

**BASIC ASSESSMENT REPORT:
THE DEVELOPMENT OF A
LINTEL SUPPLIER BUSINESS
ON THE REMAINING EXTENT OF
PORTION 76 OF THE
FARM KROMDRAAI 292 JS,
EMALAHLENI**

Report prepared for: Lintel Suppliers cc.

Report dated: November 2015 (Version 1)

Report number: BA 2015/04

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PROJECT INFORMATION SUMMARY

PROJECT TITLE	The development of a lintel supplier business on the Remaining Extent of Portion 76 of the farm Kromdraai 292 JS, eMalahleni
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LIST OF ABBREVIATIONS

COGTA	Department of Co-operative Governance and Traditional Affairs
CSES	Clean Stream Environmental Services - Coalfields
DAFF	Department of Agriculture, Forestry and Fisheries
DARDLEA	Department of Agriculture, Rural Development, Land and Environmental Affairs
DMR	Department of Mineral Resources
DWS	Department of Water and Sanitation
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMPr	Environmental Management Programme
HIA	Heritage Impact Assessment
I&AP	Interested and Affected Party
km	kilometer
l/day	liter per day
l/s	liter per second
mamsl	Meters above mean sea level
mbgl	Meters below ground level
mm	millimeter
MBSP	Mpumalanga Biodiversity Sector Plan
MTPA	Mpumalanga Tourism and Parks Agency
Min	minute
NFEPA	National Freshwater Ecosystem Priority Areas
PIA	Palaeontological Impact Assessment
SAHRA	South African Heritage Resources Agency
SDF	Spatial Development Framework
TRAC	Trans African Concessions
TWQR	Target Water Quality Range
Vhp	Vehicles per hour

1. INTRODUCTION

Lintel Suppliers cc intends to construct and operate a lintel supplier business on the Remaining Extent of Portion 76 of the farm Kromdraai 292 JS, eMalahleni. The site is currently zoned 'Agricultural' and will be rezoned to 'Industrial 1' for industrial purposes. The property is 2.24 ha in extent and currently vacant except for two dilapidated buildings and a borehole.

The Minister of Environmental and Water Affairs listed in terms of Sections 24(2), 24(5), 24D and 44, read with section 47A(1)(b) 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	Activity	Description
Listing Notice 1 (GN R983), Listed Activity 27:	<i>The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.</i>	An area of 2.24 hectares of indigenous vegetation will be impacted upon in terms of the development of the proposed lintel supplier business.

In order to obtain environmental authorisation, a Basic Assessment must be conducted as described in Regulations 19 and 20 of the Environmental Impact Assessment Regulations 2014 as promulgated in terms of Section 24(5) and 44 of the National Environmental Management Act, 1998 (Act 107 of 1998).

The objective of the Basic Assessment process is to, through a consultative process:

- a) Determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
- b) Identify the alternatives considered, including the activity, location, and technology alternatives;
- c) Describe the need and desirability of the proposed alternatives;
- d) Through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage and cultural sensitivity of the sites and locations and the risk of impact of the proposed activity and technology alternatives on these aspects to determine: (i) the nature, significance, consequence, extent, duration and probability of the impacts occurring; and (ii) degree to which these impacts (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated.

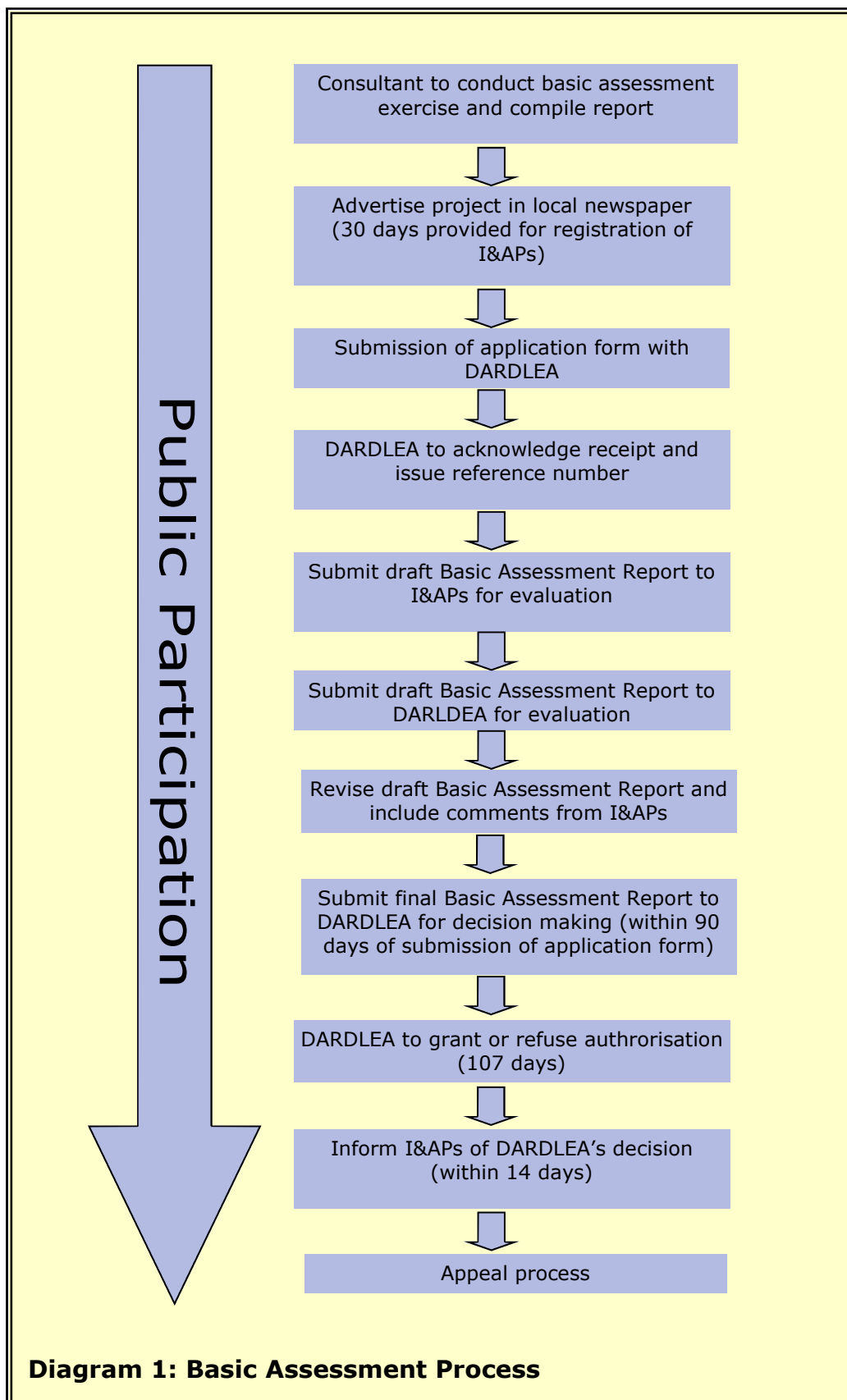
- e) Through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to: (i) identify and motivate a preferred site, activity and technology alternative; (ii) identify suitable measures to avoid, manage or mitigate identified impacts; and (iii) identify residual risks that need to be managed and monitored.

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 (BAR) is compiled in accordance with Appendix 1 of the Environmental Impact Assessment Regulations, 2014 and indicates the environmental outcomes, impacts and residual risks of the proposed activity.

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 Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA). 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.



2. DETAILS OF THE PROJECT APPLICANT AND ENVIRONMENTAL CONSULTANT

Name and address of applicant:	
Lintel Suppliers cc P.O. Box 468 Eikenhof 1872	
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Cell number:	083 391 9249
E-mail:	dbritz@lintelsuppliers.co.za

Name and address of environmental consultant:	
Clean Stream Environmental Services P.O. Box 647 Witbank 1035	
Contact persons:	Mrs. A. Erasmus <i>Pr. Sci. Nat.</i> ; Ms. R. Janse van Rensburg
Cell number:	083 271 8260
Telephone number:	013-697 5021
Fax number:	013-697 5021
Email:	adie@cleanstreamsa.co.za riana@cleanstreamsa.co.za

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

The applicant (Lintel Suppliers cc) intends to rezone the Remaining Extent of Portion 76 of the farm Kromdraai 292 JS from 'Agricultural' to 'Industrial 1' for the purpose of establishing a lintel supplier business. The lintel supplier business will produce and supply concrete lintels to the building industry.

The site is located in Nyala Road, directly to the east of the Jackaroo Agricultural Holdings, eMalahleni (Figure 5.1). The property is 2.24 ha in extent and currently vacant, except for two existing buildings and a borehole.

Korsman & Associates Town and Regional Planners (referred to as Korsman & Associates, 2015) was appointed by the applicant to compile the townplanning memorandum and site development plan for the proposed rezoning. A copy of the townplanning memorandum is provided in Appendix 3.

The proposed development will entail the following as indicated in the site development plan (Figure 3.1):

- Administration Office with 5 parking bays;
- Sales Office with 3 parking bays;
- Pre-mix factory for storage of and mixing of raw materials;
- Consumable store for the storage of machinery, etc.
- Brick fabrication plant for the production of lintels;
- Production yard;
- Concrete floor slab for the stacking of the finished product;
- Tool Store (conversion of existing building on site);
- Change Room (conversion of existing building on site);

The total footprint of the buildings (existing and proposed) will be 2219 m², which is approximately 9.6% of the entire erf (22 904 m²).

The following development conditions will apply (taken from Korsman & Associates, 2015):

Use Zone	Industrial 1	Site Development Plan
Land Use	Industrial purposes	Lintel production and supplying
Height	3 storeys	1 storey
Coverage	70 %	9.6 %
FAR	0.7	0.09
Parking ratio	2 per 100 m ²	8 parking bays provided
Building Lines	Street boundary: 5 m Rear boundary: 2 m Side boundary: 2 m for single storey 3 m for multi storey	As per approved Site Development Plan



GENERAL NOTES:

- All areas and measurements to be checked before building work commences.
- Any discrepancies to be discussed with the Architectural Professional.
- Do not scale from drawings.
- No excavation or building work may commence before building plans have been approved by the local authority.
- The National Building Regulations and all requirements of SANS 10400 must strictly be adhered to.
- The quality of all materials and workmanship to comply with the relevant SANS 10400, with particular reference to foundations, building lines etc.
- The contractor, sub-contractor and/or suppliers must verify the location of any underground services and the requirements of the local authority or other authority concerned must be adhered to when commencing to or interfering with any services.
- Steel materials must be submitted for approval prior to manufacture or installation.

AREA SCHEDULE

EXISTING BUILDINGS (TOOL STORE & CHANGE ROOM)	131 MSQ
NEW ADMIN OFFICE	215 MSQ
NEW SALES OFFICE	215 MSQ
NEW STEEL STRUCTURES	1700 MSQ
TOTAL	2261 MSQ
SITE AREA	22 504 MSQ
COVERAGE	9.9%
FAR	0.09

ZONING REQUIREMENTS:

INDUSTRIAL 1

HEIGHT: 3 STOREYS

COVERAGE: 70%

FAR: 0.7

PARKING:

2 PER 100 MSQ

8 PARKINGS REQUIRED

8 STAFF PARKINGS PROVIDED (ADMIN & SALES OFFICE = 368 MSQ)

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WYSIGINGS		REVISIONS	
W.O.Nr	DAT.	BESKRYWING	DESKRYFIE

project

SITE DEVELOPMENT PLAN FOR PORTION 76 KROMDRAAI 292 - JS FOR LABOUR SECRETARIES CC.

tekening

SITE DEVELOPMENT PLAN

geteken MR

skala 1:500

datum 05 MCH. 15

projek nr. 997

projek no.

tekening nr. SDP

tekening no.



Figure 3.1:

Proposed Site Development Plan
(PRLB Designs, 2015)

NORTH

SITE PLAN
scale 1:500

building designs

PRLB designs cc

REG. NO. 2015/03173/12

REG. NO. 2015/03173/12

REG. NO. 2015/03173/12

EMAIL: prlbdesigns@gmail.com

PROFFICE BUILDING

11 VILLAGES

23 CORRIDOR & RESERVE

ROUTE 104 BURGESS PARK

NEW FLOOR EXT 11

WILSONS LIDS

PO BOX 41134

1600 BURGESS PARK

REG. NO. C.K.2005/076492/23

2015-2016

According to Korsman & Associates (2015), the proposed development falls well within the development conditions as set out for an 'Industrial 1' zoning in terms of the eMalahleni Land Use Management Scheme, 2010.

The applicant indicated that the internal roads and working aprons will be paved. Grass will be planted around the Admin Office, Sales Office and where needed, to cover open spaces.

3.2 Description of the lintel manufacturing process

A lintel is a load-bearing horizontal block (usually manufactured from concrete/steel), which is placed over an entrance way or an opening between two vertical supports. The applicant intends to manufacture concrete lintels. Photo 3.1 provides an indication of a typical lintel and how it is installed.



Photo 3.1: An example of a concrete lintel

According to the applicant, a 'Wet Cast' method will be used to manufacture the concrete lintels.

Cement will be stored in a small cone shaped cement storage silo (see Photo 3.2), that is fitted with a dust cover. The cement will be released from a chute at the bottom of the storage silo and added to a cement mixer (fitted with a 5 kW electric motor; Photo 3.4) by means of a bucket elevator (Photo 3.3). The cement will then be mixed with water, sand and aggregate/gravel inside the cement mixer to form concrete.

The wet concrete will be removed from the cement mixer and wheel barrowed into lintel moulds/casting beds (Photo 3.5). Metal rods will be used for reinforcement. Once dry, the moulds will be removed manually and the lintels stacked and strapped. A forklift will be used to move and load finished products (Photo 3.5). Rejects will be recycled into paving lengths.

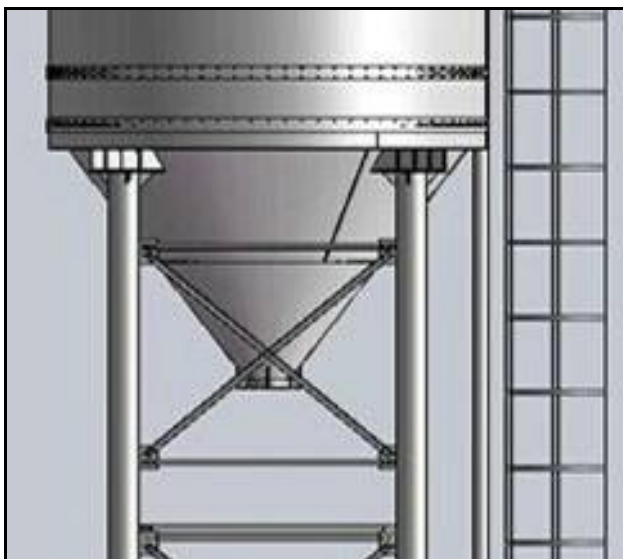


Photo 3.2: An example of a cement silo and chute



Photo 3.3: An example of a bucket elevator.



Photo 3.4: A few examples of a stationary cement mixer



Photo 3.5: An example of a lintel mould/casting bed and the final product

3.3 Need, desirability and feasibility of the activity

Lintel Suppliers cc manufactures concrete products for the building industry. Ninety five percent (95%) of the production is sold to retail outlets (hardware

stores, etc.) and the remaining 5% is sold directly to building contractors and developers.

In 2005, Lintel Suppliers cc started operating their business in the south of Johannesburg and today supplies two national outlets in Gauteng South as well as other prominent hardware outlets. The applicant operates three different factories in three different municipalities.

It is the vision of the company to enter the construction and supplying market within the eMalahleni area, thereby supporting the local economy by making their products easily available to contractors and developers.

Korsman & Associates (2015) indicated the following in terms of the need and desirability of the proposed development:

Need:

"The rapid growth and expansion experienced within eMalahleni for the last decade or so, is due to the rapid growth of industrial plants, mines and power stations in and around eMalahleni. The inevitable result of this growth is housing requirements and provision thereof, in other words, buildings and structures in various forms are developed on a daily basis.

In accordance to the South African National Standard, the application of the National Building Regulations Part K: Walls (SANS 10499-K:2011 Edition 3), it is stated that: "Lintels shall be provided above all window and door openings...". This results to a great need for lintels within the development sector.

By allowing Lintel Suppliers cc to expand their business and branch out in eMalahleni they will be investing in the economy of eMalahleni, by keeping the production and supplying of this necessary building product within the local market and eliminating the need to outsource the supply thereof. There are a multitude of developers within eMalahleni, whom are also very active with a good deal of new developments taking place as well as the proposed developments in the pipeline awaiting Council approval.

Generally, manufacturing is one of the key sectors with huge potential for beneficiation and longer value chains, with resultant impacts on job creating, economic growth and SMME development."

Desirability:

'Visual and Physical Influence - The proposed land use will have a low to medium impact on the surrounding area as it is a lower impact industrial development. Visually it will fit in with the surroundings and land uses practiced in the area. The total development will consist of approximately 5 buildings not covering a large area. Most of the site will be open and an area is identified for the stacking of the finished products ready for selling and distribution.

The proposed development will have a very low total coverage of approximately 9.6% fitting in with the general character and nature of the surrounding area and will therefore also have a low to medium impact.

Influence on the Surrounding Area - The proposed development will have a positive influence and contribution to the surrounding. The site falls in an

area earmarked for mixed land uses as well as an activity spine, encouraging development along this route.

The proposed development will lead to the raise in property value and will contribute to the mixed land use character of the area. It is also an extension of the existing industrial land uses found in the surrounds and further on.

Site Development Plan - *With the proposed development completed the site will have a mere coverage of 9.6%, leaving a large open space to cater for general open space and function as the production yard. This also contributes to the lower density character and nature of the area whilst simultaneously increasing and positively influencing the growth and development within the area.*

The proposed development will fall in line with the development controls as set out by Emalahleni Local Municipal Council. The buildings will fall within the building lines as approved and there will be more than sufficient space to accommodate the required parking bays as determined within the Land Use Management Scheme of Emalahleni, 2010."

More information regarding the need and desirability of the proposed development is provided in Appendix 3.

3.4 Services required

The said site is located approximately 8 km from the Central Business District (CBD) of eMalahleni. The site and surrounding area is not serviced by the eMalahleni Local Municipality in terms of sewer, electricity, water and waste removal.

Services (water, sewer, electricity, roads, storm water management and waste removal) for the development will have to be done by the developer to the satisfaction of the eMalahleni Local Municipality.

WSP SA Civil and Structural Engineers (Pty) Ltd. (hereafter referred to as Kotze *et. al.*, 2015a) investigated the provision of services (water, sewage, storm water and access) for the said development. A copy of the services report is provided in Appendix 4.

Utility Consulting Engineering Services (hereafter referred to as Diedericks, 2015) was appointed to investigate the electrical services to the site. A copy of the report is provided in Appendix 4.

3.4.1 Water

Water supply/availability

Potable water will be provided for contractors working on site during the construction phase.

The applicant drilled a borehole in the north eastern corner of the site (Photo 3.6) in order to provide the business with water during the operational phase. Groundwater will thus be utilized during the operational phase.



Photo 3.6: The newly drilled borehole

Water requirement

Potable water needs to be provided on site for the employees, the cement mixing process, cleaning, dust suppression and irrigation of the gardens.

According to Kotze *et. al.* (2015a), the projected average daily water demand for 'Light Industrial' land use is 150 litres/day per 100 m² GLA of buildings. The instantaneous peak water demand is expected to be 0.16 l/s. In other words, the estimated daily water usage of the proposed development is estimated at 3350 litres per day.

At least 6 700 liters of potable water must be stored on site in order to ensure that enough water is available for a 48 hour period. In addition, the amount of storage water required in case of a fire is 30 000 liters.

A total of 36 700 liters of water will thus have to be stored on site in water storage tanks. The storage tanks will most probably be located near the borehole in the north eastern corner of the site.

3.4.2 Electricity

There is an existing 22 kV Eskom powerline outside the site along the western boundary (Figure 5.2).

Diedericks (2015) recommended that a 200 kVA, 22 kV transformer and metering point be installed on site for the proposed development. A three phase supply line of approximately 302 m in length must also be installed adjacent to Nyala Road and connected to pole JAC35/1 located on the corner of the R555 provincial road and Nyala Road.

Approval was obtained from Eskom for the proposed infrastructure and electricity supply. The new transformer and supply line were subsequently installed by Eskom in the north western corner of the site (Photo 3.7).

Electricity will thus be provided by Eskom during the construction and operational phases.



Photo 3.7: A view of the Eskom Transformer and power lines

3.4.3 Sewage

During the construction phase, the contractors will have to provide chemical toilets based on the number of construction personnel. The toilets must be provided as soon as construction commences.

During the operational phase, proper ablution facilities/change rooms (i.e. showers, toilets, lockers, etc.) will be provided on site (Figure 3.1). Toilets will also be provided at the Admin Office and the Sales Office.

Kotze *et. al.* (2015a) estimated the Average Annual Daily (AAD) Flow for sewage as 3830 litres/day (see Appendix 4 for methodology used). Since no municipal services are located nearby, septic tanks will have to be installed on site for the temporary storage of the sewage.

Kotze *et. al.* (2015a) determined that a septic tank with a capacity of 57 500 liters will be required, which will have a storage capacity of 15 days.

The intention is to install two septic tanks with a combined capacity of 57 500 liters. The one septic tank will be located near the Admin Office and the other septic tank will be located near the Sales Office. The buildings will be connected to the septic tanks using a 110 mm diameter uPVC pipe. Figure 3.2 provides an indication of the proposed location of the septic tanks.

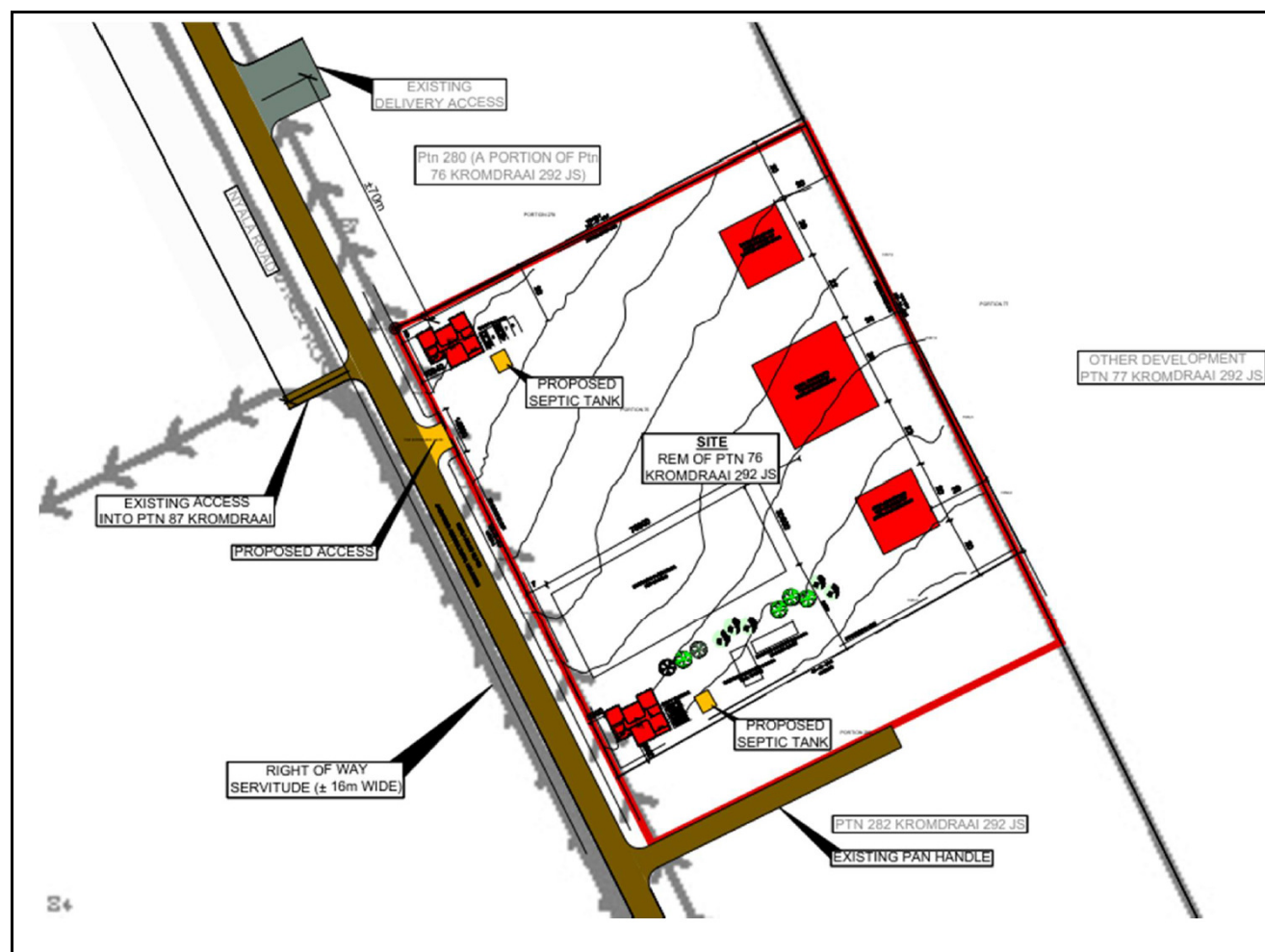


Figure 3.2: Proposed location of septic tanks and access road (taken from Kotze *et. al.*, 2015a)

3.4.4 Waste management

General/domestic/hazardous waste

During the construction phase, building rubble and a small amount of domestic waste will be generated. The contractor will have to provide adequate containers for the collection of waste. The applicant will have to ensure that the contractors remove the said building rubble and domestic waste to a licensed waste disposal site (i.e. Leeuwpoot Waste Disposal Site).

During the operational phase, domestic waste produced by the personnel will be placed in bins, which will be emptied on a regular basis and the contents thereof disposed at the Leeuwpoot Waste Disposal Site. The applicant/appointed contractors will be responsible for the removal of waste during the operational phase.

Any hazardous waste (e.g. soil contaminated with fuel/oil, paint tins, etc.) produced during the construction and/or operational phases will have to be collected in separate bins/skips and disposed at a suitable waste disposal facility by a company e.g. Enviroserv.

Lintel waste

According to the applicant, reject lintels will be recycled into paving lengths.

3.4.5 Storm water control measures

No formal storm water infrastructure (e.g. pipes, culverts, drains, etc.) are present on site. Storm water currently drains via overland flow towards the south east of the site onto the adjacent smallholding (Portion 282).

Kotze *et. al.* (2015a) calculated that the site will have a 1:5 year run-off peak flow of 123 l/s and a 1: 25 year run-off peak flow of 213 l/s (see Appendix 4 for calculations). The post-development peak flows will be slightly higher than the pre-development peak flows.

Normally, a 300 mm diameter pipe would be required to channel peak run-off during a 1: 25 year storm and a 200 mm diameter pipe for the 1: 5 year storm. However, Kotze *et. al.* (2015a) recommended no additional formal storm water systems or pipes to be installed for the following reasons:

- the site has an even fall/gradient;
- only a few buildings and paved areas are proposed;
- large grassed areas will remain after development;
- storm water will be spread out across the property and not concentrated at any one low point.

Run-off water from the buildings will be dispersed on the ground using a pre-cast concrete shoe or small concrete/paved apron and then dispersed onto the grassed area.

3.4.6 Access road

The site will be accessed from Nyala Road, which links to the R555 provincial road approximately 280 m north of the site. The R555 provincial road is a Major Arterial Street/Class 2 Road linking eMalahleni and Middelburg. The site will thus be easily accessible from eMalahleni and Middelburg.

Nyala Road has been in existence for many years and serves various smallholdings in the surrounding area. The access to the site will be located approximately 35 m from the northern boundary of the site, at an existing gate (Figure 3.2). The access gate is 6.5 m wide and will be used for security purposes.

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.

Kotze *et. al.* (2015a) determined that the fire risk for the development is Low (Group 2). The design fire flow is 1 hour with a 500 l/min requirement in case of a fire. This means that a storage tank of 30 000 liters is required in case of a fire. The storage tank will most likely be located near the borehole located in the north eastern portion of the site.

3.4.8 Energy efficiency

According to Diedericks (2015), after construction the applicant must supply Eskom with a certificate (from an independent professional engineer or certified energy manager) confirming that the electrical installation complies with the energy efficiency specifications as set out in the Generic Energy Efficiency Specification that was accepted. This certificate must be supplied after construction and prior to connecting to the Eskom network.

3.5 Nature of the activity

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

Listing	Activity	Description
Listing Notice 1 (GN R983), Listed Activity 27:	<i>The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.</i>	An area of 2.24 hectares of indigenous vegetation will be impacted upon in terms of the development of the proposed lintel supplier business.

In order to obtain environmental authorisation, a Basic Assessment must be conducted as described in Regulations 19 and 20 of the Environmental Impact Assessment Regulations, 2014 as promulgated in terms of Section 24(5) and 44 of the National Environmental Management Act, 1998 (Act 107 of 1998).

3.6 Applicable legislation, policies and/or guidelines

Table 3.1 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 3.1: 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.
Spatial Planning and Land Use Management Act, 16 of 2013	Department of Rural Development and Land Reform	To provide a framework for spatial planning and land use management
Environment Conservation Act, 1989 (Act 73 of 1989) and amendments	Department of Agriculture, Rural Development, Land and Environmental Affairs	To control environmental conservation.
National Environmental Management Act, 1998 (Act 107 Of 1998) and amendments	Department of Agriculture, Rural Development, Land and Environmental Affairs	To provide for the integrated management of the environment.
National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004) and amendments	Department of Agriculture, Rural Development, Land and Environmental Affairs	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.

Title of legislation, policy or guideline:	Administering authority:	Aim of legislation, policy or guideline
National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) and amendments	Department of Environmental Affairs	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 Biodiversity Institute; and for matters connected therewith.
National Environmental Management: Waste Act, 2008 (Act 59 of 2008) and amendments	Department of Environmental Affairs and Department of Agriculture, Rural Development, Land and 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, 2014 (Government Gazette No. 33306 of 18 June 2010) and amendments	Department of Agriculture, Rural Development, Land and Environmental Affairs	Regulations pertaining to environmental impact assessments.
National Water Act, 1998 (Act 36 of 1998) and amendments	Department of Water and Sanitation	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.
Alien and Invasive Species Regulations, 1 August 2014	Department of Environmental Affairs	Regulations regarding alien and invasive species.
List of Protected Tree Species under the National Forests Act, 1998 (Act No. 84 of 1998)	Department of Agriculture, Forestry and Fisheries	Provides a list of protected tree species.
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

Title of legislation, policy or guideline:	Administering authority:	Aim of legislation, policy or guideline
		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, 1998 (Act 10 of 1998) and amendments	Mpumalanga Tourism and Parks Agency	To control nature conservation.
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.
South African Bureau of Standards' SANS 10400 X and 10400 XA	Department of Trade and Industry	The application of the National Building Regulations in terms of environmental sustainability and energy usage in buildings.
Various by-laws of the eMalahleni Local Municipality, e.g.: <ul style="list-style-type: none"> o Inflammable liquids; o Refuse and solid waste; o Waste; o Noise; 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.
Nkangala District Municipality Climate Change Response Strategy	Nkangala District Municipality	A strategy in response to climate change.
Nkangala District Municipality Integrated Waste Management Strategy	Nkangala District Municipality	A strategy dealing with waste.
Integrated Environmental Management Guideline Series (Guideline 5 – 10 October 2012) – Companion to the Environmental Impact Assessment Regulations, 2010	Department of Agriculture, Rural Development, Land and Environmental Affairs	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.
National Protected Areas Expansion Strategy (NPAES, 2008)	Department of Environmental Affairs	To achieve cost-effective expansion of the protected area network that enhances ecological sustainability and resilience to climate change
National Biodiversity Framework (NBF, 2008)	Department of Environmental Affairs	To co-ordinate and align the efforts of the organisations and individuals involved in conserving and managing South Africa's biodiversity

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 and alternative sites

Lintel Suppliers cc manufactures concrete products for the building industry. Currently, the applicant operates three different factories in three different municipalities.

It is the vision of the company to enter the construction and supplying market within the eMalahleni area, thereby supporting the local economy by making their products easily available to contractors and developers.

The applicant investigated various potential sites in and around eMalahleni. The said site was eventually decided upon (and purchased) due to the following:

- The property was affordable.
- The property is large enough for the activity.
- The site is easily accessible via the R555 provincial road from eMalahleni and Middelburg.
- The topography of the site is suitable for the activity. It is relatively flat, which will minimize the need for earthworks.
- Currently, the site is not utilized for agriculture, residential or any other purposes.
- The site is not located near a river or stream and is not subject to the 1:100 year floodline.
- Easy access to electricity as an existing Eskom powerline is located near the site.
- The adjacent property is being used for the manufacturing of bricks. The proposed activity will therefore be compatible with the adjacent land use.
- The site and surrounding area was earmarked in the eMalahleni Local Municipality Spatial Development Framework (2013/2014) as an activity spine, which is an urban linear zone of intense mixed land use development. Development along this route is thus encouraged by the municipality.

In view of this, no other sites were provided to Clean Stream Environmental Services for investigation.

No project option

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

4.2 Alternative lintel manufacturing options

The lintel manufacturing process will mostly be manual and will rely heavily labour (approximately 50 - 60 employees during the operational phase). The only automated part of the process will be the mixing of the concrete in a motorized cement mixer.

An alternative manufacturing option would be to automate the entire or a large part of the process. Photo 4.1 provides an indication of machinery that could be utilized to automate more of the process. The applicant however, decided against this process due to the increased noise levels as a result of the machinery, increased electricity/fuel costs and loss of jobs.



Photo 4.1: Automated lintel manufacturing process

4.3 Alternative layout plans

No alternative layout plans were provided to Clean Stream Environmental Services for investigation.

4.4 Alternative services

The proposed site is located outside of town and thus not serviced by the eMalahleni Local Municipality.

Water will be obtained from an existing borehole located on site (Photo 3.6 and Section 3.4.1). Electricity will be obtained from the existing Eskom powerlines and transformer present on site (see Photo 3.7 and Section 3.4.2).

Septic tanks will be used to dispose of sewage (see Section 3.4.3). The volume of sewage/grey water that will be produced at the lintel supplier business does not justify the installation of a sewage treatment plant or package plant.

Domestic waste will be disposed of by the applicant or an appointed contractor at a licensed waste disposal site (see Section 3.4.4).

4.5 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 investigate alternative sites for the proposed lintel supplier business;
- The applicant would have to discard the business expansion plans;
- The applicant would have to investigate other land uses for the site;
- The applicant would have to sell the property;
- The proposed project would also create job opportunities (construction phase: 10 employees; operational phase: 50 - 60 employees), which would be lost if the project does not go ahead.

5. BIOPHYSICAL DESCRIPTION OF THE SITE

5.1 Location of the site

The proposed lintel supplier business will be located on the Remaining Extent of Portion 76 of the farm Kromdraai 292 JS, eMalahleni (Figure 5.1). The property is located in Nyala Road, directly east of Jackaroo Agricultural Holdings.

The co-ordinates for the centre of the site are:

Site	Latitude (S):			Longitude (E):		
76/292	25°	49'	40.02"S	29°	16'	32.46"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	2	9	2	0	0	0	7	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.

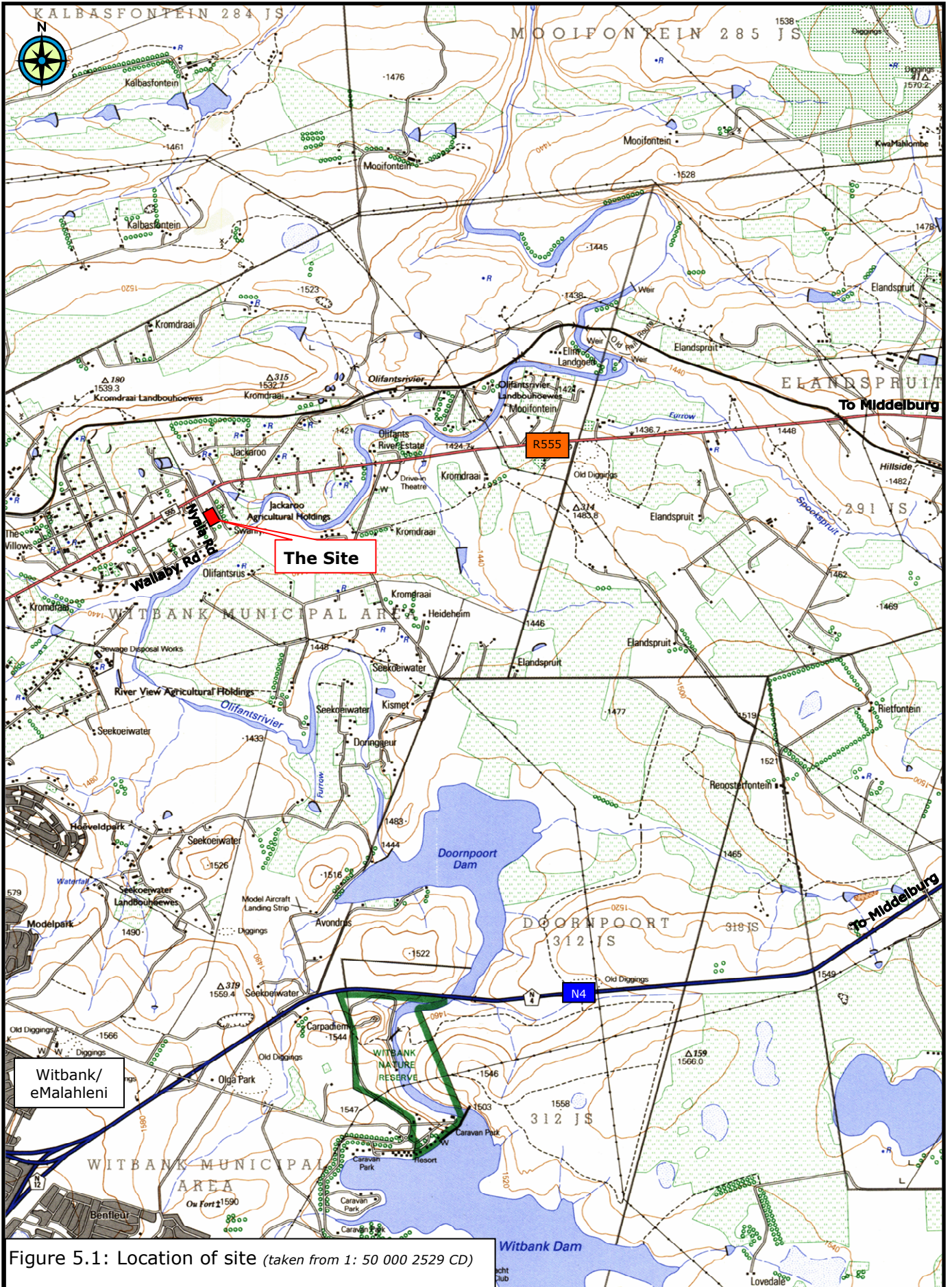


Figure 5.1: Location of site (taken from 1: 50 000 2529 CD)



5.2.1 Temperature

An indication of the lowest and highest monthly mean ambient temperatures are presented in Figure 5.2a.

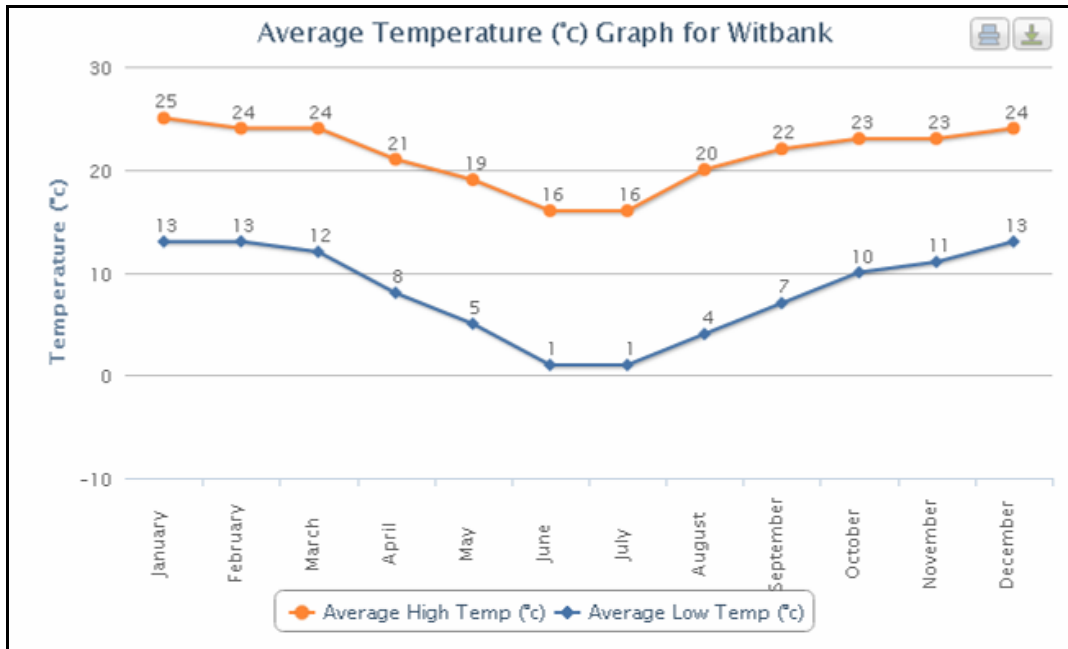


Figure 5.2a: Average temperature graph for eMalahleni (Witbank) (taken from www.worldweatheronline.com)

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 average rainfall and evaporation for eMalahleni are provided in Figure 5.2b. The highest rainfall months are November-January with the least rainfall during the winter months May-August.

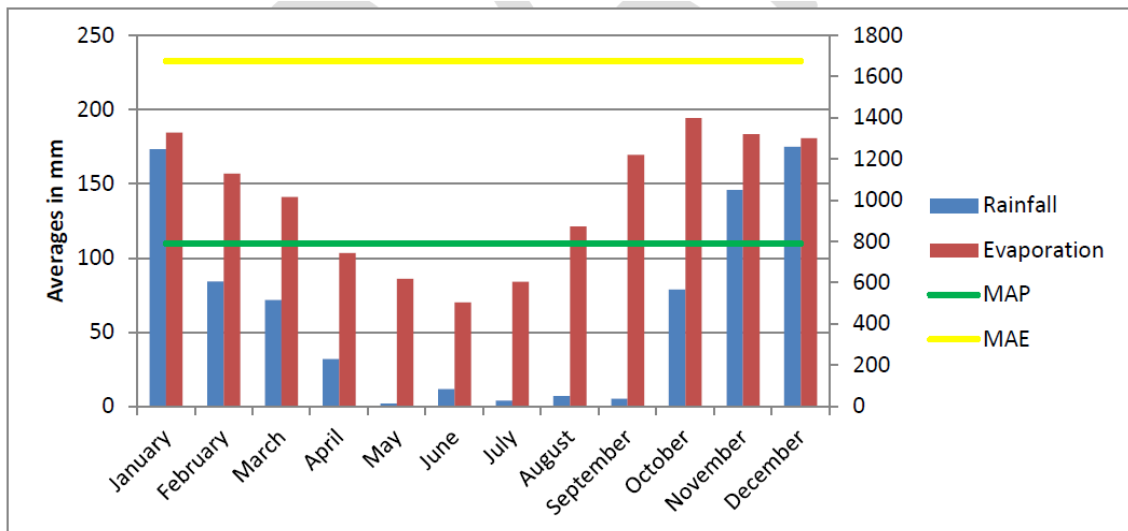


Figure 5.2b: Average rainfall and evaporation for eMalahleni (taken from Gouws, 2015)

Table 5.1 provides an indication of the Average Monthly Rainfall and Mean Monthly Evaporation measured over a period of 45 years at the Witbank Weather Station. The average annual precipitation is 702.7 mm.

Table 5.1: Average Monthly Rainfall and Mean Monthly Evaporation for eMalahleni (taken from Gouws, 2015)

Month	Average Monthly Rainfall (mm)	Mean Monthly Evaporation
January	131.5	184.5
February	91.8	156.9
March	73.8	141.4
April	39.3	103.3
May	13.4	85.9
June	7.0	70.1
July	2.9	83.9
August	7.9	121.1
September	20.7	169.5
October	78.3	194.1
November	123.8	183.5
December	116.6	180.7
Annual	702.7	1693.5

5.2.3 Wind

The wind rose for eMalahleni (Figure 5.2c) 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).

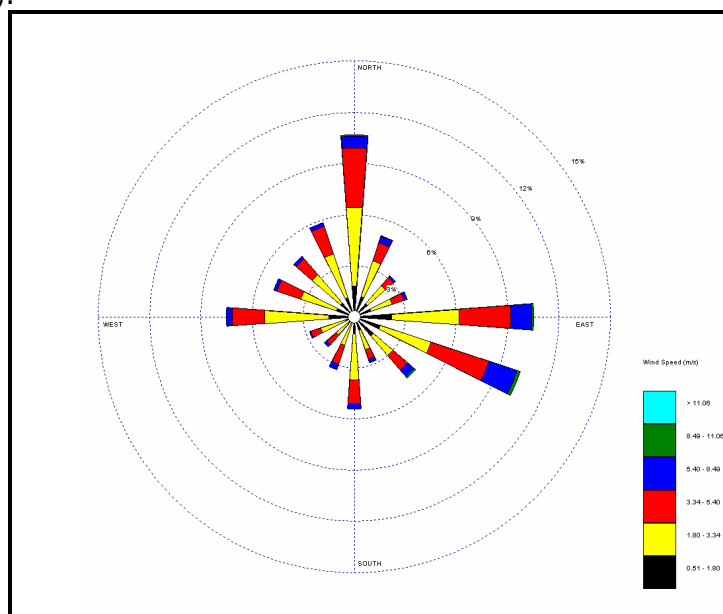


Figure 5.2c: Wind rose for Witbank (2004-2007)
(taken from uMoya-NILU Consulting (Pty) Ltd., 2010)

5.2.4 Climate change

According to the Mpumalanga Biodiversity Sector Plan Handbook (Lotter *et. al.*, 2014), there has already been notable shifts in climate in terms of increased average temperatures in Mpumalanga. Heat waves are becoming more frequent while cold days, nights and frost are becoming less frequent.

In addition, spring events such as flowering, bird migration and egg-laying are happening earlier in the year. Altitudinal range shifts for species such as the black mamba, red toad, black-bellied starling, yellow weaver, etc. have already been recorded.

Assuming moderate to high increases in greenhouse gas concentrations (e.g. carbon dioxide), regional modelling scenarios indicate that the north-eastern interior of South Africa will experience higher minimum, average and maximum temperatures over the next few decades (Lotter *et. al.*, 2014). Higher temperatures will be accompanied by increased incidents of drought, rainfall increases along the escarpment and a shift in rainfall pattern.

5.3 Land use

5.3.1 Land ownership

The Remaining Extent of Portion 76 of the farm Kromdraai is registered to Emalahleni Storage (Pty) Ltd. A copy of the Deeds Office Property report is provided in Appendix 1.

The property is in the process of being transferred to Firefly Investments 312 (Pty) Ltd, which is also owned by the applicant – see letter from applicant (dated: 22 October 2015; Appendix 1).

5.3.2 Zoning of the site

The property is zoned for agricultural purposes and will be rezoned to 'Industrial 1'.

5.3.3 Size of the site

The property is 2.24 ha in extent.

5.3.4 Servitudes

No servitudes are known to be present on site.

A 22 kV Eskom Distribution line (Old Douglas / Uitkyk-Jackaroo) is located outside the site along the western boundary (Figure 5.3 and Photo 5.1). An 11 meter building line and tree restriction (i.e. on either side of the centre line) are associated with this powerline.



Figure 5.3: Location of nearby Eskom powerlines (obtained from Eskom)

5.3.5 Land use and existing infrastructure

Figure 5.4 provides an aerial view of the site indicating the existing land uses and infrastructure.

The site is accessed from a gravel road (Nyala Road) via a gate located in the north western corner of the site (Figure 5.4).

The site is vacant, except for two buildings (stables and store, Figure 5.4) on the southern boundary. The buildings are dilapidated and seem to have been used as stables and a store room/garage in the past (Photo 5.1). Building material and other discarded items (e.g. roof tiles, pvc pipes, wood, ladder, etc.) were left in the buildings by the previous owner.

A small open trench (Photo 5.2) extends from the north western corner of the site to the stables. The purpose of this trench is unclear but it could have been excavated to install or remove cables.

A small cement pit of approximately 1.5 m x 1.5 m (Photo 5.3), which is covered with a steel grid, is present in front of the stables. This cement pit could have been connected to the ablution facilities located adjacent to the stables.



Figure 5.4: Aerial view of the site (Google Earth, 2015)

An Eskom powerline is present outside the site on the western boundary (Photo 5.4). A transformer was recently installed in the north western corner in order to supply electricity to the proposed lintel supplier business (Photo 3.7).

The applicant drilled a borehole in the north eastern corner (Photo 3.6) in order to supply the proposed business with water.

The property is entirely fenced by means of palisades, brick walls and electric fencing (Photo 5.4). Some building rubble was noted in the south western corner of the site and east of the buildings.

A Telkom line is present outside the fence on the southern boundary.



Photo 5.1: The old stables and store room



Photo 5.2: An open trench



Photo 5.3: A cement pit



Photo 5.4: Eskom powerline and palisade fence on western boundary

5.3.6 Surrounding land uses

The said site is located directly east of Jackaroo Agricultural Holdings, which is located approximately 8 km outside the eMalahleni CBD. The R555 provincial road between eMalahleni and Middelburg is located 280 m towards the north (Figure 5.1).

Various land uses take place on the surrounding agricultural holdings, including residential, light industrial, business, etc.

The property on the northern boundary of the site is used for industrial purposes (zoned 'Industrial 1'), namely brick making (Stone & Style; Figure 5.5). The owners of the business also reside on the property.

Until recently, the property on the eastern boundary was used as a hostel/boarding house for contractors. A number of containers (Figure 5.5) were turned into rooms. This activity was subsequently stopped since the property owner did not have the necessary approvals from the eMalahleni Local Municipality. According to the owner, she intends continuing the business as soon as the required approvals have been obtained.



Figure 5.5: Land uses in the surrounding area

The smallholdings south of the site are either vacant or used for residential purposes.

The Jackaroo Agricultural Holdings located west of the site are mainly used for residential and or business purposes. No agricultural activities are taking place near the site.

An approved (but not yet developed) township establishment, Riverview Extension 1 & 2, which is zoned for "Industrial 1" land uses, is located north of the site adjacent to the R555 provincial road (Figure 5.5).

5.4 Geology

A geotechnical study was undertaken by Geoset cc (hereafter referred to as Van der Merwe, 2015) to determine the suitability of the site for development purposes. The geotechnical study was commissioned as part of the townplanning application. A copy of the report is provided in Appendix 5.

According to Van der Merwe (2015), the said site is underlain by sandstone and shale of the Loskop formation, with a diabase (dolerite) intrusion towards the east and north (Figure 5.6). The sandstone and shale weathers to sandy material, whereas the diabase gives origin to clayey turf or expansive material.

Hardpan ferricrete was found in all the test pits between a depth of 1 m and 1.4 m.

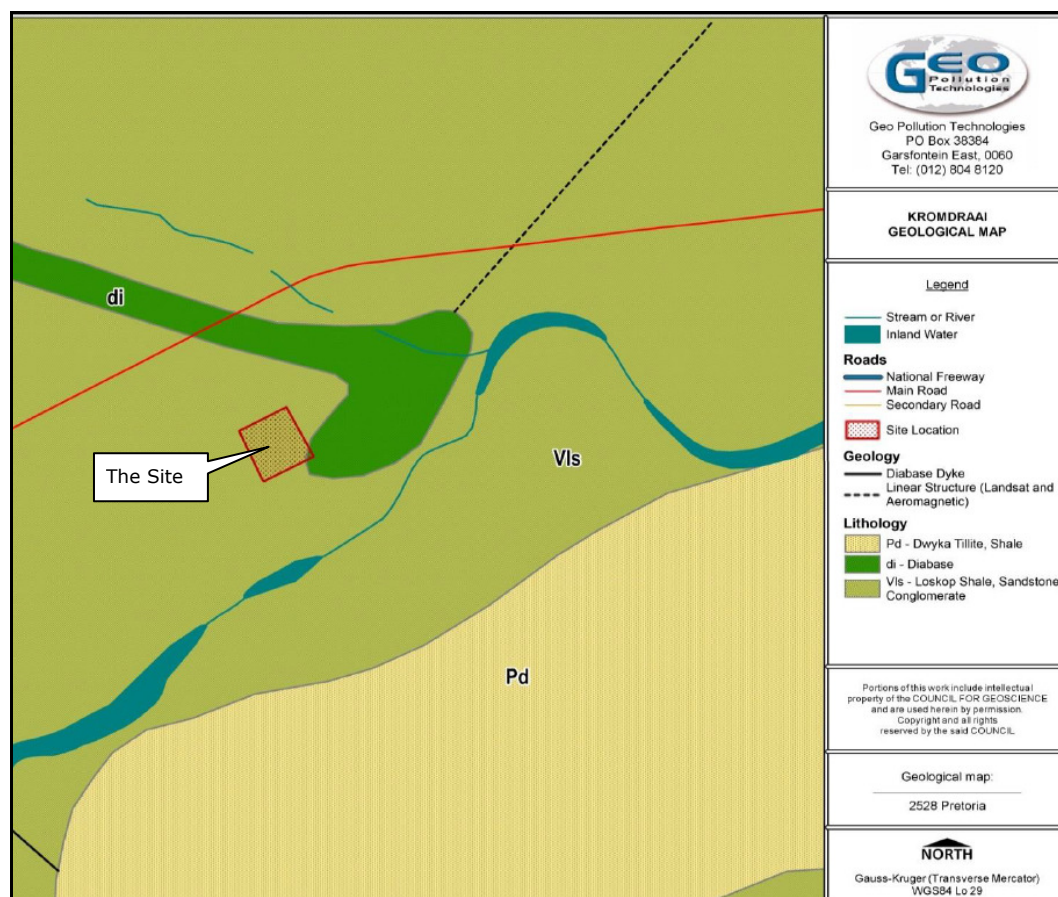


Figure 5.6: Geology of the site (taken from Gouws, 2015)

The said site is not subject to undermining or dolomite related instabilities. In addition, no potentially unstable natural slopes are present on or in close proximity to the site.

5.5 Topography

The said site lies at approximately 1430 meters above mean sea level (mamsl). The site is fairly flat with a gentle slope in a south easterly direction towards the adjacent smallholding, Portion 282 (Photo 5.5).

According to Kotze *et. al.* (2015a), the site has a gradient of approximately 2.5%.

The topography of the site is natural, except for topographical highs formed by two old buildings and Pine trees on the southern boundary (Photo 5.1). A small trench also extends across the site (Photo 5.2).

The natural topography of the surrounding area has mainly been impacted by homesteads, industrial activities, gravel roads, powerlines, etc.

The terrain type is 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)



Photo 5.5: A view of the site taken in July 2015. Note the gentle slope towards the Pine trees on the southern boundary.

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 Bb12 land type (Figure 5.9), which is characterised by red, yellow and/or greyish plinthic soils of

moderate fertility (Figure 5.8). Upland duplex and marginalitic soils are rare and red soils are not widespread.

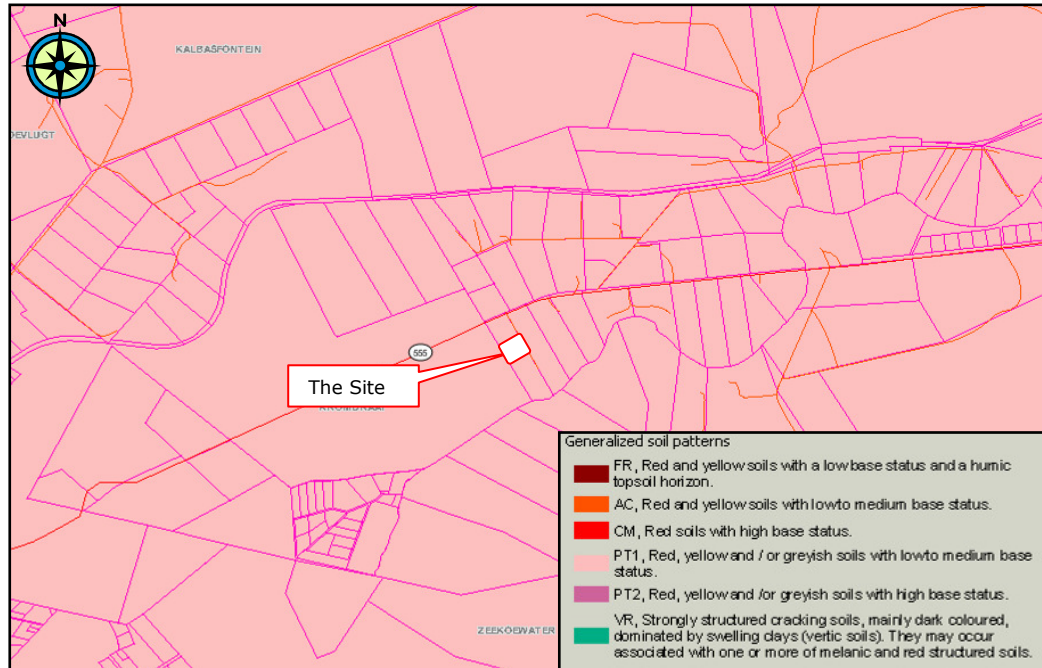


Figure 5.8: Generalized soil patterns (taken from Department of Agriculture, Forestry and Fisheries)

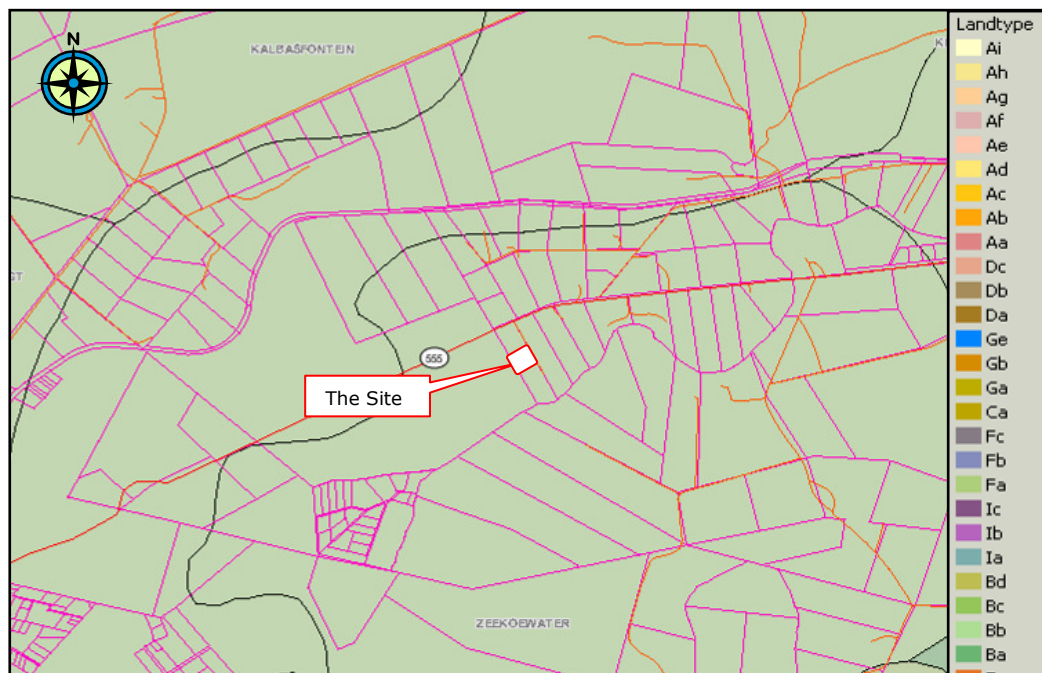


Figure 5.9: Land type of the proposed site (taken from Department of Agriculture, Forestry and Fisheries)

Except for a trench that extends across the site (Photo 5.2), two buildings on the southern boundary (Photo 5.1) and an Eskom transformer, minimum disturbance of the soil has taken place.

Impacts on the soil in the surrounding area include the construction of residences, offices, brick-making, truck parking, gravel roads, etc.

5.6.2 Geotechnical study

A geotechnical study was undertaken by Geoset cc. (hereafter referred to as Van der Merwe, 2015) to determine the suitability of the site for development purposes. Appendix 5 should be consulted for methodology used.

Soil properties

Five (5) test pits were excavated with a TLB to determine the properties of the soil. The location of these test pits are indicated in Figure 5.10.

Van der Merwe (2015) encountered the following typical soil profile on site:

Depth	Description
±0 - 0.5m	Slightly moist, dark orange brown, loose, intact, clayey silty sand. Hillwash.
±0.4 - 0.8m	Slightly moist to moist, yellow, very loose, open textured, clayey silty sand. Hillwash.
±1.0 - 1.4m	Slightly moist, orange mottled grey & red, dense, intact, sandy clay with gravel of ferricrete. Pedogenetic. Near refusal or refusal of competent TLB.

In terms of excavation characteristics, Van der Merwe (2015) anticipates some excavation problems up to a depth of 1.5 m. However, no shallow rock, rocky outcrop or core stones were encountered which may require blasting for service trenches. Refusal of the TLB occurred between 1.0 - 1.4 m below surface on hardpan ferricrete.

According to Van der Merwe (2015), the site does contain problematic material (e.g. moderately collapsible and compressible clayey silty sand, medium expansive clay and permeable material). Special precautions with regard to services and structures will be required.

Geotechnical zones

Van der Merwe (2015) identified only one (1) geotechnical zone (Site Class C2H2/2A2C) on site as indicated in Figure 5.10.

According to Van der Merwe (2015), the entire site comprises of moderately collapsible and compressible clayey silty sand (>0.75m thick with a collapsible grain structure), underlain by ferruginised medium expansive clay and nodular ferricrete. A surface movement of 10mm is expected.

Special foundation techniques will be required to prevent an impact on structures. The foundation recommendations that should be implemented on site are provided in Section 8 of this report.



Figure 5.10: Geotechnical zones (taken from Van der Merwe, 2015)

5.6.3 Agricultural potential/land capability

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

It should be noted that although the site is classified as high potential arable land, the site has not been cultivated for many years. The site and surrounding area comprise of smallholdings that are being used for a variety of purposes, e.g. residential, industrial, etc. The eMalahleni Local Municipality also identified the area as a potential Activity Spine for Mixed Land Use in the Spatial Development Framework, 2013/2014.

Looking at grazing capacity, Figure 5.12 indicates the site as transformed rangeland, due to the residential and industrial land uses in the area.

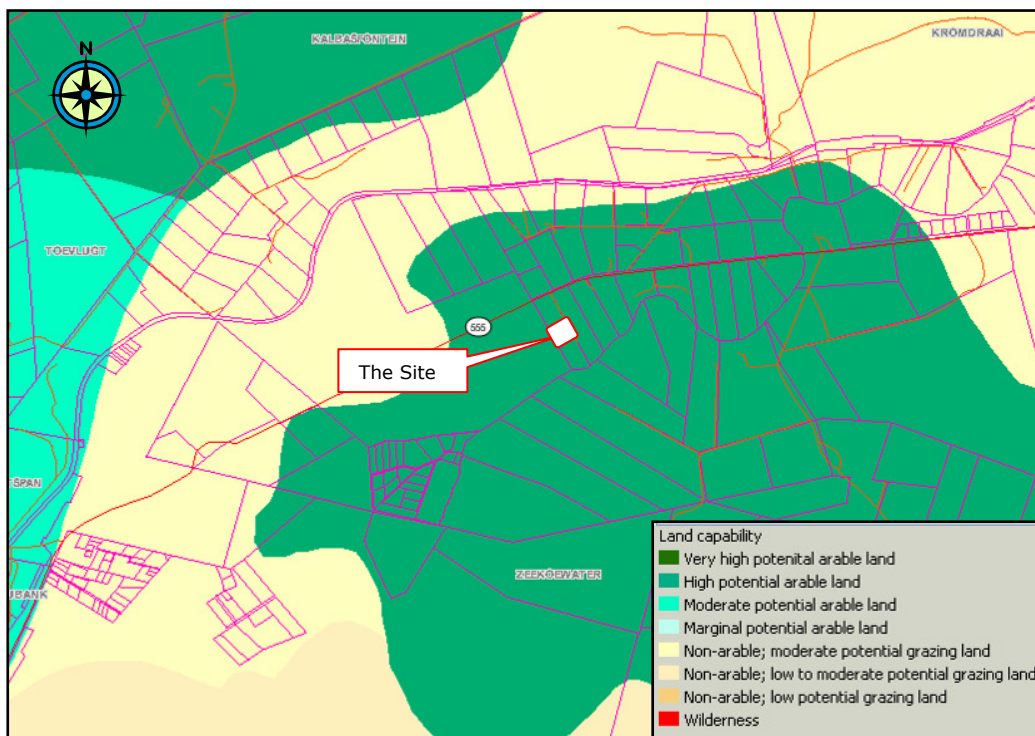


Figure 5.11: Land capability of the proposed site (taken from Department of Agriculture, Forestry and Fisheries)

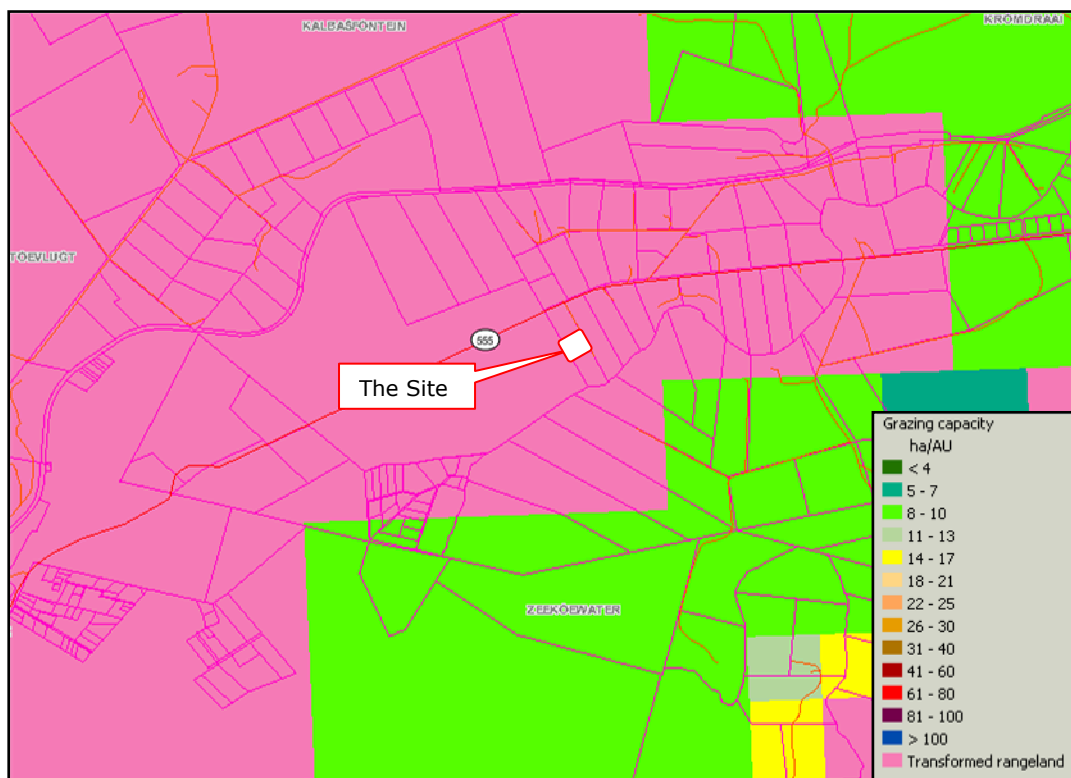


Figure 5.12: Grazing capacity of the proposed site (taken from Department of Agriculture, Forestry and Fisheries)

5.7 Natural vegetation

5.7.1 Regional vegetation and conservation status

According to 'The vegetation of South Africa, Lesotho and Swaziland', the study area falls within the Mesic Highveld Grassland Bioregion, specifically the **Rand Highveld Grassland** (veld type Gm11; 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 Rocky Highveld Grassland (34) and by Acocks (1953) as Bankenveld (61).

This grassland is found at an altitude of 1 300 metres above mean sea level (mamsl) to 1 635 mamsl in areas between rocky ridges from Pretoria to eMalahleni (Witbank). It also extends onto ridges in the Stoffberg and Roosenekal regions as well as west of Krugersdorp.

This vegetation type is species-rich and comprises wiry, sour grassland alternating with low, sour shrubland on rocky outcrops and steeper slopes. The most common grasses on the plains belong to the genera *Themeda*, *Eragrostis*, *Heteropogon* and *Elionurus*. A high diversity of herbs, many of which belong to the *Asteraceae* family, is also a typical feature. Rocky hills and ridges carry sparse woodlands with *Protea caffra* subsp. *caffra*, *Acacia caffra* and *Celtis africana*, accompanied by a rich suite of shrubs among which the genus *Rhus* is most prominent.

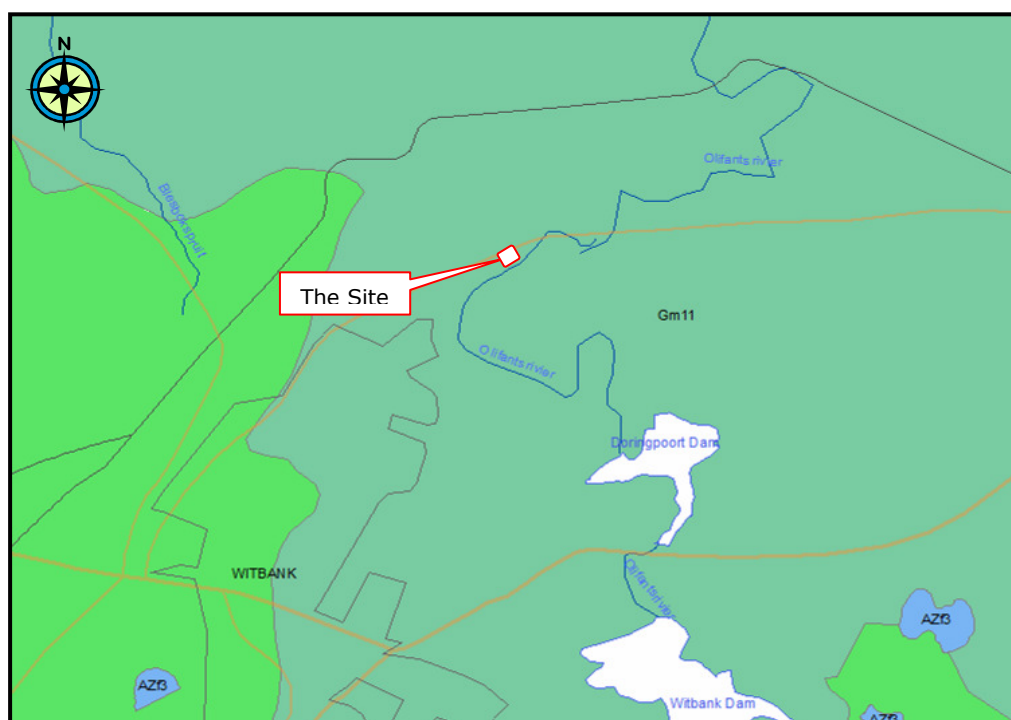


Figure 5.13: Vegetation type (taken from Mucina and Rutherford, 2006)

Almost half of the Rand Highveld Grassland has already been transformed by cultivation, urbanisation, plantations and dams. This vegetation type has been afforded the status of **Endangered** with a conservation target of 24%. Only approximately 1% of this vegetation type is currently conserved.

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 stated purpose of listing 'threatened ecosystems' is primarily to reduce the rate of ecosystem degradation and species extinction.

The study area is not situated within any of the South African centres of endemism recognised by Van Wyk and Smith (2001).

The Mpumalanga Biodiversity Sector Plan (MBSP, 2013) is a biodiversity planning tool that provides the most recent spatial biodiversity information to inform land-use and development planning (Lotter *et al.*, 2014). The main mapping categories used in the MBSP (in descending order of importance in terms of meeting conservation targets), are:

- Protected Areas;
- Critical Biodiversity Areas (Irreplaceable and Optimal);
- Ecological Support Areas;
- Other Natural Areas;
- Modified (Heavily Modified and Moderately Modified-old lands).

According to the Mpumalanga Biodiversity Sector Plan (MBSP, 2013), the site is classified as **'Heavily Modified'** in terms of the terrestrial assessment (Figure 5.14) and **'Heavily Modified'** in terms of the freshwater assessment (Figure 5.15).

'Heavily Modified' areas are defined as:

All areas currently modified to such an extent that any valuable biodiversity and ecological function has been lost. Indirect polluting effects from modified surfaces or land-uses need to be assessed, particularly where modified areas occur with freshwater CBAs and ESA sub-catchments.

As indicated in Figure 5.14, 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 Other Natural Areas and Heavily Modified.



Figure 5.14: Terrestrial biodiversity assessment (taken from Mpumalanga Biodiversity Sector Plan, 2013)

5.7.2 Vegetation found on site and surrounds

The vegetation on site comprises mostly tall, natural (secondary) grassland, with a thick basal cover. Some evidence of disturbance as a result of e.g. buildings, a trench, Eskom powerlines and geotechnical test pits are present on site. It is possible that the site may have been cultivated in the past.

The most dominant grass species is *Hyparrhenia hirta* (Common Thatching Grass) of approximately 1.5 m in height. The applicant slashes and mows (Photo 5.6) the grass around the perimeter fence and buildings to act as a fire break and to obtain access to the site.



Photo 5.6: A view of the grassland on site (looking in a westerly direction). Note that the vegetation is mowed around the boundary fences and buildings.

A row of large Pine Trees is present on the southern boundary of the site (Photo 5.6). Kikuyu Grass is dominant adjacent to the buildings and was most probably planted by the previous owner for aesthetic reasons.

Small patches of shorter and sparser vegetation is scattered throughout the site (Photo 5.7). The change in vegetation would be linked to the underlying geology (e.g. soil type, depth to sandstone/ferricrete layer). Here, species such as *Pogonarthria squarrosa* (Herringbone Grass), *Eragrostis gummifloa* (Gum Grass), *Perotis patens* (Cat's Tail), *Themeda triandra* (Rooigras) and *Helichrysum* spp. are present.

Species such as *Stoebe vulgaris* (Bankrotbos), *Aristida* spp., *Cirsium vulgare* (Scottish Thistle) and *Bidens pilosa* (Blackjack) were noted in and around disturbed areas e.g. dumping area, around buildings, etc.

Table 5.2 provides an indication of the plant species noted on site.

Table 5.2: Plant species noted on site.

Latin name	Common name
<i>Aristida</i> spp.	Three-awn
<i>Bidens pilosa</i>	Black Jack
<i>Cirsium vulgate</i>	Scottish Thistle
<i>Eragrostis curvula</i>	Weeping Love Grass
<i>Eragrostis gummifloa</i>	Gum Grass
<i>Helichrysum cf. krausii</i>	
<i>Hyparrhenia hirta</i>	Common Thatching Grass (dominant)
<i>Pennisetum clandestinum</i>	Kikuyu Grass
<i>Perotis patens</i>	Cat's Tail
<i>Pinus pinaster</i>	Cluster Pine tree
<i>Pogonarthria squarrosa</i>	Herringbone Grass
<i>Protosparagus africanus</i>	Climbing asparagus fern
<i>Stoebe vulgaris</i>	Bankrotbos
<i>Themeda triandra</i>	Rooigras

5.7.3 Plant species of conservation concern

The term 'Species of Conservation Concern' refers to the IUCN threatened and Near Threatened categories as well as the South African Red List categories (i.e. Critically Rare, Rare and Declining).

A list of Species of Conservation Concern, which historically occurred in the area (quarter degree squares 2529CD and 2529DC), was obtained from the PRECIS Database (South African National Biodiversity Institute) and PlantDat database (Mpumalanga Tourism & Parks Agency). The list contains 11 species together with their conservation status categories and habitat requirements (Table 5.3).

Table 5.3: Plant Species of Conservation Concern recorded for quarter degree squares: 2529CD and 2529DC

Latin Name	Common Name and Description	Habitat	Status
<i>Anacampseros subnuda lubbersii</i>	Dwarf, succulent mesemb	Rock sheets	Vulnerable [VU D2]
<i>Boophone disticha</i>	Poison Bulb. Bulbous tropical and subtropical flowering plant.	Dry grassland and rocky areas	Declining
<i>Callilepis leptophylla</i>	Wild Daisy	Grassland or open woodland, often on rocky outcrops or rocky hill	Declining

Latin Name	Common Name and Description	Habitat	Status
		slopes	
<i>Crinum bulbispermum</i>	Orange River Lily	Grows along stream banks	Declining
<i>Crinum macowanii</i>	River Lily	Grassland, rocky area and near rivers	Declining
<i>Encephalartos lanatus</i>	Olifants River Cycad	Sheltered, rocky valleys; deep, sandy, fertile soils	Vulnerable [VU B1ab(iii) + 2ab (iii)]
<i>Hypoxis hemerocallidea</i>	Yellow Star	Wide range of habitats, including sandy hills on the margins of dune forests, open, rocky grassland, dry, stony, grassy slopes, mountain slopes and plateaus. Appears to be drought and fire tolerant.	Declining
<i>Ilex mitis</i>	African Holly	Banks of rivers and streams	Declining
<i>Khadia carolinensis</i>	Perennial, succulent	Well-drained, sandy loam soils among rocky outcrops, or at the edges of sandstone sheets, Highveld Grassland	Vulnerable [A3c]
<i>Pachycarpus suaveolens</i>		Short or annually burnt grasslands	Vulnerable [VU B1ab (iii)]
<i>Pavetta zeyheri middelburgensis</i>		Outcrops of rocks and boulders or rocky sheets	Rare

Habitat (i.e. rivers/streams and rocky outcrops) for *Anacampseros subnuda lubbersii*, *Crinum bulbispermum*, *Crinum macowanii*, *Encephalartos lanatus*, *Ilex mitis*, *Khadia carolinensis* and *Pavetta zeyheri middelburgensis* does not occur on site.

Boophone disticha is a very conspicuous species and was not noted on site.

Grassland habitat is present on site for *Callilepis leptophylla*, *Hypoxis hemerocallidea* and *Pachycarpus suaveolens*. However, these species prefer short, rocky and/or annually burnt grassland, which is not present. Therefore, even though there is a possibility that these plant species could occur on site, it is unlikely.

5.7.4 Protected plant species

In addition to the IUCN categories, the following legislation affords protected status to selected indigenous plant species:

- National Forests Act (Act 84 of 1998),
- NEMA Biodiversity Act (Act 10 of 2004, as amended in 2007), and
- Mpumalanga Nature Conservation Act (No.10 of 1998).

National Forests Act (Act 84 of 1998)

The National Forests Act lists 47 tree species that may not be removed or damaged without a license from the National Department of Agriculture.

None of the 47 tree species listed in Schedule A of this Act occurs within the study area or its immediate surroundings.

NEMA Biodiversity Act (Act 10 of 2004, as amended in 2007)

The intention of the Biodiversity Act is to protect plant species (e.g. cycads, yellow arum lily, protea, etc.) that are directly threatened in terms of their utilisation. The destruction, collection or trading of any species listed in this Act requires a permit.

No plant species listed in the Biodiversity Act were noted within the study area during the site visits. The possibility that protected plant species could occur on site is unlikely due to the developed nature of the surrounding area and disturbances on site.

Mpumalanga Nature Conservation Act (No.10 of 1998)

A number of plant species are protected in the Mpumalanga Province under the Mpumalanga Nature Conservation Act, 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. A permit has to be obtained prior to their removal.

No protected plant species or trees were noted on site. The possibility that protected plant species could occur on site is unlikely due to the developed nature of the surrounding area and disturbances on site.

5.7.5 Invader or exotic species

Declared Weeds and Invaders are subject to the Conservation of Agricultural Resources Act (Act 43 of 1983) as amended in 2001. In terms of this Act, landowners are legally responsible for the control of alien plant species on their properties.

In addition, a number of plant species are listed as alien invasive species in terms of the Alien Invasive Species (AIS) Regulations, as defined in the National Environmental Management Biodiversity Act (Act no. 10 of 2014). The AIS regulations place each declared alien invasive plant species into one of four categories and stipulates measures for the eradication of plants in each of the four categories.

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

Table 5.4: Declared alien invasive plant species

Latin name	Category
<i>Cirsium vulgate</i> (Scottish Thistle)	Category 1b*
<i>Pennisetum clandestinum</i> (Kikuyu)	Proposed declared invader
<i>Pinus pinaster</i> (Cluster Pine)	Category 1b*

*Category 1b Listed Invasive Species are those species listed as such by notice in terms of section 70(1)(a) of the Act (NEM: Biodiversity Act) as species which must be controlled.

5.8 Animal life

5.8.1 Regional conservation status

According to the MBSP (2013) the site is classified as '**Heavily Modified**' (Figure 5.14) in terms of the Terrestrial Biodiversity Assessment.

The site is also classified as '**Heavily Modified**' in terms of the Freshwater Biodiversity Assessment (Figure 5.15).

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).

No Critical Biodiversity Areas (CBA's) for aquatic species or Ecological Support Areas (ESA's) for fish or wetland clusters are present on or near the site.



Figure 5.15: Freshwater biodiversity assessment (taken from Mpumalanga Biodiversity Sector Plan, 2013)

5.8.2 Animal life found on site and surrounds

It is highly unlikely that large animal species would permanently inhabit the site since the surrounding area is developed and the site is fenced. Dogs and cats are also present on the surrounding smallholdings, which would impact on the natural animal life.

As indicated in Section 5.7, natural grassland vegetation is present on site, which could provide habitat for small mammals, reptiles, frogs, birds, etc.

The following was noted on site:

- Termite mounds;
- A bee's nest near the old buildings;
- Laughing Dove;
- Blacksmith Plover;
- Indian Myna;
- A Hare (*Lepus* sp.).

5.8.3 Species of conservation concern

No species of conservation concern (e.g. Giant Bullfrog, Hedgehog, Serval, etc.) were noted or are expected to occur on site.

5.9 Surface water

5.9.1 Catchment

The proposed site is located within the Upper Olifants Water Management Area (WMA) and more specifically the B11J quaternary catchment.

The Minister has, in terms of section 12 of the National Water Act, Act No. 36 of 1998, prescribed a system for classifying water resources by promulgating Regulation 810 (Government Gazette 33541, dated: 17 September 2010).

The Water Resource Classification System is intended to ensure the ecological sustainability of all the significant water resources taking into consideration the social and economic needs of competing interests by all who rely on the water resource.

The proposed water resource classes for the Olifants catchment were published in Notice 619 of 2015 (Government Gazette 39004, dated: 20 July 2015). In terms of this notice, the proposed water resource class of the B11J quaternary catchment is a D (i.e. largely modified).

The following Resource Quality Objectives (RQO) for the Olifants catchment applies:

- Low flows should be improved in order to maintain the river habitat for the ecosystem and ecotourism.
- Nutrient concentrations should be improved to prevent nuisance conditions for ecotourism.
- Instream habitat must be in a largely modified or better condition to support the ecosystem and for ecotourism users.
- Instream biota must be in a largely modified or better conditions and at sustainable levels.
- Low and high flows must be suitable to maintain the river habitat for ecosystem condition and ecotourism.
- Salt concentrations must be maintained at levels where they do not render the ecosystem unsustainable.
- The riparian zone must be in a moderately modified or better condition to support the ecosystem and for ecotourism.
- Riparian vegetation must be in a moderately modified or better condition .
- Low and high flows must be in a largely modified or better condition to maintain the riparian habitat and for ecotourism.

5.9.2 Floodline

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

The closest surface water environment is the Olifants River and associated wetland, which is located ± 250 m south of the site (Figure 5.16). Two smallholdings (Portions 281 and 282) are located between the said site and the Olifants River. The Olifants River runs in a north eastern direction where it feeds into the Loskop Dam situated 40 km north – northeast of the site.



Figure 5.16: A view of the site in relation to the Olifants River.

5.9.3 Surface water runoff

The site is fairly flat with a gentle slope in a south easterly direction towards the adjacent smallholding and the Olifants River (Figure 5.15). Storm water drains as sheet wash across these properties towards the Olifants River. No prominent drainage channel is present.

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 (Figure 5.14).

Geoset (2015) encountered water seepage in Test Pit K3 (located in the north western corner of the site, Figure 5.10). According to Van der Merwe (2015), a shallow water table may exist during high rainfall periods, where drainage is expected on top of the shale or within the pedogenetic layer or purple sandstone bedrock. The water seepage was however, encountered at a depth of 1.4 m, which is well below the 0.5 m required for a wetland to be present.

5.10 Groundwater

A geohydrological investigation was conducted by Geo Pollution Technologies (hereafter referred to as Gouws, 2015) for the proposed development. A copy of the geohydrological study is provided in Appendix 6.

The objective/aim of the study was to:

- Evaluate the current groundwater status quo through site visits and a hydrocensus;
- Conduct aquifer tests to obtain optimal abstraction rates on the existing borehole;
- Predict and assess impacts using the source-pathway-receptor principle;
- Recommend best groundwater management measures and monitoring programmes based on

The investigation comprised of a site survey, hydrocensus, pump testing/aquifer testing, the measurement of the groundwater level at the existing borehole and the collection and analysis of groundwater samples. See Appendix 6 for methodology used.

5.10.1 Hydrogeological setting

According to Gouws (2015), the general hydrogeology of the area consists of a shallow, weathered aquifer (± 10 mbgl), overlying a fractured groundwater system. Groundwater mostly moves along secondary structures such as fractures, cracks and joints in the fresh rock below the weathered zone. These preferential pathways are best developed in sandstone. The underlying dolerite sills and dykes are generally impermeable.

5.10.2 Perched water table

Van der Merwe (2015) encountered water seepage in Test Pit K3 (located in the north western corner of the site; Figure 5.10). According to Van der Merwe (2015), a shallow water table may exist during high rainfall periods, where drainage is expected on top of the shale or within the pedogenetic layer or purple sandstone bedrock. The water seepage was however, encountered at a depth of 1.4 m, which is well below the 0.5 m required for a wetland to be present.

No indications of seepage or a wetland were noted during the site visit.

5.10.3 Hydrocensus

A hydrocensus was conducted on site and in the surrounding area as a site familiarisation exercise and to collect essential groundwater related data. Gouws (2015) consulted people who objected in terms of the townplanning/EIA process and where access could be obtained. Fourteen boreholes were evaluated. The borehole positions are indicated in Figure 5.17.

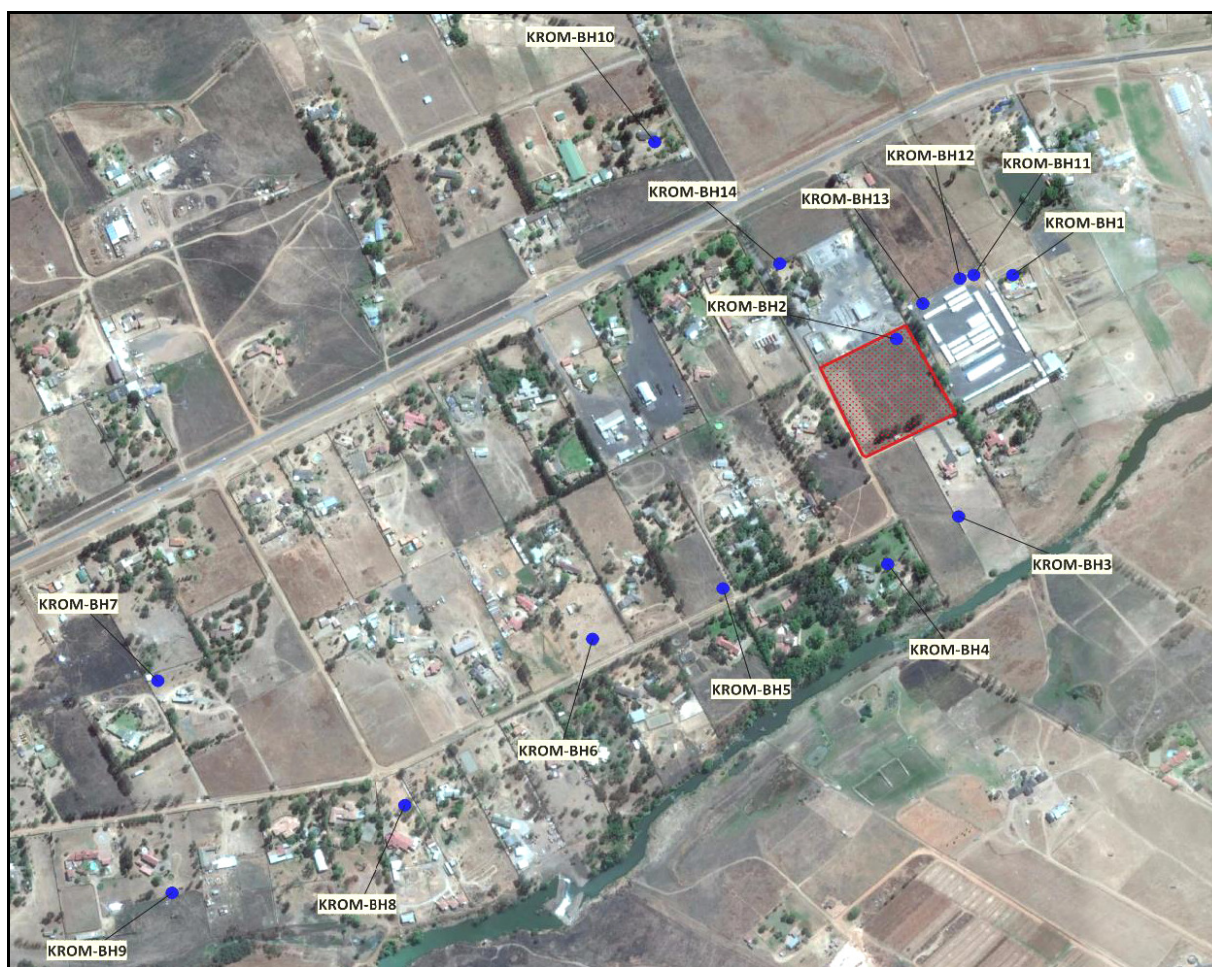


Figure 5.17: Boreholes identified as part of hydrocensus (taken from Gouws, 2015)

The two smallholdings located directly west of the site (Plots 86 and 87; Figure 6.2) could not be sampled since no contact information was available for the property owners. Access to the properties could thus not be arranged. Similarly, Portion 281 (Figure 6.2) located south of the site was not included in the hydrocensus since the property is vacant.

The hydrocensus information is provided in Table 5.5.

Table 5.5: Summarized hydrocensus information (taken from Gouws, 2015)

ID	Owner	Property	SWL (mbgl)	Use
KROM-BH1	CH Meyer	Jackaroo 78	4.90	Domestic
KROM-BH2	Lintel Suppliers	Portion 76	9.64	Planned industrial
KROM-BH3	WJJ v/d Merwe	Portion 282	6.90	Domestic
KROM-BH4	H v/d Merwe	Jackaroo 88	7.75	Domestic
KROM-BH5	G Johnson	Jackaroo 80	34.75	Domestic
KROM-BH6	H Botha	Jackaroo 76	49.07	Domestic
KROM-BH7	H van Staden	Jackaroo 63	19.60	Domestic
KROM-BH8	A Richtigter	Jackaroo 96	22.28	Domestic
KROM-BH9	K Glanzmann	Jackaroo 100	44.70	Domestic
KROM-BH10	M Wockner	Jackaroo 51	4.19	Domestic
KROM-BH11	Duduzile	Portion 77	6.20	Domestic

ID	Owner	Property	SWL (mbgl)	Use
KROM-BH12	Dudzile	Portion 77	39.55	Domestic
KROM-BH13	Dudzile	Portion 77	8.25	Domestic
KROM-BH14	Stone & Style	Portion 278	-	Industrial

5.10.4 Groundwater levels and flow

The hydrocensus established that the groundwater levels in the area vary between 4.18 mbgl to 49.07 mbgl with a mean of ± 20 mbgl. This information was used to determine the expected groundwater level at various elevations and to calculate the depth to groundwater (unsaturated zone).

The following boreholes (Figure 5.18) were found to have an anomalous groundwater level due to heterogeneities or disturbances such as abstraction:

- KROM-BH5
- KROM-BH6
- KROM-BH7
- KROM-BH8
- KROM-BH9

Figure 5.18 provides an indication of the water levels in the area.

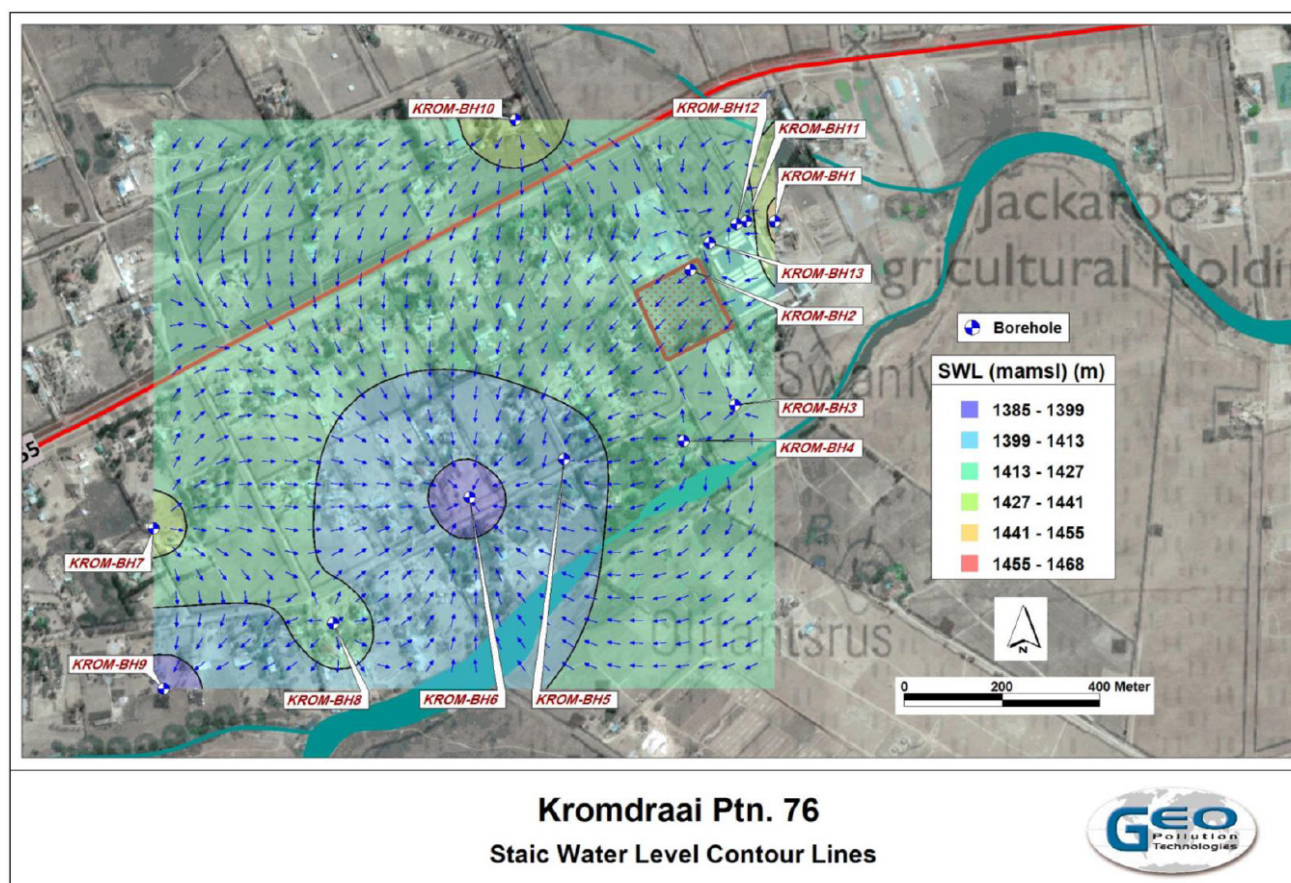


Figure 5.18: Static water level contour lines (taken from Gouws, 2015)

Surface water drainage takes place in a south easterly direction towards the adjacent smallholding (Portion 282; Figure 6.1). The inferred groundwater flow direction is thus in a south easterly direction since the groundwater table tends to emulate surface topography. However, according to Gouws (2015) and contrary to what is expected, the groundwater flow in this area is not

primarily from topographical high to low areas, but rather towards borehole KROM-BH6 (Figure 5.17). This could be as a result of extensive pumping at borehole KROM-BH6.

5.10.5 Groundwater quality

Gouws (2015) collected three groundwater samples from private landowners and one from the borehole on site in order to determine the quality of the groundwater in the area.

The water quality information is presented in Table 5.6.

Table 5.6: Results of the drinking water quality analysis (taken from Gouws, 2015)

Water Quality Constituents		KROM-BH1	KROM-BH2	KROM-BH3	KROM-BH4	TWQR	Tolerable	Exceeding TWQR
Total Alkalinity	M Alk. [mg/l CaCO ₃]	164.00	128.00	221.00	91.90		Not available	
Calcium	Ca [mg/l]	46.60	35.80	68.50	60.10	0 - 32	32 - 80	> 80
Chloride	Cl [mg/l]	18.30	18.00	39.60	40.00	0 - 100	100 - 600	> 600
Fluoride	F [mg/l]	0.37	0.21	0.50	0.75	0 - 1.0	1.0 - 1.5	> 1.5
Iron	Total Fe [mg/l]	0.00	0.10	0.00	0.00	0 - 0.1	0.1 - 1.0	> 1.0
Magnesium	Mg [mg/l]	27.20	12.10	24.30	36.40	0 - 30	30 - 70	> 70
Manganese	Mn [mg/l]	0.00	0.00	0.00	0.00	0 - 0.05	0.05 - 1.0	> 1.0
Nitrate	NO ₃ as N [mg/l]	0.89	0.88	0.00	4.59	0 - 6		> 6
pH	pH units	6.82	7.51	7.82	7.28	6.0 - 9.0		<6, >9
Potassium	K [mg/l]	1.13	1.62	2.22	11.00	0 - 50	50 - 100	> 100
Sodium	Na [mg/l]	20.90	23.90	34.80	53.10	0 - 100	100 - 200	> 200
Sulphate	SO ₄ [mg/l]	53.40	17.80	46.10	249.00	0 - 200	200 - 400	> 400
Total Dissolved Solids	TDS [mg/l]	325.00	237.00	425.00	551.00	0 - 450	450 - 1 000	> 1000
Zinc	Zn [mg/l]	0.11	0.00	0.00	1.99	0 - 3	3 - 10	> 10
Cation/Anion Balance %		10.60	11.10	9.25	2.63	Error should not exceed 5%		
Notes: A value of zero indicates that the analysis was below the detection limit								
TWQR- Target water quality range								
Tolerable - Suitable for short-term intake, but may cause adverse effects in sensitive individuals								
Exceeding TWQR- Exceedance of target water quality range may lead to adverse effects								

In summary, the following was found regarding the groundwater quality:

- The major cations in the groundwater samples are calcium and magnesium.
- The major anions in the groundwater samples are sulphate and bicarbonate.
- The groundwater type can be described as freshly recharged, unpolluted bicarbonate type waters and calcium-sulphate type waters.
- There are no constituents that exceed the TWQR (Target Water Quality Range) for drinking water.
- Ca (and Mg) are elevated above the TWQR due to host rock mineralogy.
- Calcium, sulphate and total dissolved solids are within the tolerable range of the DWA drinking water guideline.
- TDS is elevated due to elevated dissolved constituents.

According to Gouws (2015), the groundwater quality in the area is of generally good quality if compared to drinking water standards. However, the elevated Calcium may cause scaling problems in appliances using heating elements and plumbing that transports hot water.

The results of the water analyses were also plotted as pie diagrams (see Figure 5.19) in order to give a graphic representation of the groundwater quality at the various boreholes.

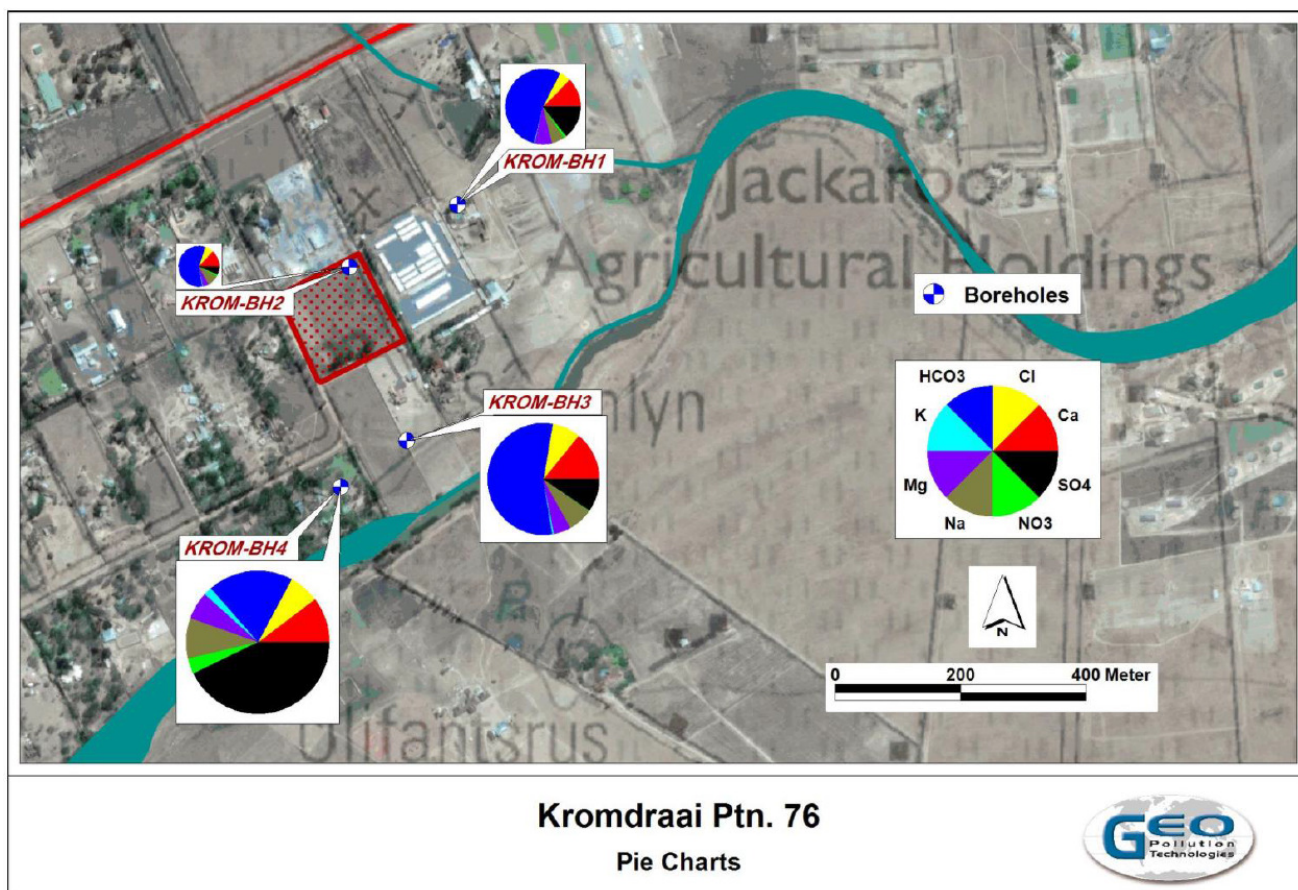


Figure 5.19: Pie charts indicating the groundwater quality at the four sites (taken from Gouws, 2015)

As indicated in Figure 5.19 and Table 5.6, the Sulphate, Magnesium and Calcium of KROM-BH4 are elevated, but still within the tolerable range of the DWA drinking water guideline. The water is suitable for short term intake, but may cause adverse effects in sensitive individuals.

Calcium is elevated in all the boreholes.

5.10.6 Groundwater potential

According to Gouws (2015), the aquifer system in the study area can be classified as a "Minor Aquifer System" based on the fact that the Loskop (Karoo) aquifer has a low permeability and does not produce large quantities of water.

A standard pump test was conducted on the borehole on site (KROM-BH2) to estimate the sustainable borehole yield.

The sustainable yield is defined as the rate at which the borehole can be operated for long durations without reaching a specified drawdown level, or a yield that will not adversely affect people or the environment now and in the future.

The pumping test showed a total drawdown of 80 m and a transmissivity value of 2.3 m²/d. Based on the interpreted pump test data, the borehole should be pumped at a sustainable rate of 0.2 l/s or 5.76 m³/d for no more

than 8 hours at a time. The borehole should thus be pumped for 8 hours and left to recover for 16 hours in a 24 hour cycle.

According to Gouws (2015), the pumping rate of 5.76 m³/d at 8 hours/day should be sufficient for the proposed development, based on the estimated water demand of 1223 m³/annum or 3.35 m³/day,

Gouws (2015) concluded that the sustainable abstraction of groundwater for the proposed development does not pose a risk to groundwater users in the area. The low abstraction rate is highly unlikely to lower the groundwater table and thus would not have an influence on the available quantity of water.

5.10.7 Aquifer vulnerability

The vulnerability of an aquifer can be defined as the tendency or likelihood for contamination to reach a specified position in the groundwater system after introduction at some location above the uppermost aquifer.

According to Gouws (2015), the aquifer vulnerability of the site is classified as medium.

Medium Vulnerable = 30 to 60%: The natural factors provide some protection to shield groundwater from contaminating activities at the land surface, however based on the contaminant toxicity mitigation measures will be required to prevent any surface contamination from reaching the groundwater table.

The methodology used for this classification is provided in Section 7 of Appendix 6.

5.11 Air quality

The eMalahleni area forms part of a national air pollution hotspot known as the Highveld Priority Area (HPA; Republic of South Africa, 2011). This Priority Area comprises the eastern part of Gauteng and the western part of Mpumalanga and covers an area of 31.106 km². 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 proposed development site is located in the eMalahleni air quality hot spot, which extends to Arnot in the east. This is an area where measured or modelled concentrations exceed, or are predicted to exceed, ambient air quality standards as identified in the Air Quality Management Plan for the Highveld Priority Area.

Exceedances do not occur throughout the hotspot, but in three nodes. In the Middelburg node the modelled and monitored PM₁₀ concentrations, as well as modelled SO₂ concentrations, exceed the ambient standard. Exceedances of the SO₂ standard occur in the Arnot node, but are few.

The air quality of the proposed development site is predominately governed by the various industrial and mining activities in and around eMalahleni. The following could impact upon the air quality of the proposed development site:

- Dust generated as a result of vehicles utilizing Nyala Road, which is a gravel road located on the western boundary of the site.

- Dust generated at the brick making business (Stone & Style) located on the northern boundary of the site.
- Dust generated as a result of the construction activities taking place on the smallholding located south of the site.
- Emissions from vehicles travelling on the various roads in the area.

5.12 Noise

In general, the ambient noise level of the site is relatively low since the site is located on the outskirts of town and away (280 m) from the R555 provincial road.

The major contributing factor to the ambient noise level of the site would be as a result of the adjacent brick-making business, residential activities on the surrounding smallholdings and traffic on Nyala Road and the R555 provincial road.

5.13 Sites of archaeological and cultural interest

Cultural Heritage Impact Assessment:

No graves, old buildings/ruins, etc. were noted on site by Clean Stream Environmental Services during the site visits. The stables and store room located on the southern boundary of the site are not older than 60 years, as it is evident from aerial views that the buildings were constructed between 2001 and 2006 (Google Maps, 2015).

Palaeontological sensitivity:

Fossils in South Africa mainly occur in rocks of sedimentary nature and not in rocks from igneous or metamorphic nature. Therefore, if Karoo Supergroup strata is present on a site, the palaeontological sensitivity is generally Low to Very High, depending on the underlying formation.

As indicated in Section 5.4 and in the geotechnical study (Van der Merwe (2015); Appendix 5), the site is underlain by sandstone and shale of the Loskop Formation (Karoo Supergroup), with a diabase (dolerite) intrusion towards the east and north (Figure 5.5). The Loskop Formation consists of a thick succession of finely layered siltstone, mudstone, feldspathic sandstone and shale. Volcanic rocks and conglomerates also occur.

According to the palaeontological map supplied by the South African Heritage Resources Agency (SAHRA, 2015), the palaeontological sensitivity of the site is '**Moderate**' (Figure 5.20 and Table 5.7) as a result of the site being underlain by the Loskop Formation.

Table 5.7: Palaeontological sensitivity criteria used (Fossil Heritage Layer Browser/SAHRA)

Rock unit	Significance/ vulnerability	Recommended action
Loskop Formation	Moderate	Desktop study is required

As indicated in Table 5.7, a desktop palaeontological study (and NOT a field assessment) is therefore required. However, from experience in dealing with other developments located within the Loskop Formation, mitigation or

conservation measures are not necessary for this development since the impact of the development on fossil heritage is Moderate.



Figure 5.20: Requirement for palaeontological study (taken from SAHRA, 2014)

5.14 Sensitive landscapes

No sensitive landscapes (wetlands/seepage areas, etc.) are present on the said site or will be directly impacted by the proposed development.

5.15 Visual aspects

The said site is located on the outskirts of eMalahleni, adjacent to the Jackaroo Agricultural Holdings (Figure 5.1).

The site is fairly flat with a gentle slope in a south easterly direction towards the adjacent smallholding.

A wall is present between the site and the properties located on the northern and eastern boundaries and the one property on the southern boundary (Portion 282). The site is thus not visible from these properties and vice versa.

The remainder of the southern and western boundaries of the site are enclosed with palisade fencing. The site is thus highly visible from Nyala Road and the properties located on the southern and western boundaries. The site is also partially visible from the properties on the opposite side of the Olifants River due to the downward slope.

The site is not visible from the R555 provincial road.

5.16 Traffic

A traffic impact assessment was conducted by WSP SA Civil and Structural Engineers (Pty) Ltd. (hereafter referred to as Kotze *et. al.*, 2015b) for the proposed development. A copy of the traffic impact assessment is provided in Appendix 7.

The objective of the traffic impact assessment was to:

- ❖ Quantify the expected development traffic generation;
- ❖ Evaluate the impact of the development on the surrounding road network;
- ❖ Determine and evaluate access arrangements of the proposed development site.

The methods used for the traffic impact assessment as well as the detailed results obtained are provided in the traffic impact report (Appendix 7).

5.16.1 Existing road network

The R555 provincial road between eMalahleni and Middelburg is located 280 m towards the north of the site (Figure 5.21). The R555 provincial road is a single carriageway consisting of one lane in each direction. The road functions as a Class 2/3 major rural arterial road between eMalahleni (Witbank) and Middelburg and is also an alternative route to the N4 toll road. According to Kotze *et. al.* (2015b), the R555 provincial road carries traffic volumes of between 570 and 780 vehicles per hour (vph) during the weekday AM and PM peak hours.

Nyala Road is a gravel road (Photo 5.7), located on the western boundary of the site. The road is about 5 m to 6 m wide and serves a number of smallholdings in the area. According to Kotze *et. al.* (2015b), Nyala Road functions as a Class 5 access road and carries low traffic volumes of between 5 and 25 vph during the weekday AM and PM peak hours.



Photo 5.7: A view of Nyala Road looking towards the R555 provincial road

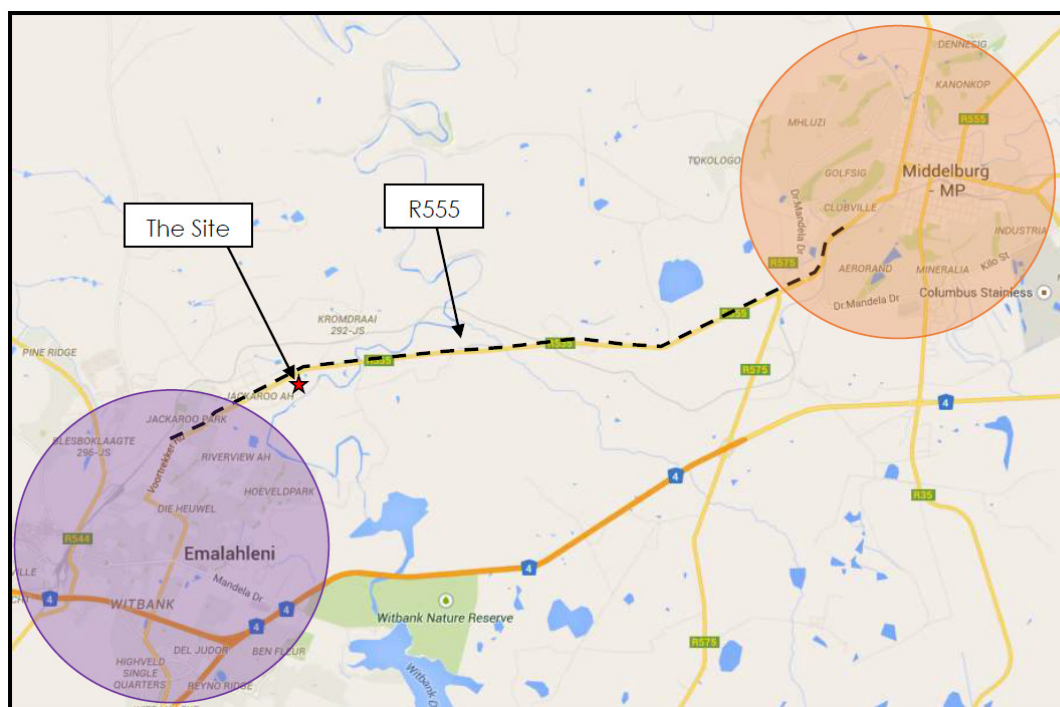


Figure 5.21: The local traffic network near the site (taken from Korsman & Associates, 2015)

5.16.2 Planned future roads

According to Kotze *et. al.* (2015b), a service road is planned parallel to the R555 provincial road. The proposed service road will provide access to a number of erven located north and east of the proposed site (i.e. Portion 76).

5.16.3 Proposed site access

The existing gravel road (Nyala Road) will provide access to the proposed development via the R555 provincial road. Nyala Road has been in existence for many years and serves various smallholdings in the area.

The access to the site will be located approximately 35 m from the northern boundary of the site, at an existing gate (Figure 5.22). The access gate is 6.5m wide and will be used for security purposes.



Figure 5.22: Proposed access road (taken from Kotze *et. al.*, 2015b)

5.16.4 Traffic impact

The estimated trip generation for the proposed development is summarized in Table 5.8.

Table 5.8: Estimated development trips (taken from Kotze *et. al.*, 2015b)

Land Use	Land Use Extent	Assigned Trip Rate	Split %	Weekday AM Peak			Weekday PM Peak		
				In	Out	Tot	In	Out	Tot
Industrial	± 15,680m ²	0.8vph/100m ²	70/30 AM 25/75 PM	88	38	126	31	95	126
Total Trips				88	38	126	31	95	126

According to Kotze *et. al.* (2015b), the proposed development would generate 126 combined trips during the weekday AM and PM peak traffic.

A number of residential and industrial developments are proposed by other developers in the surrounding area (see Figure 5.23). The potential traffic from these future developments was also taken into account by Kotze *et. al.*

(2015b). Table 5.9 provides an indication of the potential trip generation as a result of other future developments.

Table 5.9: Estimated 'Other Development' trips (taken from Kotze *et. al.*, 2015b)

Land Use	Land Use Extent	Assigned Trip Rate	Split %	Weekday AM Peak			Weekday PM Peak		
				In	Out	Tot	In	Out	Tot
Ptn 77 Kromdraai (Residential 4)	255 units	0.8/unit	65/35	71	133	204	133	71	204
Ptn 78 Kromdraai (Industrial)	1808m ²	0.8vph/100m ²	80:20	3	12	15	12	3	15
Ptn 78 Kromdraai (Residential)	1127m ²	2 Trips	75/25	0	2	2	2	0	2
Total Trips				74	147	221	147	74	221

Kotze *et. al.* (2015b) analyzed existing and future traffic flows (with and without development traffic) at the R555/Nyala Road key intersection. Figures 2 - 8 of Appendix 7 provide an indication of the background plus estimated total development traffic.

According to Kotze *et. al.* (2015b), the current Gap Acceptance (i.e. average gaps in the passing traffic to allow for entering/exiting vehicles) on the R555 provincial road is between 4.67 and 6.30 seconds, which is not acceptable for a certain percentage of vehicles.

Based on the estimated traffic generation from the proposed development and future developments, as well as the capacity analyses and the gap analyses, it was found that the R555/Nyala Road intersection does require upgrading.

5.16.5 Proposed road/intersection improvements

Based on the estimated development traffic generation, capacity analyses and gap analysis, Kotze *et. al.* (2015b) proposed that the R555/Nyala Road intersection be upgraded. Figure 5.23 provides an indication of the proposed upgrade.

Kotze *et. al.* (2015b) proposed the following regarding the intersection upgrade (Figure 5.23):

- A separate eastbound turning lane for vehicles having to turn across the R555 provincial road.
- Westbound and eastbound acceleration lanes for vehicles that need to join traffic on the R555 provincial road.
- A westbound lane and taper for the vehicles using the left-slip lane into Nyala Road.

As indicated in Figure 5.23, a future service road is planned parallel to the R555 provincial road. The proposed service road will provide access to a number of erven located north and east of the proposed site.

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 If drawing status = construction, a signed copy of this drawing is available in the WSP Pretoria Office (Original or A3 size).

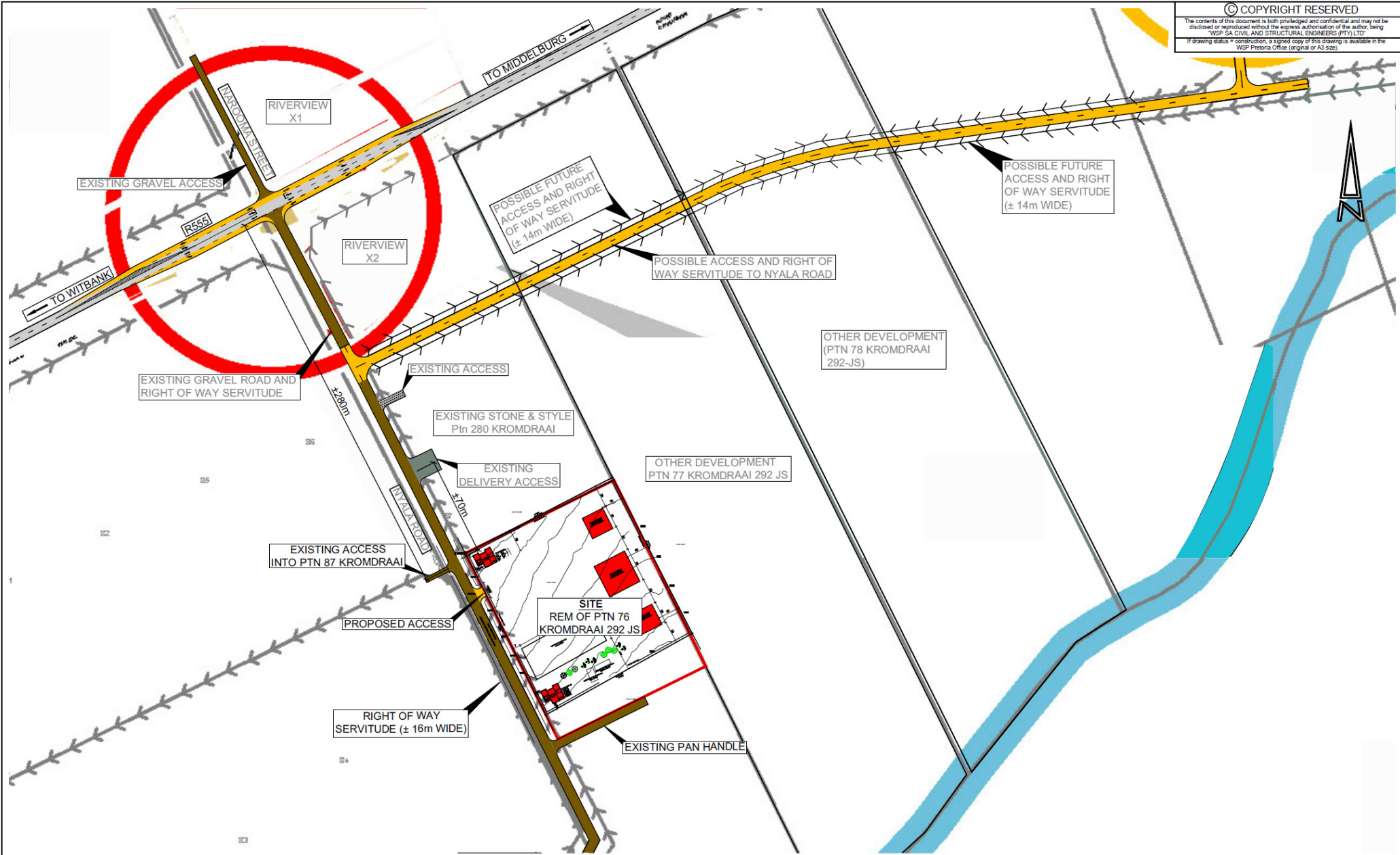


Figure 5.23: Proposed R555/Nyala Road intersection upgrades (taken from Kotze et. al., 2015b)



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 www.wspgroup.com

PROJECT:	PORTION 76 KROMDRAAI 292 JS		
TITLE:	SITE & PROPOSED ACCESSES		

SCALE:	1:2500	CHECKED:	E. D. KOTZE	APPROVED:	-
DESIGN:	-	DRAWN:	B. T. BLOXHAM	DATE:	2015/01/09
PROJECT No:	19531.R	DRAWING No:	19531.R/AL/01	REV:	A
© WSP Group plc					

According to Kotze *et. al.* (2015b), the proposed upgrade was previously put on the table for another development on Portion 77 of the farm Kromdraai 292 JS. The development has however, not yet commenced, meaning that the R555 provincial road has not yet been upgraded.

Kotze *et. al.* (2015b) recommended that there is co-ordination between the two developers in terms of timing, implementation, costs, etc.

5.16.6 Public transport

In terms of Section 29 of the National Land Transport Transition Act 22 of 2000, a public transport assessment must be included as part of the traffic impact assessment.

According to Kotze *et. al.* (2015b), the proposed development is close to a public transport route along the R555 provincial road. In addition, it is expected that some of the employees will have their own transport to work. There is sufficient turning space for a medium sized bus and minibus taxis on site. It is not considered necessary for the developer to contribute towards the provision of public transport facilities.

5.17 Sense of place

The site is situated within an area earmarked for mixed land uses as well as an activity spine (Figure 5.24) in terms of the eMalahleni Local Municipality Spatial Development Framework (SDF; 2013/2014).

An activity spine is defined as follows in terms of the SDF (2013/2014):

"....a metropolitan or urban linear zone of intense mixed land use development. The corridor may contain major transport routes such as passenger railway lines and freeways or major arterials in various forms including 'one way super streets'. It is preferable that if railways or public transport interchanges are to be developed they should be central to the corridor".

The Nkangala Spatial Development Framework also emphasizes the importance of the R555 provincial road between eMalahleni and Middelburg as a development corridor. The following is indicated:

"....posing the opportunity for consolidation and enhancement of the economic opportunities in the form of a local development corridor."

The property located on the northern boundary of the site (Portion 280; Stone and Style) is used for brick-making and residential purposes. Portion 78 (located east of the site) is also intended for industrial purposes.

An approved (but not yet developed) township establishment, Riverview Extension 1 & 2 (Portions 280 and 157), which is zoned for "Industrial 1" land uses, is located north of the site adjacent to the R555 provincial road (Figure 5.23).

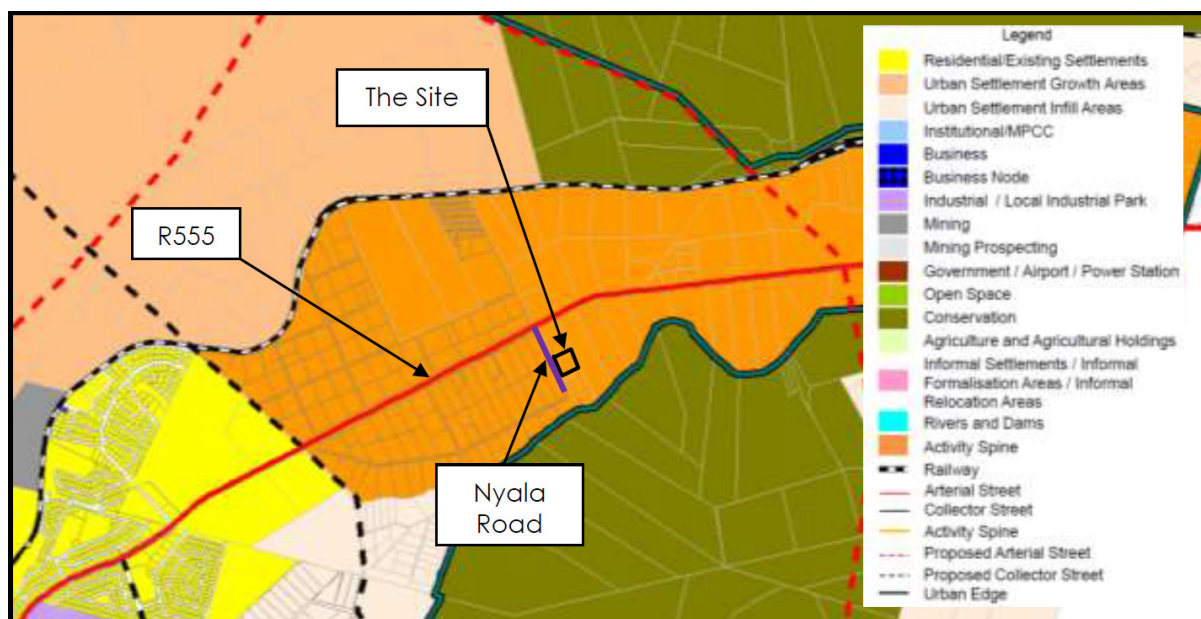


Figure 5.24: Extract from the eMalahleni Local Municipality Spatial Development Framework (2013/2014).

The smallholdings towards the south and west are currently used for residential purposes. Industrial activities (truck parking, etc.) are taking place on Portion 86 (Jackaroo Agricultural Holdings).

The proposed site is therefore surrounded by a mixed land use character. The proposed land use will be in line with the existing land use character as well as the land use proposed in the 2013/2014 ELM SDF.

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, 2014, was placed in the local newspaper, Witbank News, on Friday, 8 May 2015. A copy of the advert is provided in Appendix 8.

6.1.2 On-site advertising

Notices according to the Environmental Impact Assessment Regulations, 2014, were displayed at the following locations:

- On-site (against the palisade fence) adjacent to Nyala Road (A1; Figure 6.1-Photo 1);
- At the Nyala Road/R555 provincial road intersection (A3; Figure 6.1-Photo 2);
- On the notice board at the eMalahleni (Witbank) Public Library (A3; Figure 6.1-Photo 3);
- A copy of the notice was also loaded onto the company website: www.cleanstreams.co.za.

A copy of the notice is provided in Appendix 8.

It should be noted that the A1 notice is 594 mm x 841 mm and the A3 notices 416mm x 295mm (A3) in size.

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

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.cleanstreams.co.za) from Friday, 8 May 2015:

- ◆ Copy of the notice;
- ◆ Background Information Document (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.



Figure 6.1: A view of the notices displayed on site.

6.2 Directly affected landowner/user

The proposed development site is located on Portion 76 of the farm Kromdraai 292 JS (Figure 5.1) which is registered to Emalahleni Storage (Pty) Ltd. The property is in the process of being transferred to Labour Secretaries cc., which belongs to the applicant (see Draft Deed of Transfer; Appendix 1).

No landowners or users will be directly impacted by the proposed development.

6.3 Identified local authorities/government departments and stakeholders

Table 6.1 provides an indication to which local authorities/government departments and stakeholders Background Information Documents (BIDs; Appendix 9) were forwarded in order to inform them of the proposed project and to obtain their issues of concern.

Table 6.1: Identified local authorities/government departments and stakeholders who received BIDs

AUTHORITY/ STAKEHOLDER	CONTACT PERSON	CORRESPONDENCE SENT	COMMENTS
Department of Agriculture, Forestry and Fisheries (DAFF)	F. Mashabela	Email (dated: 15 May 2015; Appendix 9) with BID forwarded.	None.
Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA) - Directorate: Land Use and Soil Management – Ermelo	J. Venter	Email (dated: 15 May 2015; Appendix 9) with BID forwarded.	Yes. See Section 6.3.4
Department of Co-operative Governance and Traditional Affairs (COGTA)	M. Loock	Email (dated: 15 May 2015; Appendix 9) with BID forwarded.	None.
Department of Mineral Resources	M. Mokonyane	Email (dated: 15 May 2015; Appendix 9) with BID forwarded.	None.
Department of Rural Development and Land Reform (Commission on Restitution of Land Rights)	N.D. Nkambule; G.N. Mathonsi; T. Mkhabela	Email (dated: 18 May 2015; Appendix 9) requesting if any land claims registered against property.	Yes. See Section 6.3.3
Department of Water and Sanitation (DWS)	B. Mnguni	Email (dated: 15 May 2015; Appendix 9) with BID forwarded.	None
eMalahleni Local Municipality (Section Environmental and Waste Management)	E. Nkabinde	Email (dated: 15 May 2015; Appendix 9) with BID forwarded.	None.
eMalahleni Local Municipality (Section Town Planning)	M. Makgalemele	Email (dated: 15 May 2015; Appendix 9) with BID forwarded.	None.
Eskom Distribution (Land & Rights)	M. Moloko	Email (dated: 15 May 2015; Appendix 9) with BID forwarded.	Yes. See Section 6.3.1
Eskom Transmission	E. Lennox, L. Motsisi, N. Maake	Email (dated: 15 May 2015; Appendix 9) with BID forwarded.	Yes. See Section 6.3.2
Mpumalanga Agriculture	H. Laas	Email (dated: 15 May 2015; Appendix 9) with BID forwarded.	None.
Mpumalanga Tourism and Parks Agency (MTPA) – Land Advisory Unit	K. Narasoo	Email (dated: 15 May 2015; Appendix 9) with BID forwarded.	None.
Nkangala District Municipality	S. Links	Email (dated: 15 May 2015; Appendix 9) with	None.

AUTHORITY/ STAKEHOLDER	CONTACT PERSON	CORRESPONDENCE SENT	COMMENTS
		BID forwarded.	
South African National Roads Agency (SANRAL)	M. Yorke-Hart	Email (dated: 15 May 2015; Appendix 9) with BID forwarded.	None.
Sasol Gas	B. van den Heuvel	Email (dated: 15 May 2015; Appendix 9) with BID forwarded.	None.
South African Heritage Resources Agency (SAHRA)	J. Lavin (SAHRA website)	Loaded BID onto SAHRA website (print out from SAHRIS website dated: 15 May 2015; Appendix 9)	Yes. See Section 6.3.5
Telkom	J. Smit, T. Potgieter	Email (dated: 15 May 2015; Appendix 9) with BID forwarded.	None.
Trans African Concessions (TRAC)	R. Nkosi	Email (dated: 15 May 2015; Appendix 9) with BID forwarded.	None.
Transvaalse Landbou Unie	D. du Plessis	Email (dated: 15 May 2015; Appendix 9) with BID forwarded.	None.
Ward Councillor (Ward 20)	R. Cronje	Email (dated: 15 May 2015; Appendix 9) with BID forwarded.	None.
Sector 1 Kalbasfontein Kromdraai CPF	S. Botha	Email (dated: 15 May 2015; Appendix 9) with BID forwarded.	None.

6.3.1 Eskom Distribution (Land & Rights)

A letter was received from Eskom Distribution (Land & Rights) (dated: 21 May 2015; Ref: LD-INV/ET/TL/034/2015; Appendix 10) indicating that the proposed project will affect the Old Douglas/Uitkyk-Jackaroo 22kV distribution line (Figure 5.3).

Eskom indicated that there is an 11 meter building and tree restriction on either side of the centre line of the 22 kV powerline, which must be respected.

A number of other conditions were also specified by Eskom (see Appendix 10), which must be noted and adhered to by the applicant.

Eskom Distribution (T. Ludere) requested that Annexures D and E (Appendix 10) be completed by the applicant and returned to Eskom should the applicant accept the conditions.

Response:

The said Eskom powerline is located outside the site along the western boundary (Figure 5.3 and Photo 5.4). The proposed development will therefore not have a direct impact on the Eskom powerline, but could impact in terms of the 11 meter building and tree restriction.

The letter from Eskom Distribution was subsequently forwarded to the applicant. The applicant completed Annexures D and E. Clean Stream Environmental Services forwarded the signed documentation to T. Ludere as requested (e-mail dated: 6 October 2015; Appendix 10).

The applicant will adhere to Eskom's conditions during the construction and operational phases of the project.

6.3.2 Eskom Transmission

An e-mail was received from Eskom Transmission (dated: 11 June 2015; Appendix 10) indicating that Eskom Transmission will not be affected by the development.

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

A letter was received from the Commission on Restitution of Land Rights (dated: 26 May 2015; Appendix 10) indicating that a claim has been lodged against the Remaining Extent of Portion 76 of the farm Kromdraai 292 JS. The claim has not been gazette and is still being researched.

6.3.4 Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA) - Directorate: Land Use and Soil Management – Ermelo

Mr. J. Venter conducted an inspection of the proposed property on 23 June 2015 in order to determine if high potential agricultural land will be impacted. A copy of the client interaction form/site visit form is provided in Appendix 10. To date, no comment has been received.

6.3.5 South African Heritage Resources Agency (SAHRA)

The following comment (letter dated: 18 August 2015; Case ID: 7701; Appendix 10) was received from SAHRA:

In terms of the National Heritage Resources Act (NHRA), no 25 of 1999, heritage resources, including archaeological or palaeontological sites over 100 years old, graves older than 60 years, structures older than 60 years are protected. They may not be disturbed without a permit from the relevant heritage resources authority. This means that before such sites are disturbed by development it is incumbent on the developer (or mine) to ensure that a Heritage Impact Assessment is done. This must include the archaeological component (Phase 1) and any other applicable heritage components. Appropriate (Phase 2) mitigation, which involves recording, sampling and dating sites that are to be destroyed, must be done as required.

SAHRA will require the development from commissioning for a Palaeontological Desktop Assessment because the underlying palaeontological sensitivity of the proposed location has *Moderate fossiliferous rocks* (<http://www.sahra.org.za/sahris/map/palaeo>).

SAHRA Notification of Development comment

Before a Further Comment can be issued on this development SAHRA requires the following report to be submitted to the case:

- A field based HIA conducted by a suitably qualified professional archaeologist.
- A Desktop Palaeontological Assessment to be conducted by a suitably qualified professional palaeontologist.

Response:

Noted and the applicant informed of the need for a Heritage Impact Assessment and a Desktop Palaeontological Assessment.

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 7.

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

6.4.1 Stone & Style - S. Hoole van der Burgh (Figure 6.2)

Portion 278 of the farm Kromdraai 292 JS (located on the northern boundary of the site; Figure 6.2) is registered to Mr. S. Hoole van der Burgh. A brick making industry (Stone & Style) is operated from this property. The owners of the property also reside on site.

A background information document was hand delivered (2 June 2015) to Ms. A. Maritz (co-owner of property) in order to obtain their comments regarding the proposed development.

No written comments were received. However, Ms. Maritz raised the following verbal issues during the meeting:

- a. There is a shortage of groundwater in the area. People already have to truck water in. The proposed development could aggravate this situation.
- b. Possible impact of development of groundwater quality.
- c. Will worker accommodation be provided on site?

Response:

- a. *As indicated in Section 5.10, Geo Pollution Technologies (hereafter referred to as Gouws, 2015) was appointed to conduct a groundwater study to determine whether enough groundwater is available for the proposed development and whether the development will impact on the groundwater quantity of the area. According to Gouws (2015), sufficient water is available and the proposed development should not have a negative impact on groundwater quantity if the recommended abstraction rate is adhered to. Section 5.10 and Appendix 6 provide detailed information regarding the methodology followed and the results obtained.*
- b. *The development should not impact on the groundwater quality if the mitigation and management measures indicated in Section 8 (EMPr) of this report is adhered to.*
- c. *No worker accommodation will be provided on site as indicated in Section 3 and Figure 3.1.*

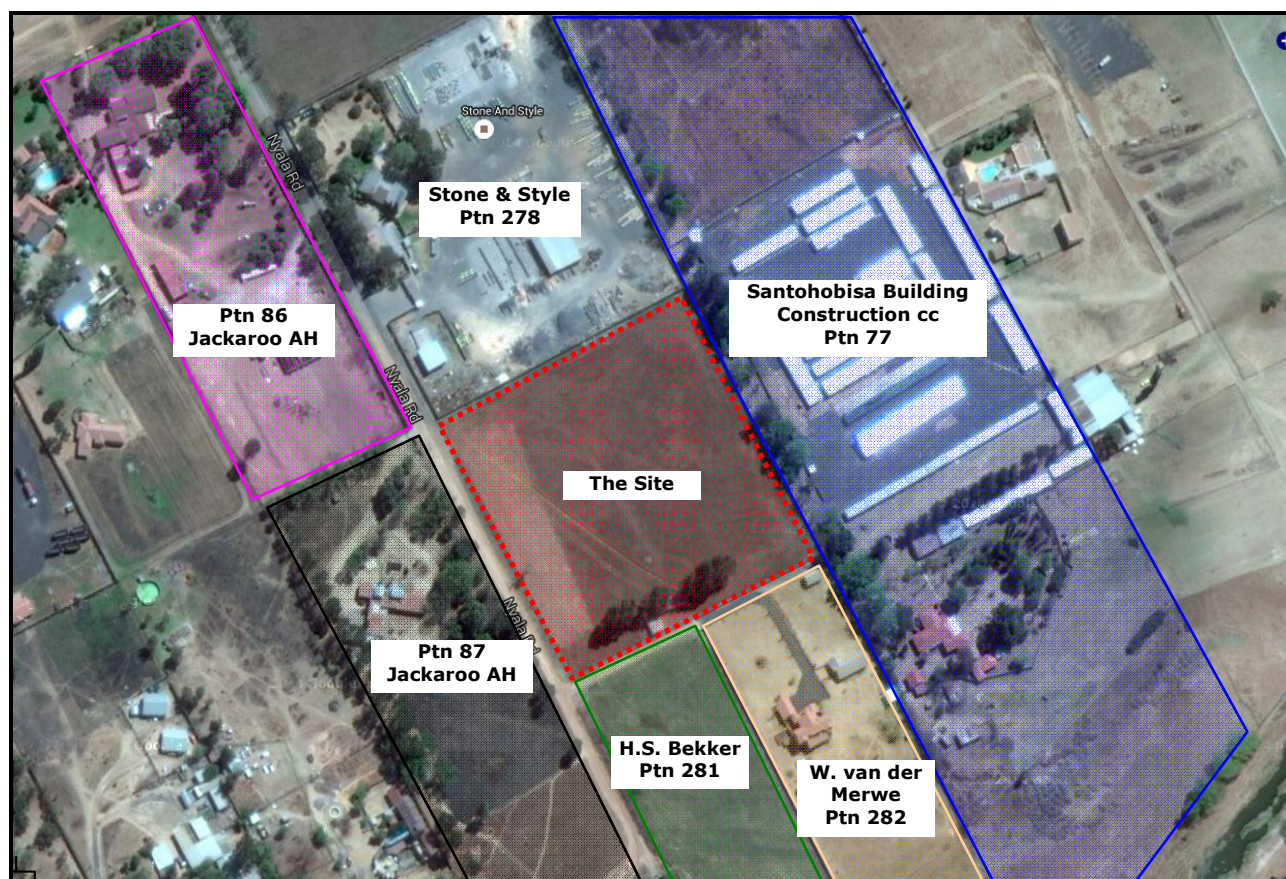


Figure 6.2 : Surrounding landowners

6.4.2 Santohobisa Building Construction cc (Figure 6.2)

Portion 77 of the farm Kromdraai 292 JS (located on the eastern boundary of the site; Figure 6.2) is registered to Santohobisa Building Construction cc.

Until recently, the property was used to provide contractor's accommodation. A number of containers (Figure 6.2) were turned into rooms and the overall facility can accommodate \pm 200 people. This activity was subsequently stopped since the property owner (Dudu) did not have the necessary approvals from the eMalahleni Local Municipality. According to the owner, she intends continuing the business as soon as the required approvals have been obtained.

A background information document was hand delivered to site and the owner (Dudu) was contacted telephonically in order to obtain her comments regarding the proposed development. **To date, no comment has been received.**

6.4.3 W. van der Merwe - Upfront Auto Electrical cc (Figure 6.2)

Portion 282 of the farm Kromdraai 292 JS (located on the southern boundary of the site; Figure 6.2) is registered to Upfront Auto Electrical cc.

A background information document was hand delivered (2 June 2015) to one of the owners, Mrs. K. van der Merwe. A completed comment sheet (dated: 2 June 2015; Appendix 10) was subsequently received indicating the following:

"We strongly reject the development as:
1. It will devaluate our R3.5 million property.

2. There is a major water problem in the area and the development will worsen the problem as everyone's boreholes run dry from time to time.
3. They will suck dry the underground water channels and the cost of new borehole and drilling is R 70 000.
4. Noise
5. Dust
6. Burglary
7. Peace disturbance."

Response:

1. *Noted. Mixed Land Use is proposed for the area as indicated in the ELM Spatial Development Framework 2013/2014 (Figure 5.22).*
2. *As indicated in Section 5.10, Geo Pollution Technologies (hereafter referred to as Gouws, 2015) was appointed to conduct a groundwater study to determine whether enough groundwater is available for the proposed development and whether the development will impact on the groundwater quantity of the area. According to Gouws (2015), sufficient water is available and the proposed development should not impact have a negative impact on groundwater quantity if the recommended abstraction rate is adhered to. Section 5.10 and Appendix 6 provide detailed information regarding the methodology followed and the results obtained.*
3. *See Point 2.*
4. *According to the applicant, the activities on site will not generate a lot of noise. The cement mixer will be fitted with a 5 kW electric motor and a forklift will be used to stockpile the product. The rest of the manufacturing process is manual. Mitigation measures to reduce the potential noise impact is provided in Section 8 (EMPr).*
5. *According to the applicant, a wet-cast production process will be used. In addition, dust covers will be installed where required. Internal roads and working aprons will be paved. Mitigation measures to reduce potential dust is provided in Section 8 (EMPr).*
6. *No worker accommodation will be provided on site as indicated in Section 3 and Figure 3.1. The entire site will be fenced and secured.*
7. *See Point 4.*

6.4.4 H.S. Bekker (Figure 6.2)

Portion 281 of the farm Kromdraai 292 JS (located on the southern boundary of the site; Figure 6.2) is registered to H.S. Bekker. The property is currently vacant. No contact details for the landowner could be obtained.

6.4.5 Portion 87 of Jackaroo Agricultural Holdings (Figure 6.2)

The registered owner of Portion 87 of Jackaroo Agricultural Holdings (located west of the site; Figure 6.2) is not listed in the WinDeed System.

A background information document was placed in the gate on 2 June 2015 (no persons were present on site) in order to inform the landowners/users of the proposed development. **To date, no comment has been received.**

6.4.6 Portion 86 of Jackaroo Agricultural Holdings (Figure 6.2)

The registered owner of Portion 86 of Jackaroo Agricultural Holdings (located west of the site; Figure 6.2) is not listed in the WinDeed System.

A background information document was placed in the gate on 2 June 2015 (no persons were present on site) in order to inform the landowners/users of the proposed development. **To date, no comment has been received.**

6.5 Department of Agriculture, Rural Development, Land and Environmental Affairs

The project was registered with the Department of Agriculture, Rural Development, Land and Environmental Affairs on 2 November 2015 (see cover letter and application dated: 2 November 2015; Appendix 1).

Clean Stream Environmental Services requested a date for a meeting and site visit.

6.6 Summary of issues of concern

Table 6.2 provides a summary of the issues of concern raised by the interested and affected parties as well as in which section of this report the issues are addressed.

Table 6.2: Summary of issues of concern raised by Government Departments, Stakeholders and I&APs

COMMENTS	ISSUE	ADDRESSED IN SECTION
Eskom Distribution	Old Douglas/Uitkyk-Jackaroo 22kV distribution line.	Sections 6.3.4 and 8
South African Heritage Resources Agency	A field based HIA to be conducted. A desktop PIA to be conducted.	Section 6.3.5
Stone & Style	Impact on groundwater quality and quantity	Sections 6.4.3 and 8
W. van der Merwe	Property value will decrease Impact on groundwater quantity Noise Dust Burglary Disturbance of peace	Section 6.4.3 Sections 6.4.3 and 8 Sections 6.4.3 and 8 Sections 6.4.3 and 8 Sections 6.4.3 and 8 Sections 6.4.3 and 8

6.7 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 Mineral Resources	S Mathavela
Department of Agriculture, Rural Development, Land and Environmental Affairs	The Director

INTERESTED AND AFFECTED PARTY LIST	
Organisation	Name
Department of Agriculture, Rural Development, Land and Environmental Affairs - Directorate: Land Use and Soil Management – Ermelo	J Venter
Department of Co-Operative Governance and Traditional Affairs	M Loock
Department of Rural Development and Land Reform	ND Nkambule
Department of Water and Sanitation – Bronkhorstspuit	B Mnguni
Other Organisations	
Eskom Distribution	T Ludere
Mpumalanga Agriculture	H Laas
Mpumalanga Tourism and Parks Agency	K Narasoo
South African National Roads Agency (SANRAL)	M Yorke-Hart
Sasol	B van den Heuvel
South African Heritage Resources Agency	Nokukhanya Khumalo
Telkom	J Smit T Potgieter
Trans African Concessions (TRAC)	R Nkosi
Transvaalse Landbou Unie	D du Plessis
Local Municipality and Municipal Councillor	
Councillor (Ward 20)	R Cronje
eMalahleni Local Municipality	E Nkabinde M Makgalemele
Nkangala District Municipality	S Links
Sector 1 Kalbasfontein Kromdraai CPF	S Botha
Surrounding landowners	
S Hoole van der Burgh (Stone & Style)	S Hoole van der Burgh A Maritz
Santohobisa Building Construction cc	Dudu
Upfront Auto Electrical cc	W van der Merwe

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 mostly office work and site surveys with regards to the design of the layout plan, the Basic Assessment Report and the specialist studies. It also involves obtaining the necessary authorisations for the said development.

Five (5) test pits were excavated and closed as part of the geotechnical study. The excavation of the test pits had an impact on small areas ($\pm 3\text{m} \times 2\text{m}$) of natural vegetation, soil and geology.

The applicant drilled a borehole on site and had an Eskom transformer installed, which also had some impact on the vegetation, soil and geology of the site.

No actual construction took place on site.

7.4 Construction phase

As indicated in Section 3.1 and Figure 5.1, the proposed lintel supplier business will be located on Portion 76 of the farm Kromdraai 292 JS, eMalahleni. The development will comprise of the following as indicated in Figure 3.1:

- Administration Office with 5 parking bays;
- Sales Office with 3 parking bays;
- Pre-mix factory for storage of and mixing of raw materials;
- Consumable store for the storage of machinery, etc.
- Brick fabrication plant for the production of lintels;
- Production yard;
- Concrete floor slab for the stacking of the finished product;
- Tool Store (conversion of existing building on site);
- Change Room (conversion of existing building on site);

The property is 2.24 ha in extent and currently vacant except for two dilapidated buildings and a borehole.

The construction phase would involve the following:

- clearing of vegetation and levelling of the site;
- excavation of the required foundations and service trenches (including the excavation of the two septic tanks);
- installation of the services (i.e. water supply, electrical connections and sewer infrastructure);
- laying of the required foundations for buildings and concrete floor slabs for the stacking of product;
- building of the outer structures and installation of the brick fabrication plant and pre-mix factory;
- installation of the required internal fittings and outfitting/conversion of the existing buildings;

- revegetation of the surrounding area impacted by the construction activities.

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

7.5 Operational phase

The operational phase would involve the following:

- The utilization of the site and buildings for the manufacturing and sale of lintel products.

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 Programme (EMPr) be compiled which specifically addresses this phase. This EMPr would have to address issues such as the removal of 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	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT OPERATIONAL PHASE	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)
TOPOGRAPHY	<ul style="list-style-type: none"> The site is fairly flat with a gentle slope in a south westerly direction towards the adjacent smallholding. In general, the construction activities (e.g. removal of vegetation, sloping of the site, construction of buildings, etc.) 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. 	SITE	LONG	DEFINITE	MEDIUM NEGATIVE	LOW NEGATIVE	<ul style="list-style-type: none"> Direct impact on topography will continue in terms of the presence of infrastructure, which in turn will impact upon the runoff from the site. 	SITE	LONG	DEFINITE	MEDIUM NEGATIVE	LOW NEGATIVE	<p>During decommissioning, the buildings and associated infrastructure will be demolished and removed from site. The site will be top soiled and shaped to conform to the original slope of the area, which will have a positive impact on the runoff from the site.</p>	SITE	LONG	DEFINITE	LOW POSITIVE	LOW POSITIVE
GEOLOGY	<ul style="list-style-type: none"> The site is underlain by sandstone and shale of the Loskop formation, with a diabase (dolerite) intrusion towards the east and north. The direct impact on geology will depend on the depth of the excavations required for the buildings and associated infrastructure (including septic tanks). The possible impact on the underlying geology cannot be mitigated. 	SITE	PERMANENT	DEFINITE	LOW NEGATIVE	LOW NEGATIVE	<ul style="list-style-type: none"> NONE. No further impact since no further construction would take place. 						<p>NONE. No further impact since no further construction would take place.</p>					
SOILS	<ul style="list-style-type: none"> During construction, the soil of an area of approximately 2ha will be directly impacted in terms of soil structure, nutritional and chemical values when the vegetation and topsoil are removed, the site is sloped and the buildings and associated infrastructure are constructed. The soil will also be impacted in terms of stockpiling of topsoil, subsoil, overburden and rocks. 	SITE	LONG	DEFINITE	MEDIUM NEGATIVE	LOW NEGATIVE	<ul style="list-style-type: none"> Direct impact on soil will continue i.t.o. soil structure, nutritional and chemical values and soil compaction. The various stockpiles will be removed and the stockpiling areas top soiled, levelled and rehabilitated/grassed on completion of the construction phase. This should have a positive impact on the soils during the operational phase of the project. 	SITE	LONG	HIGHLY PROBABLE	LOW NEUTRAL	LOW NEUTRAL	<p>The decommissioning activities will have an initial negative impact on the soil of the site in terms of disturbance (physical and biological properties). The removal of any polluted soil and proper rehabilitation of the site after decommissioning will however, have a positive impact on the soil.</p>	SITE	SHORT	PROBABLE	LOW NEUTRAL	LOW NEUTRAL
	<ul style="list-style-type: none"> Sediment transport and erosion may occur following the clearing of the site in preparation of construction. This may indirectly impact on the adjacent smallholding (Portion 282). The impact is however, expected to be minimal since the site is relatively flat. 	SITE	SHORT	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	<ul style="list-style-type: none"> Soil erosion could occur if proper storm water control measures are not implemented or measures provided are not maintained. This may indirectly impact on the adjacent smallholding (Portion 282). The impact is however, expected to be minimal since the site is relatively flat and stormwater will be dispersed on the said property. 	SITE	LONG	PROBABLE	LOW NEGATIVE	LOW NEGATIVE	<p>Soil erosion could occur if the site is not revegetated properly after decommissioning.</p>	SITE	SHORT	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE
	<p>Soil pollution may occur if:</p> <ul style="list-style-type: none"> the construction vehicles are not maintained/repared resulting in oil leaks and fuel spills; waste management measures are not implemented, proper ablution and sanitation facilities are not provided for the site workers to use on site. 	SITE	SHORT	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	<p>Soil pollution could occur if:</p> <ul style="list-style-type: none"> waste management measures are not implemented; the designated areas are not used for the mixing of concrete and making of the lintels; the sewer infrastructure is not properly installed and maintained or does not have sufficient capacity. 	SITE	LONG	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	<p>Soil pollution may occur if:</p> <ul style="list-style-type: none"> The vehicles are not maintained/repared resulting in oil leaks and fuel spills; Waste management measures are not implemented; Proper sanitation and ablution facilities are not provided for use by site workers. 	SITE	LONG	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE
	<ul style="list-style-type: none"> The site is classified as having high potential arable land (AGIS Comprehensive Atlas), which will be impacted as a result of construction. However, the site has not been cultivated for many years and no agricultural activities are taking place in the area. The surrounding area is currently used for residential and industrial activities. 	SITE	SHORT	HIGHLY PROBABLE	LOW NEGATIVE	LOW NEGATIVE	<p>NONE. No further construction will take place.</p>						<ul style="list-style-type: none"> The removal of any polluted soil and proper rehabilitation of the site after decommissioning will however, have a positive impact on the soil. 	SITE	LONG	PROBABLE	MEDIUM POSITIVE	MEDIUM POSITIVE
	<ul style="list-style-type: none"> In terms of excavation characteristics, Van der Merwe (2015) anticipates some excavation problems up to a depth of 1.5m. However, no shallow rock, rocky outcrop or core stones were encountered which may require blasting for service trenches. 	SITE	SHORT	HIGHLY PROBABLE	LOW NEGATIVE	LOW NEGATIVE	<p>NONE. No further construction will take place.</p>						<p>NONE. It is not anticipated that new trenches/foundations will be excavated.</p>					



ENVIRONMENTAL FEATURE(S)	PREDICTED IMPACT CONSTRUCTION PHASE					PREDICTED IMPACT OPERATIONAL PHASE					PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE				
	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)
SOILS	SITE	SHORT	DEFINITE	MEDIUM NEGATIVE	LOW NEGATIVE	SITE	LONG	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE					
LAND USE / SENSE OF PLACE	<ul style="list-style-type: none"> According to Van der Merwe (2015), the site does contain problematic material (e.g. moderately collapsible and compressible clayey silty sand, medium expansive clay and permeable material), which could impact on the services and structures. In addition, rising damp and ponding of water within the clayey sand could impact on structures. Mitigation measures would have to be implemented. 					<ul style="list-style-type: none"> The services and structures will continue to be impacted if the mitigation measures recommended by Van der Merwe (2015) were not implemented during the construction phase. 					NONE. The existing buildings will be decommissioned.				
	<ul style="list-style-type: none"> The construction activities should not impact on the general sense of place, since the proposed site is surrounded by a mixed land use character. The site is situated within an area earmarked for mixed land uses as well as an activity spine in terms of the eMalahleni Local Municipality Spatial Development Framework. The property located on the northern boundary of the site is used for brick-making and residential purposes. Portion 78 (located east of the site) is also intended for industrial purposes as well as Portions 280 and 157 (north of site). The properties on the southern and western boundaries of the site are however, used for residential purposes and could be impacted in terms of sense of place. 					<ul style="list-style-type: none"> The operational activities should not impact on the general sense of place, since the proposed site is surrounded by a mixed land use character. The site is situated within an area earmarked for mixed land uses as well as an activity spine in terms of the eMalahleni Local Municipality Spatial Development Framework. The property located on the northern boundary of the site is used for brick-making and residential purposes. Portion 78 (located east of the site) is also intended for industrial purposes as well as Portions 280 and 157 (north of site). The properties on the southern and western boundaries of the site are however, used for residential purposes and could be impacted in terms of sense of place. 					<ul style="list-style-type: none"> The decommissioning of the buildings and associated infrastructure 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. 				
NATURAL VEGETATION/ ANIMAL LIFE	<ul style="list-style-type: none"> The site is located in the Rand Highveld Grassland, which has been classified as Endangered in Mucina et. al. (2006) and Vulnerable in the National List of Ecosystems that are threatened and in need of protection (GN 1002 of 2011). In terms of the Mpumalanga Biodiversity Sector Plan (MBSP, 2013)), the site falls within the category 'Heavily Modified'. The development of the site will impact directly on 2 ha of natural (secondary) grassland vegetation. 					<ul style="list-style-type: none"> No further direct impact on vegetation since no further construction activities will take place. 					NONE. No further impact on vegetation since no further construction activities will take place.				
	<ul style="list-style-type: none"> Alien plants could be introduced into areas disturbed by construction, which are not rehabilitated. 					<ul style="list-style-type: none"> Alien plants could spread to adjacent properties should it be planted for landscaping purposes. 					<ul style="list-style-type: none"> Alien plants could be introduced into areas rehabilitated as part of the decommissioning phase. This could impact on the vegetation of the surrounding area. 				
	<ul style="list-style-type: none"> No plant species of conservation concern were noted on site. It is not anticipated that plant species of conservation concern or protected plants will be impacted by the construction activities due to the developed nature of the surrounding area and past disturbances on site. 					<ul style="list-style-type: none"> No further direct impact on vegetation since no vegetation will be removed during the operational phase. 					<ul style="list-style-type: none"> No further direct impact on vegetation since no vegetation will be removed during the operational phase. 				

ENVIRONMENTAL FEATURE(S)	PREDICTED IMPACT CONSTRUCTION PHASE	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT OPERATIONAL PHASE	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE						
													EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)		
NATURAL VEGETATION/ ANIMAL LIFE	<ul style="list-style-type: none"> It is not anticipated that the development will have a significant impact on animal life since the surrounding area is developed and the site is fenced off. Natural vegetation is however present on site, which could provide habitat for small mammals, reptiles, frogs, birds, etc. The construction activities could impact on any animal life (e.g. small mammals/birds) present on site during construction. 	SITE	LONG	PROBABLE	LOW NEGATIVE	LOW NEGATIVE	<ul style="list-style-type: none"> No further direct impact on animal life expected since the area will be fenced and all operational activities will take place within this fenced off area. 							No further direct impact on animal life expected since the area will be fenced and all operational activities will take place within this fenced off area.					
SURFACE WATER/SENSITIVE LANDSCAPES	<ul style="list-style-type: none"> The construction activities will not impact directly on any surface water environments (wetlands, river, stream). The closest surface water environment is the Olifants River, located approximately 250 m south of the site. Other properties are located between the Olifants River and the said site. In general, the removal of the vegetation and the earthworks required during the construction phase would result in changed runoff patterns, which could result in soil erosion if proper storm water control measures are not implemented. This could impact on the adjacent smallholding (Portion 282). 	SITE	SHORT	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	<ul style="list-style-type: none"> No direct impact expected since no surface water environments (e.g. wetlands/ stream/rivers) are present on site. The buildings and associated infrastructure will continue to impact on the surface water runoff of the site. If not well managed, increased runoff could impact on the adjacent smallholding (Portion 282). 	SITE	LONG	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE		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 would result in clean runoff from the site.	SITE	LONG	PROBABLE	LOW POSITIVE	LOW POSITIVE
	<p>Surface water runoff may be polluted if:</p> <ul style="list-style-type: none"> the construction vehicles are not maintained/repared resulting in oil leaks and fuel spills; waste management measures are not implemented, proper ablution and sanitation facilities are not provided for the site workers to use on site. 	SITE	SHORT	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	<ul style="list-style-type: none"> Indirect pollution of surface water runoff could take place if: <ul style="list-style-type: none"> the sewage system does not have sufficient capacity and is not maintained; proper waste management measures are not implemented; runoff water contaminated with oil, cement, etc. is not contained on site and allowed to flow onto the adjacent property (Portion 282). 	SITE	LONG	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE		Surface water runoff may be polluted if the heavy vehicles are not maintained/repared resulting in oil leaks and fuel spills and if waste management measures are not implemented.	SITE	SHORT	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE
GROUNDWATER	<ul style="list-style-type: none"> Groundwater may be polluted if the construction vehicles are not maintained/repared resulting in oil leaks and fuel spills and if waste management measures are not implemented. However, the shallow weathered aquifer is located approximately 10 mbgl, significantly reducing the risk of groundwater pollution. No wetlands, streams, etc. are present on site. According to Gouws (2015), the aquifer vulnerability is classified as 'Medium', meaning that natural factors provide some protection to shield groundwater from contaminating activities. 	SITE	SHORT	IMPROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	<ul style="list-style-type: none"> Indirect pollution of groundwater could take place if: <ul style="list-style-type: none"> the sewage system does not have sufficient capacity and is not maintained; proper waste management measures are not implemented; runoff water containing cement, oil etc. is not contained. However, the shallow weathered aquifer is located approximately 10 mbgl, significantly reducing the risk of groundwater pollution. No wetlands, streams, etc. are present on site. According to Gouws (2015), the aquifer vulnerability is classified as 'Medium', meaning that natural factors provide some protection to shield groundwater from contaminating activities. 	SITE	LONG	IMPROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE		Groundwater may be polluted if the heavy vehicles are not maintained/repared resulting in oil leaks and fuel spills and if waste management measures are not implemented.	SITE	SHORT	IMPROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE



ENVIRONMENTAL FEATURE(S)	PREDICTED IMPACT CONSTRUCTION PHASE					PREDICTED IMPACT OPERATIONAL PHASE					PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE				
	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)
GROUNDWATER	<ul style="list-style-type: none"> NONE. According to Gouws (2015), the groundwater quality in the area is generally of good quality, except for elevated Calcium concentrations. The Calcium in the groundwater should not cause any issues during construction since heating elements will not be utilized. 					<ul style="list-style-type: none"> According to Gouws (2015), the groundwater quality in the area is generally of good quality, except for elevated Calcium concentrations. The elevated Calcium may cause scaling problems in appliances using heating elements and plumbing that transports hot water. 					<p>NONE. The decommissioning activities should not be impacted by the groundwater quality (i.e. elevated Calcium concentrations).</p>				
	<ul style="list-style-type: none"> According to Gouws (2015), the abstraction of groundwater for the construction activities could impact on the groundwater quantity and result in a lower groundwater level. This could impact on the water supply of the site and surrounding landowners/users. The impact would however, depend on the volume of water abstracted. No impact is expected if the groundwater is abstracted at a sustainable rate as recommended by Gouws (2015). 					<ul style="list-style-type: none"> According to Gouws (2015), the abstraction of groundwater for the operational activities could impact on the groundwater quantity and result in a lower groundwater level. This could impact on the water supply of the site and surrounding landowners/users. The impact would however, depend on the volume of water abstracted. No impact is expected if the groundwater is abstracted at a sustainable rate as recommended by Gouws (2015). 					<p>The abstraction of groundwater for the decommissioning activities (e.g. dust suppression) could impact on the groundwater of the site if this is not managed. The impact would depend on the volume of water abstracted.</p> <p>No impact is expected if the groundwater is abstracted at a sustainable rate as recommended by Gouws (2015).</p>				
SITES OF ARCHAEOLOGICAL/CULTURAL INTEREST	<p>NONE. No sites of archaeological/cultural interest are known to be present on site.</p>					<p>NONE. No sites of archaeological/cultural interest are known to be present on site.</p>					<p>NONE. No sites of archaeological/cultural interest are known to be present on site.</p>				
	<ul style="list-style-type: none"> The site is underlain by sandstone and shale of the Loskop Formation, which has a 'Moderate' palaeontological sensitivity. The construction activities could thus impact on the palaeontology of the area. Any impact on the palaeontology would depend on the depth of the fossil bearing formation and the depth of the foundations/trenches. 					<p>NONE. The operational activities will have no direct or indirect impact on the palaeontology of the site as no further construction will take place.</p>					<p>NONE. The decommissioning activities will have no direct or indirect impact on the palaeontology of the site as no further construction will take place.</p>				
AIR QUALITY	<ul style="list-style-type: none"> Dust generation and vehicle emissions due to construction activities and use of heavy machinery could impact on site workers and the people residing on the adjacent properties. The extent of the impact would depend on the time of year, wind direction and velocity. The air quality of the site and surroundings could be impacted in terms of odours if: <ul style="list-style-type: none"> the chemical toilets used during construction are not maintained; proper waste management measures are not implemented. 					<ul style="list-style-type: none"> The air quality of the site and directly adjacent properties could be impacted upon by dust from the cement silo and the concrete mixer as well as dust and vehicle emissions from trucks (delivering material or collecting product) and the front-end loader. As indicated in Figure 5.2c, the area is characterized by easterly and northerly winds (i.e. the winds mostly come from an easterly and northerly direction and blows towards the west and south) Looking at the dominant wind direction, the properties on the southern and western boundaries could be impacted if mitigation measures are not implemented. The extent of the impact would depend on the time of year, wind direction and velocity. The air quality of the site and surroundings could be impacted in terms of odours if: <ul style="list-style-type: none"> the sewer system does not have capacity and is not maintained; proper waste management measures are not implemented. 					<p>Dust generation and vehicle emissions due to decommissioning activities and use of heavy machinery could impact on site workers and the adjacent land users.</p> <p>The extent of the impact would depend on the time of year, wind direction and velocity.</p>				



ENVIRONMENTAL FEATURE(S)	PREDICTED IMPACT CONSTRUCTION PHASE	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT OPERATIONAL PHASE	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE					
													EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	
VISUAL	<ul style="list-style-type: none"> A wall is present between the site and the properties located on the northern and eastern boundaries and the one property on the southern boundary (Portion 282). The site is thus not visible from these properties and vice versa. The western boundary is enclosed with palisade fencing. The construction activities will thus be highly visible from Nyala Road, the property located on the western boundary and the vacant land on the southern boundary. The site should thus be kept neat and tidy during the construction phase. 	SITE	SHORT	DEFINITE	MEDIUM NEGATIVE	LOW NEGATIVE	<ul style="list-style-type: none"> A wall is present between the site and the properties located on the northern and eastern boundaries and the one property on the southern boundary (Portion 282). The site is thus not visible from these properties and vice versa. The western boundary is enclosed with palisade fencing. The operational activities will thus be highly visible from Nyala Road, the property located on the western boundary and the vacant land on the southern boundary. The site should thus be kept neat and tidy during the operational phase. 	SITE	SHORT	DEFINITE	MEDIUM NEGATIVE	LOW NEGATIVE	<p>The site may be totally enclosed at the time of decommissioning, which would screen the decommissioning activities from the adjacent landowners/users and Nyala Road.</p> <p>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. If the site is rehabilitated properly it could have a positive impact in terms of visual aspects, depending on whether the site is visible from the surrounding area at that time.</p>	SITE	LONG	PROBABLE	LOW POSITIVE	LOW POSITIVE
NOISE	<ul style="list-style-type: none"> In general, the ambient noise level of the site is relatively low since the site is located on the outskirts of town and away (280m) from the R555 provincial road. The major contributing factor to the ambient noise level of the site would be as a result of the adjacent brick-making business, residential activities on the surrounding properties and traffic on Nyala Road and the R555 provincial road. Heavy machinery used during the construction phase will contribute to increased ambient noise levels in the area, which could impact on the construction workers and the adjacent land users. The impact would however, be a short term impact. 	SITE	SHORT	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	<ul style="list-style-type: none"> Operational noise would be created by the site workers, the cement mixer, stacking of lintels, the forklift and other vehicles, power tools (e.g. grinders used to cut the lintels) and trucks driving in Nyala Road. The operational noise could impact on on-site workers and the adjacent land users. However, the noise levels in the area are already impacted by activities associated with the adjacent brick-making business. 	SITE	LONG	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	<p>In general, the use of heavy machinery for decommissioning activities would impact on the surrounding area in terms of noise.</p>	SITE	SHORT	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE
TRAFFIC	<ul style="list-style-type: none"> 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 local road network (i.e. the R555 provincial road and Nyala Road). The deliveries would however, not occur on a continuous basis. 	SITE	SHORT	PROBABLE	LOW NEGATIVE	LOW NEGATIVE	<ul style="list-style-type: none"> The proposed activity will lead to an increase in traffic (transport trucks and employee vehicles) along the local road network (i.e. R555 provincial road and Nyala Road). According to Kotze <i>et. al.</i> (2015b), the proposed development would generate 126 combined trips during the weekday AM and PM peak traffic. Traffic flow at the R555/Nyala Road intersection would be impacted if the intersection is not upgraded. 	LOCAL	LONG	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	<p>Building rubble and other waste would have to be removed from site. This could lead to a slight increase in traffic on the road network.</p> <p>Impact on traffic after decommissioning will however, depend on the intended end land use.</p>	SITE	SHORT	PROBABLE	LOW NEGATIVE	LOW NEGATIVE
INTERESTED AND AFFECTED PARTIES	<ul style="list-style-type: none"> 10 job opportunities would be provided during the construction phase. 	SITE	SHORT	DEFINITE	MEDIUM POSITIVE	MEDIUM POSITIVE	<ul style="list-style-type: none"> Between 50 and 60 job opportunities would be provided during the operational phase. 	SITE	LONG	DEFINITE	MEDIUM POSITIVE	MEDIUM POSITIVE	<p>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 as well as the intended end land use.</p>	SITE	LONG	HIGHLY PROBABLE	LOW NEUTRAL	LOW NEUTRAL
	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> The employees working on site could be directly impacted upon if the necessary safety and occupational health measures are not adhered to. 	SITE	LONG	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE		<p>HIGHLY PROBABLE</p>	LOW NEUTRAL	LOW NEUTRAL		

ENVIRONMENTAL FEATURE(S)	PREDICTED IMPACT CONSTRUCTION PHASE	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT OPERATIONAL PHASE	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)	PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE	EXTENT	DURATION	PROBABILITY	SIGNIFICANCE (PRE-MITIGATION)	SIGNIFICANCE (POST MITIGATION)
INTERESTED AND AFFECTED PARTIES	NONE.						<ul style="list-style-type: none"> The proposed development would have a positive impact in terms of the construction industry in eMalahleni/Middelburg (i.e. supporting the local economy and making the products easily available to contractors and developers). 	REGIONAL	LONG	DEFINITE	MEDIUM POSITIVE	MEDIUM POSITIVE	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 as well as the intended end land use.	SITE	LONG	HIGHLY PROBABLE	LOW NEUTRAL	LOW NEUTRAL
	<ul style="list-style-type: none"> Eskom powerlines are located outside the site along the western boundary. Eskom and its clients could be impacted if the powerlines are damaged in any way by the construction and the stipulated conditions are not adhered to. 	LOCAL	SHORT	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	<ul style="list-style-type: none"> Eskom and its clients could be impacted if the powerlines are damaged in any way during the operational phase and the stipulated conditions are not adhered to. 	LOCAL	SHORT	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE						
	<ul style="list-style-type: none"> According to Gouws (2015), the abstraction of groundwater for the construction activities could impact on the groundwater quantity and result in a lower groundwater level. This could impact on the water supply of the surrounding landowners/users. The impact would however, depend on the volume of water abstracted. 	SITE	SHORT	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	<ul style="list-style-type: none"> According to Gouws (2015), the abstraction of groundwater for the operational activities could impact on the groundwater quantity and result in a lower groundwater level. This could impact on the water supply of the surrounding landowners/users. The impact would however, depend on the volume of water abstracted. According to Gouws (2015), sufficient water is available for the development. 	SITE	LONG	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE						
	<ul style="list-style-type: none"> Other impacts in terms of the natural environment, noise, visual, traffic, etc. are indicated in the above-mentioned sections. 						<ul style="list-style-type: none"> Other impacts in terms of the natural environment, noise, visual, traffic, etc. are indicated in the above-mentioned sections. 											

7.8 'No project' impacts

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

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

- The applicant would have to investigate alternative sites for the proposed lintel supplier business;
- The applicant would have to discard the business expansion plans;
- The applicant would have to investigate other land uses for the site;
- The applicant would have to sell the property;
- The proposed project would also create job opportunities (construction phase: 10 employees; operational phase: 50 - 60 employees), which would be lost if the project does not go ahead.

7.9 Cumulative impacts

Primarily, the only impacts that could have a cumulative impact on the environment are in terms of soil pollution, surface water pollution, groundwater (quality and quantity) and electricity.

The development will obtain electricity from Eskom and could impact on the already strained infrastructure.

If management measures are not in place to deal with waste, sewage and surface water runoff from the development, it could lead to soil, surface water and groundwater pollution, which over time could have a cumulative impact on these environments. It should however, be noted that no natural surface water environments are located near the site. The closest surface water environment is the Olifants River, which is located approximately 250m south of the site. In addition, the shallow aquifer is located approximately 10 mbgl.

The applicant intends to utilize borehole water for the manufacturing process and for domestic purposes due to the lack of municipal services in the area. The proposed water use could cumulatively impact on the groundwater regime if the recommendations in terms of sustainable abstraction (Gouws, 2015) are not adhered to. This could impact on surrounding landowners, depending on the volume of groundwater abstracted. The abstraction rate would have to be managed as indicated in Section 8 of this report.

The proposed development would add to the cumulative impact of traffic on the existing road network (i.e. R555 provincial road and Nyala Road). The R555/Nyala Road intersection must be upgraded as proposed by Kotze *et. al.* (2015b) in order to prevent a potential impact on the general road user.

The lintel manufacturing business, together with the existing industries (e.g. Stone & Style) could have a cumulative impact on the surrounding area in terms of dust and noise if mitigation measures are not implemented.

The proposed development would be beneficial to the local economy and will provide much needed job opportunities.

8. ENVIRONMENTAL MANAGEMENT PROGRAMME

8.1 Definition and objectives

The Environmental Management Programme (EMPr) was compiled in accordance with Appendix 4 of the Environmental Impact Assessment (EIA) Regulations, 2014 as well as the Western Cape Guideline for Environmental Management Plans (Lochner, 2005).

According to the Western Cape Guideline, an Environmental Management Programme (EMPr) can be defined as:

An environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented; and that the positive benefits of the projects are enhanced.

According to the EIA Regulations, 2014, an EMPr must include-

- (d) A description of the impact management objectives, including management statements, identifying the impacts and risks that need to be avoided, managed or mitigated as identified through the environmental impact assessment process for all phases of the development including -*
- (i) planning and design;*
 - (ii) pre-construction and construction activities;*
 - (iii) operation or undertaking of the activity;*
 - (iv) rehabilitation of the environment; and*
 - (v) closure, where relevant.*

This section therefore 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).

8.2 Contact details

An EMPr must include -

- (a) details of-*
- (i) the EAP who prepared the environmental management programme; and*
 - (ii) the expertise of that person to prepare an environmental management programme, including a curriculum vitae.*

The contact details and expertise of the environmental consultant are provided in Section 2 of this report.

The applicant will be responsible for the implementation of the EMPr. The contact details are provided in Section 2.

8.3 Description of the proposed project

An EMPr must provide -

- (b) a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description.
- (c) a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers.

A detailed description of the proposed development and aspects covered by the EMPr is provided in Section 3 of this report.

Section 5 provides a description of the biophysical environment of the site.

As indicated in Section 5, no sensitive environments (wetlands, streams, rivers) are present on site. The Olifants River is located approximately 250m south of the site as indicated in Figure 8.1.



Figure 8.1: Sensitive landscapes

8.4 Phases of the development and timeframe

8.4.1 Planning and design phase and pre-construction activities

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

Five (5) test pits were excavated and closed as part of the geotechnical study. The excavation of the test pits had an impact on small areas ($\pm 3\text{m} \times 2\text{m}$) of natural vegetation, soil and geology.

The applicant drilled a borehole on site and had an Eskom transformer installed, which also had some impact on the vegetation, soil and geology of the site.

No actual work (construction or pre-construction activities) took place on site. Therefore, no mitigation measures need to be implemented.

8.4.2 Construction phase

As indicated in Section 3.1 and Figure 5.1, the proposed lintel supplier business will be located on Portion 76 of the farm Kromdraai 292 JS, which belongs to the applicant.

The construction phase would involve the following:

- clearing of vegetation and levelling of the site;
- excavation of the required foundations and service trenches (including the excavation of the two septic tanks);
- installation of the services (i.e. water supply, electrical connections and sewer infrastructure);
- laying of the required foundations for buildings and concrete floor slabs for the stacking of product;
- building of the outer structures and installation of the brick fabrication plant and pre-mix factory;
- installation of the required internal fittings and outfitting/conversion of the existing buildings;
- revegetation of the surrounding area impacted by the construction activities.

Section 7.7 provides further details with regards to potential impacts identified. Mitigation and management measures are indicated in Section 8.5.

Construction timeframe:

6 – 12 months

8.4.3 Operational phase

The operational phase would involve the utilization of the site and buildings for the manufacturing and sale of lintel products.

Section 7.7 provides further details with regards to potential impacts identified. Mitigation and management measures are indicated in Section 8.5.

Operational timeframe:

Unknown.

8.4.4 Decommissioning and rehabilitation phase

This phase would involve the decommissioning of the buildings and infrastructure already constructed on site at that particular date, if ever required. This phase will not be discussed in detail. It is recommended that at the time of decommissioning, a specific Environmental Management Programme (EMPr) be compiled which specifically addresses this phase. This EMPr would have to address issues such as the removal of building rubble, ripping of the soil, the sowing of seed and the maintenance of the vegetation until it is established. Soil conservation measures would also have to be implemented.

8.5 Mitigation and management measures to be implemented

An EMPr must include -

(f) a description of proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (d) and (e) will be achieved, and must, where applicable, include actions to -

- (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;
- (ii) comply with any prescribed environmental management standards or practices;
- (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and
- (iv) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable.

8.5.1 Construction site office

Impact management objective:

- 1) To ensure that an appropriate site is selected for the construction site office and that the site office is managed in an environmentally responsible manner with the least impact on the natural environment and site workers.

Mitigation and management measures:

- c. A suitable site (within the property boundary) must be selected, demarcated and fenced for the construction site office.
- d. It is recommended that the construction site office be located near the existing gate for easy access.
- e. No overnight accommodation may be provided on site.
- f. 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.
- g. Potable water must be made available to site workers.
- h. Proper waste management facilities must be provided as part of the construction site office (see Section 8.5.6).
- i. No waste may be burnt, buried or dumped on site or the surrounding area. The contractor will have to provide adequate containers for the collection of waste. The applicant will have to ensure that the contractor removes the domestic waste to a licensed waste disposal site.

8.5.1 Construction site office

- j. An area for the parking of construction vehicles and other vehicles should be clearly demarcated. When not in use, all vehicles should be parked within this area. The demarcated parking area should be located within or in close proximity to the construction site office.
- k. As far as practically possible, vehicles must not be serviced/repaired on site. However, should it not be possible to take the vehicle to a service centre in town for repair, the contractor must ensure that the vehicles are serviced/repaired on a cement slab and that drip trays are utilized. Waste oil, filters, etc. must be properly disposed of (see Section 8.5.6).

8.5.2 General construction principles

Impact management objective:

- 1) *To ensure that the activities that occur during the construction phase have the least impact on the surrounding natural environment, site workers and adjacent landowners/users.*

Mitigation and management measures:

- a. All construction activities must be limited to the said site. The areas identified for the construction of buildings and infrastructure should be properly demarcated and the footprint kept as small as possible.
- b. No members of the general public should be allowed at the construction site.
- c. An area must be selected (within the property) and demarcated for the stockpiling of spoil (e.g. rocks, soil, etc.).
- d. The rights and conditions of Eskom (Appendix 10) with regards to their powerlines must be respected and adhered to at all times.
- e. No construction/spoiling/storing activities will be allowed near the Eskom powerlines without prior consent from Eskom.
- f. Contractors will be informed to keep to low speeds along the gravel road (Nyala Road) to reduce the amount of dust.
- g. Dust suppression measures must be implemented during dry and windy periods to prevent air-borne deposition on the remaining natural vegetation and adjacent properties.
- h. The applicant/contractor must appoint a Safety Officer and Environmental Control Officer (ECO) in order to ensure compliance with the legislation.
- i. Sufficient fire extinguishers must be provided as required by legislation.
- j. All machinery used during the construction phase must be properly muffled and maintained so as to reduce noise generation to a minimum.
- k. If archaeological remains are exposed during the construction phase, the construction must be terminated immediately and the Provincial Heritage Resources Authority (SAHRA) must be notified in this regard. A qualified archaeologist must be requested to investigate the occurrence. The applicant must take note of the requirements in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999).

8.5.2 General construction principles

- l. If any graves are discovered during construction, the discovery must be reported to the SA Police Service and/or SAHRA or an archaeologist must be called in to handle the matter.
- m. If any palaeontological material is exposed during digging, excavating, drilling or blasting SAHRA must be notified. All construction activities must be stopped and a palaeontologist must be called to determine proper mitigation measures.
- n. All pollution incidents must be reported to the Department of Agriculture, Rural Development, Land and Environmental Affairs and the Department of Water and Sanitation within 24 hours of occurrence.

8.5.3 Rehabilitation of the environment after construction

Impact management objective:

- 1) *To ensure that the areas disturbed due to construction activities are properly rehabilitated and maintained.*
- 2) *To control the growth of declared weeds and/or invader plants.*

Mitigation and management measures:

- a. Before construction, topsoil must be removed and stockpiled in a demarcated area on the property for rehabilitation of the area surrounding the buildings. The topsoil layer generally has a high organic content and carries the seed bank. It is invaluable for post-development rehabilitation.
- b. Once construction has been completed, all temporary structures, excess materials, equipment and waste must be removed from site.
- c. All residual stockpiles must be removed to spoil or spread on site as directed by the ECO.
- d. 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.
- e. Proper stormwater control measures and erosion control must be implemented to prevent erosion of the newly rehabilitated areas during heavy rainfall.
- f. If soil erosion is noted, appropriate remediation measures must be implemented.
- g. For rehabilitation purposes, a seed mix comprising of grass species indigenous to the area should be used. The planting of any alien plant species as part of landscaping should be prohibited.
- h. Kikuyu grass (*Pennisetum clandestinum*) is a proposed declared Invader that is highly invasive. It is therefore recommended that this species is not used for rehabilitation of the area.
- i. The regulations in terms of Alien Invasive Species, 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.
- j. Regular site inspections will be conducted to identify any declared weeds and/or invader plants. If identified, the plants will be eradicated

8.5.3 Rehabilitation of the environment after construction

using appropriate methods.

- k. It is advisable to consult the latest edition of 'A guide to the use of herbicides' or contact the National Department of Agriculture, Forestry and Fisheries with regards to the latest information pertaining to the application of herbicides. If pesticides or herbicides are to be used, the product should be chosen responsibly. Storage, administering and disposal must be done according to the prescribed methods.
- l. A post-construction audit must be conducted to ensure that any shortcomings are identified and addressed.

8.5.4 General operational principles

Impact management objective:

- 1) *To ensure that the activities that occur during the operational phase have the least impact on the natural environment, site workers and adjacent landowners/users.*

Mitigation and management measures:

- o. The lintel supplier business must be operated as indicated in Section 3.3 of this document.
- p. All operational activities must be limited to the said site.
- q. The fence/walls around the site must be well maintained to prevent unauthorised access into the area.
- r. The rights and conditions of Eskom (Appendix 10) with regards to their powerlines must be respected and adhered to at all times.
- s. The following **energy saving** initiatives are recommended in order to reduce the carbon footprint of the development.
 - o *the applicant must comply with SANS 10400-XA:2011 in terms of energy usage in buildings;*
 - o *energy efficient lighting to be installed where possible.*
 - o *at least 50% (volume fraction) of the annual average hot water heating requirement shall be provided by means other than electrical resistance heating including but not limited to solar heating, heat pumps, heat recovery from other systems or processes and renewable combustible fuel.*
 - o *if solar water heating systems are used, these shall comply with SANS 1307, SANS 10106, SANS 10254 and SANS 10252-1.*
 - o *all hot water service pipes shall be clad with insulation.*
 - o *ventilation in buildings should be provided in accordance with the requirements of SANS 10400-O.*
 - o *the building should be compact in plan, with the rooms that are used most and the major areas of glazing placed on the northern side of the building to allow solar heat to penetrate the glazing during the winter months.*
 - o *the longer axis of the building should be orientated so that it runs as near east/west as possible.*

8.5.4 General operational principles

- *the roof overhang to the northern wall shall be sufficient to shade the windows from midday summer sunshine in accordance with SANS 204.*
 - *windows facing east and west should be limited in number and confined to the minimum required for daylight and ventilation.*
- t. The following measures to minimize **water use** during the operational phase must be implemented:
- *Regular maintenance of the water infrastructure to minimize water wastage;*
 - *High pressure washers to be used during cleaning to minimise water use;*
 - *Harvested stormwater can be used for landscape irrigation;*
 - *Water consumption to be monitored and recorded daily;*
 - *A groundwater monitoring programme should be initiated to monitor the quality and yield of the boreholes in order to manage the use of the groundwater resource and identify any possible impact as a result of the abstraction of groundwater.*
- u. Employees must be informed to keep to low speeds along Nyala Road to reduce the amount of dust.
- v. The waste management measures provided in Section 8.5.6 of this report should be implemented.

8.5.5 Soil management

Impact management objective:

- 1) *To ensure that the activities that occur during the construction phase have the least impact on the soils in terms of soil quality, structure and erosion potential.*

Mitigation and management measures:

- a. Before construction, the areas identified for the buildings and infrastructure should be properly demarcated and the footprint kept as small as possible.
- b. If possible, construction should take place during the dry season to prevent soil erosion.
- c. Before construction, topsoil must be removed and stockpiled in a demarcated area on site for rehabilitation of the area surrounding the buildings. The topsoil layer generally has a high organic content and carries the seed bank. It is invaluable for post-development rehabilitation.
- d. Any stockpile, which is likely to remain for 12 months or more, must be vegetated.
- e. An area must be selected on the property and demarcated for the stockpiling of spoil (e.g. rocks, soil, etc.).

8.5.5 Soil management
<p>f. All residual stockpiles must be removed to spoil or spread on site as directed by the ECO.</p> <p>g. Appropriate soil conservation measures to be provided in order to prevent soil erosion and loss of topsoil. Temporary soil berms (not exceeding 0.5m in height) should be placed at convenient intervals to minimize the speed and erosion potential of any storm water flowing across the gradient of the site. These berms should be removed in a phased manner prior to the landscaping of the site.</p> <p>h. Topsoil stockpiles must be located on a flat area and must not be higher than 2 m.</p>
<p><u>Impact management objective:</u> 2) <i>To reduce potential soil pollution as a result of construction and operational activities.</i></p>
<p><u>Mitigation and management measures:</u></p> <p>a. The waste management measures as indicated in Section 8.5.6 must be implemented during both the construction and operational phases.</p> <p>b. Regular maintenance of the sewage infrastructure to reduce the potential for blockages and leaks and thus prevent potential soil pollution.</p> <p>c. The lintel manufacturing activities (e.g. mixing of cement, pouring of concrete, etc.) must be limited to demarcated areas.</p>
<p><u>Impact management objective:</u> 3) <i>To ensure that the activities that occur during the operational phase do not lead to soil erosion.</i></p>
<p><u>Mitigation and management measures:</u></p> <p>a. Run-off water from the buildings will be dispersed on the ground using a pre-cast concrete shoe or small concrete/paved apron and then dispersed onto the grassed area.</p> <p>b. Kotze <i>et. al.</i> (2015a) recommended no additional formal storm water systems or pipes to be installed for the following reasons:</p> <ul style="list-style-type: none"> ○ <i>the site has an even fall/gradient;</i> ○ <i>only a few buildings and paved areas are proposed;</i> ○ <i>large grassed areas will remain after development;</i> ○ <i>storm water will be spread out across the property and not concentrated at any one low point.</i> <p>c. Surface runoff volumes can be reduced and infiltration encouraged by maximising permeable surfaces.</p> <p>d. Monitor for erosion and intervene and/or rehabilitate where necessary.</p>
<p><u>Impact management objective:</u> 4) <i>To ensure that the geotechnical recommendations are taken into account during the construction phase in order to prevent impact on structures during the operational phase.</i></p>

8.5.5 Soil management

Mitigation and management measures:

- a. The following mitigation measures recommended by Van der Merwe (2015) must be implemented in terms of foundation requirements:
 - o *Proper compaction techniques to be used;*
 - o *Installation of lightly reinforced strip footings with articulation joints at all internal and external doors and openings;*
 - o *Light reinforcement (brick force) in masonry required;*
 - o *Soil could be replaced with an inert engineered soil fill mattress compacted at optimum moisture content;*
 - o *Lightly reinforced steel in slightly widened strip footing foundations required.*
 - o *Stiffened or cellular rafts to be used.*
- b. The following mitigation measures recommended by Van der Merwe (2015) must be implemented in terms of the geotechnical conditions:
 - o *Excavations exceeding a depth of 1.5 m will need standard sidewall protection to ensure the stability of the excavation.*
 - o *Retaining walls and slope stabilization measures are recommended on all constructed embankments exceeding 1.5m.*
 - o *Proper drainage system to be installed on site in order to drain water away from structures.*
 - o *Good surface drainage should be ensured through proper landscaping.*
 - o *All embankments must be adequately compacted and planted with grass to stop any excessive erosion and scouring of the landscape.*
 - o *A concrete apron to be constructed around any structures to enable quick channelling of storm water runoff.*
 - o *Care should be taken against rising damp if parts of the horizon are removed during construction.*

8.5.6 Waste management

Impact management objective:

- 1) *To ensure the proper storage, management and disposal of waste during the construction and operational phases.*
- 2) *To reduce potential soil, surface water and groundwater pollution as a result of waste management activities during construction and operation.*

Mitigation and management measures:

General/building waste

- a. Proper waste management measures must be implemented at the site.
- b. No dumping of any kind of waste (domestic, general, building rubble, etc.) to take place on site.
- c. Waste skips to be provided for placement of general waste, building rubble, etc.

8.5.6 Waste management

- d. Promote source separation through the provision of waste bins clearly marked for recycling and general waste. These bins should be emptied on a regular basis and disposed of accordingly (i.e. sent for recycling, taken to licensed waste disposal site, etc.).
- e. Design and implement strategies to increase recycling rates and reduce disposal to landfill.
- f. Continue to seek opportunities for recycling and reuse.
- g. The applicant will have to ensure that the contractor removes the building rubble and any domestic waste to a licensed waste disposal site during the construction phase.
- h. Waste and building rubble not to be placed on the soil stockpiles resulting in the contamination of the soil.
- i. Building rubble must be disposed of at a site specifically earmarked for that purpose. No building rubble is to be disposed of in a haphazard way in the area surrounding the development site.
- j. During the construction phase, 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.
- k. During the operational phase, the lintel manufacturing activities (e.g. mixing of cement, pouring of concrete, etc.) must be limited to the demarcated areas.
- l. Reject lintels must be recycled into paving lengths as indicated by the applicant.
- m. 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.
- n. The applicant/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.
- o. Continually reduce resource waste by applying the waste hierarchy (i.e. waste avoidance, reduction, reuse, recycling and disposal).
- p. Site workers must be aware of the importance of the implementation of the waste management measures.

Hazardous waste management

- a. Proper storage facilities must be provided for the storage of oils, grease, fuels, etc. to be used during the construction or operational phases.
- b. 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.
- c. No hazardous substance is to be disposed of on site.
- d. 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.
- e. All spills of chemicals or hydrocarbons (oil, grease, diesel, petrol, etc.) should be cleaned with the use of suitable absorbent materials such as

8.5.6 Waste management

- drizit or oclanzorb. Appropriate soil remediation measures should be implemented where soil has been contaminated with oil.
- f. 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.
 - g. 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.
 - h. 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.
 - i. 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.
 - j. Certificates of hazardous waste disposal (waybills) are to be kept for auditing purposes.
 - k. Records of environmental related incidents should be maintained.
 - l. The applicant must ensure that all workers receive relevant training with regards to the handling of hazardous substances and the potential health risks thereof.
 - m. The contractor and/or applicant will be responsible for establishing an emergency procedure for dealing with spills.

8.5.7 Water management

Impact management objective:

- 1) *To ensure that the construction and operational phases do not impact on the surface water run-off quality and quantity.*

Mitigation and management measures:

- a. The waste management measures as indicated in Section 8.5.6 must be implemented during both the construction and operational phases.
- b. Run-off water from the buildings will be dispersed on the ground using a pre-cast concrete shoe or small concrete/paved apron and then dispersed onto the grassed area.
- c. Surface runoff volumes can be reduced and infiltration encouraged by maximising permeable surfaces.
- d. Monitor for erosion and intervene and/or rehabilitate where necessary.
- e. Regular maintenance of the sewage infrastructure to reduce the potential for blockages and leaks and thus prevent potential water pollution.
- f. Material Safety Data Sheets must be available on site for all potentially hazardous materials stored and used.
- g. If any soil or surface water contamination is noted, appropriate

8.5.7 Water management

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. The Department of Agriculture, Rural Development, Land and Environmental Affairs and the Department of Water and Sanitation must be informed of the event within 24 hours. A copy of the environmental incident report must be kept on file at the site office.

Impact management objective:

- 2) *To ensure that groundwater abstraction during both the construction and operational phases do not impact on the groundwater quantity.*

Mitigation and management measures:

- a. Water level monitoring must take place on site and the directly adjacent properties (e.g. Portions 77, 278 and 282) before construction commences to determine the baseline levels at the said date.
- b. The water quality of the borehole on site must be tested before construction commences to determine the baseline water quality at the said date.
- c. The recommendations made in the groundwater study (Gouws, 2015) must be implemented:
 - *Water meter to be installed at the borehole.*
 - *Water level monitoring and abstraction volume monitoring to take place on a monthly basis. This is to ensure that over abstraction does not occur.*
 - *The borehole to be pumped at the recommended sustainable pumping rate of 6 m³/d (0.2 l/s) at 8 hours/day (16 hours recovery).*
 - *All oil and fuel storage facilities should be bunded to prevent soil and groundwater contamination. If spills occur specialised material should be kept on site to absorb any spillage (see waste management measures as indicated in Section 8.5.6).*
- b. Groundwater quality must be tested on a quarterly basis in view of the fact that the water will be used for human consumption.
- c. Records to be kept of the abstraction volumes and monitoring results.

8.5.8 Vegetation and animal life management

Impact management objective:

- 1) *To reduce the potential impact on vegetation and animal life during the construction phase.*

Mitigation and management measures:

- a. During construction, no unnecessary removal of vegetation should take place outside of the demarcated area.
- b. Only the area earmarked for construction to be cleared of vegetation. Mass clearing will not be allowed.
- c. Appropriate herbicides may be used on cleared areas, provided that they break down upon contact with the soil.

8.5.8 Vegetation and animal life management

- d. 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(s).

Impact management objective:

- 2) *To reduce the potential impact on vegetation and animal life during the operational phase.*

Mitigation and management measures:

- a. The regulations in terms of the Alien Invasive Species, 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.
- b. Exotic and alien vegetation should be removed or controlled on site.

8.5.9 Interested and affected parties

Impact management objective:

- 1) *To ensure that site workers are not impacted upon in terms of the construction work being performed.*

Mitigation and management measures:

- a. The applicant/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.
- b. The applicant/contractor must adhere (at all times) to the requirements of the Occupational Health and Safety Act, 1993 (Act 85 of 1993), the Construction Regulations, 2014 and any other applicable legislation.
- c. For safety purposes, excavations must not be undertaken until such time as all required materials are available and services can be laid.
- d. Excavations should be closed as soon as is practically possible.
- e. 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, etc.

Impact management objective:

- 2) *To ensure that the potential impacts on adjacent landowners/users are minimized during the construction and operational phase.*

Mitigation and management measures:

- a. The lintel business must be operated as indicated in Section 3.3 of this document.
- b. All construction and operational management principles as indicated in this EMP must be implemented.

8.5.9 Interested and affected parties

- c. The waste management measures as indicated in Section 8.5.6 must be implemented.
- d. The following measures will be implemented to reduce dust:
- *The applicant to ensure that the dust deposition levels on site and on the adjacent properties do not exceed 600 mg/m²/day over a 30-day average as specified in the National Dust Control Regulations (GN 827; 1 November 2013).*

Restriction Areas	Dustfall rate (D) (mg/m²/day, 30-days average)	Permitted frequency of exceeding dust fall rate
<i>Residential area</i>	<i>D < 600</i>	<i>Two within a year, not sequential months.</i>
<i>Non-residential area</i>	<i>600 < D < 1200</i>	<i>Two within a year, not sequential months.</i>

- *The applicant to commence with dust fallout monitoring before construction starts in order to determine the baseline dust fallout values in the area.*
 - *Monthly monitoring (or as recommended by the appointed specialist) must take place during the construction and operational phases. The monitoring results will indicate if the type of dust control implemented is effective or not.*
 - *Dust covers to be installed where dust could be problematic e.g. at the cement mixer.*
 - *Protect loading and unloading activities from wind.*
 - *Protect storage piles from wind.*
 - *Indigenous trees to be planted around the perimeters.*
 - *Internal roads and working aprons to be paved.*
 - *Grass cover to be left or planted to reduce dust.*
 - *Employees and truck drivers contracted to/employed by the applicant must be informed to keep to low speeds along the gravel road (Nyala Road) to reduce the amount of dust.*
- e. The following measures will be implemented to reduce noise:
- *A noise monitoring programme to be implemented during the construction and operational phases.*
 - *Noise monitoring to be conducted by a noise specialist before construction commences to determine the baseline noise levels in the area. Noise monitoring to continue through both the construction and operational phases as recommended by the noise specialist.*
 - *Mitigation measures (e.g. noise barriers, screens, trees, etc.) to be implemented.*
 - *All machinery used on site must be properly muffled and maintained so as to reduce noise generation to a minimum.*
 - *Operational activities must be limited to daylight hours (7am - 6pm) and weekdays in order to minimize the impact on the adjacent residents in terms of noise.*

8.5.9 Interested and affected parties

Impact management objective:

- 3) *To reduce potential impact on the general road users of the R555 provincial road as a result of the proposed light industrial activities.*
- 4) *To reduce the potential impact on the general road users of Nyala Road.*

Mitigation and management measures:

- a. Based on the estimated development traffic generation, capacity analyses and gap analysis, Kotze *et. al.* (2015b) proposed that the R555/Nyala Road intersection be upgraded.
- b. Kotze *et. al.* (2015b) proposed the following regarding the intersection upgrade:
 - *A separate eastbound turning lane for vehicles having to turn across the R555 provincial road.*
 - *Westbound and eastbound acceleration lanes for vehicles that need to join traffic on the R555 provincial road.*
 - *A westbound lane and taper for the vehicles using the left-slip lane into Nyala Road.*
- c. The R555/Nyala Road intersection must be upgraded before commencement of the activity.

8.6 Disaster management and Contingency plans

It is recommended that the following contingency and disaster management plans be compiled for the proposed lintel supplier business:

- Fire;
- Loss of water supply;
- Loss of electricity supply;
- Sewage system overflow or spillage;
- Staff (strikes/illness/no staff).

All staff need to be aware of these emergency/contingency plans and the actions to take in the event of an emergency.

8.7 Implementation and monitoring of the EMPr

An EMPr must include -

- (g) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);*
- (h) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);*
- (i) an indication of the persons who will be responsible for the implementation of the impact management actions;*
- (j) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;*
- (k) the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);*
- (l) a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;*

The implementation of the Environmental Management Programme (EMPr) 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 EMPr has the following advantages:

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

An approved contractor should be appointed to do the necessary construction on the said site. The contractor and site workers must be aware of their environmental responsibilities. Penalty clauses, in terms of the environment, must be built into the contracts and must be implemented. Monitoring of the environmental management programme must take place on a regular basis in order to ensure compliance.

The contractor must inform all site workers of their environmental responsibility during the construction phase. Measures to protect the environment and mitigation measures formulated in this EMPr must be implemented by the contractor and the site workers. The contractor must

thus ensure that the site workers are aware of the Environmental Authorisation and this EMPr and understand the contents thereof.

In order to achieve the above-mentioned, the contractor and site workers should undergo basic environmental awareness training with regards to the contents of this EMPr. Environmental awareness training is critical for the contractor and site workers to understand how they can play a role in achieving the objectives specified in the EMPr. The contractor must ensure that the site workers undergo the necessary environmental awareness training (see Section 8.7.1) before commencing with activities on the site.

This section must be completed on acceptance of the appointment.

MANAGEMENT ACCOUNTABILITY		
Accountability	Title	Name

MANAGEMENT DECLARATION

I, the undersigned in my capacity as designated above hereby undertake to ensure that the conditions and recommendations in terms of the Environmental Authorisation and Environmental Management Plan (EMPr) are implemented and assume responsibility and accountability in this respect.

I further understand that officials from eMalahleni Local Municipality, Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA) and Department of Water and Sanitation (DWS) may (at any time) conduct an inspection of the development in order to ensure compliance with the conditions and recommendations in the EMPr.

CONTRACTOR
..... Name and Designation
..... Signature:
..... Date:
EMPLOYER
..... Name and Designation:
..... Signature:
..... Date:

8.7.1 Environmental Awareness Plan (EAP)

An EMPr must include -

- (m) An environmental awareness plan describing the manner in which-*
- (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and*
 - (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment.*

It is recommended that the employees receive basic environmental awareness training. In order to ensure proper training, the applicant must develop and implement an Environmental Awareness Plan (EAP). This section provides an overview of what the proposed EAP will contain and how it will be implemented.

The following components would form an essential part of an Environmental Awareness Plan (EAP): -

- ✚ Development of an environmental policy;
- ✚ Identification of environmental impacts/risks and mitigation measures;
- ✚ Environmental training, awareness and competence;
- ✚ Environmental communication and reporting.

Development of an environmental policy

The applicant would have to compile an Environmental Policy (if they do not have one already), which is a one page statement setting out certain principles in terms of their environmental performance.

The environmental policy should indicate the following:

- The applicant's commitments in terms of the environment;
- Identify environmental impacts as a result of the activities taking place on site;
- Actions to be taken to minimize/mitigate the environmental impacts.
- Signature of management.

In order to ensure effective environmental management, it is important that the Environmental Policy is known and understood by all employees. It should thus be displayed at the offices, workshop and security access.

An Environmental Policy Template is provided to assist the applicant in the compilation of their Environmental Policy. A number of templates are also available on the internet.

Environmental Policy Template (taken from Richmond upon Thames, 2012)

[Insert company name here] believe that we have a responsibility to care for and protect the environment in which we operate. We are fully committed to improving environmental performance across all of our business activities, and will encourage our business partners and members of the wider community to join us in this effort.

[Insert company name here] recognises our key impacts to be in the areas of [for example]:

- *energy use*
- *raw material use*
- *waste generation*
- *emissions to air/water*
- *water use*
- *transport*
- *procurement*

We will strive to:

- *Adopt the highest environmental standards in all areas of operation, meeting and exceeding all relevant legislative requirements.*
- *Assess our organisational activities and identify areas where we can minimise impacts.*
- *Minimise waste through careful and efficient use of all materials and energy.*
- *Purchase sustainable products wherever feasible [e.g. recycled, FSC or low environmental impact products and energy from renewable sources].*
- *Train employees in good environmental practice and encourage employee involvement in environmental action.*
- *Reduce risks from environmental, health or safety hazards for employees and others in the vicinity of our operations.*
- *Adopt an environmentally sound transport strategy.*
- *Aim to include environmental and ethical considerations in investment decisions where appropriate.*
- *Assist in developing solutions to environmental problems.*
- *Continually assess the environmental impact of all our operations.*

[Insert company name here] have developed a series of action plans to supplement each of our environmental policy objectives. These can be found [in an appropriate place].

[Insert company name here] will periodically review performance and publish these results [in an appropriate manner].

Signed _____

Identification of environmental impacts / risks and mitigation measures

Environmental impacts/risks in terms of the development are indicated in Section 7 of this document while mitigation measures to be implemented are provided in Section 8.

Activities or work procedures that could have a significant impact on the environment have thus been identified and mitigation measures proposed in order to avoid pollution or the degradation of the environment.

This information must be communicated to the employees and thus forms the basis for developing an Environmental Awareness Plan (EAP) in order to ensure effective environmental management.

Environmental training, awareness and competence

Training is necessary in order to advance the competency of employees in implementing the Environmental Policy and the EMPr and to ensure effective overall environmental management.

The applicant must inform all his employees of their environmental responsibilities in terms of this Environmental Management Programme (EMPr). Measures to protect the environment and mitigation measures formulated in this EMPr must thus be implemented by the applicant and employees.

In addition, job specific training must be conducted that will be appropriate to the activity and the responsibility of the individual employees. Ad-hoc training will be undertaken as required.

Through training/awareness, the applicant will also make his employees aware of:

- ✚ the importance of conformance with the environmental policy and the requirements of the EMPr;
- ✚ the significant environmental impacts, actual or potential, of their work activities and the environmental benefits of improved personal performance;
- ✚ their roles and responsibilities in achieving conformance with the environmental policy and the requirements of the EMPr, including emergency preparedness and response requirements; and
- ✚ the potential consequences of departure from the specific operating procedures and/or mitigation measures specified in the EMPr.

Environmental training and development needs of employees will be identified on a regular basis through:

- Identification of significant environmental impacts;
- Analysis of non-conformance and incident reports;
- Audit reports.

Environmental communication and reporting

Environmental communication and reporting form an integral part of an Environmental Awareness Plan. It is important to maintain effective communication internally and to ensure that external communication (e.g. with government departments or adjacent landowners) is maintained.

In general, environmental communication and reporting will aim to:

- ✚ Ensure that employees understand the environmental policy and objectives;
- ✚ Ensure that information is communicated and readily accessible to the relevant parties;
- ✚ Improve feedback of operational and environmental performance to management;
- ✚ Ensure effective and constructive communication with relevant government departments and adjacent landowners (if applicable);
- ✚ Ensure that records are kept of environmental communication and interaction.

The following are some of the topics that should be discussed with new employees:

- ⓐ Time of commencement and completion of duties;
- ⓐ Cleaning of workplace and the importance thereof;
- ⓐ Safety clothing and its importance and correct use;
- ⓐ Procedure to follow in case of illness and injury;
- ⓐ Annual leave and when due;
- ⓐ Importance of instructions;
- ⓐ Late for work and leaving workplace without permission;
- ⓐ Emergency procedures;
- ⓐ Environmental awareness;
- ⓐ Training and its importance;
- ⓐ Alcohol and drug abuse;
- ⓐ Medical fitness;
- ⓐ Disciplinary procedures.

The following topics should form part of the environmental awareness discussions to be held with the employees:

- ⓐ NO-GO areas;
- ⓐ Water;
- ⓐ Fauna and flora;
- ⓐ Smoking and fires;
- ⓐ Dust;
- ⓐ Noise;
- ⓐ Waste management.

Various signs (including the Environmental Policy) should be displayed on site to remind site workers of the basic environmental principles and inform them of the 'DO'S' and 'DON'TS'.

The applicant must conduct regular inspections to check on site conditions and to provide training when necessary to ensure that the mitigation measures are being implemented and that the environment is carefully looked after.

8.7.2 Site documentation and record keeping

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

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

The documents should be kept as hard copies as well as in electronic format.

Complaints Register

A complaints register must be kept at the site office. Any complaints received with regards to the project 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 Agriculture, Rural Development, Land and Environmental Affairs and the Department of Water and Sanitation.

Emergency numbers

Emergency numbers (e.g. manager, 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.

Other legislation

The following should 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.

Supplementary documentation

The following supplementary documentation should be kept at the site office:

- Site instructions;
- Emergency preparedness and response procedures;
- Incident reports;
- Training records;
- Site inspection, monitoring and auditing reports.

During the course of the development, the applicant and employees must also comply with all other relevant legislation.

8.7.3 Auditing and corrective action

Environmental audits identify existing and potential environmental problems and determine what action is needed to comply with legal requirements and the Environmental Management Programme (EMPr). Subsequent audits then confirm that corrective actions have been taken and assess the effectiveness of such actions.

Construction phase:

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 EMPr.

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 ECO will be responsible to:

- Monitor and audit the construction activities on a weekly basis;
- Keep a record of each site inspection and the findings thereof;
- Make a register of the environmental monitoring and auditing results available for inspection at the construction site office;
- Keep records relating to the compliance and non-compliance with the conditions of the Environmental Authorization;

- Make these records available to the Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA) within seven (7) working days of the date of the written request by the Department for such records.

A good approach to facilitate legal enforceability of the EMPr during the construction phase is to integrate the EMPr into the tender and contract document (i.e. between the project applicant and the contractors) as a set of environmental specifications. The contractor will thus be informed prior to being appointed of his environmental responsibilities.

Penalties in terms of the environment should be implemented upon non-compliance. This will ensure that the project applicant does not sit with an environmental liability at the end of the contract.

A post-construction audit should be conducted prior to the contractors leaving site.

There are several levels at which corrective action can be affected, namely verbal instructions, written instructions and contract notices.

Level 1: The problem is discussed with the contractor and a solution is worked out together. The discussion is minuted for record purposes and the solution implemented.

Level 2: When a more serious infringement is observed, the contractor is notified in writing and given a deadline by which the issue must be rectified. Costs to be borne by the contractor.

Level 3: The contractor will be ordered to suspend all or part of the work until such time as the problem is rectified or remedial measures put in place. Costs to be borne by the contractor and no extension of time will be granted.

Level 4: Breach of contract and/or termination of employment. The applicant may also institute legal proceedings against the contractor.

An example of a penalty schedule is provided below.

PENALTY SCHEDULE			
Level	Description	Penalty	Offences
1	Minor offence	R1000 first offence R2000 second offence And R1000/per day that offence continues beyond notification of offence	<ul style="list-style-type: none"> Littering; inadequate or inappropriate on-site waste management or sanitation Uncontrolled noise and dust nuisance Poaching on site Inadequate soil / water protection controls for fuel storage & dispensing areas, vehicle parking areas
2	Moderate offence	R5000 first offence R10 000 second offence And R5000 per day that the offence continues beyond notification of offence	<ul style="list-style-type: none"> Trespassing onto neighbours properties Removal of indigenous trees marked for conservation purposes without the permission of the ECO, or trees in demarcated sensitive environmental zones Disposal of any form of waste to a non-approved dump site Any illegal /non-permitted abstraction or use of water from a natural resource The withholding of pertinent information or provision of false information to the ECO or Project Manager
3	Significant offence	R30 000 first offence R50 000 second offence And R30 000 per day that the offence continues beyond notification of offence	<ul style="list-style-type: none"> Non-compliance with any risk or safety management requirements Significant spillage of hazardous materials Use of natural materials not sourced from a legally permitted source Construction or use of roads/access across rivers, streams or wetlands that has not been authorized by the Project Manager and ECO
4	Serious offence	Up to R500 000 or total cost of rehabilitating damaged environment	<ul style="list-style-type: none"> Any serious pollution event or accident Any serious encroachment into demarcated sensitive environmental zones, by accident or on purpose Any serious stormwater damage that could have been avoided through appropriate management interventions

In addition to the schedule of penalties, a portion of the Retention on all contracts could be apportioned to compliance with the EMPr.

Operational phase:

The applicant will be responsible for auditing and corrective action during the operational phase of the development.

9. ENVIRONMENTAL IMPACT STATEMENT

9.1 Introduction

Lintel Suppliers cc manufactures concrete products for the building industry. Currently, the applicant operates three different factories in three different municipalities.

It is the vision of the company to enter the construction and supplying market within the eMalahleni area, thereby supporting the local economy by making their products easily available to contractors and developers.

Lintel Suppliers cc intends to construct and operate a lintel supplier business on the Remaining Extent of Portion 76 of the farm Kromdraai 292 JS, eMalahleni. The site is currently zoned 'Agricultural' and will be rezoned to 'Industrial 1' for industrial purposes. The property is 2.24 ha in extent and currently vacant except for two dilapidated buildings and a borehole.

The site is surrounded by a mixed **land use** character and situated within an area earmarked for mixed land uses and an activity spine in terms of the eMalahleni Local Municipality Spatial Development Framework (SDF; 2013/2014). The proposed land use will thus be in line with the existing land use character as well as the land use proposed in the 2013/2014 ELM SDF.

The proposed development would have a positive impact in terms of supporting the local economy and would provide much need employment opportunities.

Section 4 of this report provides an indication of the alternatives investigated in terms of the site, lintel manufacturing options, etc.

The said site was decided upon (and purchased) due to the following:

- The property was affordable.
- The property is large enough for the activity.
- The site is easily accessible via the R555 provincial road from eMalahleni and Middelburg.
- The topography of the site is suitable for the activity. It is relatively flat, which will minimize the need for earthworks.
- Currently, the site is not utilized for agriculture, residential or any other purposes.
- The site is not located near a river or stream and is not subject to the 1:100 year floodline.
- Easy access to electricity as an existing Eskom powerline is located near the site. Approval was obtained from Eskom for the electricity supply.
- The adjacent property is being used for the manufacturing of bricks. The proposed activity will therefore be compatible with the adjacent land use.
- The site and surrounding area was earmarked in the eMalahleni Local Municipality Spatial Development Framework (2013/2014) as an activity spine, which is an urban linear zone of intense mixed land use development. Development along this route is thus encouraged by the municipality.

9.2 Services

Water for the construction and operational activities will be obtained from an existing borehole located on site. According to Kotze *et. al.* (2015a), the estimated daily water usage of the proposed development is estimated at 3.35 m³/day.

A geohydrological investigation was conducted by Gouws (2015) in order to determine whether enough groundwater will be available for the proposed development and what impact the abstraction of groundwater could have on the water supply on site and the surrounding area. More information regarding the groundwater study and findings are provided in Section 5.10 and Appendix 6.

According to Gouws (2015), a pumping rate of 5.76 m³/d at 8 hours/day should be sufficient for the proposed development, based on the estimated water demand of 1223 m³/annum or 3.35 m³/day.

Gouws (2015) concluded that the sustainable **abstraction of groundwater** for the proposed development does not pose a risk to groundwater users in the area. The low abstraction rate is highly unlikely to lower the groundwater table and thus would not have an influence on the available quantity of water. However, water level monitoring and abstraction volume monitoring must take place on a monthly basis to ensure that over abstraction does not occur (Gouws, 2015). The mitigation measures as indicated in Section 8.5.7 with regards to water management must be implemented.

A water use licence (in terms of the National Water Act, 1998) may be required for the abstraction of groundwater (Section 21(a) application).

According to Gouws (2015), the **groundwater quality** on site and in the area is generally of good quality. Calcium (Ca) and Magnesium (Mg) are elevated above the Target Water Quality Range (TWQR) for domestic use due to the host rock mineralogy. The water is thus suitable for short-term intake, but may cause adverse effects in sensitive individuals. In addition, the Calcium may cause scaling problems in appliances using heating elements and plumbing which transports hot water. The groundwater quality must be tested on a quarterly basis in view of the fact that the water will be used for human consumption.

In terms of the **groundwater pollution risk**, the aquifer vulnerability of the site is classified as medium. Mitigation measures must thus be implemented to prevent any surface contamination from reaching the groundwater table. The mitigation measures in terms of waste management as indicated in Section 8.5.6 must be implemented.

Septic tanks will be installed to deal with **sewage**. Kotze *et. al.* (2015a) determined that a septic tank with a capacity of 57 500 liters will be required, which will have a storage capacity of 15 days. The one septic tank will be located near the Admin Office and the other septic tank will be located near the Sales Office. Indirect pollution of soil, surface water runoff and groundwater could take place if the sewage system does not have sufficient capacity and is not maintained. The mitigation measures as indicated in Section 8.5.7 would have to be implemented to reduce the pollution risk.

Electricity will be supplied by Eskom. A new transformer and supply line were installed by Eskom in the north western corner of the site for the proposed development.

The site will be **accessed** from Nyala Road, which links to the R555 provincial road approximately 280 m north of the site. A traffic impact assessment was conducted by Kotze *et. al.* (2015b) in order to quantify the expected development traffic generation and evaluate the impact of the development on the surrounding road network.

Based on the estimated development traffic generation, capacity analyses and gap analysis, Kotze *et. al.* (2015b) proposed that the R555/Nyala Road intersection be upgraded (see Section 5.16) before the development commences.

According to Kotze *et. al.* (2015b), the proposed upgrade was previously put on the table for another development on Portion 77 of the farm Kromdraai 292 JS. The development has however, not yet commenced, meaning that the R555 provincial road has not yet been upgraded. Kotze *et. al.* (2015b) recommended that the two developers co-ordinate the proposed upgrading in terms of timing, implementation, costs, etc.

Kotze *et. al.* (2015b) indicated that it is not considered necessary for the developer to contribute towards the provision of public transport facilities.

In terms of **stormwater** run-off, Kotze *et. al.* (2015a) calculated that the site will have a 1:5 year run-off peak flow of 123 l/s and a 1:25 year run-off peak flow of 213 l/s. Run-off water from the buildings will be dispersed on the ground using a pre-cast concrete shoe or small concrete/paved apron and then dispersed onto the grassed area. No additional formal storm water systems or pipes will be installed for the following reasons:

- post-development peak flows will be slightly higher than the pre-development peak flows;
- the site has an even fall/gradient;
- only a few buildings and paved areas are proposed;
- large grassed areas will remain after development;
- storm water will be spread out across the property and not concentrated at any one low point.

9.3 Public participation

The public participation process followed is described in Section 6 of this report.

Eskom Distribution indicated that the proposed project will affect the Old Douglas/Uitkyk-Jackaroo 22kV distribution line. A number of conditions were specified by Eskom, which must be noted and adhered to by the applicant. The applicant accepted the conditions and the completed documents (Annexures D and E) were forwarded to Eskom. It should be noted that the mentioned powerline is located outside the site along the western boundary.

Eskom Transmission will not be affected by the development.

A Heritage Impact Assessment and desktop Palaeontological Assessment were requested by the **South African Heritage Resources Agency**

(SAHRA). The applicant must take note of the requirements in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999) in this regard.

No graves, old buildings/ruins, etc. were noted on site by Clean Stream Environmental Services during the site visits. The stables and store room located on the southern boundary of the site are not older than 60 years, as it is evident from aerial views that the buildings were constructed between 2001 and 2006 (Google Maps, 2015). If any archaeological remains are exposed during the construction phase, the construction must be terminated immediately and SAHRA must be notified.

According to the palaeontological map supplied by the South African Heritage Resources Agency (SAHRA, 2015), the palaeontological sensitivity of the site is 'Moderate' as a result of the site being underlain by the Loskop Formation. From experience in dealing with other developments located within the Loskop Formation, mitigation or conservation measures are not necessary for this development since the impact of the development on fossil heritage is Moderate. If any palaeontological material is exposed during digging, excavating, drilling or blasting SAHRA must be notified. All construction activities must be stopped and a palaeontologist must be called to determine proper mitigation measures.

Ms. A. Maritz of Stone & Style (located on the northern boundary of the site) and **Mr. W. van der Merwe** (property on southern boundary of site) expressed their concern with regards to the potential impact on groundwater quality and quantity.

As indicated in Section 5.10 and Section 9.2, Geo Pollution Technologies (hereafter referred to as Gouws, 2015) was appointed to conduct a groundwater study to determine whether enough groundwater is available for the proposed development and whether the development will impact on the groundwater quantity of the area. According to Gouws (2015), sufficient water is available and the proposed development should not have a negative impact on groundwater quantity if the recommended abstraction rate is adhered to.

The development should not impact on the groundwater quality if the mitigation and management measures indicated in Section 8 (EMPr) of this report is adhered to.

Other issues raised such as noise, dust, etc. are addressed in Section 6 of this report.

As indicated in Section 10, the identified authorities, stakeholders and landowners/users will be provided with an opportunity to comment on the Basic Assessment Report. Any additional comments will be included and addressed in an updated version of the Basic Assessment Report, which will be submitted to the Department of Agriculture, Rural Development, Land and Environmental Affairs for decision making.

9.4 Environmental features

The environmental features of the site and surrounding area are described in Section 5 of this report.

No sensitive environments, threatened plants or animal species are present on the site.

As a result, the proposed development is not expected to have a direct impact of high significance on the natural environment in terms of geology, topography, soil, land use, surface water, groundwater, vegetation, animal life, air quality and noise. The negative impacts that are expected to occur are generally associated with construction activities and would be of short duration. Potential impacts during the construction and operational phases can be managed through the implementation of basic mitigation measures as provided in the EMPr (Section 8).

Section 7 of the Basic Assessment Report provides an indication of the potential impacts on the environment while Section 8 provides mitigation measures to be implemented in order to reduce the said impacts.

The said site is underlain by sandstone and shale of the Loskop Formation (Karoo Supergroup), with a diabase (dolerite) intrusion towards the east and north. A **geotechnical study** was undertaken by Geoset cc (hereafter referred to as Van der Merwe, 2015) to determine the suitability of the site for development purposes. Five (5) test pits were excavated with a TLB to determine the properties of the **soil**.

According to Van der Merwe (2015), the site does contain problematic material (e.g. moderately collapsible and compressible clayey silty sand, medium expansive clay and permeable material) which could impact on the services and structures. In terms of excavation characteristics, Van der Merwe (2015) anticipates some excavation problems up to a depth of 1.5 m. In addition, rising damp and ponding of water within the clayey sand could impact on structures.

Special precautions with regard to services and structures will be required. The mitigation measures indicated in Section 8.5.5 (EMPr) and Appendix 5 must be implemented.

The development of the site will impact on approximately 2ha of **Rand Highveld Grassland**, which has been classified as Vulnerable. The impact on the vegetation is estimated to be low due to the small size of the site, past impacts on the vegetation and developed nature of the surrounding area. In terms of the Mpumalanga Biodiversity Sector Plan (MBSP, 2013)), the site falls within the category 'Heavily Modified'.

It is not anticipated that the development will have a significant impact on **animal life** since the surrounding area is developed and the site is fenced off. Should any animals (e.g. reptiles or small mammals) be found during the construction phase, a specialist should be contacted to ensure the safe removal of the specimen(s).

The proposed development will not directly impact on any **surface water environments** or the 1: 100 year floodline. No wetlands, streams, drainage areas, etc. are present on or adjacent to the site. In addition, no perched water table is known to be present on the site. The closest surface water environment is the Olifants River, located approximately 250 m south of the site. Other properties are located between the Olifants River and the said site.

Indirect pollution of the surface and groundwater environment could take place if

- the sewage system does not have sufficient capacity and is not maintained;
- proper waste management measures are not implemented;
- runoff water contaminated with oil, cement, etc. is not contained on site and allowed to flow onto the adjacent property.

Mitigation measures as indicated in Section 8 of this report must be implemented to prevent possible surface and groundwater pollution.

According to Gouws (2015), a pumping rate of 5.76 m³/d at 8 hours/day should be sufficient for the proposed development, based on the estimated water demand of 1223 m³/annum or 3.35 m³/day.

Gouws (2015) concluded that the sustainable **abstraction of groundwater** for the proposed development does not pose a risk to groundwater users in the area. The sustainable abstraction rate of groundwater (5.76 m³/d at 8 hours/day) as recommended by Gouws (2015) must be adhered to.

The **air quality** of the site and directly adjacent properties could be impacted upon by dust from the cement silo and the concrete mixer as well as dust and vehicle emissions from trucks (delivering material or collecting product) and the front-end loader. The air quality of the site and surroundings could also be impacted in terms of odours if the sewer system does not have capacity and is not maintained and proper waste management measures are not implemented. Mitigation measures as indicated in Section 8 would have to be implemented.

Operational **noise** would be created by the site workers, the cement mixer, stacking of lintels, the forklift and other vehicles, power tools (e.g. grinders used to cut the lintels) and trucks driving in Nyala Road. The operational noise could impact on on-site workers and the adjacent land users. The applicant has proposed mitigation measures as indicated in Section 8.5.10.

Regular monitoring and auditing of the activities should take place during both the construction and operational phases to ensure that the mitigation measures are implemented. Also of importance would be the implementation of water and energy saving measures in order to reduce the carbon and water footprint of the business.

In addition, the business must be managed in such a way that it is environmentally sustainable, acceptable to the community and complies with the objectives of the National Environmental Management Act, 1998 (Act 107 of 1998).

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 the Environmental Management Programme (EMPr) provided in Section 8 of this report.

In view of the findings of this Basic Assessment, the following listed activity can be approved.

Listing	Activity	Description
Listing Notice 1 (GN R983), Listed Activity 27:	<i>The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.</i>	An area of 2.24 hectares of indigenous vegetation will be impacted upon in terms of the development of the proposed lintel supplier business.

The following conditions should be included in the Environmental Authorisation:

- *The management and monitoring measures as indicated in Section 8 (EMPr) of the Basic Assessment Report must be implemented.*
- *A water use licence to be obtained for the abstraction of groundwater (Section 21(a) application).*

10. EVALUATION OF BASIC ASSESSMENT REPORT

10.1 Availability of Basic Assessment Report

The Basic Assessment Report (dated: November 2015) will be submitted to the Department of Agriculture, Rural Development, Land and Environmental Affairs for evaluation purposes. A hard copy of the document will also be forwarded to the following authorities for evaluation (30-day period):

- Department of Water and Sanitation (Bronkhorstspuit);
- eMalahleni Local Municipality;
- Mpumalanga Tourism and Parks Agency.

A hard copy and electronic copy of the Basic Assessment Report will be made available during the above-mentioned period to the interested and affected parties and stakeholders consulted and/or registered as part of the Basic Assessment Process (refer to Section 10.2).

The various departments, stakeholders and interested and affected parties will be requested to forward any comments on the report to the consultant within the 30-day period provided. A register will be kept of all comments received in terms of the evaluation of the report. These comments will then be included and addressed in an updated version of Basic Assessment Report.

A hard copy of the Basic Assessment Report (dated: November 2015) will be made available at the Witbank Public Library for evaluation purposes. An electronic version will also be made available on the company website (www.cleanstreams.co.za) and on compact disc (cd) (on request).

The updated version of the Basic Assessment Report (incorporating comments from I&APs) will be submitted to the Department of Agriculture, Rural Development, Land and Environmental Affairs for final decision making.

10.2 Informing Interested and Affected Parties

The following interested and affected parties and stakeholders will be notified by means of facsimile, email, etc. of the availability of the reports for evaluation:

INTERESTED AND AFFECTED PARTY LIST	
Organisation	Name
Government Departments	
Department of Agriculture, Forestry and Fisheries	F Mashabela
Department of Mineral Resources	S Mathavela
Department of Agriculture, Rural Development, Land and Environmental Affairs	The Director
Department of Agriculture, Rural Development, Land and Environmental Affairs - Directorate: Land Use and Soil Management - Ermelo	J Venter
Department of Co-Operative Governance and Traditional Affairs	M Looock
Department of Rural Development and Land Reform	ND Nkambule

INTERESTED AND AFFECTED PARTY LIST	
Organisation	Name
Department of Water and Sanitation – Bronkhorstspuit	B Mnguni
Other Organisations	
Eskom Distribution	T Ludere
Mpumalanga Agriculture	H Laas
Mpumalanga Tourism and Parks Agency	K Narasoo
South African National Roads Agency (SANRAL)	M Yorke-Hart
Sasol	B van den Heuvel
South African Heritage Resources Agency	Nokukhanya Khumalo
Telkom	J Smit T Potgieter
Trans African Concessions (TRAC)	R Nkosi
Transvaalse Landbou Unie	D du Plessis
Local Municipality and Municipal Councillor	
Councillor (Ward 20)	R Cronje
eMalahleni Local Municipality	E Nkabinde M Makgalemele
Nkangala District Municipality	S Links
Sector 1 Kalbasfontein Kromdraai CPF	S Botha
Surrounding landowners	
S Hoole van der Burgh (Stone & Style)	S Hoole van der Burgh A Maritz
Santohobisa Building Construction cc	Dudu
Upfront Auto Electrical cc	W van der Merwe

10.3 Comments received

This section will be completed after the completion of the above-mentioned evaluation period.

REFERENCES

- ❖ AGIS Agriculture Potential Atlas. 2015.
[www.agis.agric.za/agismap_atlas]
- ❖ Council for Geoscience. **1: 250 000 Geological Series Map, 2528 Pretoria.**
- ❖ Diedericks, M.A. 2015. **Proposed Rezoning of Remainder of Portion 76 of the Farm Kromdraai 292 JS. Electrical Services Report.** Report dated: 19 March 2015. Report prepared by: Utility Consulting Engineering Services. Report number: UCS 1269\A\Z01.
- ❖ Gouws, C. 2015. **Hydrogeological Assessment. Basic Groundwater Assessment on Portion 76 of the Farm Kromdraai 292-JS, Emalahleni.** Report dated: August 2015. Report prepared by: Geo Pollution Technologies – Gauteng (Pty) Ltd. Report number: CLWIT-15-397.
- ❖ Korsman & Associates Town and Regional Planners. 2015. **Memorandum: Application for the Amendment of eMalahleni Land Use Management Scheme, 2010, in terms of Section 56 of the Town Planning and Townships Ordinance, 1986 (Ordinance 15 of 1986). Remaining Extent of Portion 76 of the Farm Kromdraai 292, Registration Division JS, Province Mpumalanga.** Report dated: 20 March 2015.
- ❖ Kotze, E.D., P.W. van der Bank and B.T. Bloxham. 2015a. **Remainder of Ptn 76 Kromdraai 292 JS. Civil Services Report.** Report dated: 17 March 2015. Report prepared by: WSP Group Africa (Pty) Ltd. Report number: 19531.R.
- ❖ Kotze, E.D., B. Bloxham and C. van Wyk. 2015b. **Remainder of Ptn 76 Kromdraai 292 JS. Traffic Impact Study.** Report dated: January 2015. Report prepared by: WSP Group Africa (Pty) Ltd Report number: 19531.R.
- ❖ **List of Ecosystems that are Threatened and in Need of Protection.** (General Notice No. 1002 of 2011). *Government Gazette* 34809: 3-541, 9 December 2011. Government Printing Works, Pretoria.
- ❖ Lotter, M.C., Lechmere-Oertel, R. & Cadman, M. 2014. **Mpumalanga Biodiversity Sector Plan Handbook.** Mpumalanga Tourism & Parks Agency, Nelspruit.
- ❖ Mpumalanga Tourism and Parks Agency. 2013. **Mpumalanga Biodiversity Sector Plan Map, 2013.**
- ❖ Mucina, L. & Rutherford, M. C. (eds). 2006. **The Vegetation of South Africa, Lesotho and Swaziland.** *Strelitzia* 19. South African National Biodiversity Institute, Pretoria.

- ❖ Mucina, L., Rutherford, M.C. & Powrie, L.W. (eds). 2005. **Vegetation Map of South Africa, Lesotho and Swaziland, 1: 1 000 000 scale sheet maps**. South African National Biodiversity Institute, Pretoria.
- ❖ **National Environmental Management Act 1998 (Act No. 107)**. Republic of South Africa, Cape Town.
- ❖ **National List of Protected Tree Species under the National Forests Act, 1998 (Act No. 84 of 1998)**. (General Notice No. 734 of 2011). *Government Gazette* 34595: 13-15, 16 September 2011. Government Printing Works, Pretoria.
- ❖ **National Water Act, 1998 (Act No 36 of 1998)**. Republic of South Africa, Cape Town.
- ❖ **South African Heritage Resources Information System (SAHRIS)**. 2015. [www.sahra.org.za/sahris].
- ❖ Van der Merwe, D.S. 2015. **The Remainder of Portion 76 Kromdraai 292 JS, Witbank, eMalahleni, Mpumalanga Province. Engineering Geological Investigation for Township Development**. Report dated: January 2015. Report prepared by: Geoset cc. Report number: GS201502K.

APPENDIX 1:

APPLICATION FORM

- ❖ Cover letter (dated: 2 November 2015; Ref: BA 2015/04) from Clean Stream Environmental Services (CSES) to the Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA) regarding submission of application form.
- ❖ Copy of the application form.

APPENDIX 2:

CURRICULUM VITAE

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

APPENDIX 3:

TOWNPLANNING MEMORANDUM

- ❖ **Korsman & Associates Town and Regional Planners. 2015. Memorandum: Application for the Amendment of eMalahleni Land Use Management Scheme, 2010, in terms of Section 56 of the Town Planning and Townships Ordinance, 1986 (Ordinance 15 of 1986). Remaining Extent of Portion 76 of the Farm Kromdraai 292, Registration Division JS, Province Mpumalanga.** Report dated: 20 March 2015.

APPENDIX 4:

SERVICES

- ❖ Kotze, E.D., P.W. van der Bank and B.T. Bloxham. 2015a. **Remainder of Ptn 76 KROMDRAAI 292 JS. Civil Services Report.** Report dated: 17 March 2015. Report prepared by: WSP Group Africa (Pty) Ltd. Report number: 19531.R.
- ❖ Diedericks, M.A. 2015. **Proposed Rezoning of Remainder of Portion 76 of the Farm Kromdraai 292 JS. Electrical Services Report.** Report dated: 19 March 2015. Report prepared by: Utility Consulting Engineering Services. Report number: UCS 1269\A\Z01.

APPENDIX 5

GEOTECHNICAL STUDY

- ❖ Van der Merwe, D.S. 2015. **The Remainder of Portion 76 Kromdraai 292 JS, Witbank, eMalahleni, Mpumalanga Province. Engineering Geological Investigation for Township Development.** Report dated: January 2015. Report prepared by: Geoset cc. Report number: GS201502K.

APPENDIX 6:

GROUNDWATER STUDY

- ❖ Gouws, C. 2015. **Hydrogeological Assessment. Basic Groundwater Assessment on Portion 76 of the Farm Kromdraai 292-JS, Emalahleni.** Report dated: August 2015. Report prepared by: Geo Pollution Technologies – Gauteng (Pty) Ltd. Report number: CLWIT-15-397.

APPENDIX 7:

TRAFFIC IMPACT STUDY

- ❖ Kotze, E.D., B. Bloxham and C. van Wyk. 2015b. **Remainder of Ptn 76 Kromdraai 292 JS. Traffic Impact Study.** Report dated: January 2015. Report prepared by: WSP Group Africa (Pty) Ltd Report number: 19531.R.

APPENDIX 8

ADVERTISING OF THE PROJECT

- ◆ A copy of the advertisement published in the Witbank News, 8 May 2015.
- ◆ A copy of the on-site notice.
- ◆ Printout of company website page www.cleanstreams.co.za – New Projects – Notices.
- ◆ Printout of company website page www.cleanstreams.co.za – New Projects – Background Information Documents.

APPENDIX 9:
BACKGROUND INFORMATION DOCUMENT

APPENDIX 10:

CORRESPONDENCE WITH THE AUTHORITIES AND INTERESTED AND AFFECTED PARTIES

- ◆ E-mail from Clean Stream Environmental Services (CSES) (dated: 15 May 2015) to:

AUTHORITY/ STAKEHOLDER	CONTACT PERSON
Sector 1 Kalbasfontein Kromdraai CPF	Botha, S
Ward 20 Councillor	Cronje, R
Transvaalse Landbou Unie	Du Plessis, D
Mpumalanga Agriculture	Laas, H
Eskom Transmission	Lennox, E / Maake, N / Motsisi, L
Nkangala District Municipality	Links, S
Department of Co-Operative Governance and Traditional Affairs	Loock, M
eMalahleni Local Municipality	Makgalemele, M Nkabinde, E
Department of Agriculture, Forestry and Fisheries	Mashabela, F
Department of Water and Sanitation	Mnguni, B
Department of Mineral Resources	Mokonyane, M
Eskom Distribution	Moloko, M
Mpumalanga Tourism and Parks Agency	Narasoo, K
Trans African Concessions	Nkosi, R
Telkom	Potgieter, T / Smit, J
Sasol Gas	Van den Heuvel, B
Department of Agriculture, Rural Development, Land and Environmental Affairs - Directorate: Land Use and Soil Management – Ermelo	Venter, J
South African National Roads Agency (SANRAL)	Yorke-Hart, M

- ◆ E-mail from CSES (dated: 18 May 2015) to the Department of Rural Development and Land Reform.
- ◆ Webpage printout (dated: 15 May 2015): South African Heritage Resources Information System (SAHRIS).
- ◆ E-mail from Eskom Distribution (T. Ludere) (dated: 21 May 2015) to CSES plus letter from Eskom (dated: 21 May 2015; Ref: Ld-INV/ET/TL/034/2015).
- ◆ E-mail from CSES (dated: 6 October 2015) to T. Ludere with completed Annexures.
- ◆ E-mail from Eskom Transmission (L. Motsisi) to CSES.
- ◆ Letter (dated: 26 May 2015) from the Commission on Restitution of Land Rights to CSES.
- ◆ Client Interaction Form of the Department of Agriculture, Rural Development, Land and Environmental Affairs - Directorate: Land Use and Soil Management – Ermelo.
- ◆ Letter (dated: 18 August 2015; Ref: 7701) from the South African Heritage Resources Agency to CSES.
- ◆ Completed comment sheet (dated: 2 June 2015) from W. van der Merwe.