



ENVIRONMENTAL IMPACT ASSESSMENT PROCESS
for
THE PROPOSED CONSTRUCTION OF A FILLING STATION AND ASSOCIATED
INFRASTRUCTURE IN NAZARETH (MIDDELBURG) IN THE STEVE TSHWETE
LOCAL MUNICIPALITY

DRAFT BASIC ASSESSMENT REPORT

Public Review

29 January 2021 to 01 March 2021

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PROJECT DETAILS

Reference No.	:	Not assigned as yet
Title	:	Basic Assessment process for the Proposed Construction of a Filling Station and Associated Infrastructure in Nazareth (Middelburg) In the Steve Tshwete Local Municipality
Report compiled by	:	Envirolution Consulting Contact person: Ms Sheila Bolingo Postal Address: P.O.Box 1898, Sunninghill, 2157 Telephone Number: 0861 44 44 99 Fax Number: 0861 62 62 22 Email: sheila@envirolution.co.za
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Status	:	Draft Basic Assessment Report
Review period	:	The 30-day period for review is from 29 January 2021 to 01 March 2021

EXECUTIVE SUMMARY

INTRODUCTION

Bullprop Investments (Pty) Ltd is proposing to develop a filling station and a Shopping Centre on Portion 59 of ERF 1 Nasaret Township, Middelburg at the corner of Kilo street & N11 Road as shown in **Figure 1** to primarily serve the Nazareth, Middelburg communities. The development site falls within, Steve Tshwete Local Municipality in the Mpumalanga Province.

The envisaged development entails the construction of a modern corporate standard Filling Station with Underground Storage Tanks (UST's) including retail diesel and petrol filling facilities, a convenience store for motorists and general public, an ablution facilities and Parking bays., as well as a shopping centre. The site currently vacant and covers an area of about 2 hectares. Access to the site will be provided directly off the N11 into the site.

REQUIREMENT FOR A BASIC ASSESSMENT PROCESSTRODUCTION

The proposed project is subject to the requirements of the Environmental Impact Assessment Regulations (2014 EIA Regulations) in terms of the National Environmental Management Act (NEMA, Act 107 of 1998, as amended). NEMA is national legislation that provides for the authorisation of certain controlled activities known as "listed activities". In terms of Section 24(1) of NEMA, the potential impact on the environment associated with these listed activities must be considered, investigated, assessed, and reported on to the competent authority (the decision-maker) charged by NEMA with granting of the relevant Environmental Authorisation. Bullprop Investments (Pty) Ltd requires an Environmental Authorisation for this project in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), and Environmental Impact Assessment Regulations, 2014 as amended in 07 April 2017 (GNR 326); a Basic Assessment (BA) Process is thus required for this project.

The proposed project is subject to the requirements of the Environmental Impact Assessment Regulations (2014 EIA Regulations) in terms of the National Environmental Management Act (NEMA, Act 107 of 1998, as amended). NEMA is national legislation that provides for the authorisation of certain controlled activities known as "listed activities". In terms of Section 24(1) of NEMA, the potential impact on the environment associated with these listed activities must be considered, investigated, assessed, and reported on to the competent authority (the decision-maker) charged by NEMA with granting of the relevant environmental authorisation.

PROJECT NEED AND DESIRABILITY

The Energy Security Master Plan as compiled by the Department of Energy sets out guidelines aimed at ensuring that diverse energy resources, in sustainable quantities and at affordable prices, are available to the South African economy in support of economic growth and poverty alleviation, taking into account environment management requirements and interactions among economic sectors. It further seeks to allow for the making of well-informed choices in respect of energy supply, energy carriers, demand sector strategies, as well as energy transformation approaches, cognisant of the need to minimise negative impacts on the environment and the economy.

The benefits of the project include filling station services, community serving facilities, business development, employment opportunities, and

contribution to municipal taxes. In terms of promoting justifiable economic and social development, the area which comprises the area proposed for the filling station is zoned for currently zoned as Business 2.

CONCLUSION (IMPACT STATEMENT)

Less than 1 hectare of partially disturbed grassland remains on site. This area of grassland is not considered to have high biodiversity value. Development of the proposed project is therefore not considered to have a significant impact on natural habitat or plant species. The positive impacts (benefits) of the proposed development outweigh the negative impacts. There is a social need and desirability for the development. The proposal is in line with social Infrastructure and services development strategies of the Local and District Municipalities.

Having assessed the impacts of the construction of the Nazareth Filling Station site as summarised in **Table 7.1**, no environmental fatal flows and no significant negative impacts have been identified to be associated with the proposed development. The Impact Assessment section of this report indicates that the identified environmental impacts associated can be effectively **mitigated** to have a **low significance**. The significance levels of the majority of identified negative impacts (as shown in the environmental sensitivity map in **Figure 7.1**) can generally be reduced to acceptable levels thus, the proposed developments could proceed provided that the mitigation measures set out in this report and in the EMPr (**Appendix F**) are diligently implemented to limit the potential impacts on vegetation, watercourses and social during construction and operation of the developments.. *The Site investigated is considered suitable for the proposed filling station provided that the recommendations made in this report are implemented and/or adhered to.*

I. RECOMMENDATIONS

It is therefore, the EAP opinion that the project should be authorised, the findings of the specialist studies undertaken within this EIA to assess both the benefits and potential negative impacts anticipated as a result of the proposed project conclude that there are no environmental fatal flaws that should prevent the proposed project from proceeding, provided that the recommended mitigation and management measures are implemented.

The following conditions would be required to be included within an authorisation issued for the project:

- All relevant practical and reasonable mitigation measures detailed within this report and within the EMPr must be implemented. The implementation of this EMPr for all life cycle phases of the proposed project is considered key in achieving the appropriate environmental management standards as detailed in this report.
- An independent Environmental Control Officer (ECO) should be appointed to monitor compliance with the specifications of the EMPr for the duration of the construction period.
- An appropriate stormwater management plan must be developed and implemented to the site. Adequate measures must be put in place to prevent polluted runoff water from entering the, wetland and soil, thus preventing surface and groundwater pollution;
- The relevant authorisations and water use licenses must be obtained from Department of Water Affairs prior to the commencement of construction activities. No activities may proceed within or in proximity to watercourses without a Water Use License permitting the activity.

- Should the informal burial site be retained in its current location; it should be fenced off at least for the duration of construction activities. It is recommended that a buffer zone of 10m is created around the graves by means of a wire fence or, alternatively, with danger tape as a more temporary measure. Should archaeologically sites or graves be exposed in other areas during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.
- It is recommended that the foundation excavations for each structure be inspected by a competent person during construction in order to verify that the materials thus exposed are not at variance with those described in the report and that it meets design criteria.
- The developer should obtain all necessary permits from relevant authorities prior to the commencement of construction i.e. water use license & plant permits
- Creation of new access roads should be minimised as far as possible.
- All declared alien plants must be identified and managed in accordance with the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983). The implementation of a monitoring programme in this regard is recommended. On-going monitoring of the development sites must be undertaken to detect and restrict the spread of alien plant species.
- Care must be taken with the topsoil during and after construction on the site. If required, measures to reduce erosion to be employed until a healthy plant cover is again established.
- Contractors must be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.

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ABBREVIATIONS

BAR	Basic Assessment Report
CBA	Critical Biodiversity Area
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EDM	Ehlanzeni District Municipality
EIA	Environmental Impact Assessment
EMPr	Environmental Management Plan report
ESA	Ecological Support Area
eWULAAS	electronic Water Use Licence Application and Authorisation System
GN	Government Notice
Ha	Hectares
HIA	Heritage Impact Assessment
I & AP's	Interested and Affected Parties
IDP's	Integrated Development Plans
Km	Kilometres
m	Meters
NEMA	National Environmental Management Act
NEM: WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NGO's	Non-Governmental Organisations
MDARDLEA	Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs
PPP	Public Participation Process
SDF	Spatial Development Framework
STLM	Steve Tshwete Local Municipality
SWMP	Stormwater Management Plan
WULA	Water Use License Application

INVITATION TO COMMENT ON THE DRAFT BA REPORT

The Draft Basic Assessment Report (BAR) has been prepared by Envirolution Consulting (Pty) Ltd in order to assess the potential environmental impacts associated with the Proposed **Construction of a Filling Station and Associated Infrastructure in Nazareth (Middelburg) in the Steve Tshwete Local Municipality** Mpumalanga Province. The report is made available for public review for 30-day review period from **29 January 2021 to 01 March 2021** at

- Nasaret Public Library: Velddrif St Nazareth, Tel: 013 246 1414
- Ward 8 Cllr Johanna Mitchell, Tel: 072 066 4386

In order to obtain further information or submit written comments please contact:

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The due date for comments on the Draft Basic Assessment Report is **01 March 2021**

1 INTRODUCTION

1.1 Project Background

Bullprop Investments (Pty) Ltd is proposing to develop a filling station and a Shopping Centre on Portion 59 of ERF 1 Nasaret Township, Middelburg at the corner of Kilo street & N11 Road as shown in **Figure 1** to primarily serve the Nazareth, Middelburg communities. The development site falls within, Steve Tshwete Local Municipality in the Mpumalanga Province.

The envisaged development entails the construction of a modern corporate standard Filling Station with Underground Storage Tanks (UST's) including retail diesel and petrol filling facilities, a convenience store for motorists and general public, an ablution facilities and Parking bays., as well as a shopping centre. The site currently vacant and covers an area of about 2 hectares. Access to the site will be provided directly off the N11 into the site.

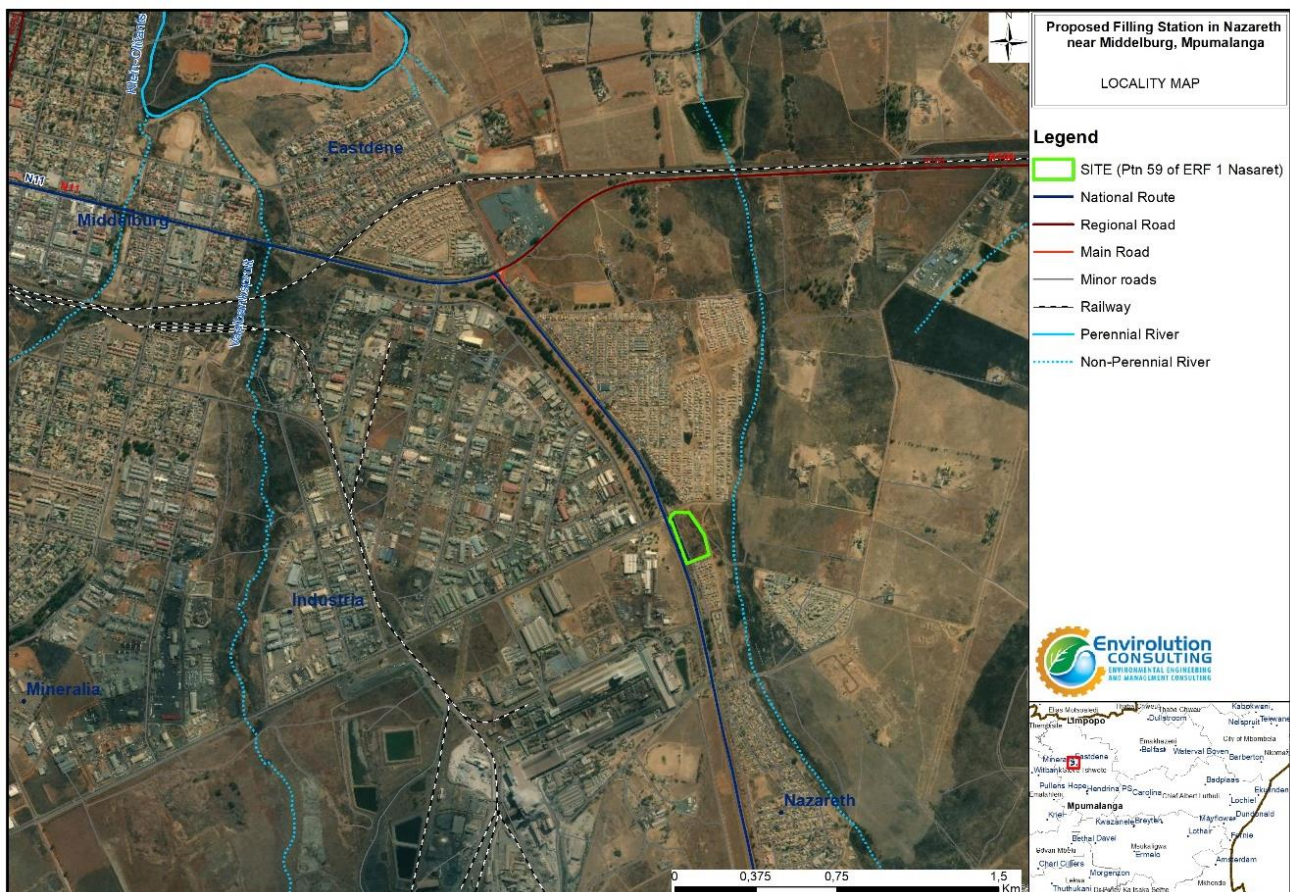


Figure 1.1: Locality map showing the proposed site for the Nazareth Filling Station (refer to **Appendix A** for A3 maps).

1.2 Details of The Environmental Assessment Practitioner (EAP)

Environmental Assessment Practitioner

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Expertise of the EAP to carry out the EIA procedures

- Cheda Sheila Bolingo, the principle author and Environmental Assessment Practitioner (EAP) responsible for this project holds an Msc degree in Environmental Management with 9 years of experience in the consulting field. Her key focus areas are on strategic environmental assessment and advice on environmental impact assessments; public participation; environmental management programmes, and mapping through ArcGIS for variety of environmental projects. She is currently involved in several diverse projects across the country.
- Gesan Govender, the project manager and reviewer is a registered Professional Natural Scientist and holds an Honours degree in Botany. He has over 15 years of experience within the field of environmental management. His key focus is on strategic environmental assessment and advice; management and co-ordination of environmental projects, which includes integration of environmental studies and environmental processes into larger engineering-based projects and ensuring compliance to legislation and guidelines; compliance reporting; the identification of environmental management solutions and mitigation/risk minimising measures; and strategy and guideline development. He is currently responsible for the project management of EIA's for several diverse projects across the country.

Curricula vitae for the project team consultants are included in **Appendix G2**.

Specialists: In order to adequately identify and assess potential environmental impacts associated with the proposed project, Envirovolution Consulting has appointed the following specialists to conduct specialist impact assessments:

- Vegetation – David Hoare of David Hoare Consulting (Pty) Ltd
- Wetland- Antoinette Bootsman of Limosella Consulting
- Heritage - Johan van Schalkwyk of Johan Heritage Consultant
- Palaeontology - Heidi Fourie
- Geotechnical report - M. J. van der Walt of Engineering Geologist CC

Specialist declarations are attached as **Appendix G3**.

1.3 Requirement of the Basic Assessment

The proposed project is subject to the requirements of the Environmental Impact Assessment Regulations (2014 EIA Regulations) in terms of the National Environmental Management Act (NEMA, Act 107 of 1998, as amended).

NEMA is national legislation that provides for the authorisation of certain controlled activities known as “listed activities”. In terms of Section 24(1) of NEMA, the potential impact on the environment associated with these listed activities must be considered, investigated, assessed, and reported on to the competent authority (the decision-maker) charged by NEMA with granting of the relevant Environmental Authorisation. Bullprop Investments (Pty) Ltd requires an Environmental Authorisation for this project in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), and Environmental Impact Assessment Regulations, 2014 as amended in 07 April 2017 (GNR 326); a Basic Assessment (BA) Process is thus required for this project.

The proposed project is subject to the requirements of the Environmental Impact Assessment Regulations (2014 EIA Regulations) in terms of the National Environmental Management Act (NEMA, Act 107 of 1998, as amended). NEMA is national legislation that provides for the authorisation of certain controlled activities known as “listed activities”. In terms of Section 24(1) of NEMA, the potential impact on the environment associated with these listed activities must be considered, investigated, assessed, and reported on to the competent authority (the decision-maker) charged by NEMA with granting of the relevant environmental authorisation.

An environmental impact assessment is an effective planning and decision-making tool for the applicant as it provides the opportunity for the applicant to be fore-warned of potential environmental issues and assess if potential environmental impacts need to be avoided, minimised or mitigated to acceptable levels. The required Basic Assessment (BA) process which is being conducted in 3 phases namely:

Phase 1: Project inception;

Phase 2: Basic Assessment and Environmental Management Programme; and

Phase 3: Authority review and response.

The report provides a description of the activity, description of property and location and a description of environment, legislation, need and desirability, significant impacts and management as well as mitigation. Comprehensive, independent environmental studies elaborated by specialists are required in accordance with the EIA Regulations to inform the EAP of its comprehensive recommendation and provide the competent authority i.e. Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs (MDARDLEA) with sufficient information in order to make an informed decision.

1.4 Listed activities triggered by the proposed development

The proposed development triggers activities that require a Basic Assessment; an application is submitted in terms of Chapter 4 of the EIA Regulations to the MDARDLEA. **Table 3.1** contains the listed activities in terms of the EIA Regulations (as amended) and includes a description of those project activities which relate to the applicable listed activities.

Table 3.1 Listed activities triggered by the proposed development

Listed activities	Description of project activity that triggers listed activity
Activity 14 of Listing Notice (LN) 1 of GNR 327 2014 (amended): The development of facilities or infrastructure for the storage, or for the storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 80 but not exceeding 500	Tank capacity of 115 cubic metres (93 Unleaded 23m ³ , 95 Unleaded 46m ³ and diesel 46m ³) is proposed for the filling station.

cubic meters	
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1.5 **Objectives of the Basic Assessment process**

According to **Appendix 1 of the 2014 EIA Regulations, 2014**, Government Notice R326, the objective of the basic assessment process is to, through a consultative process –

- (a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;
- (b) identify the alternatives considered, including the activity, location, and technology alternatives;
- (c) describe the need and desirability of the proposed alternatives;
- (d) through the undertaking of an impact and risk assessment process, inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and alternatives on these aspects to determine –
 - (i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
 - (ii) the degree to which these impacts –
 - (aa) can be reversed;
 - (bb) may cause irreplaceable loss of resources; and
 - (cc) can be avoided, managed or mitigated; and
- (e) through a ranking of the site sensitivities and possible impacts the activity and alternatives will impose on the sites and location identified through the life of the activity to –
 - (i) identify and motivate a preferred site, activity and alternative;
 - (ii) identify suitable measures to avoid, manage or mitigate identified impacts; and
 - (iii) identify residual risks that need to be managed and monitored.

The main objective of the BAR and EMP is to identify and assess potential environmental impacts associated with the proposed project, and to compile appropriate mitigation measures.

1.6 **Need and Desirability**

The following section motivates and explains the needs and desirability of the project (including demand for the activity) by highlighting the needs and desirability of the project in the context of various integrated and spatial plans, frameworks and other pertinent information, either Provincial or Municipal.

The Energy Security Master Plan as compiled by the Department of Energy sets out guidelines aimed at ensuring that diverse energy resources, in sustainable quantities and at affordable prices, are available to the South African economy in support of economic growth and poverty alleviation, taking into account environment management requirements and interactions among economic sectors. It further seeks to allow for the making of well-informed choices in respect of energy supply, energy carriers, demand sector strategies, as well as energy transformation approaches, cognisant of the need to minimise negative impacts on the environment and the economy.

Studies and projections conducted in by the International Energy Agency (IEA), based on the growth of the world economy, especially that of markets in the southern hemisphere, indicate that energy consumption in the next

twenty years will increase by at least 60%. South Africa is an extremely “energy hungry country.” The World Bank classifies economies according to Gross National Income (GNI) per capita. Although the South African economy is currently the 28th largest in the world, our energy consumption ranks 15th.

The benefits of the project include filling station services, community serving facilities, business development, employment opportunities, and contribution to municipal taxes. In terms of promoting justifiable economic and social development, the area which comprises the area proposed for the filling station is currently zoned as Business 2.

The project is therefore compatible with the Steve Tshwete Local Municipality IDP, the project site is also suitably located without having to construct new access roads.

2 DESCRIPTION OF ACTIVITY

2.1 Location of the activity and Property Details

The applicant, Bullprop Investments (Pty) Ltd intends to develop a filling station and associated infrastructures as detailed in Table 2.1.

Location of the proposed sites:	corner of Kilo street & N11 Road in Nazareth in the Mpumalanga Province
Farm details	Portion 59 of ERF 1 Nasaret
Municipality	Steve Tshwete Local Municipality; Nkangala District Municipality
Development footprint size(s) in ha	The site is approximately 2 ha in extent, development requires 6249m ²
Zoning	Business 2
Co-ordinates:	Lat (S): 25°47'9.86"S Long (E): 29°30'12.91"E
Surveyor General (SG) 21-digit code for each proposed site:	T0JS00260000000100059

2.2 Details of All Components of the Proposed Project

According to the Designed Engineering Solutions (Pty) Ltd Service Report (**Appendix G4**), the permitted land use rights for the proposed site, Erf 59/1 Middletown & Townlands 287 JS, are summarised below in **Table 2.2**.

Table 2.2: Permitted Land Use Rights

ERF 59/1 MIDDLETOWN & TOWNLANDS 287 JS	
Zoning	Business 2
Site Area	19 224 m ²
Canopy Area	428 m ²
Building Area	344 m ²
Filling Station Total Area	772 m ²
Shopping Centre Area	6 794.50 m ²
Total Area	7 566.50 m ²
Permissible Coverage	39.4%
Permissible FAR	0.37
Height	1 Storey

Figure 2.1 provides an indication of the proposed filling station and shopping layout and access roads as designed by H.T.N Architectural Design Lab (Pty) Ltd (hereafter H.T.N). Access to the site will be directly off the N11 highway. The proposed road will be 120m long and 5m wide (Figure 2.1). Site access road was approved 'in principle' by SANRAL subject to detailed design being submitted before construction.

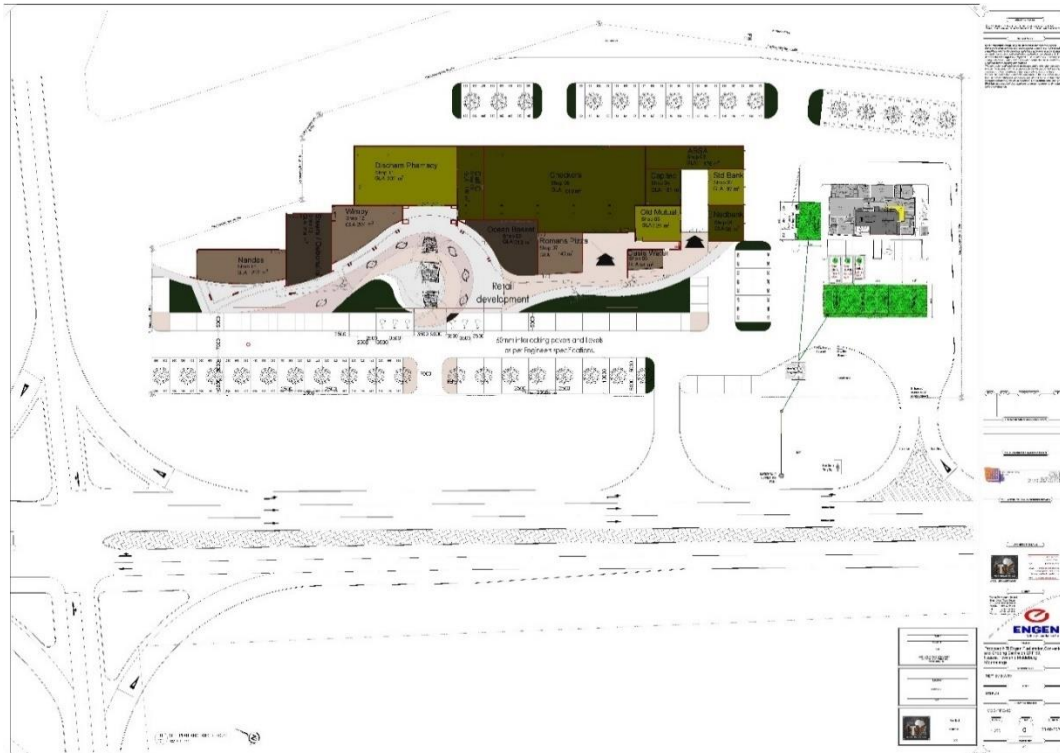


Figure 2.1: Proposed layout plan of the filling station and shopping centre

Figure 2.2 provides an indication of the conceptual layout plan for the filling station designed by H.T.N. A detailed layout plan indicating the exact location of the infrastructure as well as information pertaining to storm water management, oil traps, fuel leak monitoring system, etc. will however, only be available once an oil company (e.g. Engen) has been appointed.

In general, the proposed filling station (**Figure 2.2**) will consist of:

- Underground tanks (93 Unleaded 23m³, 95 Unleaded 46m³ and diesel 46m³);
- Pump island (above-ground fuel pumps and hose dispensers);
- Associated pump and tank infrastructure (e.g. delivery pipes, fillers, suction pumps, etc.);
- Canopy covered forecourt with 10 vehicle refuelling bays;
- Convenience store (including fast food outlet),
- ATM;
- Car parking and Delivery parking areas;
- Ablution facilities;
- Storm water channel and containment slab with catchpit;
- Landscaped area.

The forecourt and refuelling bays will be located in the southern portion and the underground tanks in the south western portion (**Figure 2.2**). The tanks will comprise of 5 23 000 litter underground tanks and associated infrastructure. Two (2) tanks will be installed for diesel, 2 for 95 Unleaded petrol and 1 for 93 Unleaded petrol. Based on the installation of five (5) underground tanks, approximately 115 000 litters or 115m³ of fuel would be stored on site. As indicated on the current layout plans (Figures 2.1), the convenience store and parking bays will be located in the south eastern portion of the site. The Shopping centre is on the northeast of the site. Access to the site would be from the south eastern and north western corners of the site (Figure 2.2).

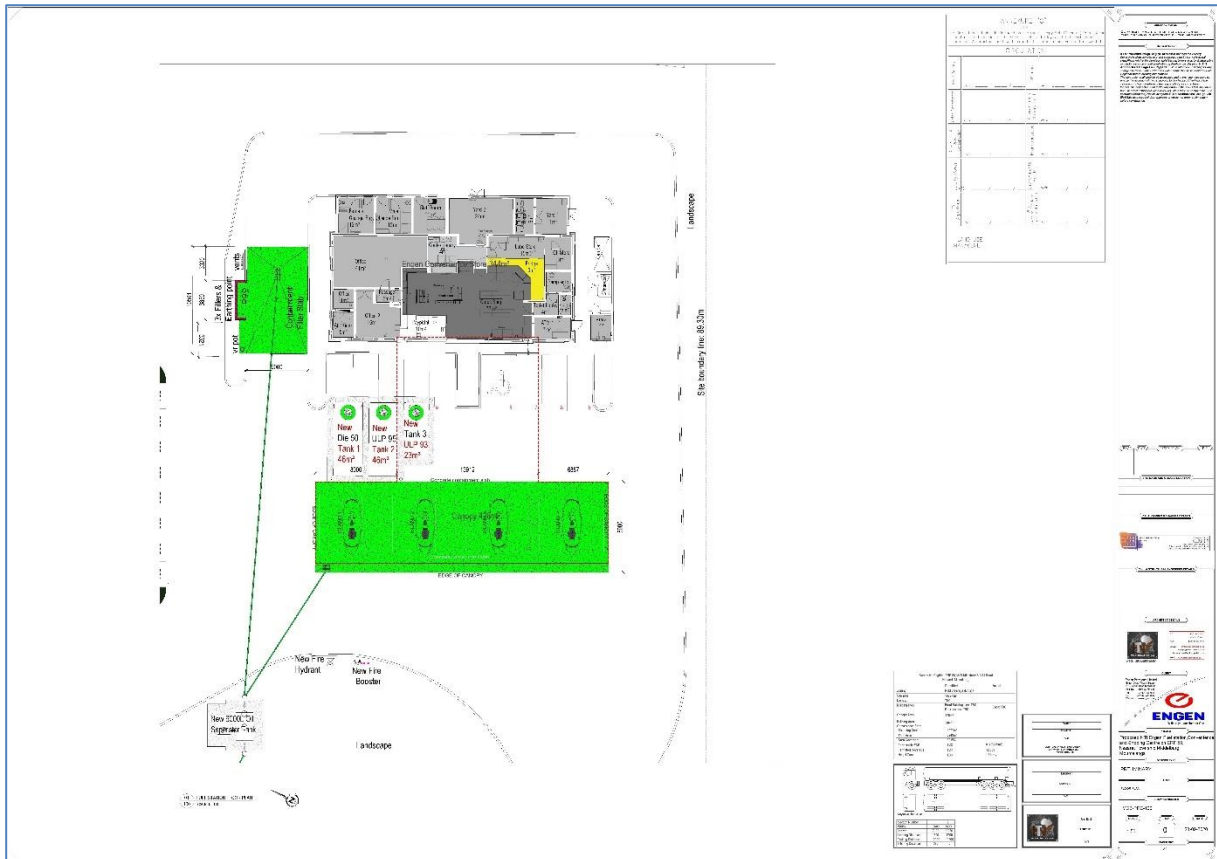


Figure 2.2: Conceptual layout plan of the filling station

Fuel dispensing and courtyard area:

As indicated in **Figure 2.2**, the forecourt and pump islands will be located in the south western portion of the site. For ease of access, a separate refuelling point (diesel island) will be provided for large trucks in the western portion of the site (Figure 2.2). The tanks would be located at least 3m clear of any building. The following dimensions would be applicable for the tank installation excavation:

- Length: 1m in excess of overall length of tank
- Breadth: 1m in excess of tank diameter
- Depth: The top of the tank must be a minimum depth of 1250mm below finished ground level. In the unlikely event that a high groundwater level occurs on site, the tanks would be safeguarded against movement or floating by means of reinforced concrete saddles.

In general, the underground tanks would be refuelled through fillers located a few meters from the tanks. Fuel would then be pumped from the underground tanks to the above-ground pump islands (fuel pumps) via delivery pipes by using either suction pumps or submersible turbine pumps. Concrete islands (with crash barriers) would be provided on which the fuel pumps (with hose dispensers) and air supply would be constructed. In order to prevent soil and water pollution as a result of accidental spills, the forecourt (would be located on top of a concrete containment slab. A storm water channel with catchpit would be installed along the southern boundary of the forecourt to capture any polluted runoff water. A canopy would also be installed, which would divert clean rainwater away from the forecourt area.

Fuel leak monitoring wells: Fuel leak monitoring wells would be installed at the filling station to monitor for possible tank leakage and to act as future observation wells. Usually, high-density polyethylene slotted/perforated pipes (160mm), wrapped in a porous geotextile or ABS single-walled wedge-slot tubular screens would be installed on the centre line of the tanks. The bottom ends would be plugged and the top ends finished off with a suitable plumber plug. The wells would be taken down to 500 mm – 1 m below the floor of the excavation depending on the nature of the soils.

Backfilling: Backfill material will be placed in 150 mm layers up to the top of the tank and will be well compacted at optimum moisture content (minimum 90% Mod AASHTO). If necessary, the tanks will be half-filled with water to prevent flotation caused by compaction of the backfill material. Once the excavations around the tanks have been backfilled, the manhole, concrete slab (saddle) and pipe work will be installed. Finally, the tanks will be backfilled with wet soilcrete (8:1 river sand: cement mix (4 X 50km/m³) up to the pavement formation level.

Construction standards: The underground tanks and related infrastructure will be installed in accordance with the various Health, Safety and Environmental policies and Standard Specifications of the appointed oil company. In addition, all work at the filling station will be done in accordance to the following SANS standards: SANS 10089 Part 3 (2010): The Petroleum Industry Part 3: The installation, modification, and decommissioning of underground storage tanks, pumps/dispensers and pipework at service stations and consumer installations. SANS 10089 Part 2 (2007). The petroleum industry Part 2: Electrical and other installations in the distribution and marketing sector. SANS 1535 (2007): Glass-reinforced polyester-coated steel tanks for the underground storage of hydrocarbons and oxygenated solvents and intended for burial horizontally.

2.3 Bulk Services Requirements

The said site is located within the Steve Tshwete Local Municipality (STLM) urban boundary and forms part of Middelburg area which is already serviced by the municipality. The link services (roads and electricity) and the internal reticulation (water, sewer, electricity, streets and street lighting) of the development will be done by the developer to the satisfaction of the STLM. It is accepted that the publication "Guidelines for Human Settlement Planning and Development services" will be used as a guideline for the design of internal and external services for the proposed development.

Water and fire fighting

The proposed filling station and the adjacent Shopping Centre (belonging to the project applicant) will connect to the existing water distribution network as currently there are water services available in the near vicinity of the

proposed development site located on Peterson Road. The exact water connection is yet to be determined through liaison with Steve Tshwete Local Municipality. It is advisable to use a 110mm diameter PVC Class 16 pipe connected to the existing 160mm diameter water pipe to service the Proposed Development. Water to service the Proposed Development will be drawn from the afore-mentioned existing water pipe and a water meter will be installed at an approved position by Steve Tshwete Local Municipality.

Water for firefighting will also be obtained from the Steve Tshwete Local Municipality. All fire-fighting controls will be in accordance with the National Building Regulations, the SANS Code of Practice (related to Community Protection against Fire) and with "Red Book" standards. The Fire Department of the Steve Tshwete Local Municipality will be consulted with regards to the fire water design and required approvals obtained.

Sewage: There is an existing municipal sewer reticulation line located on the north east corner of the proposed Development, the exact sewer connection is yet to be determined through liaison with Steve Tshwete Local Municipality.

Electricity: The proposed filling station will connect to the existing electrical network of Middelburg.

Waste management

During the construction phase, building rubble and a small amount of domestic waste will be generated. The contractor will have to provide adequate containers for the collection of waste. The applicant will have to ensure that the contractors remove the said building rubble and domestic waste to the licenced Rietfontein Waste Disposal Site. Any hazardous waste (e.g. soil contaminated with fuel/oil, paint tins, etc.) will have to be disposed at a Hazardous Waste Disposal Facility by a company dealing with such waste. During the operational phase, domestic waste will be collected by the STLM and disposed of at the licensed Rietfontein Waste Disposal Site. It is recommended that recycling forms part of waste management at the filling station in order to reduce the amount of waste to be disposed of. Items such as paper, cans and bottles should be separated at source and either reused or collected by a recycling company. Any hazardous waste (e.g. empty oil cans, contaminated cloth/paper/sand, etc.) should be stored in a separate bin and disposed of by an appointed company at a licensed Hazardous Waste Disposal Facility

Storm water control measures

The stormwater will be separated from the contaminated water via an oil separator. The containment slab under the canopy and the filler slab will be connected to the sewer system. The stormwater will be separated from these slabs via a network of valleys to ensure no contamination. delivery pavements will be routed via a grease/oil separator in order to remove any potential contaminants.

Access road

Figure 2.1 provides an indication of the proposed layout plan and access roads. Access to the site will be provided directly from the N11 highway.

Please see **Appendix G4** (Services Report) for further details on the bulk services.

2.4 Details of Alternatives Considered

The extent of the study area and the selection of the alternative alignment positions gave consideration to aspects such as ecological impacts, social impacts, visual impacts, technical feasibility and cost. The applicant identified

the opportunity to develop a filling station and shopping centre on ERF 59, Nazaret Township in Middelburg at the corner of Kilo street & N11 Road. It was decided to develop the said site due to the following:

- The property already belongs to the applicant and is undeveloped;
- The property is large enough for the activity i.e. 2ha, and developmental footprint is 6249m²
- The site forms part of an established township development, and is zone for a Business 2 by the municipality;
- Easy access to services (water, sewage, electricity, roads, storm water, waste removal) as the site is serviced as part of the established township Middelburg
- The site is easily accessible from the N11 highway.
- The site is highly visible to passing traffic utilizing the N11 which lends itself perfectly in terms of visibility of a filling station.
- The N11 national road makes the site ideal for a filling station since it is located at the entrance to the Middelburg town and easily accessible from the N4 highway;
- There are only two other filling stations located within a 3 km radius of the site.
- The project (i.e. the mall and filling station) will provide a convenient service to the general public visiting the Middelburg areas and surrounding businesses.
- The topography of the site is suitable for the activity. It is relatively flat, which will minimize the need for earthworks.

2.4.1 Site alternatives

No alternative sites were investigated since the said property belongs to the applicant. In addition, the applicant deems the proposed site to be the most feasible for a filling station.

2.4.2 Technology alternatives

The option of putting the tanks aboveground vs. underground have been assessed. Currently, the intention is to install five (5) underground petrol and diesel tanks as part of the filling station as indicated in Section 2.2. Alternatively, aboveground tanks could be installed instead of the planned underground tanks. Aboveground tanks are however, usually associated with fuel depots (catering for trucks) and not public filling stations. An aboveground facility would not fit in with the sense of place of the area and would have an aesthetic impact on the surrounding areas of Nazareth town, the new proposed shopping centre and motorists on the N11 highway. **The installation of aboveground fuel tanks was therefore discarded.**

2.4.3 No-go alternative

The 'no project option' is the alternative of not going ahead with the proposed development. The 'no project option' is only considered if it is found that the development will have significant negative impacts on the environment, which cannot be mitigated or managed. If the 'no project option' in terms of the proposed project was exercised, it would mean that:

The applicant would have to investigate other land uses (e.g. retail) for the site i.e. change current zoning to business;

- The site would remain vacant;
- The applicant would have to discard the proposed development plans;
- The applicant would have to investigate alternative sites for the proposed filling station;

- The applicant would have to sell the property; and
- Job opportunities (construction phase: ±20 employees; operational phase: ±10 employees) would be lost

3 LEGAL FRAMEWORK FOR EIA

Several other Acts, standards or guidelines have also informed the project process and the scope of issues assessed in this report. A listing of relevant legislation is provided in **Table 3.1**, where the level of applicability of the legislation or policy to the activity/project is detailed.

Table 3.2: Relevant legislative and permitting requirements applicable to the proposed project

LEGISLATION	APPLICABLE REQUIREMENTS <i>description of how the proposed development complies with and responds to the legislation and policy context, plans, guidelines, spatial tools, municipal development planning frameworks and instruments.</i>	RELEVANT AUTHORITY
The Constitution of South Africa	<p>The development has to comply with environmental right in the Bill of Rights in the Constitution of the Republic of South Africa (Act 108 of 1996), which reads as follows (Chapter 2, section 24): "Everyone has the right a) to an environment that is not harmful to their health or well-being; and b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:</p> <ul style="list-style-type: none"> i) prevent pollution and ecological degradation; ii) promote conservation; and iii) secure sustainable development and use of natural resources while promoting justifiable economic and social development." 	
National Environmental Management Act (Act No 107 of 1998)	<p>The EIA Regulations have been promulgated in terms of Chapter 5 of the Act. Listed activities which may not commence without an environmental authorisation are identified within these Regulations.</p> <p>In terms of S24(1) of NEMA, the potential impact on the environment associated with these listed activities must be assessed and reported on to the competent authority charged by NEMA with granting of the relevant environmental authorisation.</p> <p>The NEMA EIA Regulations in Government Notice R326 in Government Gazette No. 40772 came into effect on 7 April 2017. These Regulations regulate the procedure and criteria as contemplated in Chapter 5 of the Act relating to the preparation, evaluation, submission, processing and consideration of, and decision on, applications for environmental authorisations for the commencement of activities, subjected to environmental impact assessment, in order to avoid or mitigate detrimental impacts on the environment, and to optimise positive environmental impacts, and for matters pertaining thereto.</p> <p><i>Environmental Impact Assessment process being complied with according to the Section 24 of NEMA (Act 107 of 1998) and NEMA EIA Regulations GNR 982 (Government Gazette 38282, 14 December 2014), Regulation 19 under the National Environmental Management Act (NEMA) Act 107 of 1998:</i></p> <ul style="list-style-type: none"> <i>(a). Basic Assessment Report (BAR) –</i> <i>(b). Environmental Management Programme (EMPr)</i> 	Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs (MDARDLEA)
National Environmental Management Act (Act No 107 of 1998)	<p>In terms of the Duty of Care Provision in S28(1) the project proponent must ensure that reasonable measures are taken throughout the life cycle of this project to ensure that any pollution or degradation of the environment associated with this project is avoided, stopped or minimised.</p> <p>In terms of NEMA, it has become the legal duty of a project proponent to consider a project holistically, and to consider the cumulative effect of a variety of impacts.</p> <p><i>While no permitting or licensing requirements arise directly by virtue of the proposed project, this section will find application during the BA phase and will continue to apply throughout the life cycle of the project.</i></p>	MDARDLEA

LEGISLATION	APPLICABLE REQUIREMENTS <i>description of how the proposed development complies with and responds to the legislation and policy context, plans, guidelines, spatial tools, municipal development planning frameworks and instruments.</i>	RELEVANT AUTHORITY
National Water Act (Act No 36 of 1998)	<p>The development also triggers activities that require a Water Use License (WUL) because it crosses several water courses. Therefore, before construction activities may take place, the activity will require a Water Use License as per requirement in the National Water Act (Act No.36 of 1998) (NWA) under Section 21 Water Uses. In terms of the NWA, this development requires a Water Use License for the following water uses:</p> <ul style="list-style-type: none"> • Section 21(c) impeding or diverting the flow of water in a watercourse and; • Section 21 (i) altering the bed, banks, course or characteristics of a watercourse. <p><i>A water use license (WUL) is required in terms of Section 21(c) and 21 (i) of the National Water Act for the project.</i></p>	Department of Water and Sanitation (DWS)
National Environmental Management: Air Quality Act (Act No 39 of 2004)	<p>S18, S19, and S20 of the Act allow certain areas to be declared and managed as “priority areas.”</p> <p>Declaration of controlled emitters (Part 3 of Act) and controlled fuels (Part 4 of Act) with relevant emission standards.</p> <p>GN R 827 – National Dust Control Regulations prescribes general measures for the control of dust in all areas</p>	MDARDLEA & Local Municipality
National Heritage Resources Act (Act No 25 of 1999)	<ul style="list-style-type: none"> • S38 states that Heritage Impact Assessments (HIAs) are required for certain kinds of development including <ul style="list-style-type: none"> ○ The construction of a road, power line, pipeline, canal or other similar linear development or barrier exceeding 300 m in length; ○ Any development or other activity which will change the character of a site exceeding 5 000 m² in extent • The relevant Heritage Authority must be notified of developments such as linear developments (i.e. roads and power lines), bridges exceeding 50 m, or any development or other activity which will change the character of a site exceeding 5 000 m²; or the re-zoning of a site exceeding 10 000 m² in extent. This notification must be provided in the early stages of initiating that development, and details regarding the location, nature and extent of the proposed development must be provided. • Stand-alone HIAs are not required where an EIA is carried out as long as the EIA contains an adequate HIA component that fulfils the provisions of S38. In such cases only those components not addressed by the EIA should be covered by the heritage component. <p><i>A Heritage Impact Assessment (HIA) was compiled to identify, assess and, if necessary, mitigate against areas of heritage significance.</i></p>	Mpumalanga Provincial Heritage Resource Authority (MPHRA) South African Heritage Resources Agency (SAHRA)
National Environmental Management: Biodiversity Act (Act No 10 of 2004)	<p>In terms of S57, the Minister of Environmental Affairs has published a list of critically endangered, endangered, vulnerable, and protected species in GNR 151 in Government Gazette 29657 of 23 February 2007 and the regulations associated therewith in GNR 152 in GG29657 of 23 February 2007, which came into effect on 1 June 2007.</p> <p>In terms of GNR 152 of 23 February 2007: Regulations relating to listed threatened and protected species, the relevant specialists must be employed during the EIA Phase of the project to incorporate the legal provisions as well as the regulations associated with listed threatened and protected species (GNR 152) into specialist reports in order to identify permitting requirements at an early stage of the EIA Phase.</p> <p>The Act provides for listing threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), vulnerable (VU) or protected. The first national list of threatened terrestrial ecosystems has been gazetted, together with supporting information on the listing process including the</p>	MDARDLEA

LEGISLATION	APPLICABLE REQUIREMENTS <i>description of how the proposed development complies with and responds to the legislation and policy context, plans, guidelines, spatial tools, municipal development planning frameworks and instruments.</i>	RELEVANT AUTHORITY
	<p>purpose and rationale for listing ecosystems, the criteria used to identify listed ecosystems, the implications of listing ecosystems, and summary statistics and national maps of listed ecosystems (National Environmental Management: Biodiversity Act: National list of ecosystems that are threatened and in need of protection, (GG 34809, GN 1002), 9 December 2011). GNR 598: The Alien and Invasive Species (AIS) Regulations provides for the declaration of weeds and invader plants.</p> <p><i>An ecological study has been undertaken as part of the BA process, as such the potential occurrence of critically endangered, endangered, vulnerable, and protected species and the potential for them to be affected has been considered within this report.</i></p>	
National Forests Act (Act No. 84 of 1998)	<p>In terms of S5(1) no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree, except under a license granted by the Minister to an (applicant and subject to such period and conditions as may be stipulated” GN 908 provides a list of protected tree species.</p> <p><i>While no permitting or licensing requirements arise from this legislation, and this Act will find application during the construction and operational phase of the project.</i></p>	Department of Agriculture, Forestry and Fisheries
National Veld and Forest Fire Act (Act 101 of 1998)	<p>In terms of S13 the landowner would be required to burn firebreaks to ensure that should a veldfire occur on the property, that it does not spread to adjoining land.</p> <p>In terms of S13 the landowner must ensure that the firebreak is wide and long enough to have a reasonable chance of preventing the fire from spreading, not causing erosion, and is reasonably free of inflammable material. In terms of S17, the applicant must have such equipment, protective clothing, and trained personnel for extinguishing fires.</p> <p><i>While no permitting or licensing requirements arise from this legislation, and this Act will find application during the construction and operational phase of the project.</i></p>	Department of Agriculture, Forestry and Fisheries
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)	<p>The Minister may by notice in the <i>Gazette</i> publish a list of waste management activities that have, or are likely to have, a detrimental effect on the environment.</p> <p>The Minister may amend the list by –</p> <ul style="list-style-type: none"> • Adding other waste management activities to the list. • Removing waste management activities from the list. • Making other changes to the particulars on the list. <p>In terms of the Regulations published in terms of this Act (GN 921), A Basic Assessment or Environmental Impact Assessment is required to be undertaken for identified listed activities (Category A and B) while Category C Activities (such as storage of waste) must be undertaken in accordance with the necessary norms and standards.</p> <p>Any person who stores waste must at least take steps, unless otherwise provided by this Act, to ensure that:</p> <ul style="list-style-type: none"> • The containers in which any waste is stored, are intact and not corroded or in any other way rendered unfit for the safe storage of waste. • Adequate measures are taken to prevent accidental spillage or leaking. 	MDARDLEA

LEGISLATION	APPLICABLE REQUIREMENTS <i>description of how the proposed development complies with and responds to the legislation and policy context, plans, guidelines, spatial tools, municipal development planning frameworks and instruments.</i>	RELEVANT AUTHORITY
	<ul style="list-style-type: none"> • The waste cannot be blown away. • Nuisances such as odour, visual impacts and breeding of vectors do not arise; and • Pollution of the environment and harm to health are prevented. <p><i>As no waste disposal site is to be associated with the proposed project, no permit is required in this regard. Waste handling, storage and disposal during construction and operation is required to be undertaken in accordance with the requirements of the Act, as detailed in the EMP. The volumes of waste to be generated and stored on the site during construction and operation of the facility will not require a waste license.</i></p>	
National Road Traffic Act (Act No 93 of 1996)	<ul style="list-style-type: none"> • The technical recommendations for highways (TRH 11): “Draft Guidelines for Granting of Exemption Permits for the Conveyance of Abnormal Loads and for other Events on Public Roads” outline the rules and conditions which apply to the transport of abnormal loads and vehicles on public roads and the detailed procedures to be followed in applying for exemption permits are described and discussed. • Legal axle load limits and the restrictions imposed on abnormally heavy loads are discussed in relation to the damaging effect on road pavements, bridges, and culverts. • The general conditions, limitations, and escort requirements for abnormally dimensioned loads and vehicles are also discussed and reference is made to speed restrictions, power/mass ratio, mass distribution, and general operating conditions for abnormal loads and vehicles. Provision is also made for the granting of permits for all other exemptions from the requirements of the National Road Traffic Act and the relevant Regulations. <p><i>An abnormal load/vehicle permit may be required to transport the various components to site for construction.</i></p>	South African National Roads Agency Limited (SANRAL) (national roads) Provincial Department of Transport
Conservation of Agricultural Resources Act (Act No 43 of 1983)	<p>The Regulations provides a number of prohibitions of noise nuisance conditions one which states: “No person shall – erect a building or structure on residential premises or allow it to be erected there if this may cause a noise or nuisance”.</p> <p><i>While no permitting or licensing requirements arise from this legislation, this Act will find application during the BA process and will continue to apply throughout the life cycle of the project.</i></p>	DAFF
Development Facilitation Act (Act No 67 of 1995)	<p>The Development Facilitation Act contains development facilitation regulations under the Regulations under Development facilitation Act 3. The Act is directed at provincial and local spheres of government; and serves to re-address the imbalances of the past and to ensure that there is equity in the application of spatial development planning and land use management systems.</p> <p>Provides for the overall framework and administrative structures for planning throughout the Republic.</p> <ul style="list-style-type: none"> • S (2-4) provide general principles for land development and conflict resolution. <p>The applicant must submit a land development application in the prescribed manner and form as provided for in the Act. A land development applicant who wishes to establish a land development area must comply with procedures set out in the DFA.</p>	MDARDLEA
Occupational Health and Safety Act (Act No. 85 of 1993)	<p>The Occupational Health and Safety Act provides for the health and safety of persons at work and for the health and safety of persons in connection with the use of machinery; the protection of persons other than persons at work, against hazards to health and safety arising out of or in connection with the activities of persons at work.</p>	

LEGISLATION	APPLICABLE REQUIREMENTS <i>description of how the proposed development complies with and responds to the legislation and policy context, plans, guidelines, spatial tools, municipal development planning frameworks and instruments.</i>	RELEVANT AUTHORITY
	<p><i>The proposed development site and crew are to be managed in strict accordance with the Occupational Health and Safety Act (Act No. 85 of 1993) [OHSA] and the National Building Regulations.</i></p>	
<p>National Building Regulations and Building Standards Act, 1997 (Act No. 103 of 1997)</p>	<p>Section 7 of the National Building Standards and Building Regulations Act states that “council must be satisfied that buildings or structures are not dangerous to life or property”.</p> <p><i>The proposed development is in line with the Act as the structure is not deemed dangerous to life or property.</i></p>	
<p>National Development Plan 2030</p>	<p>The National Development Plan (NDP) offers a long-term perspective. It defines a desired destination and identifies the role different sectors of society need to play in reaching that goal.</p> <p>As a long-term strategic plan, it serves four broad objectives:</p> <ul style="list-style-type: none"> • Providing overarching goals for what the nation want to achieve by 2030. • Building consensus on the key obstacles to us achieving these goals and what needs to be done • to overcome those obstacles. • Providing a shared long-term strategic framework within which more detailed planning can take • place in order to advance the long-term goals set out in the NDP. • Creating a basis for making choices about how best to use limited resources. <p>The Plan aims to ensure that all South Africans attain a decent standard of living through the elimination of poverty and reduction of inequality. The core elements of a decent standard of living identified in the Plan are:</p> <ul style="list-style-type: none"> • Housing, water, electricity and sanitation • Safe and reliable public transport • Quality education and skills development • Safety and security • Quality health care • Social protection • Employment • Recreation and leisure • Clean environment • Adequate nutrition <p><i>The proposed development does not take place in contrast with the objectives of the NDP, in fact the proposed development supports the objectives of the NDP.</i></p>	
<p>Public Participation Guideline in terms of National Environmental Management Act, 1998 - (Department of Environmental Affairs 2017)</p>	<p>Guideline document in conducting the Public Participation Process for Basic Assessments. This document was used to guide the public participation process for the proposed development, including Chapter 6 of GN. R 982.</p>	<p>Department of Environmental Affairs</p>

4 PUBLIC PARTICIPATION PROCESS

The Public Participation Process (PPP) was conducted in accordance with **Chapter 6 of the Environmental Impact Assessment Regulations, Published in Government Notice R326 in Government Gazette No. 40772 on 7 April 2017**. In addition, the PPP was guided by the Integrated Environment Management Guidelines Series 7, Public Participation in the EIA process, published in Government Gazette no. 33308, 18 June 2010.

4.1 Purpose of Public Participation

The engagement of Interested and Affected Parties (I&AP's) and the Stakeholder Engagement Process is an important part of any environmental Impact assessment. The main objectives of the Stakeholder Engagement / Public Participation Process include amongst others:

- Informing the adjacent landowners, tenants, residents' associations, ward councillors, the local municipality and other organs of state of the proposed project;
- Establishing lines of communication between the stakeholders, I&AP's and the project team;
- Providing all parties with an opportunity to exchange information and to express their views and concerns regarding the proposed project;
- Obtaining comments/input from stakeholders and I&AP's, and ensuring that all views, issues, concerns and queries raised are fully documented; and
- Identifying all the significant issues associated with the proposed project

4.2 Public Participation Undertaken

In terms of the requirement of Chapter 6 of the EIA Regulations, the following key public participation tasks are required to be undertaken:

- Fixing a notice board at a place conspicuous to the public at the boundary or on the fence of—
 - (i) the site where the activity to which the application relates is or is to be undertaken; and
 - (ii) any alternative site mentioned in the application;
- Giving written notice to:
 - (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
 - (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
 - (v) the municipality which has jurisdiction in the area;
 - (vi) any organ of state having jurisdiction in respect of any aspect of the activity; and
 - (vii) any other party as required by the competent authority.
- Placing an advertisement in:
 - (i) one local newspaper; and

- (ii) in at least one provincial newspaper.
- Open and maintain a register/ database of interested and affected parties and organs of state.
- Release of a Draft EIA Report for Public Review
- Preparation of a Comments and Responses Report which documents all of the comments received and responses from the project team.

In compliance with the requirements of Chapter 6, the following summarises the key public participation activities conducted to date.

4.2.1 Placement of Site Notices

Site notices were displayed in different points within the study area. This is included in **Appendix D1**.

4.2.1 Written notifications

Access to all information that could influence interested and affected parties has been initiated by the project announcement, which included the placement of site notices and distribution of Background Information Documents (BID's) in the areas. A Background Information Document was produced and distributed during the initial PPP phase in the form of a i) email distribution to registered I&APs ii) a "knock and drop" exercise during visits to surrounding areas iii) registered mail posted to I&APs with no email contacts and lastly iv) a notification to of the project progress. These are all included in **Appendix D2**.

4.2.2 Newspaper advertisement

Newspaper advertisements was placed in the *Middelburg Observer Newspaper* requesting Interested and Affected Parties (I&APs) to register, and submit their comments. This is included in **Appendix D3**.

4.2.3 Review of the Draft Basic Assessment Report

The draft BA Report was publicly made available to all registered I&AP's for public review for 30-day review period from **29 January 2021 to 01 March 2021** at

- Nasaret Public Library: Velddrif St Nazareth, Tel. 013 246 1414
- Ward 8 Cllr Johanna Mitchell, Tel: 072 066 4386
- Dropbox link sent to registered I&APs via email; and
- Email copy of the BAR document (without appendices) sent to registered I&APs via email

4.2.4 Summary of Issues Raised by I&AP's

Issues and concerns raised by I&AP's will be integrated into the Issues and Responses Report. The issues and concerns were raised by means of

- issues raised during open day meeting and focus group meetings;
- written submissions in response to advertisements
- telephonic communications with I&AP's;
- issues raised through written correspondence received from I&AP's (fax, email and mail).

All comments received from IAPs are included in **Appendix D4** of this report.

4.2.5 Consultation with IAPs

In order to accommodate the varying needs of stakeholders and I&APs within the study area, as well as capture their views, issues and concerns regarding the project, various opportunities will be provided in order for I&APs to have their issues noted. I&APs will be consulted through the following means:

- Telephonic consultation sessions
- Written, faxed or e-mail correspondence
- Virtual meetings

4.2.6 Comments and Responses Report

At the end of the announcement phase, all comments/input from stakeholders and I&AP's, will be captured in the Issues and Response Report (IRR) which formed part of the Final BA Report. The Comments and Response Report includes responses from members of the EIA project team and/or the project proponent.

This is included in **Appendix D6**.

4.2.7 Identification of I&APs and establishment of a database

Identification of I&APs was undertaken by Envirolution Consulting through existing contacts and databases, recording responses to site notices and the newspaper advertisement, as well as through the process of networking. The key stakeholder groups identified include authorities, local and district municipalities, public stakeholders, Parastatals and Non-Governmental Organisations All relevant stakeholder and I&AP information has been recorded within a database of affected parties. While I&APs were encouraged to register their interest in the project from the onset of the process undertaken by Envirolution Consulting, the identification and registration of I&APs has been on-going for the duration of the EIA phase of the process.

This is included in **Appendix D7**.

5 DESCRIPTION OF THE AFFECTED ENVIRONMENT

This section provides a description of the environment that may be affected by the proposed project, as stipulated in the EIA Regulations (Appendix 3 Section (h) iv). The requirement is that the description of the footprint should focus on the Geographical, physical, biological, social, economic, heritage and cultural aspects. The environmental specialist studies that were undertaken to inform this section of the BA Report and have focussed on significant environmental issues of the project.

5.1 Soils, Topography and Climate

Bb 14: Plinthic catena: dystrophic and/or mesotrophic; red soils not widespread, upland duplex and margalitic soils rare. This soil type does not have an association with wetlands (Fey, 2005)

Highly variable landscape with extensive sloping plains and a series of ridges slightly elevated over undulating surrounding plains. The vegetation is species-rich, wiry, sour grassland alternating with low, sour shrubland on rocky outcrops and steeper slopes. The geology of the region is made up of mudrock, sandstone, conglomerate, volcanic rocks of the Loskop Formation of the Transvaal Supergroup.

Strongly seasonal summer-rainfall, warm-temperate region, with very dry winters. MAP is 654 mm, ranging between 570 mm and 730 mm, slightly lower in the western regions. The coefficient of variation of MAP is 28% in the west and 26–27% in the east, and varies only slightly from 25% to 29% across the unit. The incidence of frost is higher in the west (30–40 days) than in the east (10–35 days)

5.2 Land uses

The surrounding areas are mostly existing urban areas, consisting of a mixture of residential and industrial. There are areas of open vegetation to the east, but these are mostly cut off from the site by linear infrastructure and disturbance. This open area includes a shallow drainage line that is within 140 m of the edge of the site. There is no existing infrastructure on site, but it contains a row of exotic trees, some dumped material and some footpaths.

Based on historical aerial imagery in 2008 (**Figure 5.1**) it can be seen that infrastructure, especially housing, has greatly increased surrounding the study site (**Figure 5.2**). The surrounding development has kept clear from the nearby wetland, although the increase in residents in the area has resulted in increased footpaths across the wetland, as well as some mud and soil harvesting from the wetland to produce bricks and other products.



Figure 1.1: Historical image of the study site in 2008.



Figure 5.2: 2008 aerial image indicating the current conditions of the study site and surrounding.

5.3 Vegetation

Vegetation Overview: According to the most recent vegetation map of the country (Mucina et al., 2005, SANBI 2018) the study area falls within one regional vegetation type, namely Rand Highveld Grassland. There is no other vegetation type mapped as being within close proximity to the site. Any remaining vegetation on site therefore falls within Rand Highveld Grassland.

The vegetation type occurs in a highly variable landscape with extensive sloping plains and a series of ridges slightly elevated over undulating surrounding plains. The vegetation is species-rich, wiry, sour grassland alternating with low, sour shrubland on rocky outcrops and steeper slopes. Most common grasses on the plains belong to the genera *Themeda*, *Eragrostis*, *Heteropogon* and *Elionurus*. There is a high diversity of herbs, many of which belong to the Asteraceae, which is also a typical feature. Rocky hills and ridges carry sparse (savannoid) woodlands with *Protea caffra* subsp. *caffra*, *P. welwitschii*, *Senegalia caffra* and *Celtis africana*, accompanied by a rich suite of shrubs among which the genus *Searsia* (especially *S. magalismonata*) is most prominent.

Vegetation conservation status: Rand Highveld Grassland is listed as Vulnerable in The National List of Ecosystems that are Threatened and need of protection (GN1002 of 2011), published under the National Environmental Management: Biodiversity Act (Act No. 10, 2004).

Mpumalanga Biodiversity Sector Plan (MBSP): According to the Mpumalanga Biodiversity Sector Plan, most of the site is mapped as "Heavily Modified" (Figure 5.3). This indicates that the remaining vegetation on site is not considered to be important for the conservation of biodiversity in the Province nor for maintaining ecological patterns in the landscape. The field survey differs from this assessment in that parts of the site were considered to have natural grassland, albeit in poor condition.



Figure 5.3: Mpumalanga Biodiversity Sector Plan of the site and surrounding areas.

Result of Vegetation survey: A full survey of this site was conducted on 6 November 2020 at the commencement of the growing season. At that time a checklist of species occurring on site was collected and the site was investigated in detail in order to ensure that all parts were covered during the survey. The site was traversed by foot and species listed as they were encountered. Plant names follow Germishuizen *et al.* (2005) and any taxonomic updates, as found on the SANBI website. The season of the survey was favourable and it is likely that many of species present on site were identifiable at the time of the survey. The survey was of adequate duration and intensity to characterise the flora of the site.

Red List plant species: For all listed plant species that occur in the general geographical area of the site, a rating of the likelihood of it occurring on site is given as follows:

- Low: no suitable habitats occur on site / habitats on site do not match habitat description for species;
- Medium: habitats on site match general habitat description for species (e.g. grassland), but detailed microhabitat requirements (e.g. rocky grassland on shallow soils overlying dolomite) are absent on the site or are unknown from the descriptions given in the literature or from the authorities;
- High: habitats found on site match very strongly the general and microhabitat description for the species (e.g. rocky grassland on shallow soils overlying dolomite);
- Definite: species found on site.

Vegetation patterns on site

Vegetation and habitat types on site are significantly determined by the land-use history of the site, with disturbance playing a role in determining species composition. The vegetation and habitat types identified on the site are shown in **Figure 5.4**.

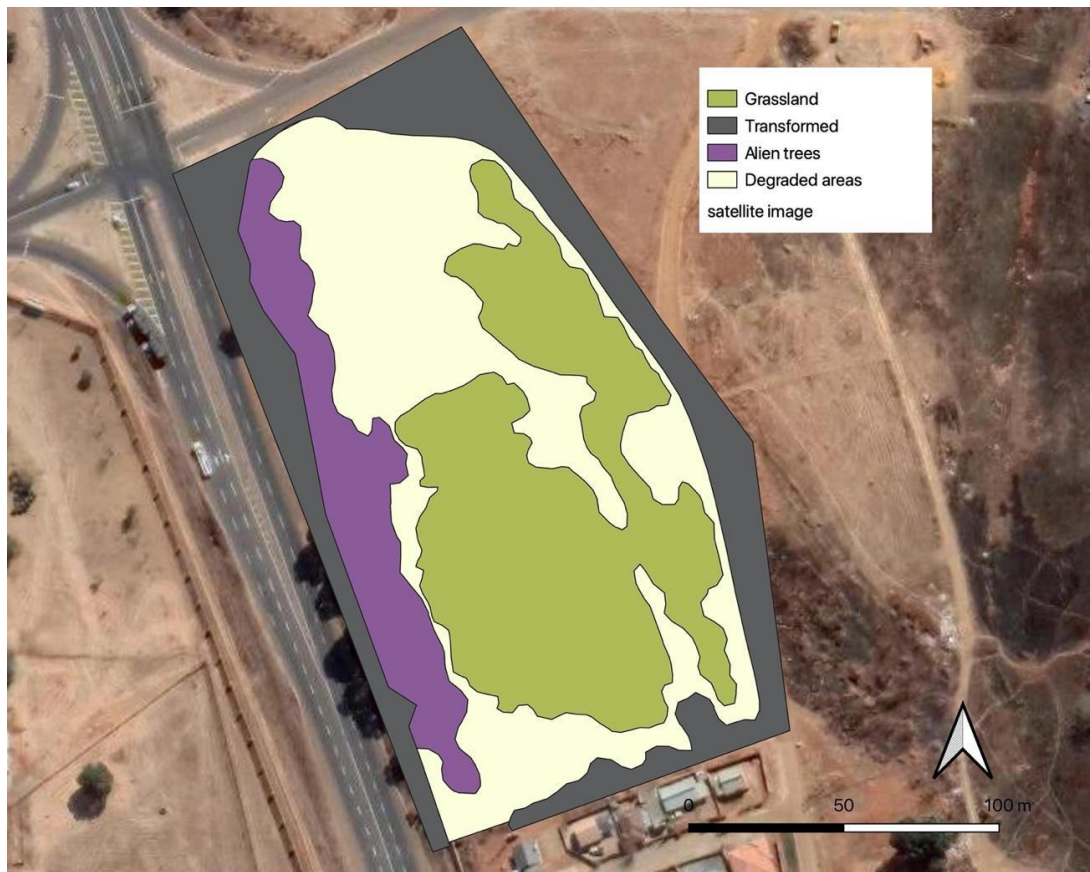


Figure 5.4: Landcover / habitats on site.

Significant parts of the site consist of previously disturbed areas, but there are also significant remaining areas of natural grassland. Within the previously disturbed area, the vegetation is secondary vegetation, and parts of the site consist of well-established, relatively old alien trees. The approximate areas (in hectares) of each habitat type on site is given in **Table 5.1**. This shows that approximately 1 hectare of the site is probably in a natural state out of a total area of 3 hectares. There is almost 2 hectares of altered or disturbed habitat. There are just over 0.5 hectares of completely transformed areas, i.e. areas in which no vegetation occurs at all. This is bare ground, buildings, roads and other hard surfaces.

Table 5.1: Areas in hectares and proportions of each habitat type found on site.

Habitat class	Status	Area (hectares)
Grassland	Natural	0.99
Alien trees	Altered	0.41
Disturbed areas, secondary vegetation, etc.	degraded, secondary	0.92
Transformed (roads, buildings, bare ground)	Altered	0.60
	TOTAL	2.92

Natural grassland is in various states from somewhat disturbed to moderate condition (**Figure 5.4a**). It is dominated by the grasses, *Eragrostis curvula*, *Heteropogon contortus*, *Brachiaria serrata*, *Hyparrhenia hirta*, *Cynodon dactylon*, *Eragrostis racemosa*, *Pogonarthria squarrosa*, and *Themeda triandra*, along with various forbs, including *Alysicarpus rugosus*, *Tephrosia capensis*, *Cucumis zeyheri*, *Rhynchosia totta*, *Gazania krebsiana*, *Cyanotis speciosa*, *Helichrysum nudifolium*, *Nidorella hottentotta*, *Ocimum obovatum*, *Elephantorrhiza elephantina*, *Felicia muricata*, *Pelargonium luridum*, *Acalypha angustata*, *Hypoxis obtusa*, *Anthospermum rigidum*, *Haplocarpha scaposa*, *Hermannia transvaalensis*, *Hibiscus microcarpus*, *Hilliardiella oligocephala*, *Hypoxis rigidula*, *Ipomoea bathycolpos*, *Kohautia amatymbica*, *Pygmaeothamnus chamaedendron*, *Ziziphus zeyheriana*, *Senecio isatideus*, *Senecio venosus*, *Leobordea divaricata*, *Lasiosiphon capitatum*, *Lasiosiphon kraussianus* and *Nidorella podocephala*. This is a relatively diverse species composition, despite the disturbed nature of the site. There were also a number of geophytes present, including *Hypoxis hemerocallidea*, *Albuca setosa*, *Ledebouria marginata*, *Ledebouria ovatifolia*, *Albuca virens*, and *Tulbaghia acutiloba*.



Figure 5.5a: Grassland vegetation on site



Figure 5.5b: Disturbed areas on site.

The northern half of the site has been heavily disturbed, including through the dumping of waste material on site. Within this secondary vegetation (**Figure 5.5b**), the species composition includes various weeds, including the species, *Arundo donax*, *Melia azeradach*, *Datura stramonium*, *Schinus molle*, *Erigeron bonariense*, *Guilleminea densa*, *Tagetes minuta*, *Verbena brasiliensis*, *Alternanthera pungens*, *Yucca gloriosa*, *Richardia brasiliensis*, *Urochloa panicoides*, *Argemone ochroleuca*, *Euphorbia serpens*, *Aristida congesta*, *Glandularia aristigera*, *Pennisetum clandestinum*, *Gomphrena celosioides*, and *Cynodon dactylon*. Various other weedy species occur in patches or singularly locally, but the majority of the area is dominated by the species listed above.

There are a number of places on site where alien trees have become established, but the largest concentration is a row of Eucalyptus trees along the western boundary that were probably originally planted as a wind-row on the margin of cultivated lands that existed there prior to urban development (**Figure 5.6**). Other than the planted trees, there are areas on site where alien trees have become established and are growing wild. These occur in various patches throughout the site.



Figure 5.6: Areas of alien trees within the site.

Disturbance on site: Except for the areas shown as natural, the vegetation on site is mostly secondary and disturbed. This is due to previous dumping of material on part of the site, the presence of roads adjacent to the site, and existing dwellings in neighbouring areas. The site is within an urban area and is adjacent to three roads as well as established infrastructure.

Flora of the site: All plant species found during the survey in remaining natural areas are listed in **Appendix E1**. Due to the fact that the fieldwork component of this survey was based on a single comprehensive survey in summer, the species list provided is likely to be relatively comprehensive, and provides a good indication of the species diversity and composition of the study area. It also provides adequate information for determining the natural status of habitats on site. In the species list (Appendix E1) all exotic species are indicated by an asterisk.

A total of 85 species were recorded on the site during the field survey, 17 of which are exotic and an additional 7 of which are declared weeds or invader plants. The proportion of naturalized exotic and invader species is high (28%),

an indication of the high levels of disturbance of habitat on site. Of the indigenous species on site, 8 are weeds of disturbed places or indigenous indicators of disturbance.

Plant species of concern: Listed species known for the grid in which the site is located are listed in Appendix E1. The list contains 16 species assessed according to IUCN Ver. 3.1 (IUCN, 2001) criteria (Appendix E1). None of the species listed in Appendix E1 has been previously recorded on site or on the farm upon which the site is situated / within 5km of the study site. On the basis of habitat preferences, the species could be allocated to habitats within the study area where they are most likely to be found. A total of 3 species were considered to have a moderate or high possibility of occurring on site (two Declining and one Near Threatened) and two declining species were found on site. The other species listed (Appendix E1) have a low chance of occurring in the study area.

Hypoxis hemerocallidea (Declining) was recorded in small numbers scattered throughout the study area within grasslands. This is a relatively widespread species in South Africa, often found in moist grasslands on slopes overlooking drainage lines. It is declining due to harvesting for medicinal purposes and not as a result of habitat loss. *Callilepis leptophylla* (Declining) was recorded as a single plant on site. It is widespread in the eastern parts of South Africa. It is declining due to harvesting for medicinal purposes and not as a result of habitat loss.

None of the other species listed in **Appendix E1** were found on site and, on the basis of the field survey and habitat requirements, there is a possibility that they could occur there.

Listed Ecosystem: The site is within Rand Highveld Grassland, listed as Vulnerable according to the National List of Ecosystems that are Threatened and need of protection (GN1002 of 2011), published under the National Environmental Management: Biodiversity Act (Act No. 10, 2004).

5.4 Wetland

Quaternary Catchment B12D is located in the 2nd Water Management Area (WMA), the Olifants: rivers include the Elands, Wilge, Steelpoort, Olifants and Letaba. The watercourse associated with the study site drains directly into the Klein-Olifants River, which is located directly east of the study site (**Figure 5.7**).

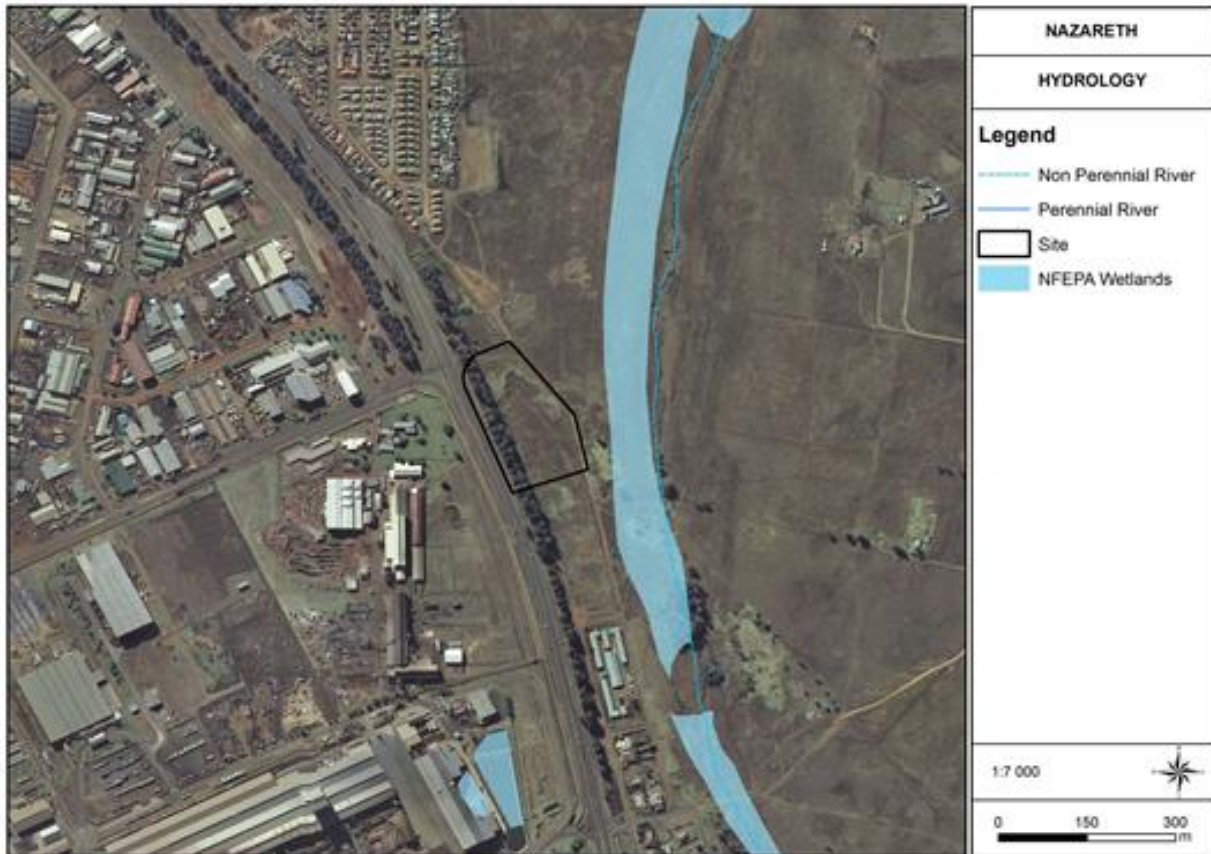


Figure 5.7: Regional hydrology of the study site and surrounding.

No wetland conditions were recorded on the study area. A channelled valley bottom wetland was however recorded approximately 85 m east of the study site (**Figure 5.8**). The wetland together with its calculated buffer zone of 22m therefore falls outside the study site and the development is unlikely to impact on the wetland. One possible exception is the accidental leaking of underground tanks. Any leak and/or spill could have potentially devastating effects on the wetland. However, if best practice guidelines are followed the probability of this is very small. The wetland is further buffered from the development site by dirt roads.



Figure 5.8: Regional hydrology of the study site and surrounding.

Wetland Functionality: The study site itself has been impacted by exotic woody vegetation growth as well as a section where rubble and dumped material is found. A stand of the invasive *Arundo donax* was recorded on the site. The wetland itself has been impacted by dumping, littering, footpaths, and informal brick making. Sewerage drains are located adjacent to the wetland and are likely to contribute to decreased water quality. Some of the impacts recorded on the study site are shown in the figures below (**Figure 5.9**).





Figure 5.9: Images of impacts recorded within and surrounding the wetland areas including dumping, leaking sewerage and recent fires.

Integrity and functional assessment

Present Ecological Status (Macfarlane *et al*, 2007): **2.7 C – Moderately modified**. Wetlands in this category are considered to be ecologically important and sensitive on a provincial or local scale. The biodiversity of these wetlands is not usually sensitive to flow and habitat modifications. They play a small role in moderating the quantity and quality of water in major rivers.

Ecological Impact and Sensitivity (DWAF, 1999): **1.8 (Moderate)** – ecologically important and sensitive on a provincial or local scale. The biodiversity of these wetlands is not usually sensitive to flow and habitat modifications. They play a small role in moderating the quantity and quality of water in major rivers.

5.5 Heritage Aspects of the area

5.5.1 Heritage:

One of the oldest maps of the region, Jeppe's Map of the Transvaal or South African Republic (**Figure 5.10**) dating to 1899, indicate the various farms in the larger region. The railway line as well as the road from the south are indicated on the map.



Figure 5.10: Section of Jeppe's Map of the Transvaal (1899).

The 1943 version of the official aerial photograph shows a landscape with little development in it. Most of the area has been subjected to agricultural activities. A farmstead can be seen located to the north and a large natural pan to the south. The latter has disappeared in recent times due to urbanisation activities. Twenty years later, as can be seen on the official aerial photograph dating to 1964 the situation is largely the same, apart from the development of what is now known as the N11 road which passes on the western side of the project area. The current situation, with most of the project area being surrounded by houses and light industrial developments

During the physical survey, the following sites, features and objects of cultural significance were identified in the project area:

Stone Age

- No sites, features or objects of cultural significance dating to the Stone Age were identified in the project area

Iron Age:

- No sites, features or objects of cultural significance dating to the Iron Age were identified in the project area.

Historic period:

- No sites, features or objects of cultural significance dating to the historic period were identified in the project area.

5.5.2 Paleontological overview

All Karoo Supergroup geological formations are ranked as **LOW** to **VERY HIGH**, and here the impact is potentially **MODERATE** for the Dwyka Group.

Trace fossils are relatively abundant in the shales occurring near the top of the Dwyka Group. Lycopods (*Leptophloem australe*) have been described from the northern Free State (Mac Rae 1999). Spores and acritarchs have been reported from the interglacial mudrocks of the Dwyka Group, also pollen, wood, and plant remain in the

interbedded mudrocks as well as the diamictite itself, while anthropod trackways and fish trails are present in places on bedding planes (Visser *et al.* 1990).

Details of the location and distribution of all significant fossil sites or key fossiliferous rock units are often difficult to be determined due to thick topsoil, subsoil, overburden and alluvium. Depth of the overburden may vary a lot.

The threats are:

- Earth moving equipment/machinery (front end loaders, excavators, graders, dozers) during construction,
- The sealing-in or destruction of fossils by development, vehicle traffic, and human disturbance.

5.6 Geotechnical and soil condition of the Site

Collapsible/Compressible Soil:

The colluvium is fine-grained and are considered to exhibit a collapsible grain structure and should therefore be regarded as being potentially collapsible and/or compressible. Soils with a collapsible grain structure consist of sand grains held apart by clay bridges that form an open, honeycomb type structure. When dry, these soils appear to have a high strength, however when subjected to simultaneous loading and saturation the clay bridges lose strength and the soil collapses into a denser state resulting in sudden settlement.

Expansive Soil:

The colluvium consists of a sand with a moderate silt and low clay content whilst the residual shale consists of nearly equal percentages of clay and silt with a low sand content as was confirmed by the results of the laboratory tests. The tests revealed that the residual shale (tested) is potentially "high" in the degree of expansiveness. According to the van der Merwe (1964) method of analysis total heave of 30mm is estimated at surface should the site soils change from a state of desiccation to one of saturation.

Foundations:

Foundation recommendations for the proposed Fuel Station Development are provided in this section. This is based on the observations and interpretations on site as well as on the results of the laboratory tests. The site was tentatively divided into two geotechnical zones

Shallow Seepage

Water seepage associated with a potential shallow perched water table was encountered at an **average depth of 2,8m** below surface in the tree test pits excavated within the southern portion of the site.

In addition, the water table is expected to rise during the wet season with subsequent saturation of the foundation soils which would have a detrimental effect on the bearing capacity.

Storm water run-off from the higher-lying ground (west) should be adequately controlled and disposed of to prevent possible flooding and/or erosion within the lower-lying eastern portion of the site. The above should be taken into consideration during design and construction to prevent problems both during as well as after construction.

The installation of seepage cut-off trenches around the up-slopes or sub-surface drainage systems and the construction of a water attenuation pond could be considered to deal with the above. In any case, the necessary damp proofing precautions should be taken underneath all structures and provision will have to be made to prevent ingress of water beneath foundations.

5.7 Social Characteristics of the Study Area and Surrounds

The purpose of this section is to provide an overview of the current socio-economic situation within the proposed project area. This section will provide a strategic understanding of the socio-economic profile of the study area, in order to develop a better understanding of the socio-economic performance as a background to the development of the project. The data presented in this section has been largely derived from the most recent (2011) Census, as well as the municipalities IDP.

5.7.1 Socio-Economic Context

The demographic features of Nkangala District Municipality (NDM) are investigated in this section. The purpose of the section is to provide an overview of the socio-economic characteristics of the district together with its local municipalities. Such an overview will assist in identifying the localized issues with reference to demographic and labour force dimensions. In order to provide comprehensive baseline information regarding the mentioned dimensions, the characteristics of the following salient features are investigated: Demographic features Employment characteristics, Employability. The socio-economic profiles are based on the official data provided by the Statistics South Africa. The above-mentioned features are presented and discussed under the fitting headings. The first socio-economic characteristic that is presented in the subsequent section relates to the demographic features.

DEMOGRAPHIC FEATURES

Before the various demographic features are presented, it is critical to provide the approach followed in determining the profiles. In order to provide updated benchmarks profiles, the Human Immunodeficiency Virus and Acquired Immune Deficiency Syndrome (HIV/AIDS) population status by municipality are taken into consideration in determining the demographic characteristics of the areas.

EMPLOYMENT CHARACTERISTICS:

High unemployment levels are an unfavorable situation and as such local municipalities have to generate new employment opportunities and the employment growth rates within the various economic sectors should be accelerated, then the unemployment rate in the local areas will decline. The high unemployment rate in the areas implies that there is insufficient disposable income and therefore the low buying capacity per individual. This also impacts the financial capacity of the local municipality to efficiently deliver adequate municipal services and will lead to high number of indigents. Furthermore, the low purchasing power within the local communities is likely to discourage potential investors to the area. The subsequent section presents an investigation into the employability of the overall population.

ANNUAL HOUSEHOLD INCOME

Annual household income is defined as the combined income of all members of the household. Consequently, the weighted average annual household income is determined.

The significant proportions of local households do not receive any formal annual income within the district. With respect to individual areas, magnitudes of “no income” category are determined and municipalities are ranked according to their proportions as follows:

1. Dr JS Moroka 38.8%
2. Thembisile 29.6%
3. Delmas 21.9%
4. Emalahleni 21.3%

- 5. Emakhazeni 15.4%
- 6. Steve Tshwete 15.2%

The above statistics indicate that new employment opportunities need to be generated throughout the district. The preceding table contains the distribution of households per income category. Therefore the weighted average annual household income for 2001 is calculated as follows:

- Steve Tshwete R53,231.33
- Emalaheni R48,092.81
- Emakhazeni R31,494.53
- Delmas R29,965.84
- Thembisile R17,574.31
- Dr JS Moroka R15,682.36

The preceding weighted average annual household income revealed that the households in Steve Tshwete and Emalaheni municipal areas have comparatively more disposable income for expenditure on goods and services. On the other hand, the populations in Thembisile and Dr JS Moroka areas receive annual income of less than R18,000 per annum and therefore have less disposable income for the purchase of commodities.

Source: <https://www.stevetshwetelm.gov.za/LED/LED%20Plan.pdf>

5.7.2 Socio-economic value of the activity

Anticipated CAPEX value of the project on completion	R 66 000 000,00
What is the expected annual turnover to be generated by or as a result of the project?	R 22 000 000,00
New skilled employment opportunities created in the <u>construction</u> phase of the project	14
New skilled employment opportunities created in the <u>operational</u> phase of the project	2
New un-skilled employment opportunities created in the <u>construction</u> phase of the project	94
New un-skilled employment opportunities created in the <u>operational</u> phase of the project	4
What is the expected value of the employment opportunities during the operational and construction phase?	R7 920 000,00

6 ASSESSMENT OF POTENTIAL IMPACTS

6.1 Impact Evaluation methodology

The purpose of impact assessment is to assign relative significance to predicted impacts associated with the project, and to determine the manner in which impacts are to be avoided, mitigated or managed. The potential environmental impacts were identified based on the nature of the receiving environment, a review of the proposed activities, and the issues raised in the public participation process.

The potential impacts of the proposed development were identified through a site visit, the Environmental Assessment Practitioners experience and expertise in the field and specialist study reports. In the Basic Assessment Report, the potential impacts are broadly identified and outlined. An assessment of the potential impacts is provided, identifying the impacts that are potentially significant and recommending management and mitigation measures to reduce the impacts. In general, it is recognized that every development has the potential to pose various risks to the environment as well as to the residents or businesses in the surrounding area. Therefore, it is important that these possible risks are taken into account during the pre-construction phase of the development.

In accordance with the requirements from the EIA Regulations 2014 GN 982, Regulation 19 (3) and as set out in Appendix 1, the following impacts of the issues identified through the basic assessment phase were assessed in terms of the following methodology. All impacts are assessed according to the following criteria.

- The **nature**, a description of what causes the effect, what will be affected, and how it will be affected.
 - * The **extent**, wherein it is indicated whether the impact will be local (limited to the immediate area or site of development), regional, national or international. A score of between 1 and 5 is assigned as appropriate with
 - * a score of 1 being site specific,
 - * 2 = local (site + immediate surrounds),
 - * 3 = regional (the impact could affect the area including the neighbouring farms, the transport routes and the adjoining towns)
 - * 4 = national and
 - * a score of 5 being international (where the impact has international ramifications that extend beyond the boundaries of South Africa).
- The **duration**, wherein it is indicated whether:
 - * The lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
 - * The lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;
 - * Medium-term (5–15 years) – assigned a score of 3;
 - * Long term (> 15 years) - assigned a score of 4; or;
 - * Permanent - assigned a score of 5.
- The **magnitude**, quantified on a scale from 0-10, where a score is assigned:
 - * 0 is small and will have no effect on the environment;
 - * 2 is minor and will not result in an impact on processes;
 - * 4 is low and will cause a slight impact on processes;
 - * 6 is moderate and will result in processes continuing but in a modified way;
 - * 8 is high (processes are altered to the extent that they temporarily cease); and
 - * 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- The **probability** of occurrence, which describes the likelihood of the impact actually occurring. Probability is estimated on a scale, and a score assigned:
 - * Assigned a score of 1–5, where 1 is very improbable (probably will not happen);

- * Assigned a score of 2 is improbable (some possibility, but low likelihood);
 - * Assigned a score of 3 is probable (distinct possibility);
 - * Assigned a score of 4 is highly probable (most likely); and
 - * Assigned a score of 5 is definite (impact will occur regardless of any prevention measures).
-
- The **significance**, which is determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high.
 - The **status**, which is described as positive, negative or neutral.
 - The degree to which the impact can be reversed.
 - The degree to which the impact may cause irreplaceable loss of resources.
 - The degree to which the impact can be mitigated.

The **significance** is determined by combining the criteria in the following formula:

$S = (E+D+M) P$; where

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance** weightings for each potential impact are as follows:

- **< 30 points: Low** (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- **30-60 points: Medium** (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- **>60 points: High** (i.e. Impact is significant, mitigation is critical to reduce impact or risk. Resulting impact could influence the decision depending on the possible mitigation. An impact which could influence the decision about whether or not to proceed with the project.).

6.2 Description and assessment of issues and potential impacts

The sections which follow provide a summary of the findings of the assessment of potential impacts associated with the construction and operation of the proposed construction of *the project*. The assessment of potential issues presented in this chapter has involved key input from specialist consultants, the public and the project proponent. Issues were assessed in terms of the criteria detailed in section 6.1. The nature of the potential impact is discussed, and the significance is calculated with and without the implementation of mitigation measures. Recommendations are made regarding mitigation/enhancement and management measures for potentially significant impacts and the possibility of residual and cumulative impacts are noted.

Table 6.1 and 6.2 briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the **CONSTRUCTION and OPERATION PHASE** for the various alternatives of the proposed development

6.2.1 Construction Phase Impacts

Table 6.1: A summary of anticipated significance of the potential direct, indirect and cumulative impacts that is likely to occur as a result of the CONSTRUCTION PHASE

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
1. IMPACT ON WATERCOURSES				
<p>Direct Impacts (1a) Changing the quantity and fluctuation properties of the watercourse by for example diverting or obstructing flow.</p> <p>Indirect Impacts: The sources of this impacts include the compaction of soil, the removal of vegetation, surface water redirection of water during construction activities</p> <p>Cumulative Impacts: The wetland is removed from the study site and activities should not affect water flow characteristics; cumulative impacts are therefore expected to be low</p>	Low	<ul style="list-style-type: none"> • Designs should take into account soil properties, slopes and runoff energy with the aim of having a neutral effect on the regional hydrograph. • A temporary fence or demarcation must be erected around No-Go Areas outside the proposed works area prior to any construction taking place as part of the contractor planning phase when compiling work method statements to prevent access to the adjacent portions of the watercourse. • Effective stormwater management should be a priority during both construction and operational phase. This should be monitored as part of the EMP. • High energy stormwater input into the watercourses should be prevented at all cost. Changes to natural flow of water (surface water as well as water flowing within the soil profile) should be taken into account. 	Low	Impacts to the flow characteristics of watercourses are unlikely to be very significant.
<p>Direct Impacts (1b): Changes in sediment entering and exiting the system</p> <p>Indirect Impacts:</p> <ul style="list-style-type: none"> • Disturbance of soil surface • Disturbance of slopes through creation of roads and tracks adjacent to the watercourse • Erosion (e.g. gully formation, bank collapse) <p>Cumulative Impacts: Contributing to the increased sediment load in this wetland system may occur if effective sediment control does not occur</p>	Medium	<ul style="list-style-type: none"> • Consider the various methods and equipment available and select whichever method(s) that will have the least impact on watercourses. • Sediment traps should be installed around the periphery of the site boundary. • Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area. • Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover. • Rehabilitation plans must be submitted and approved for rehabilitation of damage during construction and that plan must be implemented immediately upon completion of construction. • During the construction phase measures must be put in place 	Low	Expected to be limited provided that the mitigation measures are implemented correctly.

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
		to control the flow of excess water so that it does not impact on the surface vegetation. <ul style="list-style-type: none"> Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas. Monitoring should be done to ensure that sediment pollution is timeously dressed 		
<p>Direct Impacts (1c): Introduction and spread of alien vegetation</p> <p>Indirect Impacts: Once in a system alien invasive plants can spread through the catchment. If allowed to seed before control measures are implemented alien plants can easily colonise and impact on downstream users.</p> <p>Cumulative Impacts: Contribution to the local and downstream burden of alien invasive plants is likely to occur unless very carefully controlled.</p>	Medium	<ul style="list-style-type: none"> Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area and returning it where possible afterwards. Monitor the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to establish. Rehabilitate or revegetate disturbed areas 	Low	The release of alien vegetation seeds will increase an already burdened system. However, the contribution to alien vegetation resulting from the fuel station can be kept low if effective control is maintained during the operational phase
<p>Direct Impacts (1d): Loss and disturbance of watercourse habitat and fringe vegetation</p> <p>Indirect Impacts: Loss and disturbance of watercourse habitat and fringe vegetation due to direct development on the watercourse as well as changes in management, fire regime and habitat fragmentation. Since the site is removed from the wetland, this impact is not likely to occur.</p> <p>Cumulative Impacts: No cumulative impacts are expected since no specialised habitat will be disturbed</p>	Low	<ul style="list-style-type: none"> The development footprint should remain outside the delineated wetland and buffer zones. Demarcate the watercourse areas and buffer zones to limit disturbance, clearly mark these areas as no-go areas Monitor the establishment of alien invasive species within the areas affected by the construction and take immediate corrective action where invasive species are observed to establish 	Low	Nor residual risks are expected since the site is removed from the wetland and no disturbance to specialised habitat is expected to occur

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
<p>Direct Impacts (1e): Changes in water quality due to foreign materials and increased nutrients</p> <p>Indirect Impacts: Construction and operational activities may result in the discharge of solvents and other industrial chemicals, leakage of fuel/oil from vehicles and underground fuel tanks resulting in the loss of sensitive biota in the wetlands/ivers and a reduction in regional watercourse function.</p> <p>Cumulative Impacts: Expected to be moderate since pollution is already a problem in the region. Once in the system it may take many years for some toxins to be eradicated.</p>	<p>Medium</p>	<ul style="list-style-type: none"> • Locate the fuel station outside the wetland’s buffer zone • Implementation of appropriate stormwater management around the excavation to prevent the ingress of run-off into the excavation and to prevent contaminated runoff into the watercourse. • Provision of adequate sanitation facilities located outside of the watercourse area or its associated buffer zone • The development footprint must be fenced off from the watercourses and no related impacts may be allowed into the watercourse e.g. water runoff from cleaning of equipment, vehicle access etc. • After construction, the land must be cleared of rubbish, surplus materials, and equipment, and all parts of the land shall be left in a condition as close as possible to that prior to use. • Maintenance of construction vehicles / equipment should not take place within the watercourse • Measures should be put in place to prevent spills by for example constructing sumps or drains which can contain any spills in order for contaminated water to be isolated from the watercourse and removed from the site for appropriate disposal • A lined holding tank must have sufficient pumps and other measures to ensure that any spills are contained and can be safely removed without impact to the watercourse. • The design of the holding holding tank must accommodate 1:50 year floodlines to ensure that realistic flooding does not result in the release of hydrocarbons downstream. • Pumps in the sump must accommodate stormwater and rain as well as fuel spills. • A warning system, for example a float switch with alarm should ensure that any spills are timeously identified. • Standard Operating procedures, training drills and audits should be put in place and revised annually • 	<p>Low</p>	<p>Expected to be low to moderate.</p>

2. IMPACT ON VEGETATION

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
<p>Direct Impacts (2a): Loss of natural vegetation (grassland)</p> <p>There is some indigenous natural grassland remaining on site that is within a Listed Ecosystem, but not included in any Critical Biodiversity Area nor any Ecological Support Area. Construction of the proposed project will require clearing of these areas of remaining natural grassland. Although the amount of natural grassland is of very limited extent, loss is unavoidable and is permanent. No mitigation measure will counteract this. Any measures would therefore be to limit the extent of the impact (to the site). Magnitude is calculated here relative to the general area, not just the site itself. The impact occurs at the Construction Phase only.</p>	Medium	<ul style="list-style-type: none"> • Ensure that impact is contained within the footprint of the proposed development only. • Provision of adequate sanitation facilities located outside of the watercourse or its associated buffer zone. • Implementation of appropriate stormwater management around the excavation to prevent the ingress of run-off into the excavation and to prevent contaminated runoff into the watercourse. • After construction, the land must be cleared of rubbish, surplus materials, and equipment, and all parts of the land shall be left in a condition as close as possible to that prior to use. • Maintenance of construction vehicles / equipment should not take place within the watercourse or watercourse buffer. • Control of waste discharges and do not allow dirty water from operational activities to enter the watercourse • Treatment of pollution identified should be prioritized accordingly. 	Low	None
<p>Indirect Impacts:</p> <p>Alien plants are likely to invade the site as a result of the disturbance created during construction</p>				
<p>Cumulative Impacts:</p> <p>The impact is cumulative in the sense that it is part of an ongoing urbanisation process occurring here (and other parts of the country).</p>				
<p>Direct Impacts (2b): Loss of individuals of plant species of concern</p> <p>There are two plant species occurring on site that have been categorised as Declining (<i>Hypoxis hemerocallidea</i> and <i>Callilepis leptophylla</i>). This is a very low conservation category and is a flag to observe future trends in populations for the species. In both cases the categorisation is due to medicinal harvesting and not due to overall habitat loss, although habitat loss could possibly be a contributing factor in any future re-assessment of the status of the species. Nevertheless, neither species is in danger of extinction and loss of some individuals will have no effect on the conservation status of either species. Loss of plants is unavoidable, although individuals can be rescued. The value of this is, however, very limited, and loss of wild individuals cannot be compensated for by rescue activities. Magnitude is calculated here relative to the global population, not just the site itself. The impact occurs at the Construction Phase only. The duration is permanent for the plants lost on site,</p>	Low	<ul style="list-style-type: none"> • Ensure that impact is contained within the footprint of the proposed development only. • Individual plants can be rescued, although value of this is questionable and depends on the fate of the rescued individuals. • Ensure that impact is contained within the footprint of the proposed development only. • Provision of adequate sanitation facilities located outside of the watercourse or its associated buffer zone. • Implementation of appropriate stormwater management around the excavation to prevent the ingress of run-off into the excavation and to prevent contaminated runoff into the watercourse. • After construction, the land must be cleared of rubbish, surplus 	Low	None

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
but is assessed as short-term due to the very limited impact on overall population processes for the species.		materials, and equipment, and all parts of the land shall be left in a condition as close as possible to that prior to use. <ul style="list-style-type: none"> • Maintenance of construction vehicles / equipment should not take place within the watercourse or watercourse buffer. • Control of waste discharges and do not allow dirty water from operational activities to enter the watercourse • Treatment of pollution identified should be prioritized accordingly. 		
Indirect Impacts: Residual Risks: Degradation of habitat due to invasion by alien invasive plant species or a change in fire regime.				
Cumulative Impacts: The impact is cumulative in the sense that it is part of an ongoing urbanisation process occurring here (and other parts of the country).				
3. IMPACTS ON THE HERITAGE FEATURES				
Direct Impacts: Direct or physical impacts, implying alteration or destruction of heritage features As no sites, features or objects of cultural heritage significance were identified on the project area, there would be no impact as a result of the proposed development	Low	as no sites, features or objects of cultural significance were identified, no mitigation measures are proposed.	Low	Low
Indirect impacts: Impact of cultural heritage resources under threat of the proposed development, is				
Cumulative impacts: The loss of a number of archaeological sites				
4. VISUAL IMPACTS				
Direct Impacts: <ul style="list-style-type: none"> • Pollution may occur due to the littering and illegal dumping on the site and surrounding areas which can affect the visual character of the site. 	Low	<ul style="list-style-type: none"> • Ensure that no litter, refuse, waste, rubbish, rubble, debris and builders wastes generated on the premises be placed, dumped or deposited on adjacent or surrounding properties including road verges, roads or public places and open spaces during or after the construction period. All waste/litter/rubbish etc. must be disposed of at an approved dumping site as approved by the Council. • Bare surfaces must be rehabilitated as soon as possible with indigenous vegetation that will be able to grow in the area; • The landscape must be rehabilitated in such a way that it corresponds to the surrounding topography; 	Low	Medium
Indirect impacts: None				
Cumulative impacts:				

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
As more development establish in the area there will be a change in the visual character of the area from agriculture use to mixed land use.		<ul style="list-style-type: none"> • Manage construction activities in accordance with the accepted/ approved construction EMP. • Screen Construction site from neighbouring area by means of a fence and opaque cover/sheeting • Ensure appropriate housekeeping • No construction rubble, construction material, refuse, litter or any other material not found naturally in the surroundings should be allowed at any time to be lying around on the construction site 		
5. NOISE IMPACTS				
<p>Direct Impacts:</p> <ul style="list-style-type: none"> ○ Increase in noise pollution due to, among others, excavations and site clearing, noise from construction vehicles and construction staff and or drilling activities. ○ Noise pollution caused during construction could potentially be a nuisance to neighbouring residential areas. 	Medium	<ul style="list-style-type: none"> ○ Construction activities must be limited to normal working hours and according to municipal bylaws, i.e. working hours must be limited to weekdays only. ○ If construction is required on the weekend; permission from adjacent landowners will be required prior to construction. ○ No sound amplification equipment such as sirens, loud hailer or hooters are to be used on site except in emergencies and no amplified music is permitted on site. ○ Equipment that is fitted with noise reduction facilities (e.g. side flaps, silencers etc) must be used as per operating instructions and maintained properly during site operations. ○ Construction activities must abide by the national noise laws and the municipal noise by-laws with regard to the abatement of noise caused by mechanical equipment. ○ Introduce a formal recording system/grievance mechanism to capture public perceptions and complaints with regard to noise impact. 	Low	Medium
<p>Indirect impacts:</p> <p>None</p>				
<p>Cumulative impacts:</p> <p>As more development establish in the area there is a possibility that the ambient noise levels may change from that of agriculture/residential area to mixed use developed area.</p>				
6. IMPACTS ON THE AIR QUALITY				
<p>Direct Impacts:</p> <p>Construction activities have the potential to be sources of fugitive dust on site. These include:</p> <ul style="list-style-type: none"> ○ Dust from access roads. ○ Dust from area cleared for construction. ○ Emissions from construction machinery and equipment. ○ Trucks transporting spoil and fill material. 	Low	<ul style="list-style-type: none"> ○ Dust suppression measures must be implemented on access roads and working areas during dry periods. ○ Water used for this purpose must be in quantities that do not result in the generation of run-off. ○ Adherence to speed limits on site roads to prevent the liberation of dust into the atmosphere must be enforced ○ All site workers will need to wear the appropriate PPE ○ Transported material that can be blown off as dust must 	Low	Low

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
Indirect impacts: None		<ul style="list-style-type: none"> ○ Contractor to provide method statement of site-specific dust control measures ○ A speed limit of 40km/h to be maintained on all dirt roads. ○ Dust suppression by means of either water or biodegradable chemical agent is required. 		
Cumulative impacts: None				
7. TRAFFIC IMPACTS				
Direct Impacts: <ul style="list-style-type: none"> ○ Anticipated impact on traffic owing to construction vehicles and heavy vehicles delivering materials to the site. ○ Traffic congestion in and around the area may offend neighbouring property owners during the construction phase. 	Medium	The approval is subject to the following: <ul style="list-style-type: none"> ● Construction vehicles are not to be parked on the roads thereby blocking the way to the neighbouring properties. ● Clear signs should be displayed and entrance to the site indicating a construction site and turning construction vehicles. ● Construction vehicles are to avoid main roads during peak traffic hours and mitigation measures outlined in the EMPr are to be implemented. ● Ensure an appropriate access procedure to avoid backlog of traffic at the entry point to the site 	Low	Low
Indirect impacts: None				
Cumulative impacts: Possible traffic congestion or delays if no mitigation measures are implemented				
8. SOCIAL ECONOMIC (POSITIVE IMPACTS)				
Direct Impacts: Employment Opportunities In terms of employment opportunities, the following should be considered: <ul style="list-style-type: none"> ● The number of jobs that would be created during the construction and operational phase of the proposed project; and ● The extent to which certain groups such as the unemployed, disadvantaged and minority groups could be employed. ● Typical of a project of this nature, some specialised skills are required although some opportunities for local labour in the unskilled and semi-skilled categories would be available even if only of a limited nature. At this stage the extent of labour required is not finalised. 	Low	Enhancement: <ul style="list-style-type: none"> ○ It is recommended that local employment policy is adopted to maximize the opportunities made available to the local labour force. ○ Training and skills development programmes should be provided to all employees. ○ The recruitment selection process should seek to promote gender equality and the employment of women wherever possible. 	Medium	None, it is a positive impact
Indirect impacts: Economic multiplier effects from the use of local contractors such as (waste transporters and security personnel used to provide services on site)				

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
Cumulative impacts: Possible economic boost				

6.2.2 Operational Phase Impacts

Table 6.2: A summary of anticipated significance of the potential direct, indirect and cumulative impacts that is likely to occur as a result of the OPERATIONAL PHASE

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
1. IMPACT ON WATERCOURSES				
<p>Direct Impacts (1a) Changing the quantity and fluctuation properties of the watercourse by for example diverting or obstructing flow.</p> <p>Indirect Impacts: The sources of this impacts include the compaction of soil, the removal of vegetation, surface water redirection of water during construction activities</p> <p>Cumulative Impacts: The wetland is removed from the study site and activities should not affect water flow characteristics; cumulative impacts are therefore expected to be low</p>	Low	<ul style="list-style-type: none"> • Designs should take into account soil properties, slopes and runoff energy with the aim of having a neutral effect on the regional hydrograph. • A temporary fence or demarcation must be erected around No-Go Areas outside the proposed works area prior to any construction taking place as part of the contractor planning phase when compiling work method statements to prevent access to the adjacent portions of the watercourse. • Effective stormwater management should be a priority during both construction and operational phase. This should be monitored as part of the EMP. • High energy stormwater input into the watercourses should be prevented at all cost. Changes to natural flow of water (surface water as well as water flowing within the soil profile) should be taken into account. 	Low	Impacts to the flow characteristics of watercourses are unlikely to be very significant.
<p>Direct Impacts (1b): Changes in sediment entering and exiting the system</p> <p>Indirect Impacts:</p> <ul style="list-style-type: none"> • Disturbance of soil surface • Disturbance of slopes through creation of roads and tracks adjacent to the watercourse • Erosion (e.g. gully formation, bank collapse) <p>Cumulative Impacts: Contributing to the increased sediment load in this wetland system may occur if effective sediment control does not occur</p>	Low	<ul style="list-style-type: none"> • Consider the various methods and equipment available and select whichever method(s) that will have the least impact on watercourses. • Sediment traps should be installed around the periphery of the site boundary. • Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area. • Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover. • Rehabilitation plans must be submitted and approved for rehabilitation of damage during construction and that plan must be implemented immediately upon completion of construction. 	Low	Expected to be limited provided that the mitigation measures are implemented correctly.

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
		<ul style="list-style-type: none"> During the construction phase measures must be put in place to control the flow of excess water so that it does not impact on the surface vegetation. Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas. Monitoring should be done to ensure that sediment pollution is timeously dressed 		
<p>Direct Impacts (1c): Introduction and spread of alien vegetation</p> <p>Indirect Impacts: Once in a system alien invasive plants can spread through the catchment. If allowed to seed before control measures are implemented alien plants can easily colonise and impact on downstream users.</p> <p>Cumulative Impacts: Contribution to the local and downstream burden of alien invasive plants is likely to occur unless very carefully controlled.</p>	Medium	<ul style="list-style-type: none"> Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area and returning it where possible afterwards. Monitor the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to establish. Rehabilitate or revegetate disturbed areas 	Low	The release of alien vegetation seeds will increase an already burdened system. However, the contribution to alien vegetation resulting from the fuel station can be kept low if effective control is maintained during the operational phase

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
<p>Direct Impacts (1d): Loss and disturbance of watercourse habitat and fringe vegetation</p> <p>Indirect Impacts: Loss and disturbance of watercourse habitat and fringe vegetation due to direct development on the watercourse as well as changes in management, fire regime and habitat fragmentation. Since the site is removed from the wetland, this impact is not likely to occur.</p> <p>Cumulative Impacts: No cumulative impacts are expected since no specialised habitat will be disturbed</p>	Low	<ul style="list-style-type: none"> The development footprint should remain outside the delineated wetland and buffer zones. Demarcate the watercourse areas and buffer zones to limit disturbance, clearly mark these areas as no-go areas Monitor the establishment of alien invasive species within the areas affected by the construction and take immediate corrective action where invasive species are observed to establish 	Low	Nor residual risks are expected since the site is removed from the wetland and no disturbance to specialised habitat is expected to occur
<p>Direct Impacts (1e): Changes in water quality due to foreign materials and increased nutrients</p> <p>Indirect Impacts: Construction and operational activities may result in the discharge of solvents and other industrial chemicals, leakage of fuel/oil from vehicles and underground fuel tanks resulting in the loss of sensitive biota in the wetlands/streams and a reduction in regional watercourse function.</p> <p>Cumulative Impacts: Expected to be moderate since pollution is already a problem in the region. Once in the system it may take many years for some toxins to be eradicated.</p>	Medium	<ul style="list-style-type: none"> Locate the fuel station outside the wetland's buffer zone Implementation of appropriate stormwater management around the excavation to prevent the ingress of run-off into the excavation and to prevent contaminated runoff into the watercourse. Provision of adequate sanitation facilities located outside of the watercourse area or its associated buffer zone The development footprint must be fenced off from the watercourses and no related impacts may be allowed into the watercourse e.g. water runoff from cleaning of equipment, vehicle access etc. After construction, the land must be cleared of rubbish, surplus materials, and equipment, and all parts of the land shall be left in a condition as close as possible to that prior to use. Maintenance of construction vehicles / equipment should not take place within the watercourse Measures should be put in place to prevent spills by for example constructing sumps or drains which can contain any spills in order for contaminated water to be isolated from the watercourse and removed from the site for appropriate disposal A lined holding tank must have sufficient pumps and other measures to ensure that any spills are contained and can be safely removed 	Low	Expected to be low to moderate.

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
		without impact to the watercourse. <ul style="list-style-type: none"> The design of the holding holding tank must accommodate 1:50 year floodlines to ensure that realistic flooding does not result in the release of hydrocarbons downstream. Pumps in the sump must accommodate stormwater and rain as well as fuel spills. A warning system, for example a float switch with alarm should ensure that any spills are timeously identified. Standard Operating procedures, training drills and audits should be put in place and revised annually 		
2. CONVENIENCE AND ACCESSIBILITY (POSITIVE)				
Nature of the Impact: <ul style="list-style-type: none"> Availability of the filling station to satisfy the need given residences in the vicinity as well as passing traffic 	Low	<ul style="list-style-type: none"> No mitigation measures required 	Medium	Low
3. IMPACT ON VIABILITY OF OTHER STATIONS				
Nature of the Impact: <ul style="list-style-type: none"> The nearest station is located approx. 2km away from this site. Total FCM Middelburg Service Station is situated cnr Cowen Ntuli St & N11, Middelburg, and serves northbound traffic on this route, this site is proposed on the opposite route so the site will not directly share traffic with this competitor site. 	Low	This cannot be mitigated except by not proceeding with the development. However, affected filling stations have an obligation to retain their client base. Further, new developments envisaged in the project the area will mitigate the impact of a new filling station. e.g. a shopping mall is planned just behind the proposed filling station site.	Low	None
3. GROUNDWATER AND SURFACE WATER POLLUTION IMPACTS				

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
<p>Nature of the Impact:</p> <ul style="list-style-type: none"> Contamination of surface water associated with the operation of filling station. Domestic waste generated from the kiosk and the subsequent potential for leachate formation; Spillage that may occur during refuelling; Leaking underground storage tanks and fittings resulting in possible hydrocarbon contamination; Leakage from the Sewerage system/plant or contamination from resultant water. 	Low	<ul style="list-style-type: none"> Precautions to be taken to ensure that surface run-off, potential leaks or spills do not flow into the sewer system without first passing through a simple gravity separator/settlement pond or similar protective installation. Any spill should be cleaned up immediately and contaminated soil should be disposed of at a designated site. Storm water originating from the filling station surface area must be treated as dirty water. Clean water and dirty water systems must be separated. Storm water must be directed away and around the filling station site. Leak detection systems must be implemented in all fuel storage and transmission lines and tanks. 	Low	None
4. RISKS OF FIRES & EXPLOSIONS				
<p>Nature of the Impact:</p> <ul style="list-style-type: none"> Storage, handling and transportation of fuel are potentially dangerous to humans and properties due to the risk of fire and explosions. There is considerable movement of cars and other vehicles on the forecourt which could lead to accidental collision with structures, people and other vehicles. Obstructed exits e.g. by stock and/or accumulations of packaging can prevent escape and provide fuel for fires 	Medium	<ul style="list-style-type: none"> Devise a safe system of traffic movement, e.g. a one-way system for entering and exiting the forecourt. Display clear information/warning signs setting out the traffic control arrangements. Provide sufficient designated parking areas close to the shop and away from the pumps. Provide mechanical protection to vulnerable structures such as fuel tanks and liquified petroleum gas (LPG) storage areas. Keep all escape routes and fire exits clear and make regular checks to ensure that this is the case. Clear rubbish regularly (remember sand used for cleaning or containing petrol spills will be flammable and should be disposed of safely, by a hazardous waste disposal company if necessary) Storage tanks and dispense pumps are adequately maintained and monitored 	Low	Low

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
		<ul style="list-style-type: none"> • Appropriate wet stock management procedures are used • Identify hazardous areas and control all sources of ignition - use appropriate warning and hazard signs. • Fire extinguishers must be easily accessible and all vehicles should have fire extinguishers. • Ensure all staff are adequately trained (retain training records); Employees should be trained on fire safety and there should be fire marshals. • Local emergency fire brigade number should be known to everybody • The prescribed fire safety precautions in terms of the Occupational Health and Safety Act must be adhered to. • The UST's, underground pipes and dispensing pumps should be monitored regularly for leaks. • Tanker delivery driver must be present during delivery of fuel with the emergency cut off switch and a fire extinguisher. • The filling station management must develop an EMERGENCY PLAN. All staff must be adequately trained in the implementation of this plan. • The following signs must be installed <ul style="list-style-type: none"> ○ "NOSMOKING" ○ "NO NAKED OPEN FLAME" ○ "NO CELLPHONES" 		
5. HEALTH & SAFETY				

<p>Nature of the Impact:</p> <ul style="list-style-type: none"> • Safety of staff, customers, property and neighbouring properties may compromise as a result of the fire risk associated with a filling station. • Some items of stock and chemicals used in the car wash and for general cleaning can be harmful. Exposure to them through use, accidental spillage or leaks, can cause respiratory problems, dermatitis or chemical burns. • The removal of access covers to storage tanks, moving LPG cylinders and positioning of large cleaning fluid containers may cause back injury or muscular strains 	<p>Medium</p>	<ul style="list-style-type: none"> • Relevant operational staff must receive training on the correct operation of the storage tanks, as well as maintenance and repair procedures when leaks are detected. • An emergency response plan must be available on site and employees must be familiar with the plan. • The correct PPE should be used on the site. • Appropriate Health & Safety signage must be placed on and around the tank. • Fire extinguishers and sand bags must be readily available onsite and easily accessible. • Fire-fighting equipment must comply with SANS 1151 (Portable rechargeable fire extinguishers - Halogenated hydrocarbon type extinguishers), and be inspected regularly. • No smoking may be permitted on site. • No cell phones may be used during fuel dispensing. • Overfill and spillages during tanker refuelling and fuel dispensing should be prevented by the installation of automatic cut off devices. • Tanker delivery drivers must be present during delivery of fuel with the emergency cut off switch and a fire extinguisher. • A closed coupling must be used when fuel is being transferred from the bulk delivery vehicle to the USTs to prevent fugitive emissions. • Store all hazardous chemicals in their original containers. • Obtain information on all substances stored and used in the premises from manufacturers hazard data sheets. • Train staff and provide appropriate protective clothing • Eliminate all unnecessary manual handling. • Train staff in proper lifting techniques. • Provide suitable equipment e.g. keys for lifting manhole covers. • Avoid lifting items which are too heavy - use a trolley or castors where possible. 	<p>Low</p>	<p>Low</p>
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Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
6. TRAFFIC IMPACTS				
<p>Nature of the Impact:</p> <p>Impeded traffic flow due to entrance/ exit from the filling station and the movement of trucks to and from the filling station.</p>	Medium	All signage and road markings for the proposed site should be in accordance with the South African Road Traffic Signs Manual”	Low	Low
7. PERMANENT EMPLOYMENT OPPORTUNITIES CREATED (POSITIVE)				
<p>Nature of the Impact</p> <p>Opportunities will be created in the operation of the filling station and convenience shop</p>	Medium	<p><u>Enhancement Measures</u></p> <ul style="list-style-type: none"> • All recruitment must be in-line with the Developer’s Employment Equity Policy. • The policy will also promote the employment of women to ensure that gender equality is attained as defined in the Employment Equity Act No 55 of 1998. • Where possible, priority should be given to job seekers from the local area. • Developers must build the capacity of employees through development plans, technical, health and safety training and provide them with relevant training certificates. 	Low	Limited

6.3 Cumulative Impact Assessment

- **Wetland:**

- The wetland is removed from the study site and activities should not affect water flow characteristics; cumulative impacts are therefore expected to be low
- Contributing to the increased sediment load in this wetland system may occur if effective sediment control does not occur
- Contribution to the local and downstream burden of alien invasive plants is likely to occur unless very carefully controlled.
- Expected to be moderate since pollution is already a problem in the region. Once in the system it may take many years for some toxins to be eradicated

- **Traffic Impact**

Impacts associated with construction and also operation could increase the significance of this impact already present as a result of other activities in the area such as housing developments, commercial infrastructure and roads. The potential cumulative impact is **Low significance** with or without mitigation.

- **Health Safety and Security**

During construction Influx of workers looking for employment opportunities to the area may result in crime activities which may add on to the crime baseline conditions of the area. During operations, Safety of staff, customers, property and neighboring properties may be compromised as of possible crime like ATM crimes. The cumulative impact is anticipated to be **Low significance** with or without mitigation.

- **Groundwater Contamination**

The proposed filling station if not properly constructed can result in potential groundwater contamination, they are other old filing stations in the area and other activities which together can potentially cause pollution to groundwater resource, however geohydrology findings reported a low water table which means the potential cumulative impact on groundwater contamination is **Low significance** and with mitigation it can be reduced to negligible.

- **Positive Cumulative Impacts: Social economic**

The development may have positive social impacts during construction and operation through the provision of job opportunities to local people and improving on skills transfer as well as adding to the market confidence for economic development in the area. The cumulative impact is anticipated to be **Low Positive** with or without enhancement

Generally, the cumulative impact of this project is rated of Low significance for the larger part of the project, however the cumulative impacts on the wetland area could be of medium significance should mitigation measure not be implemented as changes made to the bed or banks of watercourse and unstable channel conditions may result causing erosion, meandering, increased potential for flooding and movement of bed material, which will result in property damage adjacent to and downstream of the site. Reversing this process is unlikely and should be prevented in the first place. Responsible environmental management will be required during the entire project life cycle. These management measures should be guided by the Environmental Management Plan, attached as **Appendix F**.

6.4 No-Go Alternative Assessment

This is the option of not undertaking the proposed Filling Station on this particular site. This option will result in no impacts occurring on the biophysical environment (i.e. biodiversity, soils), and will result in no visual or social impact hence the project site status quo remains such as the congestion at the existing petroleum filling stations will persist. Traffic volumes within the vicinity of the site of the proposed development will not be marginally increased. Potential impacts to groundwater and surface water resources associated with the proposed development will be avoided. The existing level of competition among fuel retailers will prevail. Job creation opportunities would be lost. Future developments in the vicinity of the study site, and motorists will need to make use of the services of the petroleum retailers located further away which is less convenient. **It can be noted that negative impacts of the no go option alternative are considered to outweigh the positive impacts of this alternative. The no go option is therefore not preferred**

7 CONCLUSIONS AND RECOMMENDATIONS

The previous chapters of this report together with the **specialist studies** contained within **Appendix E** provide a detailed assessment of the potential impacts that may result from the proposed project. This chapter concludes the Basic Assessment Report for the proposed project by providing a summary of the conclusions of the assessment of the proposed powerline. In so doing, it draws on the information gathered as part of the BA process and the knowledge gained by the environmental specialist consultants and presents an informed opinion of the environmental impacts associated with the proposed project. Potential impacts which could occur as a result of the proposed project are summarised in the sections which follows.

7.1 Summary of impacts

A summary of the impact assessments is presented in **Table 7.1**; the tables cover the construction and operational impacts. An overall weighted score is provided in each case. Thus far each of the environmental issues are assigned equal weighting (i.e. the weighted score is the average of each of the individual scores). The impact scores are also colour coded according to the following:

< 30	Low significance
30 to 60	Moderate significance
>60	High significance

It must be noted that the impact scores in **Table 7.1** below are not intended to be definitive measures of environmental impact, but they are a useful guide to evaluating the overall environmental performance of a new development and they assist in interpreting key influences of a development

Table 7.1: Impact Summary table

CONSTRUCTION PHASE		
Environmental Aspect	Without Mitigation	With Mitigation
Wetlands:		
Changing the quantity and fluctuation properties of the watercourse by for example diverting or obstructing flow.	Low	Low
Changes in sediment entering and exiting the system	Medium	Low
Introduction and spread of alien vegetation	Medium	Low
Loss and disturbance of watercourse habitat and fringe vegetation	Low	Low
Changes in water quality due to pollution	Medium	Low
Vegetation:		
Loss of natural vegetation (grassland)	Medium	Low
Loss of individuals of plant species of concern	Low	Low
Heritage:		
Direct or physical impacts, implying alteration or destruction of heritage features	Low	Low
Others:	Medium	Low
Visual Impacts	Medium	Low
Noise Impacts	Low	Low
Traffic Impacts	Medium	Low
Social-Economic: Direct employment and skills development (Positive)	Low	Medium

OPERATIONAL PHASE		
Environmental Aspect	Without Mitigation	With Mitigation
Wetlands:		
Changing the quantity and fluctuation properties of the watercourse by for example diverting or obstructing flow.	Low	Low
Changes in sediment entering and exiting the system	Low	Low
Introduction and spread of alien vegetation	Medium	Low
Loss and disturbance of watercourse habitat and fringe vegetation	Low	Low
Changes in water quality due to pollution	Medium	Low
Others:		
Convenience and accessibility(positive)	Low	Low
Impact on viability of other stations	Low	Low
Groundwater and surface water pollution impacts	Low	Low
Risks of fires & explosions	Medium	Low
Health & safety	Medium	Low
Traffic impacts	Medium	Low
Permanent employment opportunities created (positive)	Medium	Low

Table 7.1 gives a summary of the impact significance established through the basic assessment investigation, from this summary it is apparent that the significance levels of the majority of identified impacts are of Medium-Low significance for all alternatives investigated and this can further be reduced to acceptable low significance levels thus, the proposed developments could proceed provided that the mitigation measures set out in this report and in the EMPr and the Rehabilitation Plan (Appendix F) are diligently implemented to limit the potential impacts on vegetation, watercourses and social during construction and operation of the developments. Apart from the anticipated Construction phase impacts, which would be temporary (short-term duration), other impacts identified (including cumulative impacts) are associated with ecological aspects, waste and potential, but slight, increase in traffic volumes. Where impacts are unavoidable, they have been found to be of moderate to low significance according to the criteria used and furthermore, can be mitigated through appropriate design and effective implementation of the EMPr.

7.2 **Conclusion (Impact Statement)**

Summarised Findings of the Specialist Studies:

Vegetation: The requirements of this study were to undertake a specialist study to describe the vegetation and flora of the site. The vegetation study identified remnant patches of natural grassland, disturbed areas, alien trees and transformed areas on site.

The site is within one regional vegetation type, a grassland vegetation type called Rand Highveld Grassland, classified as Endangered, and is listed as Vulnerable in the National List of Ecosystems that are Threatened and need of protection (GN1002 of 2011), published under the National Environmental Management: Biodiversity Act (Act No. 10, 2004).

According to the Mpumalanga Biodiversity Conservation Plan, the site is considered to be modified, i.e. no natural habitat remains. It is therefore considered to have low conservation value. However, some parts of these areas were found to have characteristics of untransformed but disturbed natural grassland vegetation. However, most of the site is disturbed or transformed and contains no natural habitat. There are five listed plant species that have habitat requirements that are partially met by those found on site, including four Declining plant species and one Near Threatened species. Two Declining species, *Hypoxis hemerocallidea* and *Callilepis leptophylla*, were found on site, both flagged on the basis of medicinal harvesting at a national scale and not due to habitat loss. Only a small number of plants occur on site.

Transformed areas on site are not considered to be sensitive or valuable from a botanical perspective, with the exception of the remaining patches of partially disturbed grassland on site. On the basis of the moderate to poor condition of these grassland areas, they were given a MEDIUM sensitivity rating, and all other areas a LOW sensitivity rating. Loss of just under 1 hectare of relatively poor-quality natural grassland, as well as a few individuals of two Declining plant species, is not considered to be a significant impact. Despite the moderately good species composition and richness of this remnant, it is a fragmented patch of disturbed grassland with no connectivity to any other natural areas. The location is such that any habitat on site will continue to further degrade over time. The conservation value is therefore low.

An impact assessment identified loss of grassland habitat as being of Medium significance (primarily due to it being permanent and that it will definitely occur), and loss of individuals of two Declining plant species as of Low significance.

Wetland: No wetland habitat was recorded on the study area. However, a channelled valley bottom wetland was recorded east of the study site. The study site slopes towards the wetland with a slope of approximately 5.2%. This wetland, together with its calculated 22m buffer zone remain approximately 58m outside the proposed development area and should not be affected by the fuel station. One possible exception is leaking of underground tanks or other accidental fuel spills. Release of hydrocarbons into the downslope wetland could have potentially significant effects on the local and downstream wetlands. Measures should be put in place to prevent spills from entering into the wetland.

Heritage: Overall the archaeological visibility was good, due to the fact that during wintertime the vegetation is down or has burned down. Large sections of the study area have been used for agricultural fields, which would have destroyed any heritage features located there. No sites, features or objects of cultural historic significance were identified in the study area. From a heritage point of view, it is recommended that the proposed development be allowed to continue on acceptance of the proposed conditions ie *Should archaeological sites or graves be exposed in other areas during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.*

Paleo: There is no objection to the development, it is not necessary to request a Phase 1 Palaeontological Impact Assessment: Field Study to determine whether the development will affect fossiliferous outcrops as the palaeontological sensitivity is **MODERATE**. A Phase 2 Palaeontological Mitigation is only required if the Phase 1 Palaeontological Assessment identified a fossiliferous formation (Karoo Supergroup) and fossils or if fossils are found during construction. Protocol is attached (**Appendix E4**).

- This project may benefit the economy, the life expectancy of the community, the growth of the community, and social development in general.
- Preferred choice: Only one Option is presented as is possible.
- The following should be conserved: if any palaeontological material is exposed during clearing, digging, excavating, drilling or blasting SAHRA must be notified. All construction activities must be stopped, a 30 m no-go barrier constructed and a palaeontologist should be called in to determine proper mitigation measures.

Geotech: It is recommended that the foundation excavations for each structure be inspected by a competent person during construction in order to verify that the materials thus exposed are not at variance with those described in the report and that it meets design criteria. The **foundation** recommendations should be verified during construction. The placement of all material used as backfill must be controlled with suitable field tests to confirm that the required densities/stiffness are achieved during compaction and that the quality of the backfill material is within specification.

No in-situ and/or laboratory tests have been conducted to determine the permeability of the site soils encountered. Adequate control measures must be implemented during design and construction of the fuel station to ensure that no leakage/spillage occurs both during construction as well as during the operating life-time which could potentially contaminate the ground water and/or soils. ERF 59 NAZARET, as investigated, is considered suitable for the proposed Fuel Station Development from a geotechnical perspective provided that the recommendations made in this report are implemented and/or adhered to.

Overall summary:

Less than 1 hectare of partially disturbed grassland remains on site. This area of grassland is not considered to have high biodiversity value. Development of the proposed project is therefore not considered to have a significant impact on natural habitat or plant species. The positive impacts (benefits) of the proposed development outweigh the negative impacts. There is a social need and desirability for the development. The proposal is in line with social Infrastructure and services development strategies of the Local and District Municipalities.

Having assessed the impacts of the construction of the Nazareth Filling Station site as summarised in **Table 7.1**, no environmental fatal flows and no significant negative impacts have been identified to be associated with the proposed development. The Impact Assessment section of this report indicates that the identified environmental impacts associated can be effectively **mitigated** to have a **low significance**. The significance levels of the majority of identified negative impacts (as shown in the environmental sensitivity map in **Figure 7.1**) can generally be reduced to acceptable levels thus, the proposed developments could proceed provided that the mitigation measures set out in this report and in the EMPr (**Appendix F**) are diligently implemented to limit the potential impacts on vegetation, watercourses and social during construction and operation of the developments. *The Site investigated is considered suitable for the proposed filling station provided that the recommendations made in this report are implemented and/or adhered to.*

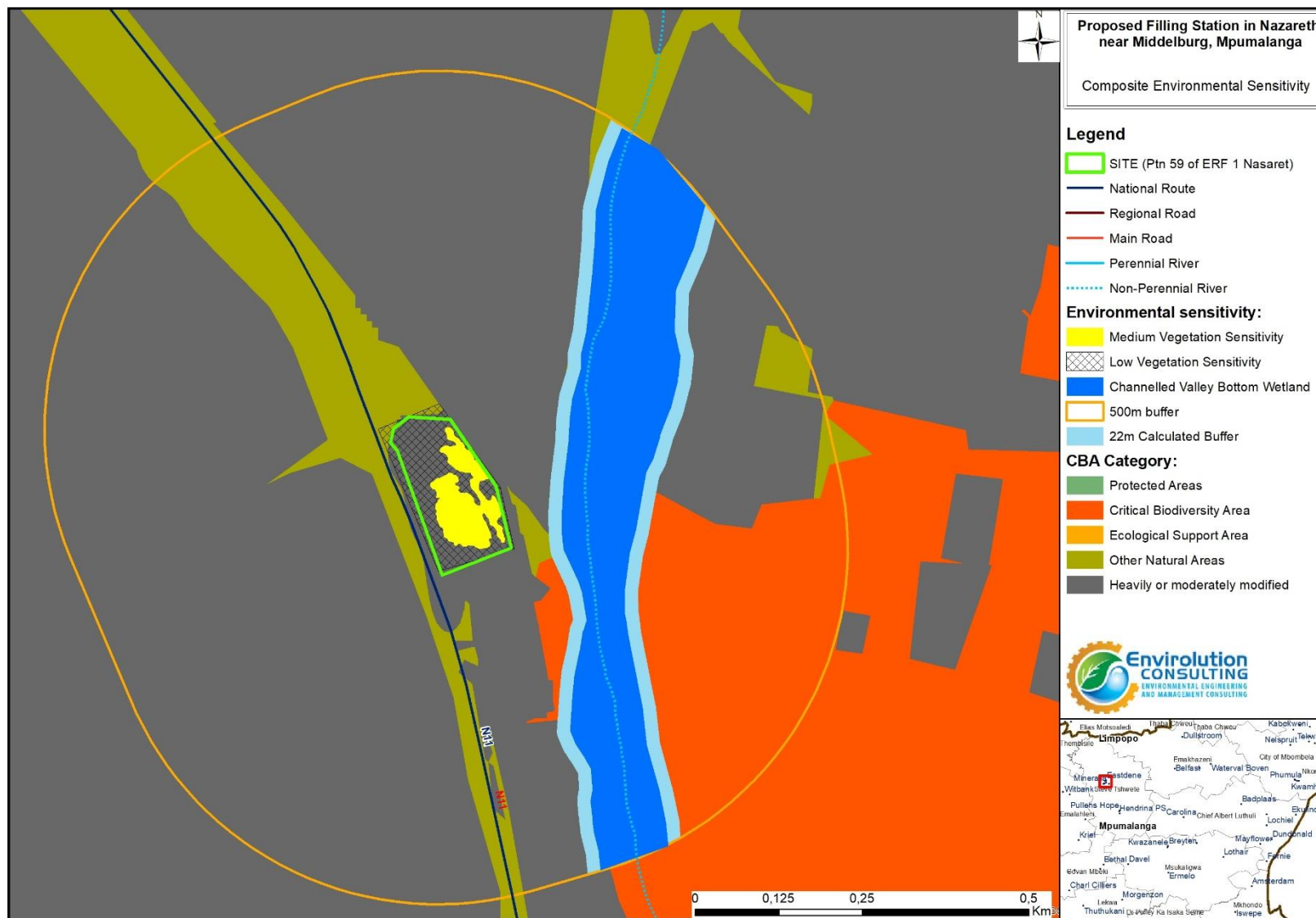


Figure 7.1: Composite Environmental Sensitivity on site (refer to Appendix A for A3 maps).

7.3 Recommendations

It is therefore, the EAP opinion that the project should be authorised, the findings of the specialist studies undertaken within this EIA to assess both the benefits and potential negative impacts anticipated as a result of the proposed project conclude that there are no environmental fatal flaws that should prevent the proposed project from proceeding, provided that the recommended mitigation and management measures are implemented.

The following conditions would be required to be included within an authorisation issued for the project:

- All relevant practical and reasonable mitigation measures detailed within this report and within the EMPr must be implemented. The implementation of this EMPr for all life cycle phases of the proposed project is considered key in achieving the appropriate environmental management standards as detailed in this report.
 - An independent Environmental Control Officer (ECO) should be appointed to monitor compliance with the specifications of the EMPr for the duration of the construction period.
 - An appropriate stormwater management plan must be developed and implemented to the site. Adequate measures must be put in place to prevent polluted runoff water from entering the, wetland and soil, thus preventing surface and groundwater pollution;
 - The relevant authorisations and water use licenses must be obtained from Department of Water Affairs prior to the commencement of construction activities. No activities may proceed within or in proximity to watercourses without a Water Use License permitting the activity.
 - Should the informal burial site be retained in its current location; it should be fenced off at least for the duration of construction activities. It is recommended that a buffer zone of 10m is created around the graves by means of a wire fence or, alternatively, with danger tape as a more temporary measure. Should archaeologically sites or graves be exposed in other areas during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.
 - It is recommended that the foundation excavations for each structure be inspected by a competent person during construction in order to verify that the materials thus exposed are not at variance with those described in the report and that it meets design criteria.
 - The developer should **obtain all necessary permits** from relevant authorities prior to the commencement of construction i.e. water use license & plant permits
 - Creation of new access roads should be minimised as far as possible.
 - All declared alien plants must be identified and managed in accordance with the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983). The implementation of a monitoring programme in this regard is recommended. On-going monitoring of the development sites must be undertaken to detect and restrict the spread of alien plant species.
 - Care must be taken with the topsoil during and after construction on the site. If required, measures to reduce erosion to be employed until a healthy plant cover is again established.
 - Contractors must be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.
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