

**BASIC ASSESSMENT REPORT IN TERMS OF NEMA**

**PROPOSED DEVELOPMENT OF BULK STORAGE FACILITIES  
AND FILLING STATIONS (STORAGE AND HANDLING OF  
HYDROCARBONS) ON PORTION 135 OF THE FARM  
BOSCHHOEK 103JQ, RUSTENBURG LOCAL MUNICIPALITY,  
NORTH WEST PROVINCE.**

**JANUARY 2022**

**(DRAFT)**



**Address: P.O. Box 1322, Ruimsig, 1732**

**Tel: 082 850 5482**

**Fax: 086 692 8820**

**[paulette@hydroscience.co.za](mailto:paulette@hydroscience.co.za)**

# TABLE OF CONTENTS

1	ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP).....	1
1.1	Details .....	1
1.2	Experience and expertise .....	1
1.3	Supporting information .....	2
1.4	Assumptions, limitations, disclaimer and copyright .....	2
1.5	Declaration of independence.....	3
2	APPLICANT / PROPONENT.....	4
2.1	Details .....	4
2.2	Supporting information .....	4
3	PROPERTY .....	5
3.1	Details .....	5
4	PROJECT.....	9
4.1	Project Description.....	9
4.2	Screening.....	12
4.3	Need and desirability .....	13
5	LEGAL FRAMEWORK.....	15
5.1	Constitution of the Republic of South Africa (CRSA).....	15
5.2	National Environmental Management Act (NEMA).....	15
5.2.1	<i>Sustainable development</i> .....	15
5.2.2	<i>NEMA regulations</i> .....	16
5.2.3	<i>Listed activities applicable</i> .....	16
5.3	National Environmental Management: Biodiversity Act (NEMBA) .....	18
5.3.1	<i>Commitment to biodiversity conservation</i> .....	18
5.3.2	<i>Protection of threatened ecosystems and species</i> .....	18
5.3.3	<i>Control of alien invasive species</i> .....	19
5.4	National Environmental Management: Waste Act (NEMWA).....	19
5.5	National Water Act (NWA).....	19
5.5.1	<i>Water uses</i> .....	19
5.5.2	<i>Legal requirements</i> .....	20
5.6	Conservation of Agricultural Resources Act (CARA).....	20

5.7	National Heritage Resources Act (NHRA) .....	21
5.7.1	<i>Legislation</i> .....	21
5.8	Other documents .....	21
6	ENVIRONMENTAL SETTING.....	22
6.1	Socio-economic Environment.....	22
6.2	Biophysical Environment .....	25
6.2.1	<i>Biodiversity overview</i> .....	26
6.2.2	<i>Heritage Overview</i> .....	30
6.2.3	<i>Hydrogeological overview</i> .....	30
6.3	Services .....	30
6.3.1	<i>Electricity</i> .....	30
6.3.2	<i>Water</i> .....	30
6.3.3	<i>Sanitation</i> .....	31
6.4	Supporting information .....	31
7	ALTERNATIVES CONSIDERED .....	32
7.1	Land use alternative .....	32
7.2	Alternative layout .....	32
7.3	No-go alternative .....	32
7.4	Services .....	32
7.4.1	<i>Option 1: Municipal services</i> .....	32
7.4.2	<i>Option 2: Water supply preferred viable option</i> .....	32
7.4.3	<i>Option 2: Sewage management preferred viable option</i> .....	32
7.5	Type convenience store .....	32
8	PUBLIC PARTICIPATION PROCESS .....	34
8.1	Summary.....	34
8.2	Introduction .....	34
8.3	Approach.....	35
8.4	Public awareness.....	35
8.4.1	<i>Site Notices</i> .....	35
8.4.2	<i>Newspaper Notice</i> .....	36
8.5	Comments and Response Register .....	41
8.6	BAR Submission.....	41

9	IMPACT ASSESSMENT.....	45
9.1	Methodology .....	45
9.2	Impact Assessment Ratings.....	46
10	ENVIRONMENTAL MANAGEMENT PROGRAMME.....	56
10.1	Alterations to the EMPr.....	56
10.2	Responsibility.....	56
10.3	Activities causing potential impacts.....	57
10.4	Potential Impacts .....	57
10.4.1	<i>Negative Impacts</i> .....	57
10.4.2	<i>Positive impacts</i> .....	57
10.4.3	<i>No-go Option impacts</i> .....	58
10.5	Management measures.....	58
10.6	Monitoring programme .....	91
10.7	Record keeping and reporting .....	91
10.6.1	<i>Compliance recording and reporting</i> .....	91
10.6.2	<i>Incident recording and reporting</i> .....	91
10.6.3	<i>Complaints recording and reporting</i> .....	92
10.7	Environmental awareness plan .....	92
10.7.1	<i>Objectives</i> .....	92
10.7.2	<i>Communication</i> .....	92
10.7.3	<i>Communication responsibility</i> .....	92
10.7.4	<i>Aspects covered</i> .....	93
11	CONCLUSIONS & RECOMMENDATIONS .....	94
11.1	EAP Opinion .....	94
11.2	Conditions .....	95
12	REFERENCES .....	96

## LIST OF FIGURES

Figure 3-1: Property Regional locality .....	6
Figure 3-2: Property Local Locality.....	7
Figure 3-3: Access (Maxim).....	8
Figure 4-1: Site Development Plan (SDP) .....	11
Figure 6-1: Survey sites (ISS, 2018) .....	27
Figure 6-2: Vegetation Sensitivity Map (ISS, 2018) .....	29
Figure 6-3: Terrestrial fauna sensitivity map (ISS, 2018) .....	29
Figure 8-1: Wording and size of notices placed .....	37
Figure 8-2: Locality of notices placed.....	38

## LIST OF TABLES

Table 8-1: Summary of the public notices and notification process .....	34
Table 8-2: Register of I&APs .....	42
Table 8-3: Comments and responses .....	44
Table 9-1: Environmental risk and impact assessment criteria .....	45
Table 9-2: Preferred Option - Impacts and Significance for the proposed filling station .....	47
Table 9-3: No-go Impacts and Significance .....	53
Table 10-1: Identified potential impacts and proposed management measures for the filling station.....	59

## LIST OF APPENDICES

### Appendix A: EAP

- Company profile: HydroScience
- Curriculum vitae (Environmental Assessment Practitioner): Ms Paulette Jacobs
- Qualification: Ms Paulette Jacobs
- Professional affiliations: Ms Paulette Jacobs (SACNASP, EAPASA WISA, IAIAsa)
- NEMA project list

### Appendix B: Applicant and property

- Title deed T000057551/2015 – owner JJJ Swarts

### Appendix C: Photographs & layout

- Photographs from site visit (February 2021)
- Site Development Plan (SDP)

### Appendix D: Specialist studies

- Biodiversity: Iggdrasil Scientific Services, 2018. Terrestrial Biodiversity Assessment associated with the Boschoek Filling Stations, North West, South Africa
- Cultural Heritage: Archaetnos Culture & Cultural Resource Consultants, 2018. A report on a cultural heritage impact assessment for the proposed development of a filling station in Boshhoek, North West Province, AE01861V, 7 December 2018.
- Geohydrology: HK Geohydrological Services Pty Ltd, 2020. Hydrogeological and contamination risk assessment study for the planned filling station, to be located on portion 135 of the farm Boschoek 103 JQ, Rustenburg, located in the North West Province, G2019/032, November 2020.
- Electrical Services: LTZ Consulting, 2021. Electrical Services Report for Portion 135 of the farms Boschhoek No 103 JQ. April 2021.
- Market Study: Demacon, 2021. Boshhoek Filling Station Mark Study. July 2021.
- Fuel Viability Study: Techworld Consulting Engineers, 2021. Fuel viability study for the proposed new filling station on R565, Portion 135 Boschhoek 103-IQ, Rustenburg Municipality. September 2021.

### Appendix E: Public participation

- Newspaper notice (Rustenburg Herald)
- Email notification
- Hand-delivered notification
- Contact details of Interested and Affected Parties (confidential)
- Comments received from Interested and Affected Parties
- Comments received from Interested and Affected Parties on draft BAR

## LIST OF ACRONYMS AND ABBREVIATIONS AND DEFINITIONS

<b>AST</b>	Above-ground Storage Tanks
<b>AIS</b>	Alien and Invasive Species Regulations (2014)
<b>Biodiversity</b>	Diversity of genes, species and ecosystems on earth, and the ecological and evolutionary processes that maintain this diversity.
<b>BPDM</b>	Bojanala Platinum District Municipality
<b>BPG</b>	Best Practice Guidelines
<b>CAPEX</b>	Capital Expenditure
<b>CARA</b>	Conservation of Agriculture Resources Act, 1983 (Act 43 of 1983)
<b>CBA</b>	Critical Biodiversity Area (terrestrial and aquatic areas required to meet biodiversity targets for ecosystems, species or ecological processes, as identified in a systematic biodiversity plan)
<b>CBD</b>	Central Business District (centre of a town/city)
<b>CRSA</b>	Constitution of the Republic of South Africa, 1996 (Act 108 of 1996) – Section 24 relates to environment
<b>CSIR</b>	Council for Scientific and Industrial Research
<b>DAFF</b>	Department of Agriculture, Forestry & Fisheries
<b>DEFF</b>	Department of Environment, Forestry & Fisheries (national authority responsible for environmental protection and implementation of NEMA)
<b>DMR</b>	Department of Mineral Resources
<b>DOL</b>	Department of Labour
<b>DTI</b>	Department of Trade and Industry
<b>DWS</b>	Department of Water and Sanitation (national authority responsible for water protection and implementation of NWA, custodian of South Africa's water resources)
<b>EAP</b>	Environmental Assessment Practitioner (independent consultant administering NEMA processes on behalf of applicant)
<b>EAPASA</b>	Environmental Assessment Practitioner Association of South Africa
<b>ECA</b>	Environment Conservation Act, 1989 (Act 73 of 1989) – preceded NEMA
<b>ECO</b>	Environmental Control Officer
<b>EIA</b>	Environmental Impact Assessment (process required in terms of NEMA to obtain authorisation for listed activities)
<b>EMF</b>	Environmental Management Framework

<b>EMP</b>	Environmental Management Programme/Plan
<b>EO</b>	Environmental Officer
<b>ERAP</b>	Emergency Response Action Plan
<b>ESA</b>	Ecological Support Area (terrestrial and aquatic areas that are not essential for meeting biodiversity targets but play an important role in supporting the ecological functioning of one or more Critical Biodiversity Areas; or in delivering ecosystem services.
<b>GIS</b>	Geographic Information System
<b>GNR</b>	Government Notice Regulation (notices published in Government Gazette in terms of already promulgated laws, legislated by government)
<b>GNR 324</b>	Amendment of GNR 985 - Listing 3 deals with activities requiring environmental authorisation due to sensitive locations
<b>GNR 325</b>	Amendment of GNR 984 - Listing 2 deals with activities requiring environmental authorisation due to expected higher environmental impact – requires full EIA (scoping and EIA)
<b>GNR 326</b>	Amendment of GNR 982 - EIA regulations – procedures / requirements
<b>GNR 327</b>	Amendment of GNR 983 - Listing 1 deals with activities requiring environmental authorisation due to expected lower environmental impact – requires Basic Assessment only
<b>GPS</b>	Global Positioning System
<b>HC</b>	Hydrocarbons
<b>HCS</b>	Hazardous Chemical Substance
<b>HIA</b>	Heritage Impact Assessment
<b>IAIA</b>	International Association of Impact Assessment
<b>IBA</b>	Important Bird (and Biodiversity) Area – of international significance for conservation of birds as identified by BirdLife International.
<b>I&amp;APs</b>	Interested and Affected Parties (as identified during the Public Participation Process)
<b>IDP</b>	Integrated Development Plan
<b>IRP</b>	Integrated Resource Plan
<b>mamsl</b>	Metres Above Mean Sea Level
<b>Listed Activities</b>	Activities identified in terms of NEMA Sections 24 and 24D, which require environmental authorisation prior to commencement due to their potential environmental impacts. See GNR 324, 325, 326, 327
<b>MAE</b>	Mean Annual Evaporation



<b>MAP</b>	Mean Annual Precipitation
<b>MSDS</b>	Material Safety Data Sheets
<b>NEMA</b>	National Environmental Management Act, 1998 (Act 107 of 1998) – overarching environmental legislation in South Africa
<b>NEM:AQA</b>	National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004)
<b>NEM:BA</b>	National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004)
<b>NEM:PAA</b>	National Environmental Management: Protected Areas Act, 2003 (Act 57 of 2003)
<b>NEM:WA</b>	National Environmental Management: Waste Act, 2008 (Act 59 of 2008)
<b>NFEPA</b>	National Freshwater Ecosystems Priority Area
<b>NHRA</b>	National Heritage Resources Act, 1999 (Act 25 of 1999)
<b>NWA</b>	National Water Act, 1998 (Act 36 of 1998)
<b>OHSA</b>	Occupational Health and Safety Act, 1993 (Act 85 of 1993)
<b>OPEX</b>	Operational Expenditure
<b>PPE</b>	Personal Protective Equipment
<b>PPP</b>	Public Participation Process
<b>PRECIS</b>	National Herbarium Pretoria (PRE) Computerised Information System
<b>QDGC</b>	Quarter Degree Grid Cell
<b>RLM</b>	Rustenburg Local Municipality
<b>SACNASP</b>	South African Council for Natural Scientific Professions (body for the registration of professional natural scientists)
<b>SAHRA</b>	South African Heritage Resources Agency (authority responsible for implementation of NHRA)
<b>SAHRIS</b>	South African Heritage Resources Information System (electronic system onto which reports are loaded for comments from SAHRA)
<b>SANBI</b>	South African National Biodiversity Institute
<b>SANRAL</b>	South African National Roads Agency
<b>SABS</b>	South African Bureau of Standards
<b>SANS</b>	South African National Standards
<b>SCC</b>	Species of Conservation Concern
<b>SDF</b>	Spatial Development Framework
<b>SDP</b>	Site Development Plan

<b>SHEQ</b>	Safety, Health, Environment & Quality
<b>SoE</b>	State of the Environment Report
<b>UST</b>	Underground Storage Tanks
<b>WCMR</b>	Waste classification and Management Regulations
<b>WISA</b>	Water Institute of Southern Africa
<b>WUL</b>	Water Use License

## 1 ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

### 1.1 Details

<b>Company:</b>	HydroScience CC
<b>Registration Number:</b>	2008/056910/23 14 March 2008
<b>Postal address:</b>	P.O. Box 1322 Ruimsig 1732
<b>Email address:</b>	paulette@hydroscience.co.za
<b>Telephone number:</b>	+ 27 (0) 82 850 5482
<b>Fax number:</b>	+ 27 (0) 86 692 8820
<b>Contact person:</b>	Ms Paulette Jacobs I.D. 680526 0104 08 4
<b>Professional registration (Paulette Jacobs):</b>	South African Council for Natural Scientific Professions (SACNASP): 400005/07 Environmental Assessment Practitioner Association of South Africa (EAPASA): 2020/357
<b>Membership (Paulette Jacobs):</b>	Water Institute of Southern Africa (WISA): 24906 International Association of Impact Assessment South Africa (IAIAsa): 5266

### 1.2 Experience and expertise

HydroScience CC was established in 2008 after Ms Paulette Jacobs acted as an independent consultant (sole proprietor) since 2000. HydroScience is an environmental, water and waste management solutions provider. Refer to Appendix A for a company profile.

Ms Paulette Jacobs obtained her qualifications from the Rand Afrikaans University in Johannesburg in 1990 and has been in the water, waste and environmental field for the last 30 years, first in research for seven (7) years at the Council for Scientific and Industrial Research (CSIR) and since then in consulting (Pulles, Howard and De Lange Water Quality Management Consultants, SRK Consulting, sole proprietor, HydroScience). Refer to Appendix A for Curriculum Vitae of Ms Paulette Jacobs. Ms Paulette Jacobs assisted Department of Water Affairs and Forestry (now Department of Water and Sanitation, DWS) to compile the Best Practice Guidelines (BPG) for water resource protection in the mining industry and has successfully completed many Water Use Licence (WUL) Applications in terms of the National Water Act (NWA), 1998 (Act 36 of 1998) as well as Environmental Impact Assessments (EIA) in terms of the National Environmental Management Act (NEMA), 1998 (Act 107 of 1998) as amended for the industrial, retail, commercial/business and residential sectors to obtain environmental authorisations, Atmospheric Emissions Licenses (AEL) and Waste

Management Licenses (WML) over the last 20 years. Refer to Appendix A for a project list of applications for environmental authorisation in North West Province.

### 1.3 Supporting information

Appendix A contains:

- Company profile: HydroScience
- Curriculum vitae (Environmental Assessment Practitioner): Ms Paulette Jacobs
- Qualification: Ms Paulette Jacobs
- Professional affiliations: Ms Paulette Jacobs (SACNASP, EAPASA, WISA, IAIAsa)
- NEMA project list

### 1.4 Assumptions, limitations, disclaimer and copyright

The findings, results, observations, conclusions and recommendations given in this report are based on the author's best scientific and professional knowledge as well as available information at the time of compilation (February 2021 – January 2022). The report is based on survey and assessment techniques which are limited by time (one day on site) and budgetary constraints relevant to the type and level of investigation undertaken (Basic Assessment Process) and HydroScience and its staff / representatives reserve the right to modify aspects of the report if and when new information may become available from changes in legislation, on-going research or further work in this field, or pertaining to this investigation.

Although HydroScience exercises due care and diligence in rendering services and preparing documents, HydroScience accepts no liability, and the client, by receiving this document, indemnifies HydroScience and its owners, directors, managers, members, agents and employees against all actions, claims, demands, losses, liabilities, costs, damages and expenses arising from or in connection with services rendered, directly or indirectly by HydroScience and by the use of the information contained in this document.

This report may not be altered or added to without the prior written consent of the author. This also refers to electronic copies of this report, which are supplied for the purposes of inclusion as part of other reports. Similarly, any recommendations, statements or conclusions drawn from or based on this report must make reference to this report. If these form part of a main report relating to this investigation or report, this report must be included in its entirety as an appendix or separate section to the main report.

Project description information contained in this report is based on information supplied by the client or client appointed sources. It has been assumed that the information provided to HydroScience is correct. Environmental data contained in this report is based on information supplied by specialists in their respective fields, as well as existing available information from official sources pertaining to the area in question (maps and reports published by the relevant government department and agencies). It has been assumed that the information from these specialists or official sources is correct. HydroScience has therefore not checked or verified historical/existing information provided for correctness. HydroScience accepts no responsibility for incomplete or inaccurate data supplied by others (the client and external sources). Where gaps or obvious errors have been identified, these are noted for consideration by the applicant and/or authority.

Mr JJJ Swarts is responsible for the implementation of recommendations and HydroScience cannot and will not take responsibility for its actions or lack thereof.

## 1.5 Declaration of independence

I, **Paulette Jacobs**, declare that –

- I act as an independent environmental, water and waste consultant in this investigation;
- I have expertise in water, waste and environmental management, including knowledge of the relevant Acts, Regulations and any guidelines that have relevance to the investigation;
- I have performed the work relating to this investigation in an objective manner, even if this results in views and findings that are not favourable to any party involved;
- I have included the specialist studies provided to me in Appendices as well as summarised findings and recommendations in this report;
- I undertake to disclose all material information in my possession that reasonably has or may have the potential to influence this investigation, unless access to that information is protected by law, in which case it will be indicated that such information exists;
- I do not have any vested interest (either business, financial, personal or other) in the investigation other than fair remuneration for work performed; and
- I will provide the parties with access to all information at my disposal regarding the investigation, whether such information is favourable or not.



---

Signature: Paulette Jacobs

## 2 APPLICANT / PROPONENT

### 2.1 Details

<b>Applicant:</b>	Jacobus Jonathan Jacob Swarts
<b>Identity Number:</b>	680529 5098 08 7
<b>Postal address:</b>	P.O. Box 3391 Kroondal 0350
<b>Physical address:</b>	Farm Marula Rustenburg
<b>Email address:</b>	steineck@polka.co.za
<b>Telephone number:</b>	+ 27 (0) 14 536 1874 / 596 6335
<b>Fax number:</b>	+ 27 (0) 14 590 3070
<b>Cellular number:</b>	+ 27 (0) 83 520 5768

### 2.2 Supporting information

Appendix B contains:

- Title deed T000057551/2015 indicating owner as JJJ Swarts

### 3 PROPERTY

#### 3.1 Details

<b>Province:</b>	North West
<b>District Municipality:</b>	Bojanala Platinum District Municipality (BPDM)
<b>Local Municipality:</b>	Rustenburg Local Municipality (RLM) P.O. Box 16 Rustenburg 0300 Tel: 014 590 3185 Fax: 014 590 3070  <u>Contact person:</u> Ms Kelebogile Mekgoe Cellular number: 072 585 9460 Email: kmekgoe@rustenburg.gov.za
<b>Ward:</b>	1 Ms Aletta Dimakatso Malla (ANC) Cell: 078 622 7901 Email: dimakatsoaletta66@gmail.com
<b>Ownership:</b>	Title deed: T000057551/2015 Jacobus Jonathan Jacob Swarts 680529 5098 08 7
<b>Land use:</b>	Zoning: Business 1 for shops Use: Vacant Rezoning: Special - In process – KMC Geomatics
<b>Surrounding land uses:</b>	Agriculture, mining, business
<b>Farm &amp; portions:</b>	Portion 135 of the farm Boschhoek 103JQ
<b>SG number:</b>	TOJQ00000000010300135
<b>Size:</b>	1.3933ha
<b>GPS locations:</b>	25° 30' 02.42" South 27° 05' 31.56" East
<b>Surrounding towns:</b>	Rustenburg: +/- 25km south east
<b>Roads &amp; access:</b>	Access from <b>R565</b> (Class 2 road), opposite northern access to existing TOTAL, has already been approved by SANRAL (September 2017) for the current zoning of "Business 1" for a retail centre.

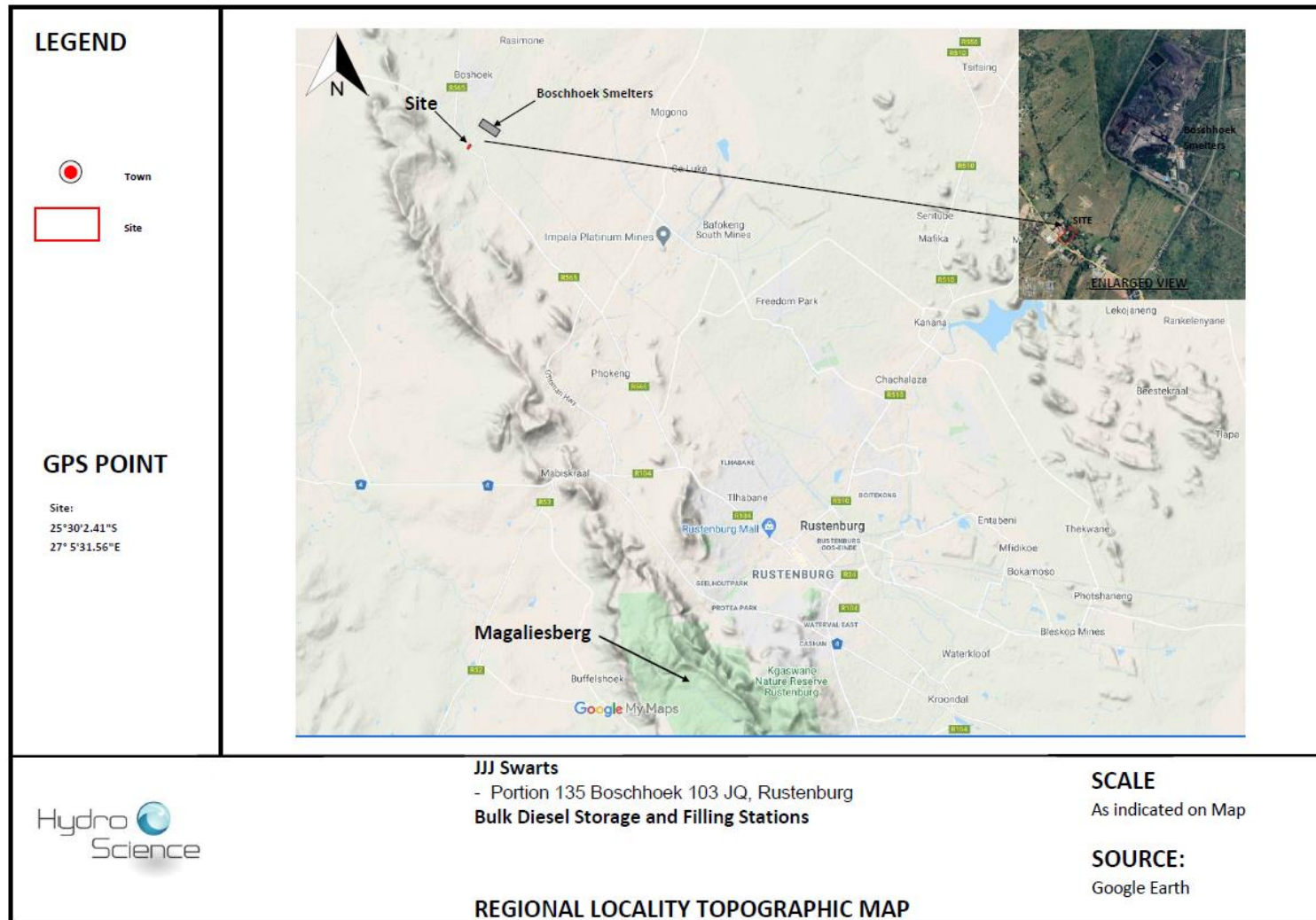


Figure 3-1: Property Regional locality





Figure 3-2: Property Local Locality

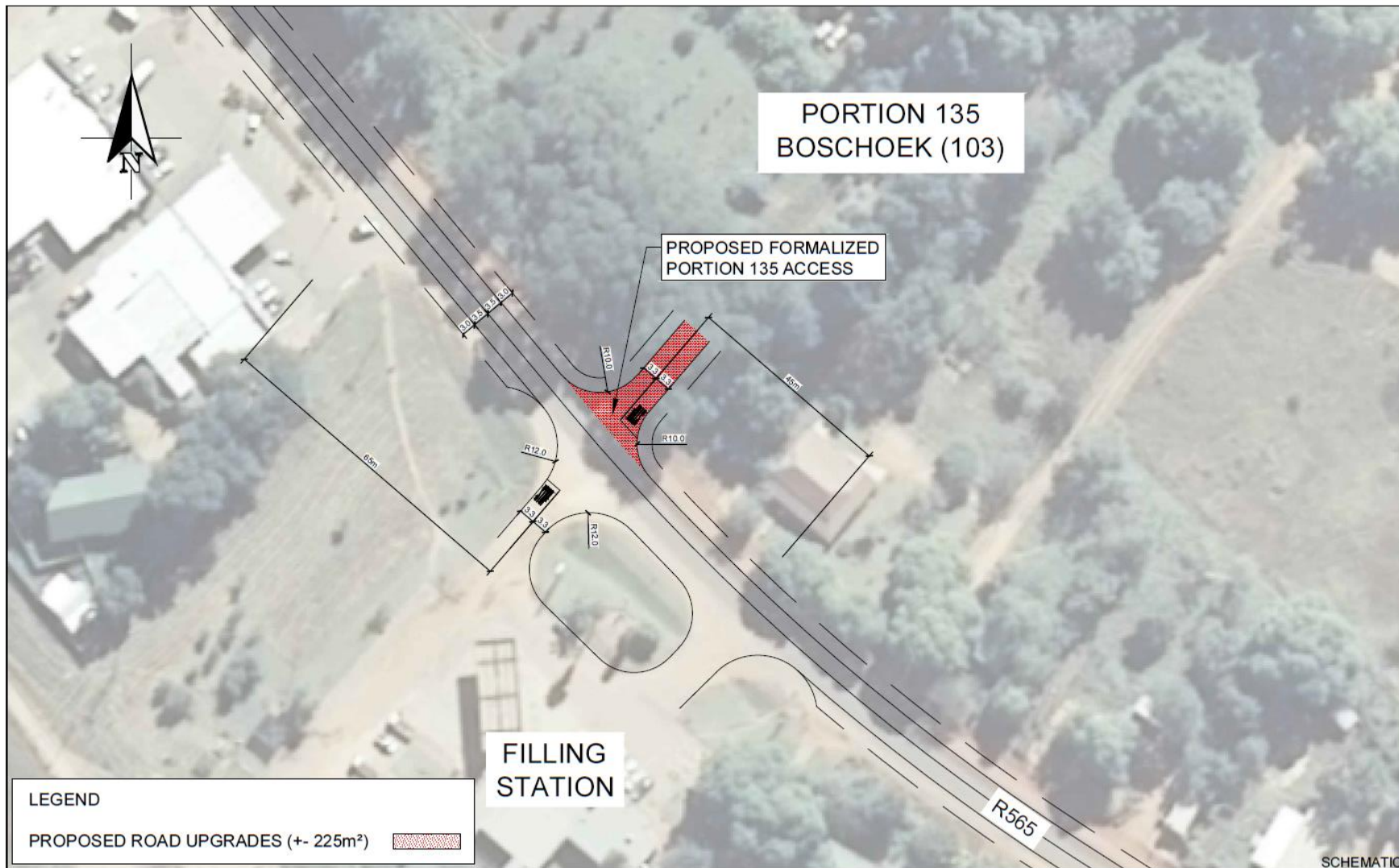


Figure 3-3: Access (Maxim)

## 4 PROJECT

### 4.1 Project Description

<p><b>Title:</b></p>	<p>Proposed development of bulk storage facilities and filling stations (storage and handling of hydrocarbons) on Portion 135 of the farm Boschhoek 103JQ, Rustenburg Local Municipality, North West Province.</p>
<p><b>Type:</b></p>	<p>Class 3 rest and service facility</p>
<p><b>Detailed description:</b></p>	<p>The proposed development will consist of bulk diesel storage facilities as well as filling stations on both sides of the site (north east and south west along the R565) whose combined tank storage capacity will be no larger than 500m<sup>3</sup> and will be developed in phases. The filling stations and bulk storage will be built on Portion 135 of the farm Boschhoek 103JQ, Rustenburg Local Municipality, North West Province.</p> <p><u>Site clearance:</u> For the development, vegetation will have to be cleared to allow space for the establishment of structures and infrastructure. The site is located in a Critical Biodiversity Area (CBA) 2 and 1.3933ha.</p> <p><u>Above-ground Storage Tanks (AST):</u> Above-ground bulk diesel storage tanks of no more than 100m<sup>3</sup> will be established within bunded areas.</p> <p><u>Underground Storage Tanks (UST):</u> The proposed filling stations will consist of six (6) underground tanks, each with a volume of 43m<sup>3</sup>. Two tanks will house 95 octane petrol, two tanks will house 93 octane petrol and two tanks will house Diesel. The combined volume of all six tanks at the filling stations will be no larger than 258m<sup>3</sup> (see below).</p> <p><u>Phased development:</u> The development will be conducted in phases as follows:</p> <ol style="list-style-type: none"> <li>1. Bulk diesel AST</li> <li>2. Filling station along R565 (open 2023)</li> <li>3. Filling station and remainder of development after construction of new road.</li> </ol> <p>Phase 1 (bulk above-ground diesel storage) will be completed within 5 years. Phase 2 (first filling station) will be completed within 10 years. Remainder of development (second filling station and other) will depend on road construction and service installation.</p>

	<p>Hydrocarbon storage &amp; handling:</p> <table border="1"> <thead> <tr> <th colspan="2">Filling Station 1</th> <th colspan="2">Filling Station 2</th> </tr> <tr> <th>Product</th> <th>Tank Capacity</th> <th>Product</th> <th>Tank Capacity</th> </tr> </thead> <tbody> <tr> <td>95 Octane petrol</td> <td>43m<sup>3</sup></td> <td>95 Octane petrol</td> <td>43m<sup>3</sup></td> </tr> <tr> <td>93 Octane petrol</td> <td>43m<sup>3</sup></td> <td>93 Octane petrol</td> <td>43m<sup>3</sup></td> </tr> <tr> <td>Diesel</td> <td>43m<sup>3</sup></td> <td>Diesel</td> <td>43m<sup>3</sup></td> </tr> <tr> <td>Total capacity</td> <td>129m<sup>3</sup></td> <td>Total Capacity</td> <td>129m<sup>3</sup></td> </tr> <tr> <td colspan="3">Two (2) filling stations</td> <td><b>258m<sup>3</sup>.</b></td> </tr> <tr> <td colspan="3">Bulk diesel storage – above ground</td> <td>100m<sup>3</sup></td> </tr> <tr> <td colspan="3"><b>Therefore, combined capacity of all tanks for both filling stations and bulk diesel storage</b></td> <td><b>358m<sup>3</sup>.</b></td> </tr> </tbody> </table>				Filling Station 1		Filling Station 2		Product	Tank Capacity	Product	Tank Capacity	95 Octane petrol	43m <sup>3</sup>	95 Octane petrol	43m <sup>3</sup>	93 Octane petrol	43m <sup>3</sup>	93 Octane petrol	43m <sup>3</sup>	Diesel	43m <sup>3</sup>	Diesel	43m <sup>3</sup>	Total capacity	129m <sup>3</sup>	Total Capacity	129m <sup>3</sup>	Two (2) filling stations			<b>258m<sup>3</sup>.</b>	Bulk diesel storage – above ground			100m <sup>3</sup>	<b>Therefore, combined capacity of all tanks for both filling stations and bulk diesel storage</b>			<b>358m<sup>3</sup>.</b>
Filling Station 1		Filling Station 2																																						
Product	Tank Capacity	Product	Tank Capacity																																					
95 Octane petrol	43m <sup>3</sup>	95 Octane petrol	43m <sup>3</sup>																																					
93 Octane petrol	43m <sup>3</sup>	93 Octane petrol	43m <sup>3</sup>																																					
Diesel	43m <sup>3</sup>	Diesel	43m <sup>3</sup>																																					
Total capacity	129m <sup>3</sup>	Total Capacity	129m <sup>3</sup>																																					
Two (2) filling stations			<b>258m<sup>3</sup>.</b>																																					
Bulk diesel storage – above ground			100m <sup>3</sup>																																					
<b>Therefore, combined capacity of all tanks for both filling stations and bulk diesel storage</b>			<b>358m<sup>3</sup>.</b>																																					
<b>Location:</b>	25° 30' 02.42" South 27° 05' 31.56" East																																							
<b>Period of establishment:</b>	Phase 1: Bulk diesel AST - within 5 years. Phase 2: First filling station - within 10 years. Phase 3: Remainder of development (second filling station and other) will depend on road construction and service installation.																																							
<b>Investment:</b>	R5 million																																							

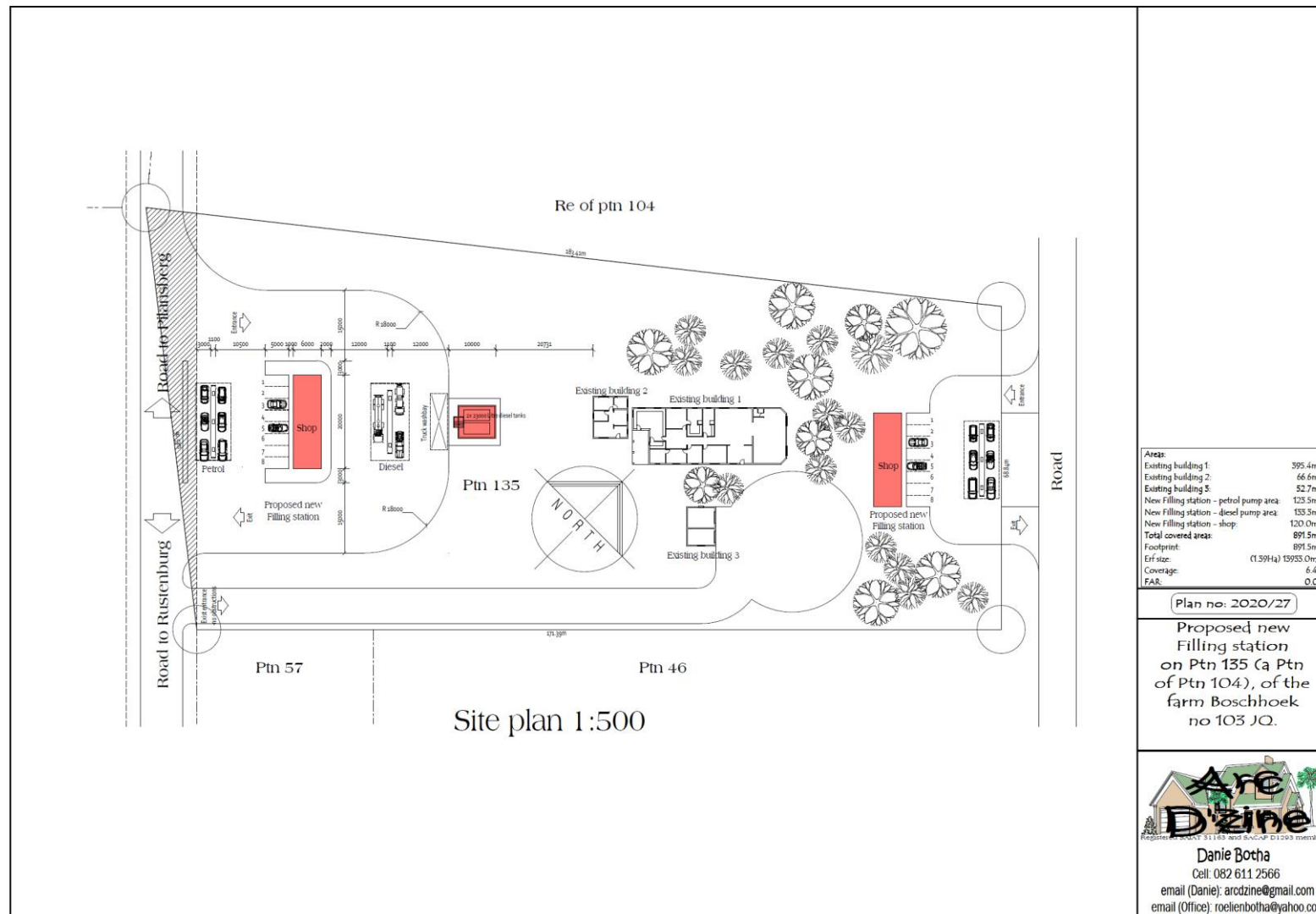


Figure 4-1: Site Development Plan (SDP)

## 4.2 Screening

The Department of Forestry, Fisheries and the Environment (DFFE) screening tool was used and a screening report generated. The following came from the report:

Aspect:	Sensitivity:	Requirement from other recent studies conducted on the site:
Environmental Management Framework (EMF)		No intersections with EMF areas found
		Air Quality Priority Area Waterberg – Bojanala Priority Area
Agricultural	High	All farms in this area were historically used for agricultural purposes. Currently, there is no signs of agricultural activities on the site – refer to photographs.
Animal	Low	Refer to terrestrial biodiversity below.
Aquatic biodiversity	Low	No concern, no impact.
Civil aviation	Low	No concern, no impact.
Defence	Low	No concern, no impact.
Plant	Low	Refer to terrestrial biodiversity below.
Terrestrial biodiversity	Very high	Critical Biodiversity Area (CBA) 2. Focus areas for land-based protected areas expansion. Refer to Terrestrial Biodiversity Assessment by Iggdrasil Scientific Services, 2018 (Appendix D).  CBA2 due to natural corridor nodes. High levels of disturbance. No significant impact on flora and fauna biodiversity. Green area to be accommodated in SDP.
Archaeological and Cultural Heritage	Low	Refer to Archaeos Culture & Cultural Resource Consultants, 2018 (Appendix D).  No sites of cultural heritage significance.

According to the Screening Report, (DFFE) the proposed property is subject to the following environmental concerns:

- The site falls in an area with a high agricultural sensitivity;
- The animal species, aquatic biodiversity, plant species, archaeological and cultural heritage was considered to be low sensitivity, while
- The terrestrial biodiversity was considered to be highly sensitive (CBA 2).

### 4.3 Need and desirability

Addressing need and desirability is a way of ensuring sustainable development. Therefore, the project must be ecologically sustainable and socially and economically justifiable.

Economic investment by applicant:	R5 million
Need & desirability	<p>According to the Market Study (Demacon, 2021), the proposed filling station will be a good locational fit based on the market gap caused by the increased volumes of traffic along the R565. The site is not only favourable in terms of the visibility and accessibility but is situated on the opposite side of the existing filling stations (Total &amp; Engen) which gives it an advantage for traffic in the opposite direction.</p> <p>The proposed new filling station will serve the transient market along the R565 between Rustenburg and Sun City, as well as the local market of Boshhoek. According to the Market Study (Demacon, 2021) there is an opportunity for the filling station to not only provide fuel and a convenience store but to provide Quick Service Restaurants that could cater to the needs of the immediate community and motorists travelling along the R565.</p> <p>It will provide work opportunity for the immediate community and will also boost the economic growth of the community.</p> <p>Refer to the Market Study done by Demacon, 2021, for the detailed calculations and analysis of the need and desirability of the proposed filling station.</p>
Fatal flaws:	No fatal flaws were identified and if the project is managed according to the Environmental Management Programme, the impact on the environment will be moderate to low.
Market:	<p>The market was determined considering traffic counts, impact of growth on the R565 passing the site, local economic growth, population and household growth.</p> <p>14 345 traffic movements on R565 (higher than at Milly's on N4) which equates to 403 459 litres/month fuel sales. Traffic growth expected to be 3.8% per annum over the medium to longer term based on economic, income and population growth.</p>
Market gap:	Famous brands and other prominent Quick Service Restaurant (QSR) operators are absent from the existing filling stations, creating an opportunity for the proposed filling station (Demacon, 2021).

<p>Potential income:</p>	<p>Fuel sales to start at 361 000 litres/month in 2023 with estimated fuel sales at 403 456 litres/month.</p> <p>Convenience store retail sales can potentially amount to R766 566/month and R9.1 million/annum.</p>
<p>Other filling stations:</p>	<p>Three (3) other filling station are located within 3km of the proposed site. The proposed site is expected to capture on average of about 20% of the monthly fuel sales of the existing sites in the market area. The viability of the existing sites will not be jeopardised based on the estimated current fuel sales at the existing sites and the expected impact (Techworld Consulting Engineers, 2021).</p>
<p>Viability:</p>	<p>Filling Stations have several profit centres in addition to fuel sales, i.e. convenience stores, fast food outlets, car washes, and ATM's. A conservative approach is to determine the viability based only on fuel sales. Fuel sales between ±270,200 litres/month (pessimistic scenario) and ±330,250 litres/month (optimistic scenario) can be expected in the short term. Therefore, the filling station is viable from a financial perspective.</p> <p>The future growth in traffic must also be considered since it can be expected that fuel sales will increase with the growth in bypassing traffic. However, if a filling station is viable from its opening, it follows that the viability will only improve given no other changes. A 2% growth/annum (conservative as Demacon states 3.8%) is expected for the future (Techworld Consulting Engineers, 2021).</p>



## 5 LEGAL FRAMEWORK

### 5.1 Constitution of the Republic of South Africa (CRSA)

The Constitution of the Republic of South Africa (CRSA), 1996 (Act 108 of 1996) places a duty on the State to protect the environment. Section 24 states that:

“Everyone has the right

- a. to an environment that is not harmful to their health or well-being; and
- b. to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that
  - i. prevent pollution and ecological degradation;
  - ii. promote conservation; and
  - iii. secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”

***The right in the CRSA is given effect in several articles of national legislation including the National Environmental Management Act (NEMA), 1998 (Act 107 of 1998) as amended.***

### 5.2 National Environmental Management Act (NEMA)

The National Environmental Management Act (NEMA), 1998 (Act 107 of 1998) as amended is the overarching environmental legislation in South Africa.

#### 5.2.1 Sustainable development

The principle of Sustainable Development has been established in the CRSA and given effect by the NEMA. Section 1(29) of NEMA states that sustainable development means the integration of social, economic and environmental factors into the planning, implementation and decision-making process so as to ensure that development serves present and future generations. Thus, Sustainable Development requires that:

- The disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied.
- That pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied.
- That the disturbance of landscapes and sites that constitute the nation’s cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied.
- That waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner.
- That a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions.
- Negative impacts on the environment, on people’s environmental rights be anticipated; and, prevented, and where they cannot altogether be prevented, are minimised and remedied.

Duty of care is addressed in Section 28 of the NEMA.

***In terms of sustainable development:***

- ***The disturbance of ecosystems, loss of biological diversity and the disturbance of landscapes and sites that constitute the nation’s cultural heritage are avoided***

**through the placement of the filling station within the existing footprint area which is already disturbed and not on a greenfields area.**

- **Waste cannot be avoided but general waste will be disposed of as part of the municipal system, hazardous waste will be taken to a registered site and any other waste will be disposed of as per the Environmental Management Programme (EMPr).**
- **Other potential negative impacts identified will also be managed through the EMPr.**

### 5.2.2 NEMA regulations

Government Notice Regulation (GNR) 982, 983, 984 and 985 of 4 December 2014 contain the latest regulations pertaining to Environmental Impact Assessment (EIA) under sections 24(5), 24M and 44 of the NEMA. These were amended / updated on 7 April 2017 under GNR 324, 325, 326 & 327.

GNR 982 as amended / updated in GNR 326 stipulate requirements in terms of processes to be followed and information to be included in documentation.

GNR 984 as amended / updated in GNR 325 was considered and no applicable activities were identified.

GNR 985 as amended / updated in GNR 324 was considered and applicable activities were identified but are mostly replaced with activities from GNR 327 due to limits.

GNR 983 as amended / updated in GNR 327 was considered and applicable activities were identified.

### 5.2.3 Listed activities applicable

The following listed activities require environmental authorisation:

GNR & Date	Activity Number and Description	Project Description
GNR 983 as amended / updated in GNR 327 of 7 April 2017	<u>Activity 14:</u> The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic meters or more but not exceeding 500 cubic meters.	The proposed development will consist of six (6) underground tanks, each with a capacity of 43m <sup>3</sup> . Two tanks will house 95 octane petrol, two tanks will house 93 octane petrol and two tanks will house Diesel. The combined volume of all six underground tanks will be no larger than 258m <sup>3</sup> . Above-ground bulk diesel storage of 100m <sup>3</sup> will also be established, bringing the total volume to 358m <sup>3</sup> .
	<u>Activity 27:</u> The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation.	The proposed development site is 1.3933 hectares in extent. This area will be cleared of vegetation to allow for the establishment of structures and infrastructure. A cement overlay will be established at the filling station sites and around above-ground bulk storage tanks.

GNR & Date	Activity Number and Description	Project Description
	<p><u>Activity 28:</u> Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998, and where such development (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.</p>	<p>The property has not been fully developed yet and will be developed. The property is larger than 1 hectare, it is 1.3933 hectares in extent.</p>
<p>GNR 324 7 April 2017</p>	<p><u>Activity 4:</u> The development of a road wider than 4 metres with a reserve less than 13.5 metres.</p>	<p>Some access and internal roads may be wider than 4 metres.</p>
	<p><u>Activity 10:</u> 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 30 but not exceeding 80 cubic metres.</p>	<p>The activity is, replaced by GNR 327, Activity 14 due to the storage capacity exceeding 80 cubic metres.</p>
	<p><u>Activity 12:</u> The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p>h. North West</p> <p>iv. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority.</p>	<p>For the development, vegetation will also be cleared to allow space for the establishment of structures and infrastructure. The site is located in a Critical Biodiversity Area (CBA) 2.</p> <p>The activity is however, replaced by GNR 327, Activity 27 due to the cleared area exceeding 1 ha.</p>

## 5.3 National Environmental Management: Biodiversity Act (NEMBA)

### 5.3.1 Commitment to biodiversity conservation

Although South Africa became a signatory to the Convention of Biological Diversity in 1998, the more recent enactment of national legislation has affirmed our country's commitment to biodiversity and conservation as required in the CRSA. The National Environmental Management: Biodiversity Act (NEMBA), 2004 (Act 10 of 2004) has been promulgated by the South African President and was published in the Government Gazette in June 2004 (Volume 467; No. 26426). One of the objectives of this Act is to provide for the management and conservation of South Africa's biodiversity within the framework of the NEMA and to ensure the sustainable use of indigenous biological resources.

The Act, in protecting biodiversity, deals with:

- the protection of threatened ecosystems and species;
- the control of alien invasive species;
- the control of genetically modified organisms; and
- regulates bioprospecting.

As with NEMA, NEMBA incorporates and gives effect to international agreements relating to biodiversity.

### 5.3.2 Protection of threatened ecosystems and species

Ecosystems that are Critically Endangered, Endangered or Vulnerable can be listed in terms of Section 52 of the Act as threatened ecosystems at both national and provincial level. For example, Critically Endangered ecosystems are defined in the Act as being 'ecosystems that have undergone severe degradation of ecological structure, function or composition as a result of human intervention and are subject to an extremely high risk of irreversible transformation'. Importantly, any land-use change application occurring within an ecosystem listed as Critically Endangered or Endangered will automatically require environmental authorisation.

***The terrestrial biodiversity indicates a least threatened ecosystem and moderately protected area. The area planned for the filling station is a degraded area that is mostly covered with garden plants and the historic orchard.***

Threatened or Protected Species Regulations of 2013 (GNR388 of 2013): Part 2 of NEMBA provides for listing of species that are threatened or in need of protection to ensure their survival in the wild, while regulating the activities, including trade, which may involve such listed threatened or protected species and activities which may have a potential impact on their long-term survival. In February 2007, the Minister of Environmental Affairs and Tourism published a list of Critically Rare, Endangered, Vulnerable and Protected Species, according to Section 56(1) of the Act, which was updated again in 2013.

***Species of conservation concern (SCC) for the larger area include:***

***Flora:***

- ***Myrothamnus flabellifolius (Data Deficient Geophyte)***

***Fauna:***

- ***Invertebrates: No likelihood of occurrence***
- ***Amphibians: Giant Bullfrog - no likelihood of occurrence***
- ***Reptiles: Nile Crocodile & Natal Python – unlikely to occur for any extended period because primary preferred habitat is not available***

- ***Birds: European Roller & Marabou Stork – site provides little value in terms of endemic species***
- ***Mammals: South African Hedgehog & Honey Badger – site provides no habitat for Threatened or Protected Species***

***The area planned for the filling station is, however, degraded and none of the sensitive species, as listed above, were found on site.***

### 5.3.3 Control of alien invasive species

The list of alien and invasive species is intended to provide a legal framework to manage and control alien species that are considered invasive and that have the potential to threaten biodiversity, water resources and agricultural potential. NEMBA has identified all species that should be considered as alien or invasive species, as well as the restricted activities relating to each species. It is required by law (from 1 October 2014), for landowners to investigate the type and extent of alien invasive species growing on their property and to implement an effective control and eradication management plan.

***Alien and invasive species are found on the property. Refer to Alien and Invasive Species Regulations, 2014 (GNR598).***

## 5.4 National Environmental Management: Waste Act (NEMWA)

In terms of the National Environmental Management: Waste Act (NEMWA), 2008 (Act 59 of 2008), the following is relevant to this project:

- GNR 926 of 29 November 2013. National Norms and Standards for the Storage of Waste.

***The storage of waste material on the site before off-site recycling and disposal has to comply with these Norms and Standards.***

## 5.5 National Water Act (NWA)

### 5.5.1 Water uses

The National Water Act (NWA), 1998 (Act 36 of 1998) Section 21 defines water use as:

- (a) taking water from a water resource.
- (b) storing water.
- (c) impeding or diverting the flow of water in a watercourse.
- (d) engaging in a stream flow reduction activity contemplated in section 36.
- (e) engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1).
- (f) discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit.
- (g) disposing of waste in a manner which may detrimentally impact on a water resource.
- (h) disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process.
- (i) altering the bed, banks, course or characteristics of a watercourse.
- (j) removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people.
- (k) using water for recreational purposes.

***The project triggers Section 21 (a) since water from the borehole will be used as the main water supply for the filling station. Section 21 (g) might be triggered depending on the sewage management planned. Section 21 (c) & (i) are also triggered since the filling station will be constructed within 500m of a wetland on a neighbouring property.***

### 5.5.2 Legal requirements

The NWA states in Section 22 (1) that a person may only use water –

- (a) without a licence –
  - (i) if that water use is permissible under Schedule 1;
  - (ii) if that water use is permissible as a continuation of an existing lawful use; or
  - (iii) if that water use is permissible in terms of a general authorisation issued under section 39;
- (b) if the water use is authorised by a licence under this Act; or
- (c) if the responsible authority has dispensed with a licence requirement under subsection (3).

***The proposed project will therefore require a water use license. An application has commenced on the on-line eWULAas system with reference number WU19572.***

## 5.6 Conservation of Agricultural Resources Act (CARA)

### Conservation of agricultural potential:

The aim of the Conservation of Agricultural Resources Act (CARA), 1983 (Act 43 of 1983) is to provide for control over the utilization of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith.

To achieve this aim, the following objectives are included:

- To provide for the conservation of the natural agricultural resources of the Republic by the maintenance of the production potential of land;
- The combating and prevention of erosion and weakening or destruction of the water sources, and
- The protection of the vegetation and the combating of weeds and invader plants.

### Combating weeds and invader plants:

In 1984, regulations were passed in terms of the CARA, regulations declaring about 50 species “weeds” or “invader plants”. On 30 March 2001, the Minister of Agriculture promulgated an amendment to these regulations. This amendment then contained a more comprehensive list of species that are declared weeds and invader plants dividing them into three (3) categories. These categories are as follows:

- Category 1: Declared weeds that are prohibited on any land or water surface in South Africa. These species must be controlled, or eradicated where possible.
- Category 2: Declared invader species that are only allowed in demarcated areas under controlled conditions and prohibited within 30m of the 1:50 year flood line of any watercourse or wetland.
- Category 3: Declared invader species that may remain, but must be prevented from spreading. No further planting of these species is allowed.

***In terms of the amendments to the regulations under the CARA, landowners are legally responsible for the control of alien invasive vegetation species on their properties. An alien invasive eradication programme must be compiled in order to control alien and invasive vegetation on site during construction and operation.***

## 5.7 National Heritage Resources Act (NHRA)

### 5.7.1 Legislation

The National Heritage Resources Act (NHRA), 1999 (Act 25 of 1999) requires protection of the following cultural heritage resources:

- a. Archaeological artifacts, structures and sites older than 100 years;
- b. Ethnographic art objects (e.g. prehistoric rock art) and ethnography;
- c. Objects of decorative and visual arts;
- d. Military objects, structures and sites older than 75 years;
- e. Historical objects, structures and sites older than 60 years;
- f. Proclaimed heritage sites;
- g. Grave yards and graves older than 60 years;
- h. Meteorites and fossils; and
- i. Objects, structures and sites of scientific or technological value.

The national estate includes the following:

- a. Places, buildings, structures and equipment of cultural significance;
- b. Places to which oral traditions are attached or which are associated with living heritage;
- c. Historical settlements and townscapes;
- d. Landscapes and features of cultural significance;
- e. Geological sites of scientific or cultural importance;
- f. Archaeological and paleontological importance;
- g. Graves and burial grounds;
- h. Sites of significance relating to the history of slavery; and
- i. Movable objects (e.g. archaeological, paleontological, meteorites, geological specimens, military, ethnographic, books etc.).

***No archaeological artefacts or graves were found on site.***

## 5.8 Other documents

The following documents were also considered:

- Department of Environmental Affairs (DEA), 2017. Integrated Environmental Management Guideline. Guideline on need and desirability. ISBN 978-0-9802694-4-4.
- DEA, 2017. Public participation guideline in terms of NEMA, 1998 EIA regulations. ISBN 978-0-9802694-2-0.
- Department of Rural, Environmental and Agriculture Development North West Province (READ), 2018. Bojanala Platinum District Municipality Environmental Management Framework (EMF).

## 6 ENVIRONMENTAL SETTING

### 6.1 Socio-economic Environment

Province:	North West (NW)
District Municipality:	Bojanala Platinum District Municipality (BPDM)
Local Municipality:	Rustenburg Local Municipality (RLM) <u>Size:</u> 342 300ha <u>Population:</u> Second smallest municipality but largest population in District; expect 32.9% population growth Core part of platinum mining in South Africa. N4 Platinum Development Corridor runs from east to west. Economic hub of the province.
Roads:	Site is north of R565 in Boshhoek between Rustenburg and Sun City via Phokeng
Surrounding land use:	Commercial with retail, personal and business services and filling stations in the immediate surrounding area.
Zoning of property:	<u>Current:</u> Business 1 for shops <u>Planned:</u> Special for filling station
Integrated Development Plan (IDP):	<u>Structuring elements:</u> Rustenburg Town, Magalies Mountain Range (forces development to north and north east), Provincial Roads (R565 & R510), Platinum Mines  <u>Settlements:</u> Formal Urban Settlements (with municipal services); Tribal Settlements (Bafokeng tribal land); Rural Settlements; Informal Settlements (24 000 households, 68 800 units)  <u>Economic activities:</u> Agriculture (46.6% animals, 25.1% field crops, 23.9% animal products); Mining (world's largest Platinum Group Metal depository); Tourism
Spatial Development Framework (SDF):	Currently under review to align with SPLUMA.
Building completed (2010 – 2019):	722 residential units per annum 97 069 m <sup>2</sup> shopping space 28 109 m <sup>2</sup> office & banking space 92 175 m <sup>2</sup> industrial & warehouse space
Growth areas:	Some notable densification and expansion along the R565, especially in Ledig and Ga-Luka, but also in Chaneng and Phokeng.
Economy:	R208.1 billion for Rustenburg which is 56.7% of BPDM & 34.7% of NW



	<p><b>Economic structure:</b></p> <ul style="list-style-type: none"> <li>• Primary (64.2%) <ul style="list-style-type: none"> <li>○ Agriculture (0.7%)</li> <li>○ Mining (63.4%)</li> </ul> </li> <li>• Secondary (11.2%) <ul style="list-style-type: none"> <li>○ Manufacturing (6.7%)</li> <li>○ Utilities (1.9%)</li> <li>○ Construction (2.5%)</li> </ul> </li> <li>• Tertiary (24.6%) <ul style="list-style-type: none"> <li>○ Trade (6.2%)</li> <li>○ Transport (3.2%)</li> <li>○ Business Services (7.2%)</li> <li>○ Government (4.4%)</li> <li>○ Commodity (3.7%)</li> </ul> </li> </ul> <p><u>Economic growth (2010 – 2020):</u> Average annual = - 0.8% Mining= - 3.2%</p> <p><u>Disposable income growth:</u> 4.3%</p>
<p>Employment:</p>	<p>64.9% of potential labour force participate in local economy</p> <ul style="list-style-type: none"> <li>• 81.5% in formal employment</li> <li>• 18.5 % in informal employment</li> </ul> <p>Formal economy gained 11 080 jobs since 2010 at an average rate of 1 108 jobs gained per year. Informal economy lost 5 425 jobs since 2010 at an average rate of 543 jobs lost per year.</p> <p>12.5% found employment since 2010.</p> <p>Skilled and low-skilled employment have maintained steady annual growth between 2010 and 2020.</p>
<p>Mining impact:</p>	<p>Platinum prices plunged 35% since 2011. Power prices rose 26% a year in this period, while workers gained a 20% annual increase in basic pay. Imminent shaft closures and possible retrenchments.</p>
<p>Demographics:</p>	<p><u>Population size:</u> 335 739 people in primary trade area <u>Population growth:</u> 3.3% average per annum</p> <p>158 237 households <u>Household growth:</u> 5.79 average per annum</p> <p><u>Gender:</u> 55.5% male 44.5% female</p> <p><u>Race:</u></p> <ul style="list-style-type: none"> <li>• 94.5% Black</li> <li>• 2.4% Indian</li> </ul>

	<ul style="list-style-type: none"> <li>• 1.2% White</li> <li>• 1.1% Coloured</li> </ul> <p><u>Education:</u></p> <ul style="list-style-type: none"> <li>• 30.7% attended university</li> <li>• 24.9% attended FET college</li> <li>• 18.1% attended ordinary school</li> </ul> <p><u>Age profile:</u></p> <ul style="list-style-type: none"> <li>• 3.2% silent generation (65 years and older)</li> <li>• 10.3% boomers (50 – 64 years)</li> <li>• 22.6% generation X (35 - 49 years)</li> <li>• 33.1% millennials (21 – 34 years)</li> <li>• 7.3% generation Z (15 – 20 years)</li> </ul> <p><u>Economically active:</u></p> <ul style="list-style-type: none"> <li>• 65.3% of population</li> <li>• 79.9% are employed</li> <li>• 14.4% in skilled occupations (&gt; R13 500/month)</li> <li>• 62.9% in semi-skilled occupations (R4 000/month)</li> <li>• 20.9 in low-skilled occupations (R2 500/month)</li> <li>• 41.1% employed in primary sector</li> <li>• 13.8% employed in secondary sector</li> <li>• 37% employed in tertiary sector</li> </ul>
--	---

The following section is just an overview of the Market Study (DEmacon, 2021) and further details can be viewed in the report in Appendix D.

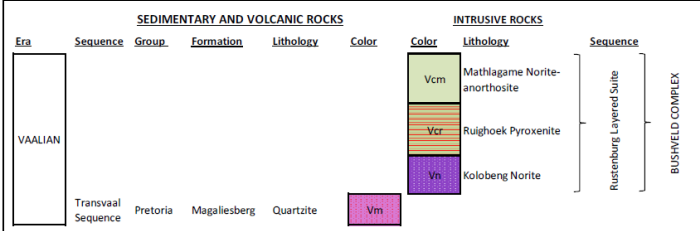
According to Du Toit (Demacon, July 2021), the land use directly surrounding the proposed filling station site is predominantly commercial with retail, personal and business services and several other filling stations. Other land uses within the vicinity includes the mining complexes to the north and east of the site, agricultural activities and Rustenburg town located to the south-east. Although the area is also a well-known tourist destination there are no tourist facilities or accommodation in the direct vicinity but the R565 is used by tourists to travel to several tourist destinations along this route.

There are two other fillings stations located within the vicinity of the proposed filling station, both these filling stations are located on the opposite side of the R565.

According to the demographic analysis, the majority of the households reside in formal dwellings with approximately 74% of the population being economically active. The percentage male to female is 55% to 45% and the population is showing a positive growth. The analysis indicated that the majority of the population has some degree of education beyond matric with only a small percentage that had no formal education.

## 6.2 Biophysical Environment

Topography:	1 171 metres above mean sea level (mamsl) in south to 1 167 mamsl in north (4m drop)
Water Management Area (WMA):	1 Limpopo
Quaternary catchment:	A22F
Precipitation:	Rainfall zone: A2G Mean Annual Precipitation (MAP): 640mm/a Rainfall season: Summer (October – April) with 92.34% of rain Dry season: Winter (May – September) Type: Thunderstorms with heavy lightning and strong winds.
Evaporation:	Evaporation zone: 2B Mean Annual Evaporation (MAE): 1 977mm for S-pan
Runoff:	Hydro Zone: Q Mean Annual Runoff (MAR): 10 – 20mm/a Flow: North and east towards drainage line
Waterbodies:	Drainage line: > 200m east Artificial wetland: North east
Water demand for project:	15m <sup>3</sup> /day or 5 475m <sup>3</sup> /annum
Water users in area:	Domestic and garden purposes. Six (6) other boreholes
Water supply:	No municipal water supply. On-site water supply: Borehole BH1 Location: 25.50030 <sup>0</sup> South & 27.09269 <sup>0</sup> East Water level depth: 15.75mbgl Yield: 1.5l/s for 12h/d = 64.8m <sup>3</sup> /day or 5 475m <sup>3</sup> /annum Water quality: Chemical – suitable for use without treatment. Bacteriological – suitable for use without chlorination. Availability: Site on topographic low means groundwater is constantly flowing towards the site which has a positive effect of the sustainability of the groundwater resource.
Geohydrology:	Water level depth: 13.27 – 18.05 mbgl Flow direction: North east
Geology:	2526 Rustenburg Kolobeng Norite and Ryghoek Pyroxenite as part of the Rustenburg Layered Suite.

	<p>Kolobeng Norite no visible on site but weathering product black turf is visible on site.</p>  <p>Geophysical: Weathered norite with sandy loam on top</p>
<p>Protected areas:</p>	<p>Magaliesberg &amp; Kgaswane Nature Reserve: 15km South south east          Pilansberg National Park: 17km north          Vaalkop Dam Nature Reserve: 33km East south east          National Protected Areas Expansion Strategy Area: 11km East          No national parks or informal protected areas in vicinity.</p>
<p>Eco-region:</p>	<p>Western Bankenveld</p>
<p>Ecosystem:</p>	<p>Least Threatened          Moderately protected</p>
<p>Biome:</p>	<p>Savanna          Gold Reef Mountain Bushveld (SVcb9)</p>
<p>Terrestrial sensitivity:</p>	<p>Critical Biodiversity Area (CBA) 2 (North West Biodiversity Sector Plan)          Presence of natural corridor nodes          Ecological Support Areas (ESA) 2 around site (north and south)</p>
<p>Fauna:</p>	<p>CBA2 – important habitat for vultures</p>
<p>Vegetation community:</p>	<p><u>Study area:</u> Transformed  <u>Surrounding:</u> Wetland (artificial wetland and riparian area), Secondary Grassland, Savanna</p>

### 6.2.1 Biodiversity overview

The following section is just an overview of the Biodiversity Assessment (Iggdrasil, 2018) and further details can be viewed in the report in Appendix D.

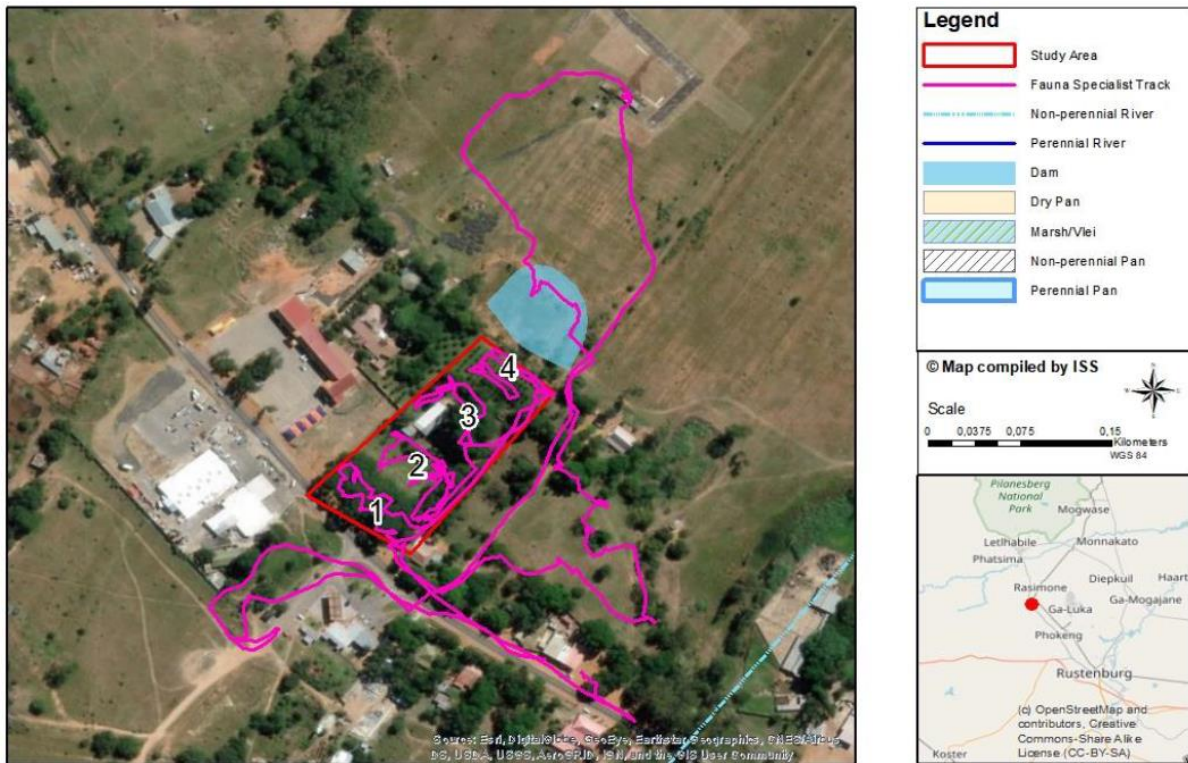


Figure 6-1: Survey sites (ISS, 2018)

Survey site:	Observations & character:
1	<p><b>Location:</b> 0 – 40m from road.  <b>Soils:</b> Loamy soils.  <b>Flora:</b> Sparse cover &amp; scattered large trees (indigenous &amp; alien)  <b>Fauna:</b> Limited signs of fauna (mainly birds)</p> <p>Disturbed and part of road servitude</p>
2	<p><b>Location:</b> 40 – 85m from road.  <b>Soils:</b> Loamy soils.  <b>Flora:</b> Dense dead grass layer, scattered small to large trees (indigenous, fruit &amp; alien) and scattered shrubs  <b>Fauna:</b> Flora made visibility difficult but provided good shelter for smaller animals.  <b>Structures:</b> Disused open reservoir</p> <p>Old orchard and historically disturbed.</p>
3	<p><b>Location:</b> 85 - 150m from road.  <b>Soils:</b> Loamy soils.  <b>Flora:</b> Sparse to no cover with scattered large trees (exotic, garden &amp; alien)  <b>Fauna:</b> None.  <b>Structures:</b> Neglected residential area and garden.</p> <p>Disturbed.</p>

4	<p><b>Location:</b> 150 - 180m from road.</p> <p><b>Soils:</b> Loamy soils.</p> <p><b>Flora:</b> Sparse to no cover with some new grass shoots along north east border</p> <p><b>Fauna:</b> Minimal (signs of recent fire)</p> <p><b>Structures:</b> Old orchard with citrus trees.</p> <p>Disturbed used as a dumping site with some pits for waste as well..</p>
---	--

A site survey was undertaken by Iggdrasil Scientific Services in November 2018 and the following were noted on site:

- There are no watercourses located on site, there is, however, a wetland located to the north-east of the site and a section of the site falls within the 100m buffer of the wetland;
- The site was previously used for residential (farm house) and agricultural (orange orchard) and was considered to be transformed / disturbed;
- No caves, mine adits/shafts, caverns occur within the immediate area and species with preference for such sites, such as some bats, are unlikely to reside in the area;
- Savanna woodland and/or forest is largely absent from site but may occur in the region along the streams and rivers. The site has limited connectivity to such sites and therefore species with preference for indigenous woodlands and forests are unlikely to reside in or travel through the site;
- Rocky terrain, rocky outcrops, cliffs and crags are absent from site and therefore species with preferences for such habitats, like the vultures, are unlikely to reside on site;
- Signs of rodents and antelopes were noted on site, but the pellets were old. In addition, a few scattered burrows were observed that could be indicative of other rodent species on site;
- No Threatened or Protected (TOP) mammals, avifauna or any other animal species were observed on site, nor were any indicators of such species noted during the survey;
- In general, bird life was abundant but dominated by suburban species. The patchwork of habitats available around the site would provide for good avian biodiversity but would however, have limited representation of water birds;
- No reptile species were observed on site;
- No frogs were observed during site visit.

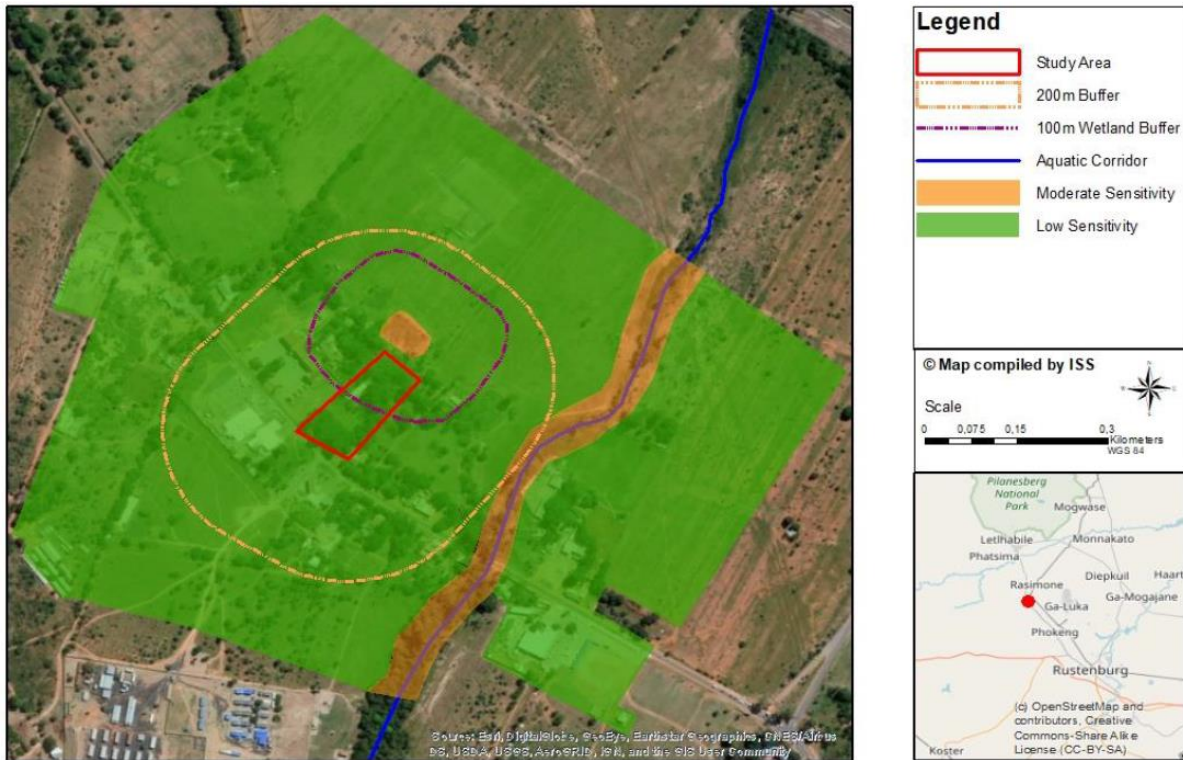


Figure 6-2: Vegetation Sensitivity Map (ISS, 2018)

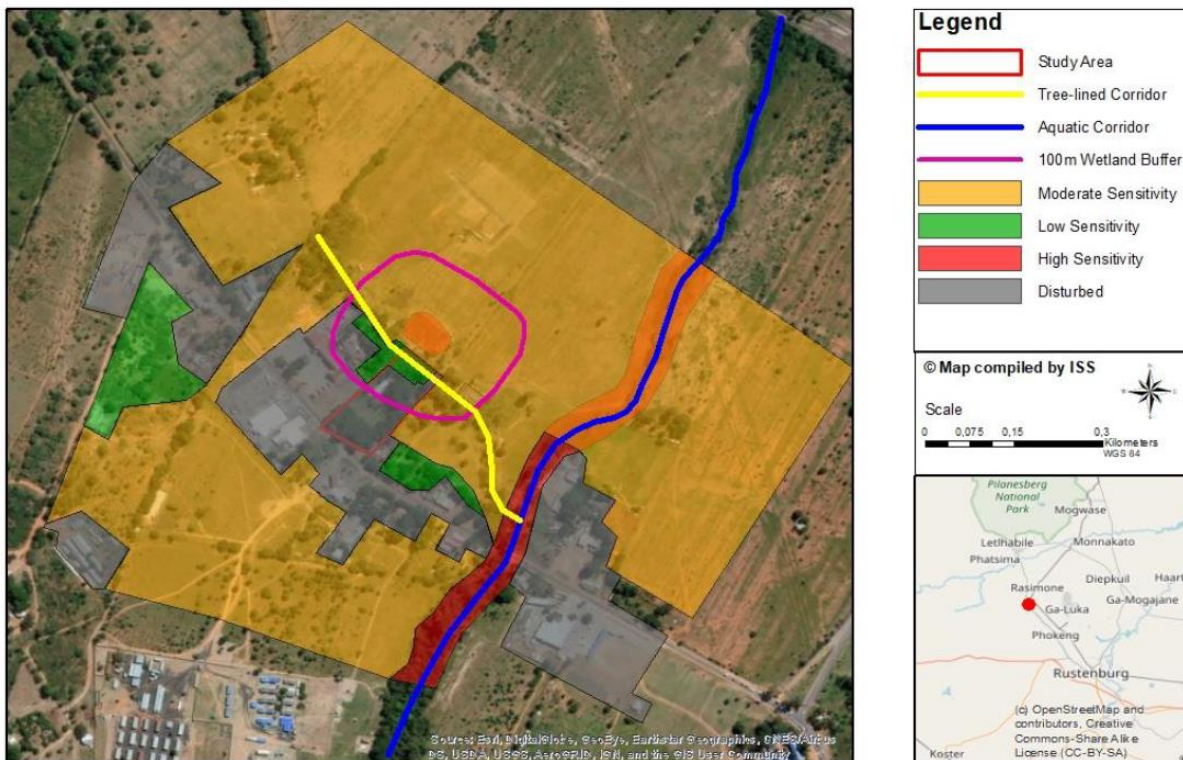


Figure 6-3: Terrestrial fauna sensitivity map (ISS, 2018)

## 6.2.2 Heritage Overview

The following section is just an overview of the Heritage Impact Assessment (Archaetnos, 2018) and further details can be viewed in the report in Appendix D.

According to Van Vollenhoven and Smit (Archaetnos, 2018), no site of cultural heritage significance was identified and this is mainly due to the entire area being disturbed by former and recent human interventions.

It should be noted, that the subterranean presence of archaeological and/or historical sites, features or artifacts is always a distinct possibility and care should therefore be taken during site clearance and once construction starts.

## 6.2.3 Hydrogeological overview

The following section is just an overview of the Hydrogeological study (HK Geohydrological, 2018) and further details can be viewed in the report in Appendix D.

The proposed project will use borehole water as its main source of water since there are no bulk municipal services (water and sewer) within the area. This also means that most of the neighbouring properties are reliant on the groundwater as a source of everyday water use. The Geohydrological assessment was conducted to determine whether the borehole on site can be used as a water resource for the proposed project and also determine what the impact of the filling station will be on the surrounding water users.

According to HK Geohydrological Services (Pty) Ltd, the borehole on site can provide the water demand for the filling station (5 475m<sup>3</sup>/annum). It was found that the surface material layer on site has a medium capacity to absorb contaminants and a medium capacity to create an effective barrier for contaminants. The vulnerability of the groundwater aquifer due to the hydrogeological conditions were rated as a medium risk.

## 6.3 Services

### 6.3.1 Electricity

The following information is extracted from the LTZ Consulting report (Appendix D):

- Current supply is 3-phase bulk connection directly from Eskom (overhead powerline and pole mount 300kVA transformer).
- Current supply assumed to be 50kVA.
- Estimated load required is 140kVA (based on diesel depot, shops and expansion).
- Requested Eskom to upgrade to 150kVA.
- No upgrade of any network services is required since sufficient spare capacity exists on installed transformer (300kVA). Communication with Tshepo from Eskom (082 373 0723).

### 6.3.2 Water

The following is extracted from the HK Geohydrological Services report (Appendix D):

- There is no municipal water supply on the property.
- The water demand is 15m<sup>3</sup>/day or 5 475m<sup>3</sup>/annum.
- Borehole BH1, located on the property, can be used at a rate of 1.5l/s for 12h/d or 64.8m<sup>3</sup>/d to supply water for the project. WUL in terms of NWA is required.
- The water demand for the filling station is 15m<sup>3</sup>/d.



- The on-site borehole can provide in the water demand for the filling station project.
- Residents in the area use groundwater as it is the only water supply source.

### **6.3.3 Sanitation**

The following is extracted from the HK Geohydrological Services report (Appendix D):

- The surface material layer that is found on site has a medium capacity to absorb contaminants and a medium capacity to create an effective barrier to contaminants.
- A high reduction of bacteria and viruses will be evident in the unsaturated aquifer if a sanitation leak does happen.
- Some reduction of nitrates and phosphates will occur and chloride will be minimally reduced.
- A sealed underground conservancy tank is proposed for the collection and storage of sewage.
- The conservancy tank should be pumped regularly by a honeysucker for off-site disposal of the sewage to a licensed Wastewater Treatment Works (WWTW).

## **6.4 Supporting information**

Appendix D contains copies of the specialist studies.

## 7 ALTERNATIVES CONSIDERED

### 7.1 Land use alternative

No alternative land uses were considered since the property was bought for this specific purpose (filling station) due to its location (accessibility, visibility, convenience) and an existing bulk diesel depot (23m<sup>3</sup> storage & handling) has already been established (did not trigger EIA requirement).

Agricultural activities (orange orchard) were ceased on the site probably because it was not financially viable (small property of 1.3933ha etc.)

No land use alternatives were therefore assessed because the site is currently zoned for business rights and rezoning for "Special" to accommodate a filling station is in process.

### 7.2 Alternative layout

Not proceeding with Phase 3 if the other road is not constructed. Convert the area to another use such as a picnic area suggested by the biodiversity study. No changes to impact assessment.

### 7.3 No-go alternative

The no-go alternative would be to refuse the project. This will result in:

- Property vulnerable for illegal settlements and dumping of waste.
- Underutilisation of property of 1.3933ha with only 23m<sup>3</sup> bulk diesel storage tank occupying a small percentage of the surface area available.

### 7.4 Services

#### 7.4.1 Option 1: Municipal services

Municipal services are not available. Electricity is directly from Eskom and available.

#### 7.4.2 Option 2: Water supply preferred viable option

A borehole (BH1) exists on site and can supply the water demand (HK Geohydrological Services, 2018).

#### 7.4.3 Option 2: Sewage management preferred viable option

Septic tanks and French Drains are not preferable for larger commercial developments as these increase the likelihood of groundwater contamination due to higher volumes to be managed. A conservancy tank, which is pumped with honeysucker and sewage disposed off-site for treatment at a licenced WWTW is preferable for the volumes expected.

### 7.5 Type convenience store

Three options exist for the retail offering:

- Option 1: C Store/Grab&Go only

- Option 2: C Store/Grab & Go with a Semi-service/QSR Restaurant
- Option 3: C Store/Grab & Go with a Full-service/Sit-down Restaurant

The Market study (Demacon, 2021) recommends that the proposed filling station offer a C-store/Grab&Go offering with a semi-service or QSR restaurant (Option 2) since there is a gap in the market for this.

## 8 PUBLIC PARTICIPATION PROCESS

### 8.1 Summary

**Table 8-1: Summary of the public notices and notification process**

Newspaper notice:	Newspaper: Rustenburg Herald Date: 2021-02-19 Page: 4 Refer to Appendix E for tear sheet.
Site notices:	Date placed: 15 February 2021 Size of notices: 800 X 600 mm Number of notices placed: 2 Wording and Location: Refer to Figures 8-1 - 8-3.
Interested and Affected Parties (I&APs):	Number of I&APs notified by hand-delivery: 5 Number of I&APs notified by email: 32 Number of I&APs notified by registered mail: 1  20 I&APs registered including: <ul style="list-style-type: none"> <li>• 8 neighbours</li> <li>• 3 existing filling stations in area (Total / Pilansberg Motors; Engen &amp; Boshoek filling Station)</li> <li>• RLM (6 people)</li> <li>• Ward councillor (Ward 1 - Dimakatso Malla)</li> <li>• NW DEDECT (3 people)</li> <li>• DAFF (7 people)</li> <li>• DWS (3 people)</li> <li>• SAHRA (SAHRIS &amp; Province)</li> <li>• Eskom</li> <li>• SANRAL</li> </ul> Refer to Table 8-1.
Comments received:	Yes.
Comments relate to:	At this stage the comments received are related to the availability and reviewing of the Draft BAR. Comments received on the Draft BAR will be included when submitting the final report to the Authorities.

### 8.2 Introduction

The Public Participation Process (PPP) aims to provide all Interested and Affected Parties (I&APs) with clear, accurate and comprehensible information about the project for the proposed development of bulk storage facilities and filling stations (storage and handling of hydrocarbons) on Portion 135 of the farm Boschhoek 103JQ, Rustenburg Local Municipality, North West Province. In addition, the process seeks to provide I&APs with the opportunity to indicate their viewpoints on issues and concerns about the proposed project.

This process, therefore, enhances transparency and accountability in decision-making, as it allows all I&APs to suggest ways of avoiding, reducing or mitigating potential negative impacts, as well as enhance positive impacts of the proposed project. All inputs from the I&APs are considered in the planning process. Consequently, clear recording of all issues and concerns raised have been maintained in a comments and response register. This register has been updated when new issues or concerns were raised.

This section provides a methodical description of the PPP followed. It also contains a complete record of public notices, details of all registered I&APs and all communications to and from I&APs pertaining to the application.

### 8.3 Approach

The aim of the PPP is not only to adhere to the required legislation, but also to give as many stakeholders and I&APs as possible, an opportunity to be actively involved in this process.

The PPP has been carried out in accordance with Chapter 6 of the NEMA and in support of the EIA Regulations of 2014 as amended. Based on these Regulations, published in terms of Sections 39 to 44 of GNR 982 amended in GNR 326 of NEMA, the following steps were undertaken:

- Potential I&APs were identified through windeed searches, conducting a site visit to the area on 15 February 2021, conducting interviews (telephonically and in person), through notices placed on the site (Figures 8-1 – 8-3) as well as through placing a notice in a local newspaper, the Rustenburg Herald;
- A stakeholder register was compiled in terms of Regulation 42 that includes national, provincial and local authorities, government departments, organisations, as well as landowners that may have an interest;
- I&APs were given more than twelve (12) months to register and raise concerns (February 2021 – February 2022) which included 30 days to review the draft BAR (26 January – 27 February 2022). A hard copy was made available at Rustenburg Public Library in Heystek Street, Rustenburg and through an electronic channel (wetransfer) upon request. Any concerns that have been raised by I&APs were acknowledged, noted and addressed (Table 8-2) by EAP where possible;
- A recorded summary of concerns raised by I&APs, as well as the responses from the EAP, were kept throughout the entire process.

### 8.4 Public awareness

#### 8.4.1 Site Notices

Site notices, measuring 800 mm x 600 mm were placed at the site on 15 February 2021 at the entrance gate to the house (25° 30' 01.14" South; 27° 05' 32.42" East) and along the property boundary facing the R565 (25° 30' 3.82" South; 27° 05' 29.61" East).

Each notice contained details regarding the applicant (JJJ Swarts), the nature of the activity (storage and handling of hydrocarbons), the locality (Portion 135 of the farm Boschhoek 103JQ, Rustenburg Local Municipality, North West Province), and the contact details of the EAP (See Figure 8-1). The placement of the site notices was recorded by taking photographs of the placed notices on site, as well as by recording the GPS coordinates of these positions. See

Figures 8-2 – 8-3. These notices remained on the site for the duration of the process (February 2021 – March 2022).

#### 8.4.2 Newspaper Notice

A detailed newspaper notice was placed in the Rustenburg Herald Newspaper, published on 19 February 2021 (see Appendix E). Distribution areas of the newspaper are as follows:

- Waterkloof
- Rustenburg
- Boons
- Bleskop
- Brits
- Buffelspoort
- Derby
- Elandskraal
- Groot-Marico
- Hartbeespoort
- Karlienpark
- Kroondal
- Lichtenburg
- Marikana
- Moedwil
- Mooinooi
- Northam
- Rex
- RPM
- Sun City
- Swartklip
- Swartruggens
- Thabazimbi
- Tlhabane
- Waterfall Mall
- Zinniaville
- Zeerust

The aim of placing a notice in the local newspaper was to create a greater awareness of the project and to invite a broader spectrum of I&APs to register and be part of the process.

32 000 copies of the newspaper are distributed weekly.

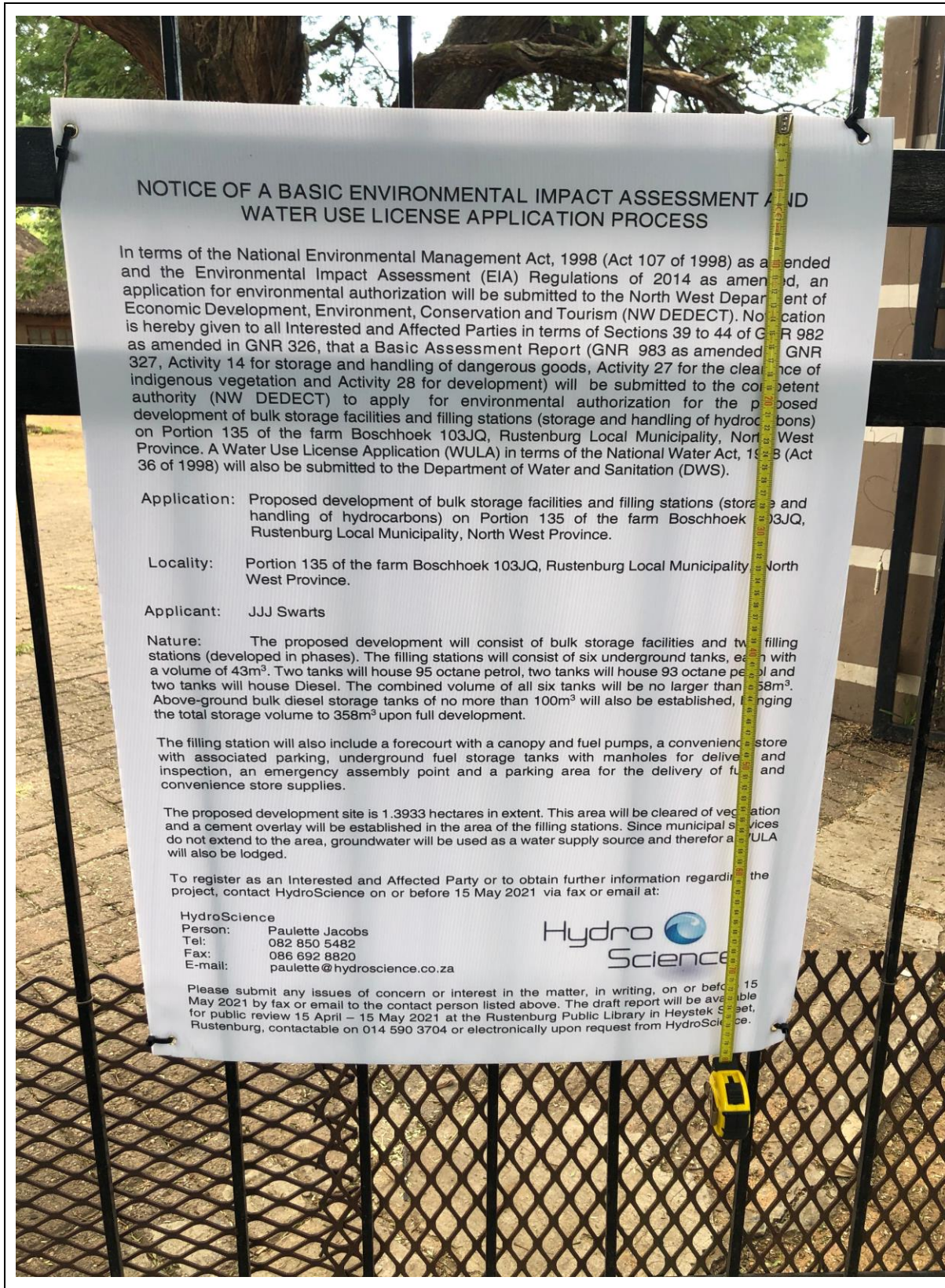


Figure 8-1: Wording and size of notices placed



**Figure 8-2: Locality of notices placed**





Figure 8-3: Aerial view of location of site notices

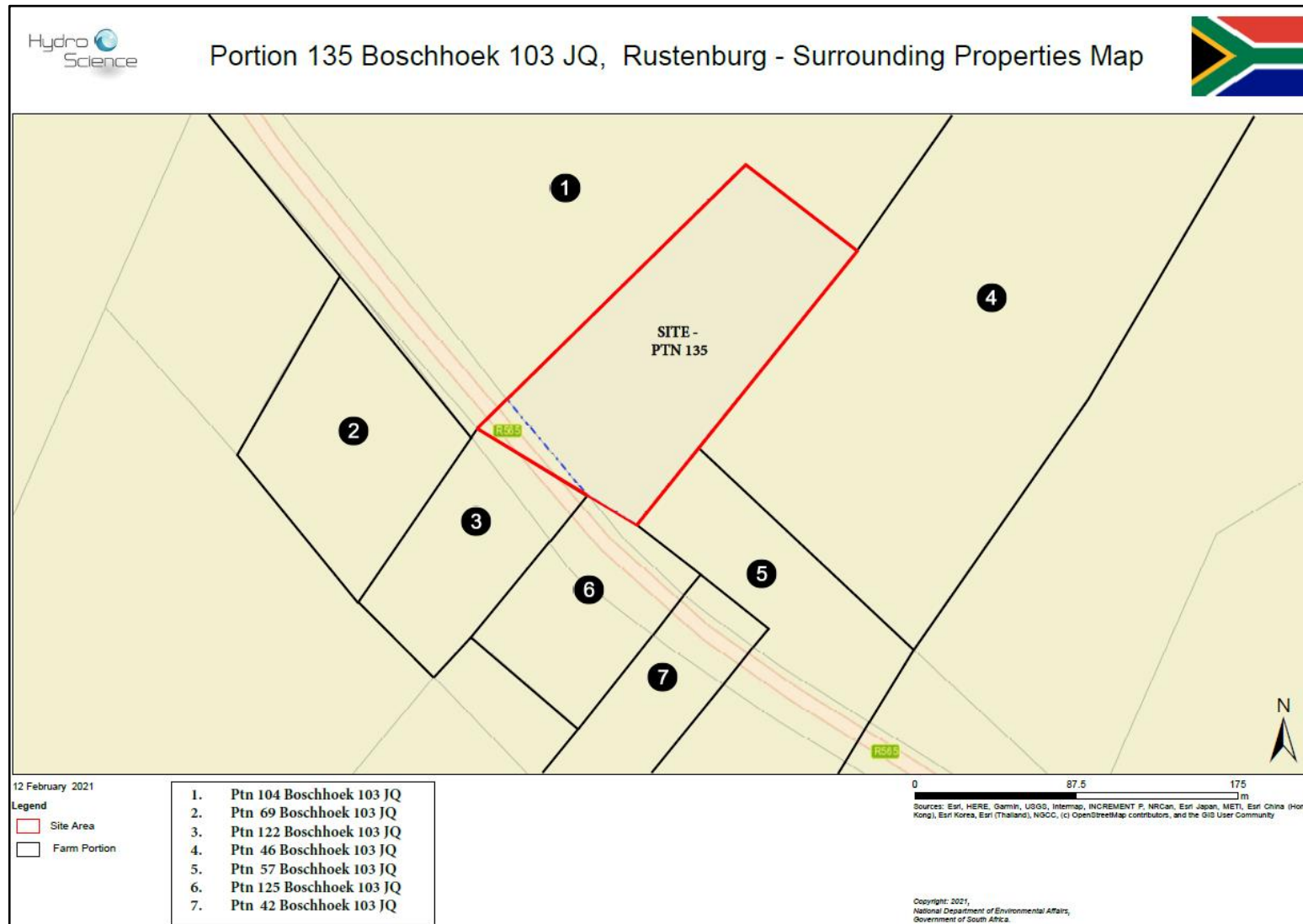


Figure 8-4: Neighbouring properties

## 8.5 Comments and Response Register

Any concerns that were raised by I&APs during the process were recorded and addressed by the EAP where possible (see Table 8-3). All proof of communication can be seen in Appendix E.

Furthermore, all registered I&APs were given an opportunity to comment in writing (26 January – 27 February 2022), on the draft BAR before its submission to the competent authority, NW DEDECT, in March 2022.

## 8.6 BAR Submission

The draft BAR (hard copy) was made available for public review at Rustenburg Public Library in Heystek Street, Rustenburg and through an electronic channel (Wetransfer) upon request from 26 January - 27 February 2022. All I&APs have therefore been given an opportunity to comment on this document. Once the period for comments lapsed, all comments made were included in the comments and response register.

After submission of the draft BAR to the authorities, during the public review period, the authorities listed below, were also afforded an opportunity to submit their comments to be addressed in the final BAR.

The final BAR (including all supporting documentation) will be submitted to NW DEDECT for consideration. A decision will be provided by NW DEDECT in terms of their considerations and findings and if authorised, conditions of the authorisation will be provided.

**Table 8-2: Register of I&APs**

Neighbouring landowners, residents and businesses		
Portion of farm Boschhoek 103JQ:	Owner:	Interaction:
104	Alexandre F. Comacho (also owner of Castian CC below) Pax Square	2021-02-15 Hand-delivery & email
69	Castian CC (also owner of Engen Filling Station)	2021-02-15 Hand-delivery (Carina Labuschagne) & email
122 & 125	Willem J. Engelbrecht	2021-02-15 Email
46	Hubertus G. Schieke (also owner of the Boshhoek Filling Station)	2021-02-15 Email
57	Kedase Business Enterprise (Pty) Ltd	2021-02-15 Hand-delivery (Phemeio Tau) & email
42	Charlotte J. Stander	2021-02-18 Registered mail RD842162213ZA
	Pilansberg Motors (Total)	2021-02-15 Hand-delivery (Tsholofelo) & email
	Botona Farming & Services	2021-02-15 Hand-delivery (Petric de Wet) & email

Authorities and other stakeholders:		
Authority / organisation / entity:	Section / Department:	Interaction:
Local authority: RLM	Integrated Environmental Management (Lilian Sefike; Kelebogile Mekgoe)	Email: 2021-02-15 Draft report: 2022-02-01
	Town Planning (Thato Molwantwa)	Email: 2021-02-15
	Roads and Transport (Fumani Ntlhamu, Godfrey Mahlangu, Masego, Moatshe)	Email: 2021-02-18

<b>Authorities and other stakeholders:</b>		
<b>Authority / organisation / entity:</b>	<b>Section / Department:</b>	<b>Interaction:</b>
	Office of the speaker: Ward 1 Councillor	Email: 2021-02-19
District authority: BPDM	Environmental (Joshua Moss)	Email: 2021-02-18
Provincial authority: NW READ	Head office (Ellis Thebe, Ouma Skosana) Rustenburg office (Motshabi Mohlalisi)	Email: 2021-02-15 Draft report: 2022-02-01
Eskom	Kobus Vorster	Email: 2021-02-15
Department of Agriculture, Forestry & Fisheries (DAFF)	Lufuno Nevhuvumba Raesibe Masihiane Mpho Gumula R Mabule D Nhlaka L Khoza	Email: 2021-02-18
Department of Water and Sanitation (DWS)	Thato Mjona Lethabo Ramashala Sebenzile Ntshangase	Email: 2021-02-18 eWULaas: WU19572
South African National Roads Agency (SANRAL)		Email: 2021-02-18
South African Heritage Resources Agency (SAHRA)	Natasha Higgitt Mosiane Mathlabane (Province)	Email: 2021-02-18 SAHRIS: 2021-04-15

**Table 8-3: Comments and responses**

<b>Comments &amp; Responses Report</b>		
<b>I&amp;AP:</b>	<b>I&amp;AP Comment</b>	<b>EAP Response</b>
Andre du Toit (representing Sunfox 51 CC & Castian CC – owner of Engen filling station and other businesses) 2021-03-18	Registered. Requested the Draft BAR	Draft BAR will be circulated when available (2022-01-26)
Lodewyk Gresse (representing Mr Hubert Schieke – owner of Boshhoek Meule filling station) 2021-04-09	Requested the Draft BAR	Draft BAR will be circulated when available (2022-01-26)
Willie Engelbrecht 2021-05-11	Requested the Draft BAR	Draft BAR will be circulated when available (2022-01-26)

## 9 IMPACT ASSESSMENT

### 9.1 Methodology

The significance of the adverse environmental impacts identified were assessed in terms of their:

- Duration;
- Extent;
- Probability; and
- Severity.

The above was used to determine the significance of an impact without any mitigation, as well as with mitigation.

**Nature of an impact:** An impact's nature can be positive (+) or negative (-).

**Consequence:** Considers duration, extent and severity

Consequence = duration + extent + severity

**Table 9-1: Environmental risk and impact assessment criteria**

<b>DURATION (D)</b>		
Immediate	Less than 1 month	1
Short-term	2 - 24 months	2
Life of project	Operational phase	3
Post-closure	Time of rehabilitation and for re-establishment of natural systems	4
Residual	A permanent impact (100 years or more)	5
<b>EXTENT (E)</b>		
Site specific	Site of the proposed work	1
Local	Site and immediate surroundings (property)	2
Regional	Municipal area	3
Provincial	Provincial area	4
National	Republic of South Africa	5
<b>PROBABILITY (P)</b>		
Rare	<5% probability of occurrence – may occur in exceptional circumstances	1
Unlikely	15% - 6% probability of occurrence – could potentially occur at some time	2
Possible	45% - 16% chance of occurrence – might occur at some time	3
Likely	65% - 46% probability of occurrence – will probably occur in most circumstances	4
Almost Certain	90% - 66% probability of occurrence – is expected to occur	5
Definite	100%- will occur	6
<b>SEVERITY (S)</b>		
Catastrophic (critical)	Total change in area of direct impact, relocation not an option, death, toxic release off-site with detrimental effects, irreversible loss, huge financial loss	6

Significant (High)	> 70% change in area of direct impact due to loss of significant aspect, extensive injuries, long term loss in capabilities, off-site release to high extent, major financial implications	5
Serious	50 – 70% long-term loss, extensive rehabilitation / restoration / treatment required, high financial impact, still restricted in extent	4
Moderate (medium)	20 – 49% change, medium term loss in capabilities, rehabilitation / restoration / treatment required, on-site release with outside assistance, medium financial impact	3
Minor	10 – 19% change, short term impact that can be absorbed, on-site release, immediate containment, low financial implications	2
Insignificant (low)	< 10 % change in the area of impact, no financial implications, localised impact, a small percentage of population	1

[Duration (D) + Extent (E) + Severity (S)] x Probability (P) = Impact Significance (IS)

IMPACT SIGNIFICANCE (IS)		
Impact Significance	IS score range	Description
Low (L)	<15	The impact is minor or insubstantial; it is of little importance to any stakeholder and can easily be rectified.
Moderate Low (ML)	16 - 45	The impact is limited in extent, even if the intensity is major; the probability will only be likely, the impact will not have a significant impact considered in relation to the bigger picture; no major material effect on decisions and will require only small-scale management intervention bearing moderate costs.
Moderate High (MH)	46 - 70	The impact is significant to one or more stakeholders, and its intensity will be medium or high; therefore, the impact may materially affect the decision, and management intervention will be required.
High (H)	71 <	The impact could render options controversial or the entire project unacceptable if it cannot be reduced to acceptable levels; and/or the cost of management intervention will be a significant factor in project decision-making.

## 9.2 Impact Assessment Ratings

The impacts and associated significance ratings for the project for the various alternatives were assessed (Tables 9.2 and 9.3). The no-go option (Table 9.4) would not meet the project objective.

The planning phase activities are considered to be of a negligible impact significance as these typically involve desktop assessments and site inspections. A very low temporary impact may be experienced due to the increased presence of humans and vehicles / machinery.



**Table 9-2: Preferred Option - Impacts and Significance for the proposed filling station**

Aspect and Description		Impact Rating (before mitigation)						Impact Rating (after mitigation)							
		Nature of Impact (Positive/Negative)	Spatial Scope/ Extent (6)	Duration (6)	Severity (6)	Consequence	Probability (6)	Significance (108)	Nature of Impact (Positive/Negative)	Spatial Scope/ Extent (6)	Duration (6)	Severity (6)	Consequence	Probability (6)	Significance (108)
Aspect	Description														
<b>FLORA - Damage or loss of habitat due to construction activities</b>	Weeds and alien species will be introduced and seeds will spread due to disturbance.	N	2	4	4	10	6	60	N	2	4	4	10	3	30
	Vegetation will be removed in order to establish the site, access and excavations to install the tanks.	N	2	5	3	10	6	60	N	2	5	3	10	2	20
	Destruction, further loss and fragmentation of the vegetation community classified as CBA.	N	3	4	4	11	5	55	N	3	4	4	11	2	22
	Staff members/ Contractors might create new pathways across the natural vegetation.	N	2	5	3	10	5	50	N	2	5	3	10	3	30
	Dumping of waste outside the designated area.	N	2	4	3	9	5	45	N	2	4	3	9	1	9
	Burning of vegetation on site.	N	2	4	3	9	6	54	N	2	4	3	9	1	9

	Storing of construction material and soil stockpiles outside the designated areas	N	2	4	3	9	3	27	N	2	4	3	9	1	9
<b>FAUNA &amp; AVIFAUNA - Loss of species due to construction activities</b>	Removal of the plant species	N	2	4	4	10	5	50	N	2	4	4	10	3	30
	Injury / death to fauna and avifauna due to poaching	N	3	4	4	11	5	55	N	3	4	4	11	1	11
	Dumping of waste and construction material outside the designated area	N	2	4	4	10	3	30	N	2	4	4	10	2	20
	Fires	N	2	4	4	10	5	50	N	2	4	4	10	1	10
	Reduced dispersal/migration of fauna	N	3	4	4	11	5	55	N	3	4	4	11	2	22
	Disruption/alteration of ecological life cycles (breeding, migration, feeding) due to noise	N	3	4	3	10	5	50	N	3	4	3	10	2	20
	Disruption/alteration of ecological life cycles (breeding, migration, feeding) due to dust	N	3	4	3	10	5	50	N	3	4	3	10	2	20
	Disruption due to movement of construction vehicles in order to access the site but also while working on site.	N	2	4	4	10	3	30	N	2	4	4	10	2	20
<b>WETLAND - Damage or loss of wetland on adjacent property due to construction activities</b>	Weeds and alien species will be introduced and seeds will spread due to disturbance	N	2	4	4	10	4	40	N	2	4	4	10	2	20
	Dumping of waste outside the designated area.	N	2	2	2	6	4	24	N	2	2	2	6	2	12
	Burning of vegetation on site.	N	2	4	4	10	4	40	N	2	4	2	8	2	16
	Dumping of construction material within the watercourse or buffer area	N	2	4	4	10	4	40	N	2	4	4	10	2	20

	Spillage/leak of hydrocarbon or other hazardous material	N	2	4	4	10	4	40	N	2	4	4	10	2	20
<b>SURFACE WATER - Pollution or loss of surface water</b>	Spillage of fuel / oil from construction vehicles or containers	N	2	2	3	7	6	42	N	2	2	3	7	2	14
	Spillage of chemicals	N	2	2	3	7	6	42	N	2	2	3	7	1	7
	Spillage of cement	N	2	2	3	7	6	42	N	2	2	3	7	2	14
	Mixing of cement on soil surface	N	1	2	3	6	6	36	N	1	2	3	6	2	12
	Maintenance or fixing of vehicles / machinery on site	N	2	2	3	7	6	42	N	2	2	3	7	2	14
	Washing of vehicles / machinery on site	N	2	2	3	7	6	42	N	2	2	3	7	1	7
	Compaction of the soil due to construction activities and movement of vehicles / machinery will increase the runoff	N	2	2	3	7	6	42	N	2	2	3	7	2	14
	Siltation and Erosion	N	1	2	3	6	6	36	N	1	2	3	6	2	12
	Washing up (bathing, hand washing a washing of dishes / containers or clothes)	N	2	2	3	7	6	42	N	2	2	3	7	1	7
<b>GROUNDWATER R - Pollution of the ground water system or over-utilisation during the operational phase</b>	Spillage of fuel / oil from construction vehicles or containers	N	2	2	3	7	6	42	N	2	2	3	7	2	14
	Spillage of chemicals	N	2	2	3	7	6	42	N	2	2	3	7	1	7
	Spillage of cement	N	2	2	3	7	6	42	N	2	2	3	7	2	14
	Mixing of cement on soil surface	N	1	2	3	6	6	36	N	1	2	3	6	2	12
	Maintenance or fixing of vehicles / machinery on site	N	2	2	3	7	6	42	N	2	2	3	7	2	14
	Washing of vehicles / machinery on site	N	2	2	3	7	6	42	N	2	2	3	7	1	7

	Compaction of the soil due to construction activities and movement of vehicles / machinery	N	2	2	3	7	6	42	N	2	2	3	7	2	14
	Ablution facilities risk leakage	N	1	2	3	6	6	36	N	1	2	3	6	2	12
	Washing up (bathing, hand washing a washing of dishes / containers)	N	2	2	3	7	6	42	N	2	2	3	7	1	7
	Excessive water usage from borehole impacting other groundwater users (water availability)	N	1	2	3	6	6	36	N	1	2	3	6	1	6
<b>SOIL - Pollution and Compaction</b>	Removal of vegetation	N	2	2	3	7	6	42	N	2	2	3	7	3	21
	Spillage of fuel / oil from construction vehicles or containers	N	2	2	3	7	6	42	N	2	2	3	7	2	14
	Spillage of chemicals	N	2	2	3	7	6	42	N	2	2	3	7	1	7
	Spillage of cement	N	2	2	3	7	6	42	N	2	2	3	7	2	14
	Mixing of cement on soil surface	N	1	2	3	6	6	36	N	1	2	3	6	2	12
	Maintenance or fixing of vehicles / machinery on site	N	1	2	3	6	5	30	N	1	2	3	6	1	6
	Washing of vehicles / machinery on site	N	2	2	3	7	5	35	N	2	2	3	7	1	7
	Erosion of soil	N	2	2	3	7	6	42	N	2	2	3	7	2	14
	Unnecessary loss of soils due to site preparation	N	1	2	3	6	6	36	N	1	2	3	6	1	6
	Compaction of the soil due to construction activities and movement of vehicles / machinery	N	2	2	3	7	6	42	N	2	2	3	7	3	21
	Washing away of soil from stockpiles	N	1	2	3	6	6	36	N	1	2	3	6	2	12
<b>AIR QUALITY - Polluting or</b>	Fires on site	N	2	2	4	8	5	40	N	2	2	4	8	1	8
	Emissions from construction vehicles	N	2	2	3	7	5	35	N	2	2	3	7	2	14

<b>decreasing the quality of the air</b>	Waste being airborne	N	2	2	3	7	6	42	N	2	2	3	7	2	14
	Cement bags / particles blown around	N	2	2	3	7	6	42	N	2	2	3	7	1	7
	Particulate matter and dust flying off moving vehicles	N	2	2	3	7	6	42	N	2	2	3	7	2	14
	Particulate matter may be lifted from the site and pose a health threat	N	2	2	3	7	5	35	N	2	2	3	7	2	14
<b>VISUAL IMPACT - Change in the sense of place or decreasing the aesthetic value</b>	Site clearance / removal of vegetation	N	2	2	4	8	6	48	N	2	2	2	6	2	12
	Dust created during the construction activities	N	2	2	3	7	6	42	N	2	2	2	6	2	12
	Waste on site	N	2	2	3	7	6	42	N	2	2	2	6	2	12
<b>HEALTH - Spreading of deceases/ degradation in health</b>	Using the veld for ablution instead of toilets	N	1	2	2	5	6	30	N	1	2	2	5	3	15
	Dust created during construction	N	2	2	2	6	6	36	N	2	2	2	6	3	18
	Dumping of waste on site	N	1	2	2	5	6	30	N	1	2	2	5	2	10
	Workers not using / wearing PPE	N	1	2	5	8	5	40	N	1	2	5	8	1	8
	Burning of material / hazardous waste on site	N	2	2	5	9	5	45	N	2	2	5	9	1	9
	Spreading of diseases	N	3	2	5	10	5	50	N	3	2	5	10	2	20
	Dehydration due to a lack of drinking water	N	1	2	5	8	5	40	N	1	2	5	8	1	8
<b>NOISE</b>	Noise from construction related activities	N	2	2	4	8	6	48	N	2	2	4	8	4	32
<b>TRAFFIC - disturbance to the flow of traffic</b>	Increase in construction vehicles	N	2	2	3	7	6	42	N	2	2	2	6	3	18
	Traffic congestions due to the construction activities	N	2	2	3	7	6	42	N	2	2	2	6	3	18

<b>SAFETY &amp; SECURITY</b>	Theft of construction material and equipment	N	1	2	4	7	5	35	N	1	2	4	7	2	14
	The site is unsafe for locals, especially kids playing on construction site or residents passing through the site	N	2	2	4	8	5	40	N	2	2	4	8	2	16
	Home owner security at risk due to influx of workers into area	N	2	2	4	8	5	40	N	2	2	4	8	2	16
	Construction vehicles at risk of theft or vandalism	N	1	2	4	7	5	35	N	1	2	4	7	2	14
	Unfair treatment of staff member can lead to dispute or strikes	N	1	2	3	6	5	30	N	1	2	3	6	2	12
	Safety risk when crossing busy roads to get to work / construction site	N	1	2	4	7	5	35	N	1	2	4	7	2	14
	Using inappropriate working methods or equipment	N	1	2	4	7	5	35	N	1	2	4	7	1	7
	Workers not wearing the correct PPE	N	1	2	4	7	5	35	N	1	2	4	7	1	7
<b>SOCIO-ECONOMIC</b>	Impact on other filling station businesses	N	2	3	3	8	6	48	N	2	3	2	7	5	35
	Disruption arising during the construction / operation	N	1	1	2	4	2	8	N	1	1	1	3	1	3
	Decommissioning the depot / filling station will sterilise future land-use options	N	2	5	2	9	2	18	N	2	4	1	7	1	7
	Maintenance and house-keeping	N	2	5	2	9	3	27	N	2	5	1	8	2	16

**Table 9-3: No-go Impacts and Significance**

Aspect and Description		Impact Rating (before mitigation)							Impact Rating (after mitigation)						
Aspect	Description	Nature of Impact (Positive/Negative)	Spatial Scope/ Extent (6)	Duration (6)	Severity (6)	Consequence	Probability (6)	Significance (108)	Nature of Impact (Positive/Negative)	Spatial Scope/ Extent (6)	Duration (6)	Severity (6)	Consequence	Probability (6)	Significance (108)
<b>FLORA - Damage or loss of existing vegetation</b>	Maintenance of the property or no maintenance at all could result in the introduction of weeds and alien species.	N	2	4	3	9	5	45	N	2	2	2	6	3	18
	Using the vacant property for illegal dumping site.	N	2	4	3	9	5	45	N	2	2	2	6	1	6
	Using the vacant property for illegal settlements (shacks).	N	2	4	4	10	5	50	N	2	2	2	6	1	6
<b>FAUNA &amp; AVIFAUNA - Loss in species due to neglect</b>	Dumping of waste, illegal settlers and no maintenance at the property can result in the invasion of pests	N	2	4	3	9	5	45	N	2	4	3	9	2	18

Aspect and Description		Impact Rating (before mitigation)							Impact Rating (after mitigation)						
Aspect	Description	Nature of Impact (Positive/Negative)	Spatial Scape/ Extent (6)	Duration (6)	Severity (6)	Consequence	Probability (6)	Significance (108)	Nature of Impact (Positive/Negative)	Spatial Scape/ Extent (6)	Duration (6)	Severity (6)	Consequence	Probability (6)	Significance (108)
<b>SURFACE WATER - Pollution/ Contamination of surface water (storm water/ runoff)</b>	Ablution facilities risk leakage if not properly maintained and secured	N	2	2	4	8	6	48	N	2	2	4	8	1	8
<b>SOIL - Pollution/ Contamination of Soil</b>	Leaking of hazardous material due to illegal dumping.	N	1	2	4	7	6	42	N	2	2	4	8	1	8
	Compaction of soil due to illegal settlers occupying the property.	N	1	2	4	7	6	42	N	2	2	4	8	1	8
	Soil erosion due to the removal of vegetation associated with informal settlements.	N	1	2	4	7	6	42	N	2	2	4	8	1	8
	Ablution facilities risk leakage if not properly maintained and secured.	N	1	2	4	7	6	42	N	2	2	4	8	1	8
<b>VISUAL IMPACT - Change in the</b>	Property and buildings being neglected or vandalised.	N	2	4	2	8	6	48	N	2	4	2	8	1	8
	Illegal settlers occupying the property	N	2	4	2	8	6	48	N	2	4	2	8	1	8



Aspect and Description		Impact Rating (before mitigation)							Impact Rating (after mitigation)						
Aspect	Description	Nature of Impact (Positive/ Negative)	Spatial Scape/ Extent (6)	Duration (6)	Severity (6)	Consequence	Probability (6)	Significance (108)	Nature of Impact (Positive/Negative)	Spatial Scape/ Extent (6)	Duration (6)	Severity (6)	Consequence	Probability (6)	Significance (108)
sense of place or decreasing the aesthetic value	Waste/illegal dumping on site	N	2	4	2	8	6	48	N	2	4	2	8	1	8
HEALTH - Spreading of deceases/ degradation in health	Dumping of waste on site or vandalising the buildings could result in pests, such as rats, being introduced.	N	2	2	3	7	6	42	N	2	2	3	7	2	14
	Increase in pests	N	2	2	3	7	5	35	N	2	2	3	7	2	14
SAFETY & SECURITY	Theft of material or vandalism of the buildings on site	N	1	2	4	7	5	35	N	1	2	4	7	2	14
	Property neglected and vandalised could become a hotspot for criminal activities such as drugs.	N	3	4	4	11	5	55	N	3	4	4	11	2	22
SOCIO-ECONOMIC	Drop in market value for the property but also surrounding properties if the site is vandalised, illegal dumping occurs or illegal settlers start occupying the property	N	2	4	3	9	3	27	N	2	4	1	7	1	7

## 10 ENVIRONMENTAL MANAGEMENT PROGRAMME

### Alterations to the EMPr

As EMPrs should remain dynamic and flexible, certain conditions may require the EMPr to be revised. These conditions may include the following:

- Changes in legislation;
- Published/gazetted norms and standards;
- Occurrence of unanticipated impacts or impacts of greater significance, intensity and extent than anticipated;
- Conditions in environmental authorisation or water use authorisation which do not form part of the EMPr;
- Inadequate mitigation measures, i.e. where the level of an environmental parameter is not conforming to the required level despite the implementation of the mitigation measure; and
- Secondary impacts which occur as a result of the mitigation measures.

### 10.2 Responsibility

The Applicant will be responsible for the implementation of all mitigation and management measures as well as the compliance with this EMPr and any license and authorisation conditions.

The applicant will delegate its responsibilities to an Environmental Control Officer (ECO) during the construction phase.

Each contractor involved in the project will comply with the EMPr.

The ECO will be suitably qualified to perform the necessary tasks and will be appointed at a level such that he/she can interact effectively with site contractors, labourers and the public.

The ECO will be required to perform the following tasks:

- Monitoring and execution of the EMPr by being on site regularly (weekly);
- Inspect the site as required to ensure adherence to the management actions of the EMPr and authorisations/licences (compliance assessments/audits);
- Complete Site Inspection Forms on a weekly basis;
- Provide inputs to or compile the environmental compliance assessment report;
- Liaise with contractors on issues relating to implementation of, and compliance with, the EMPr and authorisations/licences;
- Maintain a record of environmental incidents (spills, impacts, legal transgressions etc.) as well as corrective and preventive actions taken; and
- Maintain a public-complaints register in which all complaints are recorded.

The conditions of the authorisation/licences and EMPr will be brought to the attention of all persons (employees, workers, consultants, contractors etc.) associated with the undertaking of these activities and the applicant will take such measures that are necessary to bind such persons to the conditions thereof (contracts with penalties for non-compliances).

The applicant can further enforce this by running workshops in order to raise environmental awareness. These workshops should cover aspects such as fire prevention, strict use of ablution facilities and general duty of care. A pamphlet can be handed out on socially acceptable and environmentally responsible conduct such as water conservation, waste management etc.

Entity:	Responsible Person:	Contact details:
Applicant	Mr. Jacobus Jonathan Jacob Swarts	083 520 5768
Environmental Control Officer	To be appointed by the Applicant	

### 10.3 Activities causing potential impacts

The following activities are activities that could cause potential impacts if not managed properly or if no mitigation measure is implemented:

- Removal of vegetation;
- Establishment of the construction camp site / office;
- Access roads and movement of machinery/heavy vehicles/equipment on site;
- Creating conditions for alien invasive species to breed or grow;
- Hydrocarbon spills / leakages;
- Poor waste management and littering;
- Dumping of material/waste;
- Stockpiling of soil and material;
- Poor management of water (storm water & potable water);
- Poor management of ablution facilities;
- Random events such as fire;
- Poaching or removal of fauna species.

### 10.4 Potential Impacts

#### 10.4.1 Negative Impacts

- Destruction, further loss and fragmentation of the vegetation community classified as CBA;
- Displacement of faunal community due to habitat loss, direct mortalities and disturbance (noise, dust and vibration);
- Infringement by humans into the adjacent natural grassland areas, with associated impacts such as poaching, litter as well as introduction of pests, diseases and feral species;
- Infringement by humans into the watercourse areas (wetland on adjacent property), with associated impacts such as litter, spills as well as introduction of alien invasive species;
- Erosion due to clearance of vegetation, compaction of soil or poor management of stockpiling areas;
- Pollution/contamination of soil, surface water and groundwater due to leakages or spillages of fuel, oil and hazardous substances;
- Pollution/contamination caused by littering or dumping of building waste (rubble);
- Dust and noise.

#### 10.4.2 Positive impacts

- The derelict property will be transformed into a business and will not be a sore eye to the community;
- The property will be used and will therefore not form a potential site for illegal settlements.

### **10.4.3 No-go Option impacts**

- Risk of illegal settlers using the property;
- Risk of illegal dumping;
- Risk that the property will be invaded by alien and invasive species.

### **10.5 Management measures**

Dedicated measures have been identified to manage the impacts identified above (Table 10.1). The purpose of the EMPr is to ensure that undue or reasonably avoidable adverse impacts of the project are prevented; that impacts which cannot be prevented are managed to reduce their significance; and that the positive benefits of the project are enhanced. The applicant is responsible for the implementation of recommendations and mitigation/management measures and HydroScience cannot and will not take responsibility for the actions of the applicant or lack thereof.

**Table 10-1: Identified potential impacts and proposed management measures for the filling station**

**1. Environmental Awareness Training**

<b>Management Outcome:</b> All on-site staff are aware of and understands the individual responsibilities in terms of this EMPr.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of Implementation	Timeframe for Implementation	Responsible person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>• All staff must receive environmental awareness training;</li> <li>• All new staff coming onto site must receive environmental awareness training;</li> <li>• All staff are aware of the conditions and controls linked to the Environmental Authorisation, Water Use Authorisation (WUA) and within the EMPr;</li> <li>• The responsible operator of vehicle / equipment / machinery must have the required training to make use of the spill kit in emergency situations;</li> <li>• All staff are made aware of their individual roles and responsibilities in achieving compliance with the environmental authorisation, WUA and EMPr;</li> <li>• The Contractor must erect and maintain information posters at key locations on site;</li> <li>• Environmental awareness training should include the following:               <ul style="list-style-type: none"> <li>i. Description of significant environmental impacts, actual or potential, related to their work activities;</li> <li>ii. Mitigation measures to be implemented when carrying out specific activities;</li> <li>iii. Emergency preparedness and response procedures;</li> <li>iv. Procedures to be followed when working near or within sensitive areas;</li> <li>v. Water usage and conservation;</li> </ul> </li> </ul>	Contractor	Presentations should be as visual as possible - it can include posters, power point presentations, videos or any other material that will assist in the training.	<p>Environmental awareness training must be done before construction starts and as soon as new staff members start on site and continue throughout the operational phase.</p> <p>Environmental posters must be on site at all times and must be visible / readable.</p>	ECO	During the weekly or bi-weekly inspection.	Photos Attendance Register Training material

<ul style="list-style-type: none"> <li>vi. Solid waste management procedures;</li> <li>vii. Sanitation procedures;</li> <li>viii. Dangers of open and/or unattended fires.</li> <li>• A record of all environmental awareness training courses undertaken as part of the EMPr must be available;</li> <li>• An attendance register of all staff that received environmental awareness training must be kept;</li> <li>• Course material must be available and presented in all appropriate languages;</li> <li>• Environmental training and topics can form part of the daily Toolbox Talks.</li> </ul>						
---	--	--	--	--	--	--

## 2. Site Establishment

**Management Outcome:** Impacts on the environment are minimised when establishing new infrastructure and the development footprints are kept to a minimum and within demarcated site establishment area.

**Potential Impacts:**

- Loss of vegetation and fauna habitat
- Activities may lead to displeasing aesthetics, such as the storage of materials, excavation activities and the use and storage of machines / vehicles / equipment
- Pollution of soil and groundwater due to spills on site

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of Implementation	Timeframe for Implementation	Responsible person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>• A Method Statement must be provided by the contractor prior to any on-site activity that includes:               <ul style="list-style-type: none"> <li>○ overnight vehicle / machinery parking areas;</li> <li>○ stockpile and lay down areas;</li> <li>○ the batching area / plant;</li> <li>○ equipment cleaning areas;</li> <li>○ eating and ablution facilities;</li> <li>○ waste management;</li> <li>○ access route.</li> </ul> </li> <li>• Location of the site camp must be within an approved area to ensure that the site does not impact on sensitive areas identified in the environmental assessment;</li> <li>• Sites should be located where possible on previously disturbed areas;</li> <li>• If possible, no temporary facilities or portable toilets to be setup within 50m of the adjacent wetland area;</li> <li>• If possible, the existing buildings should be used as offices;</li> <li>• No staff to be accommodated on the property;</li> <li>• Signs (safety) must be erected at the entrance to the working site;</li> <li>• All storage areas should be marked as "Laydown" areas, should be barricaded and kept neat and tidy at all times.</li> <li>• Housekeeping should be done daily.</li> </ul>	Contractor	Area can be identified during a site visit.	Before site establishment and throughout construction phase.	ECO	Before site establishment and during all site visits	Photos

### 3. Access Roads

<b>Management Outcome:</b> SANRAL approved access. Minimise impact to the environment through the planned and restricted movement of vehicles to/on site.						
<b>Potential Impacts:</b>						
<ul style="list-style-type: none"> <li>• Loss of habitat through the damage of vegetation</li> <li>• Loss of biodiversity through the damage of vegetation or killing of fauna</li> <li>• Compaction of soil</li> <li>• Erosion</li> </ul>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of Implementation	Timeframe for Implementation	Responsible person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>• During site planning, all access roads must be identified and assessed to ensure that the best route is chosen;</li> <li>• Access to the site must fall within the assessed area;</li> <li>• Maximum use of existing roads must be made.</li> </ul>	Project Manager Project Engineer Contractor	Site walk-about before site establishment.	During planning and site establishment and construction.	ECO	During all site visits	Photos



#### 4. Fencing where required / applicable

<b>Management Outcome:</b> To minimise impact to the environment and ensure safe and controlled access to the site through the erection of a fence and gates where required.						
<b>Potential Impacts:</b>						
<ul style="list-style-type: none"> <li>• Loss of habitat through the damage of vegetation</li> <li>• Loss of biodiversity through the damage of vegetation or killing of fauna</li> <li>• Compaction of soil</li> <li>• Erosion</li> <li>• Security breaches</li> </ul>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of Implementation	Timeframe for Implementation	Responsible person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>• Use existing gates to gain access to all parts of the site;</li> <li>• All gates must be fitted with locks and be kept locked after working hours;</li> <li>• All demarcation fencing and barriers must be maintained in good working order for the duration of the site establishment period;</li> <li>• The existing wall must be maintained;</li> <li>• On completion of the project, all temporary fences are to be removed and where possible re-used by the contractor at new project sites;</li> <li>• The contractor will ensure that all fence uprights are appropriately removed, ensuring that no uprights are cut at ground level but rather removed completely.</li> </ul>	Contractor	Construction of a fence	Before site establishment	ECO	During all site visits	Photos

## 5. Water Management

<b>Management Outcome:</b> Undertake responsible water usage and prevent pollution of water.						
<b>Potential Impacts:</b> The un-weathered norite normally is solid and forms continuous solid layering forming a safety barrier to protect the aquifer below from pollution. Surface material has medium capacity to absorb contaminants and create an effective barrier to contaminants. A high reduction of bacteria and viruses will result if a sanitation leak happens. Nitrates and Phosphates will reduce to some extent. A little reduction in hydrocarbons is expected (HK Geohydrological). <ul style="list-style-type: none"> <li>• Over-utilisation impacting other water users (over-abstraction)</li> <li>• Pollution of groundwater (H/BH5 at risk due to distance of &lt; 150m, but not equipped)</li> <li>• Pollution of surface water (drainage feature is 220m away and at limited risk)</li> </ul>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of Implementation	Timeframe for Implementation	Responsible person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>• All reasonable measures to limit pollution or sedimentation of the downstream watercourse must be implemented.</li> <li>• Ensure water conservation is being practiced by: <ul style="list-style-type: none"> <li>– Minimising water use during cleaning of equipment;</li> <li>– Undertaking regular audits of water systems;</li> <li>– Discuss water usage and conservation during environmental awareness training and toolbox talks;</li> <li>– Install flow meter on BH1 to measure abstraction volumes and prevent over-abstraction.</li> </ul> </li> <li>• Monitor groundwater quality to ensure suitability for use and no pollution from operations. Refer to Section 10.6.</li> <li>• Borehole BH 1 is situated ideally to monitor groundwater impacts. This borehole must be monitored for BTEXN and TPH parameters as well as major cation and anions to serve as a baseline value prior to construction, then during construction and operation to detect contamination. If</li> </ul>	Contractor		During construction and operation	ECO	During all site visits	Photos BH1 groundwater monitoring

contamination is detected, the groundwater monitoring cycle must be shortened to a two-monthly cycle (from bi-annual).						
--	--	--	--	--	--	--

## 6. Storm and Waste Water Management

**Management Outcome:** An effective system of storm water run-off control is implemented, where required and impacts to the environment caused by storm water and wastewater discharges during activities are avoided.

**Potential Impacts:**

- Pollution of downstream watercourse (wetland)
- Pollution of soil
- Erosion and siltation

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of Implementation	Timeframe for Implementation	Responsible person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>• Construction should preferably take place in the dry season (winter) as natural runoff is minimal then;</li> <li>• Additional storm water concentration must be contained (attenuated) before discharge.</li> <li>• Appropriate pollution control necessary to prevent discharge of water containing polluting matter or visible suspended solids (hydrocarbon &amp; silt trap);</li> <li>• Runoff from the batching areas must be strictly controlled, and contaminated water must be collected, stored and either treated or disposed of off-site, at a location legally approved to accept the wastewater (keep safe disposal certificate);</li> <li>• All spillages of hydrocarbons onto surfaces must be cleaned by the use of an approved absorbent material and the used absorbent material disposed of at an appropriately licensed waste disposal facility (keep safe disposal certificate);</li> <li>• Any stockpiled soil and rock should have storm water management measures implemented around it;</li> <li>• The large roof structures to be built and sealed (concrete / tar / brick) surfaces will increase storm water volumes that need to be managed;</li> <li>• A storm water plan must be available and used during all the phases of construction. This must include siltation / attenuation ponds handling storm water concentrations.</li> </ul>	Contractor		Measures implemented before site establishment starts and checked during construction and operational activities.	ECO	During all site visits	Photos BH1 groundwater monitoring for sewage pollution (bacteria & nitrates)

<p><u>During Operation the following will be required:</u></p> <ul style="list-style-type: none"> <li>• Storm water originating from the filling station surface area must be treated as dirty water;</li> <li>• Clean water and dirty water systems must be separated;</li> <li>• Clean storm water must be directed away and around the filling station sites to allow larger volumes stormwater to remain clean and suitable for discharge;</li> <li>• Leak detection systems must be implemented in all fuel storage and transmission lines and tanks;</li> <li>• Air monitoring systems must be implemented around the storage tanks;</li> <li>• The spillage of fuels, chemicals and / or sewerage water must be reported immediately to the designated Departments stipulated in the WUL and other documents stipulating monitoring practices;</li> <li>• An emergency accidental spillage plan must be in place and workers must be trained to handle such accidents;</li> <li>• No uncontrolled discharges, resulting in pollution of the receiving environment and aquifer / watercourses, shall be permitted;</li> <li>• Chemical storage areas should be sufficiently contained (bunded), and the use of chemicals should be controlled;</li> <li>• Water pumped from any sump or temporary dewatering pit should be pumped into a dirty water system and should not be allowed to enter any clean water system, natural drainage line, or the aquifer;</li> <li>• All water retention structures, including storm water dams, retention ponds etc. should be constructed to have adequate freeboard to be able to contain water from 1:50 year rain events.</li> </ul>	<p>The Applicant</p>			<p>The Applicant's Environmental Officer</p>	<p>On a regular basis, as agreed by the Applicant</p>	
---	----------------------	--	--	--	---	--

## 7. Solid Waste Management

<b>Management Outcome:</b> Wastes are appropriately stored, handled and safely disposed of at a licensed waste facility.						
<b>Potential Impacts:</b>						
<ul style="list-style-type: none"> <li>• Loss of habitat through the damage of vegetation</li> <li>• Compaction of soil</li> <li>• Pollution of soil due to spillages associated with dumping of solid waste</li> <li>• Establishment of Alien Invasive Plant Species</li> </ul>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of Implementation	Timeframe for Implementation	Responsible person	Frequency	Evidence of Compliance
<u>General:</u> <ul style="list-style-type: none"> <li>• All measures regarding waste management must be undertaken using an integrated waste management approach; and</li> <li>• A suitable position must be found and clearly demarcated for waste collection and storage;</li> </ul> <u>Prevention of waste:</u> <ul style="list-style-type: none"> <li>• Material storage areas should be safe, secure and weather-proof to prevent damage to material (resulting in waste generation) and theft. Area with impermeable base or in sealed containers.</li> <li>• Due to the additional movement of people, there will be increased litter production and higher probability of littering. Therefore, there should be on-site signs raising the awareness of the impacts of littering on the natural environment and weekly litter patrols to collect litter.</li> <li>• Train staff/contractors to operate in an environmentally responsible manner (closing of taps for water conservation, reporting spills, no littering etc.).</li> <li>• No planned maintenance or servicing of vehicles / machinery / equipment on site. If emergency maintenance is required to on-site vehicles, machinery and/or equipment, drip trays and / or absorbent mats will be placed underneath the vehicles /</li> </ul>	Contractor		Measures must be implemented before site establishment starts and must be controlled during construction and operational activities.	ECO	During all site visits	Photos Documents

<p>machinery / equipment where maintenance work is conducted to prevent grease/oil spillages impacting the environment or generating waste (contaminated soil).</p> <p><u>Reduction / minimisation of waste:</u></p> <ul style="list-style-type: none"> <li>• Reduce waste quantities and disposal costs through a reduction in the materials ordered.</li> <li>• “Take-back” schemes – setting up schemes with suppliers to take back surplus materials.</li> <li>• Engage with the supply chain to supply products and materials that use minimal packaging.</li> </ul> <p><u>Reuse / recycling of waste:</u></p> <ul style="list-style-type: none"> <li>• Separate / sort / segregate waste for collection and recycling - make arrangements with recycling contractors to provide clearly marked bins for material separation / sorting. Make sure that contractors are aware of the placement of the bins and their responsibility to separate / sort materials.</li> <li>• Though no special disposal methods are required for non-hazardous waste, non-biodegradable refuse such as glass bottles, plastic bags, etc., must be stored in suitable containers to allow for recycling and emptied on an as-required basis for recycling purposes during the working phase.</li> <li>• Segregate packaging for reuse.</li> </ul> <p><u>Waste handling on site:</u></p> <ul style="list-style-type: none"> <li>• Separate / segregate / sort waste into different containers.</li> <li>• Collect waste in suitable containers (drums / skips / bins on site).</li> <li>• Waste containers should be marked, or colour coded to indicate which types of waste can be disposed to it. Staff to be trained in this regard to segregate waste.</li> <li>• Ensure sufficient containers are available for storage of waste prior to removal off site to prevent overflow and littering on the site and surroundings.</li> <li>• Ensure no litter, refuse, waste and rubble generated on the premises will be placed, dumped or deposited on this site, adjacent or surrounding properties during the working phase.</li> <li>• The waste collection and storage site must be maintained in a clean and orderly fashion.</li> </ul>						
--	--	--	--	--	--	--

<ul style="list-style-type: none"> <li>Waste must be disposed, as soon as possible to a municipal transfer station, skip or on a licensed landfill site. Waste must not be allowed to stand on site to decay, resulting in malodours and attracting pests. Empty containers regularly and waste should not be stored on site in excess of 30 days.</li> <li>Waste collection bins with secure covers (scavenger and weatherproof) must be provided to prevent fauna entering the container. Waste containers must not to be left standing without a cover as this may attract fauna to inspect the skip and possibly cause death or injury to the fauna.</li> <li>Waste may not be burnt on site.</li> <li>Hazardous waste must be stored separately from general waste on an impermeable surface within a bund wall and disposed of at a licensed hazardous waste site if not recycled.</li> </ul> <p><u>Waste removal &amp; disposal:</u></p> <ul style="list-style-type: none"> <li>Companies that transport the waste must be registered / licenced to do so.</li> <li>Site must be easily accessible for trucks picking up or dropping off the skips.</li> <li>Remove waste from site for recycling or disposal to the local licensed municipal landfill / waste management facility on a regular basis (at least weekly or when container is full).</li> <li>No burning or burying of waste.</li> <li>Any hazardous waste will be stored and handled according to the relevant legislation and only disposed to licensed disposal facilities.</li> </ul> <p><u>Documentation:</u></p> <ul style="list-style-type: none"> <li>Report on the quantities of different waste streams managed on each site (landfill, reuse, recycling, energy recovery).</li> <li>Ensure copies of all waste manifests (safe disposal certificates) are kept, showing responsible handling, transport and disposal by a reputable waste handler.</li> <li>Include measure in contract that will ensure contractors are required to clean their work area after construction.</li> </ul>						
---	--	--	--	--	--	--



### 8. Protection of Watercourses

**Management Outcome:** Pollution and contamination of the watercourse environment as well as potential erosion are prevented.

Although the watercourse is not located on the property it is on the border of the neighbouring property and must therefore be considered and protected.

**Potential Impacts:**

- Loss of habitat through the damage of vegetation
- Loss of biodiversity
- Soil erosion and siltation
- Pollution of the watercourse
- Establishment of Alien Invasive Plant Species

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of Implementation	Timeframe for Implementation	Responsible person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>• All watercourses and water bodies must be protected from direct or indirect spills of pollutants such as solid waste, sewage, cement, hydrocarbons, chemicals, wash and contaminated water or organic material resulting from the contractor's activities;</li> <li>• In the event of a spill, prompt action must be taken to clear the polluted or affected areas;</li> <li>• No equipment / machinery / vehicles must access the site from the northern boundary of the property in order to avoid traversing the wetland;</li> <li>• The delineated / identified buffer area must be maintained. No temporary lay-down areas or site office in this area. Only very limited development should be allowed in the buffer zone.</li> <li>• Development of the second filling station in the northern portion of the property (Phase 3) will only commence after the construction of the road which will effectively cut the wetland off from this property.</li> </ul>	Contractor		Measures must be implemented before site establishment starts and must be controlled during activities.	ECO	During all site visits	Photos

## 9. Vegetation Clearing

**Management Outcome:** Vegetation clearing is restricted to the authorised development footprint of the proposed project and must be done in phases according to the development phases.

**Potential Impacts:**

- Loss of habitat through the damage of vegetation
- Loss in biodiversity
- Compaction of soil
- Establishment of Alien Invasive Plant Species

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of Implementation	Timeframe for Implementation	Responsible person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>• During vegetation clearance, methods should be employed to minimize potential harm to fauna species. Clearing has to take place in a phased and slow manner, commencing from the south-western boundary progressing towards the north-eastern boundary to maximize potential and time for mobile species to move to adjacent areas;</li> <li>• Prior and during vegetation clearance, any larger fauna species noted should be given the opportunity to move away from the machinery;</li> <li>• Fauna species such as frogs and reptiles that have not moved away should be carefully and safely removed to a suitable location beyond the extent of the development footprint by a suitably qualified person trained in the handling and relocation of animals;</li> <li>• Removal of alien invasive species.</li> <li>• All vegetation removed during the site establishment period must be disposed of at a registered “green” landfill site or composting site or in an appropriate manner as agreed by the ECO unless it is indigenous vegetation which could be used during rehabilitation;</li> <li>• If herbicides / pesticides are used, only a registered control operator must carry this out or it must be carried out under the</li> </ul>	Contractor and ECO	Site survey or walkabout	Before site establishment and during activities	ECO	During all site visits	Photos

<p>supervision of a registered control operator, or someone who is appropriately trained and a daily register must be kept of any usage;</p> <ul style="list-style-type: none"> <li>• Trees, shrubs, grass, natural features and topsoil which are not removed during vegetation clearance shall be protected from damage during construction;</li> <li>• When removing trees, maintain indigenous trees that will not hamper development;</li> <li>• Removal and disposal of alien invasive plant species must be done in an appropriate manner as required by law - Alien Invasive Species Regulations 2014 (NEMBA Act 10 of 2004).</li> </ul>						
--	--	--	--	--	--	--

### 10. Protection of fauna

<b>Management Outcome:</b> Minimise the disturbance to fauna.						
<b>Potential Impacts:</b>						
<ul style="list-style-type: none"> <li>• Loss of habitat through the damage of vegetation</li> <li>• Loss in biodiversity due to catching and killing</li> <li>• Establishment of Alien Invasive Plant Species</li> </ul>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of Implementation	Timeframe for Implementation	Responsible person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>• No poaching must be tolerated under any circumstances;</li> <li>• No trapping or poisoning of animals;</li> <li>• No feeding of animals on site or the adjacent properties;</li> <li>• Any noisy point-sources utilised on site should be enclosed, and all equipment / machinery fitted with silencers where applicable;</li> <li>• All equipment / machinery will be serviced and maintained within operating specifications to prevent excessive noise.</li> </ul>	Contractor	Site survey or walkabout	Before site establishment and during activities	ECO	During all site visits	Photos Record of site survey/ walkabout

### 11. Protection of heritage resources

<p><b>Management Outcome:</b> Minimise the disturbance to heritage resources.</p> <p>No heritage resources were found on site and this section addresses the process should something be found during construction.</p>						
<p><b>Potential Impacts:</b></p> <ul style="list-style-type: none"> <li>Loss of heritage resources</li> <li>Damage to heritage resources</li> </ul>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of Implementation	Timeframe for Implementation	Responsible person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>All work must cease immediately, if any human remains and/or other archaeological, palaeontological and historical material are uncovered. Such material, if exposed, must be reported as per the information below or to the nearest museum, archaeologist/ palaeontologist (or the South African Police Services), so that a systematic and professional investigation can be undertaken.</li> <li>Reporting of the findings must be done as follows: <u>Archaeological sites or remains, fossils or other categories of heritage resources</u> - SAHRA APM Unit (Natasha Higgitt / Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA. <u>Unmarked human burials</u> - SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase / Mimi Seetelo 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA</li> <li>If heritage resources are uncovered during the course of the development, a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the heritage resource.</li> <li>If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA.</li> </ul>	Contractor		During construction activities	ECO	During all site visits	Photos

<ul style="list-style-type: none"><li>Sufficient time should be allowed to remove/collect such material before work recommences.</li></ul>						
--	--	--	--	--	--	--

## 12. Safety of the public

<b>Management Outcome:</b> All precautions are taken where possible to minimise the risk of injury, harm or complaints.						
<b>Potential Impacts:</b>						
<ul style="list-style-type: none"> <li>• Damage to property</li> <li>• Injuries</li> <li>• Vehicle accidents</li> <li>• Traffic congestions will become a nuisance</li> </ul>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of Implementation	Timeframe for Implementation	Responsible person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>• Demarcate and restrict public access to the working area;</li> <li>• Ensure that there is signage all over the site that warns the public of activities;</li> <li>• Ensure that there are sufficient road signs so that the public is aware of vehicles moving around;</li> <li>• Points men/women must be appointed to direct traffic or warn motorists of any danger on the roads;</li> <li>• All unattended open excavations must be adequately fenced or demarcated;</li> <li>• Adequate protective measures must be implemented to prevent unauthorised access to areas and climbing of structures;</li> <li>• Maintain an incidents and complaints register in which all incidents or complaints involving the public are logged.</li> </ul>	Contractor		Proper planning must be done before establishment and implemented during construction and operational activities	ECO	During all site visits	Photos

### 13. Sanitation

<b>Management Outcome:</b> Clean and well-maintained toilet facilities are available to all staff in an effort to minimise the risk of disease and impact to the environment.						
<b>Potential Impacts:</b> The un-weathered norite normally is solid and forms continuous solid layering forming a safety barrier to protect the aquifer below from pollution. Surface material has medium capacity to absorb contaminants and create an effective barrier to contaminants. A high reduction of bacteria and viruses will result if a sanitation leak happens. Nitrates and Phosphates will reduce to some extent (HK Geohydrological). <ul style="list-style-type: none"> <li>• Risk of diseases</li> <li>• Spillages could occur</li> <li>• Odour</li> </ul>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of Implementation	Timeframe for Implementation	Responsible person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>• If possible, use the ablution facilities in the existing buildings during construction;</li> <li>• Keep all ablution facilities clean;</li> <li>• If the existing facilities can't be used, mobile dry chemical toilets must be installed on-site for construction;</li> <li>• Ablution facilities and / or mobile toilets must be used at all times and no indiscriminate use of the veld for the purposes of ablutions must be permitted under any circumstances;</li> <li>• Proper hand washing facilities, including soap, must be provided for the ablution facilities and the chemical toilets;</li> <li>• Where mobile chemical toilets are required, the following must be ensured: <ul style="list-style-type: none"> <li>○ If possible, toilets must be located no closer than 50m to any watercourse or water body;</li> <li>○ Toilets are secured to the ground to prevent them from blowing over;</li> <li>○ No spillage occurs when the toilets are cleaned or emptied and the contents are managed in accordance with the EMPr for waste disposal;</li> <li>○ Toilets are emptied before long weekends and workers holidays, and must be locked after working hours;</li> </ul> </li> </ul>	Contractor	Records of disposal certificates.	Portable chemical toilets must be provided before site establishment starts and removed once rehabilitation is completed. Formal water-borne flush facilities for the operational phase will discharge to a conservancy tank.	ECO	During all site visits	Photos Documents Certificates of removal and safe disposal



<ul style="list-style-type: none"> <li>○ Toilets are serviced regularly and the ECO or SHEQ must inspect toilets to ensure compliance to health standards;</li> <li>○ A copy of the safe waste disposal certificates must be maintained.</li> <li>● During the operational phase, the same will apply but flushing toilets discharging to conservancy tanks will be installed and used. Conservancy tanks will be emptied by honeysucker on a regular basis. Sewage will be discharged to a licensed wastewater treatment facility with adequate capacity to handle the volumes.</li> </ul>						
---	--	--	--	--	--	--

### 14. Emergency Procedures

<b>Management Outcome:</b> Emergency procedures are in place to enable a rapid and effective response to all types of environmental emergencies.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of Implementation	Timeframe for Implementation	Responsible person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>• Compile an Emergency Response Action Plan (ERAP) prior to the commencement of the proposed project;</li> <li>• The Emergency Plan must deal with accidents, potential spillages and fires in line with relevant legislation;</li> <li>• All staff must be made aware of emergency procedures as part of environmental awareness training;</li> <li>• The relevant local authority’s fire department must be made aware of a fire as soon as it starts;</li> <li>• In the event of emergency mitigation measures being necessary to contain the spill or leak, it must be implemented as per the section below - Hazardous Substances.</li> </ul>	Contractor	Notice boards. Toolbox talks to include it as a topic.	Must be done before site establishment starts and implemented during construction and operational activities.	ECO	During all site visits	Photos Documentation

### 15. Hazardous Substances

<b>Management Outcome:</b> Safe storage, handling, use and disposal of hazardous substances.						
<b>Potential Impacts:</b>						
<ul style="list-style-type: none"> <li>Contamination of soil, groundwater or watercourse due to leaks/ spills</li> </ul>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of Implementation	Timeframe for Implementation	Responsible person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>The use and storage of hazardous substances to be minimised and substituted with non-hazardous and non-toxic alternatives where possible;</li> <li>All hazardous substances will be stored in suitable containers as defined in the legislation and Material Safety Data Sheet;</li> <li>Containers will be clearly marked to indicate contents, quantities and safety requirements;</li> <li>All storage areas will be bunded. The bunded area will be of sufficient capacity to contain a spill / leak from the stored containers (110% of container capacity);</li> <li>An Alphabetical Hazardous Chemical Substance (HCS) control sheet will be drawn up and kept up to date on a continuous basis;</li> <li>All hazardous chemicals that will be used on site will have Material Safety Data Sheets (MSDS);</li> <li>All employees working with HCS will be trained in the safe use of the substance and according to the safety data sheet;</li> <li>Employees handling hazardous substances / materials must be aware of the potential impacts and follow appropriate safety measures. Appropriate personal protective equipment (PPE) must be made available;</li> <li>The Contractor must ensure that hydrocarbons are stored in appropriate storage tanks or in bowsers;</li> <li>The tanks / bowsers must be situated on a smooth impermeable surface (concrete) with a permanent bund. The impermeable lining must extend to the crest of the bund and</li> </ul>	Contractor		Planning done prior to site establishment and implemented during construction and operational activities.	ECO	During all site visits	Photos

<p>the volume inside the bund must be 130% of the total capacity of all the storage tanks / bowsers (110% statutory requirement plus an allowance for rainfall);</p> <ul style="list-style-type: none"> <li>• The floor of the bund must be sloped, draining to a separator;</li> <li>• Provision must be made for re-fuelling at the storage area by protecting the soil with an impermeable groundcover. Where dispensing equipment is used, a drip tray must be used to ensure small spills are contained;</li> <li>• All empty dirty drums must be stored on a drip tray or within a bunded area;</li> <li>• No unauthorised access into the hazardous substances' storage areas shall be permitted;</li> <li>• No smoking must be allowed within the vicinity of the hazardous storage areas;</li> <li>• Adequate fire-fighting equipment must be made available at all hazardous storage areas;</li> <li>• An appropriately sized spill kit kept on-site relevant to the scale of the activity/s involving the use of hazardous substance must be available at all times;</li> <li>• The responsible operator must have the required training to make use of the spill kit in emergency situations;</li> <li>• In the event of a spill, contaminated soil must be collected in containers and stored in a central location and disposed of according to the National Environmental Management: Waste Act (Act 59 of 2008) and the Norms and Standards for Waste Storage (GNR 926 of 29 November 2013).</li> <li>• Location and position of underground fuel storage tanks, consider (South African National Standards, 2004):             <ul style="list-style-type: none"> <li>○ Before installation, inspection by qualified engineer - comply with South African Bureau of Standards (SABS).</li> <li>○ Inlet and outlet pipes to be provided with a shut-off valve; in the case where a pump is used to pump the fluid into the tank, a non-return valve should be provided.</li> <li>○ In the case where storage tanks are automatically filled, an overflow pipe, which drains in the source tank, must be fitted.</li> </ul> </li> </ul>						
--	--	--	--	--	--	--

### 16. Batching Area

<b>Management Outcome:</b> To control concrete and cement batching activities in order to minimise spillages and contamination of soil, surface water and groundwater.						
<b>Potential Impacts:</b>						
<ul style="list-style-type: none"> <li>Contamination / pollution of watercourse or soils</li> </ul>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of Implementation	Timeframe for Implementation	Responsible person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>Concrete mixing must be carried out on an impermeable surface (such as boards and/or within a bunded area with an impermeable surface or wheelbarrow, if batches are small) or make a hard surface and remove when done;</li> <li>Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains;</li> <li>A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted;</li> <li>Hardened concrete from the washout facility can either be reused or disposed of at an appropriate licenced disposal facility;</li> <li>Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site;</li> <li>Sand and aggregates containing cement must be kept damp to prevent the generation of dust;</li> <li>Any excess sand, stone and cement must be removed or reused from site on completion of activities period and disposed at a registered disposal facility.</li> </ul>	Contractor		During construction activities.	ECO	During all site visits	Photos

### 17. Dust & Emission

<b>Management Outcome:</b> Dust prevention measures are applied to minimise the generation of dust.						
<b>Potential Impacts:</b>						
<ul style="list-style-type: none"> <li>Nuisance for residents or people at work</li> <li>Health risk</li> </ul>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of Implementation	Timeframe for Implementation	Responsible person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>Take all reasonable measures to minimise the generation of dust;</li> <li>Removal of vegetation must be limited to the working area/ footprint;</li> <li>During high wind conditions, the ECO will evaluate the situation and make recommendations as to whether dust-damping measures are adequate, or whether working will cease altogether until the wind speed drops to an acceptable level;</li> <li>Appropriate dust suppression measures must be used when dust generation is unavoidable, e.g. dampening with water; particularly during prolonged periods of dry weather. Such measures must also include the use of temporary stabilising measures (e.g., chemical soil binders, straw, brush packs, chipping).</li> <li>Maintenance on construction vehicles must be done to avoid the release of excessive emissions.</li> <li>All vehicles and machinery / equipment used on, or entering the site, must be maintained and serviced regularly to ensure that they do not emit smoke or fumes.</li> <li>The contractor's representative must ensure that all on-site vehicles comply with the old SABS 0181 standards (now SANS 10181:2003 in conjunction with SANS 10282:2003)</li> <li>Limit idling time of vehicles / equipment.</li> </ul>	Contractor		During construction activities.	ECO	During all site visits	Photos

- Avoid overloading of construction vehicles.
- Any solvent-based finishes such as paints, varnishes, sealants, and polishes will contain minimal levels of Volatile Organic Compounds (VOC) and no Chloro-Fluoro Carbons (CFC), which may harm the atmosphere. Water-based paints are to be used where possible and plant-based stains and sealants must be considered as these are more environmentally friendly.

--	--	--	--	--	--	--

### 18. Noise

<b>Management Outcome:</b> To prevent unnecessary noise to the environment and surrounding community by ensuring that noise from activities is mitigated.						
<b>Potential Impacts:</b>						
<ul style="list-style-type: none"> <li>Nuisance for residents or people at work</li> <li>Health risk</li> </ul>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of Implementation	Timeframe for Implementation	Responsible person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>Construction hours must be adhered to, weekdays from 07:00 – 18:00;</li> <li>If possible, construction activities must be limited to the week and should activities take place over a weekend, the I&amp;APs and landowners must be consulted with.</li> <li>hours (7:00 – 17:00 daily during weekdays).</li> <li>The contractor is to abide by the by-laws of the local municipality relating to noise control.</li> <li>Ear plugs are to be worn by construction workers as and when required.</li> <li>Reducing the noise produced through silencers, lubrication and maintenance, vibration damping i.e. placing a layer of damping material (rubber, neoprene, cork or plastic) beneath the vibrating machine.</li> <li>Reduce noise from vehicles by:               <ul style="list-style-type: none"> <li>turning off engines when they are not in use;</li> <li>checking the brakes are properly adjusted and don't squeal;</li> <li>no revving the engine unnecessarily;</li> <li>only using the horn in emergencies; and</li> <li>replacing exhaust systems as soon as they become noisy.</li> </ul> </li> </ul>	Contractor		During construction activities.	ECO	During all site visits	Photos Documents Emails



### 19. Fire prevention

<b>Management Outcome:</b> Prevention of uncontrollable fires.						
<b>Potential Impacts:</b>						
<ul style="list-style-type: none"> <li>• Possible injuries</li> <li>• Air pollution due to smoke</li> <li>• The smoke can be a health risk</li> <li>• Loss of habitat</li> <li>• Damage to property</li> </ul>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of Implementation	Timeframe for Implementation	Responsible person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>• Designated smoking areas must be allocated;</li> <li>• Bins must be provided for cigarette buds at the designated smoking area;</li> <li>• Firefighting equipment must be available on all vehicles located on site;</li> <li>• The local Fire Protection Agency (FPA) must be informed of activities;</li> <li>• Contact numbers for the FPA and emergency services must be communicated in environmental awareness training, toolbox talks and displayed at a central location on site.</li> </ul>	Contractor		During operational activities.	ECO	During all site visits	Photos

## 20. Stockpile and Stockpiling Areas

<b>Management Outcome:</b> To reduce erosion and sedimentation as a result of stockpiling.						
<b>Potential Impacts:</b>						
<ul style="list-style-type: none"> <li>Soil erosion and siltation</li> </ul>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of Implementation	Timeframe for Implementation	Responsible person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>All material that is excavated during the activities (during earthworks) must be stored appropriately on site;</li> <li>All stockpiled material must be maintained and kept clear of weeds and alien invasive species by undertaking regular weeding and control methods;</li> <li>Stockpiles must not exceed 2 m in height;</li> <li>During periods of strong winds and heavy rain, the stockpiles should be covered with appropriate material (e.g., cloth, tarpaulin etc.);</li> <li>Where possible, sandbags (or similar) should be placed at the bases of the stockpiled material in order to prevent erosion of the material.</li> </ul>	Contractor		During construction activities.	ECO	During all site visits	Photos

## 21. Landscaping and Rehabilitation/ Remediation

<b>Management Outcome:</b> No environmental degradation occurs as a result of the project.						
<b>Potential Impacts:</b>						
<ul style="list-style-type: none"> <li>• Soil erosion</li> <li>• Infestation of weeds and alien invasive species</li> </ul>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of Implementation	Timeframe for Implementation	Responsible person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>• All spoil and waste will be disposed to a licensed waste site and certificates of safe disposal provided;</li> <li>• Stockpiled topsoil must be used for rehabilitation;</li> <li>• Stockpiled topsoil will be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion;</li> <li>• Before placing topsoil, all visible weeds from the placement area and from the topsoil must be removed;</li> <li>• Subsoil must be ripped before topsoil is placed;</li> <li>• Sections that will not be paved or that could rather be landscaped should be landscaped according to a landscape plan or planting plan;</li> <li>• Trees that were left on site must be maintained and included as part of the landscape plan;</li> <li>• If possible, the project must be timed so that rehabilitation/ landscaping can take place at the optimal time for vegetation establishment;</li> <li>• After site rehabilitation / landscaping the sites must be monitored in order to ensure that rehabilitation is successful. During the monitoring period all alien invasive plant species must be eradicated according to an Alien Invasive Eradication Plan.</li> </ul>	Contractor		After construction or if possible, during the last phases of construction.	ECO	During all site visits	Photos

## 22. Communication

<b>Management Outcome:</b> Proper communication with landowners, neighbours and the public						
<b>Impact Management Actions</b>	<b>Implementation</b>			<b>Monitoring</b>		
	<b>Responsible person</b>	<b>Method of Implementation</b>	<b>Timeframe for Implementation</b>	<b>Responsible person</b>	<b>Frequency</b>	<b>Evidence of Compliance</b>
<ul style="list-style-type: none"> <li>Notify landowners, neighbours and councillors at least 7 days before activities start of the intention to commence with the construction of the filling station. This should be done as the project progresses from one area/neighbourhood to the following.</li> <li>Keep a complaints register on site.</li> <li>A notice board should be visible at each site with the contact information of the Project Manager, Contractor, Emergency Contact and ECO.</li> <li>In addition to the contact information there should also be a timeframe of when work will commence and when it will be completed.</li> </ul>	Project Manager/ Contractor	Telephone calls Emails Notifications/ Posters	Before construction starts and during construction.	ECO	During all site visits	Photos Emails Signed register Complaints register

## 10.6 Monitoring programme

All records will be kept for at least five (5) years.

The following aspects need to be monitored and audited:

a) Compliance with EMPr, environmental authorisation, water use authorisation and any other licenses' conditions

- Appoint an Environmental Control Officer (ECO)

b) Noise, Nuisance and Disturbance Monitoring

- A record of complaints must be kept as well as the measures taken to address these complaints.

c) OHSA Compliance

- Register to indicate that all the employees and contractors have been informed as to their rights under the Act; and
- Accident records as per the Act - reported to the Department of Trade and Industry (DTI) and the Department of Labour (DOL).

d) Groundwater for pollution from filling station (fuel storage tanks etc.)

Pollution can impact on groundwater aquifer below filling station as well as regional aquifer downstream and the wetland  $\pm$  220m south east.

Sampling point: BH1

Sampling frequency: Bi-annually for quality and monthly for water level and continuous flow meter for abstraction from before start of construction

Sampling parameters: pH, Electrical Conductivity (EC), Total Dissolved Solids (TDS), Chloride (Cl), Sulphate (SO<sub>4</sub>), Nitrate (NO<sub>3</sub>), Ammonium (NH<sub>4</sub>), ortho-Phosphate (o-PO<sub>4</sub>), Fluoride (F), Calcium (Ca), Magnesium (Mg), Sodium (Na), Potassium (K), Aluminium (Al), Iron (Fe), Manganese (Mn), E.coli, Total Coliforms, Total Hardness, Alkalinity, Total Petroleum Hydrocarbons (TPH), BTEXN (Benzene Toluene Ethylbenzene Xylenes and Naphthalene)

Sampling objectives:

- Prevent over-abstraction of groundwater from borehole and subsequent impacts on other groundwater users.
- Ensure water is safe for human consumption (bacteriologically & chemically).
- Check for signs of hydrocarbon pollution – spills / leaks from operations or tanks

## 10.7 Record keeping and reporting

### 10.6.1 Compliance recording and reporting

Accurate and up-to-date records will be kept by the ECO of all system malfunctions resulting in non-compliance with the EMPr, environmental authorisation and licenses.

### 10.6.2 Incident recording and reporting

The applicant will also, within 24 hours, ensure that the relevant authorities (NW DEDECT, DWS, DOL, DTI etc.) are notified of the occurrence or detection of any incident which has the potential to cause, or has caused pollution of the environment, health or safety risks or which is a contravention of any EMPr, environmental authorisation or license condition. The applicant is then to submit an action plan indicating measures, which will be taken to:

- Correct the impacts resulting from the incident;
- Prevent the incident from causing any further impact; and

- Prevent a recurrence of a similar incident.

### 10.6.3 Complaints recording and reporting

A complaints register will be kept and all complaints from the public / community will be noted therein as well as measures taken to rectify the situation as described above.

## 10.7 Environmental awareness plan

### 10.7.1 Objectives

The objectives of an environmental awareness plan are to:

- Inform employees, landowners, contractors and visitors of any environmental risk which may result from their presence, work or activities, and
- Inform employees, landowners, contractors and visitors of the manner in which the identified possible risks must be dealt with in order to avoid pollution or degradation of the environment and health and safety hazards.

In general, the purpose of implementing an environmental awareness plan is to optimise the awareness of those on the property and partaking in the activities, which have the potential to impact negatively on the environment, and in doing so, promote the goal of sustainable development.

### 10.7.2 Communication

Both objectives of the environmental awareness plan indicate that employees, landowners, contractors and visitors must be informed of environmental matters. Information sharing is only possible through effective communication channels.

The goal for proficient communication is to provide structures for effective communication, participation and consultation that relate to the occupational health and safety hazards, environmental hazards and the Safety, Health, Environment and Quality (SHEQ) management system.

The objective of the communication procedure is to ensure effective communication flow, involvement of all levels of employees in the communication chain and to comply with the requirements in terms of ISO 9001:2008 clause 5.5.3 and ISO 14001:2004 clause 4.4.3.

### 10.7.3 Communication responsibility

It will be the responsibility of the Safety, Health, Environment and Quality (SHEQ) officer to communicate the environmental awareness plan with employees, landowners, contractors and visitors. Should the SHEQ officer struggle with information or should there be a query regarding certain environmental issues it can be discussed with the appointed ECO.

The communication can be done in the following way:

- As part of toolbox talks;
- Posters or information sheets on the notice board, within the ablution facility or at specific spots such as at the drinking water point or waste bins;
- Visitors entering the site could be given an induction or a brochure of the main environmental risks;

- Environmental awareness training for the contractors and their staff members as well as the applicant's representative that will be working on site. This should be done before the construction commences.

#### **10.7.4 Aspects covered**

The following Environmental Risks/ Aspects should be covered as part of the Environmental Awareness Plan:

- Water saving / conservation;
- Waste management / Recycling;
- Importance of PPE;
- What are CBAs and wetland areas;
- Erosion;
- Alien Invasive Species;
- Risk of spillages (fuel, oil, cement and hazardous material);
- Dust
- Noise
- Importance of nature and why we protect it.

## 11 CONCLUSIONS & RECOMMENDATIONS

Based on the impact assessment (Section 9), it is clear that the construction and operation of the filling stations can potentially have a negative impact on the environment. The significance of the impact can, however, be mitigated / managed to a low to moderate low significance.

### 11.1 EAP Opinion

It is the opinion of the EAP that the project may continue from an environmental perspective based on the following:

- **Location:** The site is on a major movement route and therefore ideally located in terms of accessibility, convenience and visibility with a passer-by traffic flow past the site. It can serve local (Boshoek) and transient traffic / customers.
- **Access:** Access to the site from the R565 has already been approved by SANRAL based on current approved land zoning (Business 1) and only needs to be amended based on new proposed land use "Special" for filling station (Techworld Consulting Engineers, 2021). Access for the second filling station (Phase 3) will only be negotiated once the road is under construction.
- **Size of property:** The property is probably too small (< 5ha at 1.3933ha) to allow for commercially viable agriculture. The property is however, large enough to provide efficient access and safe / appropriate circulation for fuel tankers (Techworld Consulting Engineers, 2021).
- **Cultural heritage:** No sites of archaeological or cultural heritage significance were found or will be impacted (Archaetnos, 2018).
- **Terrestrial biodiversity:** The site is highly disturbed and transformed. No significant impact on flora and fauna biodiversity expected (Iggdrasil, 2018).
- **Wetland on adjacent property:** Mitigation measures in EMPr should be implemented to minimise the impact on this wetland on the neighbouring property. The construction of the new road (if proceeding in Phase 3) will effectively cut this site off from the wetland.
- **Water supply:** Though no municipal services exist in the area, the existing borehole on the property (BH1) can sustainably be used to supply water (5 475m<sup>3</sup>/annum) to the filling station and an application for water use authorisation is in process with Department of Water and Sanitation (DWS) under reference WU19572 (eWULaas). Conservancy tanks will also be registered for storage and pumping of sewage for off-site treatment and disposal.
- **Electricity:** No upgrade of any network services is required since sufficient spare capacity exists as confirmed by Eskom on installed transformer (300kVA) to accommodate this development (LTZ Consulting, 2020).
- **Socio-economic:** The project will create jobs. The filling station is viable from a financial perspective from its opening (2023) and will improve in future with 2% growth/annum expected (Demacon, 2021).
- **Fatal flaws:** No fatal flaws from an environmental perspective.
- **Other filling stations:** The proposed site is expected to capture on average about 20% of the monthly fuel sales of the existing sites in the market area. The viability of the existing sites will not be jeopardised based on estimated current fuel sales at the existing sites and the expected impact (Techworld Consulting Engineers, 2021). The other filling stations are therefore expected to object to this project since these three (3) filling stations share market and traffic streams. However, competition is good.
- **Market gap:** Famous brands and other prominent Quick Service Restaurant (QSR) operators are absent from the existing filling stations, creating an opportunity for the proposed filling station (Demacon, 2021)



## 11.2 Conditions

The project can be authorised under the following conditions:

- Compliance with EMPr.
- Proper implementation of the specialists' recommendations.
- Water Use Authorisation.

## 12 REFERENCES

Den Boogert, L., Kasl, B. & Perry, K. 2018. Biodiversity Assessment Associated with the Boschoek Filling Stations, North West, South Africa. **Iggdrasil Scientific Services.**

Department of Environmental Affairs (DEA), 2017. Integrated Environmental Management Guideline. Guideline on need and desirability. ISBN 978-0-9802694-4-4.

Department of Environmental Affairs (DEA), 2017. Public participation guideline in terms of NEMA, 1998 EIA regulations. ISBN 978-0-9802694-2-0.

Department of Rural, Environmental and Agriculture Development North West Province (READ), 2018. Bonjala Platinum District Municipality Environmental Management Framework.

Du Toit, H. 2021. Boshhoek Filling Station Mark Study. **Demacon.**

Kruger, P. 2021. Fuel viability study for the proposed new filling station on R565, Portion 135 Boschhoek 103-IQ, Rustenburg Municipality. **Techworld Consulting Engineers.**

Kruidenier, J.H.B. 2018. Hydrogeological and contamination risk assessment study for the planned filling station, to be located on portion 135 of the farm Boschoek 103 JQ, Rustenburg, located in the North West Province. **HK Geohydrological Services.**

Mucina, L. & Rutherford, M. C. 2006. The vegetation of South Africa, Lesotho and Swaziland. *Strelitzia* 19. South African National Biodiversity Institute, Pretoria.

Stoltz, M. 2020. Electrical Services Report for the Proposed development of a filling station in Boschhoek, North West Province. **LTZ Consulting.**

Van Vollenhoven, A.C. & Smit, J. 2018. A Report on Heritage Impact Assessment for the Proposed development of a filling station in Boschhoek, North West Province. **Archaetnos Culture & Cultural Heritage Resource Consultants.**

### Legislation:

- Conservation of Agricultural Resources Act (CARA), 1983 (Act 43 of 1983)
- Constitution of the Republic of South Africa (CRSA), 1996 (Act 108 of 1996)
- National Environmental Management Act (NEMA), 1998 (Act 107 of 1998)
- National Environmental Management: Biodiversity Act (NEM:BA), 2004 (Act 10 of 2004)
- National Environmental Management: Protected Areas Act (NEM:PAA), 2003 (Act 57 of 2003)
- National Environmental Management: Waste Act (NEM:WA), 2008 (Act 59 of 2008)
- National Heritage Resources Act (NHRA), 1999 (Act 25 of 1999)
- National Water Act (NWA), 1998 (Act 36 of 1998)