BASIC ASSESSMENT REPORT:

THE DEVELOPMENT OF A LIGHT INDUSTRIAL AREA (BENICON PARK X1) AND FILLING STATION ON A PORTION OF THE REMAINING EXTENT OF PORTION 26 OF THE FARM NAAUWPOORT 335 JS, EMALAHLENI

Report prepared for: Elmir Industrial Projects cc.

Report dated: March 2014 (final)

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DEDET Ref. No. 17/2/3 N-280

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PROJECT INFORMATION SUMMARY

PROJECT TITLE	The development of a light industrial area (Benicon Park X1) and filling station on a portion of the Remaining Extent of Portion 26 of the farm Naauwpoort 335 JS, eMalahleni

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ADT	Average Daily Traffic
BPOA	Beniconpark Property Owners' Association
CBA	Critical Biodiversity Area
CoGTA	Department of Co-Operative Governance and Traditional Affairs
CSES	Clean Stream Environmental Services - Coalfields
DAFF	Department of Agriculture, Forestry and Fisheries
DALA	Department of Agriculture and Land Administration
DARDLA	Department of Agriculture, Rural Development and Land Administration
DEDET	Department of Economic Development, Environment and Tourism
DMR	Department of Mineral Resources
DoE	Department of Energy
DWA	Department of Water Affairs
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMP	Environmental Management Plan
ESA	Ecological Support Area
FRA	Fuel Retailers Association
GPT	Geo Pollution Technologies
I&AP	Interested and Affected Party
LPM	Liters per month
MBCP	Mpumalanga Biodiversity Conservation Plan
MBSP	Mpumalanga Biodiversity Sector Plan
mbgl	metre below ground level
MTPA	Mpumalanga Tourism and Parks Agency
NFEPA	National Freshwater Ecosystem Priority Areas
RE	Remaining Extent
SAHRA	South African Heritage Resources Agency
SAPIA	South African Petroleum Industry Association
WSP	WSP SA Civil and Structural Engineers (Pty) Ltd.

1. INTRODUCTION

Elmir Industrial Projects cc. intends to develop a light industrial area and filling station on a portion of the Remaining Extent of Portion 26 of the farm Naauwpoort 335 JS, eMalahleni. The development will be known as Benicon Park X1. The northern portion of the site will be subdivided into light industrial stands. The filling station will be located in the south eastern portion of the site adjacent to the R544 provincial road. The south western portion of the site will be zoned for residential use. The said site is located adjacent to the R544 provincial road (P120-1) between eMalahleni and Bethal, at the T-Junction to Duvha Power Station (D914 road).

The Minister of Environmental and Water Affairs listed in terms of Sections 24(2) and 24D of the National Environmental Management Act, 1998 (Act No. 107 of 1998), a number of activities that require an environmental impact assessment (either a Basic Assessment or a full Environmental Impact Assessment) before undertaking these activities.

The proposed activity would involve the following listed activities as identified in terms of Section 24(2) and 24D of the National Environmental Management Act, 1998:

Listing	Description
Listing Notice 1: R544 of 18 June 2010	*LISTED ACTIVITY NO. 23:* *The transformation of undeveloped, vacant or derelict land to –* *(i) residential, retail, commercial, recreational, industrial or institutional use, inside an urban area, and where the total area to be transformed is 5 hectares or more, but less than 20 hectares, or* *(ii) residential, retail, commercial, recreational, industrial or institutional use, outside an urban area and where the total area to be transformed is bigger than 1 hectare but less than 20 hectares; -* *Except where such transformation takes place for (i) linear activities; or (ii) for purposes of agriculture or afforestation, in which case Activity 16 of Notice No. R545 applies.*
Listing Notice 1: R544 of 18 June 2010	*LISTED ACTIVITY NO. 13:* *The construction 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 cubic metres.*
Listing Notice 3: R546 of 18 June 2010	*LISTED ACTIVITY NO. 13:* *The clearance of an area of 1 hectare or more of vegetation where **75%** or more of the vegetative cover constitutes indigenous vegetation, except where such removal of vegetation is required for:* *(1) the undertaking of a process or activity included in the list of waste management activities published in terms of section 19 of the National Environmental: Waste Act, 2008, in which case the activity is regarded to be excluded from this list.* *(2) the undertaking of a linear activity falling below the thresholds mentioned in Listing Notice 1 in terms of GN No. 544 of 2010.*

In order to obtain environmental authorisation, a Basic Assessment must be conducted as described in Regulations 21 to 25 of the Environmental Impact Assessment Regulations 2010 as promulgated in terms of Section 24(5) of the National Environmental Management Act, 1998 (Act 107 of 1998).

Clean Stream Environmental Services was appointed as independent environmental consultant to conduct the required basic assessment and compile the necessary documentation. This Basic Assessment Report is

compiled in terms of the requirements of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2010.

This report thus provides information regarding the planned activity, the environmental features of the said site and the public participation process followed. It also provides an indication of the potential impacts that could result during the construction and operational phases of this project as well as possible mitigation/management measures to be implemented.

2. DETAILS OF THE PROJECT APPLICANT AND ENVIRONMENTAL CONSULTANT

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A copy of the application form and the declaration of independence by the applicant and environmental consultant are provided in Appendix 1.

A copy of the Curriculum Vitae of both Mrs. A. Erasmus and Ms. R. Janse van Rensburg are provided in Appendix 2 together with a list of projects completed to date.

3. DESCRIPTION OF THE ACTIVITY

3.1 Nature of the activity

Elmir Industrial Projects cc. intends to develop a light industrial area and filling station on a portion of the Remaining Extent of Portion 26 of the farm Naauwpoort 335 JS, eMalahleni.

The proposed development would involve the following listed activities as identified in terms of Section 24(2) and 24D of the National Environmental Management Act, 1998:

Listing	Description
Listing Notice 1: R544 of 18 June 2010	*LISTED ACTIVITY NO. 23:* *The transformation of undeveloped, vacant or derelict land to –* *(i) residential, retail, commercial, recreational, industrial or institutional use, inside an urban area, and where the total area to be transformed is 5 hectares or more, but less than 20 hectares, or* *(ii) residential, retail, commercial, recreational, industrial or institutional use, outside an urban area and where the total area to be transformed is bigger than 1 hectare but less than 20 hectares; -* *Except where such transformation takes place for (i) linear activities; or (ii) for purposes of agriculture or afforestation, in which case Activity 16 of Notice No. R545 applies.*
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In order to obtain environmental authorisation, a Basic Assessment must be conducted as described in Regulations 21 to 25 of the Environmental Impact Assessment Regulations 2010 as promulgated in terms of Section 24(5) of the National Environmental Management Act, 1998 (Act 107 of 1998).

3.2 Basic Assessment process description

Diagram 1 provides a schematic description of the Basic Assessment process followed. This process is strictly according to the above-mentioned Regulations. The aim of the process is to ensure that the environmental impacts are considered, the relevant I&APs are consulted and the decision making authorities are provided with sufficient information to make an informed decision.

The decision making authority is the Mpumalanga Department of Economic Development, Environment and Tourism (DEDET). This Department will decide to grant or refuse the approval of the project. On approval, an Environmental Authorisation and Record of Decision will be issued in the name of the project applicant.

The project applicant will be responsible for complying with the conditions set in the Environmental Authorisation and Record of Decision.

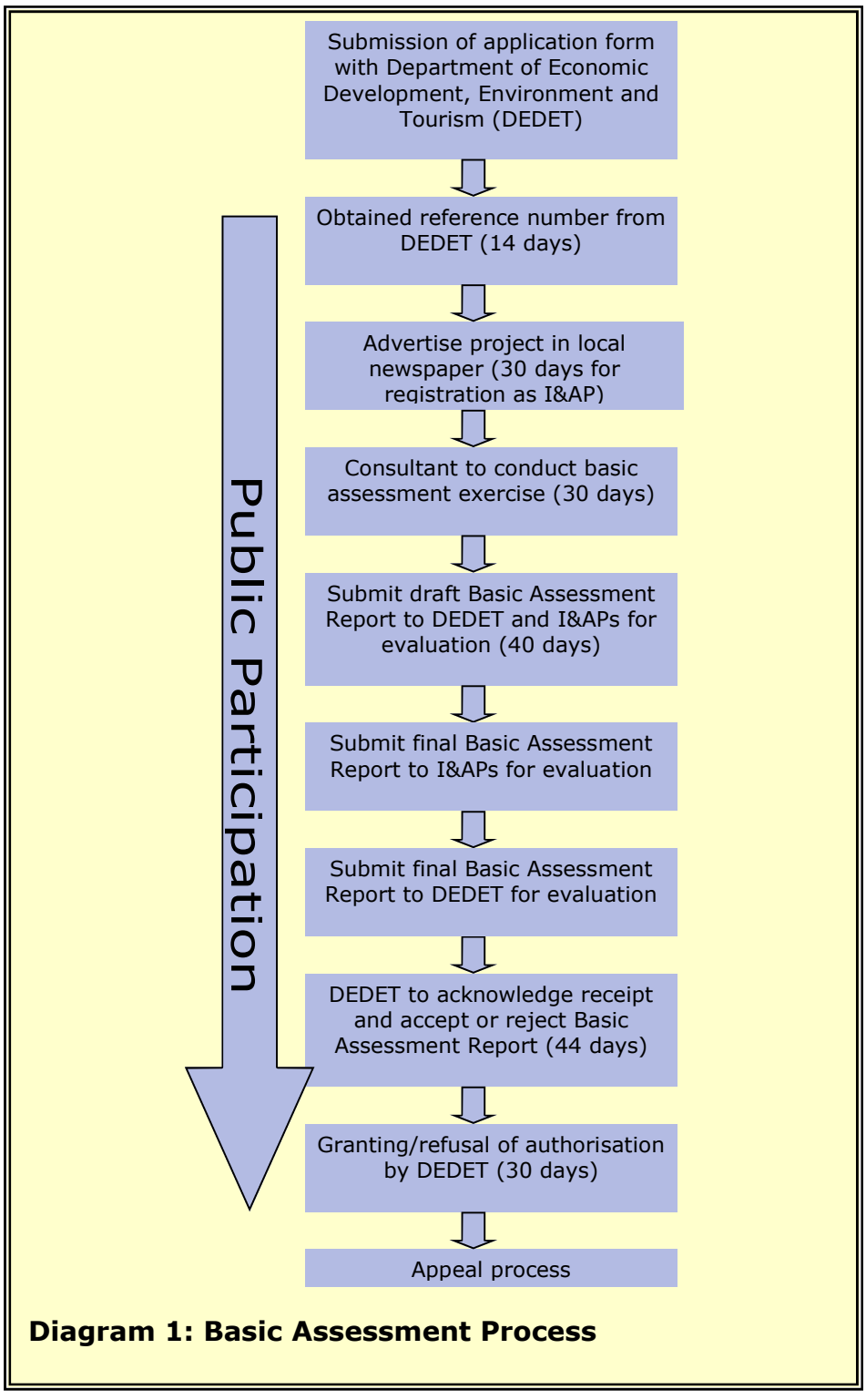


Diagram 1: Basic Assessment Process

3.3 Description of the site, design, size and scale of the development

The applicant, Elmir Industrial Projects cc., intends to develop a light industrial area and filling station on a portion of the Remaining Extent (RE) of Portion 26 of the farm Naauwpoort 335 JS, eMalahleni. The said site is located adjacent to the R544 provincial road between eMalahleni and Bethal (see Figure 5.1).

The property (RE of Portion 26) is 64.1710 ha in extent of which approximately 19 ha will be utilized for the development.

A copy of the Township Establishment Memorandum compiled by Elmir Property Projects (Pty) Ltd. (2013) and the Draft Conditions of Establishment are provided in Appendix 3.

Figure 3.1a provides an indication of the proposed layout plan designed by Elmir Property Projects (Pty) Ltd. Figure 3.1b provides an overlay of the layout plan and aerial view of the surrounding area.

The development will comprise of 3 sections and will be known as Benicon Park X1. The northern portion of the site will be utilized for light industrial purposes. The south eastern section will comprise a filling station (garage) and the south western section will be zoned for residential use (Figure 3.1a).

The development of the property will be phased as such:

- Phase 1 – Filling Station
- Phase 2 – Industrial
- Phase 3 - Residential

According to the applicant, the development of the filling station will act as a catalyst for the development of the other industrial stands.

Table 3.1 provides an indication of the land uses proposed for the development.

Table 3.1: Land uses proposed (taken from Elmir Property Projects (Pty) Ltd., 2013).

Zoning	Erven	Area (ha)	% of Total
Industrial 1 (including filling station)	2	10.20	53.1%
Residential 1	1	4.58	23.8%
Community Facility	1	0.24	1.3%
Streets		4.17	21.7%
Total	**4**	**19.21**	**100.0%**

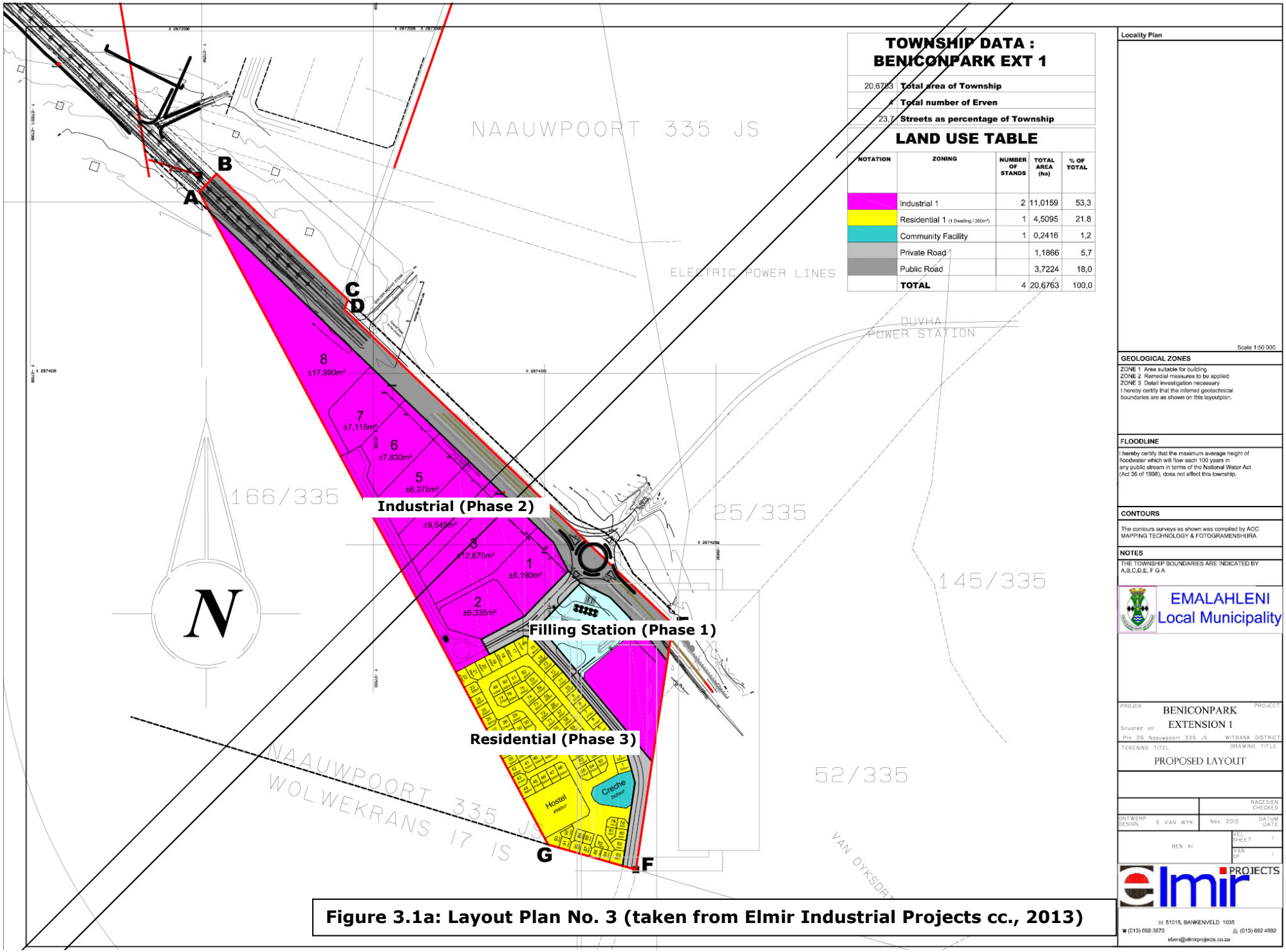


Figure 3.1a: Layout Plan No. 3 (taken from Elmir Industrial Projects cc., 2013)

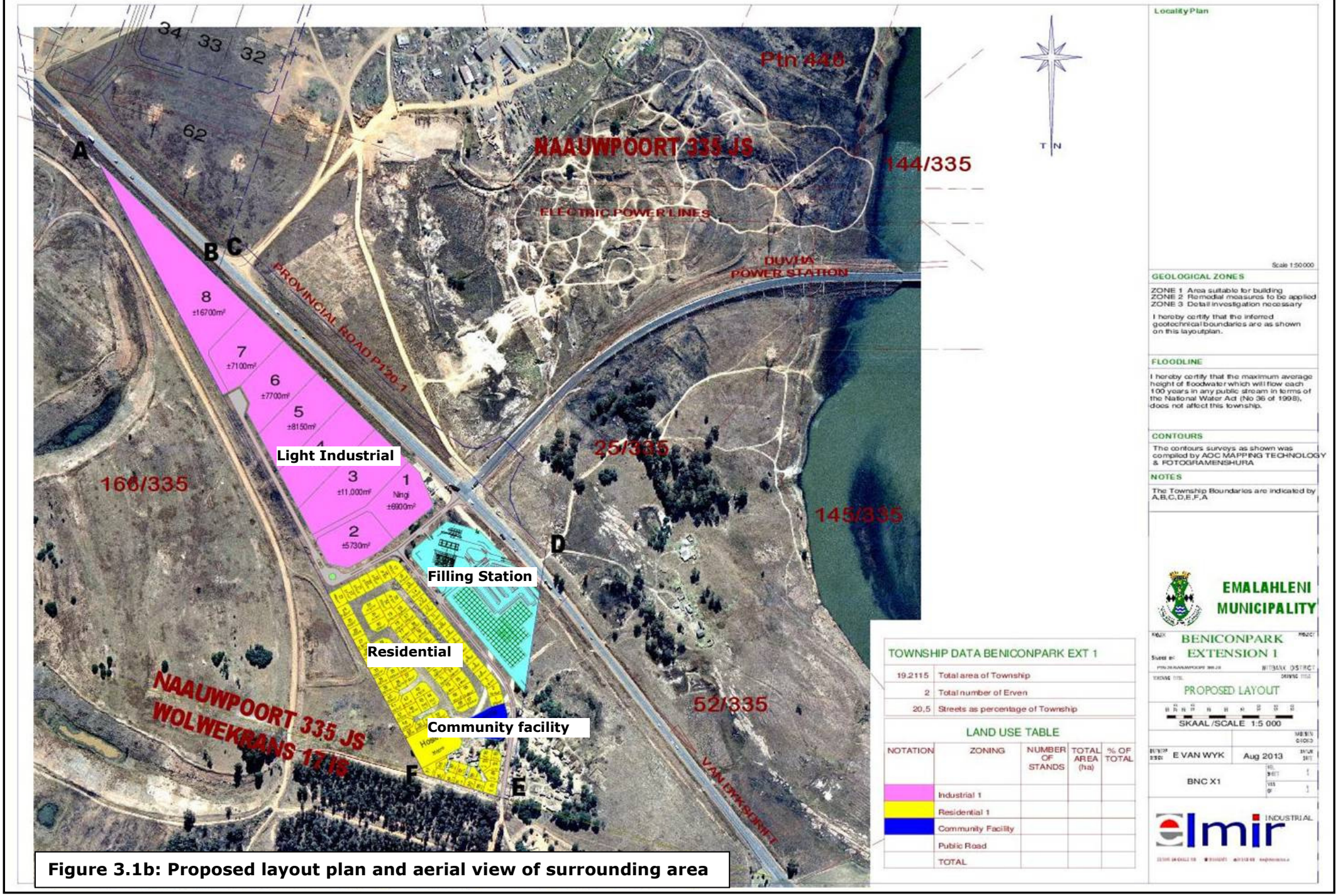


Figure 3.1b: Proposed layout plan and aerial view of surrounding area

3.3.1 Filling station ('Industrial 1' - Phase 1) – Figure 3.1a

Two 'Industrial 1' stands will be provided on site. One of the stands will be used for a filling station, which will be located at the R544/Duvha Power Station road (D2771) T-Junction (Figure 3.1a).

The filling station would cater for the many heavy vehicles and other traffic utilizing the R544 as well as the Duvha Power Station road.

The filling station (garage) will comprise of 6 X 23 000 liter (i.e. 138 m^3) underground fuel tanks and associated infrastructure. In general, the proposed filling station will consist of:

- Underground tanks (unleaded, premium and diesel);
- Island dispensers (above-ground fuel pumps);
- Associated pump and tank infrastructure (e.g. delivery pipes, fillers, suction pumps, etc.);
- Forecourt;
- Shop, take-aways, etc;
- Car parking;
- Ablution facilities;
- Entrance/exit road.

Figure 3.2 provides an indication of the conceptual layout plan for the filling station designed by Elmir Property Projects (Pty) Ltd. A detailed layout plan indicating the exact location of the infrastructure (i.e. tank pit, fuel pumps, parking area, shop, etc.) 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. Sasol, Total, BP) has been appointed.

As indicated on the current layout plan (Figure 3.2), the shops, ablution facilities and parking area will be located in the centre of the site (Figure 3.2). Four access points (three from the internal roads and one from the R544 provincial road) are proposed.

Fuel dispension:

The fuel tanks, fillers and island dispensers will be located in the northern portion of the site (Figure 3.2). For ease of access, a separate refuelling point will be provided for large trucks on the southern boundary of the site (Figure 3.2).

The tank pit 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.

If a high groundwater level occurs on site, the tanks would be safeguarded against movement or floating by means of reinforced concrete saddles. According to Geo Pollution Technologies Gauteng (Pty) Ltd. (2013), the depth to groundwater on site is approximately 4.54 m.

In general, the underground tanks would be refuelled through the fillers located a few meters from the tanks. Fuel would then be pumped from the underground tanks to the above-ground island dispensers (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 island dispensers and air supply would be constructed. Each dispenser would be fitted with a delivery pipe to the unleaded, premium and diesel tanks.

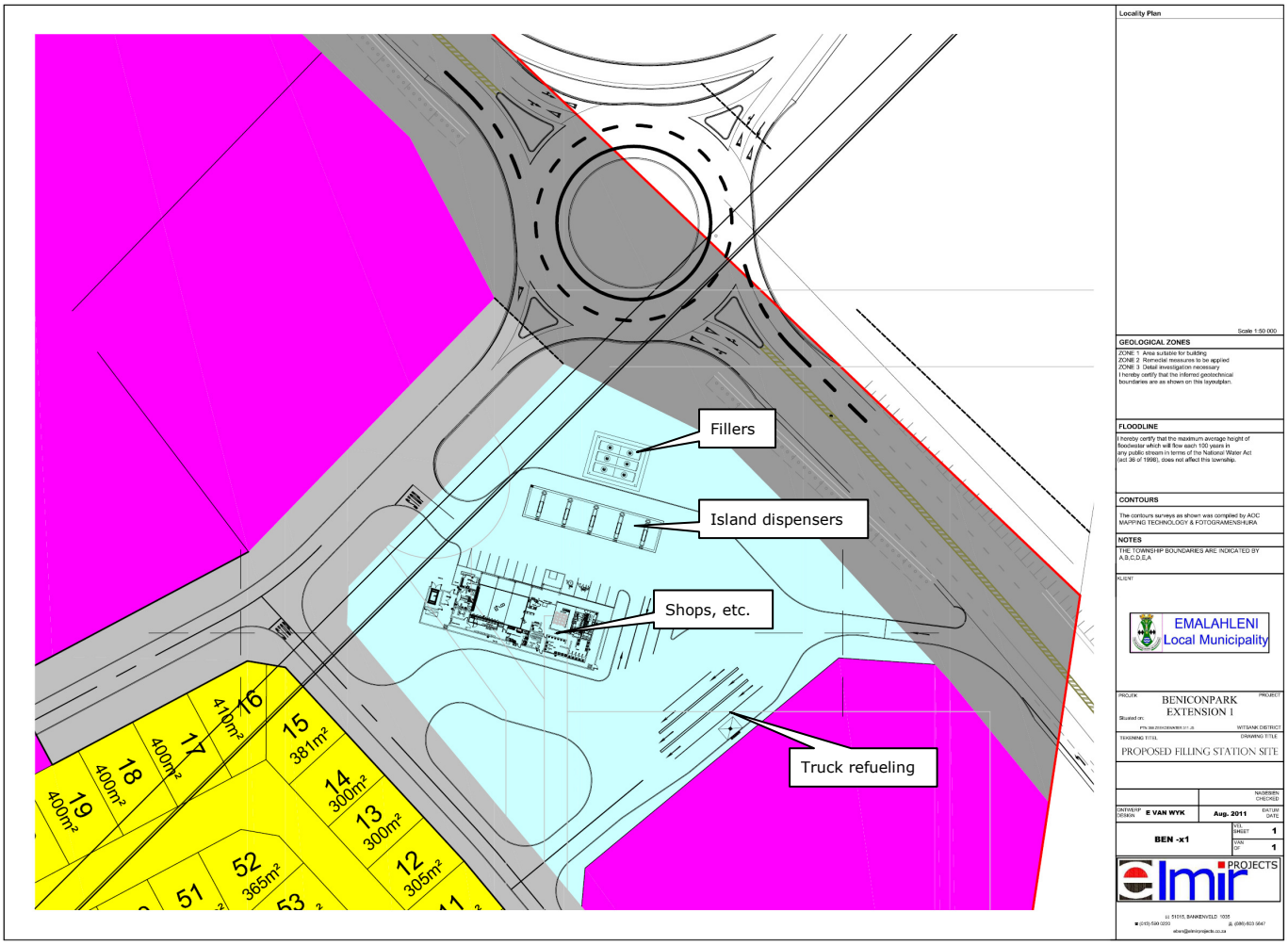


Figure 3.2: Conceptual filling station layout plan (taken from Elmir Industrial Projects cc., 2013)

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 tank farm will be backfilled with wet soilcrete (8:1 river sand: cement mix (4 X 50km/m^3) 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 SABS 089 code which pertains to the *'installation of underground storage tanks, pump/dispensers and pipe work at service stations and consumer installations'.*

The following SABS standards would be applicable:

SABS

▪ SABS 089-3 1999:	The installation of underground storage tanks, pump/dispensers and pipe work at service stations and consumer installations
▪ SABS 0140-2:	Identification colour marking – Part 2. Identification of hazards and equipment in work situations.
▪ SABS 0140-3:	Identification colour marking – Part 3. Contents of pipelines.
▪ SABS 62-1:	Steel pipes – Part 1. Steel pipes of nominal bore not exceeding 200mm.
▪ SABS 62-2:	Steel pipes – Part 2. Pieces and pipe fittings of nominal bore not exceeding 150mm, made from steel pipe.
▪ SABS 1123:	Steel pipe flanges
▪ SABS 1200:	Standardised specifications for civil engineering construction.
▪ SABS 1535:	Glass-reinforced polyester-coated steel tanks for the underground storage of hydrocarbons and oxygenated solvents and intended for burial horizontally.
▪ SABS 0400:	The application of the National Building Regulations.

British Standards
- BS 143 and BS 1256
- BS 1387 and S 4504

3.3.2 Light Industrial Area ('Industrial 1' – Phase 2) – Figure 3.1a

The applicant intends to develop the second light industrial stand as a "Mining & Electra Hub" which would cater for the numerous coal mines and power stations in the area in terms of maintenance and supply of goods.

The development objective is thus to create an industrial node for:
- The service and repair of mining and electricity generation equipment; and
- Supply of mining and electrical goods & materials and the fitment where required.

According to the applicant, it is not possible to determine the land size that individual businesses may require at this stage. The layout plan therefore makes provision for large stands, which may be subdivided in the future once the real need has been determined.

On a stand zoned Industrial (i.e. Industrial 1 and Industrial 2), the eMalahleni Land Use Management Scheme (2010) would allow the following activities:

1. *The making of any article or part of any article.*

2. *The altering, repairing, renovating, ornamenting, painting, spraying, polishing, finishing, cleaning, dyeing, washing, or breaking up of any article.*
3. *The adaptation for sale or use of any article.*
4. *The recycling, sorting, assembling or packing (including washing or filling bottles or other containers) of any articles and material.*
5. *The construction, reconstruction, assembling, repairing, or breaking up of vehicles and machinery or parts thereto.*
6. *Printing by letterpress, lithography, photogravure or other similar process, including any activity associated with the printing industry.*
7. *The production and/or storage of gas, fuel or liquid in a holder of more than 140m^3 storage capacity.*
8. *The freezing, chilling or storage in cold storage of any article.*
9. *The slaughtering of livestock, and poultry and/or processing of meat.*
10. *The generation of electricity.*
11. *Photographic processing.*
12. *Any activity that is necessarily or ordinarily incidental to any activity referred to in subparagraphs (i) to (xi), inclusive, if the premises on which it is carried on forms part of or are adjacent to the premises on which the activity to which it is so incidental to, is carried on."*

The eMalahleni Land Use Management Scheme (2010) does not make provision for noxious industries as part of the Industrial 1 zoning. In addition, it is stated in the overall Benicon Park townplanning approval (28 August 2006; Appendix 3) that *"an Industrial 1 zoning exclude all activities with a noxious nature".* In other words, only light industrial activities would be allowed on the said stands.

3.3.3 Residential area ('Residential 1' – Phase 3) – Figure 3.1a

One Residential 1 stand of 4.58 ha will be provided. The stand will be subdivided into a number of smaller residential stands with a density of 1 dwelling per 200m².

The residential stand would allow for the formalisation of the informal settlement in the southern portion of the property. According to the applicant, a small number of additional residential erven may be available to the general public after the allocation.

It is the intention to create an enclosed area with a single access point, which will provide maximum security for the residents.

It should be noted that the provision of the residential stand depends on the approval thereof by the eMalahleni Local Municipality.

3.3.4 Community facility – Figure 3.1a

One stand will be zoned as 'Community Facility'. The stand will be 0.24 ha in extent. The community facility stand will be provided within the residential area and could be used for a church, crèche or something similar.

3.4 Services required

Currently, the proposed site is located outside of the distribution area of the eMalahleni Local Municipality and is thus not provided with any municipal services. The developer would have to provide services such as electricity, water, wastewater treatment (sewage) and waste removal.

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 eMalahleni Local Municipality.

Once the area is developed, a new property owners' association, to be called the Beniconpark Property Owners' Association (BPOA), will be established as a Non Profit Company in terms of the Companies Act. The BPOA will be responsible for the maintenance of the services and management of the development.

According to Elmir Industrial Projects cc. (2013), the main functions and competencies of the BPOA will be the following:

1.1 The charging and collecting of levies from property owners' and tenants.
1.2 The approval of building plans and the enforcement of the BPOA's building and business regulations.
1.3 The purchase of water in bulk from the eMalahleni Local Municipality and the distribution to the individual property owners.
1.4 The maintenance of internal electrical equipment.
1.5 Operation of all communal sewer systems.
1.6 The maintenance of internal roads, storm water drainage and street lighting.
1.7 Provision of appropriate security to all properties, also the residential area.
1.8 Landscaping and up-keep of open areas.

3.4.1 Water

A borehole is present on site providing the informal settlement with water for domestic use. Water will thus be available during the construction phase from this borehole.

During the operational phase, water will be obtained from the eMalahleni Local Municipality via a 200 mm diameter water supply line. Water will be drawn from the Point C low pressure reservoir group in Universe Street.

Scip Engineering Group applied to the eMalahleni Local Municipality for a total water demand of 0.590 ML/day phased over 3 – 5 years. This water demand entails the water required for the entire Benicon Park development (see Section 4 of this report and Appendix 4). A copy of the application and approval (dated: 8 January 2013 - see Page 3 of application) is provided in Appendix 4.

The applicant estimates that Benicon Park X1 will however, only require 0.136 Ml of water per day. Of this, Phase 1 of the development (i.e. filling station) would require approximately 10 000 liters of water per day, based on the volumes utilized at another filling station (N4 Business Park) with a similar footprint.

The new water supply line will need to be installed within the R544 provincial road reserve between Duvha Park and Benicon Park (i.e. the site). Approval was obtained from the Department of Roads and Transport (March 2009 and December 2013) for the installation of the pipeline within the road reserve. A copy of the wayleave approvals are provided in Appendix 4.

A bulk water meter will be installed at the connection point near Duvha Park and the BPOA will distribute the water internally to the individual properties.

The Draft Conditions of Establishment stipulates that every property owner shall install a water tank of a capacity in the ratio of 3 (three) litres of water for every 1 (one) square meter of land. This will ensure sufficient stand-by storage capacity on every parcel of land in case of water supply disruptions.

3.4.2 Electricity

Electricity for the proposed development would be supplied by Eskom. According to the applicant, approval from Eskom has been obtained and the installation costs have been paid. A copy of the Eskom quotation for the installation is attached in Appendix 4 as proof of approval in this regard.

Eskom will provide a new point of supply of 150 kVA at pole no LAL4/38/14 subject to technical conditions specified in Section 2 of the Eskom quotation.

As part of the conditions (but not limited to), Eskom requires that the developer utilizes energy efficient technologies and equipment and that a certificate is provided to Eskom confirming that the electrical installation complies with the said energy efficient specifications.

3.4.3 Sewage

No municipal bulk sewer line is present in the area or in close proximity thereof. The closest municipal sewage works is the Naauwpoort Sewage Works, which is situated several kilometers north of the development site.

The informal settlement located on the southern boundary of the site currently utilizes pit latrines.

During the construction phase, the contractor would have to ensure that chemical toilets are provided on site and serviced on a regular basis.

During Phase 1 of the development (i.e. filling station), sewage will be treated in localised 'package plants' or stored temporarily in conservancy tanks.

The developer estimated that approximately 1 541 m^3 of sewage would be produced at the filling station per year as indicated in the table below:

Assumption: Footprint of Benicon Park filling station will be similar to that of the N4 Business Park	
Description	**Liters/day**
Number of toilets =4 Assume 500 visitors per day of which 20% use a toilet, i.e. 100 flushes at 10l/flush	1000
Number of urinals = 2 Assume 500 visitors per day of which 20% uses urinal, i.e. 100 flushes at 3l/flush.	300
Kitchen with sinks & washing machines & bakery Consume 2 500 l/day going directly to sewage	2500
Showers for staff Assume 4 workers using a shower per 12 hour shift, i.e. 8 showers per day at 60 l/shower	480
Total daily flow	4280
Total monthly flow	128 400
Total annual throughput	1 540 800 l/year; or 1 541 m^3/year

According to the developer, a proper sewage network and bulk sewer line will be installed during Phase 2, i.e. once more information is available regarding the number of industries on the property and subsequent sewage volumes.

3.4.4 Waste management

Any rubble produced during the construction phase will have to be removed and disposed of by the contractor at a registered waste disposal facility.

During the operational phase, domestic waste will have to be disposed of at the Leeuwpoort waste site. Any hazardous waste (e.g. oil, paint tins, etc.) produced at the filling station and/or industrial stands will have to be collected and disposed of by specific contractors (e.g. Wastetech, Oilkol, etc.).

3.4.5 Storm water control measures

Presently, no municipal storm water infrastructure is present in the area.

A storm water management plan will have to be compiled by the project engineers in accordance with nationally accepted norms, standards and environmental requirements.

In general, storm water would be conveyed on the road surface and channelled between the kerbs whereafter the water would be released into the adjacent veldt. In order to prevent erosion at the point of discharge, energy dissipators would be installed.

According to the R544 provincial road upgrade design (Appendix 4), the existing culvert located just south of the site will be extended as part of the road upgrade. This culvert will allow storm water to drain from the site and surrounding area underneath the R544 towards the Olifants River.

Within the industrial area, the various stand owners may have to make provision for the separation of clean and dirty water on the specific stand, depending on the type of industry/operation. All surface water contaminated with oil or other pollutants will have to be routed through sediment and oil traps and/or treated.

The applicant could not provide detailed information with regards to the proposed storm water control measures to be installed at the filling station. More information will only be available once an oil supplier has been appointed and the necessary plans drawn up. At filling station sites in general, water from the forecourt and fuel delivery pavements is routed via a grease/oil separator in order to remove any potential contaminants. Rain that falls onto the canopy (roof) of the filling station is treated as clean water and routed separately to the overall storm water management system.

3.4.6 Access road

The site is located at the T-Junction of the R544 provincial road between eMalahleni and Bethal and the P2271 provincial road to Duvha Power Station (Figures 3.1b and 5.1). Access to the said site is currently obtained via an informal gravel road extending from the R544 provincial road. The gravel access road also provides access to the informal settlement.

Access to Benicon Park X1 would be provided at the R544 and P2271 intersection by means of a traffic circle (Figure 3.1a). The access position has already been approved in principle by the Department of Public Works, Roads

and Transport. A copy of the letter from the Department is attached in Appendix 4.

According to the townplanning memorandum, a new access road will be created through the proposed development to the existing Impungwe Provincial Hospital (previously Wolwekrans) (see Figure 3.1a).

The internal streets of the development will be constructed to municipal standards and specifications, but will be maintained by the BPOA.

3.4.7 Fire fighting

All fire-fighting controls would have to be in accordance with the National Building Regulations, the SANS Code of Practice (related to Community Protection against Fire) and with "Red Book" standards.

3.5 Applicable legislation, policies and/or guidelines

Table 3.2 provides an indication of legislation, policies and/or guidelines applicable to the said project. The list below merely serves to highlight key legislation and obligations and is thus not definitive or exhaustive.

Table 3.2: Applicable legislation, policies and/or guidelines

Title of legislation, policy or guideline:	Administering authority:	Aim of legislation, policy or guideline
The Constitution of the Republic of South Africa, 1996 (Act 108 of 1996)	Department of Justice and Constitutional Development	To establish a Constitution with a Bill of Rights for the RSA. It sets out of a number of fundamental environmental rights (Section 24).
Development Facilitation Act, 1995 (Act 67 of 1995) and amendments	Department of Rural Development and Land Reform	To provide for planning and development.
Environment Conservation Act, 1989 (Act 73 of 1989) and amendments	Department of Economic Development, Environment and Tourism	To control environmental conservation.
National Environmental Management Act, 1998 (Act 107 0f 1998) and amendments	Department of Economic Development, Environment and Tourism	To provide for the integrated management of the environment.
National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004) and amendments	Department of Economic Development, Environment and Tourism	To reform the law regulating air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social development; to provide for national norms and standards regulating air quality monitoring, management and control by all spheres of government; for specific air quality measures; and for matters incidental thereto.
National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) and amendments	Department of Economic Development, Environment and Tourism	To provide for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998; the protection of species and ecosystems that warrant national protection; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources; the establishment and functions of a South African

Title of legislation, policy or guideline:	Administering authority:	Aim of legislation, policy or guideline
		Biodiversity Institute; and for matters connected therewith.
National Environmental Management: Waste Act, 2008 (Act 59 of 2008) and amendments	Department of Environmental Affairs	To reform the law regulating waste management in order to protect health and the environment by providing for the prevention of pollution and ecological degradation and for securing ecologically sustainable development.
National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) and amendments	Department of Environmental Affairs	To provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes; for the establishment of a national register of all national, provincial and local protected areas; for the management of those areas in accordance with national norms and standards; for intergovernmental co-operation and public consultation in matters concerning protected areas; and for matters in connection therewith.
Environmental Impact Assessment Regulations, 2010 (Government Gazette No. 33306 of 18 June 2010) and amendments	Department of Economic Development, Environment and Tourism	Regulations pertaining to environmental impact assessments.
National Water Act, 1998 (Act 36 of 1998) and amendments	Department of Water Affairs	To control water management aspects.
National Veld and Forest Fire Act, 1998 (Act 101 of 1998) and amendments	Department of Agriculture, Forestry and Fisheries	To prevent and combat veld, forest and mountain fires throughout South Africa.
National Heritage Resources Act, 1999 (Act 25 of 1999) and amendments	South African Heritage Resources Agency	This legislation aims to promote good management of the national estate, and to enable and encourage communities to nurture and conserve their legacy so that it may be bequeathed to future generations.
Protection of Personal Information Act, 2013 (Act 4 of 2013)	Department of Justice and Constitutional Development	The purpose of this act is to give effect to the constitutional right to privacy by safeguarding personal information and to regulate the manner in which personal information may be processed.
Promotion of Access to Information Act, 2000 (Act 2 of 2000) and amendments	Department of Justice and Constitutional Development	To give effect to the constitutional right of access to any information held by the State and any information that is held by another person and that is required for the exercise or protection of any rights; and to provide for matters connected therewith.
Promotion of Administrative Justice Act, 2000 (Act 3 of 2000) and amendments	Department of Justice and Constitutional Development	The Act aims to make the administration (e.g. Government and Parastatals) effective and accountable to people for its actions.
Conservation of the Agricultural Resources Act, 1983 (Act 43 of 1989) and amendments	Department of Agriculture, Forestry and Fisheries	To provide control over the utilization of the natural resources of the Republic in order to promote the conservation of soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith.
Occupational Health and Safety Act, 1993 (Act 85 of 1993) and amendments	Department of Labour	To provide for the health and safety of persons at work and for the health and safety of persons in connection with the activities of persons at work and to establish an advisory council for occupational health and safety.
Health Act, 1977 (Act 63 of 1977) and amendments	Department of Health	To promote public health.
Mpumalanga Nature Conservation Act,	Mpumalanga Tourism and	To control nature conservation.

Title of legislation, policy or guideline:	Administering authority:	Aim of legislation, policy or guideline
1998 (Act 10 of 1998) and amendments	Parks Agency	
National Building Regulations and Standards Act, 1977 (Act 103 of 1977) and amendments	Department of Trade and Industry	To provide for the promotion of uniformity in the law relating to the erection of buildings in the areas of jurisdiction of local authorities; for the prescribing of building standards; and for matters connected therewith.
National Road Traffic Act, 1996 (Act 93 of 1996)	South African National Road Agency Limited	Regulations relating to the transportation of dangerous goods and substances by road
Petroleum Products Act, 1977 (Act No. 120 of 1977) and amendments	Department of Energy	To regulate the distribution and sale of petroleum.
Regulations Site and Retail licences (Government Gazette No. 28665 of 27 March 2006)	Department of Energy	To regulate the distribution and sale of petroleum.
Regulations regarding the use of payment cards to purchase petroleum products at a retail site (Government Gazette Notice No. 731 of 9 July 2009)	Department of Energy	To regulate the distribution and sale of petroleum.
Regulations regarding the display of prices at which petroleum products are available for sale (Government Gazette Notice No. 376 of 14 May 2010)	Department of Energy	To regulate the distribution and sale of petroleum.
Various by-laws of the eMalahleni Local Municipality, e.g.: o Inflammable liquids; o Refuse and solid waste; o Waste; o Rates.	eMalahleni Local Municipality	To regulate land use with the eMalahleni Local Municipal area.
Integrated Development Plan for the eMalahleni Local Municipality	eMalahleni Local Municipality	Broad spatial framework guidelines for the eMalahleni Local Municipality.
Spatial Development Framework for the eMalahleni Local Municipality	eMalahleni Local Municipality	Spatially based policy guidelines whereby changes, needs and growth in the region can be managed to benefit the whole community.
Integrated Environmental Management Guideline Series (Guideline 5 – 10 October 2012) – Companion to the Environmental Impact Assessment Regulations, 2010	Department of Economic Development, Environment and Tourism	To provide clarity on the processes to be followed when applying for an environmental authorisation in terms of the EIA Regulations and gives a comprehensive interpretation of the listed activities.

4. DESCRIPTION OF ALTERNATIVES

This section provides an indication of the alternatives investigated in terms of the site, layout plan and service provision.

4.1 Proposed site

Benicon Park X1 forms part of a townplanning application submitted in 2006 for the establishment of the proposed township: Benicon Park, located on various portions of the farm Naauwpoort 335 JS.

The townplanning application was approved by the eMalahleni Local Municipality in terms of Section 98 of the Town Planning and Townships Ordinance, Nr 15 of 1986 on 28 August 2006 under Council Resolution E.101/06. A copy of the Council Resolution is provided in Appendix 3. It should be noted that this resolution makes provision for the division of Benicon Park into 6 different townships of which the proposed Benicon Park X1 forms part.

An environmental impact assessment (DALA Ref. No.: 17/2/1/16 MP-29) was also submitted for the proposed development to the then Department of Agriculture and Land Administration (DALA). Only a portion of the overall development (Benicon Park Proper) was approved by the Department due to a lack of services at that time. Figure 4.1 provides an indication of the overall application area and the section approved by the Department. The proposed light industrial and filling station development (Benicon Park X1) was thus not approved by the Department.

Subsequently, Elmir Industrial Projects cc. (the applicant) concluded a Land Availability and Development Agreement with the previous applicant and land owner (N.J. van der Merwe) with regards to the development of Benicon Park X1 (Appendix 3). Elmir Industrial Projects cc. decided to make changes to the approved layout plan and applied to the eMalahleni Local Municipality for the amendment of the original townplanning application. Clean Stream Environmental Services was appointed to obtain the relevant environmental authorisations.

The applicant decided on purchasing and developing the said site due to the following:

- The establishment of Benicon Park X1 has already been approved by the eMalahleni Local Municipality as part of the overall Benicon Park township establishment. The applicant therefore only has to apply for an amendment of the approval.
- Approval has already been obtained from the eMalahleni Local Municipality for the water connection and supply.
- Approval has already been obtained from Eskom for the electricity provision.
- Approval has already been obtained from the Department of Public Works, Roads and Transport for the proposed intersection.
- The proposed site belongs to the applicant.
- The site is located en route to various mines and power stations in the area and will be the ideal location for the establishment of businesses that provide goods and services to the mines and power stations.
- The site is ideally located for the establishment of a filling station.
- The businesses will be very visible and have great exposure adjacent to the R544 provincial road.

- Many of the surrounding properties are already utilized for business/light industrial purposes.
- The proposed site has been earmarked for industrial purposes in terms of the Spatial Development Framework (SDF) (2010) of the eMalahleni Local Municipality.

In view of this, no other sites were identified by the applicant for the proposed development.

No project option
More information with regards to the implication of the 'no project option' is provided in Section 4.4.

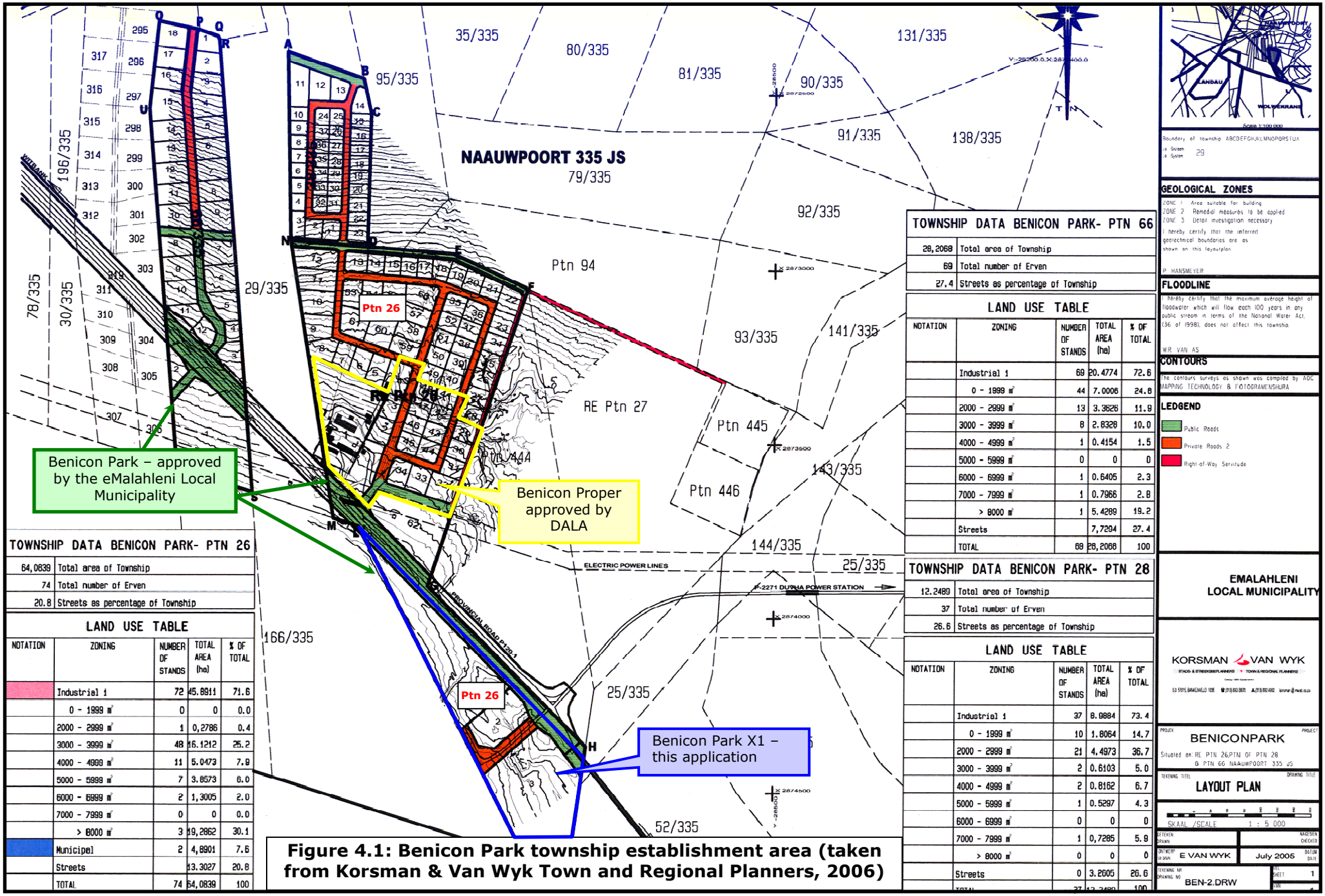


Figure 4.1: Benicon Park township establishment area (taken from Korsman & Van Wyk Town and Regional Planners, 2006)

TOWNSHIP DATA BENICON PARK- PTN 26

64,0839	Total area of Township
74	Total number of Erven
20.8	Streets as percentage of Township

LAND USE TABLE

NOTATION	ZONING	NUMBER OF STANDS	TOTAL AREA (ha)	% OF TOTAL
	Industrial 1	72	45.8911	71.6
	0 - 1999 m²	0	0	0.0
	2000 - 2999 m²	1	0,2786	0.4
	3000 - 3999 m²	48	16.1212	25.2
	4000 - 4999 m²	11	5.0473	7.9
	5000 - 5999 m²	7	3.8573	6.0
	6000 - 6999 m²	2	1,3005	2.0
	7000 - 7999 m²	0	0	0.0
	> 8000 m²	3	19,2862	30.1
	Municipal	2	4,8901	7.6
	Streets		13.3027	20.8
	TOTAL	74	64,0839	100

TOWNSHIP DATA BENICON PARK- PTN 66

28,2068	Total area of Township
69	Total number of Erven
27.4	Streets as percentage of Township

LAND USE TABLE

NOTATION	ZONING	NUMBER OF STANDS	TOTAL AREA (ha)	% OF TOTAL
	Industrial 1	69	20.4774	72.6
	0 - 1999 m²	44	7.0006	24.8
	2000 - 2999 m²	13	3.3626	11.9
	3000 - 3999 m²	8	2.8328	10.0
	4000 - 4999 m²	1	0.4154	1.5
	5000 - 5999 m²	0	0	0
	6000 - 6999 m²	1	0.6405	2.3
	7000 - 7999 m²	1	0.7966	2.8
	> 8000 m²	1	5.4289	19.2
	Streets		7,7294	27.4
	TOTAL	69	28,2068	100

TOWNSHIP DATA BENICON PARK- PTN 28

12.2489	Total area of Township
37	Total number of Erven
26.6	Streets as percentage of Township

LAND USE TABLE

NOTATION	ZONING	NUMBER OF STANDS	TOTAL AREA (ha)	% OF TOTAL
	Industrial 1	37	8.9884	73.4
	0 - 1999 m²	10	1.8064	14.7
	2000 - 2999 m²	21	4.4973	36.7
	3000 - 3999 m²	2	0.6103	5.0
	4000 - 4999 m²	2	0.8162	6.7
	5000 - 5999 m²	1	0.5297	4.3
	6000 - 6999 m²	0	0	0
	7000 - 7999 m²	1	0,7285	5.9
	> 8000 m²	0	0	0
	Streets	0	3.2605	26.6
	TOTAL	37	12.2489	100

Boundary of township ABCDEFGHJKLMNOPQRSTUA

o System 29

GEOLOGICAL ZONES

ZONE 1 Area suitable for building
ZONE 2 Remedial measures to be applied
ZONE 3 Detail investigation necessary

I hereby certify that the inferred geotechnical boundaries are as shown on this layoutplan

P HANSMEYER

FLOODLINE

I hereby certify that the maximum average height of floodwater which will flow each 100 years in any public stream in terms of the National Water Act, (36 of 1998), does not affect this township.

WR VAN AS

CONTOURS

The contours surveys as shown was compiled by AOC MAPPING TECHNOLOGY & FOTOGRAMENSHURA

LEDGEND

Public Roads
Private Roads 2
Right-of-Way Servitude

EMALAHLENI LOCAL MUNICIPALITY

KORSMAN VAN WYK
STADS- & STREEKSBEPLANNERS TOWN & REGIONAL PLANNERS

PROJECT: BENICONPARK
Situated on: RE PTN 26,PTN OF PTN 28 & PTN 66 NAAUWPOORT 335 JS

DRAWING TITLE: LAYOUT PLAN

SKAAL /SCALE 1 : 5 000

GETEKEN DRAWN	NAGESIEN CHECKED
ONTWERP DESIGN E VAN WYK	July 2005 DATUM DATE
TEKENING NR DRAWING NO BEN-2.DRW	BLAD SHEET 1

4.2 Alternative layout plans

4.2.1 Layout Plan No. 1 (Figure 4.2)

Layout Plan No. 1 (Figure 4.2) was approved by the eMalahleni Local Municipality in 2006 (Council Resolution E.101/06) as part of the original township application (i.e. Benicon Proper and Benicon Park X1 – X5).

The proposed development would have comprised of two (2) 'Industrial 1' (light industrial) stands and one (1) 'Municipal' stand as indicated in the following table and Figure 4.2:

TOWNSHIP DATA BENICON PARK EXT 1			
Total area of Township (ha)		19.2115	
Total number of Erven		3	
Streets as percentage of Township		21.5	
LAND USE TABLE			
Zoning	**Number of stands**	**Total area (ha)**	**% of Total**
Industrial 1	2	13.2848	69.2
Municipal	1	1.7890	9.3
Streets		4.1377	21.5
TOTAL	3	19.2115	100

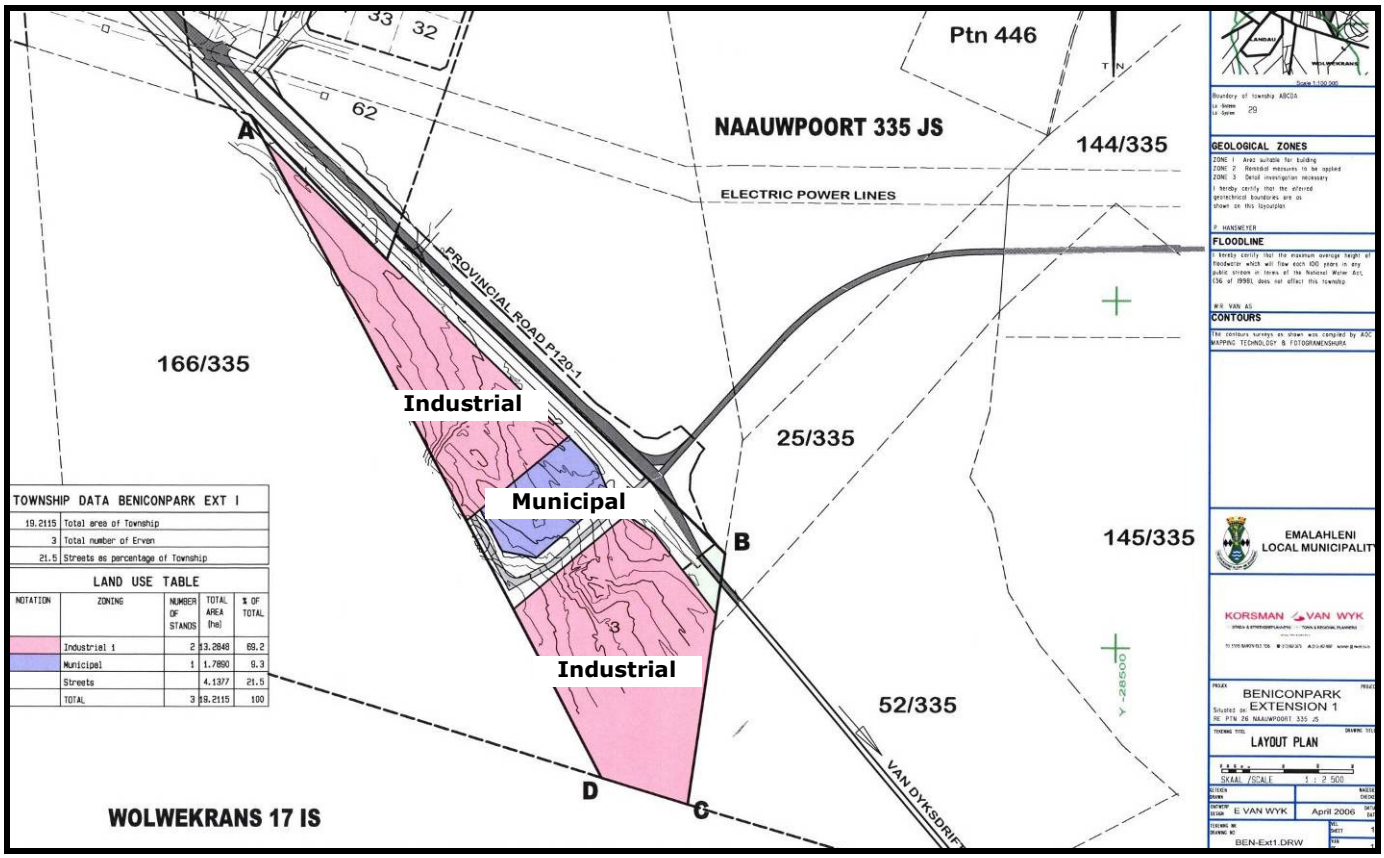


Figure 4.2: Layout Plan No. 1 (taken from Korsman & Van Wyk Town and Regional Planners, 2006)

According to Elmir Industrial Projects (2013), the municipal stand is no longer required since services (i.e. water, sewage) will be provided by the Beniconpark Property Owners' Association (BPOA) and not by the eMalahleni

Local Municipality. Elmir Industrial Projects subsequently decided to change the approved layout plan and apply to the eMalahleni Local Municipality for the amendment of the original townplanning application.

This layout plan was thus discarded by the applicant.

4.2.2 Layout Plan No. 2 (Figure 4.3)

Layout Plan No. 2 was the original layout plan provided to Clean Stream Environmental Services by the applicant and includes three industrial stands (Stands 4, 5 and 6) and one residential stand (Stand 3). The one industrial stand (Stand 5) was earmarked for a garage/filling station.

As indicated in Section 4.2.1, the stand zoned 'Municipal' in Layout Plan No. 1 was omitted from Layout Plan No. 2 since services (i.e. water, sewage) will be provided by the Beniconpark Property Owners' Association (BPOA) and not by the eMalahleni Local Municipality.

Layout Plan No. 2 was however, discarded by the applicant, since the residential stand in the southern portion of the site was found to be too small to accommodate the informal settlers.

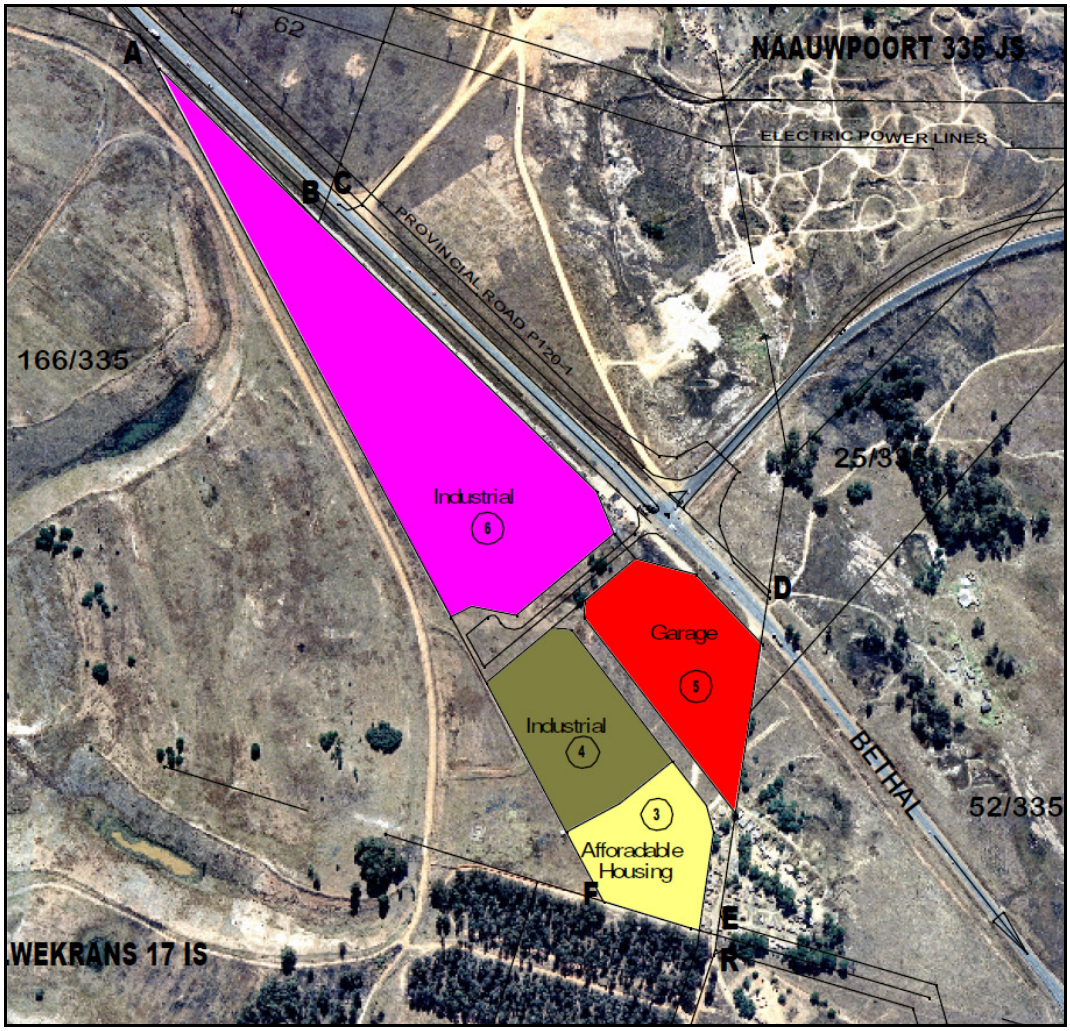


Figure 4.3: Layout Plan No. 2 (taken from Elmir Industrial Projects cc., 2013)

4.2.3 Layout Plan No. 3 (Figure 3.1a – preferred layout plan)

Layout Plan No. 3 (Figure 3.1a and Figure 4.4) is the ***preferred layout plan***. A description of the components of this layout plan is presented in Section 3.3 of this report.

Layout Plan No. 3 comprises of the following stands:

- 2 'Industrial 1' stands (with one industrial stand earmarked for a filling station);
- 1 'Residential 1' stand; and
- 1 'Community' facility.

As indicated in Section 4.2.2, the 'Residential 1' stand provided for in Layout Plan No. 2 was found to be too small to accommodate the informal settlers present on site. The size of the residential stand was thus increased. In addition, a stand was provided for a community facility (possibly a crèche).

No other changes were made to the layout plan.

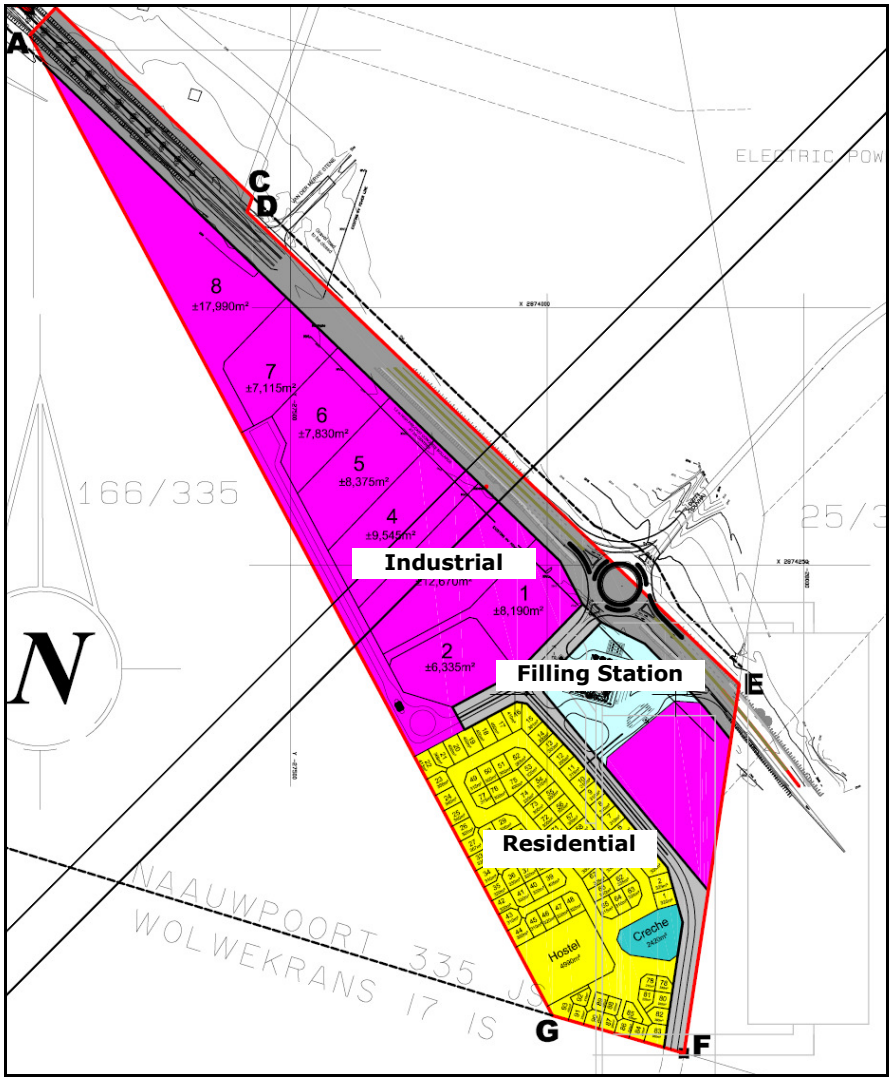


Figure 4.4: Layout Plan No. 3 (taken from Elmir Industrial Projects cc., 2013)

4.3 Alternative services

4.3.1 Water

As indicated in Section 3.4.1, no municipal bulk water line is present in the area or in close proximity thereof. However, a number of alternatives are available with regards to water provision at the proposed development.

Boreholes:
A borehole is present on site providing the informal settlement with water for domestic use.

This borehole does however, not have sufficient capacity to provide the entire development (i.e. Phases 1 to 3) with water. This option was thus not pursued by the developer.

Water from Wolwekrans Water Works:
In the Land Availability and Development Agreement (Appendix 3), it is stated that the Wolwekrans Water Works located south of the site will be transferred to the BPOA/council and that the water works will be utilized as a source of water for the development. According to the applicant, this option was investigated but no further response was received from BHP Billiton, the current owners of the water works.

This option was thus not pursued.

Bulk water pipeline:
As indicated in Section 3.4.1 of this report, the applicant intends to obtain potable water from the eMalahleni Local Municipality. However, no municipal bulk water line is currently present in the area. The option of installing a new bulk water line was thus investigated.

According to the applicant, a 200 mm diameter water supply line will be installed within the R544 provincial road reserve between Duvha Park and Benicon Park X1 (i.e. the said site).

Scip Engineering Group applied to the eMalahleni Local Municipality for a water connection and water supply of 0.590 ML/day. This water demand entails the water required for the entire Benicon Park development. The water connection and water supply was subsequently approved by the municipality. A copy of the application and approval (dated: 8 January 2013 - see Page 3 of application) is provided in Appendix 4.

Approval was also obtained from the Department of Roads and Transport (March 2009 and December 2013) for the installation of the pipeline within the road reserve. A copy of the wayleave approvals are provided in Appendix 4.

Environmental authorisation and a water use license would be required should the new water pipeline impact/cross any streams or wetlands between the said site and the Duvha Park connection point.

4.3.2 Sewage

As indicated in Section 3.4.3, no municipal bulk sewer line is present in the area or in close proximity thereof. The closest municipal sewage works is the Naauwpoort Sewage Works, which is situated several kilometers north of the development site. The Naauwpoort Sewage Works is currently functioning at over capacity.

A number of alternatives were thus investigated regarding the disposal/treatment of sewage.

Temporary on-site storage (conservancy tanks):
The applicant intends to phase the development of the site, which will assist with the provision of services. Initially, only the filling station will be constructed, which means that according to the applicant's calculations ±128,400 liters of sewage would have to be stored or disposed of per month.

According to the applicant, this sewage volume can be temporarily stored in conservancy tanks, which will be emptied on a regular basis by a contractor.

The applicant has not yet decided whether this option (conservancy tank) or the on-site treatment of sewage (package plant) will be implemented during Phase 1 of the development.

On-site treatment (package plant):
Another alternative is to install a sewage package plant on site. Sewage will be treated on-site and the effluent will either be released into the environment or used for irrigation purposes.

An environmental authorisation will be required for the treatment of sewage depending on the capacity of the package plant and a water use license will be required for the release/irrigation of the effluent.

In addition, the layout plan will have to be revised to make provision for the package plant/s.

The applicant has not yet decided whether this option (package plant) or conservancy tanks will be implemented during Phase 1 of the development.

Bulk sewer line:
According to the developer, a proper sewage network and bulk sewer line will be installed during Phase 2, i.e. once more information is available regarding the number of industries on the property and subsequent sewage volumes.

Approval will have to be obtained from the eMalahleni Local Municipality for the bulk connection and disposal at the Naauwpoort sewage works. In addition, approval for a sewer line within the road reserve will have to be obtained from the Department of Public Works, Roads and Transport.

Depending on the size of the intended bulk sewer line, environmental authorisation may also have to be obtained. Should the sewer line impact on/cross a stream and/or wetland, a water use license and environmental authorisation will be required.

4.4 The 'No Project Option'

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 purchase another site for the proposed development and obtain all the necessary approvals for the new site;
- The applicant would have to investigate other uses for the proposed site, since it has already been purchased;
- The applicant would have to leave the said property vacant.
- Current activities on site (e.g. dumping of waste, hawkers, informal settlers, etc.) would continue.
- The applicant might have to sell the property.

4.5 Need, desirability and feasibility of the activity

4.5.1 The need

According to the town planning memorandum (Appendix 3) compiled by Elmir Industrial Project cc., the need for the proposed development is indicated as follows:

"The proposed township: Beniconpark Extension 1 is centrally situated within the Highveld Coalfields. A large share of Emalahleni's economic activities takes place south of the town, on the collieries and at Eskom's power stations.

Mr Dikeledi Mahlangu, M.E.C. for Department of Public Works, Roads and Transport declared on 23 May 2013 during his 2013/14 Policy & Budget Speech the following, namely that:

- *Provincial Road P120-1 will be a new coal haulage road; and*
- *15 km of this road, from Emalahleni to Road D914 (Duvha Power Station road) will be rehabilitated and this will commence during this financial year.*

A new dual carriage road will be constructed during the rehabilitation process. The large number of industrial type of businesses situated on "farm-land" along this road is evident of the need of such properties, zoned and developed for industrial purposes. There is no other proclaimed industrial township in the vicinity, ideally situated at the intersection of two such arterial roads.

The two large stands ensure that the future development of the land is adaptable in order to provide for a spectrum of spatial requirements. This attribute will be a key success factor for the development of this proposed township.

Experience has shown that it is not only very difficult to relocate informal settlements, but this on-site settlement can also provide the labour to the businesses that will be trading from these premises.

The above-mentioned facts are excellent indications of the extent of the business activities in this vicinity. The need for industrial properties in this revised layout is therefore evident."

4.5.2 The desirability

According to the town planning memorandum (Appendix 3) compiled by Elmir Industrial Project cc., the desirability of the proposed development is indicated as follows:

"The proposed amendments to the layout are desirable for the following reasons:

- *The flexibility to cater for the various spatial needs and requirements will be a critical factor for attracting new property investments, especially for businesses relocating from Gauteng.*
- *If any municipality or public body needs a portion of land in future, this can be provided to meet its specific needs.*
- *The need to provide employee's housing nearby their place of employment has been articulated in many Government's policies, i.e. the Reconstruction and Development Policy.*
- *Easy access to the hospital is just logic. The industrial stands may also provide consulting rooms for medical practitioners.*

The proposed township is an endorsement of the principles and proposals of the Spatial Development Framework. The implementation of the proposed layout and land use rights will contribute to the development and sustainability of the economy of Emalahleni as a development node, in particular to the following objectives of the SDF:

- *The area is thus earmarked for a Local Industrial Area.*
- *The SDF states the following regarding to the need for industrial land:"*

2.3 THE ECONOMY:

"Emalahleni constitute one of the largest economies within the Nkangala District Municipality. The largest economic sectors within the municipality are mining followed by utilities.

The spatial distribution of this economic activity in the municipality is as follows:

Power Stations: *Due to the rich coal reserves in the Emalahleni and Steve Tshwete Municipalities, Eskom developed the Kendal, Ga-Nala, Matla, Wilge and Duvha power stations during the 1970's and 1980's to provide in future electricity needs.*

This has lead to the establishment of Ga-Nala, Thubelihle and Wilge and the growth of these townships. The Wilge power station has however been demolished, with detrimental effects for the Wilge settlement.

Kendal is the largest power station with capacity of 4 032 MW. The chimneys at the Duvha power station are the highest manmade structures in Africa. These smoke stacks are each 300 metres tall, 30 metres higher than the Hillbrow tower in Johannesburg. Coal is a limited resource and there are plans to convert to gas in future to feed the power stations.

Manufacturing: *There are a number of industrial areas in Emalahleni, mostly concentrated in and around eMalahleni.*

There is a shortage of small, serviced industrial stands in eMalahleni. The land to the west of Ferrobank is not suitable for development; hence this area cannot be extended.

***Service industries** are emerging on the agricultural holdings north of eMalahleni (Jackaroo Park A.H. and Riverview A.H.). This could be ascribed to the fact that there are no suitable, small industrial sites to accommodate these uses. Applications for industrial uses have also been received in the Dixon A.H., but this area is constrained by stormwater problems.*

The Naauwpoort industrial area is situated approximately 5 km south of Duvha Park Extension 1. This township formerly fell outside the jurisdictional area of the eMalahleni municipality and was approved and administered by the Mpumalanga Provincial Government.

There is a need for industrial land in Emalahleni, both in terms of land for heavy industries (approximately 20 to 50 hectares) and for light industries, service industries and high-tech industries."

4.5.3 Feasibility of the filling station

A feasibility study was conducted by WSP SA Civil and Structural Engineers (Pty) Ltd. (hereafter referred to as WSP) for the proposed establishment of a filling station as part of the Benicon Park X1 development.

The objective of the feasibility study was to:

- Determine if the proposed site is feasible for developing and operating filling station facilities;
- Determine the potential impact on surrounding sites.

A copy of the feasibility study is provided in Appendix 5 and should be consulted regarding methodology used. It should be noted that the feasibility study was conducted in December 2011.

In order to determine whether or not a proposed filling station will be feasible, the developer has to take into account fixed **costs** (e.g. the cost of land, buildings, engineering, etc.), operational costs (e.g. salaries, services, etc.) as well as expected fuel **sales** and income from the convenience store. It is also necessary to look at **competitor sites** and determine the potential impact that the new site may have on other filling stations in the area.

4.5.3.1 Start-up and operating costs

A breakdown of the start-up costs that will be incurred by the oil company and the operator as well as the operating costs are provided in Appendix 5.

4.5.3.2 Expected fuel sales and income from the convenience store

According to WSP (2011), the following empiric formula is used by the fuel industry to calculate the expected average litres of fuel to be sold in a month:

Liters per month = (vehicles per day passing the site) X
(average fill per vehicle) X
(% vehicles of passer-by traffic turning into the site) X
(average full normal trading days in a month)

Traffic volumes (vehicles per day passing the site)
According to WSP (2011), the Average Daily Traffic (ADT) passing the site during November 2011 was approximately 16 700 vehicles per day. The ADT per travelling direction is as follows:

- 600 veh/day northbound on the R544;
- 200 veh/day southbound on the R544;
- 900 veh/day east and westwards on road D2771.

Average fill per vehicle:
According to WSP (2011), the proposed site will primarily cater for the transient market consisting mainly of the middle to upper middle income population class as well as a significant portion of business traffic. An average fill rate of 25 liters per vehicle was assumed for all the light vehicles in both directions and 160 litres for the heavy vehicles.

Interception rates (%vehicles of passer-by traffic turning into the site):
WSP (2011) estimated the interception rate for the proposed development as follows:

ADT = ± 16 700 veh/day passing the site	
Road and Direction	**Interception Rate**
R544 northbound	5.0 % (light) 2.0 % (heavy)
R544 southbound	1.75 % (light) 0.5% (heavy)
D2771 (both directions)	2.75 % (light) 1.0% (heavy)

Trading days:
According to WSP (2011), traffic volumes have an impact on the number of trading days per month. Traffic on the R544 is slightly lower over weekends than during the week and higher on Fridays. Thus, 28 trading days were used for the R544 and 26 trading days for the D2771.

Expected monthly sales:
Using information w.r.t. traffic flow, average fill, trading days and interception rate, the expected monthly fuel sales for the proposed filling station was calculated by WSP (2011). The expected fuel sales in a month are provided in Table 4.1.

Table 4.1: Expected fuel sales in a month (taken from WSP, 2011)

Monthly sales potential	**Petrol (light)**				**Diesel (heavy)**			
Movement	**D2771**		**R544**		**R544**		**D2771**	
	N-EB/E-NB	**S-EB/E-SB**	**NB**	**SB**	**NB**	**SB**	**N-EB/E-NB**	**S-EB/E-SB**
Traffic flow (veh/day)	4 610	379	3 965	3 539	629	659	2 619	351
Average fill (liters/vehicle)	25	25	25	25	160	160	160	160
Trading days (days/month)	28	28	28	28	26	26	26	26
Interception rate (%)	2.75	2.75	5	1.75	2	0.5	1	1
Subtotal	**88 743**	**7 296**	**138 775**	**43 353**	**52 333**	**13 707**	**108 950**	**14 602**
Sales potential	**278 166**				**189 592**			
Total Current Monthly Sales Potential					**467 758**			
Total liters (Year 1 (2014) @ 90% of potential sales and 3% growth)					433 312			
Total liters (Year 2 2015) @ 95% of potential sales and 3 % growth)					471 432			
Total liters (Year 3 (2016) @ 100% of potential sales and 3 % growth)					511 132			
Total liters (Year 4 (2017) @ 100% of potential sales and 3 % growth)					526 466			

As indicated in Table 4.1, the expected fuel sales for Year 3 is 511 132 liters per month.

In addition to the expected fuel sales, the expected shop sales for Year 3 is R1 022 000/month.

According to WSP (2011), the filling station will also include a branded food outlet with take-away and sit-down meals. The expected revenue from the food outlet is estimated at R511 000/month.

More detailed information with regards to the above-mentioned calculations is provided in Appendix 5.

4.5.3.3 Feasibility of site

Based on the feasibility assessment, WSP (2011) concluded the following with regards to the feasibility of the site:

- The land, building and other fixed costs will be similar to that of a new filling station.
- The cost of the road and civil engineering works will be average to below average when compared to other similar new sites.
- The site is feasible from a fuel sales viewpoint, based on the expected fuel and convenience store sales.
- The site is feasible from a fuel sales point of view for the Operator from the 2nd operational year.
- The site is feasible for the Fuel Company from the 1st operational year.
- The sales from other amenities (e.g. car wash, fast foods, etc.) have not been taken into account.
- No filling stations are located within a 3 km radius of the site

According to WSP (2011), the development of a filling station on site will be feasible.

5. BIOPHYSICAL DESCRIPTION OF THE SITE

5.1 Location of the site

The proposed development will take place on a portion of the Remaining Extent of Portion 26 of the farm Naauwpoort 335 JS, eMalahleni (Figure 5.1). The site is located adjacent to the R544 provincial road (P120-1) between eMalahleni and Bethal, at the T-Junction to Duvha Power Station (D914 road).

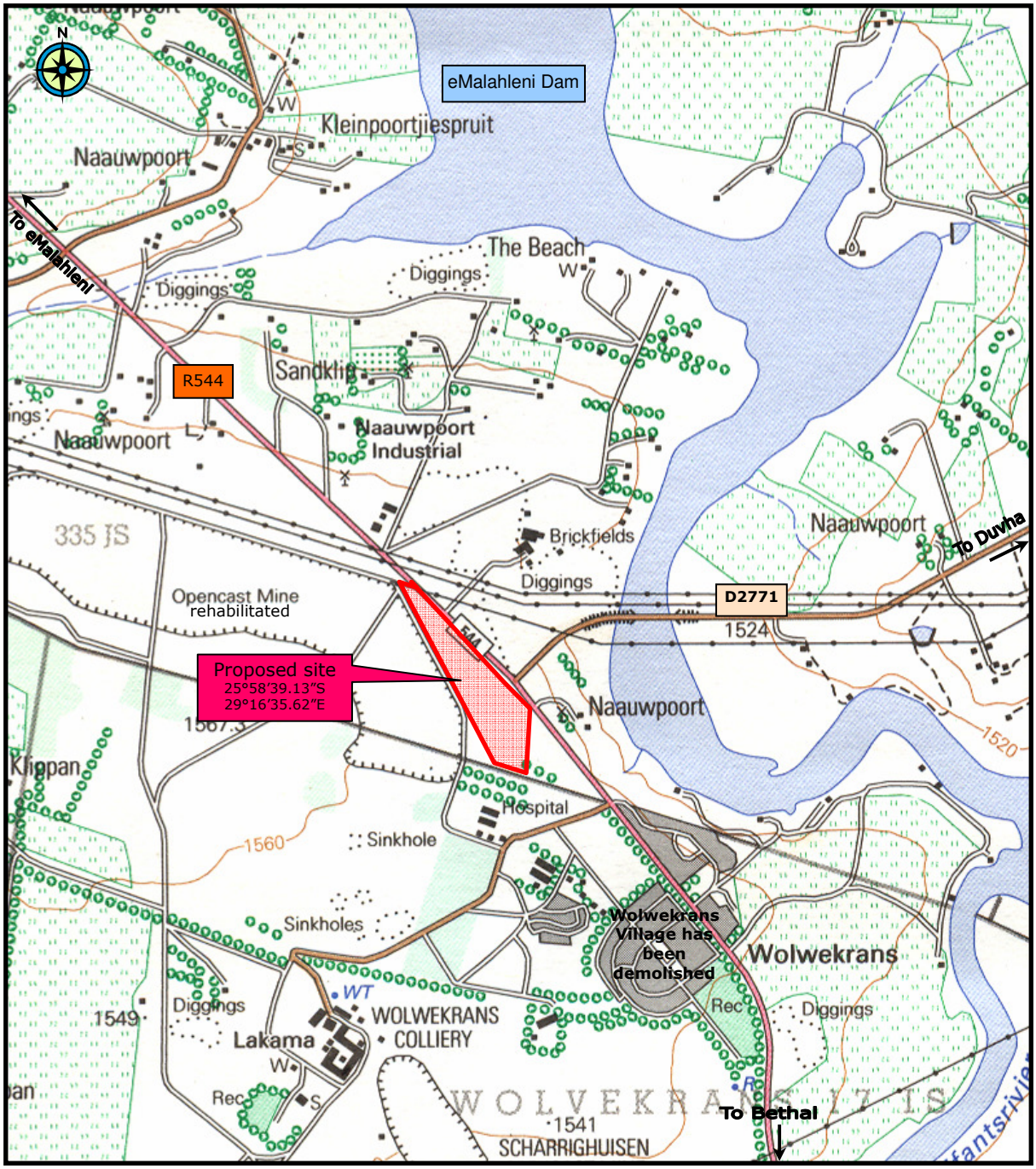


Figure 5.1: Location of site *(taken from 1: 50 000 2529CD)*

Co-ordinates for the centre of the site are:

- 25°58'39.13"S
- 29°16'35.62"E

The Surveyor-General 21 digit site reference number for the proposed project is:

T	O	J	S	0	0	0	0	0	0	0	0	0	3	3	5	0	0	0	2	6

The said property falls under the jurisdiction of the eMalahleni Local Municipality (MP312) and the Nkangala District Municipality.

5.2 Climate

The South African Weather Bureau has partitioned the country into 15 climatic regions. This division is based on:

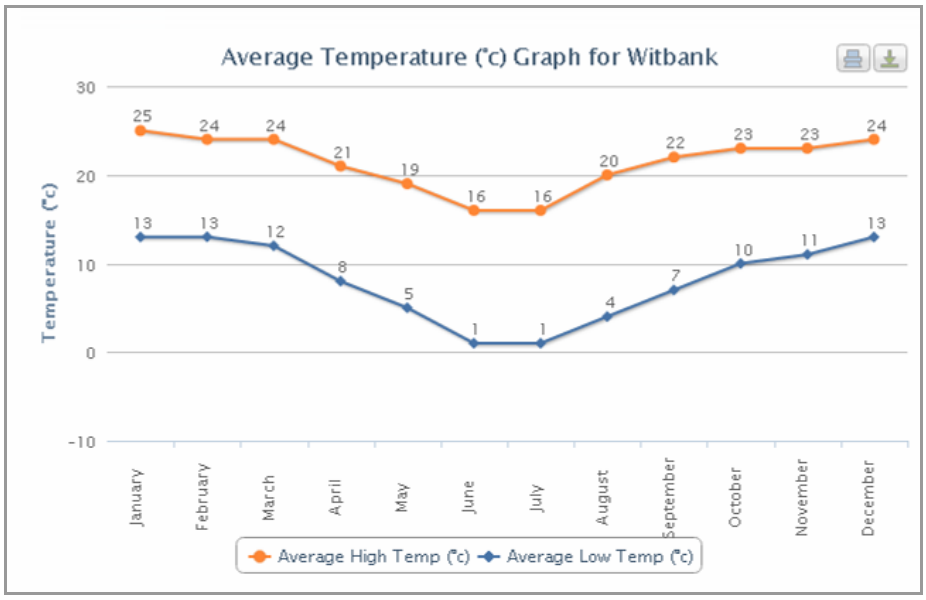
- geographic considerations, more specifically the prominent mountain ranges (great escarpment) which constitute the main climatic divides, besides also other features such as rivers and political boundaries;
- the interior plateau - use has been made of the change from BW to BS and from BS to C climates according to the Köppen classification.

The proposed site falls within Climatic Region H – The Highveld.

The climate is typical of the Highveld, with warm summers and cold winters with occasional severe frosts. Rainfall typically occurs as high-intensity short duration thunderstorms. The average frost period is 111 days per annum. The mean annual temperature is 22.5°C, with recorded extremes of -11°C and 34°C.

5.2.1 Temperature

An indication of the lowest and highest monthly mean ambient temperatures are presented in the graph below (taken from www.worldweatheronline.com).

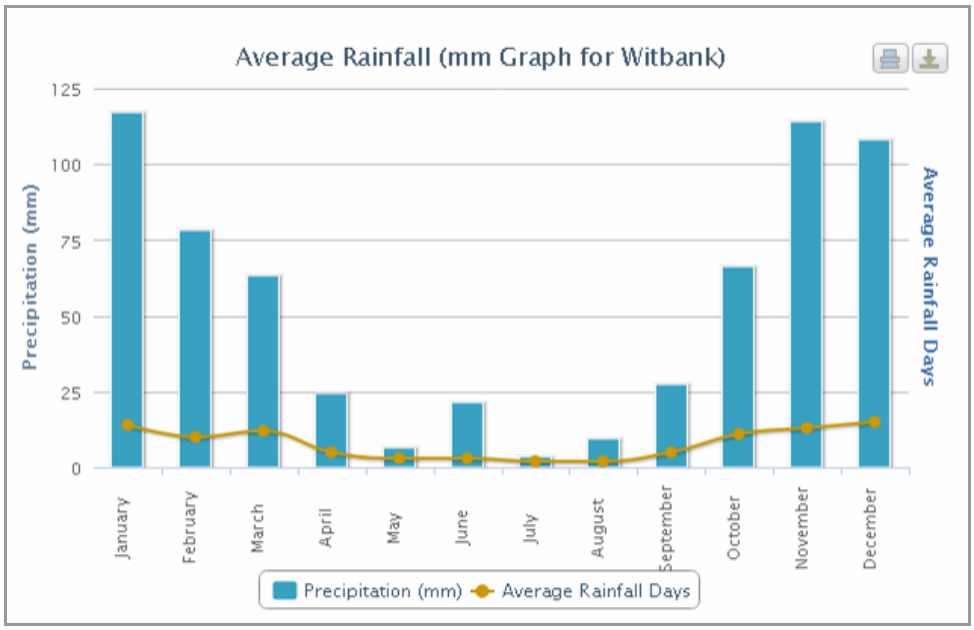


The highest temperatures are experienced during January and are usually recorded between 12:00 and 16:00. The mean temperature begins to rise

slowly from a minimum between 05:00 – 06:00 to a mean maximum at 14:00. It then drops sharply after 16:00 –17:00.

5.2.2 Rainfall

The precipitation and average rainfall days for eMalahleni are provided in the graph below (taken from www.worldweatheronline.com). The highest rainfall months are November-January with the least rainfall during the winter months May-August.



The average number of days per month having rainfall depths in excess of 0,1mm, together with the maximum and minimum number of rainfall days, are given in Table 5.1 while the 24 hour rainfall depths for different recurrence intervals are given in Table 5.2.

Table 5.1: Monthly rainfall data (Vandyksdrift (No. 478546) weather station).

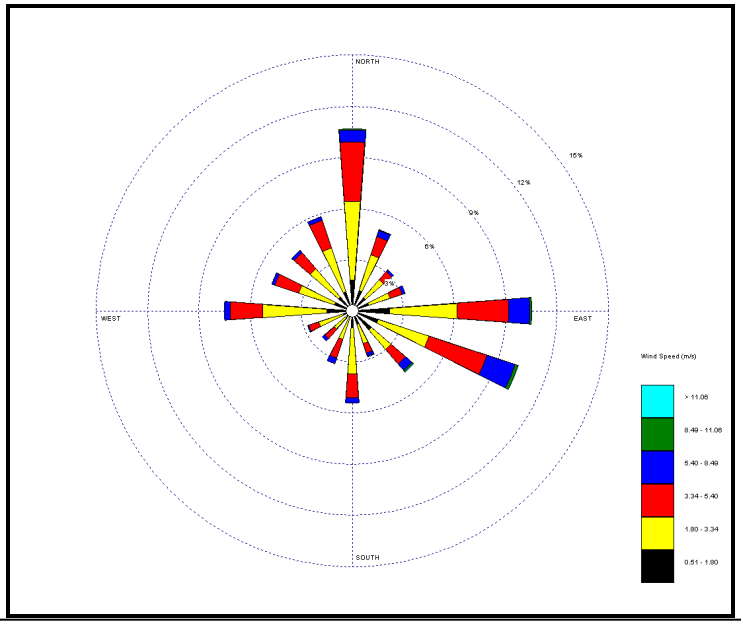
Average Monthly Rainfall Depths (mm) and Days Having a Rainfall of >0,1mm		
Month	**Ave Depths**	**Ave Days**
January	128	13,8
February	92	11,2
March	77	9,5
April	49	6,5
May	21	2,9
June	8	1,5
July	8	1,7
August	8	0,9
September	23	3,7
October	68	8,3
November	122	13,0
December	124	13,1
Total	**728**	**86.1**

Table 5.2: Rainfall intensities (Vandyksdrift (No. 478546) weather station).

24 Hour Rainfall Depths (mm)			
Maximum Depth	**50 Year Storm Event**	**100 Year Storm Event**	**200 Year Storm Event**
115	104	118	134

5.2.3 Wind

The wind rose for eMalahleni indicates that the area is characterized by easterly and northerly winds. The winds are mostly light and fall in the categories 1.80 – 3.34 m/s and 3.34 – 5.40 m/s (uMoya-NILU (Pty) Ltd., 2010).



Wind rose for Witbank (2004-2007) *(Taken from uMoya-NILU Consulting (Pty) Ltd., 2010)*

During the day, the most dominant wind directions are from the north (N) (23.21%) followed by the north-north-westerly (NNW) to west-north-westerly winds (NWN) (24.0%) and the easterly to south-easterly (SE) (23.1%).

The most dominant wind directions during the night are from the east (E) to south-east (SE) (29.6%), with a greatly reduced frequency of the north-westerly winds.

5.3 Land use

Figure 5.2 provides an aerial view of the site as well as an indication of the surrounding land uses and environmental features of the site. Figure 5.3 provides a photographic view of the important features on site.

5.3.1 Land ownership

Portion 26 of the farm Naauwpoort 335 JS is registered to Benicon Eiendoms Beleggings (Pty) Ltd (T30663/1981) on the WinDeed System. A copy of the Deeds Office Property report is provided in Appendix 1.

The property was however, purchased by Elmir Industrial Projects cc. in 2012. A copy of the Sale of Property Agreement is provided in Appendix 3.

5.3.2 Zoning of the site

The property is still zoned agriculture, although the application for a township establishment was approved by the eMalahleni Local Municipality (see Appendix 3) in 2006.

5.3.3 Size of the site

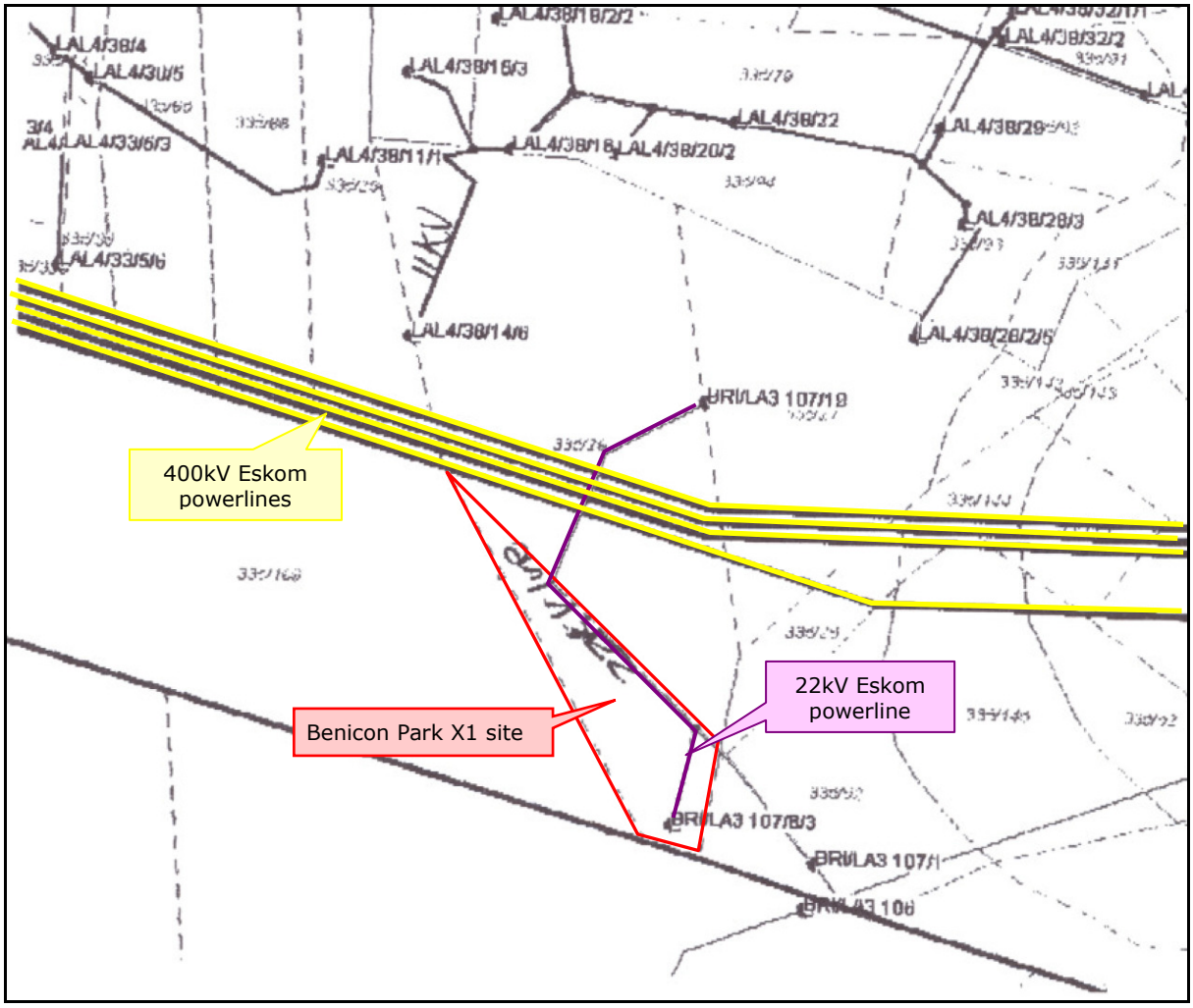
Portion 26 of the farm Naauwpoort 335 JS is 64.0839 ha in extent. However, only approximately 19 ha will be utilized for the proposed development (i.e. the portion of the farm located south of the R544 provincial road).

5.3.4 Servitudes

Four (4) 400kV overhead electrical powerlines are present on Portion 26 of the farm Naauwpoort 335 JS. A servitude is associated with these powerlines. The powerlines however, do not extend across the proposed site, which comprises the portion of Portion 26 located south of the R544 provincial road.

A 22kV powerline extends along the northern boundary of the site and across the southern portion of the site towards the informal settlement. A servitude would also be associated with this powerline.

The diagram provided by Eskom in 2007 indicating the location of the various powerlines is presented below.



The R544 provincial road between Bethal and eMalahleni extends along the northern boundary of the site (Figure 5.1). A servitude is associated with this road.

5.3.5 Land use and existing infrastructure

The site has not been formally developed (Figure 5.2). However, informal settlers constructed houses in the southern portion of the site. This settlement extends onto the adjacent property. A dilapidated hostel and a football field are present next to this area (Figure 5.3; Photo 1). The hostel was previously used by Benicon employees.

Two gravel roads provide access to the informal settlement (Figure 5.3; Photo 3). These gravel roads extend through the informal settlement to the Impungwe Hospital (previously Wolwekrans Hospital) located south of the site (Figure 5.2).

Hawkers operate informal businesses adjacent to the R544 provincial road (Figure 5.3; Photo 2). These businesses comprise of permanent (brick) and informal (corrugated iron) structures and were constructed partly within the road reserve and partly on the proposed development site. Waste generated by the hawkers (e.g. domestic waste, tyres, exhausts, etc.) is disposed of behind the businesses on the said property.

An old excavation of between 1 and 2 metres deep is present on site behind to the hawkers' stalls (Figure 5.2 and Figure 5.3; Photo 5). Sand was possibly excavated from this area by the informal settlers. During heavy rainfall periods, the excavation fills up with water (Figure 5.3; Photo 6). A number of smaller excavations and surrounding berms are also present in the central portion of the site (Figure 5.3; Photo 7). One of these excavations is overgrown with wattle trees.

A 22kV Eskom powerline extends along the northern boundary and cuts through the southern portion of the site towards the informal settlement (Figure 5.3; Photo 3).

An old opencast mine (Wolwekrans Colliery) belonging to BHP Billiton/Ingwe Surface Holdings is present on the western boundary of the site. As indicated in Figure 5.2, this opencast mine has been rehabilitated and fenced. From the aerial view and site visit it is evident that the rehabilitation activities also extended onto the proposed development site and that a portion of the site was fenced of as part of the mining area. A fire break of approximately 5m wide has been made around the rehabilitated area (Figure 5.3; Photo 8).

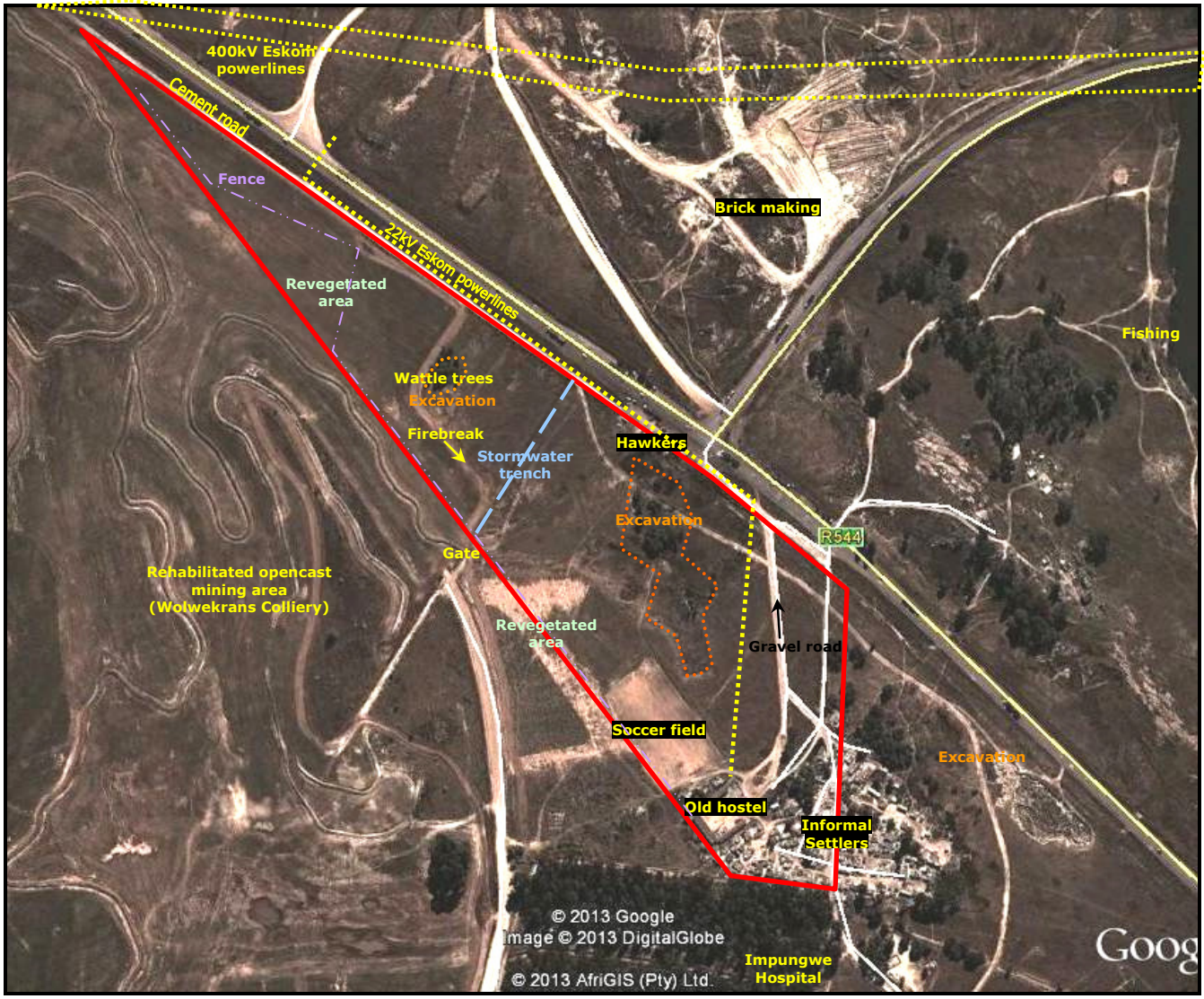


Figure 5.2: Aerial view of the site and surrounding area (June 2013; Google Earth)

A stormwater trench was excavated across the site to capture surface water runoff from the rehabilitated mining area. The stormwater trench is approximately 1.5 m deep and is vegetated (Figure 5.2 and Figure 5.3; Photo 4).

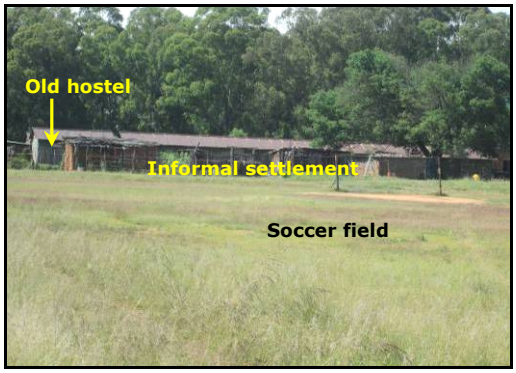


Photo 1: Informal settlers

Photo 2: Hawkers

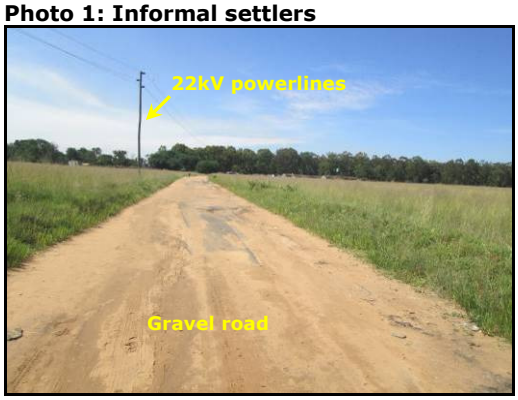


Photo 3: Gravel road to informal settlement

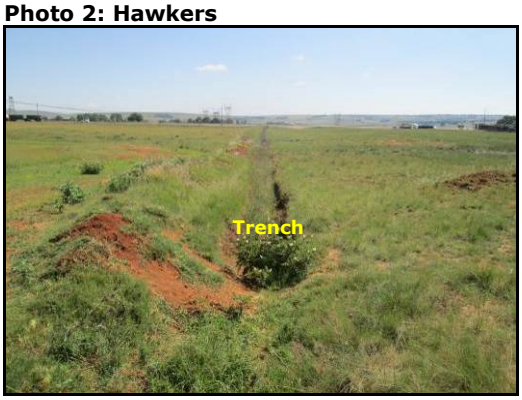


Photo 4: Stormwater trench

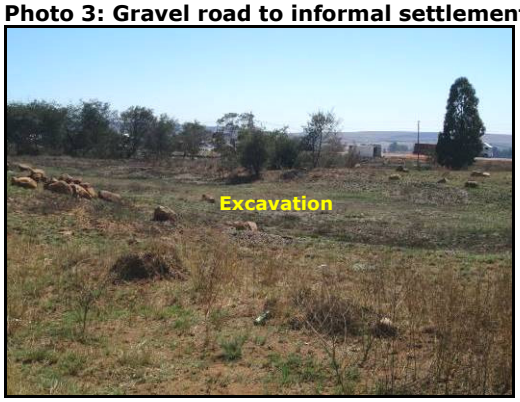


Photo 5: Excavation behind hawkers

Photo 6: Excavation after heavy rain

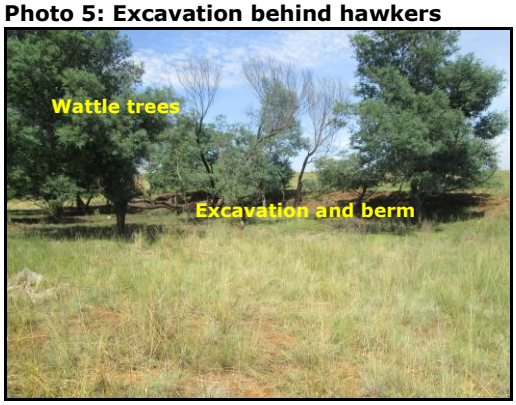


Photo 7: Excavation in centre of site

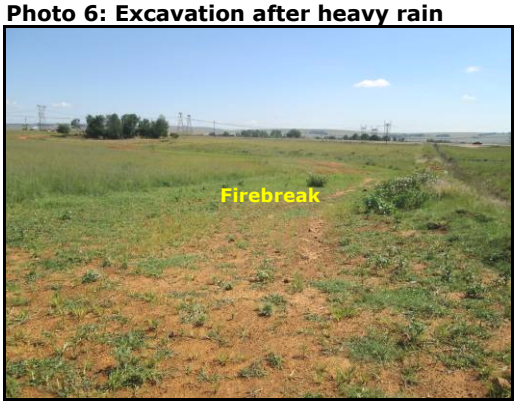


Photo 8: Firebreak

Figure 5.3a: Photographic view of the site.

5.3.6 Surrounding land uses

The said site is located approximately 10 km from the central business district of eMalahleni on the outskirts of town adjacent to the R544 provincial road.

The area previously comprised smallholdings, which have recently been developed for industrial and other business purposes. Many of the smallholdings between the said site and town are used by logistics companies due to the area being en-route to a large number of coal mines.

The property on the western boundary of the site was previously mined by BHP Billiton (Wolwekrans Colliery) by means of opencast mining. The area has since been rehabilitated (Figure 5.2 and Figure 5.4; Photo 1)).

Wolwekrans Colliery also included a residential area (Wolwekrans Village), which was located approximately 900 m south of the said site (Figure 5.1). This village was demolished as part of the rehabilitation activities.

The Impungwe Hospital (previously Wolwekrans Hospital) is located south of the site (Figure 5.4; Photo 4).

The mine, village and hospital were provided with water from a water treatment works (Wolwekrans Water Treatment Works) located near the hospital (Figure 5.4; Photo 3). The water treatment works was not demolished as part of the rehabilitation activities and is still operational.

The workshops, offices and scrapyard of the mining contractor, Benicon (Benicon Eiendoms Beleggings (Pty) Ltd.), are located north of the site opposite the R544 provincial road. Van der Merwe Stene is located east of Benicon. Naauwpoort Industrial and Mining Salvage Industries cc. (a scrapyard) is located west of Benicon. Houses are present on all these industrial properties.

The property located north of the R544 and east of the road to Duvha Power Station is vacant and used informally for recreational activities (i.e. fishing) since it is located adjacent to the Olifants River (Figure 5.2).

As previously indicated, the R544 provincial road forms the northern boundary of the site. The Department of Public Works, Roads and Transport is currently busy with the upgrading of this road (Figure 5.4; Photo 2).

Other land uses in the area include four large 400kV Eskom powerlines and a cellphone tower north of the site (Figure 5.4; Photos 5 and 6).

A list of the surrounding land owners/users as well as an indication of the various land uses are provided in Table 5.3. The location of the various properties and landowners are presented in Figure 6.2 in the public participation section.

Photo 1: Rehabilitated opencast mine

Photo 2: Upgrading of the R544 road

Photo 3: Wolwekrans Water Treatment Works

Photo 4: Impungwe Hospital

Photo 5: Cellphone tower

Photo 6: 400kV Eskom powerlines

Figure 5.3b: Photographic view of the surrounding area.

Table 5.3: List of surrounding land owners/users

NAME OF OWNER/USER	PROPERTY	LAND USE
A.G. Lloyd - Naauwpoort Industrial and Mining Salvage Industries cc.	Portion 29 of Naauwpoort	Industrial (scrapyard) and homestead
C.W. van der Merwe - Van der Merwe Stene	Portions 81, 447, 25 and 52 of Naauwpoort	Industrial (brick-making) and homestead
Benicon Eiendoms Beleggings (Pty) Ltd. - Benicon	Portion 26 of Naauwpoort	Industrial (offices, workshops, scrapyard) and homestead
N. van der Merwe	Portion 66 of Naauwpoort	Vacant but earmarked for industrial
Informal settlers	Portion 26 and 52 and Naauwpoort	Residential (informal)
Hawkers	R544 road reserve	Informal businesses (traditional

NAME OF OWNER/USER	PROPERTY	LAND USE
		medicine, tyres, exhausts, food stalls)
Department of Roads and Transport	R544 provincial road	R544 provincial road
Eskom	Naauwpoort	22kV and 400kV powerlines
Ingwe Surface Holdings Ltd./BHP Billiton	Portion 166 of Naauwpoort and 4 of Wolwekrans	Opencast mine (rehabilitated)
Wolwekrans Water Treatment Plant	Portion 4 of Wolwekrans	Water provision
Impungwe Hospital	Portion 4 of Wolwekrans	Medical

5.3.7 Surrounding filling stations

No filling stations are located within a 3 km radius of the site. However, WSP (2011) identified six (6) competitor sites on or near the R544 route which could be affected by the proposed filling station. The following filling stations were identified:

- Total, corner of R544 and Springbok Street, Tasbet Park;
- Engen, corner of OR Tambo Drive and N12 on/off ramp;
- Sasol, corner of OR Tambo Drive and Hans Strydom Avenue;
- BP, corner of Hans Strydom Avenue and John Bailie Street, Klipfontein;
- Total, Stevenson Street near Pick & Pay, Klipfontein;
- Sasol, Highland Mews.

Figure 5.4 indicates the location of these sites.

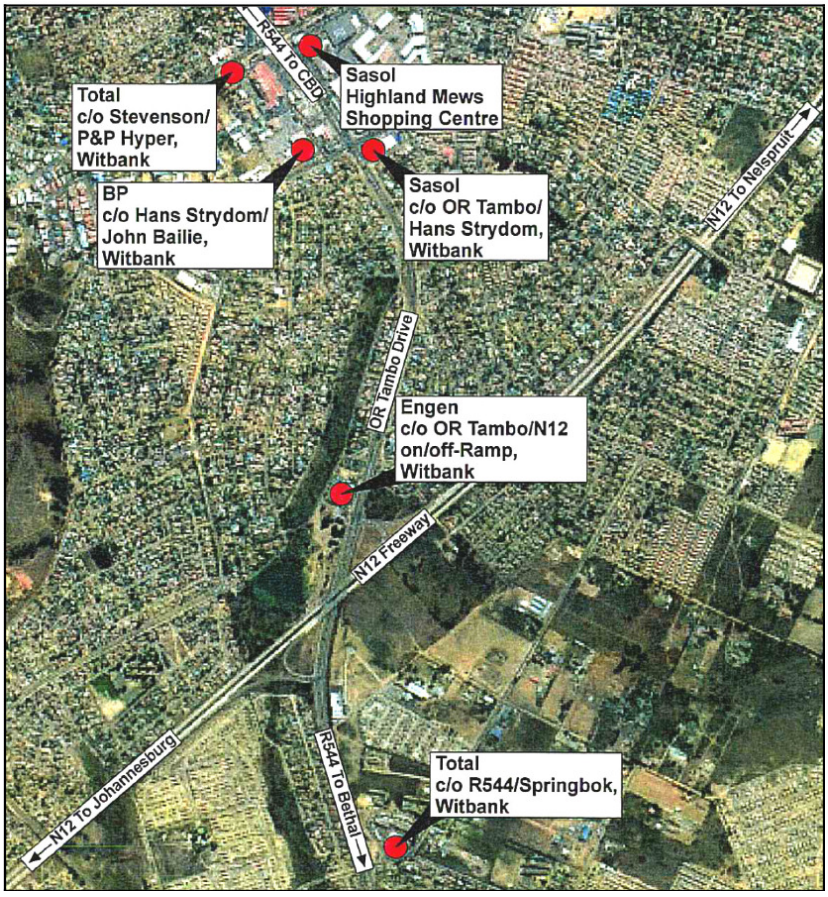


Figure 5.4: Location of other filling stations (taken from WSP, 2011)

5.4 Geology

A geotechnical study (Appendix 6) was undertaken by Johann van der Merwe (Pty) Ltd. to determine the suitability of the site for development purposes. The geotechnical study was commissioned as part of the original townplanning application and environmental impact assessment conducted for the overall Benicon Park development during 2006 to 2008.

According to Johann van der Merwe (Pty) Ltd. (2007), the site is underlain by transported sandy, silty and gravelly soils that are underlain by residual soils developed over mudrock and sandstone bedrock belonging to the Vryheid formation, Ecca Group, Karoo Supergroup (Figure 5.5). The Loskop Formation is located to the east of the R544 provincial road.

According to Geo Pollution Technologies (2013), there are no faults, dykes or lineaments indicated on the geology map apart from the contact between the Ecca Group and Loskop Formation.

The said site is not subject to undermining or dolomite related instabilities. In addition, the site is not located in an area of known active seismicity.

The closest mine (Ingwe Surface Holdings Ltd./BHP Billiton) is located on the western boundary of the site (Figure 5.2). Part of the mine has been rehabilitated.

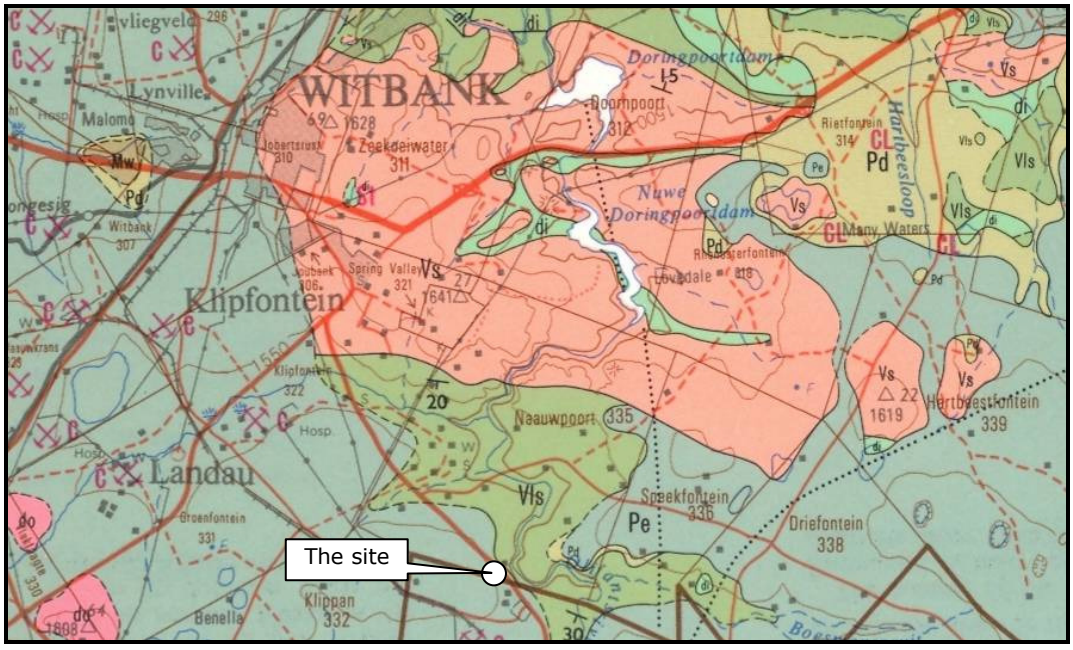


Figure 5.5: Geology of the site (taken from 1: 250 000 Geological Series sheet 2528 Pretoria)

5.5 Topography

According to the AGIS Comprehensive Map drafted by the Department of Agriculture, Forestry and Fisheries, the topography of the area is relatively flat with an average slope ranging between <2% – 5% as indicated in Figure 5.6. These slopes are suitable for development purposes.

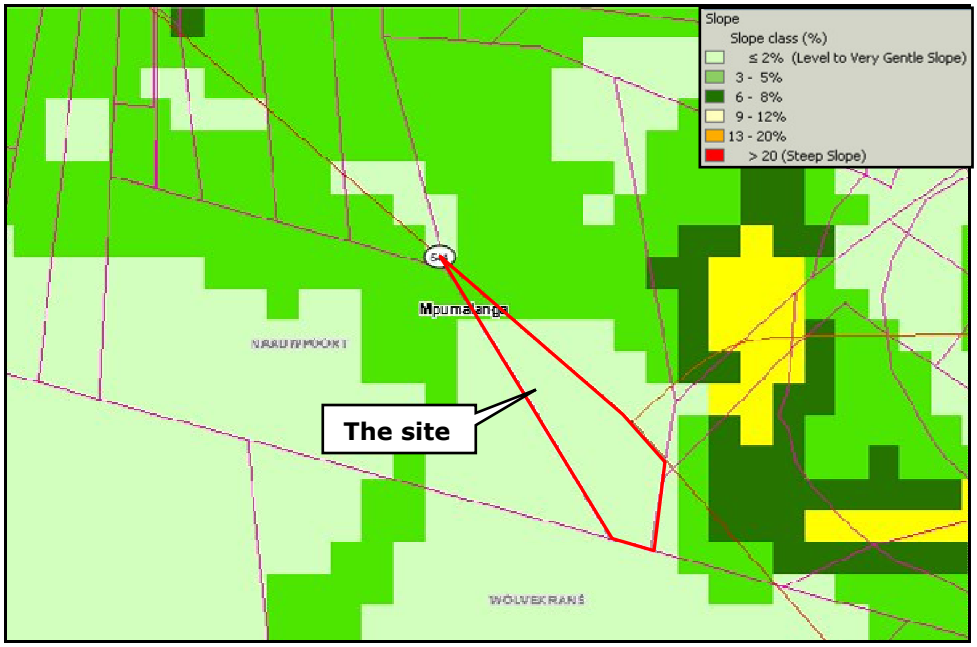


Figure 5.6: Slope of the proposed site (taken from Department of Agriculture, Forestry and Fisheries)

The terrain type of the proposed site is indicated as plains with open low hills or ridges as indicated in Figure 5.7.

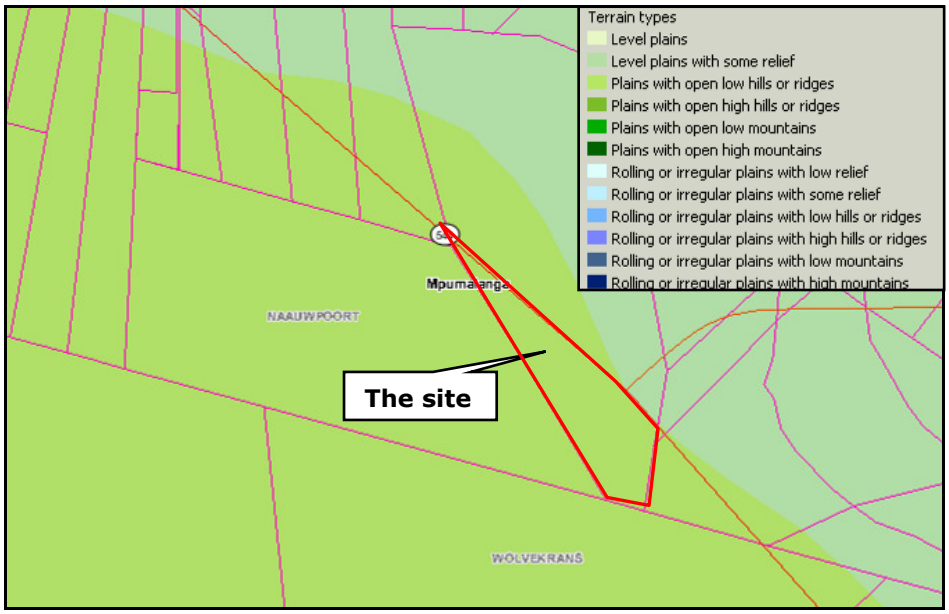


Figure 5.7: Terrain type of the proposed site (taken from Department of Agriculture, Forestry and Fisheries)

The proposed site lies at approximately 1554 meters above mean sea level (mamsl). The photographic view of the site (Figure 5.3) provides a good indication of the topography of the site and surrounding area.

The site slopes gently in a north easterly direction towards the R544 provincial road and the Olifants River.

The topography of the western and northern portions of the site has been impacted upon by the rehabilitation activities of the adjacent opencast mine (Figure 5.2). Other impacts on the topography include:

- The upgrading of the R544 provincial road;
- The construction of the soccer field, hostel and informal settlement in the southern portion of the site (Figure 5.2);
- The excavation of sand/gravel (Figure 5.2);
- The construction of the gravel roads on site (Figure 5.2);
- The dumping of waste.

No unstable rocky slopes or steep slopes with loose soil are present on the said site.

5.6 Soil

5.6.1 General

According to the AGIS Comprehensive Atlas of the Department of Agriculture, Forestry and Fisheries, the said site falls within the Ba4 land type, which is characterised by red, yellow and/or greyish plinthic soils (with subsurface accumulation of iron and manganese oxides due to fluctuating water table) with low to medium base status (Figures 5.8 and 5.9). Red soils are widespread and upland duplex and margalitic soils are rare (Rehab Green Monitoring Consultants cc., 2004).

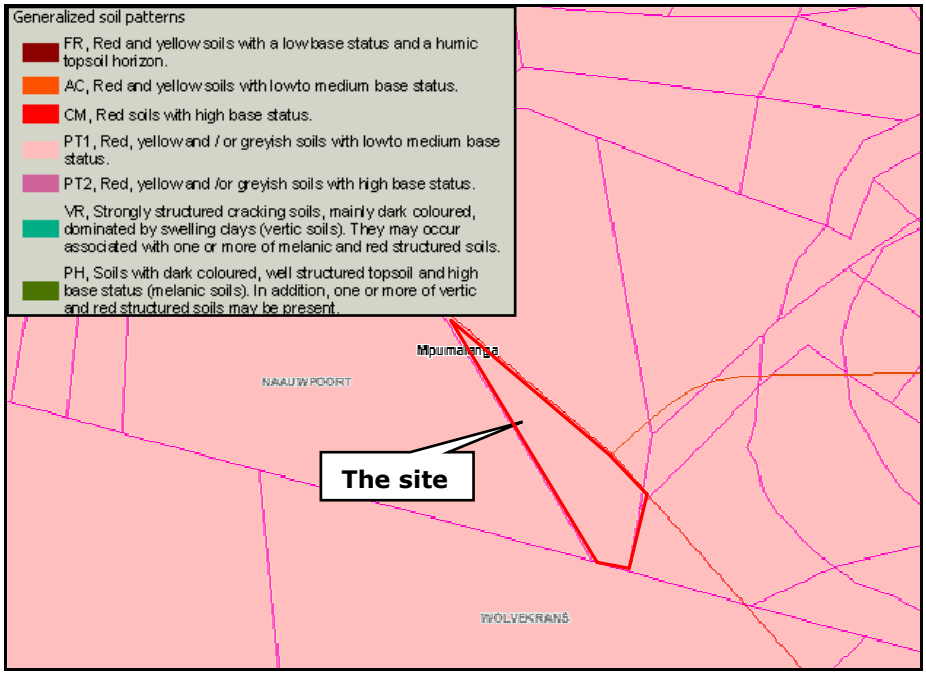


Figure 5.8: Generalized soil patterns (taken from Department of Agriculture, Forestry and Fisheries)

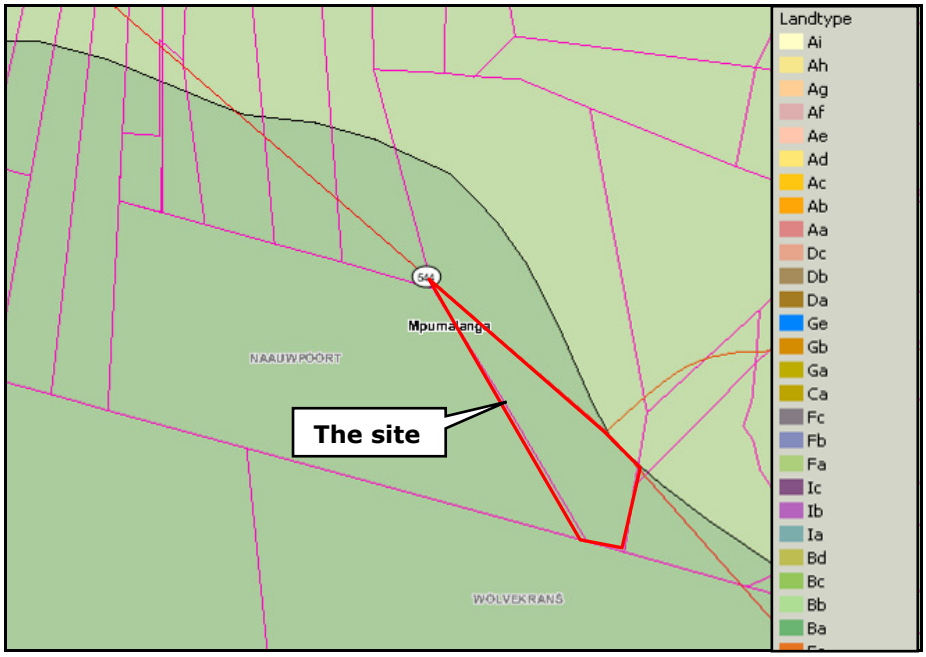


Figure 5.9: Land type of the proposed site (taken from Department of Agriculture, Forestry and Fisheries)

5.6.2 Geotechnical study

A geotechnical study (Appendix 6) was undertaken by Johann van der Merwe (Pty) Ltd. to determine the suitability of the site for development purposes. The geotechnical study was commissioned as part of the original townplanning application and environmental impact assessment conducted for the overall Benicon Park development during 2006 to 2008.

According to Johann van der Merwe (Pty) Ltd. (2007), the site comprises of transported sandy, silty and gravelly soils that are underlain by residual soils developed over mudrock and sandstone bedrock.

These site soils are potentially 'low' in the degree of expansiveness. A total surface heave value of less than 7.5 mm is predicted across the entire site, depending on:

- the locality;
- moisture condition of the soils (change from dry to a saturated soil).

The upper sandy and gravelly horizons (0.5 m to 0.7 m below surface) are considered to be potentially collapsible and compressible.

Geotechnical zones

Johann van der Merwe (Pty) Ltd. (2007) demarcated the site into three (3) geotechnical zones as indicated in Figure 5.10:

Zone A (Figure 5.10) – comprises a small area in the northern portion of the site.

- Thin to moderate horizon (<1.2m thick) of *loose*, voided, colluvial SANDY and GRAVELLY soils over *very dense* and *very stiff* residual soils over *soft rock* HARDPAN FERRICRETE, SANDSTONE and MUDROCK bedrock at depth.
- Upper horizons are potentially highly collapsible and compressible.
- Seasonal perched water conditions may occur.

- Very hard machine excavation and limited blasting can be expected from below 0.6m to 1.4m across this zone.
- Classifies as a Site Class "S1/C1/S1" according to the guidelines of the NHBRC Standards and Guidelines of 1999.
- Recommendations w.r.t. mitigation measures to be implemented are indicated in Section 8 (EMP) and Appendix 6.

During the site visit conducted by Clean Stream Environmental Services (January 2014), it was noted that approximately half of Zone A was revegetated as part of the adjacent mine rehabilitation project. The soil properties of this zone have therefore been impacted upon. Depending on the depth of the earthworks, the underlying geology could also have been impacted upon. The geotechnical conditions of Zone A have thus been altered since the geotechnical study was conducted.

Zone B (Figure 5.10) – comprises the southern and northern most portions of the site.

- Prominent horizon (>1.5m thick) of *loose* to *very loose*, voided, colluvial SANDY and GRAVELLY soils over *medium dense* to *dense* ferruginised residual soils at depth.
- Upper levels are potentially highly compressible and collapsible.
- Classifies as a Site Class "S2/C2" according to the NHBRC Standards and Guidelines of 1999.
- Recommendations w.r.t. mitigation measures to be implemented are indicated in Section 8 (EMP) and Appendix 6.

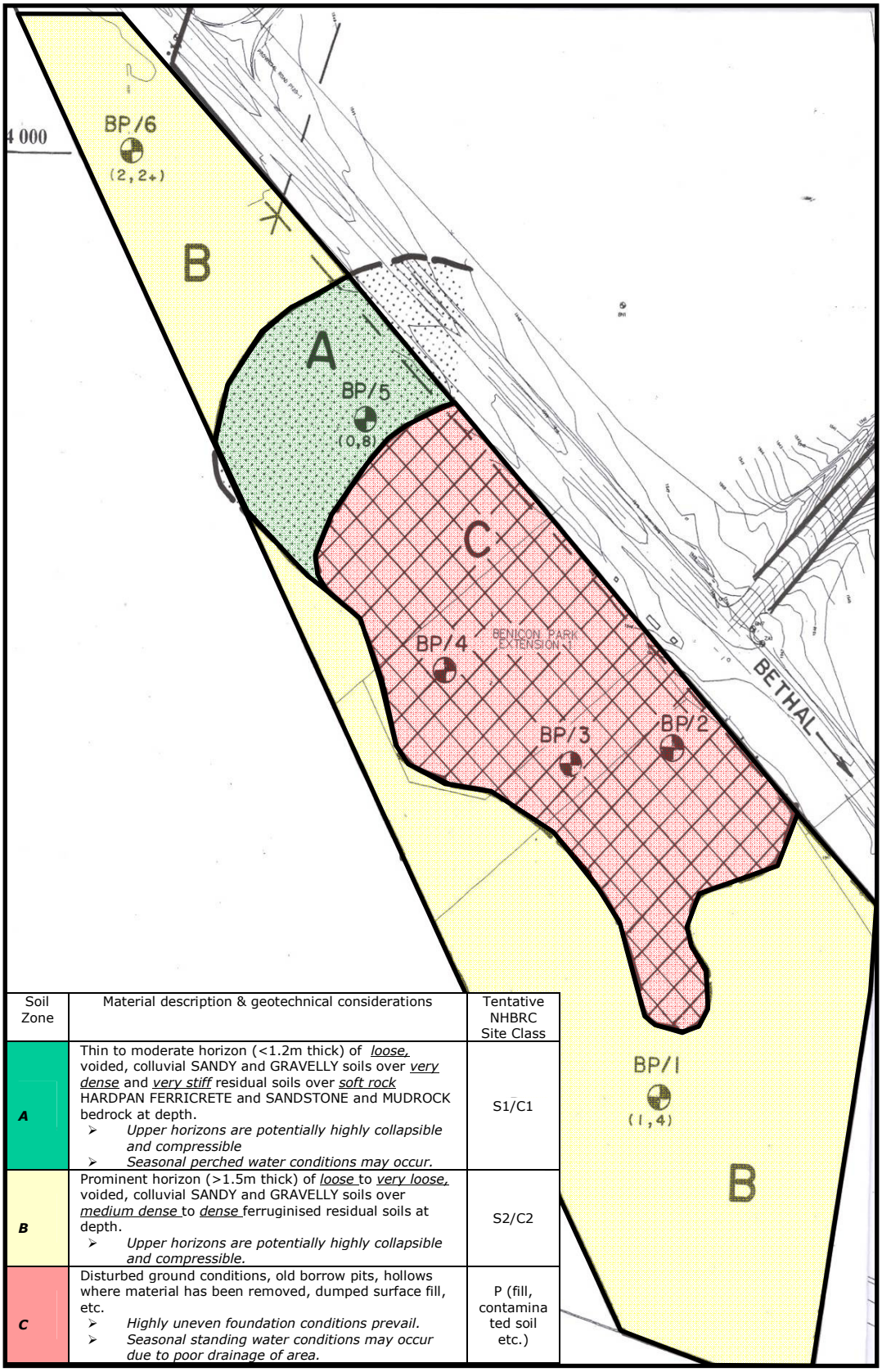
Zone C (Figure 5.10) - occupies the areas of disturbed ground conditions in the northern, central and southern portions of the property.

- This area is characterized by highly uneven ground conditions caused by the removal of sand for construction purposes. Hard rock sandstone is exposed in the base of the excavation.
- It is recommended that ***this area be excluded from the development.***
- ***Alternatively, the area should be properly reinstated according to recognized engineering and environmental practice.***

Soil profiles

A generalized and simplified description of the typical soil profile of Zone A is as follows:

- 0.0 – 0.6: Moist, light brown, loose, silty fine SAND containing fine roots; colluvium.
- 0.6 – 0.9: Slightly moist, light orange, loose, silty sandy GRAVEL containing occasional FERRICRETE NODULES; pebble marker.
- 0.9 – 1.3: Slightly moist, dark red blotched white, partially ferruginised, gravelly sandy SILT containing numerous FRAGMENTS of QUARTZITE and SANDSTONE and with FERRICRETE NODULES; ferruginised residual mudrock/sandstone. Overall consistency is very dense. This horizon is cemented into a dark red blotched yellow, soft rock HARDPAN FERRICRETE in the western portion of this soil zone.
- 1.3 – 1.8: Slightly moist, dark red blotched yellow, stiff, laminated, clayey sandy SILT; residual mudrock. This horizon is present in the central part of this soil zone only.



Soil Zone	Material description & geotechnical considerations	Tentative NHBRC Site Class
A	Thin to moderate horizon (<1.2m thick) of *loose,* voided, colluvial SANDY and GRAVELLY soils over *very dense* and *very stiff* residual soils over *soft rock* HARDPAN FERRICRETE and SANDSTONE and MUDROCK bedrock at depth. ➢ *Upper horizons are potentially highly collapsible and compressible* ➢ *Seasonal perched water conditions may occur.*	S1/C1
B	Prominent horizon (>1.5m thick) of *loose* to *very loose,* voided, colluvial SANDY and GRAVELLY soils over *medium dense* to *dense* ferruginised residual soils at depth. ➢ *Upper horizons are potentially highly collapsible and compressible.*	S2/C2
C	Disturbed ground conditions, old borrow pits, hollows where material has been removed, dumped surface fill, etc. ➢ *Highly uneven foundation conditions prevail.* ➢ *Seasonal standing water conditions may occur due to poor drainage of area.*	P (fill, contaminated soil etc.)

Figure 5.10: Geotechnical zones (taken from Johann van der Merwe (Pty) Ltd., 2007)

A generalized and simplified description of the typical soil profile of Zone B is as follows:

- 0.0 – 0.4: Moist, light brown, loose, silty fine SAND containing fine roots; colluvium.
- 0.4 – 1.6: Moist, dark orange, dark yellow and light grey (in the extreme north), very loose, voided, clayey fine SAND containing fine roots; colluvium.
- 1.6 – 2.0: As above and containing scattered NODULAR CONCRETIONS; ferruginised colluvium. Overall consistency is loose becoming medium dense to dense towards the base.

2.0+: Either yellow and purple, soft rock SANDSTONE or dark red blotched purple, soft rock HARDPAN FERRICRETE.

Soil properties

According to Johann van der Merwe (Pty) Ltd. (2007), a powerful trench digger, jackhammer work and limited blasting will be required in order to remove the hardpan ferricrete and sandstone bedrock (from 0.6 m to 1.4 m below surface) across Zone A.

No problems should however, be experienced using conventional earth-moving equipment down to an average depth of at least 2 m across Zones B and C.

Instabilities of the upper portions of the sidewalls of deep excavations may occur across Zone B, especially during the wet season.

The site soils are expected to be potentially chemically aggressive with regards to buried ferrous pipes (pH values ranging from 5.24 to 7.20 and electrical conductivity values ranging from 0.004 to 0.015 S/m). Non-ferrous metal pipes or plastic pipes should therefore be used for wet services. The foundation soils should also be treated with an environmentally friendly insecticide to combat termites.

5.6.3 Agricultural potential/land capability

No agricultural activities have taken place on site in the recent past.

In terms of land capability, the proposed site is indicated according to the Department of Agriculture, Fisheries and Forestry as moderate potential arable land (Figure 5.11).

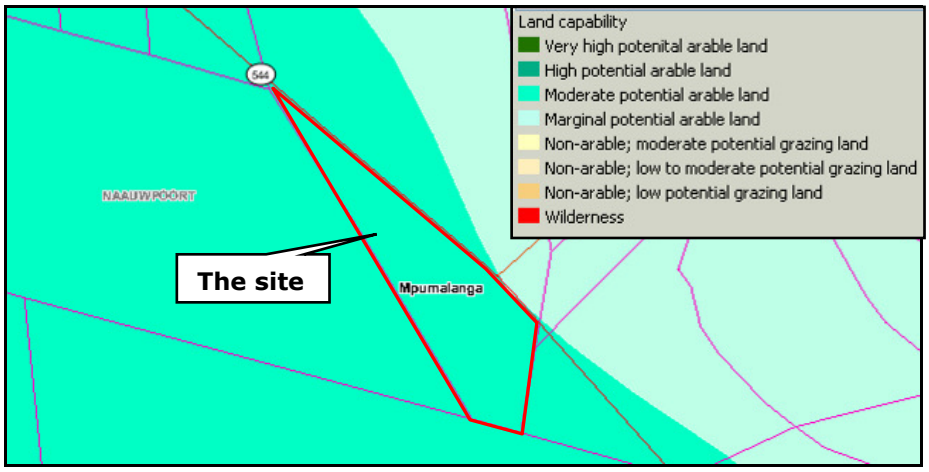


Figure 5.11: Land capability of the proposed site (taken from Department of Agriculture, Forestry and Fisheries)

Looking at grazing capacity, Figure 5.12 (Department of Agriculture, Forestry and Fisheries) indicates the area as transformed rangeland, due to the mining and light industrial activities taking place in the area.

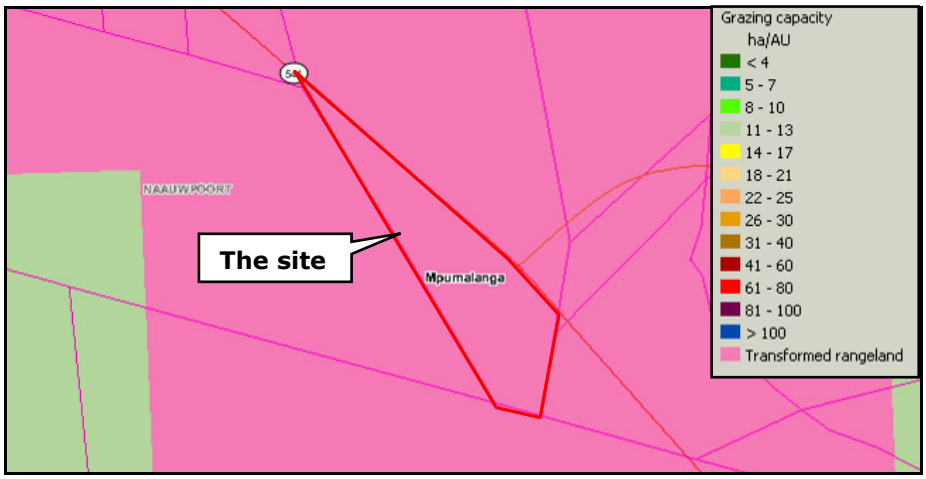


Figure 5.12: Grazing capacity of the proposed site (taken from Department of Agriculture, Forestry and Fisheries)

The Mpumalanga Biodiversity Conservation Plan indicates a score of 6 (which is medium, grazing) for the site in terms of land capability.

5.6.4 Impacts on soil

The area along the western boundary of the site was mined by opencast method and rehabilitated in recent years (Figure 5.2). It was noted during the site visit that the rehabilitation activities extended onto a portion of the proposed development site. In addition, a stormwater trench was excavated to divert stormwater runoff from the rehabilitated area across the site. The mining activities and subsequent rehabilitation have therefore impacted upon the soil of the said site.

Revegetation was successful on the majority of the site, except for a small portion near the gate (Figure 5.2). Erosion was noted in this area as a result of recent rainfall downpours.

Informal business activities (sale of tyres, traditional medicine, food, etc.) are taking place within the road servitude of the R544 provincial road (at the R544 and Duvha Power Station road intersection). Since no services are available in this area, the businesses dispose of waste (and burn waste) on the proposed site, which has probably led to soil pollution.

A large excavation and a few smaller excavations are present in the central portion of the site (Figure 5.2). Sand was possibly excavated by the informal settlers for construction purposes. These excavations have not been rehabilitated and periodically fill up with water during heavy rainfall periods. The excavation activities would have impacted on the site soils.

Other impacts on the soil include:

- the informal settlement in the southern portion of the site;
- pit latrines utilized by the informal settlers;
- soccer field;
- erection of Eskom powerlines;
- construction and utilization of the gravel roads;
- upgrading of the R544 provincial road.

5.7 Natural vegetation

5.7.1 General vegetation description

According to 'The vegetation of South Africa, Lesotho and Swaziland', the study area falls within the Mesic Highveld Grassland bioregion, specifically the Eastern Highveld Grassland (veld type Gm12; Figure 5.13) (Mucina & Rutherford, 2006). The vegetation type was previously referred to by Low and Rebelo (1998) as Moist Sandy Highveld Grassland (38) and by Acocks (1953) as Bankenveld (61) and North-Eastern Sandy Highveld (57).

This grassland extends from the eastern side of Johannesburg towards Belfast and then southwards to Bethal, Ermelo and Piet Retief.

This vegetation type is characterized by short dense grassland, dominated by the usual highveld grass composition (*Aristida, Digitaria, Eragrostis, Themeda,* etc.*)* with small, scattered rocky outcrops with wiry, sour grasses and some woody species (*Acacia caffra, Celtis africana, Parinari capensis*, etc.).
Approximately 44% of the Eastern Highveld Grassland has already been transformed by cultivation, urban sprawl, mining, plantations and dams. This vegetation type has been afforded the status of endangered with a conservation target of 24%.

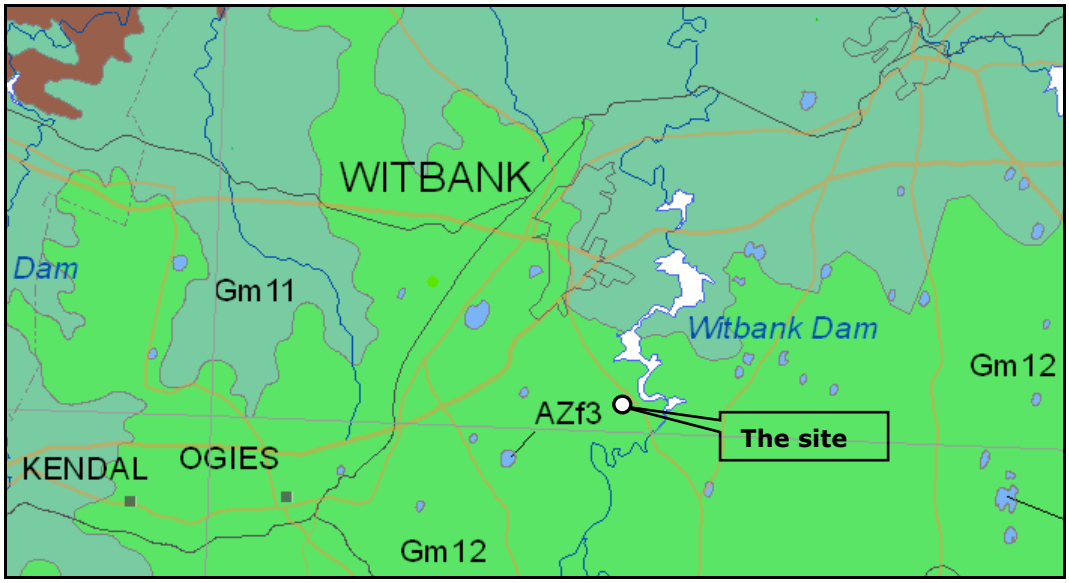


Figure 5.13: Vegetation type (taken from Mucina and Rutherford, 2006)

The National List of Ecosystems that are Threatened and in need of protection (GN1002 of 2011), published under the National Environmental Management: Biodiversity Act (Act No. 10, 2004), lists this vegetation type as **Vulnerable**.

Vulnerable (VU) ecosystems - being ecosystems that have a high risk of undergoing significant degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems or endangered ecosystems.

The site and surrounding area is indicated as **'Highly Significant'** and **'No Natural Habitat Remaining'** (Figure 5.14) in terms of the terrestrial biodiversity assessment of the Mpumalanga Biodiversity Conservation Plan

(2006). The provincial assessment therefore attributes high conservation value to the vegetation on site.

'Highly Significant' areas have the second highest biodiversity status of land outside of the protected area network, and are regarded as being in need of "strict land-use controls". According to the MBCP land-use guidelines, 'Highly Significant' areas should be maintained as natural vegetation cover and need to be managed for the conservation of biodiversity. Cultivation-based agriculture and urban/industrial development should not be permitted.

Even though the MBCP attributes high conservation value to the site, it should be noted that the biodiversity of the site has been severely impacted upon by various activities on site. Section 5.7.2 provides a description of the current state of the vegetation on site as well as the various impacts.

The said project area does not fall within a nature reserve, conservancy or other protected area (Mpumalanga Biodiversity Conservation Plan, 2006).

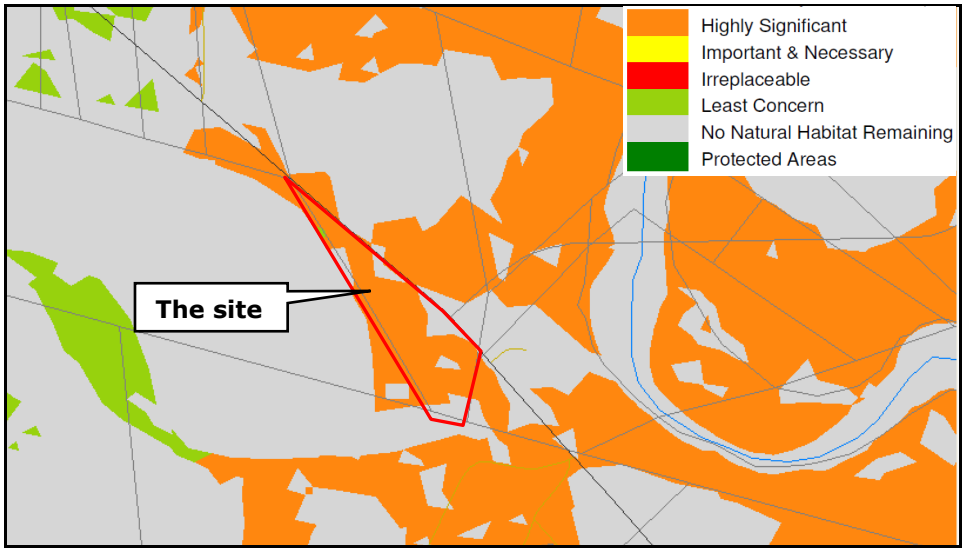


Figure 5.14: Terrestrial biodiversity assessment (taken from the Mpumalanga Biodiversity Conservation Plan, 2006)

Over the last few years (2007 – 2013), the Mpumalanga Tourism and Parks Agency reviewed and updated the Mpumalanga Biodiversity Conservation Plan in order to align the spatial data with the bioregional plan requirements of the South African National Biodiversity Institute (SANBI) and surrounding provinces.

According to the new Mpumalanga Biodiversity Sector Plan (MBSP, 2013), the majority of the site falls within the category **'Other Natural Areas'** in terms of the biodiversity priority classification system (Figure 5.15). 'Other Natural Areas' are defined as:

Natural areas which are not identified as CBAs or ESAs and which most likely provide a range of ecosystem services from their ecological infrastructure in varying efficiency and effectiveness. Although these areas are not essential for ensuring the persistence of biodiversity or landscape targets, they are still important repositories of species and play an important role in society as ecological infrastructure. They are however, not prioritized for immediate conservation action.

The primary objective of this biodiversity category is to minimise habitat and species loss through judicious planning and to ensure basic ecosystem functionality.

According to the MBSP Land-Use Guideline, these areas serve as optional sites for all forms of urban and industrial development, but may require authorisation for high-impact land uses.

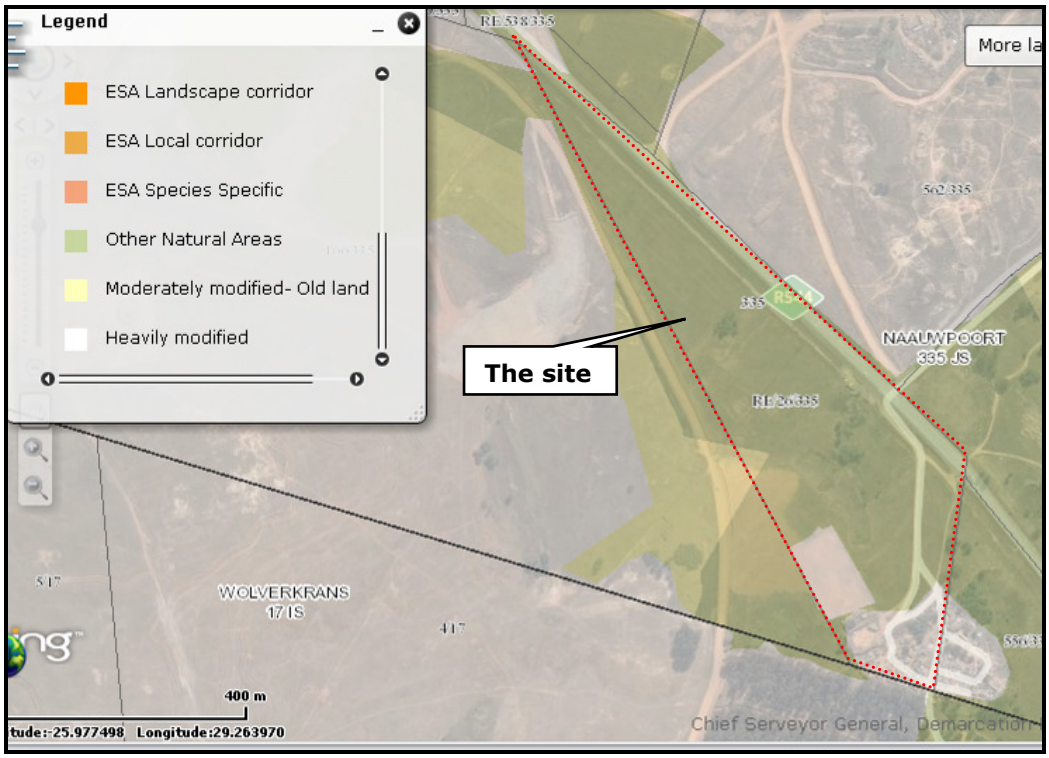


Figure 5.15: Terrestrial biodiversity assessment – Mpumalanga Biodiversity Sector Plan, 2013

The southern portion of the site (i.e. informal settlement and soccer field) is classified as **'Heavily modified'**.

As indicated in Figure 5.15, no critical biodiversity areas (CBA's) or ecological support areas (ESA's) are located in close proximity of the site. The surrounding area has mostly been classified as heavily modified/transformed.

5.7.2 Vegetation found on site and surrounds

As indicated in Section 5.3.5 of this report, the said site and therefore the vegetation on site has been highly impacted upon. Some of the impacts include:

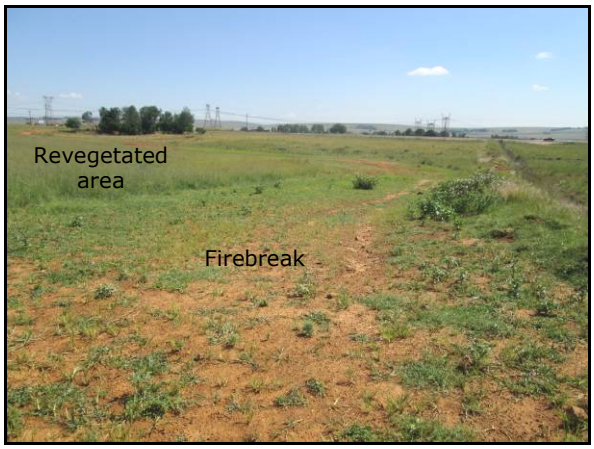
- Adjacent opencast mining activities,
- Informal settlement,
- Sand excavation,
- The construction and utilization of gravel roads,
- Hawkers' stalls,
- Soccer field,
- The dumping of waste.

The area along the western boundary of the site was mined by opencast method and rehabilitated in recent years (Figure 5.2). It was noted during the site visit that the rehabilitation activities extended onto the northern

portion of the proposed development site. The dominant grass species identified in the rehabilitated area are Oulandsgras (*Eragrostis curvula*) and Finger Grass (*Digitaria eriantha*), which usually form part of the seed mixture used for revegetation purposes.

Revegetated area in northern portion of the site

In order to protect the newly vegetated areas, the mine maintains a firebreak of approximately 5m along the rehabilitated area as can be seen in the following photograph.



View of the firebreak on site

The revegetation on a portion of the site (western boundary near the mine gate; Figure 5.2) was unsuccessful. This area is sparsely vegetated and prone to erosion as indicated below.

Sparsely vegetated area on western boundary

Clumps of Wattle trees (*Acacia mearnsii and A. dealbata*) and Blue Gum (*Eucalyptus* sp.) are found in three areas on site, mainly within the two excavations located in the central portion of the site and in and around the informal settlement.

Silver Wattle trees at large excavation

The vegetation in the southern portion of the site has been impacted upon by human activities such as the informal residential settlement, excavations, gravel roads, soccer field, etc. The disturbed nature of the vegetation is evident by the presence of plant species such as Bankrupt bush (*Stoebe vulgaris*), Wild tomato (*Solanum sisymbrifolium)* and Natal Red Top (*Melinis repens).*

Large patches of Red Autumn Grass (*Schizachyrium sanguineum*) (which prefer moist soils) are present on site, indicating the possible ponding of water during the rainy season. These grass species are mainly present near the old excavations.

Table 5.4 provides an indication of the plant species noted on site.

Table 5.4: Plant species noted on site

Latin name	Common name
Acacia dealbata	Silver Wattle
Acacia mearnsii	Black Wattle
Aristida congesta	Tassle Three-awn
Cleome cf. hirta	
Cymbopogon validus	Giant Turpentine Grass
Cynodon dactylon	Couch Grass
Digitaria eriantha	Finger Grass
Eragrostis chloromelas	Curly Leaf
Eragrostis curvula	Oulandsgras
Eragrostis racemosa	Narrow Heart Love Grass
Gladiolus vinosomaculatus	
Helichrysum aureonitens	
Helichrysum coriaceum	Vaal Teebossie
Hyparhenia hirta	Common thatching Grass
Eucalyptus sp.	Blue Gum
Melinis repens	Natal Red Top
Pennisetum clandestinum	Kikuyu Grass
Perotis patens	Cat's Tail
Pogonarthria squarrosa	Herringbone Grass
Schizachyrium sanguineum	Red Autumn Grass

Latin name	Common name
Senecio harveianus	
Solanum sisymbrifolium	Wild Tomato
Stoebe vulgaris	Bankrupt Bush
Tagetes minuta	Khaki Weed
Themeda triandra	Rooigras

5.7.3 Endangered or rare species

The said site is located within quarter degree square 2529 CD.

Table 5.5 provides an indication of the Red Data plant species recorded on the PRECIS Database of the South African National Biodiversity Institute for the quarter degree square 2529CD and the adjacent 2529 DC.

Table 5.5: Red Data plant species recorded for quarter degree squares: 2529CD and 2529DC

Latin Name	Common Name and Description	Habitat	Status
Anacampseros subnuda lubbersii	Dwarf, succulent mesemb	Rock sheets	Vulnerable
Crinum bulbispermum	Orange River Lily	Grows along stream banks	Declining
Crinum macowanii	River Lily	Grassland, rocky area and near rivers	Declining
Pachycarpus suaveolens		Short or annually burnt grasslands	Vulnerable
Ilex mitis	African Holly	Banks of rivers and streams	Declining
Callilepis leptophylla	Wild Daisy	Grassland areas	Declining
Hypoxis hemerocallidea	Yellow Star	Grassland	Declining
Pavetta zeyheri middelburgensis		Outcrops of rocks and boulders or rocky sheets	Rare
Encephalartos lanatus	Olifants River Cycad	Sheltered, rocky valleys; deep, sandy, fertile soils	Vulnerable
Encephalartos middelburgensis	Middelburg Cycad	Rocky areas	Critically endangered

Suitable habitat for *Anacampseros subnuda lubbersii, Crinum bulbispermum, Ilex mitis, Pavetta zeyheri middelburgensis, Encephalartos lanatus* and *Encephalartos middelburgensis* does not occur within the study area.

Disturbed grassland does occur on site, which could provide suitable habitat for the other species. However, none of the plant species were noted on site. Their occurrence on site is unlikely since the area has been impacted upon as indicated previously.

5.7.4 Protected plant species

According to Provincial Ordinances, a number of plant species are protected in Mpumalanga Province, whether they are considered to be threatened or not. This includes, but is not limited to, the following common names: ferns, flame lilies, christmas bells, pineapple flowers, clivia, nerine, crinum, ground lily, fire lily, irises, all orchids.

In addition, a number of plants have medicinal and/or cultural value and need to be removed before construction commences.

No protected plant species or trees were noted on site. It is highly unlikely that protected plant species are present on site due to the disturbed nature of the vegetation. However, any protected or medicinal plant species noted by the environmental control officer during the construction phase must be relocated if possible with the help of the Mpumalanga Tourism and Parks Agency.

5.7.5 Invader or exotic species

Declared weeds and alien invasive species listed in the Conservation of Agricultural Resources Act (Act 43 of 1983) and Schedule 13 of the Mpumalanga Nature Conservation Act, 1998 (Act 10 of 1998) are indicated in Table 5.6.

Table 5.6: Declared weeds and alien invasive plant species

Latin name	Category
Acacia dealbata (Silver Wattle)	Category 2
Acacia mearnsii (Black Wattle)	Category 2
Pennisetum clandestinum (Kikuyu)	Proposed declared invader
Solanum sisymbrifolium (Wild tomato)	Category 1

- ***Category 1:*** *Prohibited and must be controlled.*
- ***Category 2:*** *(commercially used plants) – May be grown in demarcated areas provided that there is a permit and that steps are taken to prevent their spread.*
- ***Category 3*** *(ornamentally used plants): May no longer be planted. Existing plants may be retained as long as all reasonable steps are taken to prevent the spreading thereof, except within the flood line of watercourses and wetlands.*

5.8 Animal life

The site is indicated as 'Highly Significant' and 'No Natural Habitat Remaining' (Figure 5.14) in terms of the terrestrial biodiversity assessment of the Mpumalanga Biodiversity Conservation Plan (2006). In terms of aquatic biodiversity, the proposed site is indicated in the Mpumalanga Biodiversity Conservation Plan (2006) as occurring within an area where the conservation of aquatic biodiversity is 'Not Required'.

Over the last few years (2007 – 2013), the Mpumalanga Tourism and Parks Agency reviewed and updated the Mpumalanga Biodiversity Conservation Plan in order to align the spatial data with the bioregional plan requirements of the South African National Biodiversity Institute (SANBI) and surrounding provinces.

According to the new Mpumalanga Biodiversity Sector Plan (MBSP, 2013), the majority of the site falls within the category **'Other Natural Areas'** for both the terrestrial and freshwater assessment (Figure 5.15 and Figure 5.16). It should be noted that the MBSP freshwater assessment includes information obtained from the National Freshwater Ecosystem Priority Areas (NFEPA) and threatened freshwater ecosystems databases (National Biodiversity Assessment 2011).

The Olifants River, located east of the site, is classified as 'Heavily Modified'.

No critical biodiversity areas (CBA's) for aquatic species, ecological support areas (ESA's) for fish or important wetlands/wetland clusters are present on or near the site.

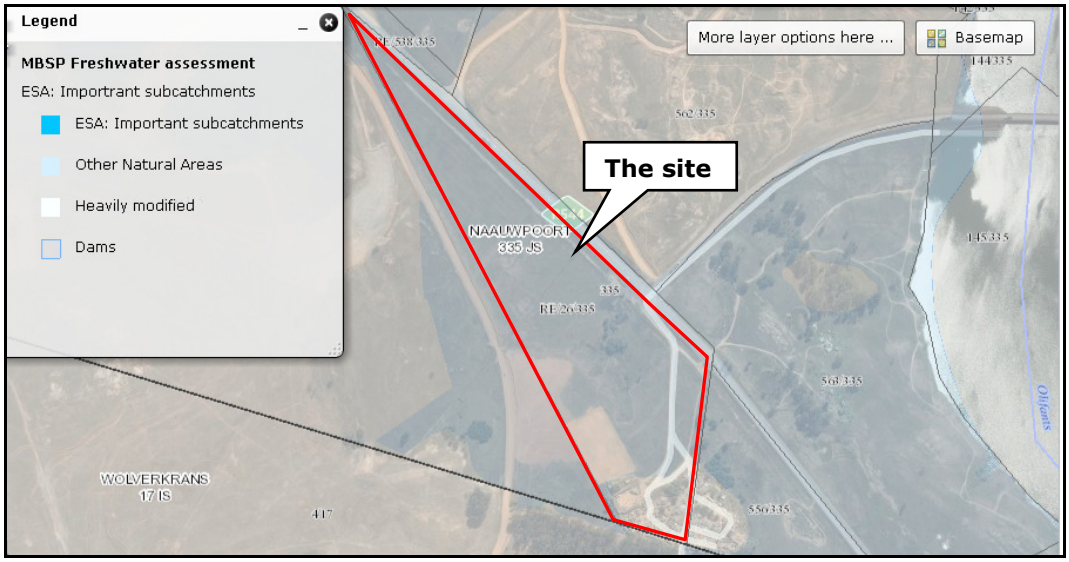


Figure 5.16: Freshwater biodiversity assessment – Mpumalanga Biodiversity Sector Plan, 2013

No animal species were noted on the site during the site visits. It is highly unlikely that large animal species would permanently inhabit the site since the site and surrounding area are impacted by human activity (e.g. roads, industrial, business and residential activities, etc.) as indicated in preceding sections.

Although it is unlikely that large animal species would permanently inhabit the site, it is possible that a number of smaller species (e.g. rodents, scrub hare), birds, reptiles and amphibians could be found on site and in the surrounding area. The grassland could provide habitat for small mammals (e.g. mongoose), reptiles and birds.

Dung from the scrub hare, termite mounds and rodent/mongoose burrows were confirmed to be present on site (except near the informal settlement).

Although there are termite mounds on site, no activity from termite eating animals (e.g. aardvark and aardwolf) was noted.

Domestic animals/livestock such as dogs, cats and chickens are present at the informal settlement.

Although no endangered or rare species were noted, it does not exclude the possibility that Red Data species may occur in the area. This is however, unlikely.

5.9 Surface water

5.9.1 Catchment

The said site is situated within the B11G quaternary catchment (Figure 5.17).

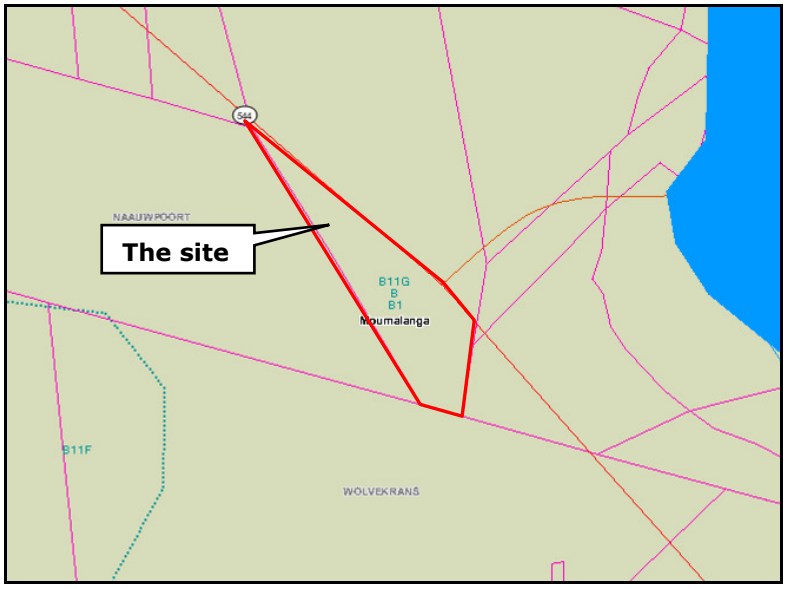


Figure 5.17: Tertiary Catchment (taken from Department of Agriculture, Forestry and Fisheries)

5.9.2 Floodline

No natural surface water environments (e.g. rivers, streams, dams, wetland, etc.) are located on site or in close proximity of the site. The proposed development will therefore not be affected by the 1: 100 year floodline.

The closest surface water environment is the Olifants River, which is located approximately 500 m east of the site on the opposite side of the R544 provincial road (Figure 5.1 and Figure 5.16).

5.9.3 Surface water runoff

The site slopes gently in a north easterly direction towards the R544 provincial road and the Olifants River. The rehabilitated opencast mine forms a topographical high on the western boundary of the site. Stormwater from the mine thus drains onto the site.

A drainage/stormwater trench and berm extends across the site from the rehabilitated mining area to the R544 provincial road. The stormwater trench however, does not have an outlet (e.g. culvert underneath the road). Runoff water thus accumulates in this trench and may overflow onto the site during heavy rainfall periods.

A number of old excavations are present in the central portion of the site (see photographs below). During heavy rainfall periods, these excavations temporarily fill up with water, which results in the ponding of water on site.

The excavation located near the hawkers' stalls.

The excavation after a heavy downpour.

One of the smaller excavations

5.9.4 Wetlands

The Mpumalanga Biodiversity Sector Plan (MBSP, 2013) does not indicate any important wetlands or wetland clusters on or near the site.

According to Johann van der Merwe (Pty) Ltd. (2007), indications of perched water conditions were evident on top of the hardpan ferricrete and less permeable residual horizons of geotechnical Zone A (Figure 5.10 and Figure 5.18).

During the site visit conducted by Clean Stream Environmental Services (January 2014), it was noted that approximately half of Zone A was revegetated as part of the adjacent mine rehabilitation project (Figure 5.18). The portion of Zone A not disturbed by the mine was impacted upon by excavation activities (Figure 5.18).

The soil properties of this zone have therefore been impacted upon. Depending on the depth of the earthworks, the underlying geology could also have been impacted upon as well as the presence of the perched water table.

The geotechnical conditions of Zone A have thus been altered since the geotechnical study was conducted.

No indications of a wetland were noted during the site visit (i.e. January 2014).

Figure 5.18: Overlay of the geotechnical zone map and the aerial view of the site

5.10 Groundwater

5.10.1 Perched water table

No groundwater (perched and/or permanent) was encountered during the geotechnical study. However, according to Johann van der Merwe (Pty) Ltd. (2007), indications of perched water conditions were evident on top of the hardpan ferricrete and less permeable residual horizons of geotechnical Zone A (Figure 5.18). A perched water table could thus be present within Zone A.

During the site visit conducted by Clean Stream Environmental Services (January 2014), it was noted that approximately half of Zone A was revegetated as part of the adjacent mine rehabilitation project (Figure 5.18). The portion of Zone A not disturbed by the mine was impacted upon by excavation activities (Figure 5.18).

The rehabilitation and excavation activities could thus have altered the presence of the perched water conditions since the geotechnical study was conducted.

No indications of seepage or a wetland were noted during the site visit (i.e. January 2014).

5.10.2 Geohydrological investigation – filling station site

A geohydrological investigation was conducted by Geo Pollution Technologies (GPT) in order to determine the following with regards to the proposed filling station:

- Presence of groundwater users in the vicinity of the site;
- Depth to the groundwater table on site;
- Approximate direction of groundwater flow on site;
- Current quality of the groundwater on site.

A copy of this report is provided in Appendix 7.

The investigation comprised of a site survey, geophysical survey, hydrocensus, the drilling and pump testing of a new borehole, the measurement of the groundwater level at the new borehole and the collection and analysis of groundwater samples. See Appendix 7 for methodology used.

❖ **Groundwater potential**

According to GPT (2013), the Ecca Group has a low groundwater storage potential and a low to very low primary permeability. Within the Ecca Group it is known that 83% of the boreholes produce less than 2 ℓ/s (7 200 ℓ/hr).

Groundwater occurrence is generally associated with the following:

- fractures and joints developed locally along bedding planes,
- contact zones between different sedimentary lithologies, and
- fault and associated shear zones.

It is not uncommon to find a shallow water table aquifer within the weathered zone above the bedrock. However, the hydraulic characteristics of the water table aquifer will depend on the depth of weathering and the type of geological material.

❖ **Hydrocensus**

A hydrocensus was conducted within a 1 km radius of the site in order to identify possible groundwater users.

GPT (2013) identified six (6) boreholes and two (2) surface water sources in the vicinity. The borehole positions are indicated in Figure 5.19.

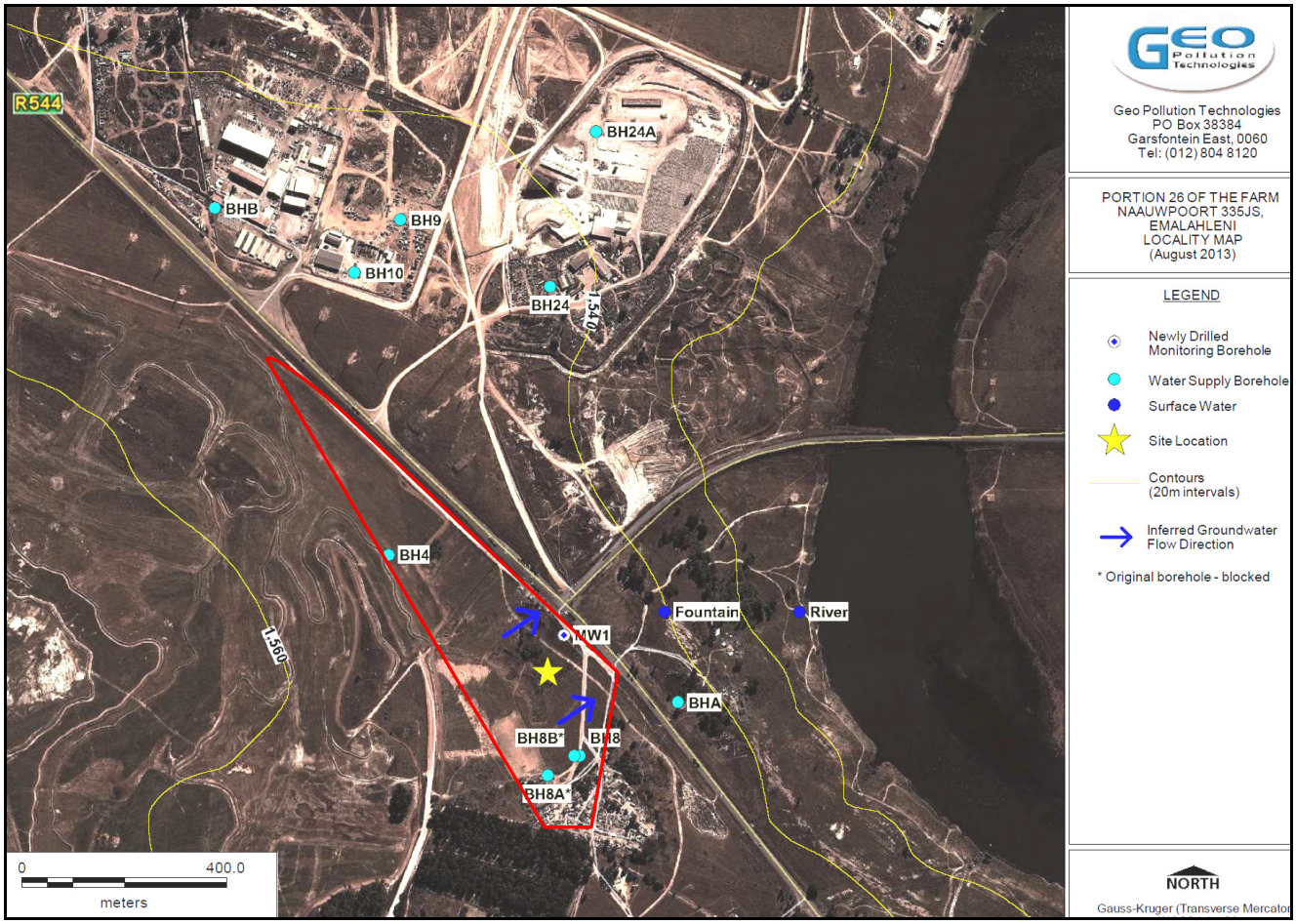


Figure 5.19: Boreholes identified as part of hydrocensus (taken from Geo Pollution Technologies, 2013)

The hydrocensus information is provided in Table 5.7.

Table 5.7: Summarized hydrocensus information (taken from Geo Pollution Technologies, 2013)

No.	Type	Use	SWL (mbgl)	Distance and direction from centre of filling station site	Address/owner
BH 8	Borehole	Domestic	28.0	200 m S	Informal settlement
BH 8A and 8B	Borehole (blocked)	-	-	200 m S	Informal settlement
BH 4	Borehole	Future water supply	-	400 m NW	Benicon Park
BH 24	Borehole	Domestic and factory	36.82	760 m N	Plot 27, CW van der Merwe
BH 10	Borehole	Domestic	16.41	880 m NNW	Benicon Park, N van der Merwe
BH24A	Borehole	Domestic	24.74	1050 m ENE	Plot 27, CW van der Merwe
BH B	Borehole	Domestic	25.34	1150 m NW	Plot 26, Benicon
Fountain	Surface water	-	0.00	240 m ENE	Plot 52, CW van der Merwe
Olifants River	Surface water	Water supply	0.00	500 m E	Plot 52, CW van der Merwe

❖ **Monitoring borehole**

A borehole was drilled by GPT (2013) at the proposed filling station site for future groundwater monitoring purposes. The location of the monitoring borehole is indicated in Figure 5.20. The borehole is located approximately 10 m south east of the future underground storage tank area.

According to GPT (2013), the geological profile mainly comprised silty sand and gravel up to 3 m below surface. Weathered sandstone was encountered from below 3 m. Seepage water was encountered between 8 and 9 m. Drilling was terminated at 15 m.

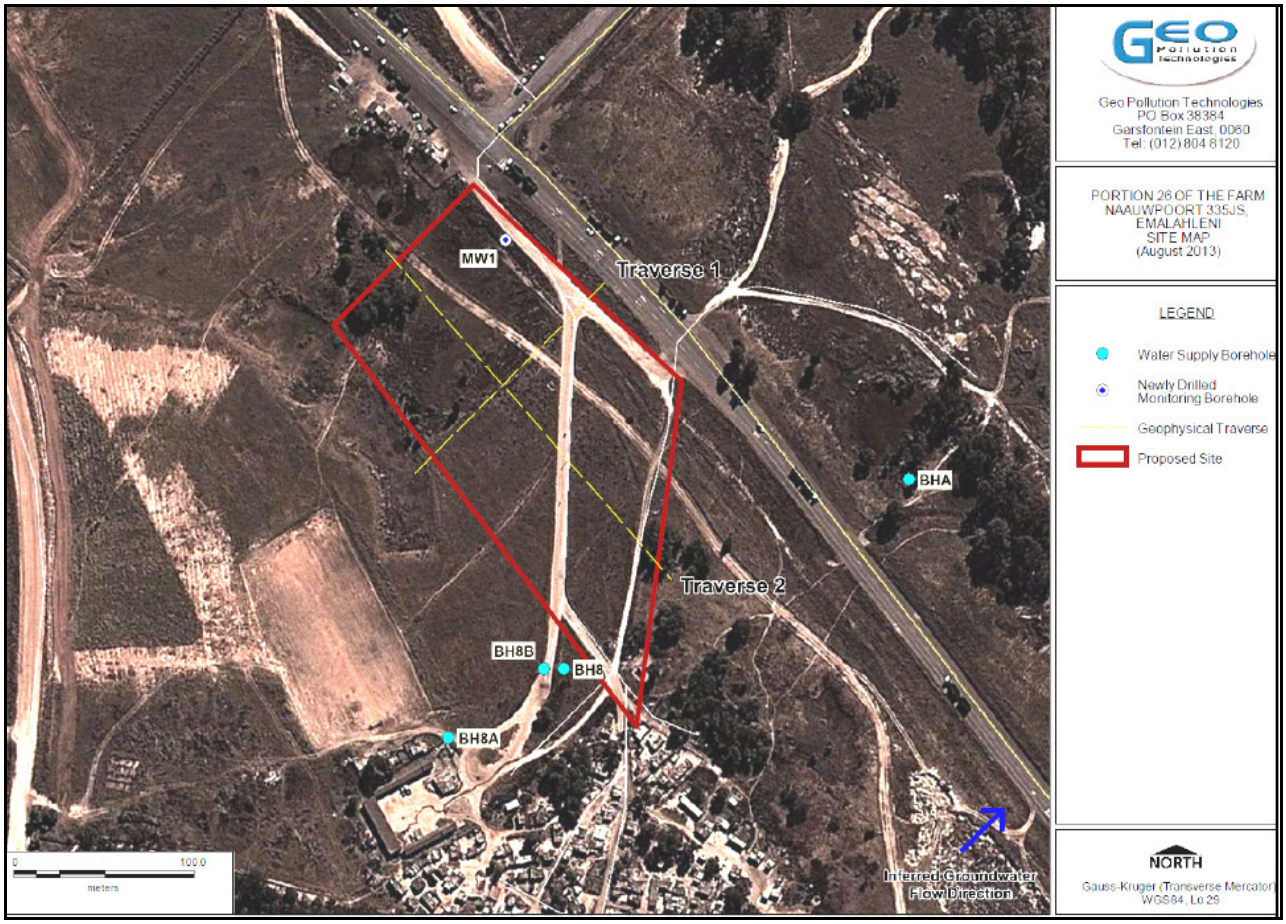
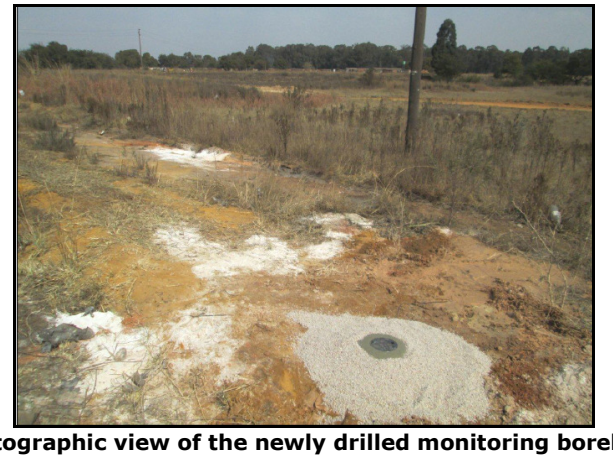


Figure 5.20: Position of monitoring borehole (taken from Geo Pollution Technologies, 2013)



Photographic view of the newly drilled monitoring borehole

❖ **Groundwater flow**

Surface water drainage takes place in a north easterly direction towards the Olifants River. According to GPT (2013), the inferred groundwater flow direction is thus in a north easterly direction since the groundwater table tends to emulate surface topography.

No electromagnetic anomalies were identified on site, suggesting that no prominent groundwater flow paths occur on site.

The hydraulic conductivity and estimated groundwater flow velocity were also calculated. According to GPT (2013), the groundwater is expected to travel approximately 4 m per year in a north easterly direction under steady state conditions. However, groundwater abstraction from surrounding boreholes may have an influence on local groundwater flow-patterns.

❖ **Groundwater quality**

Water samples were taken from the fountain, Olifants River, BH 8 and BH 24 (i.e. the nearest sampling points to the site) and the newly drilled borehole (MW1) for water analysis.

No petroleum hydrocarbon compounds were detected in any of the samples.

An inorganic analysis was also conducted on groundwater from the new borehole (MW1) in order to determine the general drinking water quality.

The water quality information is presented in Table 5.8.

Table 5.8: Results of the drinking water quality analysis (taken from GPT, 2013)

Sample No.	MW1		Class I	Class II
Ca	3.17		150	300
Mg	0.88		70	100
Na	4.60		200	400
K	2.41		50	100
Mn	0.06		0.1	1
Fe	0.06		0.2	2
F	0.24		1	1.5
NO_2	0.00		32	66
NO_3	0.77		10	20
NH_4	0.00		1.2	2.4
Zn	0.08		5	10
PO_4	0.99		-	-
Cl	2.47		200	600
SO_4	9.49		400	600
TDS by EC	20.20		1000	2400
M-Alk($CaCO_3$)	9.20		-	-
pH	5.75		5.0 - 9.5	4.0 - 10.0
EC	3.10		150	370
Cat/An Bal. %	-2.04%		-	-
Notes				
Yellow = Class I				
Tan = Class II				
exceeds maximum allowable				
na- not analysed				
0 = below detection limit of analytical technique				

According to Table 5.8, the groundwater is fit for human consumption since no concentrations exceeded the limits for Class I water. Based on the hydrocensus data and the water quality analysis, it is evident that the groundwater on site has not been negatively impacted by the nearby decommissioned/rehabilitated mine.

5.11 Air quality

The proposed site and the eMalahleni area form part of a national air pollution hotspot known as the Highveld Priority Area. This Priority Area comprises the eastern part of Gauteng and the western part of Mpumalanga and covers an area of 31.106 km^2. This Priority Area was declared in terms of Section 18(1) of the National Environmental Management: Air Quality Act 2004 (Act 39 of 2004) due to poor air quality and associated health risks.

The air quality of the site is predominately governed by the various industrial (e.g. power stations, etc.) and opencast mining activities in the eMalahleni area

- Emissions from vehicles travelling along the R544 provincial road and Duvha road;
- Emissions and dust from vehicles utilizing the gravel road;
- Dust and emissions from the nearby brick-making operation;
- Dust and emissions as a result of the R544 provincial road construction;
- Smoke as a result of cooking fires at the informal settlement;
- Smoke emitted from veld fires.

5.12 Noise

The major contributing factor to the ambient noise level of the site would be as a result of:

- Traffic utilizing the R544 provincial road and Duvha road;
- Traffic utilizing the gravel access road;
- Noise as a result of the R544 provincial road construction;
- Business, light industrial, informal residential and recreational activities taking place in the surrounding area;
- Noise from the nearby brick-making operation.

5.13 Sites of archaeological and cultural interest

No sites of archaeological and/or cultural interest are known to occur on site. As previously indicated, the said site has been impacted by various activities (see Section 5.3).

5.14 Sensitive landscapes

No sensitive landscapes (wetlands/seepage areas, etc.) are present on site.

5.15 Visual aspects

The site slopes gently in a north easterly direction towards the R544 provincial road. The site is vacant except for the hawkers and informal settlement.

The site is highly visible from the R544 provincial road located on the northern boundary as well as from the rehabilitated opencast mine located along the western boundary.

The site is also visible from the properties located north of the R544 provincial road.

The southern portion of the site is visible from the informal settlement but not from the Impungwe Hospital since it is screened by wattle trees.

5.16 Traffic

5.16.1 Existing road network

The site is located at the R544 provincial road and D2771 (P2271) Duvha Power Station road T-Junction (Figure 5.1).

The R544 (P120-1) provincial road between eMalahleni and Bethal is located along the northern boundary of the site. The R544 provincial road is a Class 2, single carriageway, major transient route. This road becomes a dual carriageway road with two lanes in each direction near the Duvha residential area.

The R544 provincial road is a very busy road, with a significant percentage of the current traffic being heavy vehicles. The R544 provincial road is currently being upgraded (widened) to cater for the increased traffic volumes. Construction is estimated to be complete by June 2014. The layout plan of the section of the road upgrade adjacent to the said site is provided in Appendix 4.

The D2771 (P2271) road is an arterial road with one lane in each direction and carries medium traffic volumes. It provides access to Duvha Power Station and other mines/industries/residential areas in the vicinity.

No other significant roads are located near the site except for a gravel road providing access to the informal settlement.

5.16.2 Access to the site

Access to the said site is currently obtained via a gravel road extending from the R544 provincial road. The gravel road also provides access to the informal settlement in the southern portion of the site and extends all the way to the Impungwe Hospital.

Access to Benicon Park X1 would be provided at the R544 and P2271 intersection by means of a traffic circle (Figure 3.1a). The access position has already been approved in principle by the Department of Public Works, Roads and Transport. A copy of the letter from the Department is attached in Appendix 4.

According to the townplanning memorandum, a new access road will be created through the proposed development to the existing Impungwe Hospital (previously Wolwekrans) (see Figure 3.1a).

5.17 Sense of place

The said site and surrounding area are already used for light industrial purposes being ideally located adjacent to the R544 provincial road between eMalahleni and Bethal (Figure 5.1).

Benicon and a scrapyard are located north of the site. A brick-making operation is located northeast of the site and a rehabilitated opencast mine is located on the western boundary (Figure 5.2).

Surrounding land uses include the following:

- Informal residential settlement;
- Informal business;
- Industrial;
- Mining;
- Medical (Impungwe Hospital);
- Roads;
- Powerlines;
- Telephone lines.

According to the Spatial Development Framework of the eMalahleni Local Municipality (2010), the area adjacent to the R544 provincial road at the southern entrance to eMalahleni is earmarked for industrial purposes (Figure 5.21) and is referred to as the Naauwpoort Industrial Area.

Since the proposed filling station and light industrial area will be developed in an area earmarked for industrial development, it will not impact on the sense of place.

In addition, the proposed residential stand will cater for the residents of the informal settlement and will therefore not impact on the sense of place.

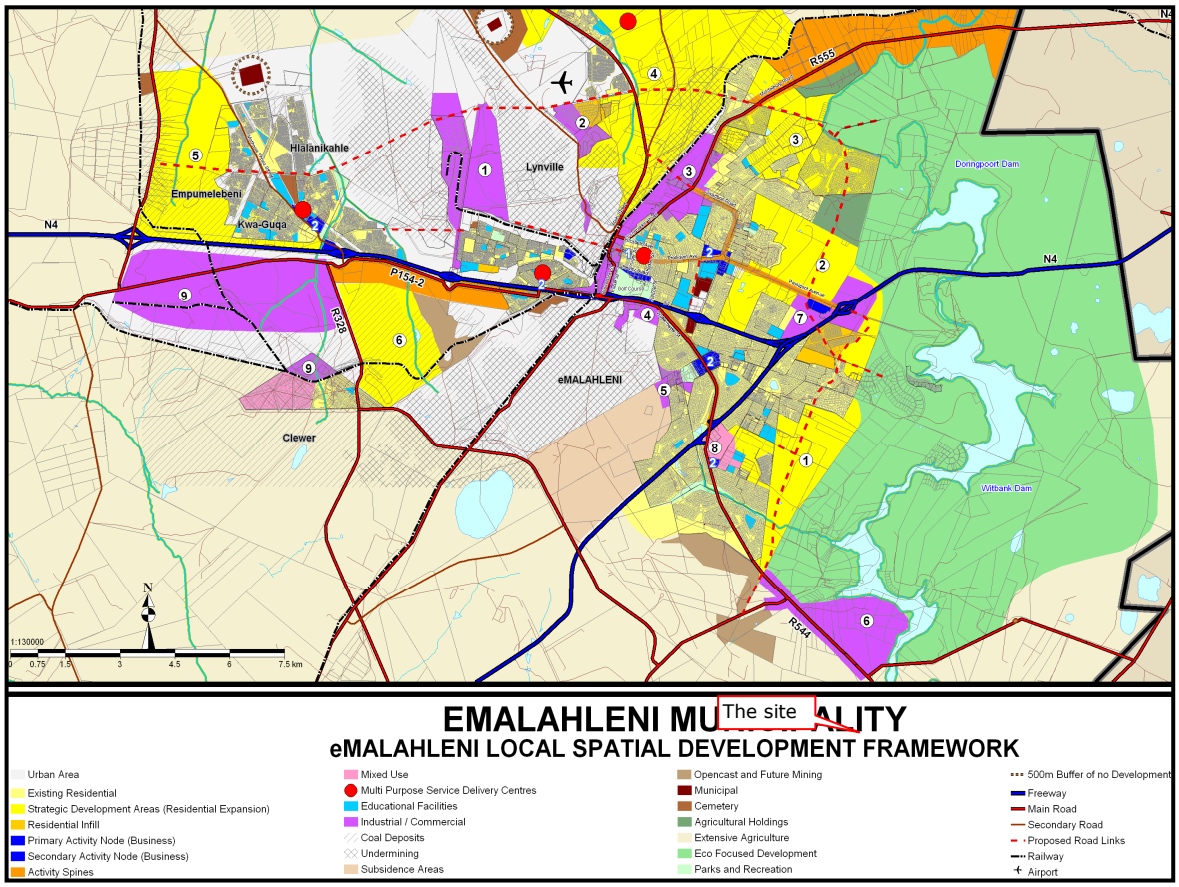


Figure 5.21: Proposed development - eMalahleni Local Spatial Development Framework (2010)

6. DESCRIPTION OF THE PUBLIC PARTICIPATION PROCESS

6.1 Advertising of the project

6.1.1 Press advertising

A block advert (150mm x 95mm), according to the Environmental Impact Assessment Regulations, 2010, was placed in the local newspaper, Witbank News, on Friday, 23 August 2013. A copy of the advert is provided in Appendix 8.

6.1.2 On-site advertising

Notices according to the Environmental Impact Assessment Regulations, 2010, were displayed at the following locations:

- On-site at the R544 and D2771 T-Junction adjacent to the hawker's stalls (English and Zulu; Figure 6.1-Photo 1);
- On-site adjacent to the gravel access road to the informal settlement (English; Figure 6.1-Photo 2);
- At the Paso Café & Supermarket, which is the closest shop to the site (English and Zulu; Figure 6.1-Photo 3);
- A copy of the English and Zulu notices was also loaded onto the company website: www.cleanstreamsa.co.za.

Copies of the notices (English and Zulu) are provided in Appendix 8.

It should be noted that a notice of 594 mm x 841 mm (A1) was displayed at the R544/D2771 T-Junction. The rest of the notices were 416mm x 295mm (A3) in size.

No alternative sites were identified for the proposed development. No notices were thus placed on an alternative site.

6.1.3 Informing I&APs via the internet

Interested and affected parties were also informed via the above-mentioned adverts and notices that a copy of the following documentation could be downloaded from the Clean Stream Environmental Services website (www.cleanstreamsa.co.za) from Friday, 23 August 2013:

- Copy of the notice – English and Zulu;
- Background Information Document – English (BID; Appendix 9).

This information was available on the website for the duration of the basic assessment phase.

A copy of the webpage printouts is provided in Appendix 8.

6.1.4 Feedback from the advertising process

No persons registered as interested and affected parties in terms of the advertising process (site and newspaper advertising) within the 30 day registration period provided. There was thus no need for a public meeting.

Only a CV (Curriculum Vitae) was received from Mr. P.E. Moramaga.

An e-mail (dated: 27 September 2013; Appendix 8) w.r.t. the registration of I&APs was forwarded to the Department of Economic Development, Environment and Tourism.

Photo 1: Notices displayed at the R544/D2771 T-Junction adjacent to the hawkers' stalls

Photo 2: Notice displayed adjacent to the gravel road to the informal settlement

Photo 3: Notices displayed at the Paso Café & Supermarket

Figure 6.1: Notices displayed

6.2 Relevant Authorities

6.2.1 The Department of Economic Development, Environment and Tourism

The Department of Economic Development, Environment and Tourism (DEDET) was consulted with regards to the proposed development.

The following documentation was submitted to the Department (eMalahleni office) on 26 July 2013 (Appendix 1):

- Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010.

A letter from the Department (dated: 23 August 2013; Ref: 17/2/3 N-280; Appendix 10) was received acknowledging receipt of the Application Form.

A site visit with Ms. M. Seshweni of the Department and Ms. R. van Rensburg of Clean Stream Environmental Services was held on 1 October 2013. During this visit, Ms. Seshweni raised the following issues:

Comment	Response
The Department suggested that the applicant appoint someone to do an inventory of the people (i.e. names and ID numbers) currently residing in the informal settlement. This should be done before they are told that they will be provided with stands otherwise there could be an influx of people. One stand should then be provided per family identified during the audit.	*Noted and agreed. The applicant indicated that they will contact the people residing in the informal settlement as soon as they have finality regarding the development of the area – i.e. once the eMalahleni Local Municipality has approved the residential area and a developer (Department of Housing, private developer, etc.) has been identified. The applicant will make the land available to the people free of charge but will not develop the residential site.*
What will happen to the people currently residing in the Benicon Hostel? Will they also be provided with stands? Concern regarding their current living conditions (not up to standard). They should be included in the above-mentioned inventory.	*The hostel on site is dilapidated and no longer formally occupied. If the residential area is approved and developed, the hostel could possibly be converted into family units. If the residential area is not approved, the hostel will be demolished.*
Need a letter from Eskom indicating that they can provide the development with electricity.	*See Section 3.4.2. Approval from Eskom has been obtained and the installation costs have been paid. A copy of the Eskom quotation for the installation is attached in Appendix 4 as proof of approval in this regard.*
Don't foresee a major impact on traffic, as long as the access road will be located at a 4-way stop. If possible the access approval letter from the Department of Roads should be included in the Basic Assessment Report.	*A copy of the access approval from the Department of Public Works, Roads and Transport is provided in Appendix 4. According to the letter of approval, the 4-way stop will be replaced with a traffic circle. According to the applicant, the main benefit of a circle is that illegal u-turns will be eliminated.*
Who will be responsible for servicing the residential area?	*According to the applicant, the residential stand will be handed over (hopefully at no cost) to a developer, the eMalahleni Local Municipality or a Government Department for development. The developer of the residential area (and not Elmir Industrial Projects cc.) will thus be responsible for the installation of services.*

An e-mail (dated: 2 October 2013; Appendix 10) was forwarded to the Department confirming the issues of concern raised during the site visit.

6.2.2 Nkangala District Municipality

A background information document (Appendix 9) was e-mailed (dated: 28 August 2013; Appendix 10) to the Nkangala District Municipality in order to obtain their concerns with regards to this project. ***To date, no comment has been received.***

6.2.3 eMalahleni Local Municipality

A background information document (Appendix 9) was e-mailed (dated: 28 August 2013; Appendix 10) to the eMalahleni Local Municipality in order to obtain their concerns with regards to this project. ***To date, no comment has been received.***

6.2.4 Department of Water Affairs (DWA)

A background information document (Appendix 9) was forwarded (e-mails dated: 28 August 2013; Appendix 10) to the Department of Water Affairs (DWA) in order to obtain their concerns with regards to the proposed project. ***To date, no comment has been received.***

6.2.5 Mpumalanga Tourism and Parks Agency (MTPA)

A background information document (Appendix 9) was forwarded (e-mail dated: 28 August 2013; Appendix 10) to the Mpumalanga Tourism and Parks Agency in order to obtain their concerns with regards to the proposed project. ***To date, no comment has been received.***

6.2.6 Department of Mineral Resources (DMR)

A background information document (Appendix 9) was forwarded (e-mail dated: 28 August 2013; Appendix 10) to the Department of Mineral Resources in order to obtain the Department's concerns with regards to the proposed project. ***To date, no comment has been received.***

6.2.7 Department of Energy (DoE)

A background information document (Appendix 9) was forwarded (e-mail dated: 28 August 2013; Appendix 10) to the Department of Energy in order to obtain the Department's concerns with regards to the proposed project. ***To date, no comment has been received.***

6.2.8 Department of Culture, Sport and Recreation

A background information document (Appendix 9) was forwarded (e-mail dated: 28 August 2013; Appendix 10) to the Department of Culture, Sport and Recreation in order to obtain the Department's concerns with regards to the proposed project. ***To date, no comment has been received.***

6.2.9 Department of Agriculture, Forestry and Fisheries (DAFF)

A background information document (Appendix 9) was forwarded (e-mail dated: 28 August 2013; Appendix 10) to the Department of Agriculture, Forestry and Fisheries in order to obtain the Department's concerns with regards to the proposed project. ***To date, no comment has been received.***

6.2.10 Department of Agriculture, Rural Development and Land Administration (DARDLA)

A background information document (Appendix 9) was forwarded (e-mail dated: 28 August 2013; Appendix 10) to the Department of Agriculture, Rural Development and Land Administration in order to obtain the Department's concerns with regards to the proposed project. ***To date, no comment has been received.***

6.2.11 Department of Co-Operative Governance and Traditional Affairs (CoGTA)

A background information document (Appendix 9) was forwarded (e-mail dated: 28 August 2013; Appendix 10) to the Department of Co-Operative Governance and Traditional Affairs in order to obtain the Department's concerns with regards to the proposed project. ***To date, no comment has been received.***

6.2.12 Mpumalanga Provincial Heritage Authority

A background information document (Appendix 9) was forwarded (e-mail dated: 28 August 2013; Appendix 10) to the Mpumalanga Provincial Heritage

Authority in order to obtain the Department's concerns with regards to the proposed project. ***To date, no comment has been received.***

6.2.13 Department of Public Works, Roads and Transport

A background information document (Appendix 9) was forwarded (e-mail dated: 28 August 2013; Appendix 10) to the Department of Public Works, Roads and Transport in order to obtain the Department's concerns with regards to the proposed project. ***To date, no comment has been received.***

6.2.14 Department of Rural Development and Land Reform (Commission on Restitution of Land Rights)

The Department of Rural Development and Land Reform was contacted (facsimile dated: 29 August 2013; Appendix 10) with regards to any land claims registered against the farm Naauwpoort 335 JS. No response was received from the Department.

However, Clean Stream Environmental Services is aware that claims have been lodged against the mentioned farm (letter from Commission received in 2007; Claim Ref: RP 671/1094; Appendix 10). The status of the land claim and specific portions of the farm involved would have to be investigated by the applicant.

6.2.15 South African Heritage Resources Agency (SAHRA)

Information regarding the proposed project was loaded onto the SAHRA digital heritage management system for comment. See Appendix 10 for a printout of the webpage.

Subsequently, the following interim comment (letter dated: 11 November 2013; Case ID: 4021; Appendix 10) was received from SAHRA:

In terms of Section 38(8) of the National Heritage Resources Act (Act 25 of 1999), any proposed development that requires an application in terms of NEMA must have an assessment of impacts to heritage resources completed as part of the application process. The relevant heritage authority must determine whether the assessment done in terms of impacts to heritage resources satisfies our requirements and must provide comments or recommendations to the decision-making authority.

Based on the information provided in the submitted BID, the proposed development may impact on heritage resources such as archaeology and palaeontology.

As such, SAHRA requires that a heritage impact assessment be completed that assesses the impact of the proposed development on all heritage resources including, but not limited to, archaeological heritage, rock art, palaeontological heritage, any significant structures and intangible heritage. This assessment must not only assess impacts in terms of the development footprint, but must also assess broader, indirect impacts to heritage that may result from the proposed development.

The quickest process to follow for the archaeological component would be to contract a specialist (see www.asapa.org.za) to provide a ***Phase 1 Archaeological Impact Assessment Report****. This must be done before any development takes place. The Phase 1 Impact Assessment Report will identify the archaeological sites and assess their significance. It should also make recommendations (as indicated in section 38 of the NHRA) about the*

process to be followed. For example, there may need to be a mitigation phase (Phase 2) where the specialist will collect or excavate material and date the site. At the end of the process the heritage authority may give permission for destruction of the sites.

*A **Palaeontological field assessment study** must be undertaken to assess whether or not the development will impact upon significant palaeontological resources. If the area is deemed sensitive, a full Phase 1 Palaeontological Impact Assessment will be required and if necessary a Phase 2 rescue operation might be necessary (see www.palaeontologicalsociety.co.za).*

Any other heritage resources that may be impacted such as built structures over 60 years old, sites of cultural significance associated with oral histories, burial grounds and graves, graves of victims of conflict, and cultural landscapes or viewscapes must also be assessed.

This assessment must satisfy SAHRA's minimum requirements for impact assessments and must comply with the requirements in Section 38(3) of the NHRA and as such, this assessment must provide recommendations regarding the mitigation of any identified direct and indirect impacts to heritage resources.

SAHRA looks forward to receiving this assessment before commenting further on this proposed development.

Response from Clean Stream Environmental Services:
The applicant has been informed of SAHRA's requirements as indicated above.

6.3 Consultation with other stakeholders

6.3.1 Mr. B. Nkosi (Councillor - Ward 19)
The councillor for area (Ward 19 – Mr. B. Nkosi) was contacted telephonically on 9 September 2013 regarding the proposed project. In addition, a background information document (Appendix 9) was forwarded (facsimiles dated: 9 September 2013 and 22 November 2013; Appendix 10) to the councillor in order to obtain his issues of concern and/or objections on behalf of the community. ***To date, no comment has been received.***

6.3.2 Wildlife and Environment Society of South Africa
A background information document (Appendix 9) was forwarded (e-mail dated: 28 August 2013; Appendix 10) to the Wildlife and Environment Society of South Africa for evaluation and comment. ***To date, no comment has been received.***

6.3.3 Eskom
A background information document (Appendix 9) was forwarded (e-mail dated: 28 August 2013; Appendix 10) to the various sections of Eskom for evaluation and comment.

Subsequently, a letter (dated: 11 September 2013; Appendix 10) was received from Eskom indicating that four (4) of Eskom Transmission's lines are present on Portion 26 of the farm Naauwpoort 335 JS.

Eskom Transmission indicated that they will raise no objection to the proposed development provided that their rights are acknowledged and respected at all times. No encroachment whatsoever will be allowed in the Eskom servitude. A number of terms and conditions were provided in their letter (Appendix 10), which must be adhered to by the developer.

Response from Clean Stream Environmental Services:
The applicant has been informed of the terms and conditions as stipulated by Eskom. It should be noted that these powerlines (400kV) are not located on the proposed development site, but on a portion of Portion 26 located north of the R544 provincial road (refer to the diagram in Section 5.3.4 of this report). 22kV powerlines are however, present on site.

6.3.4 Telkom

A background information document (Appendix 9) was forwarded (e-mail dated: 28 August 2013; Appendix 10) to the Telkom for evaluation and comment.

Subsequently, a letter was received from Telkom (dated: 29 August 2013; Appendix 10) indicating that they have *no objection to the proposed development*. However, the following points need to be considered when working in close proximity to Telkom infrastructure:

- *All safety regulations must be adhered to at all times.*
- *Infrastructure will be in the vicinity of 1 metre from the fence line in the road reserve where the services are parallel to the road.*
- *Underground network can be from 0.6 m to 1.5 m deep and strict caution must be taken as it is a main fibre network.*
- *Overhead lines might either have copper or fibre cables and caution must be taken to safeguard the network from damages.*
- *Telkom should be given 90 days notice to do a survey and provide the contractor with a quote if infrastructure needs to be relocated. The cost for such deviation or removal shall be for the account of the contractor.*
- *When any damages occur on Telkom infrastructure it must be communicated to Robert Khoza at 081 413 4482, or the Toll Free number is 0800 203 951, he will also be responsible for indicating Telkom services on site. The cost to repair damages will be for the person that damaged the network.*

Response from Clean Stream Environmental Services*:*
Noted. The applicant has been informed accordingly.

6.3.5 South African Petroleum Industry Association (SAPIA)

A background information document (Appendix 9) was forwarded (e-mail dated: 28 August 2013; Appendix 10) to the South African Petroleum Industry Association (SAPIA) for evaluation and comment. ***To date, no comment has been received.***

6.3.6 Fuel Retailers Association (FRA)

A background information document (Appendix 9) was forwarded (e-mail dated: 28 August 2013; Appendix 10) to the Fuel Retailers Association (FRA) for evaluation and comment. ***To date, no comment has been received.***

6.4 Adjacent landowners/users

Figure 6.2 provides an indication of the adjacent landowners/users in relation to the proposed site.

In order to determine the registered owners of the various properties, a Deeds Search was conducted via the WinDeed system of the Deeds Office of South Africa. The Deeds Search Template provides information pertaining to land ownership, size and land value of each of the properties.

The adjacent landowners were informed of the proposed development through the advertising process as indicated in Section 6.1 and the distribution of background information documents. A copy of the background information document is provided in Appendix 9.

The comments received from the adjacent landowners in response to the advertising and distribution of the background information document are indicated below.

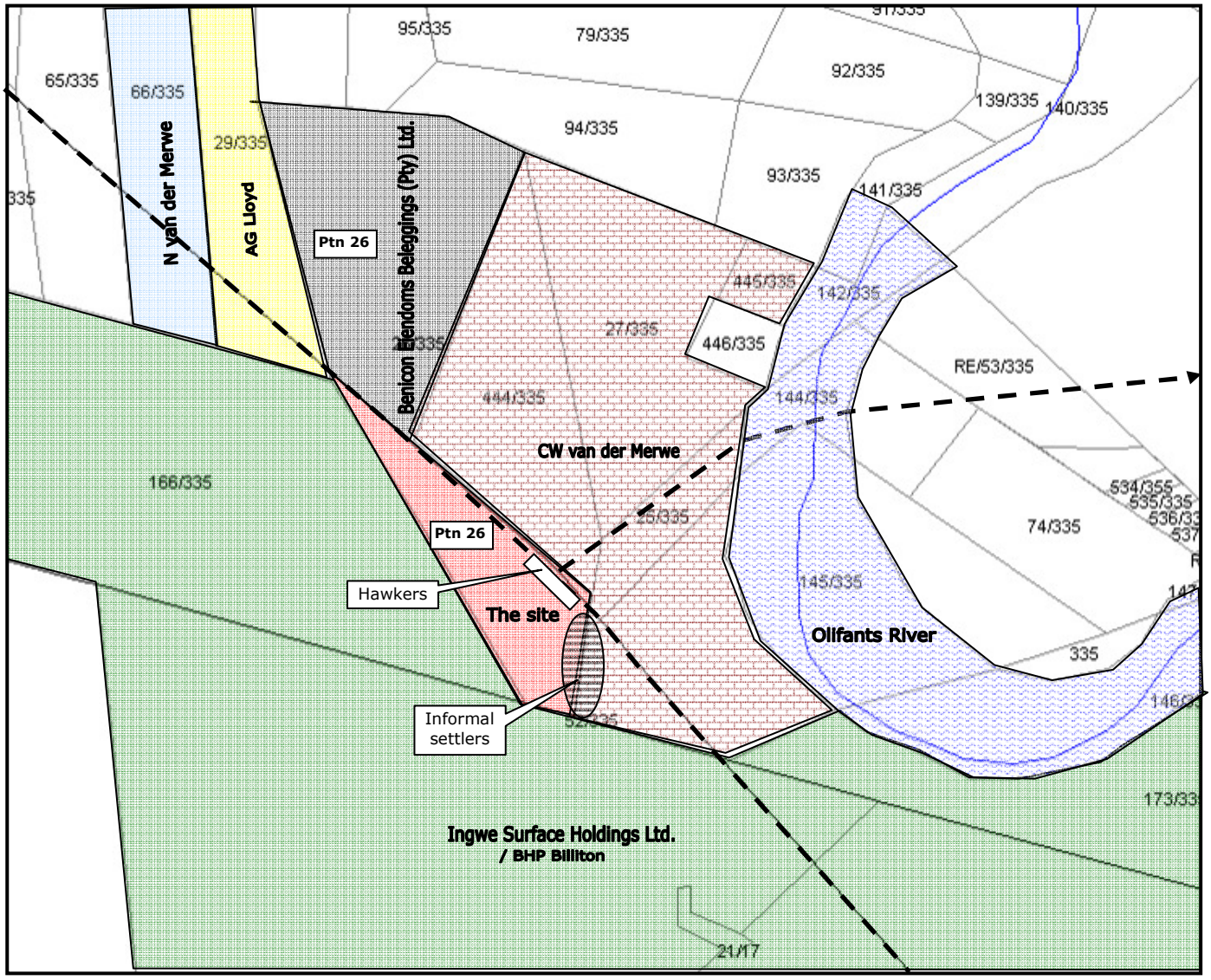


Figure 6.2 : Surrounding landowners

6.4.1 Ingwe Surface Holdings Ltd./BHP Billiton (Figure 6.2)

The properties located on the western and southern boundaries of the site are registered to Ingwe Surface Holdings Ltd. (BHP Billiton).

The area west of the site was mined (Wolwekrans Colliery) a number of years ago and has since been rehabilitated.

The Impungwe Provincial Hospital (previously Wolwekrans) and Wolvekrans Water Treatment Works are located south of the site (Figure 5.1). A mine village (Wolwekrans Village) used to be located near the hospital, but has since been demolished by BHP Billiton (Figure 5.1).

A background information document was forwarded (e-mail dated: 28 August 2013; Appendix 10) to Mr. V. Dhanooklal (legal section) in order to obtain his comments regarding the proposed development. ***To date, no comment has been received.***

A background information document was also forwarded to the BHP Mine Closure Manager, Mr. P. Lombard (e-mail dated: 11 September 2013; Appendix 9) informing him of the proposed development. The proposed project was also discussed telephonically on 11 September 2013. ***To date, no comment has been received.***

6.4.2 C.W. van der Merwe (Figure 6.2)

The property located on the eastern boundary of the site (i.e. opposite the R544 provincial road) as well as on the south eastern boundary of the site is registered to C.W. van der Merwe. Mr. Van der Merwe is the owner of Portions 444, 445, 25, 27 and 52 of Naauwpoort 335 JS. The properties are used for light industrial (brick-making) and residential purposes (farmstead). The property adjacent to the Olifants River (Portion 52) is currently vacant and used by residents in the area for fishing.

The informal settlement present in the southern portion of the proposed project site extends onto Mr. C.W. van der Merwe's property (Figure 6.2).

A background information document was forwarded (e-mail dated: 2 September 2013; Appendix 10) to Mr. B. van der Merwe in order to obtain their comments regarding the proposed development. The proposed project was also discussed telephonically.

Subsequently, a completed comment sheet was received (dated: 26 September 2013; Appendix 10) indicating the following:

> *Informal settlers have occupied the portion of my property located adjacent to the proposed development site. I therefore object to the proposed development until such time as the informal settlers are removed.*

<u>Response from Clean Stream Environmental Services:</u>

According to the project applicant, a portion of the development site will be made available free of charge for the relocation of the informal settlers. See Figure 3.1a and Section 6.4.8 of this report for more detail.

6.4.3 Benicon Eiendoms Beleggings (Pty) Ltd. (Figure 6.2)

As indicated in Section 5.3.1, Portion 26 of the farm Naauwpoort 335 JS is registered to Benicon Eiendoms Beleggings (Pty) Ltd (T30663/1981) on the WinDeed System. A copy of the Deeds Office Property report is provided in Appendix 1.

A portion of the property located south of the R544 provincial road was purchased by Elmir Industrial Projects cc. in 2012 for the proposed filling station and industrial development. A copy of the Sale of Property Agreement is provided in Appendix 3.

The portion north of the R544 provincial road is however, still registered to Benicon Eiendoms Beleggings (Pty) Ltd. The workshops, offices and scrapyard of the mining contractor, Benicon, are located on this portion. This property formed part of the original township application with regards to the proposed Benicon Park industrial area.

A background information document was hand delivered to Benicon on 1 October 2013 for review and comment. ***To date, no comment has been received.***

6.4.4 A.G. Lloyd (Figure 6.2)

Mr. A.G. Lloyd owns and resides on Portion 29 of the farm Naauwpoort 335 JS. A scrapyard (Naauwpoort Industrial and Mining Salvage Industries cc.) is operated from the property. The business has been in operation for approximately 25 years.

A background information document was forwarded (e-mail dated: 29 August 2013; Appendix 10) to Mr. Lloyd in order to obtain his comments regarding the proposed development. ***To date, no comment has been received.***

6.4.5 N. van der Merwe (Figure 6.2)

Portion 66 of Naauwpoort 335 JS is registered to Mr. N. van der Merwe. The said property formed part of the original township application with regards to the proposed Benicon Park industrial area.

A background information document was e-mailed (dated: 4 September 2013 and 6 September 2013; Appendix 10) to Mr. Van der Merwe in order to obtain his comments regarding the proposed development. ***To date, no comment has been received.***

6.4.6 Hawkers (Figure 6.2)

Hawkers, who sell tyres, food, fruit and vegetables, traditional medicine, etc. are present adjacent to the R544 provincial road. The said hawker stalls are located within the R544 provincial road reserve with a small portion of their footprint extending onto the said development site. According to the applicant, these hawkers are currently posing a safety risk to the users of the R544 provincial road. They are also occupying the site illegally and will have to move.

The hawkers were informed of the proposed project via the notices (English and Zulu) displayed adjacent to the hawker stalls (see Section 6.1). The hawkers did not register as interested and affected parties.

6.4.7 Informal settlers (Figure 6.2)

A number of informal settlers reside in the southern section of the site. The informal settlement also extends onto Portion 52 of the farm Naauwpoort 335 JS, which belongs to Mr. C.W. van der Merwe.

The residents obtain water from a borehole located within the settlement. No waterborne sewerage is available and pit latrines are used. No electricity is available.

According to the applicant, a portion of the development site (to be zoned 'Residential 1') will be made available to the people free of charge for relocation.

According to the applicant, the Department of Human Settlements has been contacted for assistance in the relocation process. If no assistance is received from the Department of Human Settlements, the residential area could be handed over to a developer, the eMalahleni Local Municipality or another Government Department for development.

It should be noted that the development of the land for residential purposes will depend on approval thereof by the eMalahleni Local Municipality and the Department of Economic Development, Environment and Tourism as well as securing funding from Government with regards to the development thereof.

The residents of the informal settlement were informed of the proposed project via the notices (English and Zulu) displayed adjacent to the gravel access road (see Section 6.1). The hawkers did not register as interested and affected parties.

6.5 List of Interested and Affected Parties

From the above public participation process, the following list of Interested and Affected Parties was compiled:

INTERESTED AND AFFECTED PARTY LIST	
Organisation	**Name**
Government Departments	
Department of Agriculture, Forestry and Fisheries	F Mashabela
Department of Agriculture, Rural Development and Land Administration	J Venter
Department of Co-Operative Governance and Traditional Affairs	M Loock
Department of Culture, Sport and Recreation	S Singh
Department of Economic Development, Environment and Tourism	M Seshweni
Department of Energy	M Machete
Department of Mineral Resources– eMalahleni	M Mokonyane
Department of Water Affairs – Nelspruit	P Monyela
Department of Public Works, Roads and Transport	B Viljoen M Sibanyoni
Department of Rural Development and Land Reform	GN Mathonsi
South African Heritage Resources Agency	J Lavin

INTERESTED AND AFFECTED PARTY LIST	
Organisation	**Name**
Mpumalanga Provincial Heritage Authority	B Moduka
Other Organisations	
Eskom	E Lennox, N Galela, N Maake, M Moloko, L Motsisi
Telkom	J Kruger
South African Petroleum Industry Association (SAPIA)	A Moldan
Fuel Retailers Association (FRA)	Z Sokabo
Mpumalanga Tourism and Parks Agency (MTPA)	F Krige
Wildlife and Environment Society of South Africa (WESSA)	L Betha
Local Municipality and Municipal Councillor	
eMalahleni Local Municipality	T Buthelezi
Councillor (Ward 19)	B Nkosi
Nkangala District Municipality (Development and Planning)	G Mathalise
Community	
Ingwe Surface Holdings (Pty) Ltd./BHP Billiton (legal section)	V Dhanooklal
BHP Billiton Mine Closure	P Lombard
CW van der Merwe	B van der Merwe
N van der Merwe	N van der Merwe
AG Lloyd	AG Lloyd
Benicon Eiendoms Beleggings (Pty) Ltd. - Benicon	L Modigage
Hawkers	
Informal settlers	

7. ENVIRONMENTAL IMPACT DESCRIPTION AND EVALUATION

7.1 Introduction

This section of the report describes and evaluates the potential impact of the proposed development on the environment. The impact of the development has to be assessed in terms of the following development phases:

- **Planning and design phase**
- **Construction phase**
- **Operational phase**
- **Decommissioning phase**

7.2 Evaluation of impacts

The evaluation of impacts is conducted in terms of the following criteria:

- **Nature of impact**

- **Extent of impact**

Site	Effect limited to the site and its immediate surroundings
Local	Effect limited to within 3-5 km of the site
Regional	Effect will have an impact on a regional scale

- **Duration of impact**

Short	Effect lasts for a period 0 to 5 years
Medium	Effect continues for a period between 5 and 10 years
Long	Effect will cease after the operational life of the activity either because of natural process or by human intervention
Permanent	Where mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient

- **Probability**

Improbable	Less than 33% chance of occurrence
Probable	Between 33 and 66% chance of occurrence
Highly probable	Greater than 66% chance of occurrence
Definite	Will occur regardless of any prevention measures

- **Significance of impact**

Low	Where the impact will have a relatively small effect on the environment and will not have an influence on the decision
Medium	Where the impact can have an influence on the environment and the decision and should be mitigated
High	Where the impact definitely has an impact on the environment and the decision regardless of any possible mitigation

- **Status**

Positive	Impact will be beneficial to the environment
Negative	Impact will not be beneficial to the environment
Neutral	Positive and negative impact

It must be noted that many of the potential negative consequences can be mitigated successfully. It is however, necessary to make a thorough assessment of all possible impacts in order to ensure that environmental considerations are taken into account, in a balanced way, as far as possible, supporting the aim of creating a healthy and pleasant environment.

7.3 Planning and design phase

The planning and design phase involved office work and site surveys with regards to the design of the layout plan, the Basic Assessment Report, the geotechnical report and the geohydrological report. It also involves obtaining the necessary authorisations for the said development.

Apart from the drilling of a borehole and excavation of 6 test pits, no actual work (construction) took place on site. Therefore, no impacts are expected.

7.4 Construction phase

The development of the property will be phased as indicated in Figure 3.1a:

- Phase 1 – Filling Station
- Phase 2 – Industrial
- Phase 3 - Residential

The construction phase would thus involve the following:

- **Phase 1: Construction of the filling station (Figure 3.1a) –**
  - clearing of vegetation and levelling of the site;
  - construction of the access road;
  - excavation of underground tank pits;
  - installation of the underground tanks and associated infrastructure;
  - excavation of the required foundations and service trenches (including the excavation of the conservancy tanks);
  - installation of the services;
  - laying of the required foundations for buildings;
  - building of the outer structures;
  - installation of the required internal fittings.
- **Phase 2: Construction of the industrial area (Figure 3.1a) -**
  - Clearing of vegetation and levelling of the site;
  - excavation of the required foundations and service trenches;
  - installation of the services;
  - construction of the various buildings;
  - construction of the internal roads.
- **Phase 3: Construction of the residential area (Figure 3.1a) -**
  - Clearing of vegetation and levelling of the site;
  - excavation of the required foundations and service trenches;
  - installation of the services;
  - construction of the various buildings;
  - construction of the internal roads.

Section 7.7 provides further details with regards to potential impacts identified.

7.5 Operational phase

The operational phase would involve the following:

- Utilisation of the filling station;
- Utilisation of the industrial area;
- Utilisation of the residential area.

Section 7.7 provides further details with regards to potential impacts identified.

7.6 Decommissioning phase

If required, this phase would involve the decommissioning of the facilities constructed as part of this project (see Section 7.4).

The decommissioning phase will not be discussed in detail. It is recommended that at the time of decommissioning, a specific Environmental Management Plan (EMP) be compiled which specifically addresses this phase. This EMP would have to address issues such as the removal of underground tanks, building rubble and the rehabilitation of the site. Soil conservation measures would also have to be implemented.

7.7 Identification of potential impacts

The following tables provide an indication of the environmental features that will be impacted (directly and indirectly) during the construction, operational and decommissioning phases of the proposed project as indicated above.

ENVIRONMENTAL FEATURE(S)	PREDICTED IMPACT CONSTRUCTION PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT OPERATIONAL PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)
TOPOGRAPHY	**Phase 1 – Filling Station:** ▪ The natural slope of the area is in a north easterly direction towards the R544 provincial road and the Olifants River. ▪ However, the topography of the filling station stand has been impacted upon by an old excavation. The excavation is between 1 and 2 meters deep, extends across most of the filling station stand and leads to the ponding of water on site during heavy rainfall periods. ▪ The geotechnical study classified this area as Zone C and recommended that no development takes place due to the uneven ground conditions. Alternatively, the area should be properly reinstated according to recognized engineering and environmental practices. The area must thus be built up before any construction takes place, which would have a positive impact on the topography. ▪ The cut-and-fill activities and construction of buildings (topographical highs) would result in changed runoff patterns and an increased risk of soil erosion if mitigation measures are not implemented. ▪ The excavation of the tank pit will also have a temporary impact on the topography until such time as it is backfilled.	SITE	LONG	DEFINITE	MEDIUM POSITIVE	MEDIUM POSITIVE	**Phase 1 – Filling Station:** ▪ Direct impact on topography will continue, which in turn will impact upon the runoff from the site.	SITE	LONG	HIGHLY PROBABLE	LOW NEGATIVE	LOW NEGATIVE	**Phase 1 – Filling Station, Phase 2 – Industrial and Phase 3 - Residential:** ▪ During decommissioning, the underground tanks will be removed and the buildings will be demolished. The area will be shaped to conform to the original slope of the area, which will have a positive impact on the runoff from the site.	SITE	LONG	HIGHLY PROBABLE	LOW POSITIVE	LOW POSITIVE
		SITE	SHORT	DEFINITE	LOW NEGATIVE	LOW NEGATIVE												
	Phase 2 – Industrial: ▪ The site slopes gently in a north easterly direction towards the R544 provincial road. ▪ The topography of the southern section of the industrial stand has been impacted upon by the large and some smaller sand excavations. The topography of the northern section was positively impacted through the rehabilitation activities of the adjacent mine that extended onto the said site. ▪ The construction activities (e.g. removal of vegetation, sloping of the site and the formation of voids and topographical highs) would have a direct impact on the topography and would result in changed runoff patterns and an increased risk of soil erosion if mitigation measures are not implemented. ▪ In addition, the creation of topographical highs in the form of buildings will impact on the general topography of the area.	SITE	SHORT	DEFINITE	LOW NEGATIVE	LOW NEGATIVE	**Phase 2 – Industrial and Phase 3 - Residential:** ▪ Direct impact on topography will continue, which in turn will impact upon the runoff from the site.	SITE	LONG	HIGHLY PROBABLE	LOW NEGATIVE	LOW NEGATIVE						
	Phase 3 - Residential: ▪ The site slopes gently in a north easterly direction towards the R544 provincial road. ▪ The topography has already been impacted upon by the informal settlement, gravel roads, soccer field and on-site excavations. ▪ The construction activities (e.g. the removal of vegetation, sloping of the site and the formation of voids and topographical highs) would have a direct impact on the topography and would result in changed runoff patterns and an increased risk of soil erosion if mitigation measures are not implemented. ▪ In addition, the creation of topographical highs in the form of buildings will impact on the general topography of the area.	SITE	SHORT	DEFINITE	LOW NEUTRAL	LOW NEUTRAL													

ENVIRONMENTAL FEATURE(S)	PREDICTED IMPACT CONSTRUCTION PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT OPERATIONAL PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)
GEOLOGY	**Phase 1 – Filling Station:** ▪ The site is underlain by mudrock and sandstone bedrock belonging to the Vryheid Formation, Ecca Group. ▪ The geology of the filling station stand has been impacted upon by an old excavation. The excavation is between 1 and 2 meters deep, extends across most of the filling station stand and leads to the ponding of water on site during heavy rainfall periods. ▪ The geotechnical study classified this area as Zone C and recommended that no development takes place due to the uneven ground conditions. Alternatively, the area should be properly reinstated according to recognized engineering and environmental practice. ▪ The construction activities could impact on the underlying geology depending on the amount of cut-and-fill needed to level the area and the depth of the building foundations/service trenches. ▪ The excavation of the tank pit for the underground tanks could also impact on the underlying geology (hardrock sandstone). The impact cannot be mitigated.	SITE SITE	PERMANENT PERMANENT	PROBABLE DEFINITE	LOW NEGATIVE LOW NEGATIVE	LOW NEGATIVE LOW NEGATIVE	**Phase 1 – Filling Station:** ▪ None - no further construction.						**Phase 1 – Filling Station:** ▪ No impact expected.					
	Phase 2 – Industrial: ▪ The site is underlain by mudrock and sandstone bedrock belonging to the Vryheid Formation, Ecca Group. ▪ The geology of the southern section of the industrial stand has been impacted upon by the large and some smaller sand excavations. The geology of the northern section could have been impacted upon by the rehabilitation activities of the adjacent mine (that extended onto the said site). ▪ Provision of foundations for the buildings (industrial and residential) and trenches for the services could impact on the underlying geology depending on the depth of the excavations. ▪ Due to the hard rock material underlying the site (Geotechnical Zone A), hard excavation methods (e.g. trench digger, jackhammer and limited blasting) may be required. Blasting could cause increased fracturing and permeability of the underlying geology. The possible impact on the underlying geology cannot be mitigated.	SITE SITE	PERMANENT PERMANENT	PROBABLE PROBABLE	LOW NEGATIVE LOW NEGATIVE	LOW NEGATIVE LOW NEGATIVE	**Phase 2 – Industrial and Phase 3 - Residential:** ▪ None – no further construction.						**Phase 2 – Industrial and Phase 3 - Residential:** ▪ No impact expected.					
	Phase 3 - Residential: ▪ The site is underlain by mudrock and sandstone bedrock belonging to the Vryheid Formation, Ecca Group. ▪ Rehabilitation activities, excavation of sand and the construction of the informal settlement could have impacted on the underlying geology. ▪ Provision of foundations for the buildings (industrial and residential) and trenches for the services could impact on the underlying geology depending on the depth of the excavations.	SITE	PERMANENT	PROBABLE	LOW NEGATIVE	LOW NEGATIVE											

ENVIRONMENTAL FEATURE(S)	PREDICTED IMPACT CONSTRUCTION PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT OPERATIONAL PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)
SOILS /GEOTECHNICAL	**Phase 1 – Filling Station:** ▪ The site comprises of transported sandy, silty and gravelly soils that are underlain by residual soils developed over mudrock and sandstone bedrock. ▪ The soils of the filling station stand have been impacted upon by an old excavation. The excavation is between 1 and 2 meters deep, extends across most of the stand and leads to the ponding of water on site during heavy rainfall periods. ▪ In general, the construction of buildings/infrastructure will lead to changes in soil structure, nutritional and chemical values. ▪ Sediment transport and erosion may occur following the clearing of the site in preparation of construction. This may impact on the adjacent areas and the R544 provincial road if proper storm water control measures are not implemented. ▪ Soil pollution may occur if the construction vehicles are not maintained/repaired resulting in oil leaks and fuel spills and if waste management measures are not implemented, etc. ▪ The filling station site falls within Geotechnical Zones B and C, with Zone B located in the southern portion and Zone C in the northern portion of the stand (Figure 5.18). ▪ Johann van der Merwe (2007) recommended that Zone C (i.e. the excavation) be excluded from development due to the highly uneven ground conditions. Alternatively, the area should be properly reinstated (filled) according to recognized engineering and environmental practice. As per the current layout plan, most of the filling station will be located in this zone. The buildings, island dispenser and parking areas could thus be impacted upon if the area is not properly reinstated before construction. ▪ According to Johann van der Merwe (2007), the upper soil layers of Zone B (southern portion of site) are highly compressible and collapsible. The site soils could thus impact on the structures if mitigation measures were not implemented. ▪ According to Johann van der Merwe (2007), the site soils are potentially chemically aggressive with regards to buried ferrous pipes. The services could thus be impacted upon if mitigation measures are not implemented. ▪ The installation of the underground tanks should not impact on the soil of the site, since the tanks will be installed in the previously excavated area. ▪ In addition, Geotechnical Zone C should not impact on the fuel tanks, since the tanks will be installed underground.	SITE SITE SITE SITE	LONG LONG LONG LONG	PROBABLE HIGHLY PROBABLE HIGHLY PROBABLE PROBABLE	MEDIUM NEGATIVE MEDIUM NEGATIVE MEDIUM NEGATIVE MEDIUM NEGATIVE	LOW NEGATIVE LOW NEGATIVE LOW NEGATIVE LOW NEGATIVE	**Phase 1 – Filling Station:** ▪ Direct impact on soil will continue i.t.o. soil structure, nutritional and chemical values and soil compaction. ▪ Soil pollution could occur if proper waste management does not take place, especially hazardous waste management at the filling station (e.g. oil cans, fuel spillage, etc.). ▪ Soil pollution would occur if the sewer infrastructure (conservancy tanks) is not properly installed, maintained and emptied on a regular basis. ▪ Soil erosion could occur if proper stormwater control measures are not implemented. This could impact on the adjacent stands and the R544 provincial road. ▪ The buildings and associated infrastructure will continue to be impacted upon if mitigation measures in terms of the geotechnical conditions were not implemented.	SITE SITE SITE SITE SITE	LONG LONG LONG LONG LONG	HIGHLY PROBABLE HIGHLY PROBABLE PROBABLE PROBABLE HIGHLY PROBABLE	MEDIUM NEGATIVE MEDIUM NEGATIVE MEDIUM NEGATIVE LOW NEGATIVE MEDIUM NEGATIVE	LOW NEGATIVE LOW NEGATIVE LOW NEGATIVE LOW NEGATIVE LOW NEGATIVE	**Phase 1 – Filling Station:** ▪ The decommissioning of the filling station will have an initial negative impact on the soil of the site in terms of soil disturbance (physical and biological properties). ▪ Soil erosion could occur if the site is not revegetated properly after decommissioning. ▪ Soil pollution may occur if the vehicles are not maintained/repaired resulting in oil leaks and fuel spills and if waste management measures are not implemented, etc. ▪ In addition, soil pollution may occur as a result of accidental spills (fuels, oils, etc.) when the fuel tanks and associated infrastructure are removed. ▪ The removal of any polluted soil and proper rehabilitation of the site after decommissioning will however, have a positive impact on the soil.	SITE SITE	SHORT LONG	PROBABLE HIGHLY PROBABLE	MEDIUM NEGATIVE MEDIUM POSITIVE	LOW NEGATIVE MEDIUM POSITIVE

ENVIRONMENTAL FEATURE(S)	PREDICTED IMPACT CONSTRUCTION PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT OPERATIONAL PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)
SOILS /GEOTECHNICAL	**Phase 2 – Industrial:** ▪ The site comprises of transported sandy, silty and gravelly soils that are underlain by residual soils developed over mudrock and sandstone bedrock. ▪ The soil of the southern section of the industrial stand has been impacted upon by the large and some smaller sand excavations. The soil of the northern section was impacted as a result of the rehabilitation activities of the mine. ▪ In general, the construction of buildings/infrastructure will lead to changes in soil structure, nutritional and chemical values. ▪ Sediment transport and erosion may occur following the clearing of the site in preparation of construction. This may impact on the adjacent stands and the R544 provincial road if proper storm water control measures are not implemented. ▪ Soil pollution may occur if the construction vehicles are not maintained/repaired resulting in oil leaks and fuel spills and if waste management measures are not implemented, etc. ▪ The industrial stand falls within Geotechnical Zones A, B and C (Figure 5.18). Zone A is located in the central portion of the stand and comprises an old excavation and rehabilitated area. Zone B is present in the northern portion (rehabilitated area) and Zone C in the southern portion (i.e. the excavation). ▪ According to Johann van der Merwe (2007), the upper soil layers of Zone A and Zone B are highly compressible and collapsible. The site soils could thus impact on the structures if mitigation measures were not implemented. ▪ Seasonal perched water conditions may be present in Zone A, which could impact on the buildings and infrastructure if mitigation measures are not implemented. It should however, be noted that the perched water conditions may no longer exist due to previous excavations and rehabilitation activities on site. ▪ Johann van der Merwe (2007) recommended that Zone C be excluded from development due to the highly uneven ground conditions. Alternatively, the area should be properly reinstated (filled) according to recognized engineering and environmental practice. Any buildings constructed in this zone could be impacted upon if the area is not properly reinstated before construction. ▪ According to Johann van der Merwe (2007), the site soils are potentially chemically aggressive with regards to buried ferrous pipes. The services could thus be impacted upon if mitigation measures are not implemented.	SITE SITE SITE SITE SITE SITE	SHORT LONG	PROBABLE HIGHLY PROBABLE PROBABLE HIGHLY PROBABLE PROBABLE	MEDIUM NEGATIVE MEDIUM NEGATIVE MEDIUM NEGATIVE MEDIUM NEGATIVE LOW NEGATIVE	LOW NEGATIVE LOW NEGATIVE LOW NEGATIVE LOW NEGATIVE LOW NEGATIVE	**Phase 2 - Industrial:** ▪ Direct impact on soil will continue i.t.o. soil structure, nutritional and chemical values and soil compaction. ▪ Soil pollution would occur if proper waste management does not take place, especially hazardous waste management at each industry (e.g. oil cans, vehicle servicing, etc.). ▪ Soil pollution could occur if the sewer network is not properly installed and maintained. ▪ Soil erosion could occur if proper stormwater control measures are not implemented. This could impact on the adjacent stands and the R544 provincial road. ▪ The buildings and associated infrastructure will continue to be impacted upon if mitigation measures in terms of the geotechnical conditions were not implemented.	SITE SITE SITE SITE SITE	LONG	HIGHLY PROBABLE HIGHLY PROBABLE PROBABLE PROBABLE HIGHLY PROBABLE	LOW NEGATIVE MEDIUM NEGATIVE MEDIUM NEGATIVE LOW NEGATIVE MEDIUM NEGATIVE	LOW NEGATIVE LOW NEGATIVE LOW NEGATIVE LOW NEGATIVE LOW NEGATIVE	**Phase 2 - Industrial:** ▪ The decommissioning of the industries will have an initial negative impact on the soil of the site in terms of soil disturbance (physical and biological properties). ▪ Soil erosion could occur if the site is not revegetated properly after decommissioning. ▪ Soil pollution may occur if the construction vehicles are not maintained/repaired resulting in oil leaks and fuel spills and if waste management measures are not implemented, etc. ▪ The removal of any polluted soil and proper rehabilitation of the site after decommissioning will however, have a positive impact on the soil.	SITE SITE	SHORT LONG	PROBABLE HIGHLY PROBABLE	MEDIUM NEGATIVE MEDIUM POSITIVE	LOW NEGATIVE MEDIUM POSITIVE

ENVIRONMENTAL FEATURE(S)	PREDICTED IMPACT CONSTRUCTION PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT OPERATIONAL PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)
SOILS /GEOTECHNICAL	**Phase 3 - Residential:** ▪ The site comprises of transported sandy, silty and gravelly soils that are underlain by residual soils developed over mudrock and sandstone bedrock. ▪ The soil has already been impacted upon by the informal settlement, gravel roads, soccer field and on-site excavations. ▪ In general, the construction of buildings/infrastructure will lead to changes in soil structure, nutritional and chemical values. ▪ Sediment transport and erosion may occur following the clearing of the site in preparation of construction. This may impact on the adjacent stands if proper storm water control measures are not implemented. ▪ Soil pollution may occur if the construction vehicles are not maintained/repaired resulting in oil leaks and fuel spills and if waste management measures are not implemented, etc. ▪ The residential stand falls within Geotechnical Zones B and C (Figure 5.18). Zone B is present over most of the stand (soccer field, informal settlement). Zone C comprises a small section of the old excavation in the northeastern corner of the stand. ▪ According to Johann van der Merwe (2007), the upper soil levels of Zone B are highly compressible and collapsible. The site soils could thus impact on the structures if mitigation measures were not implemented. ▪ Johann van der Merwe (2007) recommended that Zone C be excluded from development due to the highly uneven ground conditions. Alternatively, the area should be properly reinstated (filled) according to recognized engineering and environmental practice. Any buildings constructed in this zone could be impacted upon if the area is not properly reinstated before construction. ▪ According to Johann van der Merwe (2007), the site soils are potentially chemically aggressive with regards to buried ferrous pipes. The services could thus be impacted upon if mitigation measures are not implemented.	SITE SITE SITE SITE SITE SITE SITE SITE SITE SITE	SHORT LONG LONG LONG	PROBABLE HIGHLY PROBABLE HIGHLY PROBABLE PROBABLE	MEDIUM NEGATIVE MEDIUM NEGATIVE MEDIUM NEGATIVE MEDIUM NEGATIVE	LOW NEGATIVE LOW NEGATIVE LOW NEGATIVE LOW NEGATIVE	**Phase 3 - Residential:** ▪ Direct impact on soil will continue i.t.o. soil structure, nutritional and chemical values and soil compaction. ▪ Soil pollution could occur if proper waste management does not take place (i.e. if domestic waste is not collected by the eMalahleni Local Municipality and disposed of on site). ▪ Soil pollution would occur if the sewer system is not properly installed and maintained and does not have sufficient capacity. ▪ Soil erosion could occur if proper stormwater control measures are not implemented. This could impact on the adjacent stands. ▪ The buildings and associated infrastructure will continue to be impacted upon if mitigation measures in terms of the geotechnical conditions were not implemented.	SITE SITE SITE SITE SITE	LONG LONG LONG LONG	HIGHLY PROBABLE HIGHLY PROBABLE PROBABLE PROBABLE HIGHLY PROBABLE	MEDIUM NEGATIVE MEDIUM NEGATIVE MEDIUM NEGATIVE MEDIUM NEGATIVE	LOW NEGATIVE LOW NEGATIVE LOW NEGATIVE LOW NEGATIVE	**Phase 3 - Residential:** ▪ The decommissioning of the houses will have an initial negative impact on the soil of the site in terms of soil disturbance (physical and biological properties). ▪ Soil erosion could occur if the site is not revegetated properly after decommissioning. ▪ Soil pollution may occur if the construction vehicles are not maintained/repaired resulting in oil leaks and fuel spills and if waste management measures are not implemented, etc. ▪ The removal of any polluted soil and proper rehabilitation of the site after decommissioning will however, have a positive impact on the soil.	SITE SITE	SHORT LONG	PROBABLE HIGHLY PROBABLE	MEDIUM NEGATIVE MEDIUM POSITIVE	LOW NEGATIVE MEDIUM POSITIVE

ENVIRONMENTAL FEATURE(S)	PREDICTED IMPACT CONSTRUCTION PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT OPERATIONAL PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)
LAND USE / AGRICULTURAL POTENTIAL/SENSE OF PLACE	**Phase 1 – Filling Station:** ▪ The property is zoned for agriculture. However, it is not used for agricultural purposes and is currently vacant. The majority of the stand comprises of an old excavation. Informal businesses (hawkers) are located adjacent to the R544 provincial road at the proposed access point. ▪ The proposed site has been earmarked for industrial purposes in terms of the Spatial Development Framework (SDF) (2010) of the eMalahleni Local Municipality. The surrounding properties (Benicon, Van der Merwe Stene) are already used for industrial purposes. ▪ The site is located adjacent to the R544 provincial road en route to various coal mines and power stations. The filling station would cater for the heavy vehicles and other traffic utilizing the R544 as well as the Duvha Power Station road on their way to and from the mines. ▪ No other filling stations are located within 3 km of the site. ▪ The proposed land use will thus be compatible to that of the surrounding area and improve the current land use of the site.	SITE	LONG	DEFINITE	LOW POSITIVE	LOW POSITIVE	**Phase 1 – Filling Station:** ▪ The land use will change from vacant to filling station. The new land use will be compatible with that of the surrounding area.	SITE	LONG	DEFINITE	LOW POSITIVE	LOW POSITIVE	**Phase 1 – Filling Station:** ▪ The decommissioning and rehabilitation of the site would allow for a different land use on site. The impact will depend on the existing land use in the area at the said time.	SITE	LONG	HIGHLY PROBABLE	LOW NEUTRAL	LOW NEUTRAL
	Phase 2 - Industrial: ▪ The property is zoned for agriculture. However, it is not used for agricultural purposes and is currently vacant. The majority of the stand was revegetated as part of the rehabilitation of the adjacent opencast mine. Old excavations are also present on site. ▪ The proposed site has been earmarked for industrial purposes in terms of the Spatial Development Framework (SDF) (2010) of the eMalahleni Local Municipality. The surrounding properties (Benicon, Van der Merwe Stene) are already used for industrial purposes. ▪ The site is located en route to various mines and power stations in the area and will be the ideal location for the establishment of businesses that provide goods and services to the mines and power stations. ▪ The proposed land use will thus be compatible with that of the surrounding area.	SITE	LONG	DEFINITE	LOW NEUTRAL	LOW NEUTRAL	**Phase 2 - Industrial:** ▪ The land use will change from vacant to industrial. The new land use will be compatible with that of the surrounding area.	SITE	LONG	DEFINITE	LOW NEUTRAL	LOW NEUTRAL	**Phase 2 – Industrial, Phase 3 - Residential:** ▪ The decommissioning and rehabilitation of the site would allow for a different land use on site. The impact will depend on the existing land use in the area at the said time.	SITE	LONG	HIGHLY PROBABLE	LOW NEUTRAL	LOW NEUTRAL
	Phase 3 – Residential: ▪ The property is zoned for agriculture. However, it is not used for agricultural purposes. The southern portion partly utilized by informal settlers. Old excavations are also present on site. ▪ The proposed site has been earmarked for industrial purposes in terms of the Spatial Development Framework (SDF) (2010) of the eMalahleni Local Municipality. However, the proposed residential stand would allow for the formalisation of the informal settlement and will therefore not impact on the sense of place.	SITE	LONG	DEFINITE	LOW POSITIVE	LOW POSITIVE	**Phase 3 - Residential:** ▪ The land use will not change significantly, since the current informal settlement on site would be formalised.	SITE	LONG	DEFINITE	LOW POSITIVE	LOW POSITIVE						

ENVIRONMENTAL FEATURE(S)	PREDICTED IMPACT CONSTRUCTION PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT OPERATIONAL PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)
NATURAL VEGETATION / ANIMAL LIFE	**Phase 1 – Filling Station, Phase 2 – Industrial, Phase 3 - Residential:** ▪ The site falls within the Eastern Highveld Grassland vegetation type, which is classified as Vulnerable in terms of the National List of Ecosystems that are threatened and in need of protection (GN 1002 of 2011). ▪ The development of the site will impact directly on approximately 19 ha of disturbed Eastern Highveld Grassland and associated animal life. ▪ It should be noted that the vegetation and subsequently the animal life on site have been impacted upon by various activities such as the informal settlement, gravel roads, excavations, etc. A portion of the site was recently revegetated as part of the rehabilitation activities of the adjacent mine. ▪ According to the new Mpumalanga Biodiversity Sector Plan (MBSP, 2013), the majority of the site falls within the category **'Other Natural Areas'** for both the terrestrial and freshwater assessment. The southern portion of the site (i.e. informal settlement and soccer field) is classified as **'Heavily modified'**. ▪ According to the MBSP Land-Use Guideline, these areas serve as optional sites for all forms of urban and industrial development, but may require authorisation for high-impact land uses. ▪ The proposed development will thus not impact on vegetation or animal life of significant conservation importance. ▪ However, mitigation measures should be implemented to ensure that any plant or animal species of importance that may occur on site is relocated before construction begins. ▪ During construction, the invader species on site (wattle, blue gum, wild tomato, etc.) will be removed.	SITE SITE SITE	LONG LONG PERMANENT	DEFINITE DEFINITE DEFINITE	LOW NEGATIVE LOW NEGATIVE LOW POSITIVE	LOW NEGATIVE LOW NEGATIVE LOW POSITIVE	**Phase 1 – Filling Station, Phase 2 – Industrial, Phase 3 - Residential:** ▪ No further direct impact on vegetation or animal life since no further construction activities will take place. ▪ However, alien plants could be introduced into areas disturbed by construction, which are not rehabilitated. If alien plants are utilized in the gardens, they could spread and impact on the surrounding vegetation (e.g. the newly vegetated area within the rehabilitated mine).	SITE	LONG	PROBABLE	LOW NEGATIVE	LOW NEGATIVE	**Phase 1 – Filling Station, Phase 2 – Industrial, Phase 3 - Residential:** ▪ During the decommissioning phase, building rubble and any polluted soil will be removed from the site and disposed of accordingly. The said area will then be rehabilitated in order to establish a vegetation cover and prevent soil erosion. This could result in the creation of artificial habitats for animal life within the rehabilitated area.	SITE	LONG	PROBABLE	MEDIUM POSITIVE	MEDIUM POSITIVE

ENVIRONMENTAL FEATURE(S)	PREDICTED IMPACT CONSTRUCTION PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT OPERATIONAL PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)
SURFACE WATER/SENSITIVE LANDSCAPES	**Phase 1 – Filling Station:** ▪ No natural water sources (e.g. streams/wetlands) are located on site or in close proximity of the site. The closest surface water environment is the Olifants River, which is located approximately 500 m east of the site on the opposite side of the R544 provincial road. No portion of the site is located within the 1:100 year floodline. ▪ The topography and subsequently surface water runoff patterns of the filling station site have been impacted upon by an old excavation. The excavation is between 1 and 2 meters deep, extends across most of the filling station stand and leads to the ponding of water on site during heavy rainfall periods. ▪ The geotechnical study classified this area as Zone C and recommended that no development takes place due to the uneven ground conditions. Alternatively, the area should be properly reinstated according to recognized engineering and environmental practices. The area would thus be built up before any construction takes place, which would have a positive impact on the surface water runoff patterns and prevent the ponding of water on site. ▪ The removal of the vegetation as part of the construction activities would result in increased surface water runoff flow velocities, which could lead to soil erosion if proper storm water control measures are not implemented. Soil erosion could impact on the adjacent area and the R544 provincial road. ▪ The excavation of the tank pit will have a temporary impact on the topography and subsequently the surface water runoff patterns of the site until such time as it is backfilled. ▪ Surface water runoff may be polluted if the construction vehicles are not maintained/repaired resulting in oil leaks and fuel spills and if waste management measures are not implemented, etc. Polluted surface water runoff could end up in the Olifants River, even though the river is located approximately 500 m from the site.	SITE SITE SITE SITE	LONG SHORT SHORT SHORT	DEFINITE PROBABLE PROBABLE PROBABLE	MEDIUM POSITIVE LOW NEGATIVE LOW NEGATIVE MEDIUM NEGATIVE	MEDIUM POSITIVE LOW NEGATIVE LOW NEGATIVE LOW NEGATIVE	**Phase 1 – Filling Station:** ▪ No direct impact expected since no natural surface water environments (e.g. wetlands/streams) are located on or near the site. ▪ Increased yields could be expected due to increased paved areas and buildings, which would facilitate increased runoff quantities and velocities. This could lead to soil erosion in the adjacent area if proper storm water control measures are not implemented. ▪ Indirect pollution of surface water could take place if: ▪ the sewage system (conservancy tank) does not have sufficient capacity and is not maintained/emptied on a regular basis; ▪ proper waste management measures are not implemented; ▪ adequate oil separators and litter traps are not installed and maintained for the filling station; It should however, be noted that the site is located approximately 500 m from the Olifants River. ▪ Surface water pollution could take place if petroleum spills occur and the necessary contingency plan is not in place.	SITE SITE LOCAL	LONG LONG LONG	PROBABLE PROBABLE PROBABLE	LOW NEGATIVE MEDIUM NEGATIVE MEDIUM NEGATIVE	LOW NEGATIVE LOW NEGATIVE LOW NEGATIVE	**Phase 1 – Filling Station:** During the decommissioning phase, building rubble and any polluted soil (from e.g. fuel spillage) will be removed from the site and disposed of accordingly. The said area will then be rehabilitated in order to establish a vegetation cover and prevent soil erosion. This would result in clean runoff from the site, which would have a positive impact on surface water.	SITE	LONG	PROBABLE	MEDIUM POSITIVE	MEDIUM POSITIVE

ENVIRONMENTAL FEATURE(S)	PREDICTED IMPACT CONSTRUCTION PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT OPERATIONAL PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)
SURFACE WATER/SENSITIVE LANDSCAPES	**Phase 2 – Industrial and Phase 3 - Residential:** ▪ No natural water sources (e.g. streams/wetlands) are located on site or in close proximity of the site. The closest surface water environment is the Olifants River, which is located approximately 500 m east of the site on the opposite side of the R544 provincial road. No portion of the site is located within the 1:100 year floodline. ▪ The topography and subsequently surface water runoff patterns of the industrial and residential stands have already been impacted upon by e.g. the informal settlement, gravel roads, soccer field, on-site excavations, storm water trench and rehabilitation activities of the adjacent mine. ▪ The excavations on site have led to the ponding of water during heavy rainfall periods. The excavations would be filled/levelled before any construction takes place, which would have a positive impact on the surface water runoff patterns and prevent the ponding of water on site. ▪ The rehabilitation activities of the adjacent mine has led to an increase in surface water runoff volumes and velocities onto the site. During the construction phase, the removal of the vegetation would result in even higher flow velocities, which could lead to soil erosion if proper storm water control measures are not implemented. ▪ Surface water runoff may be polluted if the construction vehicles are not maintained/repaired resulting in oil leaks and fuel spills and if waste management measures are not implemented, etc. Polluted surface water runoff could end up in the Olifants River, even though the river is located approximately 500 m from the site.	SITE SITE SITE	LONG SHORT	DEFINITE PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	**Phase 2 – Industrial and Phase 3 - Residential:** ▪ No direct impact expected since no natural surface water environments (e.g. wetlands/streams) are located on or near the site. ▪ Increased yields could be expected due to increased paved areas and buildings, which would facilitate increased runoff quantities and velocities. This could lead to soil erosion in the adjacent area if proper storm water control measures are not implemented. ▪ The industries and residences could be impacted upon if a proper storm water management plan is not implemented on site to deal with the additional storm water runoff from the mine. ▪ Indirect pollution of surface water could take place if: ▪ the sewage system (conservancy tank) does not have sufficient capacity and is not maintained/emptied on a regular basis; ▪ proper waste management measures are not implemented; ▪ adequate oil separators and litter traps are not installed and maintained for the industrial area; It should however, be noted that the site is located approximately 500 m from the Olifants River.	SITE SITE SITE	LONG LONG LONG	PROBABLE PROBABLE PROBABLE	LOW NEGATIVE MEDIUM NEGATIVE MEDIUM NEGATIVE	LOW NEGATIVE LOW NEGATIVE LOW NEGATIVE	**Phase 2 – Industrial, Phase 3 - Residential:** During the decommissioning phase, building rubble and any polluted soil (from e.g. fuel spillage) will be removed from the site and disposed of accordingly. The said area will then be rehabilitated in order to establish a vegetation cover and prevent soil erosion. This would result in clean runoff from the site, which would have a positive impact on surface water	SITE	LONG	PROBABLE	MEDIUM POSITIVE	MEDIUM POSITIVE

ENVIRONMENTAL FEATURE(S)	PREDICTED IMPACT CONSTRUCTION PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT OPERATIONAL PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)
GROUNDWATER	**Phase 1 – Filling Station:** ▪ According to Johann van der Merwe (2007), no perched groundwater conditions are present at the filling station site. However, an old excavation of between 1 and 2 meters deep extends across most of the filling station stand and leads to the ponding of water on site during heavy rainfall periods. ▪ The geotechnical study classified this area as Zone C and recommended that no development takes place due to the uneven ground conditions. Alternatively, the area should be properly reinstated according to recognized engineering and environmental practices. The excavation could have impacted on the groundwater of the site. This is however, unlikely since no sign of groundwater seepage was noted in the excavation during winter and spring. ▪ According to GPT (2013), groundwater flow is in a north easterly direction towards the R544 provincial road and the Olifants River. The depth to groundwater on site was measured to be 4.54 mbgl. ▪ Due to the depth of the groundwater table, it is highly unlikely that the general construction activities (foundations and trenches) will impact on the groundwater. ▪ However, the installation of the underground tanks may impact on the groundwater of the site. Mitigation measures (e.g. saddles) would have to be implemented to ensure that the underground tanks are secured. This would however, depend on whether or not the site is built up and the tanks installed in the built-up platform area.	SITE	SHORT	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	**Phase 1 – Filling Station:** ▪ No groundwater will be abstracted for the operational activities. Thus, no direct impact is expected in terms of groundwater quantity. ▪ Groundwater could be indirectly impacted upon if proper sanitation facilities and waste management measures are not put in place and maintained. ▪ According to GPT (2013), groundwater flow is in a north easterly direction towards the R544 provincial road and the Olifants River. The depth to groundwater on site was measured to be 4.54 mbgl. The pollution migration rate is approximately 4 m/year. ▪ Groundwater pollution could thus take place if: • the underground tanks are not installed according to the specifications laid down by SABS; • the underground tanks are not installed by an approved and experienced contractor; • the underground tanks are not monitored and maintained on a regular basis in order to prevent any leakages; • overfill occurs; • the tanks leak. ▪ According to GPT (2013), the proposed filling station will be located in a sensitive area in terms of the presence of a fountain, the Olifants River and groundwater users (all located between 200 m and 1.2 km from the site). Potential fuel leakages and/or spillages on site may have a negative impact on these receptors through the pathway of groundwater. ▪ The water supply borehole (BH8) located 200 m south of the site at the informal settlement is at the highest risk of being impacted, should an unforeseen release of petroleum product occur at the proposed filling station due to a leak or spill incident. Although borehole BH8 is not located directly down-gradient of the site, regular pumping is expected to induce groundwater flow from the area towards the point of abstraction. ▪ The fountain (located 240 m east-northeast, down-gradient of the site), and borehole BH4 (located 400 m northwest of the site) would be next at risk.	SITE LOCAL LOCAL	LONG LONG LONG	PROBABLE PROBABLE PROBABLE	MEDIUM NEGATIVE MEDIUM NEGATIVE MEDIUM NEGATIVE	LOW NEGATIVE LOW NEGATIVE LOW NEGATIVE	**Phase 1 – Filling Station:** During the decommissioning phase, building rubble and any polluted soil (e.g. from fuel spillage) will be removed from the site and disposed of accordingly. The said area will then be rehabilitated in order to establish a vegetation cover and prevent soil erosion. This would result in clean runoff from the site entering the storm water infrastructure. It would thus have a positive impact on groundwater.	SITE	LONG	PROBABLE	MEDIUM POSITIVE	MEDIUM POSITIVE

ENVIRONMENTAL FEATURE(S)	PREDICTED IMPACT CONSTRUCTION PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT OPERATIONAL PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)
GROUNDWATER							The underground tanks could continue to be impacted upon if the necessary mitigation measures were not implemented to secure the tanks (e.g. saddles) during installation.	SITE	LONG	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE						
	Phase 2 - Industrial: ▪ According to Johann van der Merwe (Pty) Ltd. (2007), indications of perched water conditions were evident on top of the hardpan ferricrete and less permeable residual horizons of geotechnical Zone A (Figure 5.18). A perched water table could thus be present within Zone A. ▪ However, during the site visit conducted by Clean Stream Environmental Services (January 2014), it was noted that approximately half of Zone A was revegetated as part of the adjacent mine rehabilitation project. The portion of Zone A not disturbed by the mine was impacted upon by excavation activities. The rehabilitation and excavation activities could thus have altered the presence of the perched water conditions since the geotechnical study was conducted. ▪ No indications of seepage or a wetland were noted during the site visit (i.e. January 2014). Depending on the depth of the excavations, the season and the extent to which the geology was altered, the construction activities could impact on the perched water table of the site and vice versa. ▪ According to GPT (2013), groundwater flow is in a north easterly direction towards the R544 provincial road and the Olifants River. The depth to groundwater on site was measured to be 4.54 mbgl. ▪ Due to the depth of the groundwater table, it is highly unlikely that the general construction activities (foundations and trenches) will impact on the groundwater.	SITE	SHORT	PROBABLE	LOW NEGATIVE	LOW NEGATIVE	**Phase 2 - Industrial:** ▪ No groundwater will be abstracted for the operational activities. Thus, no direct impact expected in terms of groundwater quantity. ▪ The perched groundwater table (Zone A) and the buildings will continue to be impacted upon if a perched water table is present in Zone A and if the recommendations in the geotechnical report were not implemented during the construction phase. ▪ Groundwater could be indirectly impacted upon if proper sanitation facilities and waste management measures are not put in place and maintained.	SITE SITE	LONG LONG	PROBABLE PROBABLE	MEDIUM NEGATIVE MEDIUM NEGATIVE	LOW NEGATIVE LOW NEGATIVE	**Phase 2 – Industrial, Phase 3 - Residential:** ▪ During the decommissioning phase, building rubble and any polluted soil (e.g. from fuel spillage) will be removed from the site and disposed of accordingly. The said area will then be rehabilitated in order to establish a vegetation cover and prevent soil erosion. This would result in clean runoff from the site entering the storm water infrastructure. It would thus have a positive impact on groundwater.	SITE	LONG	PROBABLE	MEDIUM POSITIVE	MEDIUM POSITIVE
	Phase 2 - Residential: ▪ According to GPT (2013), groundwater flow is in a north easterly direction towards the R544 provincial road and the Olifants River. The depth to groundwater on site was measured to be 4.54 mbgl. ▪ Due to the depth of the groundwater table, it is highly unlikely that the general construction activities (foundations and trenches) will impact on the groundwater.	SITE	SHORT	PROBABLE	LOW NEGATIVE	LOW NEGATIVE	**Phase 3 - Residential:** ▪ The informal settlement currently uses groundwater for domestic purposes (BH8). ▪ The groundwater could be impacted upon if the newly developed residential area continues to utilize this borehole. ▪ Groundwater could be indirectly impacted upon if proper sanitation facilities and waste management measures are not put in place and maintained.	SITE SITE	LONG LONG	PROBABLE PROBABLE	MEDIUM NEGATIVE MEDIUM NEGATIVE	LOW NEGATIVE LOW NEGATIVE						
SITES OF ARCHAEOLOGICAL/ CULTURAL INTEREST	**Phase 1 – Filling Station, Phase 2 – Industrial, Phase 3 - Residential:** ▪ None. No graves, etc. are known to be present on site.						**Phase 1 – Filling Station, Phase 2 – Industrial, Phase 3 - Residential:** ▪ None. No graves, etc. are known to be present on site.						**Phase 1 – Filling Station, Phase 2 – Industrial, Phase 3 - Residential:** ▪ None. No graves, etc. are known to be present on site.					

ENVIRONMENTAL FEATURE(S)	PREDICTED IMPACT CONSTRUCTION PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT OPERATIONAL PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)
AIR QUALITY	**Phase 1 – Filling station:** ▪ The air quality of the site is already impacted upon by the various industrial and mining activities in the eMalahleni area. ▪ The construction activities (including installation of underground tanks) could impact on the air quality of the site in terms of dust. The extent of the impact would depend on the time of year the filling station is constructed. ▪ This could impact on the road users utilizing the R544 and D2771 roads in terms of visibility, which could lead to a possible risk of accidents if the impact is not mitigated. ▪ Dust generation could also impact on the informal settlement located south of the site. ▪ In addition, dust generation and vehicle emissions due to construction activities could impact on site workers.	SITE	SHORT	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	**Phase 1 – Filling station:** ○ The filling station would be provided with electricity and no direct impact is therefore expected on the air quality of the site. ○ The internal roads would be paved and/or tarred and therefore no dust generation will take place. ○ However, vehicle emissions could impact on the air quality of the site. ○ The air quality of the site and surroundings (specifically the residential area) could also be impacted upon in terms of odours if: ○ the sewage system (conservancy tank) does not have sufficient capacity and is not maintained/emptied on a regular basis; ○ proper waste management measures are not implemented. ○ The air quality of the site and the surroundings (specifically the residential area) could be impacted upon by: ○ fumes from the petrol and diesel pumps if these facilities are not managed according to the set requirements; ○ if petroleum spills occur and the necessary contingency plan is not in place.	SITE SITE	LONG LONG	PROBABLE HIGHLY PROBABLE	MEDIUM NEGATIVE MEDIUM NEGATIVE	LOW NEGATIVE LOW NEGATIVE	**Phase 1 – Filling station:** Dust generation and vehicle emissions due to decommissioning activities and use of heavy machinery could impact on the air quality of the site. The extent of the impact would depend on the time of year, wind direction and velocity.	SITE	SHORT	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE
	Phase 2 – Industrial and Phase 3 - Residential: ▪ The air quality of the site is already impacted upon by the various industrial and mining activities in the eMalahleni area. ▪ The construction activities could impact on the air quality of the site in terms of dust. The extent of the impact would depend on the time of year the industries and residences are constructed. ▪ This could impact on the road users utilizing the R544 and D2771 roads in terms of visibility, which could lead to a possible risk of accidents if the impact is not mitigated ▪ Dust generation could also impact on the informal settlement located in the southern portion of the site. The extent of the impact would depend on the area being developed at that time. ▪ In addition, dust generation and vehicle emissions due to construction activities could impact on site workers.	SITE	SHORT	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	**Phase 2 – Industrial and Phase 3 - Residential:** ▪ During the operational phase, no direct impact on the air quality is anticipated due to the development being supplied with electricity. ▪ In addition, no noxious industries would be allowed on site. ▪ The internal roads of the residential and industrial area would most likely be paved and/or tarred and therefore no dust generation will take place. ▪ Vehicle emissions could impact on the air quality of the site and immediate surroundings due to the increased number of vehicles utilizing the roads. ○ The air quality of the site and surroundings could also be impacted upon in terms of odours if: ○ the sewage system does not have sufficient capacity and is not maintained/emptied on a regular basis; ○ proper waste management measures are not implemented.	SITE	LONG	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	**Phase 2 – Industrial and Phase 3 - Residential:** Dust generation and vehicle emissions due to decommissioning activities and use of heavy machinery could impact on the air quality of the site. The extent of the impact would depend on the time of year, wind direction and velocity.	SITE	SHORT	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE

ENVIRONMENTAL FEATURE(S)	PREDICTED IMPACT CONSTRUCTION PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT OPERATIONAL PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)
VISUAL	**Phase 1 – Filling station:** ▪ The filling station stand is highly visible from the R544 provincial road. ▪ The site is also visible from the remainder of the development site and the rehabilitated opencast mine to the west. ▪ The site is somewhat visible from the informal settlement. ▪ The road users and informal settlers could thus be impacted upon in terms of the activities being visual.	SITE	SHORT	PROBABLE	LOW NEGATIVE	LOW NEGATIVE	**Phase 1 – Filling station:** ▪ The filling station will be highly visible from the R544 provincial road, which is a positive aspect in terms of attracting business. However, it would be important to keep the site neat and tidy at all times and ensure that the filling station is well maintained to prevent any visual impacts on the general road user. ▪ The filling station will also be visible from the adjacent industrial and residential stands. The remainder of the development could thus be impacted upon (e.g. in terms of property value) if the filling station is not maintained.	SITE	LONG	HIGHLY PROBABLE	MEDIUM NEUTRAL	LOW NEUTRAL	**Phase 1 – Filling station:** ▪ The decommissioning activities would be visible to the surrounding landowners/users at that time. However, if the site is rehabilitated properly it could have a positive impact in terms of visual aspects.	SITE	LONG	PROBABLE	LOW NEUTRAL	LOW POSITIVE
	Phase 2 – Industrial: ▪ The industrial stand is highly visible from the R544 provincial road. ▪ The site is also visible from the remainder of the development site and the rehabilitated opencast mine to the west. ▪ The road users could thus be impacted upon in terms of the construction activities being visual.	SITE	SHORT	PROBABLE	LOW NEGATIVE	LOW NEGATIVE	**Phase 2 – Industrial:** ▪ The industries will be highly visible from the R544 provincial road, which is a positive aspect in terms of advertising. However, it would be important to keep the site neat and tidy at all times and well maintained to prevent any visual impacts on the general road user. ▪ The filling station will also be visible from the adjacent filling station and residential stands. The remainder of the development could thus be impacted upon (e.g. in terms of property value) if the industries are not maintained.	SITE	LONG	HIGHLY PROBABLE	MEDIUM NEUTRAL	LOW NEUTRAL	**Phase 2 – Industrial and Phase 3 - Residential:** ▪ The decommissioning activities would be visible to the surrounding landowners/users at that time. However, if the site is rehabilitated properly it could have a positive impact in terms of visual aspects.	SITE	LONG	PROBABLE	LOW NEUTRAL	LOW POSITIVE
	Phase 3 - Residential: ▪ The residential stand is highly visible from the informal settlement, since the informal settlement is located in the southern portion of the stand. ▪ The residential stand is somewhat visible from the R544 provincial road. ▪ The site is also visible from the remainder of the development site, the rehabilitated opencast mine and partially from the R544 provincial road. ▪ The road users and informal settlers could thus be impacted upon in terms of the construction activities being visual.	SITE	SHORT	PROBABLE	LOW NEGATIVE	LOW NEGATIVE	**Phase 3 – Residential:** ▪ The residential development will not be visible from the R544 provincial road once the industrial stand and filling station has been constructed. The residents will thus have some privacy. ▪ The residential development will however, be visible from the filling station, industrial area and adjacent rehabilitated mine. The remainder of the development could thus be impacted upon (e.g. in terms of property value) if the residential area is not maintained.	SITE	LONG	HIGHLY PROBABLE	LOW NEGATIVE	LOW NEGATIVE						
NOISE	**Phase 1 – Filling Station:** ▪ The traffic utilizing the R544 provincial road dictates the ambient noise level of the site. ▪ Heavy machinery used during the construction phase will contribute to increased ambient noise levels in the area. The residents of the informal settlement may be impacted by the increased noise levels, although the construction activities will be of short duration. Construction activities should be limited to daylight hours and noise should be kept as low as possible.	SITE	SHORT	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	**Phase 1 – Filling Station:** ▪ The operational activities of the filling station could impact on the ambient noise level of the site and the people residing in the adjacent residential area. The impact would not be significant since the site is located adjacent to the busy R544 provincial road, which is the main contributor to noise in the area.	SITE	LONG	HIGHLY PROBABLE	LOW NEGATIVE	LOW NEGATIVE	**Phase 1 – Filling station, Phase 2 – Industrial and Phase 3 - Residential** ▪ In general, the use of heavy machinery for decommissioning activities would impact on the surrounding area in terms of noise. The impact would depend on the ambient noise levels and nature of the area at that time.	SITE	SHORT	PROBABLE	LOW NEGATIVE	LOW NEGATIVE

ENVIRONMENTAL FEATURE(S)	PREDICTED IMPACT CONSTRUCTION PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT OPERATIONAL PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)
NOISE	**Phase 2 – Industrial** ▪ The traffic utilizing the R544 provincial road dictates the ambient noise level of the site. ▪ Heavy machinery used during the construction phase will contribute to increased ambient noise levels in the area. The residents of the informal settlement may be impacted by the increased noise levels, although the construction activities will be of short duration and located a distance from the residential area. Construction activities should be limited to daylight hours and noise should be kept as low as possible.	SITE	SHORT	PROBABLE	LOW NEGATIVE	LOW NEGATIVE	**Phase 2 – Industrial** ▪ Noise generation would be due to noise associated with various industrial activities and increased traffic on site. ▪ The operational activities could impact on the residential area, especially if the industries operate after hours and over weekends. Mitigation measures would have to be implemented. ▪ The filling station should not be impacted due to the similar land use.	SITE	LONG	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	**Phase 1 – Filling station, Phase 2 – Industrial and Phase 3 - Residential** ▪ In general, the use of heavy machinery for decommissioning activities would impact on the surrounding area in terms of noise. The impact would depend on the ambient noise levels and nature of the area at that time.	SITE	SHORT	PROBABLE	LOW NEGATIVE	LOW NEGATIVE
	Phase 3 – Residential ▪ The traffic utilizing the R544 provincial road and activities within the informal settlement dictate the ambient noise level of the site. ▪ Heavy machinery used during the construction phase will contribute to increased ambient noise levels in the area. The residents of the informal settlement would be impacted by the increased noise levels, although the construction activities will be of short duration. Construction activities should be limited to daylight hours and noise should be kept as low as possible.	SITE	SHORT	DEFINITE	MEDIUM NEGATIVE	LOW NEGATIVE	**Phase 3 – Residential** ▪ Activities within the residential area (e.g. music, children playing) could impact on the ambient noise level of the site. However, the impact should not be significant since noise is already generated at the existing informal settlement and the surrounding land use during the operational phase would be industrial.	SITE	LONG	HIGHLY PROBABLE	LOW NEGATIVE	LOW NEGATIVE						
TRAFFIC	**Phase 1 – Filling station** ▪ The construction of the access road and connection to the R544 provincial road would impact on the traffic utilizing this road, which could lead to an increased risk of traffic accidents. The extent of the impact would depend on the status of the current road upgrading activities. Mitigation measures would have to be implemented. ▪ The delivery of building material during the construction period could lead to a slight increase in traffic on the road network (i.e. ±5 km along the R544 provincial road). The deliveries would however, not occur on a continuous basis. ▪ The delivery of the underground tanks could lead to a temporary delay in traffic flow on the R544 provincial road if the tanks are to be transported via 'Abnormal load'. ▪ The extent of the impact would also depend on the status of the current road upgrading activities.	SITE LOCAL	SHORT SHORT	HIGHLY PROBABLE PROBABLE	MEDIUM NEGATIVE LOW NEGATIVE	LOW NEGATIVE LOW NEGATIVE	**Phase 1 – Filling station** ▪ The filling station will intercept traffic already using the R544 provincial road and the road to Duvha Power Station. The filling station will thus not be a traffic generator. ▪ According to WSP (2011), the proposed filling station traffic will not negatively impact on the existing traffic for the following reasons: ▪ The site does comply with the minimum standards of the relevant design documents. ▪ The necessary preceding deceleration lanes and turning lanes will be provided at the accesses to ensure that the vehicles enter and exit the site safely. ▪ The sight distance is very good due to the geometry of the existing roads. ▪ The access roads will be able to accommodate the delivery vehicles. The general road users and visitors to the filling station and remainder of the development could be impacted upon if the access road to the site was not constructed according to the approved designs.	SITE	LONG	IMPROBABLE	LOW NEGATIVE	LOW NEGATIVE	**Phase 1 – Filling station, Phase 2 – Industrial and Phase 3 - Residential** ▪ Building rubble, other waste and the underground tanks would have to be removed from site. This could lead to a slight increase in traffic on the road network. The impact would depend on the traffic volumes on the R544 provincial road at the time of decommissioning. There will be no impact on traffic after decommissioning.	SITE	SHORT	PROBABLE	LOW NEGATIVE	LOW NEGATIVE

ENVIRONMENTAL FEATURE(S)	PREDICTED IMPACT CONSTRUCTION PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT OPERATIONAL PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)
TRAFFIC	**Phase 2 - Industrial:** ▪ All construction activities will take place on site and will not directly impact on traffic. ▪ The delivery of building material during the construction period could lead to a slight increase in traffic on the R544 provincial road. The deliveries would however, not occur on a continuous basis. The extent of the impact would also depend on the status of the current road upgrading activities.	LOCAL	SHORT	PROBABLE	LOW NEGATIVE	LOW NEGATIVE	**Phase 2 - Industrial:** ▪ The industrial area may lead to an increase in traffic on the R544 provincial road as a result of people driving to and from work and customers visiting the various industries. ▪ The impact on the road network should however, not be significant since the R544 provincial road is currently being upgraded in order to accommodate the increased traffic volumes from the various developments along this road.	LOCAL	LONG	HIGHLY PROBABLE	LOW NEGATIVE	LOW NEGATIVE	**Phase 1 – Filling station, Phase 2 – Industrial and Phase 3 - Residential** ▪ Building rubble, other waste and the underground tanks would have to be removed from site. This could lead to a slight increase in traffic on the road network. The impact would depend on the traffic volumes on the R544 provincial road at the time of decommissioning. There will be no impact on traffic after decommissioning.	SITE	SHORT	PROBABLE	LOW NEGATIVE	LOW NEGATIVE
	Phase 3 - Residential: ▪ All construction activities will take place on site and will not directly impact on traffic. ▪ The delivery of building material during the construction period could lead to a slight increase in traffic along ± 5 km of the R544 provincial road. The deliveries would however, not occur on a continuous basis.	LOCAL	SHORT	PROBABLE	LOW NEGATIVE	LOW NEGATIVE	**Phase 3 - Residential:** ▪ The residential area would in essence be a formalisation of the existing informal settlement. The residents of the informal settlement would thus be relocated to the formalised area. An increase on the road network is thus not expected. ▪ There might however, be a slight increase in traffic if additional people move into the area.	LOCAL	LONG	PROBABLE	LOW NEGATIVE	LOW NEGATIVE						
INTERESTED AND AFFECTED PARTIES	**Phase 1 – Filling station** The proposed filling station will not impact on other filling stations in town during the construction phase.						**Phase 1 – Filling station** The proposed filling station will initially have an impact on the nearest filling stations in terms of loss of sales. According to WSP (2011), the estimated impact of the proposed filling station on the surrounding filling stations are as follows: **Filling station** / **Lost Fuel Sales if development is built (lpm)** Total c/o R544 Springbok — 81 200 Engen c/o OR Tambo/N12 on-ramp — 42 400 Sasol c/o OR Tambo/Hans Strydom — 35 000 BP c/o Hans Strydom/John Bailie — 15 000 Total Stevenson/Pick & Pay — 25 000 Sasol Highland Mews — 20 000 However, these filling stations will recover the possible lost sales within 2 – 4 ½ years. According to WSP (2011), the impact of the proposed filling station on the existing filling stations is not enough to impact on the feasibility of these filling stations. In addition, general traffic growth will ensure that the short term loss will be regained over the next 5 years.	LOCAL	LONG	HIGHLY PROBABLE	LOW NEGATIVE	LOW NEGATIVE	**Phase 1 – Filling station, Phase 2 – Industrial and Phase 3 - Residential** ▪ The impact of the decommissioning of the development in terms of interested and affected parties will depend on the character of the area at that time. ▪ Potential impacts in terms of dust, noise, visual, etc. that may occur during the decommissioning phase are indicated in the preceding sections.					

ENVIRONMENTAL FEATURE(S)	PREDICTED IMPACT CONSTRUCTION PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT OPERATIONAL PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)
INTERESTED AND AFFECTED PARTIES	**Phase 1 – Filling station, Phase 2 – Industrial ad Phase 3 - Residential** ▪ Job opportunities could be provided during the construction phase.	SITE	SHORT	PROBABLE	LOW POSITIVE	LOW POSITIVE	**Phase 1 – Filling station, Phase 2 – Industrial ad Phase 3 - Residential** ▪ Job opportunities could be provided during the operational phase at the filling station and various industries.	SITE	LONG	HIGHLY PROBABLE	LOW POSITIVE	LOW POSITIVE	**Phase 1 – Filling station, Phase 2 – Industrial and Phase 3 - Residential** ▪ The impact of the decommissioning of the development in terms of interested and affected parties will depend on the character of the area at that time. ▪ Potential impacts in terms of dust, noise, visual, etc. that may occur during the decommissioning phase are indicated in the preceding sections.					
	Phase 1 – Filling station, Phase 2 – Industrial ad Phase 3 - Residential ▪ More people in the area during the construction phase could lead to increased theft and burglaries in the area.	SITE	SHORT	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	**Phase 1 – Filling station, Phase 2 – Industrial ad Phase 3 - Residential** ▪ More people in the area as a result of the various industries could lead to increased theft and burglaries in the area.	SITE	LONG	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE						
	Phase 1 – Filling station, Phase 2 – Industrial ad Phase 3 - Residential ▪ Contractors working on site could be directly impacted upon if the necessary safety and occupational health measures are not adhered to.	SITE	SHORT	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	**Phase 1 – Filling station, Phase 2 – Industrial ad Phase 3 - Residential** ▪ Employees at the filling station and various industries could be impacted upon if the necessary safety and occupational health measures are not adhered to.	SITE	LONG	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE						
	Phase 3 - Residential ▪ The residential area extends onto the area currently occupied by the informal settlement. The residents of the informal settlement could be impacted upon if houses are not constructed for them in the remainder of the site before their existing houses are demolished.	SITE	SHORT	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	**Phase 3 - Residential** ▪ The residents of the informal settlement will be positively impacted upon through the provision of proper housing and services. ▪ However, they could be negatively impacted upon if they are not provided with proper housing and services.	SITE	LONG	HIGHLY PROBABLE	MEDIUM NEUTRAL	LOW NEUTRAL						
	Phase 1 – Filling station ▪ Hawkers who are operating illegal informal businesses adjacent to the R544 provincial road will have to move as soon as the construction of the access road and filling station commences. The hawkers will thus be impacted upon.	SITE	SHORT	DEFINITE	MEDIUM NEGATIVE	MEDIUM NEGATIVE	**Phase 1 – Filling station** ▪ No further impact.											
	Phase 1 – Filling station, Phase 3 - Residential ▪ According to Eskom, a 22kV powerline traverses the site. Eskom and its users could be impacted if the powerline is damaged in any way by the construction activities. The conditions stipulated by Eskom would have to be adhered to.	SITE	SHORT	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	**Phase 1 – Filling station, Phase 3 - Residential** ▪ Eskom and its users could be impacted if the powerline is damaged in any way during the operational phase. The conditions stipulated by Eskom would have to be adhered to.	SITE	SHORT	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE						

ENVIRONMENTAL FEATURE(S)	PREDICTED IMPACT CONSTRUCTION PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT OPERATIONAL PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE AREA: 19 ha	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)
INTERESTED AND AFFECTED PARTIES	**Phase 1 – Filling station** ▪ None						**Phase 1 – Filling station** ▪ Potential fuel leakages and/or spillages on site may have a negative impact on surrounding groundwater users. ▪ The water supply borehole (BH8) located 200 m south of the site at the informal settlement is at the highest risk of being impacted, should an unforeseen release of petroleum product occur at the proposed filling. Although borehole BH8 is not located directly down-gradient of the site, regular pumping is expected to induce groundwater flow from the area towards the point of abstraction. ▪ The fountain (located 240 m east-northeast, down-gradient of the site), and borehole BH4 (located 400 m northwest of the site) would be next at risk.	LOCAL	LONG	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	**Phase 1 – Filling station, Phase 2 – Industrial and Phase 3 - Residential** ▪ The impact of the decommissioning of the development in terms of interested and affected parties will depend on the character of the area at that time. ▪ Potential impacts in terms of dust, noise, visual, etc. that may occur during the decommissioning phase are indicated in the preceding sections.					
	Phase 1 – Filling station ▪ None						**Phase 1 – Filling station** ▪ People utilizing the residential area or industrial area and the R544 provincial road could be impacted upon should the necessary safety measures not be implemented at the filling station and an explosion/fire occurs.	SITE	LONG	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE						

7.8 'No project' impacts

If the 'no project option' in terms of the proposed project was exercised, it would mean that:

- The applicant would have to purchase another site for the proposed development and obtain all the necessary approvals for the new site;
- The applicant would have to investigate other uses for the proposed site, since it has already been purchased;
- The applicant would have to leave the said property vacant.
- Current activities on site (e.g. dumping of waste, hawkers, informal settlers, etc.) would continue.
- The applicant might have to sell the property.

7.9 Cumulative impacts

Primarily, the only impacts that could have a cumulative impact on the environment are in terms of surface water pollution, groundwater pollution, traffic and services.

Filling station:
If management measures are not in place to deal with possible spills, it could lead to soil, surface water and groundwater pollution, which over time could have a cumulative impact on these environments.

Industrial and residential:
The proposed development together with all other developments in eMalahleni would impact on the services (water and sewage) provided by the local municipality.

The eMalahleni Local Municipality must ensure that the required services can be provided and that there is sufficient capacity at the sewage works to cater for the additional development.

The development will obtain electricity from Eskom and could impact on the already strained infrastructure, especially if the conditions as stipulated by Eskom in the approval letter are not adhered to.

The proposed development would also add to the cumulative impact of traffic on the R544 provincial road. Proper access points must be constructed in order to prevent a potential impact on the general road user.

If management measures are not in place to deal with waste and surface water runoff from the development, it could lead to soil pollution, surface water and groundwater pollution, which over time could have a cumulative impact on these environments. In the long run, it could result in the pollution of the Olifants River.

8. ENVIRONMENTAL MANAGEMENT PLAN

This section provides an indication of the mitigation measures to be implemented by the site operator (and site workers) in order to reduce the potential impacts identified (see Section 7).

The implementation of the Environmental Management Plan (EMP) as part of the daily construction and operational activities is crucial and requires commitment from all levels of management and the on-site workers. The successful implementation of an EMP has the following advantages:

- Meeting legal obligations;
- Contributes to the environmental awareness of the workforce;
- Can facilitate the prevention of environmental degradation;
- Can minimise impacts when they are unavoidable;
- Can ensure good environmental performance and improve community relations.

The implementation of the EMP by the contractor(s) must be monitored and audited on a regular basis in order to ensure compliance. This will ensure that the project applicant does not sit with an environmental liability at the end of the contract and non-compliance in terms of the issued Authorisation.

The applicant must appoint an Environmental Control Officer (ECO) who will have the responsibility of monitoring and reporting on compliance with the conditions of the Environmental Authorisation as well as monitoring and reporting on the implementation of the EMP. The ECO must be appointed before the commencement of construction and must remain employed until all rehabilitation measures as well as site clean-up are completed.

The following documentation must be available (at all times) at the site office:

- A copy of the Basic Assessment Report and Environmental Management Plan;
- A copy of the Environmental Authorisation;
- A copy of site audit reports;
- A copy of any other permits/approvals and/or service agreements from other authorities.

8.1 Complaints Register

A complaints register must be kept at the site office. Any complaints received with regards to the construction and operational phases must be recorded in the complaints register. The following information must be recorded:

- Date complaint recorded;
- Nature of complaint;
- Details of complainant (name, address, telephone number, etc.);
- Manner in which complaint was dealt with;
- Date when complaint was reported to the Department of Economic Development, Environment and Tourism.

8.2 Emergency numbers

Emergency numbers (e.g. developer, police, fire department, ambulance, etc.) must be prominently displayed at the site office.

Contact details of adjacent landowners/users must also be kept on file. Adjacent landowners/users must be informed timeously of any interruption of services due to the construction activities.

8.3 Other legislation

The following must also be displayed at the site office:
- Occupational Health and Safety Act, 1993 (Act 85 of 1993) as amended;
- Basic Conditions of Employment Act, 1997;
- Summary of the Employment Equity Act.

During the course of the development, the developer and contractors must also comply with all other relevant legislation (including the byelaws of the eMalahleni Local Municipality).

The contractor(s) appointed must be made aware of the requirement to implement the EMP.

8.4 Construction site offices (filling station, industrial area and residential area)

The following general management measures should be implemented for all construction site offices with regards to the construction of the filling station, industrial and residential areas:
- A suitable site must be selected and demarcated for the construction site office, which must be fenced. The fencing of the site will prevent any people from wandering onto the site and will limit the possible theft of construction materials.
- No overnight accommodation may be provided on site.
- Chemical toilets must be provided for use by the site workers. These must be serviced on a regular basis. No long drop toilets may be allowed.
- Potable water must be made available to site workers.
- Proper waste management facilities must be provided as part of the construction site office.
- No waste may be burnt, buried or dumped on site or surrounding area.
- No dumping of any kind of waste (domestic, general, building rubble, etc.) may take place on site or in the surrounding area. All waste must be removed to an existing waste disposal site (Leeuwpoort Waste Disposal Facility).
- As far as practically possible, vehicles must not be serviced on site. However, should it not be possible to take the vehicle to a service centre in town, the contractor must ensure that the vehicles are serviced on a cement slab and that drip trays are utilized. Waste oil, filters, etc. must be properly disposed of.
- The contractor must adhere (at all times) to the requirements of the Occupational Health and Safety Act, 1993 (Act 85 of 1993) and the Construction Regulations, 2003 as well as all applicable legislation.

- The contractors must ensure that the necessary protective gear (PPE) is worn at all times and that signs are erected to warn workers to use hearing protection as well as any other hazards.

8.5 General construction activities

The construction activities will entail the following:

- **Phase 1: Construction of the filling station (Figure 3.1a) –**
  - clearing of vegetation and levelling of the site;
  - construction of the access road;
  - excavation of underground tank pits;
  - installation of the underground tanks and associated infrastructure;
  - excavation of the required foundations and service trenches (including the excavation of the conservancy tanks);
  - installation of the services;
  - laying of the required foundations for buildings;
  - building of the outer structures;
  - installation of the required internal fittings.
- **Phase 2: Construction of the industrial area (Figure 3.1a) -**
  - Clearing of vegetation and levelling of the site;
  - excavation of the required foundations and service trenches;
  - installation of the services;
  - construction of the various buildings;
  - construction of the internal roads.
- **Phase 3: Construction of the residential area (Figure 3.1a) -**
  - Clearing of vegetation and levelling of the site;
  - excavation of the required foundations and service trenches;
  - installation of the services;
  - construction of the various buildings;
  - construction of the internal roads.

8.5.1 General principles

These mitigation measures are applicable to all the construction activities (filling station, industrial and residential areas) and must be implemented:

- Before any construction, the site must be demarcated and pegged. The fencing of the site will prevent any people from wandering onto the site and getting injured.
- The contractor must adhere to the requirements of the Occupational Health and Safety Act, 1993 (Act 85 of 1993) and the Construction Regulations, 2003 at all times as well as all applicable legislation.
- Each contractor must appoint a safety officer in order to ensure compliance with the legislation.
- Each contractor should keep a logbook for all tools and legally required equipment.
- Each contractor must appoint an Environmental Control Officer to ensure compliance with the environmental legislation.
- All construction activities must be limited to daylight hours (preferably between 7h00 and 17h00) in order to prevent any impact on the surrounding residents.
- All machinery used during the construction phase must be properly muffled and maintained so as to reduce noise generation to a minimum.

- If blasting is required (Geotechnical Zone A), the requirements of the Explosives Act, 2003 (Act 15 of 2003) must be put in place in order to prevent any impact on site workers, adjacent landowners/users, etc.
- Site workers, nearby residents and road users to be informed when blasting will take place (e.g. warning siren).
- Waste management measures -
    - *All existing waste on site to be removed to the Leeuwpoort Waste Disposal Site before any construction takes place.*
    - *Proper waste management measures must be implemented for the site.*
    - *No dumping of any kind of waste (domestic, general, building rubble, etc.) to take place on site.*
    - *Waste skips to be provided for placement of general waste, building rubble, etc.*
    - *Arrangements to be made for the removal of waste from site to the Leeuwpoort Waste Disposal Site on a regular basis.*
    - *Waste and building rubble not to be placed on the soil stockpiles resulting in the contamination of the soil.*
    - *No stockpiling of building material or equipment may take place within the R544 provincial road reserve or on the adjacent rehabilitated mining area.*
    - *Cement/concrete should be mixed in either demarcated areas or on metal sheeting or conveyor belts. If mixed in demarcated areas, these areas will have to be ripped and the cement/concrete removed on completion of construction activities.*
    - *Site workers must be instructed to collect windblown rubbish which may collect in the surrounding area on the said site. This will assist with the overall visual appearance of the site.*
    - *The contractor must ensure that all site workers receive appropriate training with regards to the overall waste management measures to be implemented for the said site.*
    - *Site workers must be aware of the importance of the implementation of the waste management measures.*

- Hazardous waste management measures –
    - *Proper storage facilities must be provided for the storage of oils, grease, fuels, chemicals and any hazardous materials.*
    - *The storage and handling of fuel, lubricants and other chemicals must be done in specially demarcated impervious and bunded areas.*
    - *Collection containers (e.g. drip trays) must be placed under all dispensing mechanisms for hydrocarbons or hazardous liquid substances to ensure that potential contamination from leaks/spillage is reduced.*
    - *No hazardous substance is to be disposed of on site.*
    - *No bins containing organic solvents, paint tins or bins containing thinning agents may be cleaned on site, unless containers for liquid disposal are provided. The tins must be collected and rinsed at a central waste collection point, where it poses no threat to surface or ground water.*
    - *All spills of chemicals or hydrocarbons (oil, grease, diesel, petrol, etc.) should be cleaned with the use of suitable absorbent materials such as drizit or oclanzorb. Appropriate soil remediation measures should be implemented where soil has been contaminated with oil.*
    - *Contaminated soil generated as a result of fuel, oil, etc. spills will be disposed of in a specially marked drum located at the site office.*

An approved waste contracting firm (e.g. Enviroserv) will collect the drum and dispose of the contaminated soil at an appropriate waste disposal site.

- *Contaminated soil/fuel that cannot be removed will be treated in situ with an appropriate remedial agent. In this instance, the services of an expert may be required.*
- *Waste oils collected on site should be stored in drums in a designated, bunded area and removed by an approved recycling contractor and disposed of at an appropriate licensed waste disposal facility.*
- *In all instances where a firm is contracted to collect waste (e.g. Enviroserv, Wastetech, Oilkol, etc.), the site operator will ensure that the correct documentation is completed and filed for future reference.*
- *Certificates of hazardous waste disposal (waybills) are to be kept for auditing purposes.*
- *Records of environmental related incidents should be maintained.*
- *The applicant must ensure that all workers receive relevant training with regards to the handling of hazardous substances and the potential health risks thereof.*

- Topsoil must be removed and stockpiled for rehabilitation of disturbed areas after construction.
- Dust suppression measures must be implemented during dry and windy periods.
- If possible, construction should take place during the dry season to prevent soil erosion.
- Sediment movement off site should be limited by ensuring the implementation of runoff control measures and the rapid revegetation of sites following construction related activities.
- If soil erosion is noted, appropriate remediation measures must be implemented.
- All site workers/contractors will be informed that no poaching/trapping of animals in the surrounding area (e.g. near the Olifants River) will be allowed.
- Should any animals (e.g. reptiles or mammals) be found during the construction phase, a specialist should be contacted immediately to ensure the safe removal of the specimen.
- No water may be abstracted from the Olifants River for construction activities.
- If any archaeological remains are exposed during the construction phase, the construction must be terminated immediately and the Provincial Heritage Resources Authority must be notified. In this regard, the applicant must take note of the requirements in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999).
- Once the construction activities have been completed, the disturbed areas must be top soiled and re-vegetated (i.e. rehabilitated) as soon as possible in order to prevent soil erosion and the establishment of alien vegetation.
- The regulations in terms of the Conservation of Agricultural Resources Act, 1983, and the Mpumalanga Nature Conservation Act, 1998 (Act 10 of 1998) with regards to declared alien species must be noted and complied with. Regular site inspections will be conducted to identify any declared weeds and/or invader plants. If identified, the plants will be eradicated using appropriate methods.
- A post-construction audit must be conducted to ensure that any shortcomings are identified and addressed.

- All pollution incidents must be reported to the Department of Economic Development, Environment and Tourism and the Department of Water Affairs within 24 hours of occurrence.
- The following geotechnical recommendations should be taken into account:
    - *The excavation of terraces and road cuts and the placement of the engineered fills must be controlled with suitable field tests to ensure that the required densities are achieved during compaction, and that the quality of fill material is within specification.*
    - *A competent person must inspect all foundation excavations.*
    - *According to Johann van der Merwe (Pty) Ltd. (2007), a powerful trench digger, jackhammer work and limited blasting will be required in order to remove the hardpan ferricrete and sandstone bedrock (from 0.6 m to 1.4 m below surface) across Zone A. If blasting is required, the requirements of the Explosives Act, 2003 (Act 15 of 2003) must be put in place in order to prevent any impact on site workers, adjacent landowners/users, etc.*
    - *Due to the thin to moderate horizon of potentially collapsible and compressible foundation soils in Zone A, one of the following foundation solutions may be considered: *deep strip foundations; *compaction of in-situ soils below individual footing; *soil raft; *modified normal construction.*
    - *Due to the moderate to prominent horizon of potentially collapsible and compressible foundation soils in Zone B, one of the following foundation solutions may be considered: *deep strip foundations; *compaction of in-situ soils below individual footing; *soil raft; *stiffened or cellular raft; *piled or pier foundation.*
    - *Instabilities of the upper portions of the sidewalls of deep excavations may occur across Zone B, especially during the wet season.*
    - *Seasonal perched water conditions may be present in Zone A. Site drainage and plumbing precautions to be taken.*
    - *Zone C is characterized by highly uneven ground conditions caused by the removal of sand. The area should be properly reinstated according to recognized engineering and environmental practice if the site is to be developed.*
    - *The site soils are expected to be potentially chemically aggressive with regards to buried ferrous pipes (pH values ranging from 5.24 to 7.20 and electrical conductivity values between 0.004 – 0.015 S/m). Non-ferrous metal pipes or plastic pipes should therefore be used for wet services.*
    - *The foundation soils should be treated with an environmentally friendly insecticide to combat termites.*

8.5.2 Construction of the filling station

In addition to the above-mentioned, the following mitigation measures must also be implemented during the installation of the underground tanks and the construction of the buildings and associated infrastructure at the filling station:

- The informal businesses/hawkers operating from the eastern boundary of the site should be informed that they must relocate before any construction takes place.
- Proper signage, warning signals, a barrier, etc. (i.e. required safety measures) must be provided along the R544 provincial road to warn the

road users that the access road is being constructed. These signs must also be visible at night.

- The monitoring borehole drilled for groundwater monitoring purposes at the filling station must be located and demarcated before construction commences.
- The excavation on site (Geotechnical Zone C) must be properly reinstated according to recognized engineering and environmental practice before construction takes place.
- The excavation is currently filled with rainwater. Depending on when construction takes place (time of year), the water within the excavation may have to be drained prior to filling up the excavation.
- The developer must ensure that the conservancy tank/sewage treatment plant to be installed at the filling station has sufficient capacity.
- No construction will be allowed within the Eskom powerline servitude without prior consent from Eskom. The servitude would have to be demarcated before any construction takes place.
- The rights and conditions of Eskom with regards to their servitude must be respected and adhered to at all times.
- The filling station must be constructed according to the following standards:

SABS

▪ SABS 089-3 1999:	The installation of underground storage tanks, pump/dispensers and pipe work at service stations and consumer installations
▪ SABS 0140-2:	Identification colour marking – Part 2. Identification of hazards and equipment in work situations.
▪ SABS 0140-3:	Identification colour marking – Part 3. Contents of pipelines.
▪ SABS 62-1:	Steel pipes – Part 1. Steel pipes of nominal bore not exceeding 200mm.
▪ SABS 62-2:	Steel pipes – Part 2. Pieces and pipe fittings of nominal bore not exceeding 150mm, made from steel pipe.
▪ SABS 1123:	Steel pipe flanges
▪ SABS 1200:	Standardised specifications for civil engineering construction.
▪ SABS 1535:	Glass-reinforced polyester-coated steel tanks for the underground storage of hydrocarbons and oxygenated solvents and intended for burial horizontally.
▪ SABS 0400:	The application of the National Building Regulations.

British Standards

- BS 143
- BS 1256
- BS 1387
- BS 4504

- All equipment must be installed using approved contractors.
- For the underground tank, the sides of the pit must be cut vertically and the bottom horizontally. Care must be taken to ensure dimensions are not decreased during excavation. Overall dimensions are to be checked before lowering the tank. Jamming the tank in the excavation can be extremely costly to rectify.
- The filling station site would have to be filled/built up as a result of the existing excavation. Depending on the depth of the built-up area, the underground tanks may be installed above the groundwater table. Should the groundwater table be encountered, either saddles and a concrete slab or a single suitable concrete slab must be installed with the underground tanks to counter the potential buoyancy force of the water table. The

relatively shallow depth to groundwater (4.54 m) should be taken into account by the engineer when designing the underground storage tank area.
- The tank must be thoroughly inspected before installation for apparent fracture and damage and to ensure that the protective coating is intact.
- According to GPT (2013), filler points must be fitted with secondary containment measures to ensure that any tank overfills are contained.
- In addition, concrete containment slabs must be constructed around filler points and the dispensing area.
- The road pavement and forecourt area must be paved and sloped in order to prevent ponding of water.
- No ponding of water may occur on site, which could impact on the underground fuel storage tanks and therefore the groundwater of the site.
- An Oil Industry standard oil separator must be installed, which will allow for the removal of free product from any surface runoff or spillages prior to discharge into the stormwater system.

8.5.3 Construction of the industrial area

- All construction activities must be limited to the said site. The said site must be properly demarcated and the footprint kept as small as possible.
- Before construction of the development commences, the applicant must ensure that the necessary upgrades in terms of services (water, sewage) are done.
- The waste management measures as indicated in Section 8.5.1 must be adhered to.
- The general construction principles as indicated in Section 8.5.1 must be adhered to.

8.5.4 Construction of the residential area

- The residential stand will be handed over by the applicant to a developer, local municipality or government department for development.
- Before construction of the development commences, the developer must ensure that the necessary upgrades in terms of services (water, sewage) are done.
- A register of the names and identification numbers of the people residing in the informal settlement should be drafted to ensure the proper allocation of houses.
- Construction should commence in the northern portion of the site so as to reduce the impact of the construction activities on the residents of the informal settlement.
- The people directly impacted by the development should be allocated houses first before their existing houses are demolished.
- All construction activities must be limited to the said site. The said site must be properly demarcated and the footprint kept as small as possible.
- The waste management measures as indicated in Section 8.5.1 must be adhered to.
- The general construction principles as indicated in Section 8.5.1 must be adhered to.
- No construction will be allowed within the Eskom powerline servitude without prior consent from Eskom.
- The rights and conditions of Eskom with regards to their servitude must be respected and adhered to at all times.
- A notice must be placed in the Witbank News if the connection to the bulk services is going to lead to any service interruptions in Duvha Park or the Naauwpoort area.

8.6 Operational activities

The operational activities will entail the following:

- Utilisation of the filling station;
- Utilisation of the industrial area;
- Utilisation of the residential area.

8.6.1 General principles

These mitigation measures are applicable to all the operational activities (all phases) and must be implemented:

- Regular maintenance of the sewage infrastructure.
- Regular maintenance of the water infrastructure to minimize water wastage.
- Storm water management and erosion:
  - *Stormwater management should include flow attenuation structures (e.g. attenuation ponds and grassed swales) to ensure diffuse runoff from the site.*
  - *Surface runoff volumes can be reduced and infiltration encouraged by maximising permeable surfaces.*
  - *Erosion protection structures (e.g. attenuation ponds and grassed swales vegetated swales, reno or gabion mattresses or small scale baffled aprons) should be placed at all stormwater outlet points. The structure would depend on anticipated flow velocities.*
  - *Monitor for erosion and intervene and/or rehabilitate where necessary.*
- Waste management measures:
  - *Proper waste management measures must be implemented for the site.*
  - *The site must be kept clean and tidy at all times and should not be littered with waste lying outside of waste bins.*
  - *No waste may be burnt, buried or dumped on site.*
  - *See Section 8.5.1 for general mitigation measures regarding hazardous waste.*
- Exotic and alien vegetation should be removed or controlled on site.
- The regulations in terms of the Conservation of Agricultural Resources Act, 1983, and the Mpumalanga Nature Conservation Act, 1998 (Act 10 of 1998) with regards to declared alien species must be noted and complied with.
- The overall management of the site and associated infrastructure will be of utmost importance and therefore the implementation of these mitigation measures must be monitored and audited on a regular basis.
- It is recommended that the owners of the filling station and various industries as well as the new residents become involved with the local Community Policing Forum (CPF) in order to combat crime (e.g. burglaries, etc).

8.6.2 Operation of the filling station

The following mitigation measures must be implemented during the utilization of the filling station and underground tanks:

- Only the indicated access roads to be used during the operational phase.
- The conservancy tank installed for the storage of sewage must be emptied by a reputable contractor on a regular basis.

- A solid and general waste collection area to be provided in the yard behind the convenience store. This area will be fenced and screened from the main filling station area as well as the nearby roads.
- The waste collection area will be locked at all times.
- The waste collection area will be kept clean and tidy at all times. This area will not be littered with waste lying outside of the waste bins.
- Domestic waste generated by the convenience store and the forecourt area will be sorted and stored in metal cages/skips/bins until collected and disposed at the registered Leeuwpoort Waste Disposal Site.
- Arrangements are to be made with the eMalahleni Local Municipality to collect the waste on a weekly basis and dispose thereof at the registered Leeuwpoort Waste Disposal Site.
- Where possible, recycling of waste will be encouraged and appropriate bins provided for the recycling initiative.
- Rubbish bins for domestic waste will be provided in the forecourt area for use by the general public. These rubbish bins will be emptied as soon as full and the contents disposed in the metal cages/skips/bins located in the yard behind the convenience store.
- Site workers will be instructed to collect windblown rubbish which may collect within the surrounding landscaped or paved. This will assist with the overall visual appearance of the site.
- Rain that falls onto the canopy (roof) of the filling station must be treated as clean water and channelled from the roof into an underground uPVC piped storm water system.
- Water from the forecourt and fuel delivery pavements must be treated as contaminated and routed to an oil separator.
- The storm water management measures will be inspected on a regular basis in order to ensure that the structures are functional (not blocked) and not causing flooding of the surrounding roads, soil erosion or contamination of the clean storm water. This will be of particular importance at the start of the rainy season and during the rainy season.
- The following additional measures should be implemented: debri and rubbish to be removed from kerb inlets and conduits during routine inspections; sediment to be removed especially after the first couple of months of installation as un-surfaced areas contribute a lot of sand/silt; debri, silt, etc. to be disposed of at an approved landfill site (if contaminated); stone pitching or gabion work to be repaired after major flooding; check on structural integrity of kerb inlets; damaged kerb inlets could lead to uncontrolled erosion downstream.
- If any soil contamination as a result of storm water runoff is noted, appropriate remediation measures must be implemented immediately. An environmental incident report must be completed indicating the date of the incident, description of incident and action taken. A copy of the environmental incident report must be kept on file at the site office.
- Smoking must be prohibited on site. No smoking signs must be prominently displayed.
- Safety signage must be put in place. These include, "no naked flames; no smoking; no cellular phones".
- Sufficient fire extinguishers must be provided as required by legislation. The site operator must ensure that the said fire extinguishers are serviced on a regular basis and are operational.
- The closest fire hydrant must be clearly marked and indicated to all site workers. The site operator must ensure that the fire hydrant is checked on a regular basis to ensure that it is operational.
- An emergency response plan for fire fighting must be compiled and all site workers must receive training.

- The site operator must ensure that all site workers are trained in the use of the appropriate fire fighting equipment.
- The site operator should liaise with the emergency services of the eMalahleni Local Municipality to ensure that they are aware of where the site is, the layout of the site as well as where the on-site fire fighting equipment is located.
- The contact number of the emergency services of the eMalahleni Local Municipality must be prominently displayed on site.

The following management measures need to be implemented to reduce the potential impact on surface water and groundwater of the site and immediate surrounding area (including surrounding groundwater users) as a result of the utilization of the underground fuel storage tanks:

- Monthly stock reconciliation of the fuel must be done and record kept thereof.
- If product loss is suspected, the fuel supplier must be contacted to isolate and rectify the case of the problem. An environmental incident report to be completed and kept on file at the site office.
- The leak detectors must be tested regularly and records kept. The tanks should be supplied with alarms that flag any discrepancies and immediately inform the site operator.
- Regular monitoring (monthly) of the monitoring wells must be undertaken.
- Monitoring programmes will have to be implemented for groundwater contamination, surface water discharge and oil/water separator discharge.
- The on-site borehole drilled as part of the geohydrological study will be tested on a quarterly basis in order to monitor the groundwater of the site and ensure that no hydrocarbon contamination is reaching the groundwater.
- Records of monitoring will be kept and made available to the Department of Economic Development, Environment and Tourism and the Department of Water Affairs.
- Should contamination be detected, the Department of Economic Development, Environment and Tourism and the Department of Water Affairs must be informed of the event within 24 hours and the rehabilitation plan executed.
- GPT (2013) recommended that in the case of fuel spillage/leakage, an independent geohydrologist be commissioned to determine the lateral and vertical extent of the contamination plume as well as to provide recommendations and assist with remediation and rehabilitation of the affected area.
- The oil separator will be checked and emptied on a weekly basis and kept clean to prevent blockages and overflow. The collected material will be disposed of at a suitable waste disposal facility (hazardous waste site) by a company such as e.g. Enviroserv.
- Records of water quality analysis and quantities of materials removed from the oil separator will be kept on file at the site office.
- According to GPT (2013), the Fuel Supplier must ensure that sufficient training is provided to the operators of the refueling area. Training must include general site operation, spill response and emergency procedures and site safety.
- All spills greater than 200 litres must be reported to the Department of Water Affairs, the Department of Economic Development, Environment and Tourism and the eMalahleni Local Municipality.

- An emergency plan for the handling of major/minor spills at the facility and during transportation of product must be compiled and a copy kept on site. Staff must be appropriately trained to implement the plan.

The following contingency plan with regards to fuel spillages must be included as part of the emergency plan:

Contingency plan w.r.t. fuel spillages

➢ **Equipment required**

The following equipment must be kept on-site in order to deal with fuel spillages:

- Absorbing fibres;
- Sandbags;
- Sand to absorb spills;
- Two waste bins: one for storage of used fibres and the other for discarding used fibres.

A sufficient quantity of the above-mentioned must be kept on-site at all times.

This equipment must be kept:

- In places where spills are likely to occur i.e. near the pumps and delivery area;
- Located in a clean, dry and easily accessible storage facility.

➢ **Classification of spills**

Minor spills

Minor spill
A minor spill is one that is less than 200 litres and does not threaten any streams, rivers or storm water drains or the public.

The following procedure must be followed when a minor spill occurs:

- 'Ensure that the bulk serviceman stops the delivery immediately by operating the emergency cut-off device.
- Check the immediate environment to ensure that there is no source of ignition.
- Contain the spillage by using sand from the fire buckets or soak up the spill with unused fibres. (**Note:** If sand was used and the incident has been dealt with, then arrange for the sand to be disposed of by a specialist contractor such Waste Tech. Remember that the sand is still hazardous, as it is highly flammable.)
- If the spill soaked into the ground, then the soil should be ploughed to allow for aeration. Water can then be used to bring oil to the surface and mopped up immediately with the absorbent fibre.
- If absorbent fibres were used, discard the fibres in the bin for used fibres. Waste fibre must be removed by a specialist contractor such as Waste Tech.
- If there is product on the vehicle, then wash and wipe the vehicle prior to the vehicle departing from the site.
- Complete an **Incident Report.**
- Investigate the cause of the spill and take the necessary actions to prevent a re-occurrence'.

Major spill

Major spill
A major spill is one where more than 200 litres of fuel or oil products are involved. However, a spill of less than 200 litres that threatens any streams, rivers or storm water drains or even incidents that may attract the public, press or authorities attention must be considered a major spill and dealt with in the same manner.

The following procedure must be followed when a major spill occurs:

- 'Ensure that the bulk serviceman stops the delivery immediately by operating the emergency cut-off device.
- Check the immediate environment to ensure that there is no source of ignition and switch off the site's master switch.
- Close the filling station and warn any people in close proximity of the site to move away.
- Contact the nearest fire station.
- Do not start any vehicles parked near the filling station.
- Try and contain the spillage with sand or soil or try to prevent the product from leaving the depot site and ensure that the fire extinguisher is easily accessible. **Note:** If a major spill occurs on paving or on non porous surfaces, then form a barrier using sand or sandbags to prevent the spill from entering any drains or from contaminating the natural water system.
- If a major spill occurs on soil or porous surfaces, then remove the contaminated soil for disposal or rehabilitation to prevent the spill from contaminating the groundwater.
- Remove as much of the spill as possible and then mop up using the absorbing fibres. **Note:** Watering the soil will bring up the oil to the surface and make it easier to mop up the product with the absorbing materials.
- Complete an **Incident Report**.
- Investigate the cause of the spill and take the necessary actions to prevent a re-occurrence'.

➢ **Mitigation measures to follow when an overspill occurs**

The following procedure must be followed when an overspill occurs:

- 'Stop the delivery of the wet stock products by closing the vehicle faucet and foot valve. **Note:** The driver cannot disconnect the delivery hose until arrangements can be made to dispense the fuel in the delivery hose, i.e. until the preset quantity of product has been offloaded completely.
- Having emptied the hose, ensure the bulk serviceman disconnects the hose, replaces the filler cap and locks it.
- Amend the **Delivery Note** to reflect the additional products delivered and confirm the change by authorising the document.
- Ensure the bulk serviceman cleans up any spills before leaving the site.
- Complete an **Incident Report**.
- Investigate the cause of the spill and take the necessary actions to prevent a re-occurrence'.

➢ **Mitigation measures to deal with contaminations**

A contamination can occur:

- When two different products are mixed together,
- When excessive volumes of water are mixed with the product, or
- As a result of dirt.

The following procedure would have to be followed:

- 'Draw a sample of at least 500ml and place it in a clean glass container in the presence of a reliable witness. **Note:** Retain the sample in the event that it is required.
- Label the sample to reflect the tank number, or pump number, product, suspected contamination and date of the sample.
- Contact the supplier for further information regarding product testing.
- Investigate the cause of the contamination and take the necessary actions to prevent a re-occurrence'.

8.6.3 Operation of the industrial and residential area

The following mitigation measures must be implemented during the utilization of the industrial and residential area:

- General operational principles are provided in Section 8.6.1 and must be implemented.
- The water and sewer infrastructure should be inspected on a regular basis to ensure that there are no blockages/leakages or spillage.
- Proper waste management measures must be implemented for the site.
- The site must be kept clean and tidy at all times and may not be littered with waste lying outside of waste bins.
- No waste may be burnt, buried or dumped on site**.**
- Where possible, recycling of waste must be encouraged and appropriate bins provided for the recycling initiative.
- The overall management of the site and associated infrastructure will be of utmost importance and therefore the implementation of these mitigation measures must be monitored and audited on a regular basis.
- It is recommended that the developer, owners of the various industries and new residents become involved with the local Community Policing Forum (CPF) in order to combat crime (e.g. burglaries, etc).

9. ENVIRONMENTAL IMPACT STATEMENT

Elmir Industrial Projects cc. intends to develop a light industrial area and filling station on a portion of the Remaining Extent of Portion 26 of the farm Naauwpoort 335 JS, eMalahleni. The development will be known as Benicon Park X1. The northern portion of the site will be subdivided into light industrial stands. The filling station will be located in the south eastern portion of the site adjacent to the R544 provincial road. The south western portion of the site will be zoned for residential use in order to accommodate the informal settlers on site.

According to the Spatial Development Framework of the eMalahleni Local Municipality (2010), the area adjacent to the R544 provincial road at the southern entrance to eMalahleni is earmarked for industrial purposes (Figure 5.21) and is referred to as the Naauwpoort Industrial Area. The development of the proposed filling station and light industrial area will not thus impact on the sense of place. In addition, the proposed residential stand will cater for the residents of the informal settlement and will therefore not impact on the sense of place.

No objections or comments were received from the filling stations in town or from the Fuel Retailers Association and the South African Petroleum Industry Association.

Only one objection was received from the adjacent landowner, Mr. C.W. van der Merwe who indicated that informal settlers have occupied a portion of his property located adjacent to the proposed development site. He indicated that he objects to the proposed development until such time as the informal settlers are removed/relocated.

According to the project applicant, a portion of the development site will be made available free of charge for the relocation of the informal settlers. The Department of Human Settlements has been contacted for assistance with regards to the relocation process. If no assistance is received from the Department of Human Settlements, the residential area could be handed over to a developer, the eMalahleni Local Municipality or another Government Department for development purposes.

It should be noted that the development of the land for residential purposes will depend on approval thereof by the eMalahleni Local Municipality and the Department of Economic Development, Environment and Tourism as well as securing funding from Government with regards to the development thereof.

According to the applicant, the hawkers located at the proposed entrance to the site are occupying the site illegally and will have to move.

The South African Heritage Resources Agency indicated that a Phase 1 Archaeological Impact Assessment Report and a Palaeontological field assessment study must be done to determine whether any sites of cultural or archaeological significance are present on site. The applicant has been informed of this requirement.

Eskom and Telkom indicated no objection to the proposed development provided that the terms and conditions as stipulated in their letters (Appendix 10) are adhered to when working close to Eskom or Telkom infrastructure.

As indicated in Section 10, the identified authorities, stakeholders and registered interested and affected parties will be provided with an opportunity to comment on the draft and final Basic Assessment Report.

As indicated in Section 3 of this report, the development will be phased with the filling station being developed first, followed by the light industrial area and the residential area.

Water for Phases 1 to 3 will be provided by the eMalahleni Local Municipality. A new bulk water pipeline will be installed from Duvha Park to the development site. Approval was obtained from the eMalahleni Local Municipality for the water supply and water connection. In addition, approval was obtained from the Department of Public Works, Roads and Transport for the installation of the pipeline within the R544 provincial road reserve. Environmental authorisation and a water use license would be required should the new water pipeline impact/cross any streams or wetlands between the said site and the Duvha Park connection point.

Since no bulk sewer line is present in the area, the applicant intends installing a conservancy tank/sewage package plant to dispose of the sewage produced during Phase 1 of the development (i.e. filling station). A bulk sewer line will be installed during the later phases of the development. Approval will have to be obtained from the eMalahleni Local Municipality for the bulk connection and disposal at the Naauwpoort sewage works. In addition, approval for a sewer line within the road reserve will have to be obtained from the Department of Public Works, Roads and Transport.

Depending on the size of the intended bulk sewer line, environmental authorisation may be required. Should the sewer line impact on/cross a stream and/or wetland, a water use license and environmental authorisation will be required.

Electricity for all phases of the development will be obtained from Eskom.

Access to the development (including the filling station) will be obtained from the R544 provincial road at the R544 and D2771 T-Junction. The access road (in the form of a traffic circle) has been approved by the Department of Public Works, Roads and Transport.

According to WSP (2011), the proposed filling station traffic will not negatively impact on the existing traffic for the following reasons:

- The site complies with the minimum standards of the relevant design documents.
- The necessary preceding deceleration lanes and turning lanes will be provided at the accesses to ensure that the vehicles enter and exit the site safely.
- The sight distance is very good due to the geometry of the existing roads.
- The access roads will be able to accommodate the delivery vehicles.

As indicated in Section 5 of this report, the environmental features of the site have been impacted by human activities. Existing impacts include the presence of a large excavation (between 1 and 2 metres deep) in the centre of the site and smaller excavations scattered throughout the site. An informal settlement and soccer field are present in the southern portion of the site. The western and northern portions of the site were revegetated/rehabilitated

as part of the rehabilitation activities of the adjacent opencast mine. Hawkers are operating informal businesses within the road reserve and partially on-site at the R544 and D2771 T-Junction. An old cement road and Eskom powerline are present on the eastern boundary of the site within the road reserve. In addition, a 22 kV powerline and gravel road extend across the southern portion of the site.

As a result, the proposed development is not expected to have an impact of high significance on the environment in terms of geology, topography, soil, land use, air quality, noise, visual or sense of place. No sensitive environments, threatened plant or animal species are known to occur on site. The negative impacts that are expected to occur are generally associated with construction activities and would be of short duration. These impacts can be managed through the implementation of basic mitigation measures as provided in the EMP (see Section 8 of this report).

The filling station stand is located on a previously excavated area. According to Johann van der Merwe (2007), this large excavation (Geotechnical Zone C) must be properly reinstated according to recognized engineering and environmental practices before any construction takes place. The underground tanks, buildings and associated infrastructure could be impacted upon if the area is not properly filled/built up.

Hard excavation (i.e. a powerful trench digger, jackhammer work and limited blasting) will be required to remove the hardpan ferricrete and sandstone bedrock across Geotechnical Zone A, which comprises a portion of the industrial stand. If blasting is required, the requirements of the Explosives Act, 2003 (Act 15 of 2003) must be put in place in order to prevent any impact on site workers, adjacent landowners/users, etc.

Indications of perched water conditions were evident on top of the hardpan ferricrete and less permeable residual horizon of Zone A. A perched water table could thus be present. However, the rehabilitation and excavation activities could have altered the presence of the perched water conditions since the geotechnical study was conducted. Mitigation measures should however, be implemented during the construction of the industrial area to prevent possible impacts on the buildings.

Highly compressible and collapsible soils may be present in the upper horizons of Geotechnical Zone B. Mitigation measures would have to be implemented to prevent potential impacts on buildings and infrastructure.

In addition, the site soils are expected to be potentially chemically aggressive with regards to buried ferrous pipes (pH values ranging from 5.24 to 7.20 and electrical conductivity values between 0.004 – 0.015 S/m). Non-ferrous metal pipes or plastic pipes should therefore be used for wet services.

The proposed filling station could potentially impact on surface water runoff and the groundwater of the site if the mitigation measures indicated in Section 8 of this report are not implemented. The closest surface water environment (Olifants River) is however, located approximately 500 m from the site on the opposite side of the R544 provincial road. No wetlands or natural pans/dams are present on site.

According to GPT (2013), the groundwater level of the site is located at approximately 4.54 m below surface. The relatively shallow depth to

groundwater should thus be taken into account by the engineer when designing the underground storage tank area. It should however, be noted that the area where the filling station is proposed has been excavated and would have to be filled/built up before construction can take place. The underground tanks may thus not be located near the water table but within the built-up area.

The closest borehole (BH8) is located 200 m from the site at the informal settlement and a fountain is present approximately 240 m from the site on the opposite side of the R544 provincial road. Groundwater flow is in a north easterly direction towards the Olifants River and the groundwater is expected to travel approximately 4 m per year under steady state conditions. The groundwater is of good quality and has not been negatively impacted by the nearby decommissioned/rehabilitated mine.

Based on the above-mentioned, GPT (2013) concluded that the borehole (BH8) located at the informal settlement could be impacted should a fuel leak or spill take place at the filling station and mitigation measures not be implemented. Although the borehole is not located directly down-gradient of the site, regular pumping is expected to induce groundwater flow from the area towards the point of abstraction.

A number of mitigation measures with regards to the installation of the underground tanks, stormwater management, waste management and groundwater monitoring are provided in Section 8 (EMP) of this report to reduce the potential impact on the groundwater of the site and surface water runoff from the filling station.

According to WSP (2011), the development of a filling station on site will be feasible. No other filling stations are located within 3 km of the site. The proposed filling station will however, initially have an impact on the nearest filling stations in town in terms of loss of sales. According to WSP (2011), these filling stations will recover the possible lost sales within 2 – 4 ½ years. The impact of the proposed filling station on the existing filling stations is not enough to impact on the feasibility of these filling stations. In addition, general traffic growth will ensure that the short term loss will be regained over the next 5 years.

Conclusion and recommendation:

Based on the findings of this Basic Assessment Report, it is felt that the proposed development could be approved subject to the implementation of the mitigation measures proposed in Section 9 of this report.

10. EVALUATION OF BASIC ASSESSMENT REPORT

10.1 Availability and evaluation of Basic Assessment Report

The draft Basic Assessment Report (dated: January 2014) was submitted to the Department of Economic Development, Environment and Tourism on 27 January 2014 (letter dated: 27 January 2014; Appendix 11).

The draft Basic Assessment Report (dated: January 2014) was also submitted/couriered to the following authorities for evaluation (40-day period) on 31 January 2014:

- Department of Water Affairs (Bronkhorstspruit office) – letter dated: 31 January 2014; Appendix 11;
- Mpumalanga Tourism and Parks Agency – letter dated: 31 January 2014; Appendix 11.
- eMalahleni Local Municipality (T. Buthelezi) – letter dated: 31 January 2014; Appendix 11.

An e-mail was forwarded to the other government departments, stakeholders and interested and affected parties informing them that the document was available for evaluation purposes from 31 January 2014 to 3 March 2014. The councillor (Mr. B. Nkosi) and Benicon were informed via facsimile (Appendix 11).

A copy of the draft Basic Assessment Report was made available from 31 January 2014 to 3 March 2014 at the Klipfontein Public Library (eMalahleni) for evaluation purposes by interested and affected parties. A copy of the notice displayed at the library and the register is provided in Appendix 11.

In addition, a copy of the document was provided on the Clean Stream Environmental Services website (www.cleanstreamsa.co.za) for download and evaluation purposes. A copy of the webpage printouts are provided in Appendix 11.

The following interested and affected parties/stakeholders/government departments were notified by means of facsimile, e-mail, etc. of the availability of the said report:

INTERESTED AND AFFECTED PARTY LIST	
Organisation	**Name**
Government Departments	
Department of Agriculture, Forestry and Fisheries	F Mashabela
Department of Agriculture, Rural Development and Land Administration	J Venter
Department of Co-Operative Governance and Traditional Affairs	M Loock
Department of Culture, Sport and Recreation	S Singh
Department of Economic Development, Environment and Tourism	M Seshweni
Department of Energy	M Machete
Department of Mineral Resources– eMalahleni	M Mokonyane
Department of Water Affairs – Nelspruit	P Monyela

INTERESTED AND AFFECTED PARTY LIST	
Organisation	**Name**
Department of Public Works, Roads and Transport	B Viljoen M Sibanyoni
Department of Rural Development and Land Reform	GN Mathonsi
South African Heritage Resources Agency	J Lavin
Mpumalanga Provincial Heritage Authority	B Moduka
Other Organisations	
Eskom	E Lennox, N Galela, N Maake, M Moloko, L Motsisi
Telkom	J Kruger
South African Petroleum Industry Association (SAPIA)	A Moldan
Fuel Retailers Association (FRA)	Z Sokabo
Mpumalanga Tourism and Parks Agency (MTPA)	F Krige
Wildlife and Environment Society of South Africa (WESSA)	L Betha
Local Municipality and Municipal Councillor	
eMalahleni Local Municipality	T Buthelezi
Councillor (Ward 19)	B Nkosi
Nkangala District Municipality (Development and Planning)	G Mathalise
Community	
Ingwe Surface Holdings (Pty) Ltd./BHP Billiton (legal section)	V Dhanooklal
BHP Billiton Mine Closure	P Lombard
CW van der Merwe	B van der Merwe
N van der Merwe	N van der Merwe
AG Lloyd	AG Lloyd
Benicon Eiendoms Beleggings (Pty) Ltd. - Benicon	L Modigage

10.2 Comments received

No objections were received regarding the proposed development.

10.2.1 Interested and Affected Parties

A.G. Lloyd

A completed comment sheet (dated: 4 February 2014; Appendix 11) was received from Mr. A.G. Lloyd (owner of Portion 29 of the farm Naauwpoort 335 JS).

The following was indicated:

"We have no objection to the proposed development but we do have a concern about the sewerage & drainage. We understand that you want to make use of septic tanks and French drains. We feel the size and scale of this development that includes a housing and garage with industrial areas could impact negatively on our groundwater. That is our only supply of drinking water. Our concern is that this water could be contaminated with sewerage draining into it and feel that a sewerage plant needs to be built to deal with this."

Response from Clean Stream Environmental Services:
As indicated in Section 3.4.3 of this report, sewage will be treated in localised 'package plants' or stored temporarily in conservancy tanks during Phase 1 of the development (i.e. filling station). No septic tanks and French drains will be installed.

According to the developer, a proper sewage network and bulk sewer line will be installed during Phase 2, i.e. once more information is available regarding the number of industries on the property and subsequent sewage volumes.

No groundwater pollution is expected if the conservancy tank/sewage treatment plant to be installed at the filling station has sufficient capacity and is maintained. This condition was indicated in the Environmental Management Plan (Section 8).

In addition, it should be noted that surface water drainage takes place in a north easterly direction towards the Olifants River. According to GPT (2013), the inferred groundwater flow direction is also in a north easterly direction since the groundwater table tends to emulate surface topography (Figure 5.19). It is thus unlikely that the proposed development will impact on the groundwater of Portion 29, since this property is located north of the site.

Benicon settlement (informal settlement)

A meeting was held with two members of the Benicon Committee on Thursday, 13 March 2014. The following persons were present at the meeting:

- L. Greyling – Elmir Industrial Projects cc.
- A. Erasmus – Clean Stream Environmental Services
- R. Janse van Rensburg – Clean Stream Environmental Services
- Z. Dlamini – Benicon Committee
- M. Ramalota – Benicon Committee

A copy of the attendance register is provided in Appendix 11.

Mr. Dlamini and Ms. Ramalota raised the following issues:

- From the layout plan, it seems that the Benicon settlement will be directly impacted by the proposed development and that the people will have to move. What will happen to the residents?

Response*: The Benicon settlement will not be directly impacted during the construction of Phase 1 (filling station) and Phase 2 (industrial stands) of the development. As indicated in the layout plan (Figure 3.1b), it is only the residential stand that impacts directly on the Benicon settlement.*

- Who will develop the residential area?

Response: *Elmir Industrial Projects cc. will not be responsible for the development of the residential area, but will make the land available for residential purposes.*

The Department of Human Settlements (V. Mtsweni) and the eMalahleni Local Municipality (Chief Town Planner and Director of Spatial Planning) have been contacted with regards to the development of the residential area. However, no assistance has been received to date.

It is recommended that the community (via the councillor and the committee) approach the eMalahleni Local Municipality regarding the establishment of the residential area.

It should be noted that the development of the land for residential purposes will depend on approval thereof by the eMalahleni Local Municipality and the Department of Economic Development, Environment and Tourism as well as securing funding from Government.

It is recommended that the community approach the eMalahleni Local Municipality before the new financial year to ensure that the Municipality make provision in their budget for the development of the residential stand.

- Currently, no services are available at the Benicon settlement since the site is located far from town. What services will be provided for the proposed residential area?

Response: *The level of services will depend on who develops the residential area. Elmir Industrial Projects cc. will install a water pipeline from Duvha Park to the filling station. A water connection will thus be available. It is recommended that the community approach the eMalahleni Local Municipality before the new financial year to ensure that the Municipality make provision in their budget for the installation of services, since it is very costly.*

- Will the development provide any job opportunities? If so, people from the Benicon settlement must be given first choice.

<u>Response:</u> *It is anticipated that job opportunities will be created during the construction and operational phases of the development. Contractors will be appointed for the construction of the filling station and other businesses. These contractors may need to employ additional people, especially if the contractors are from out of town.*

Employees will also be required at the filling station and possibly at the new businesses. People from the local community could be employed should they have the necessary skills.

The applicant can however, not guarantee that people from the community would find employment, but will assist as far as possible.

- When will construction start?

Response: *Depending on the approval of the project and obtaining the required licenses, construction may commence in the last quarter of this year.*

- Proper communication channels must be established between the developer and the community in order to keep them informed of possible job opportunities and if any issues arise.

Response: *Agreed. Proper communication is very important. Clean Stream Environmental Services will keep the councilor and committee members informed of the environmental assessment process.*

Elmir Industrial Projects will provide Mr. Dlamini and Ms. Ramalota with the contact details of the appointed contractors. They can then speak to the contractors directly about employment opportunities. The applicant will also inform them of any job opportunities at the filling station.

Mr. Dlamini and Ms. Ramalota indicated that they were satisfied with the responses and had more clarity on what the development would entail.

10.2.2 Government Departments

Department of Water Affairs

A letter (dated: 24 February 2014; Ref: 16/2/7/B100/N01; Appendix 11) was received from the Department of Water Affairs (DWA) regarding the proposed development.

The following was indicated:

1. Applicant shall conduct a preliminary legal assessment to identify all the water use activities associated with the proposed development project that will require authorisation by the DWA and shall note that in terms of section 22(1) of the National Water Act, 1998 (Act No. 36 of 1998).

Therefore any other water use related activities as outline in section 21 of the National Water Act, 1998 (Act No. 36 of 1998) associated with the proposed development project that are not permissible as indicated on paragraph 1 above shall have to be authorized by the DWA prior to such water use activities taking place.

Response: *Noted and applicant informed of DWA requirement.*

2. Page 13, section 3.4.1: It is mentioned that a borehole is present on site providing the informal settlement with water for domestic use. Water will thus be available during the construction phase from this borehole.

The taking of water from the ground and surface water resources during the developmental and operational phases of the proposed project is prohibited unless if the use is permissible as outline in paragraph 1 above.

It is further mentioned in the report that during the operational phase, water will be obtained from the eMalahleni Local Municipality via a 200 mm diameter water supply line. The applicant shall submit the service agreement to the Department.

A Service Level Agreement shall be entered into by the developer and the service provider concerned to ensure that provision will be made to render this service.

Response: Noted. At this stage it is unclear where the contractors will obtain water from during the construction phase. The required licenses/approvals will have to be obtained from the Department of Water Affairs by the developer should there be no option but to take water from the borehole.

In terms of the operational phase - a copy of the application for water from the Municipality and approval thereof (dated: 8 January 2013 - see Page 3 of application) is provided in Appendix 4.

3. Page 14, section 3.4.3: It is mentioned that chemical toilets will be used during the construction phase. The applicant shall ensure that no sanitary system is located within a horizontal distance of 100 metres from any watercourses. Therefore reasonable measures shall have to be taken to prevent the potential pollution of the ground and surface water resources due to the proposed onsite sanitation facilities.

It is further mentioned in the report that during phase 1 of the development (i.e. filling station) sewage will be treated in localized 'package plants' or stored temporarily in conservancy tanks. And that a proper network and bulk sewer line will be installed during Phase 2.

The preferred method of sewage disposal required by the DWA is by connection to the Municipality's main sewer line. In this regard the applicant shall ensure that permission is obtained from the relevant Municipality to dispose of sewage via their main sewer connections including proof that the capacity of the sewage treatment plant will be able to accommodate the extra load.

In cases where the former method is not possible, it is the responsibility of the developer to ensure that the sewage treatment and disposal systems to be used on site shall not pollute any surface and groundwater resources. Therefore all reasonable measures must be taken to prevent any wastewater overflowing from any wastewater disposal facility.

NB: The use of septic tanks and French drains will require the applicant to conduct geohydrological studies since the facilities might impact on the local groundwater.

Response: Chemical toilets - the closest watercourse is the Olifants River, which is located approximately 500 m east of the site on the opposite side of the R544 provincial road (Figure 5.1 and Figure 5.16). The chemical toilets will thus not be located within 100 metres of a watercourse.

Sewage disposal – no septic tanks and French drains will be installed on site by the applicant. The applicant shall ensure that the package plant/conservancy tank to be installed has sufficient capacity and is maintained, to minimize any possibility of surface and/or groundwater

pollution. Should the development connect to the sewer network of the eMalahleni Local Municipality, all the necessary approvals will be obtained before hand.

4. Stormwater Management: Adequate stormwater control and management must be practiced to ensure that contaminants are not introduced into water resources during the developmental and operational phases of the proposed project.

Response: Noted and agreed. A storm water management plan will have to be compiled by the project engineers in accordance with nationally accepted norms, standards and environmental requirements. Stormwater management measures to be implemented are indicated in Section 3.4.5 and Section 8 (EMP) of this document.

5. Page 8, Waste Management: The solid waste generated on site during the construction and operational phases of the proposed development project shall be stored, handled and transported to a permitted waste disposal site in such a manner as not to cause any nuisance or secondary pollution. If the Local Municipality will be the service provider, a letter of agreement between the developer and the Permit Holder of the waste disposal site shall be provided to the DWA.

Response: Noted and applicant informed of requirement.

The eMalahleni Local Municipality indicated the following in their letter (dated: 28 February 2014):
"The Municipal Leeuwpoort Landfill Site is available for disposal of rubble, construction waste and domestic waste, provided hazardous substances are not present in the waste stream. Permission to utilize the Leeuwpoort Landfill Site can be obtained from the Waste Management Department of the eMalahleni Local Municipality upon payment of the prescribed disposal tariff."

6. The applicant shall provide clarity on the issues of concern mentioned below prior to any recommendations from the DWA.

Response: Noted.

7. Flood-lines: The map of location of the proposed development project showing the 1: 100 year flood-line in terms of section 144 of the National Water Act, 1998 (Act No. 36 of 1998) which states that 'for the purposes of ensuring that all persons who might be affected have access to information regarding potential flood hazards, no person may establish a township unless the layout plan shows, in a form acceptable to the local authority concerned, lines indicating the maximum level likely to be reached by floodwaters on average once in every 100 years", shall be submitted to the DWA.

Response: Noted and applicant informed. It should be noted that the site is located approximately 500 m from the Olifants River on the opposite side of the R544 provincial road. The site is also elevated approximately 30 m above the Olifants River. Please refer to Appendix 12 which provides a layout plan where the engineer certified that the site would not be affected by the 1:100 year floodline.

8. Dust: The applicant is requested to provide the Department with the source, quality and estimated quantity of the water that will be used for dust suppression during the developmental phase of the proposed project.

Response: Noted and applicant informed of this requirement.

9. The applicant is referred to section 19(1) of the National Water Act, 1998 (Act No. 36 of 1998), and to report any pollution incident(s) originating from the proposed development project shall be reported to DWA Regional Office within 24 hours.

Response: Noted. This is also indicated in the Environmental Management Plan (Section 8).

eMalahleni Local Municipality

A letter (dated: 28 February 2014; Appendix 11) was received from the eMalahleni Local Municipality regarding the proposed development.

The following was indicated:

The proposed development is a listed activity. This department is not opposed to the development, however due diligence must be given to the protected areas especially during any developmental footprint. The cutting and removal of any indigenous trees and plants on the property should be minimized where possible and in the case where a large number of such indigenous trees have been removed, cut or damage, replacement of such trees or similar species of trees should be considered after completion of the project in consultation with the Municipal Parks Department.

Response: It should be noted that the vegetation on site has been impacted by past land uses and is disturbed. No indigenous trees are present on site and therefore no indigenous trees will be impacted. Mitigation measures to minimize the impact on the natural vegetation are provided in Section 8 of this report.

Priority attention should also be given to the generation of waste during construction. All waste generated should be disposed off in an appropriate manner. The Municipal Leeuwpoort Landfill Site is available for disposal of rubble, construction waste and domestic waste, provided hazardous substances are not present in the waste stream. Permission to utilize the Leeuwpoort Landfill Site can be obtained from the Waste Management Department of the eMalahleni Local Municipality upon payment of the prescribed disposal tariff. Illegal dumping is strictly forbidden and is punishable in terms of the eMalahleni Local Municipality Solid Waste Management By-laws.

Response: Noted and applicant informed of requirements.

Dust suppression during construction should be given attention. Appropriate measures should be taken in ensuring that all sources of dust pollution are kept under control.

Response: Noted and applicant informed of requirement. This is also indicated in the Environmental Management Plan (Section 8).

Smoke from open fires and construction vehicles as well as noise during construction process should be brought to a minimum.

<u>Response:</u> Noted and applicant informed of requirement. This is also indicated in the Environmental Management Plan (Section 8).

A copy of the Environmental Management Plan should be submitted to the HOD: Environmental and Waste Management of the eMalahleni Local Municipality.

<u>Response:</u> The Environmental Management Plan forms part of the Basic Assessment Report (see Section 8 of this report). A copy of the Basic Assessment Report was submitted to Mr. T. Buthelezi of the eMalahleni Local Municipality.

10.2.3 Stakeholders

<u>Telkom</u>
A letter was received from Telkom (dated: 12 February 2014; Appendix 11) indicating the following:

Telkom has no objection to the proposed operations. Points to consider when working close to Telkom infrastructure. All safety regulations must be adhered to at all times. Infrastructures will be in the vicinity of 1 metre from the fence line in the road reserve where the services are parallel to the road. Underground network can be from 0.6 m to 1.5 m deep and strict caution must be taken to safeguard network from damages. Telkom should be given 90 days notice to do a survey and provide the Contractor with a quote if infrastructure needs to be relocated. The cost for such deviation or removal shall be for the account of the Contractor. When any damages occur on Telkom infrastructure it must be communicated to Robert Khoza at 091 413 4482, or the Toll free number is 0800 203 3951, he will also be responsible for indicating Telkom services on site. The cost to repair damages will be for the person that damaged the network.

<u>Response:</u> Noted and applicant informed of requirements.

10.3 Evaluation of Final Basic Assessment Report

The final Basic Assessment Report (dated: March 2014) will be made available to the interested and affected parties and stakeholders consulted and/or registered as part of the Basic Assessment Process. Due to the fact that no substantial changes were made to the document, the interested and affected parties will be provided with a 21-day period in which to evaluate the document.

Interested and affected parties and stakeholders will be notified by means of facsimile and email of the availability of the report for comment. The stakeholders and interested and affected parties will be requested to forward

any comments on the report to the Department of Economic Development, Environment and Tourism (with a copy to the consultant) within 21 days.

An electronic version of the final Basic Assessment Report will be loaded on the company website (www.cleanstreamsa.co.za) for evaluation purposes. A hard copy of the document will be placed at the Klipfontein Public Library.

A hard copy of the Final Basic Assessment Report will be submitted to the Department of Economic Development, Environment and Tourism for final decision making.

REFERENCES

- Council for Geoscience. **1: 250 000 Geological Series Map, 2528 Pretoria.**
- Clean Stream Environmental Services. 2008. EIR: T**he development of a light industrial area on various Portions of the farm Naauwpoort 335 JS, Witbank.** Report dated: April 2008. Report number: EIA 2006/6. Report prepared by: R. van Rensburg and A. Erasmus
- Elmir Property Projects (Pty) Ltd. 2013. **Motivation Memorandum in Support of the Amendment of the Application for the Establishment of the Proposed Township: Beniconpark Extension 1 in terms of Section 100 of the Town-Planning and Townships Ordinance, 1986 (Nr 15 of 1986).** Report dated: August 2013. Reference Number: BEN-
- Geo Pollution Technologies – Gauteng (Pty) Ltd. 2013. **Geohydrological Study at Remaining Extent of Portion 26 of the Farm Naauwpoort 335 JS, eMalahleni.** Report dated: September 2013. Report number: NAA-13-361.
- Johann van der Merwe (Pty) Ltd. 2007. **Report on a Geotechnical Investigation Carried Out for the Proposed Benicon Park Extensions Industrial Township Development on the Remaining Portions 26, 28 & 66 of the farm Naauwpoort 335-JS, eMalahleni Municipality, Witbank District, Mpumalanga Province.** Report dated: 20 July 2007. Report number: M07/2871.
- Rehab Green Monitoring Consultants cc. 2004. **General Soil and Agricultural Assessment of the Steve Tshwete Municipal Area.** Report dated: July 2004. Report number: RG/2004/07/25. Report prepared by: P.I. Steenekamp
- Scip Engineering Group. 2013. Benicon Park. **Application for the Approval of Bulk Infrastructure for Water Supply to Benicon Proper, X1 to X5, eMalahleni.** Report dated: 5 December 2013.
- SDF. 2010. **eMalahleni Local Municipality Spatial Development Framework.**
- Lotter, M.C. & Ferrar, A.A. 2006. **Mpumalanga Biodiversity Conservation Plan.** Mpumalanga Parks Board, Nelspruit.
- Mpumalanga Tourism and Parks Agency. **Mpumalanga Biodiversity Sector Plan, 2013.**
- Mucina, L. & Rutherford, M. C. (eds). 2006. **The Vegetation of South Africa, Lesotho and Swaziland.** *Strelitzia 19*. South African National Biodiversity Institute, Pretoria.
- WSP SA Civil and Structural Engineers (Pty) Ltd. 2011. **Benicon Park Filling Station. Proposed New Filling Station Located on the c/o R544 and D2771 (Benicon Park). Feasibility Study and Impact on Surrounding Sites.** Report dated: December 2011. Report number: 13298.R. Report prepared by: E. Kotze.

APPENDIX 1:

APPLICATION FORM

APPENDIX 2:

CURRICULUM VITAE

- Mrs. A. Erasmus *Pr. Sci. Nat.*
- Ms. R. Janse van Rensburg
- List of projects

APPENDIX 3:

TOWNPLANNING INFORMATION

- Elmir Property Projects (Pty) Ltd. 2013. **Motivation Memorandum in Support of the Amendment of the Application for the Establishment of the Proposed Township: Beniconpark Extension 1 in terms of Section 100 of the Town-Planning and Townships Ordinance, 1986 (Nr 15 of 1986).** Report dated: August 2013. Reference Number: BEN-
- Conditions of Establishment
- Letter from the eMalahleni Local Municipality (dated: 28 August 2006) – **Application for the Establishment of the Townships Beniconpark, Beniconpark Extension 1 and Beniconpark Extension 2.**
- Sale of Property Agreement – 16 August 2012

APPENDIX 4:

SERVICES

- Letter from the Department of Public Works, Roads and Transport (dated: -; Ref. No. F09/11/2/2 – P120-1). **Application for the Wayleave Approval for the Water Pipeline Crossing, Drawing 098/492-01-02.**
- Letter from Department of Roads and Transport (dated: 6 March 2009; Ref No. F18/11/2/2 P120-1). Wayleave: **Approval for Municipal Water Pipe Line Alongside and Within the Road reserve of P120-1.**
- Scip Engineering Group. 2013. Benicon Park. **Application for the Approval of Bulk Infrastructure for Water Supply to Benicon Proper, X1 to X5, eMalahleni.** Report dated: 5 December 2013.
- Letter from Eskom (dated: 30 September 2013; Ref. No.: WN101310535LPU). **Budget quotation for a new point of supply 150 kVA at Pole No. LAL4/38/14.**
- Copy of the R544 provincial road upgrade design plan.
- Letter from the Department of Public Works, Roads and Transport (dated: -; Ref. No.: F09/11/2/2 – P120-1). **Approval in Principle for the Beniconpark Filling Station Design at the Intersection of Provincial Roads P120-1 and D2771.**

APPENDIX 5

FEASIBILITY STUDY

- WSP SA Civil and Structural Engineers (Pty) Ltd. 2011. **Benicon Park Filling Station. Proposed New Filling Station Located on the c/o R544 and D2771 (Benicon Park). Feasibility Study and Impact on Surrounding Sites.** Report dated: December 2011. Report number: 13298.R. Report prepared by: E. Kotze.

APPENDIX 6

GEOTECHNICAL STUDY

- Johann van der Merwe (Pty) Ltd. 2007. **Report on a Geotechnical Investigation Carried Out for the Proposed Benicon Park Extensions Industrial Township Development on the Remaining Portions 26, 28 & 66 of the farm Naauwpoort 335-JS, eMalahleni Municipality, Witbank District, Mpumalanga Province.** Report dated: 20 July 2007. Report number: M07/2871.

APPENDIX 7

GEOHYDROLOGICAL STUDY

- Geo Pollution Technologies – Gauteng (Pty) Ltd. 2013. **Geohydrological Study at Remaining Extent of Portion 26 of the Farm Naauwpoort 335 JS, eMalahleni.** Report dated: September 2013. Report number: NAA-13-361.

APPENDIX 8

ADVERTISING OF THE PROJECT

- A copy of the advertisement published in the Witbank News, 23 August 2013.
- A copy of the on-site notice in English.
- A copy of the on-site notice in Zulu.
- Printout of company website page www.cleanstreamsa.co.za – New Projects – Notices.
- Printout of company website page www.cleanstreamsa.co.za – New Projects – Background Information Documents.
- E-mail from Clean Stream Environmental Services (dated: 27 September 2013) to the Department of Economic Development, Environment and Tourism regarding the advertising of the project.

APPENDIX 9:

BACKGROUND INFORMATION DOCUMENT

APPENDIX 10:

CORRESPONDENCE WITH THE AUTHORITIES AND INTERESTED AND AFFECTED PARTIES

- Letter from the Department of Economic Development, Environment and Tourism (dated: 23 August 2013; Ref: 17/2/3 N-280) to Clean Stream Environmental Services (CSES).
- E-mail from CSES (dated: 2 October 2013) to the Department of Economic Development, Environment and Tourism regarding the site visit.
- E-mail from CSES (dated: 28 August 2013) to:
    - Nkangala District Municipality (G. Mathalise);
    - Department of Mineral Resources (M. Mokonyane);
    - Department of Energy (M. Machete);
    - Department of Co-Operative Governance and Traditional Affairs (M. Loock);
    - Department of Agriculture, Forestry and Fisheries (F. Mashabela);
    - Department of Agriculture, Rural Development and Land Administration (J. Venter);
    - Department of Culture, Sport and Recreation (S. Singh);
    - Department of Public Works, Roads and Transport (M. Sibanyoni, B Viljoen);
    - Department of Water Affairs (P. Monyela);
    - Mpumalanga Tourism and Parks Agency (F. Krige);
    - Endangered Wildlife Trust (U. Franke);
    - Wildlife and Environment Society of South Africa (L. Betha);
    - Fuel Retailers Association (Z. Sokabo);
    - South African Petroleum Industry Association (A. Moldan);
    - Mpumalanga Provincial Heritage Authority (B. Maduka);
    - Eskom (E. Lennox, N. Maake, N. Galela, M. Moloko, L. Motsisi) ;
    - Telkom (J. Kruger);
    - BHP Billiton (V. Dhanooklal);
    - eMalahleni Local Municipality (T. Buthelezi).
- Facsimile from CSES (dated: 29 August 2013) to the Department of Rural Development and Land Reform.
- Letter from the Commission on Restitution of Land Rights (dated: -; Ref. No. RP 671/1094) to CSES.
- Webpage printout: South African Heritage Resources Information System (SAHRIS).
- Letter from the South African Heritage Resources Agency (dated: 11 November 2013; Case ID: 4021) to CSES.
- Facsimile from CSES (dated: 9 September 2013 and 22 November 2013) to Councillor B. Nkosi.
- Letter from Eskom (dated: 11 September 2013; Ref. No. INV152/2013) to CSES.
- Letter from Telkom (dated: 29 August 2013) to CSES.
- E-mail from CSES (dated: 11 September 2013) to P. Lombard – BHP Billiton.
- E-mail from CSES (dated: 2 September 2013) to B. van der Merwe.
- Comment sheet (dated: 26 September 2013) from C.W. van der Merwe.
- E-mail from CSES (dated: 29 August 2013) to A. Lloyd.
- E-mail from CSES (dated: 4 September 2013 and 6 September 2013) to N. van der Merwe.

APPENDIX 11:

EVALUATION OF BASIC ASSESSMENT REPORT

- Letter from Clean Stream Environmental Services (CSES) (dated: 27 January 2014; Ref: BA 2013/03) to the Department of Economic Development, Environment and Tourism (DEDET).
- Letter from CSES (dated: 31 January 2014; Ref: BA 2013/03) to the Department of Water Affairs.
- Letter from CSES (dated: 31 January 2014; Ref: BA 2013/03) to the Mpumalanga Tourism and Parks Agency.
- Letter from CSES (dated: 31 January 2014; Ref: BA 2013/03) to the eMalahleni Local Municipality
- E-mail from CSES (dated: 31 January 2014) forwarded to the interested and affected parties and stakeholders.
- Facsimile from CSES (dated: 31 January 2014) to Councilor B. Nkosi.
- Facsimile from CSES (dated: 3 February 2014) to Benicon.
- Copy of the notice displayed at the Klipfontein Public Library and the register;
- Web page printouts - www.cleanstreamsa.co.za.
- Completed comment sheet (dated: 4 February 2014) from Mr. A.G. Lloyd.
- Attendance register.
- Letter from the Department of Water Affairs (dated: 24 February 2014; Ref No. 16/2/7/B100/N01) to CSES
- Letter from the eMalahleni Local Municipality (dated: 28 February 2014) to CSES.
- Letter from Telkom (dated: 12 February 2014) to CSES.

APPENDIX 12:

FLOODLINE