducted as part of the EIA phase.
- Increased levels of dust and noise may occur during transportation of materials and the product. However, these impacts are expected to be low, as all roads are paved, and the site will be overlain with gravel initially and then paved later on. Operational activities will also only take place during normal working hours.

5 Alternatives

5.1 Location alternatives:

There are two other vacant properties (erf 4919 and erf 1560) situated on either side of the preferred site (erf 1559), which could be investigated as alternatives.

5.1.1 Preferred Site

The proposed site for the Emulsion Plant is located at 28°17'46.80"S and 29° 8'15.25"E, on erf 1559, Hardustria, Harrismith. The proposed site is currently vacant and not being used for anything. It is situated within an industrial area and zoned as "General Industrial". The applicant also has permission to utilise this site from the landowner. The property was recently specifically bought by the landowner for this purpose.

There are no watercourses or other sensitive environmental features located on, or within close proximity to the proposed site. The Wilge River is located more than 1 km away from the site. The site is also situated within a vegetation type that is classified as Least Concern (Eastern Free State Sandy Grassland) and the site is degraded. There is a railway line approximately 660 m from the proposed site.

5.1.2 Alternative 1

There is a vacant property situated adjacent to the preferred site on its eastern side. This alternative is located at 28°17'48.52"S and 29° 8'17.34"E, on erf 1560, Hardustria, Harrismith. This site has the same environmental condition as the preferred site and is also located within an industrial area. However, impacts relating to aesthetics and noise may be greater as this site is located directly next to another business. Refer to figure 3 below and the Alternative Map in **Annexure 2** for the location of Alternative 1.

5.1.3 Alternative 2

The second alternative site is situated on the other side of the preferred site, directly adjacent to it, on erf 4919, Hardustria, Harrismith. This site also has the same zoning and environmental condition as the preferred site and alternative 1. However, the site is in the process of being bought by someone else, who is planning another development on the property. Therefore, this site is not feasible and will not be assessed further.

Due to the above mentioned, the preferred site is considered to be the best option for the development.

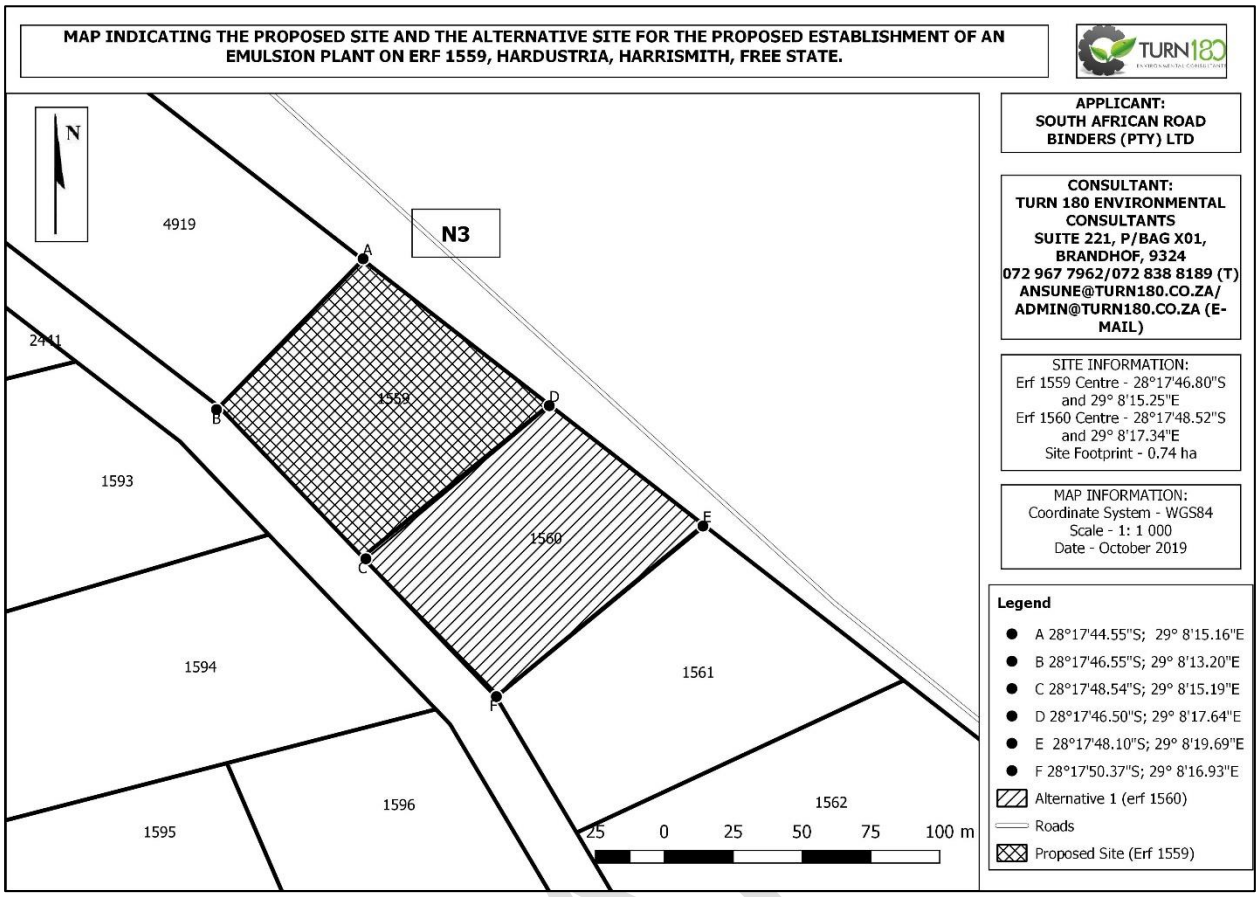

Figure 3: Map indicating the Preferred Site and Alternative 1.

5.2 Design / Layout alternative:

There is no feasible design/layout alternative for this project that will be assessed due to the following reasons:

The applicant has extensive knowledge and experience in the operation of the Emulsion Plant and the layout of the site is usually designed in a manner to allow the most efficient and safest way of operation, storage of goods and transportation of material to and product from the plant. Please refer to figure 4 below and the Layout Plan attached in **Annexure 2.**

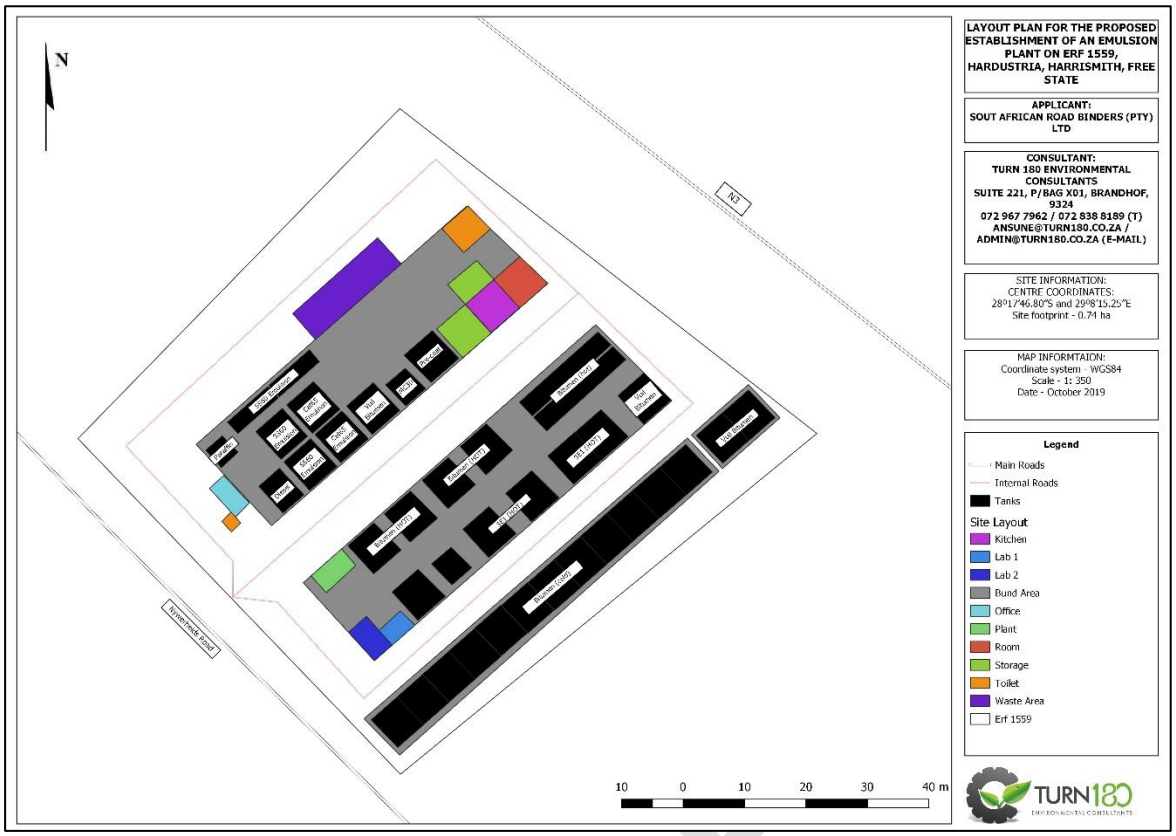

Figure 4: Layout Map for the proposed project.

5.3 Technological alternative:

As far reasonably possible, the best technology will be utilised to limit and / or prevent impact on the environment. The type of tanks that will be used for the storage of goods on site will be of such nature as to minimise "breathing losses" into the atmosphere. All dangerous substances stored at the Plant will be stored in a bunded area which can contain 110% of the volume of the substance. Emissions originating from the Emulsion Plant were very low and were well below the limits set for the relevant listed activity during previous emission monitoring, when the Plant was located at a different site. An air emission monitoring program and dust monitoring program will be implemented to verify compliance to the air emission standards in terms of the NEM:AQA. Therefore, there is no technological alternative at this time, as the latest and best technology available to the applicant is used in the Plant.

5.4 No Go alternative:

The "no-go" alternative will be considered throughout the assessment of the proposed project. If the project is not authorised, no bitumen emulsion will be produced at the site, which will result in road construction projects in the surrounding area needing to transport bitumen emulsion from somewhere else. This will increase the cost of repairing the roads in the area in future. No new job opportunities will be created by leaving the site vacant, which won't benefit the economy of the area.

6 Description of the receiving environment that might be affected and a description of environmental issues, potential impacts and cumulative effects

6.1 Geology and soil

Overview

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.

Potential impacts	**Preliminary significance**	**Mitigation**
There will not be any impact on geology, as establishing an Emulsion Plant will not involve any blasting or deep excavation.	Negligible – There will be no geological impact.	No blasting or disturbance of geology.
There will be an impact on soil, as topsoil will need to be removed and the area will need to be compacted. Spillage of hazardous substances could also lead to contamination of the soil.	Low - Moderate - If mitigation and management measures are implemented.	If topsoil is removed, soil loss will be reduced through stockpiling topsoil and preventing erosion by implementing storm water management practices or covering topsoil stockpiles with tarps. No topsoil may be used for construction purposes. Contamination of soil through spillage of hazardous substances is also possible. However, once the site is paved in the future, this impact will become insignificant.
Cumulative impacts	**Preliminary significance**	
None	None	

6.2 Climate

Overview

The site is situated within the Upper Vaal Water Management Area and is located within Rainfall Zone C8A and has a Mean Annual Rainfall (**"MAR"**) between 600 mm and 700 mm per annum (refer to figure 5 below). The site also falls within the C81E Quaternary Catchment. Furthermore, the site is located within Evaporation Zone 12A with a Mean Annual Evaporation (**"MAE"**) of between 1 200 mm to 1 300 mm (refer to figure 6 below). Mean maximum daily temperatures vary from 26°C in the summer to 16°C in winter (refer to figure 7 below) and the prevailing wind direction in the area is a West North Westerly wind (refer to figure 8 below).

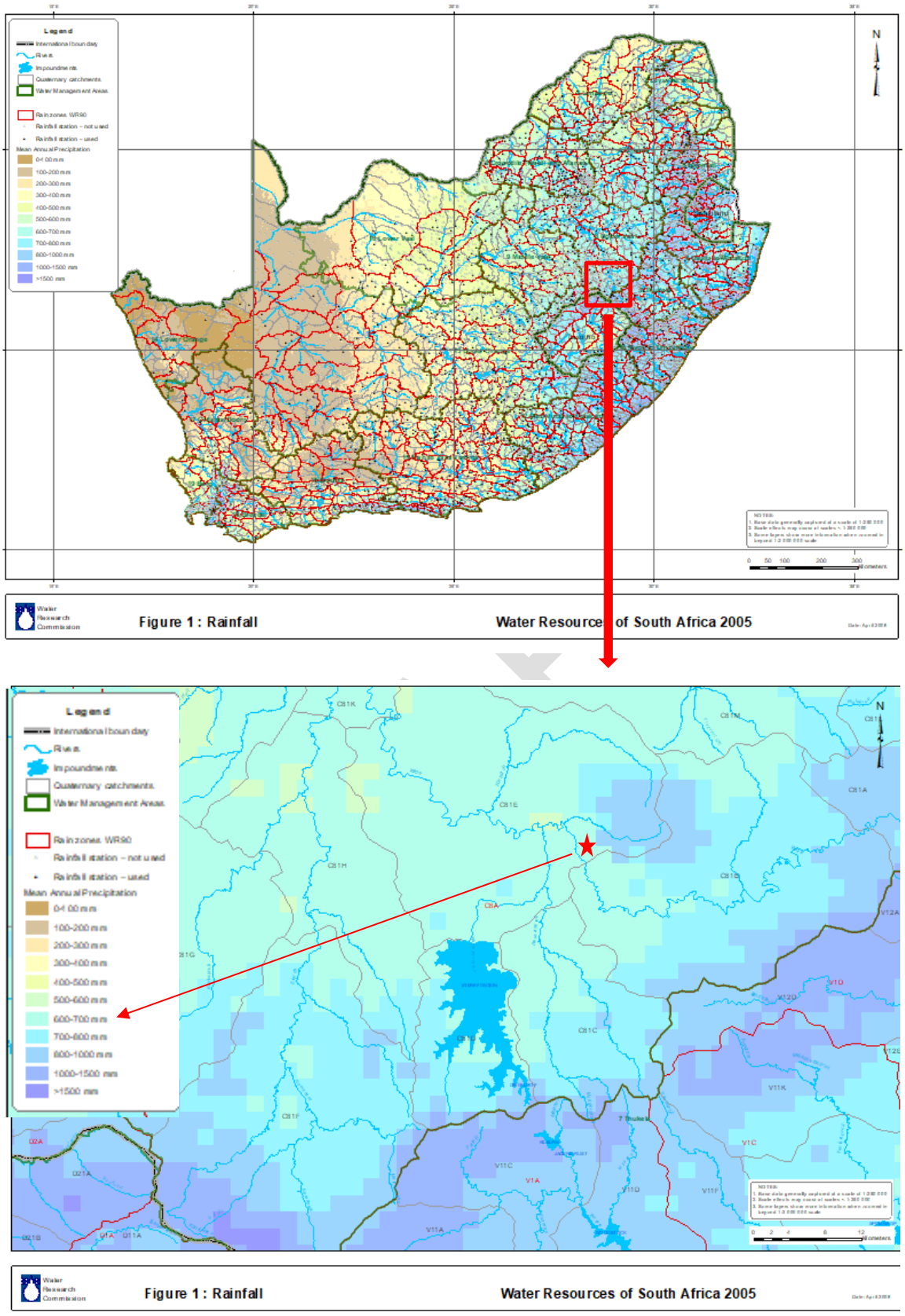

Figure 5: Map indicating the MAR of Harrismith.

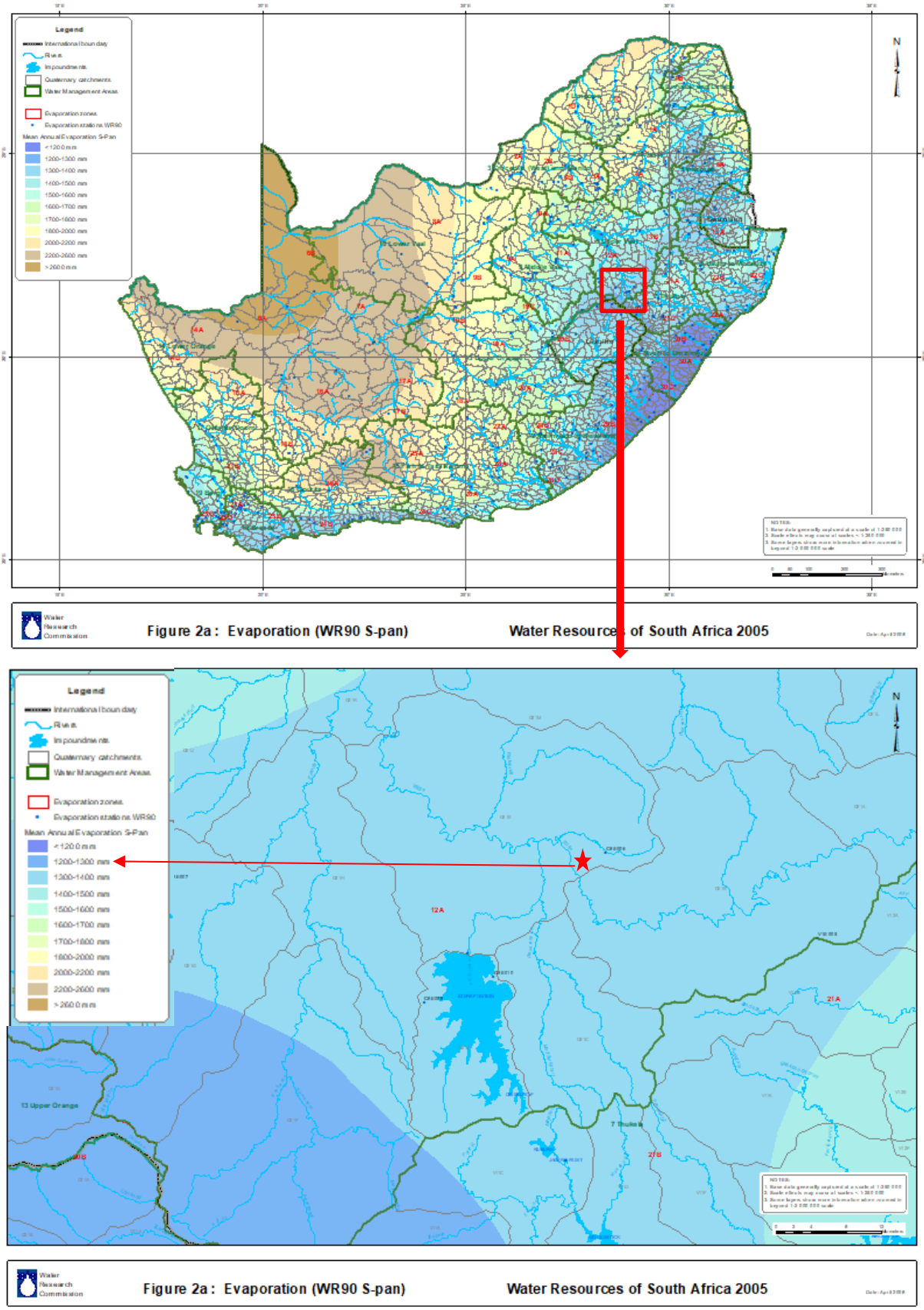

Figure 6: Map indicating the MAE of Harrismith.

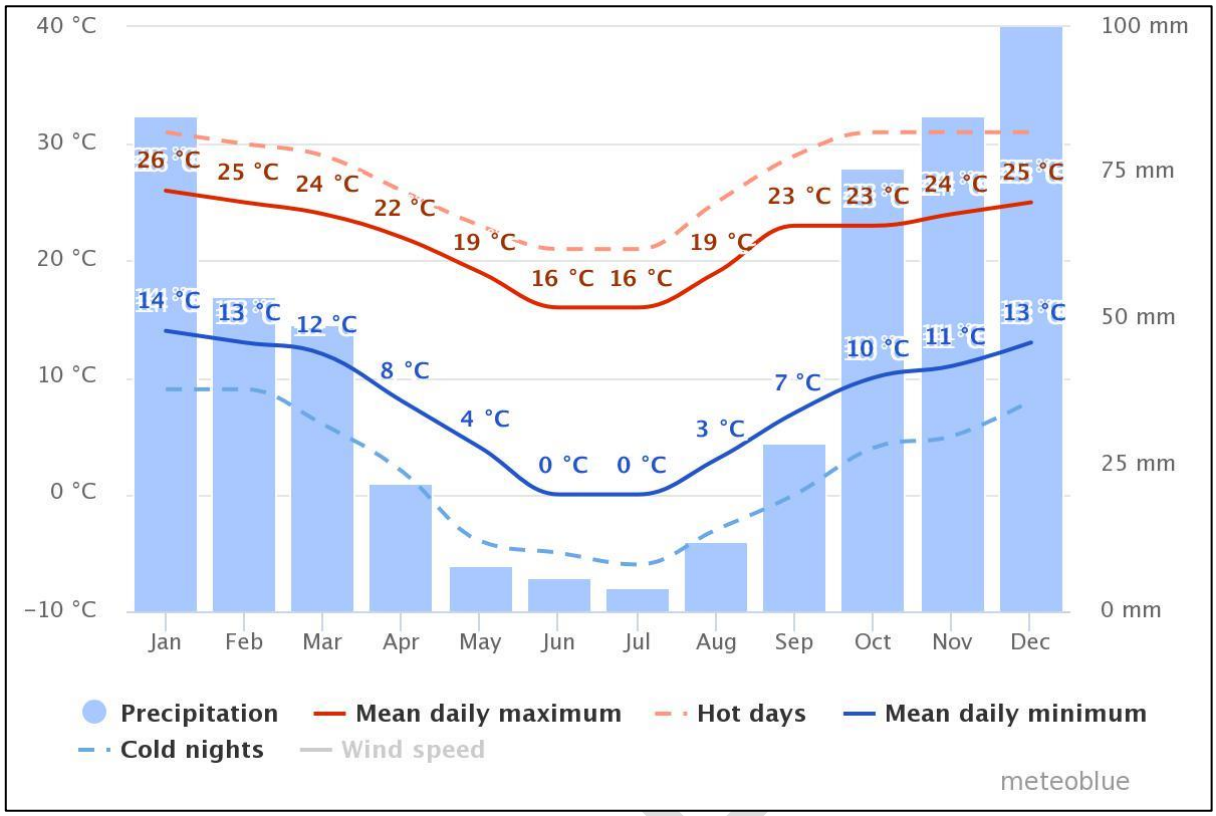

Figure 7: Figure indicating the average maximum and minimum temperatures and rainfall for Harrismith.

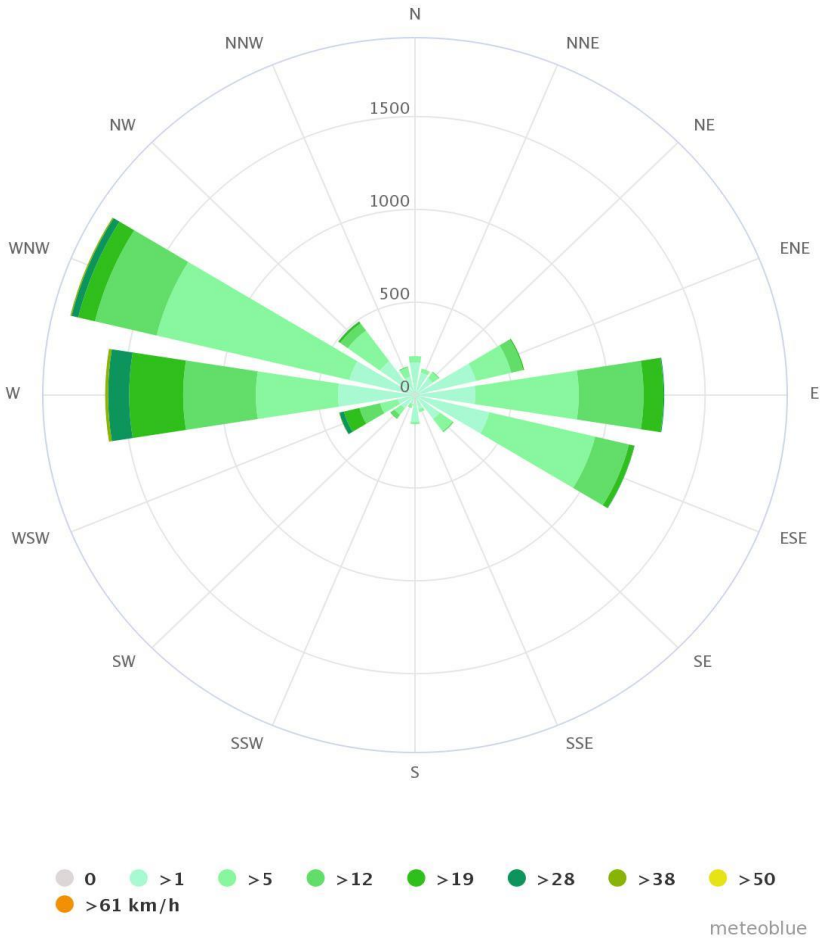

Figure 8: Harrismith Wind Rose that indicates how many hours per year the wind blows from the indicated direction.

Potential impacts	**Preliminary significance**	**Mitigation**
The atmospheric emissions produced by the Emulsion Plant will not be to an extent to change the climatic conditions in the area or create a microclimate. The impact will therefore be negligible. However, although very limited, the emissions may have an impact on the regional ambient air quality and on residents in the area. However, this impact is expected to be	Negligible - If mitigation and management measures are implemented.	The type of tanks that will be used for the storage of goods on site will be of such nature as to minimise "breathing" losses into the atmosphere. An air emission monitoring program and dust fallout monitoring programme will be implemented to reduce the potential impact. An Atmospheric Impact Assessment will also be conducted during the EIA phase.

very low due to the low emissions of the plant.		
Cumulative impacts	**Preliminary significance**	
Emissions from the Emulsion Plant will have an impact on the ambient air quality, which may in the long run have an impact on climate change. However, this impact is expected to be very low because of the small scale of the development and the minimal emissions emitted by the Plant. The ambient air quality in the area may already be poor because the presence of a number of industries that could be emitters in the area.	Low	

6.3 Air quality

Overview

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, an Atmospheric Impact Assessment will be conducted as part of the EIA phase in order to assess the ambient air quality of the area and the potential impacts of the Plant.

Potential impacts	**Preliminary significance**	**Mitigation**
There may be a negative impact on air quality due to dust and other harmful	Low - Moderate - If mitigation and management	The type of tanks that will be used for the storage of goods on site will be of such

emissions from the Emulsion Plant. The primary fugitive emission sources for the Emulsion Plant operations include storage tanks containing hot bitumen, diesel storage tanks, paraffin storage tanks and diesel burners. Key emissions include NO_x, SO_2, CO and Volatile Organic Compounds (VOCs). There is no stack that releases emissions into the atmosphere. Dust emissions is expected to be minimal because the site will be overlain with gravel and paved later on.	measures are implemented.	nature as to minimise "breathing" losses into the atmosphere. An air emission monitoring program and dust fallout monitoring programme will be implemented to reduce the potential impact.
Cumulative impacts	**Preliminary significance**	
There might be a cumulative impact on air quality as a result of surrounding industry also contributing to air emissions.	Low - Moderate	

6.4 Groundwater

Overview

The Harrismith area consists of a minor aquifer system (refer to Figure 9) with a moderate vulnerability (refer to Figure 10). 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 (refer to Figure 11) (Department of Water and Sanitation, 2012).

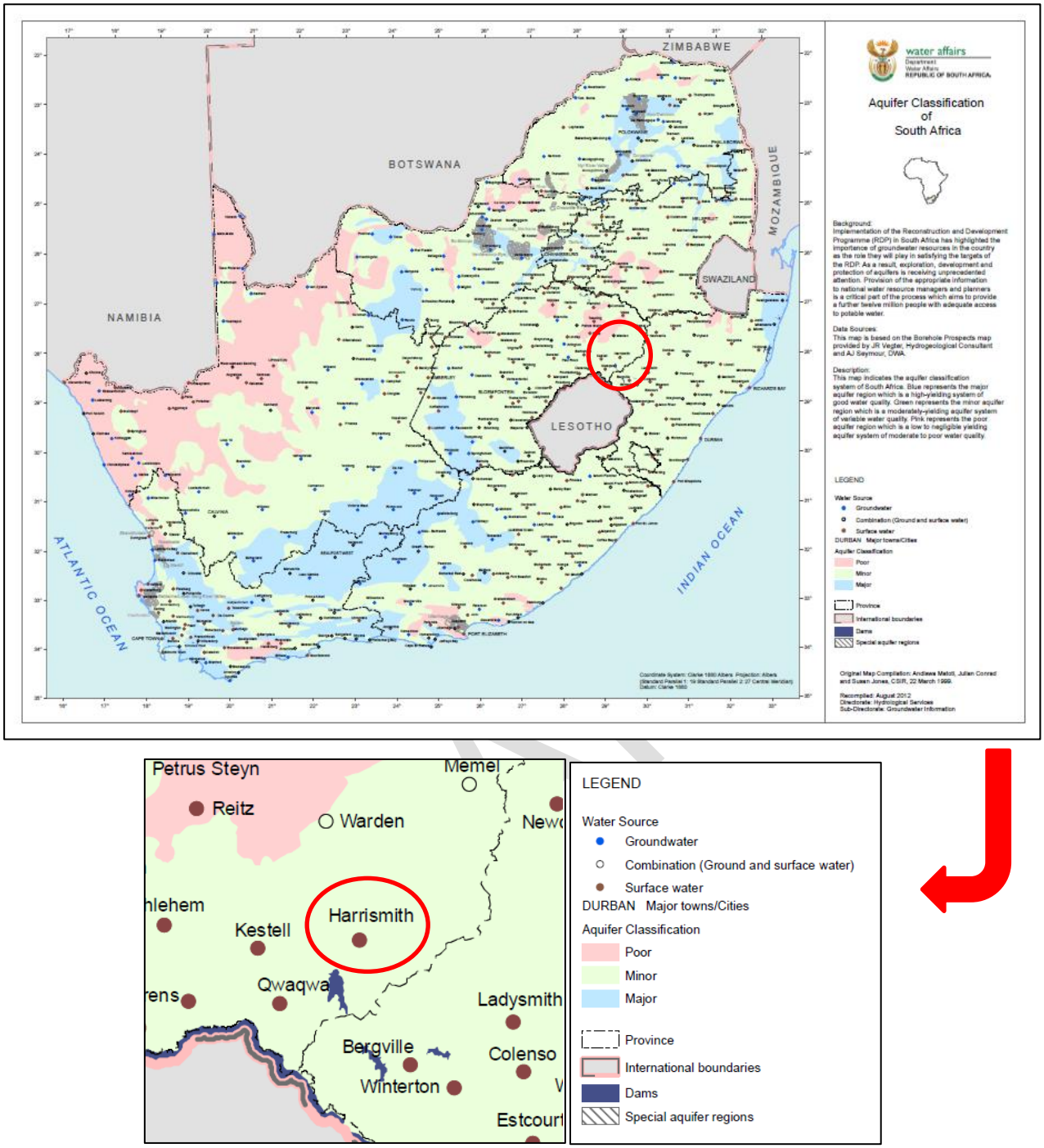

Figure 9: Figure showing the aquifer classification of Harrismith.

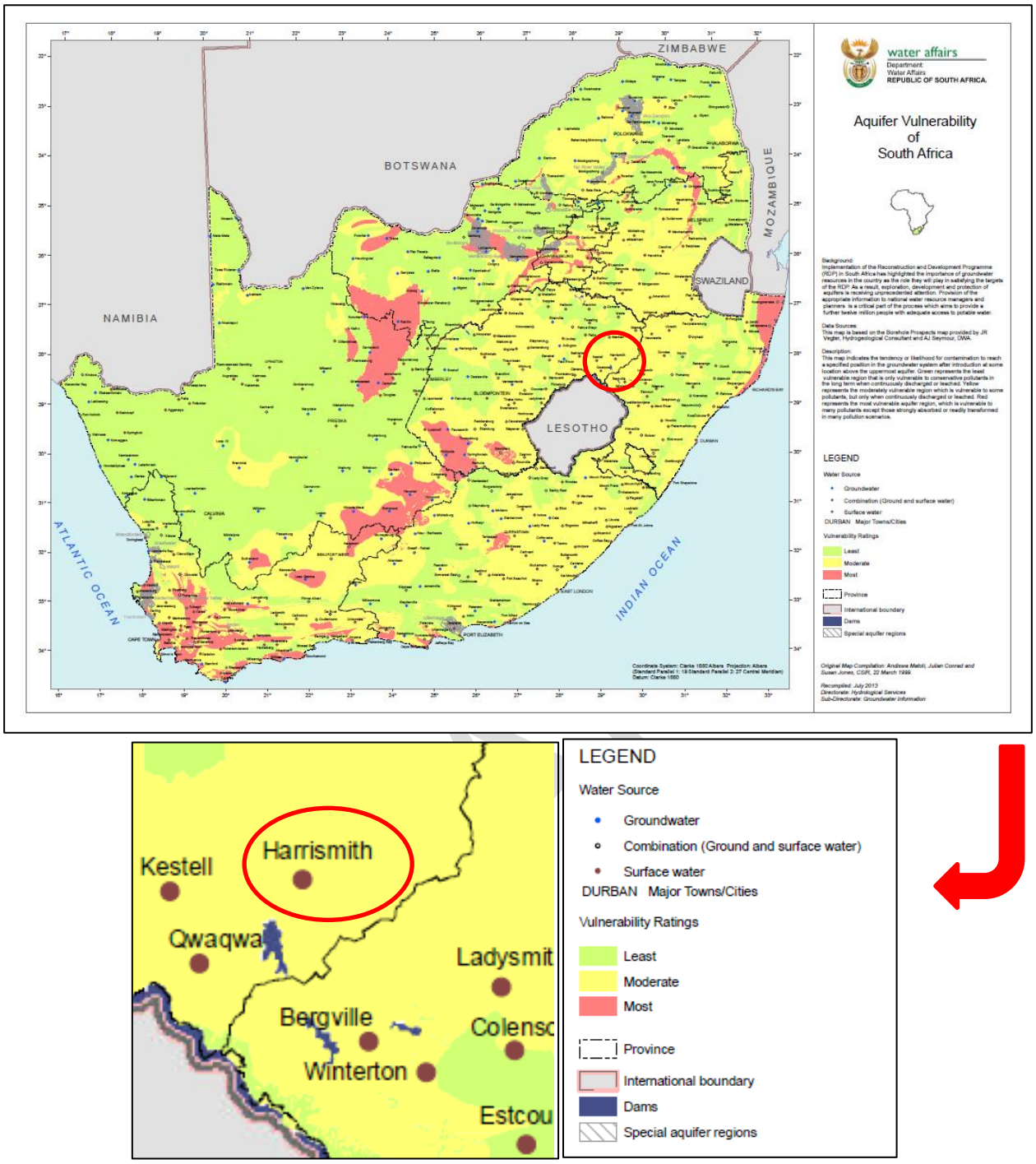

Figure 10: Figure showing the aquifer vulnerability of Harrismith.

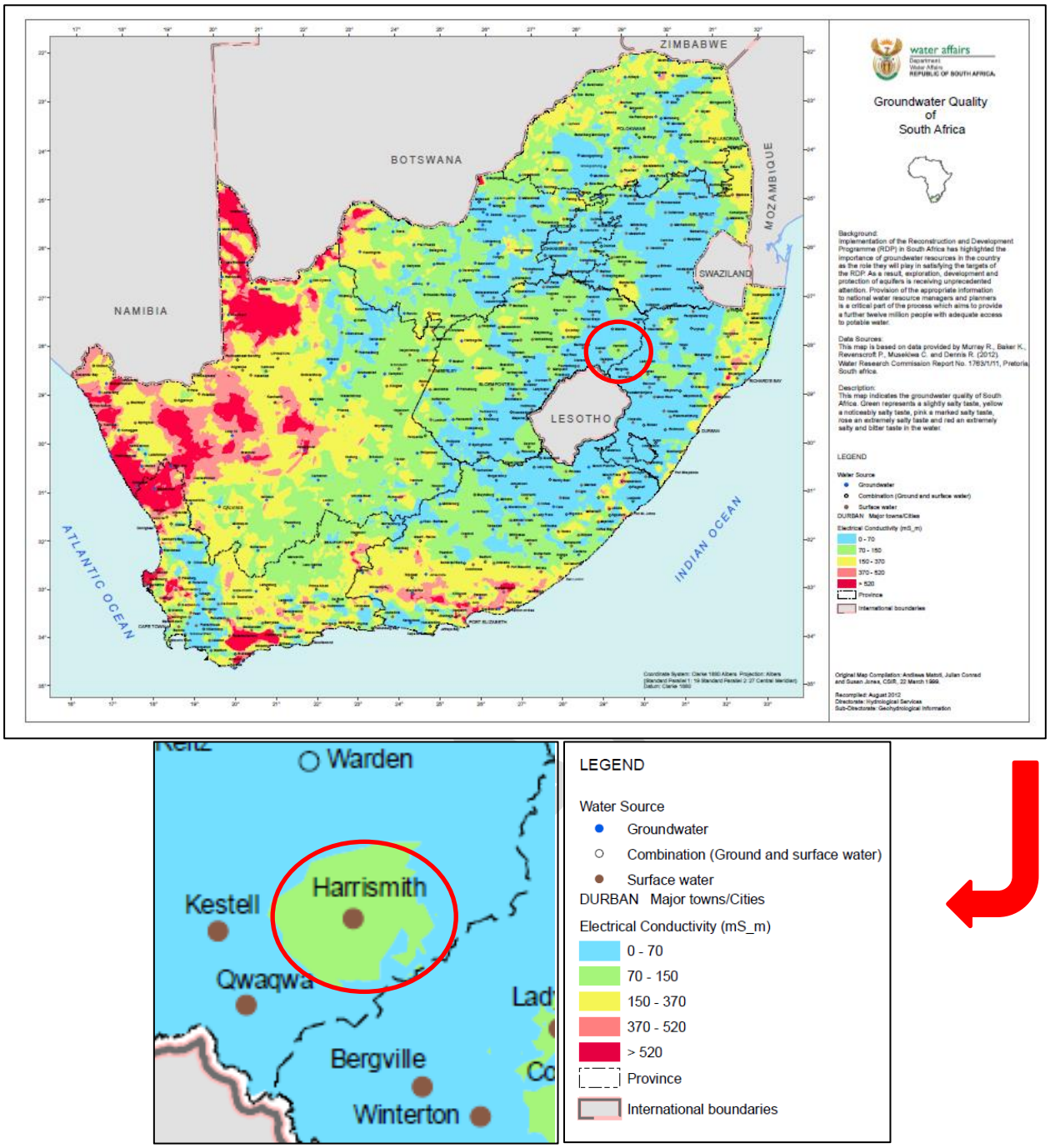

Figure 11: Figure showing the groundwater quality of Harrismith.

Potential impacts	Preliminary significance	Mitigation
Groundwater may become contaminated as a result of leakage and / or spills of hazardous substances.	Low - Moderate – If mitigation and management measures are implemented.	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. Spillages of hydrocarbons will be prevented by using drip trays. If any spills occur, the spills will be cleaned immediately by removing contaminated soil and disposing of it as hazardous waste. Tanks will be inspected regularly for leaks and if any are detected, they will be fixed immediately.
There will be no impact on groundwater levels as the Emulsion Plant will not abstract groundwater for use.		
Cumulative impacts	**Preliminary significance**	
There might be a cumulative impact on groundwater as a result of the activities in the surrounding area.	Low	

6.5 Surface water

Overview

The site is not located close to any natural wetlands or watercourses. The closest watercourse is the Wilge River, which is located approximately 1.3 km to the southwest of the site. The presence of any other watercourses/wetlands will be verified by an Ecologist during the EIA phase.

Potential impacts	Preliminary significance	Mitigation
There will be no impact on surface water features, because there are no surface water features present on the property. Although runoff will drain towards the Wilge River, this water feature is 1.3 km away and the property will be	Low - If mitigation and management measures are implemented.	All potentially hazardous substances will be stored in a bunded area which can contain 110% of the volume of the substance. Spillages of hydrocarbons will be prevented by using drip trays. If any spills occur, the spills will be cleaned

surrounded by a wall that will limit runoff. There is also a road and other developments between the proposed site and the Wilge River.		immediately by removing contaminated soil and disposing of it as hazardous waste. Tanks will be inspected regularly for leaks and if any are detected, they will be fixed immediately. Adequate storm water management measures must be implemented on site. Berms and/or trenches should be constructed around the site in order to prevent clean storm water from entering site and dirty storm water from leaving site and entering natural drainage lines.
Cumulative impacts	**Preliminary significance**	
There might be a cumulative impact on surface water as a result of the activities in the surrounding area.	Low	

6.6 Land use

Overview

Currently the property is vacant and not being used for anything. The applicant has a lease agreement with the landowner to utilise the property (refer to **Annexure 5**). The landowner recently bought the property specifically for this purpose. 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.

Potential impacts	**Preliminary significance**	**Mitigation**
Establishing an Emulsion Plant on this site does take away the site's potential to be used for something else. However, the potential to use this site for anything else is low, as the site is located within an industrial area and is degraded. On the other hand, due to the development being	Low - Moderate - If mitigation and management measures are implemented.	Loss of the potential to use the site for other activities is unavoidable, as it is planned that this be a permanent development.

permanent, the impact may be higher.		
Cumulative impacts	**Preliminary significance**	
There may be a cumulative impact on loss of land due to surrounding land uses.	Low - Moderate	

6.7 Vegetation

Overview

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). According to Mucina *et al.* (2006, 394)) this vegetation type usually consists of closed grassland with numerous herb species. The site also falls within an Ecological Support Area 1 as per the Free State Biodiversity Management Plan (2015). However, it should be noted that the site is situated within an industrial area of a town and thus the site is degraded (refer to figure 12 below and the Sensitivity Map in **Annexure 2**). The site has an approximate footprint of 0.74 ha. Natural vegetation will need to be cleared on the entire footprint. However, due to the degraded state of the site, mostly dry grasses

are present. The vegetation present will be confirmed by an Ecologist during the EIA phase of the project.

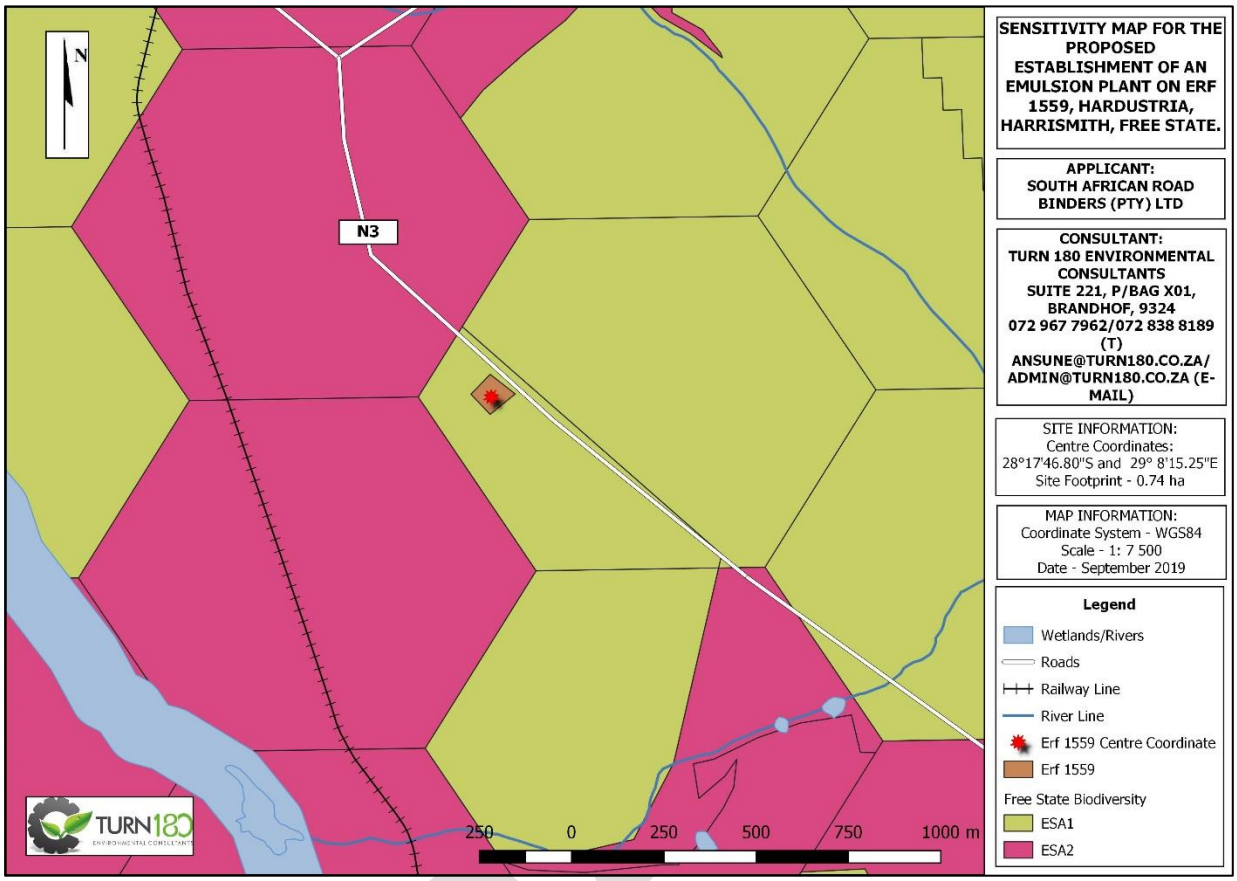

Figure 12: Sensitivity Map for the proposed project.

Potential impacts	**Preliminary significance**	**Mitigation**
Establishing the Emulsion Plant will require the entire site to be cleared of natural occurring vegetation. However, the vegetation of the site is classified as Least Concern, the site is degraded and small (0.74 ha). Removal of vegetation may also lead to the establishment of alien invasive species.	Low - If mitigation and management measures are implemented.	No vegetation will be cleared outside the site boundaries. If any protected species are found on site, the correct permits should be obtained to remove these species. Alien vegetation should be removed on a regular basis. Removal of alien plants must adhere to the Alien and Invasive Species Regulations.

Cumulative impacts	Preliminary significance	
There may be a cumulative impact on loss of vegetation due to surrounding land uses.	Low	

6.8 Animal life

Overview

The proposed site is located within an industrial area and thus degraded. The area surrounding the property has also been degraded and habitats disturbed as a result of the presence of numerous other industries and businesses. Therefore, it is not expected that there are many animals present. However, this will be verified by an Ecologist during the EIA phase of the project.

Potential impacts	Preliminary significance	Mitigation
The impact on animal life will be low due to the absence of animals in the already degraded area.	Low - If mitigation and management measures are implemented.	It is not expected that there are many animals present. However, no hunting will occur of animals that are present. No open fires are allowed. Any animals present should be relocated to a suitable habitat.
Cumulative impacts	**Preliminary significance**	
There may be a cumulative impact on animals due to surrounding land uses.	Low	

6.9 Cultural Heritage and Palaeontology

Overview

The site is disturbed and vacant and there are no buildings older than 60 years on the proposed site and it is not likely that there are any graves or other heritage artefacts present on the proposed site. A Heritage and Paleontological Impact Assessment will be conducted as part of the EIA process.

Potential impacts	Preliminary significance rating	Mitigation
It is not foreseen that there will be any impact on cultural heritage. Due to the degraded state of the site, there are no buildings and/or sites with heritage value present. A Heritage and Paleontological Impact Assessment will be included as part of the EIA process to determine if there are any sites of cultural heritage or any paleontological remains on the proposed site.	Low	No blasting or deep excavation will take place. If any archaeological artefacts or palaeontological remains are found, work will stop immediately and SAHRA will be notified.
Cumulative impacts	**Preliminary significance**	
None	None	

6.10 Noise

Overview

There are numerous contributors to the ambient noise levels in the area, including numerous truck stops, such as the Highway Junction truck stop, the largest truck stop in Africa, which is located approximately 780 m from the proposed site. There are no residential areas within close proximity to the proposed site.

Potential impacts	Preliminary significance rating	Mitigation
During operation, the Emulsion Plant generates very low levels of noise. However, noise may	Low - If mitigation and management	Work will only be done during normal daylight hours.

be generated by trucks when materials and product is loaded onto trucks to be transported to other areas. Thus, the proposed project may contribute to higher ambient noise levels in the area.	measures are implemented.	The machinery on site will be serviced regularly to limit noise levels.
Cumulative impacts	**Preliminary significance**	
There might be a cumulative impact on noise as a result of surrounding operations.	Low	

6.11 Aesthetics

Overview

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.

Potential impacts	**Preliminary significance**	**Mitigation**
Although the proposed site is located next to a national road, the site and the surrounding area is degraded, and the proposed project will not have a significant negative impact on the aesthetics.	Low	The site will always be kept clean and neat through correct housekeeping and waste disposal.
Cumulative impacts	**Preliminary significance**	

There might be a cumulative impact on aesthetics as a result of surrounding land uses.	Low	

6.12 Demographics and Regional socio-economic structure

Overview

The site is situated within an industrial area of the town of Harrismith, which has a total population of 27 869. Of this, 66.2% is considered to be of working age (15-64), while 28.6% of the population is young (0-14) and 5.1% is elderly (65+). The population consists of 87.1% Black Africans, followed by 10.7% Whites, 1.3% Indian/Asian, 0.8% Coloured and 0.2% Other. Only 13% of the population has a higher education and 5.3% has no schooling at all (STATS SA, 2011).

Potential impacts	**Preliminary significance**	**Mitigation**
The establishment of an Emulsion Plant may provide jobs to local people. Also, upgrading roads in the area improves the connectivity between communities and businesses. Approximately 10 jobs will be provided by the proposed project.	Positive	Employ local residents at the Emulsion Plant.
Cumulative impacts	**Preliminary significance**	
None	None	

7 Public participation during the scoping phase

7.1 Consultation process

Project initiation

A Public Participation Process ("**PPP**") in terms of the EIA Regulations that was undertaken as part of the Scoping Phase, included the following:

- Placing site notices at the entrance to the site and on site;
- Placing adverts in the Express (25 September 2019) and the Bloem News (26 September 2019) newspapers;
- A Notification and Background Information Document ("**BID"**) regarding the project were sent to all identified Interested and Affected Parties ("**I&APs**"). This included the adjacent landowners. stakeholders and relevant authorities (refer to **Annexure 3**).

A time period of 30 days was allowed for the public to register and / or send their issues and concerns regarding the Project to Turn 180 Environmental Consultants.

All authorities and registered I&AP also receive a copy of the draft Scoping Report.

Interested and Affected Parties

Adjacent landowners, relevant stakeholders and authorities were notified of the project via written notifications and the BID. The main purpose of this is to inform the potential I&APs of the project and obtain insight into any related issues they may have.

A comments and response register will be compiled and updated to include all comments received from I&APs. This register will also record the responses from the consultants and how comments are addressed.

Authorities

The following departments and / or organs of state were consulted during the PPP:

- Thabo Mofutsanyana District Municipality;
- Maluti-A-Phofung Local Municipality;
- The Department of Economic, Small Business Development, Environmental Affairs and Tourism ("**DESTEA**");
- The Free State Heritage Authority;
- South African Heritage Resources Authority ("**SAHRA**").
- N3 Toll Concession

7.2 Register of I&APs contacted during the consultation process

Contact Person	Organisation	Contact details	Manner of notification	Comments & Response
Authorities & Stakeholders				
Ms. Takatso Lebenya (Municipal Manager)	Thabo Mofutsanyana District Municipality	Private Bag X810 Witsieshoek 9870 1 Mampoi Street Old Parliament Building Phuthaditjhaba 9869 058 718 1089/36 (Tel)	BID sent via registered mail on 27/09/2019	No comments received.
Mr. Pierre Swart (Air Quality Management)	Thabo Mofutsanyana District Municipality	Private Bag X810 Witsieshoek 9870 1 Mampoi Street Old Parliament Building Phuthaditjhaba 9869 058 718 1089/36 (Tel) 084 513 3100 (Cell)	BID sent via registered mail on 27/09/2019	An official from DESTEA informed Turn 180 that the District Municipality does not have an official to handle the Atmospheric Emission License ("**AEL**") application. Therefore, the AEL application must be submitted to province (DESTEA).
Robert Tsupa (Municipal Manager)	Maluti -A-Phofung Local Municipality	Private Bag X805 Witsieshoek 9870 Cnr Moremoholo & Motloung Streets Setsing Complex Phuthaditjhaba 9869 058 718 3700 (Tel)	BID sent via registered mail on 27/09/2019	No comments received.
Ward Councillor (Ward 6)	Maluti -A-Phofung Local Municipality	Private Bag X805 Witsieshoek 9870	BID sent via registered mail on 27/09/2019	No comments received.

Contact Person	Organisation	Contact details	Manner of notification	Comments & Response
		Cnr Moremoholo & Motloung Streets Setsing Complex Phuthaditjhaba 9869 058 718 3700 (Tel)		
Ms Nthabaleng Mohase	Department of Economic, Small Business Development, Tourism and Environmental Affairs (Air Quality)	Private Bag X20801 Bloemfontein 9300 113 St. Andrews Street Bloemfontein 9301 051 400 4812 (Tel)		An official from DESTEA informed Turn 180 that the District Municipality does not have an official to handle the Atmospheric Emission License ("**AEL**") application. Therefore, the AEL application must be submitted to province (DESTEA).
Ms. G. Mkhosana	Department of Economic, Small Business Development, Tourism and Environmental Affairs	Private Bag X20801 Bloemfontein 9300 113 St. Andrews Street Bloemfontein 9301 051 400 4812 (Tel) mkhosana@destea.gov.za (E-mail)	BID delivered by hand on 18/02/2019.	No comments received.
Ms. Ragna Redelstorff	SAHRA	021 462 4502 (Tel) P.O. Box 4637 Cape Town 8000 rredelstorff@sahra.org.za (E-mail)	BID uploaded on SAHRIS on 18/02/2019.	No comments received.
Me. L. Philips	Free State Heritage Authority	078 448 9307 (Cell) 051 447 9609 (Tel) National Museum 36 Aliwal Street Bloemfontein	BID sent via e-mail on 27/09/2019.	No comments received.

Contact Person	Organisation	Contact details	Manner of notification	Comments & Response
		9301 loudinep@gmail.com loudine.philip@nasmus.co.za (E-mail)		
Mr Anesh Madanlal (Manager)	N3 Toll Concession	PO Box 1052 Harrismith 9880 Bergview Complex, Warden Street Harrismith 9880 058 623 0860 (Tel) aneshm@n3tc.co.za (E-mail)	BID sent via registered mail on 27/09/2019	**Comments:** Mr. Madanlal asked that the N3 Toll Concession be registered as an Interested and Affected Party. He had the following comments: 1. Provide intended detail of access on to the N3 and impact of traffic on the N3. 2. Provide a Traffic Impact Assessment. 3. Impact of dust on the N3 4. Impact of lighting on the adjacent N3 traffic. 5. Impact of Emissions/smoke on the safety of the road user on the N3 taking cognisance of change in prevailing wind. 6. Impact of fire hazard 7. Impact of Spillage of hazardous materials on environment and N3TC road reserve. 8. Impact of potential widening of the N3 Road Reserve to accommodate a future Van Reenen Development Project as identified by the Minister of Transport in 2017. 9. Acceptance of storm water runoff from the N3. 10. Building line restriction, both SANRAL and municipal requirements 11. Impact of security and boundary wall/fence. N3TC / SANRAL will not be

				responsible for maintenance / accident damage. **Response:** Turn 180 confirmed that the N3 Toll Concession will be registered as an I&AP and will receive all reports. Turn 180 also responded: 1. The existing access road where Nywerheids Road connects with the N3 will be used. No new access road is planned. 2. The project will not have an impact on the traffic of the N3, as the site will not be directly accessed from the N3. Please refer to the previous point. 3. Dust monitoring will be implemented to ensure that dust fallout does not exceed the limits. It is planned that the site be paved in the future. If dust proves to be problematic, it will be advised that the site be paved sooner. 4. Lights will be placed so that they face away from the N3 to avoid having impacts on the traffic on the N3. 5. An emulsion plant does not have a stack with smoke emissions. An emulsion plant is primarily a collection of storage tanks. The primary emissions associated with an emulsion plant are fugitive emissions originating from "working and breathing losses" from the storage tanks. The emissions are not to an extent that they will have an impact on traffic in terms of visibility. However, an Atmospheric Impact Assessment will be done as part

				of the EIA phase and will be included in the EIA reports. 6. An emulsion plant has very strict safety regulations and best practices will be followed at all times during the storage of hazardous substances. The applicant has a Fire Safety Management Plant that will be included in the Scoping and EIA reports. 7. Best practices will be followed at all times for the storage of hazardous substances. All potentially hazardous substances will be stored in a bunded area with an impermeable surface that can contain 110% of the volume of the substance. If any spills of hazardous substances occur, these spills will be cleaned immediately by disposing of the contaminated soil as hazardous waste. Tanks will be inspected regularly for leaks and if any are found, they will be fixed immediately. 8. Could you perhaps provide us with more information on the potential widening of the N3 Road Reserve to accommodate a future Van Reenen Development Project as identified by the Minister of Transport in 2017? 9. Storm water management measures in the form of berms and/or culverts will be constructed around the site to divert clean storm water originating from the N3 road around the site into natural drainage lines. 10. A surveyor was appointed to delineate the site according to the Title Deed.

Contact Person	Organisation	Contact details	Manner of notification	Comments & Response
				The site will be surrounded by a 2.5 to 3 m tall wall. This will reduce the visual impact of the plant and also provide security. A security guard will also be present on site, especially during night time.
Adjacent Landowners and stakeholders				
Maxipres Mr. Barry Arndt	Erf 1555	16 Nywerheids Road Hardustria Harrismith 9880 079 868 1413 (C) williamh@bridgestone.co.za (E-mail)	BID delivered by hand on 25/09/2019	No comments received.
Mr. Willie Richards	Erf 2441	19 Nywerheids Road Hardustria Harrismith 9880 072 196 4506 (C) Harrismithra247@gmail.com (E-mail)	BID delivered by hand on 25/09/2019	No comments received.
Capstone Seeds SA Mr. Hennie de Winnaar	Erf 1593	21 Nywerheids Road Hardustria Harrismith 9880 033 330 4474 (T) hennie@capstoneseeds.com (E-mail)	BID delivered by hand on 25/09/2019	**Comment:** Mr. de Winnaar commented that Capstone Seeds is a company that distributes seeds to farmers for the planting of crops. They are concerned about the danger air emissions from the proposed plant holds for their products and their personnel. **Response:** Turn 180 responded with the following: - The developer will make health, safety and environmental aspects a priority during the construction and operational phases of the project.

Contact Person	Organisation	Contact details	Manner of notification	Comments & Response
				- Best practices will be followed at all times for the storage of hazardous substances. - The developer will implement measures to reduce the visual impacts of the plant. A wall of 2.5 to 3 m high will be built around the site. If necessary, other measures such as planting trees along the wall will be investigated. - It should be noted that an Emulsion Plant does not have a stack that releases smoke into the atmosphere. An Emulsion Plant is essentially a collection of tanks that stores, heats and mixes bitumen emulsion, a substance that is used during road surfacing. The only emissions associated with an Emulsion Plant are fugitive emissions due to breathing and working losses originating from the tanks that heat the bitumen. - An Atmospheric Impact Assessment will be conducted as part of the EIA phase of the project in order to assess the possible impacts, including health impacts, of the plant. - The specialist conducting this assessment was also notified of your concern regarding the impact on your seeds and they will investigate this. - A Dust Fallout Monitoring Programme will also be implemented if dust generation proves to be problematic. This programme will be implemented up until the site and all roads are paved. - All potential impacts of the proposed development, along with mitigation and management measures for these impacts, will

Contact Person	Organisation	Contact details	Manner of notification	Comments & Response
				be discussed in detail in the Scoping and EIA Reports for the project.
Shiptech	Erf 1594 Erf 1596	23 Nywerheids Road Hardustria Harrismith 9880 073 150 2648 (C) jacques@shiptech.co.za (E-mail)	BID delivered by hand on 25/09/2019	No comments received.
Vacant Lot Could not determine landowner	Erf 1560			
Mr. Steven Gottschalk (landowner) Mr. Guy Nicolson (Consultant acting on behalf of landowner)	Erf 4919 (Erf 1556, Erf 1557, Erf 1558)	147 North Reef Road Bedfordview 2008 011 929 6819 (T) 082 411 4980 (C) (Mr. Gottschalk) 082 772 9941 (C) (Mr. Nicolson) steveng@value.co.za (E-mail) guyn@saol.com (E-mail)	BID delivered by hand on 25/09/2019 (BID handed in at Value Logistics offices)	**Comment:** Mr. Gottschalk is concerned about the impact that the proposed development will have on the value of the properties, as well as future development. **Response:** Turn 180 responded with the following: - The developer will make health, safety and environmental aspects a priority during the construction and operational phases of the project. - Best practices will be followed at all times for the storage of hazardous substances. - The developer will implement measures to reduce the visual impacts of the plant. A wall of 2.5 to 3 m high will be built around the site. If necessary, other measures such as planting trees along the wall will be investigated. - It should be noted that an Emulsion Plant does not have a stack that releases smoke into the atmosphere. An Emulsion Plant is essentially a

Contact Person	Organisation	Contact details	Manner of notification	Comments & Response
				collection of tanks that stores, heats and mixes bitumen emulsion, a substance that is used during road surfacing. The only emissions associated with an Emulsion Plant are fugitive emissions due to breathing and working losses originating from the tanks that heat the bitumen. An Atmospheric Impact Assessment will be conducted as part of the EIA phase of the project in order to assess the possible impacts, including health impacts, of the plant. - A Dust Fallout Monitoring Programme will also be implemented if dust generation proves to be problematic. This programme will be implemented up until the site and all roads are paved. - All potential impacts of the proposed development, along with mitigation and management measures for these impacts, will be discussed in detail in the Scoping and EIA Reports for the project.
GSF	Erf 1561 Erf 1562	28 Nywerheids Road Hardustria Harrismith 9880 082 327 3383 (C) merekitemba@gmail.com (E-mail)	BID delivered by hand on 25/09/2019	No comments received.
Mr. Mano Padiyachy (Tenant of property) Mr. Guy Nicolson (Consultant	Portion 1 of erf 1913	10 Essex Street Tunney Industrial Elandsfontein manop@value.co.za (E-mail) RikaK@value.co.za (E-mail)	BID delivered by hand on 25/09/2019 (BID handed in at Value Logistics offices)	**Comment:** Mr. Padiyachy is concerned about the impact of the proposed plant on the health of their employees. Mr. Nicolson also commented that there is a concern that the proposed plant will reduce

Contact Person	Organisation	Contact details	Manner of notification	Comments & Response
acting on behalf of landowner) Mr. Steven Gottschalk (landowner)		147 North Reef Road Bedfordview 2008 011 929 6819 (T) 082 411 4980 (C) (Mr. Gottschalk) 082 772 9941 (C) (Mr. Nicolson) steveng@value.co.za (E-mail) guyn@saol.com (E-mail)		the value of the property and the viability of the property's intended use. **Response:** Turn 180 responded with the following: - The developer will make health, safety and environmental aspects a priority during the construction and operational phases of the project. - Best practices will be followed at all times for the storage of hazardous substances. - The developer will implement measures to reduce the visual impacts of the plant. A wall of 2.5 to 3 m high will be built around the site. If necessary, other measures such as planting trees along the wall will be investigated. - It should be noted that an Emulsion Plant does not have a stack that releases smoke into the atmosphere. An Emulsion Plant is essentially a collection of tanks that stores, heats and mixes bitumen emulsion, a substance that is used during road surfacing. The only emissions associated with an Emulsion Plant are fugitive emissions due to breathing and working losses originating from the tanks that heat the bitumen. An Atmospheric Impact Assessment will be conducted as part of the EIA phase of the project in order to assess the possible impacts, including health impacts, of the plant. - A Dust Fallout Monitoring Programme will also be implemented if dust generation proves to be problematic. This programme will be

Contact Person	Organisation	Contact details	Manner of notification	Comments & Response
				implemented up until the site and all roads are paved. - All potential impacts of the proposed development, along with mitigation and management measures for these impacts, will be discussed in detail in the Scoping and EIA Reports for the project.

8 Plan of study for the Environmental Impact Assessment

8.1 Assessment Methodology

The main objective of the EIA process will be to assess and quantify the potential impacts that were identified by the project team, specialists and I&APs during the Scoping study.

The concept of "significance" is at the core of impact identification, evaluation and decision-making during the EIA process and can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. intensity, duration and likelihood), while impact significance is the value placed on the change by different affected parties (i.e. level of acceptability) [DEAT (2002) Impact Significance, Integrated Environmental Management, Information Series 5].

The significance is rated from Low to High, as indicated in the table below. The table includes an explanation of the impact magnitude and a guide that reflects the extent of the proposed mitigation measures deemed necessary.

Significance	**Low**	**Low-Moderate**	**Moderate**	**Moderate-High**	**High**
Impact Magnitude	Impact is of very low order and therefore likely to have very little real effect. Acceptable.	Impact is of low order and therefore likely to have little real effect. Acceptable.	Impact is real, and potentially substantial in relation to other impacts. Can pose a risk to I&AP.	Impact is real and substantial in relation to other impacts. Pose a risk to the I&AP. Unacceptable.	Impact is of the highest order possible. Unacceptable. Fatal flaw.
Action Required	Maintain current management measures. Where possible improve.	Maintain current management measures. Implement monitoring and evaluate to determine	Implement monitoring. Investigate mitigation measures and improve management measures to	Improve management measures to reduce risk.	Implement significant mitigation measures or implement alternatives.

Significance	Low	Low-Moderate	Moderate	Moderate-High	High
		potential increase in risk. Where possible improve	reduce risk, where possible.		

The assessment criteria, as mentioned above, can be described as follows:

The **nature of impact** is a broad indication of what is being affected and how.

Severity relates to the nature of the event, aspect or impact to the environment and describes how severe the aspects will impact on the biophysical and socio-economic environment.

Type of criteria	8.2 Rating				
	1	2	3	4	5
Quantitative	0-20%	21-40%	41-60%	61-80%	81-100%
Qualitative	Insignificant / Non-harmful	Small / Potentially harmful	Significant / Harmful	Great / Very harmful	Disastrous Extremely harmful
Social / Community response	Acceptable / I&AP satisfied	Slightly tolerable / Possible objections	Intolerable / Sporadic complaints	Unacceptable / Widespread complaints	Totally unacceptable / Possible legal action
Irreversibility	Very low cost to mitigate / High potential to mitigate impacts to level of insignificance / Easily reversible	Low cost to mitigate	Substantial cost to mitigate / Potential to mitigate impacts / Potential to reverse impact	High cost to mitigate	Prohibitive cost to mitigate / Little or no mechanism to mitigate impact Irreversible

Type of criteria	8.2 Rating				
	1	2	3	4	5
Biophysical (Air quality, water quantity and quality, waste production, fauna and flora)	Insignificant change / deterioration or disturbance	Moderate change / deterioration or disturbance	Significant change / deterioration or disturbance	Very significant change / deterioration or disturbance	Disastrous change / deterioration or disturbance

Extent refers to the spatial influence of an impact. It will be: a) limited to the site and its immediate surroundings; b) extending to the surrounding local area, c) regional (will have an impact on the region) d) national (will have an impact on a national scale); or e) or international (impact across international borders).

Rating	Description
1: Low	Immediate, fully contained area
2: Low-Moderate	Surrounding area
3: Moderate	Regional
4: Moderate-High	National
5: High	International

Frequency refers to how often the specific activity, related to the event, aspect or impact, is undertaken.

Rating	Description
1: Low	Once a year or once during operation / Life of Plant
2: Low-Moderate	Once / more in 6 Months
3: Moderate	Once / more a Month
4: Moderate-High	Once / more a Week
5: High	Daily

Probability considers the likelihood of an impact/incident occurring over time.

Rating	Description
1: Low	Almost never / almost impossible

2: Low-Moderate	Very seldom / highly unlikely
3: Moderate	Infrequent / unlikely / seldom
4: Moderate-High	Often / regularly / likely / possible
5: High	Daily / highly likely / definitely

Duration refers to the amount of time that the environment will be affected by the event, risk or impact, if no intervention, e.g. remedial action, takes place.

Rating	**Description**
1: Low	One month
2: Low-Medium	Between 1 and 3 months (Quarter)
3: Medium	3 months to 1 year
4: Medium-High	1 to 10 years
5: High	More than 10 years

Should any fatal flaws be identified during the EIA process, which will be indicated by a "high" significance rating, the activity relating to the potential impact will be assessed as a "no-go" alternative (i.e. be excluded from the project) if the impact cannot be managed and / or mitigated to acceptable levels.

8.2. EIA Process

8.2.1 Tasks anticipated for the EIA process

The list below is a summary of the tasks that will be undertaken as part of the EIA process and the manner in which they will be undertaken.

1. Conduct a baseline assessment at the Site and the Operational Site to determine the potential impact on the various spheres of the receiving environment;
2. Conduct a Heritage and Paleontological Assessment (Ms. Loudine Philip and Banzai Environmental)
3. Conduct an Ecological Assessment (DPR Ecologists)
4. Conduct an Atmospheric Impact Assessment (uMoya-NILU Consulting (Pty) Ltd)

8.2.2 Consultation and public participation process

The PPP to be followed during the EIA process will include the following:

- Continuous consultation with registered I&APs and the relevant Authorities;

- Public meetings throughout the project for all registered I&APs if requested;
- Updating of the I&AP database throughout the consultation process in order to keep record of all I&APs contacted during the process;
- Copies of the Scoping Report, draft EIA Report (together with specialist reports and Environmental Management Programme) will be sent to all registered I&APs;
- A copy of these Reports will also be made available to the authorities for a period of 30 days for comment;
- Compilation of a Comments & Response Report, that will include all comments received during the process (including comments received on any draft Reports) and the response taken by the EAP to address these comments where possible.

9 EAP Declaration

The EAP declares that the Scoping Phase was conducted objectively, and the information provided in this report is correct. All inputs from I&AP's received to date have been included.

_____

NAME OF EAP

_____ _____

SIGNATURE OF EAP DATE

10 References

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