DRAFT BASIC ASSESSMENT REPORT:

THE DEVELOPMENT OF A RESIDENTIAL AREA ON A PORTION OF PORTION 93 OF THE FARM RONDEBOSCH 403 JS, MIDDELBURG

Report prepared for: Middelburg Muslim Jamaat

Report dated: April 2019 (draft)

Report number: BA 2018/01

DARDLEA ref: 1/3/1/16 1N-174

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PROJECT INFORMATION SUMMARY

PROJECT TITLE	The development of a residential area on a portion of Portion 93 of the farm Rondebosch 403 JS, Middelburg

CLIENT	Middelburg Muslim Jamaat
CONTACT DETAILS	P.O. Box 2211 Middelburg 1050 013-691 5700

CONSULTANT	AdiEnvironmental cc
CONTACT DETAILS	P.O. Box 647 Witbank 1035 013-697 5021

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UNDERTAKING BY EAP

as required in terms of Section 2(j) of Appendix 2 of the Environmental Impact Assessment Regulations, 2014.

Project: The development of a residential area on a portion of Portion 93 of the farm Rondebosch 403 JS, Middelburg.

I, ADRIENNE ERASMUS, *hereby confirm that:*

- *the information provided in this Draft Basic Assessment Report is, to the best of my knowledge, correct as at the time of compilation thereof;*
- *comments and inputs obtained from stakeholders and interested and affected parties through the public participation process conducted to date have been included in this Draft Basic Assessment Report;*
- *information provided to interested and affected parties (to date) has been included in this Draft Basic Assessment Report;*
- *inputs and recommendations from the specialist reports are included in this Draft Basic Assessment Report.*

Signed at MALAHLENI on this 10TH day of APRIL of 2019.

Signature:.....

Company: ADI ENVIRONMENTAL CC

I, Riana J. van Rensburg, *hereby confirm that:*

- *the information provided in this Draft Basic Assessment Report is, to the best of my knowledge, correct as at the time of compilation thereof;*
- *comments and inputs obtained from stakeholders and interested and affected parties through the public participation process conducted to date have been included in this Draft Basic Assessment Report;*
- *information provided to interested and affected parties (to date) has been included in this Draft Basic Assessment Report;*
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Signed at eMalahleni on this 10th day of April of 2019.

Signature:.....

Company: Adi Environmental cc

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LIST OF ABBREVIATIONS

°C	Degrees Celsius
BA	Basic Assessment
CBA	Critical Biodiversity Area
COGTA	Department of Co-operative Governance and Traditional Affairs
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
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EIS	Ecological Importance and Sensitivity
EMPr	Environmental Management Programme
ESA	Ecological Support Area
ha	hectares
HIA	Heritage Impact Assessment
I&AP	Interested and Affected Party
km	kilometer
kl	kiloliter
ℓ	liter
l/s	liters per second
m	meters
mamsl	meters above mean sea level
mbgl	meters below ground level
mm	millimeter
MBSP	Mpumalanga Biodiversity Sector Plan
MTPA	Mpumalanga Tourism and Parks Agency
NFEPA	National Freshwater Ecosystem Priority Areas
PIA	Palaeontological Impact Assessment
PES	Present Ecological State
SAHRA	South African Heritage Resources Agency
SDF	Spatial Development Framework
STLM	Steve Tshwete Local Municipality

SECTION 1: INTRODUCTION

The applicant, *Middelburg Muslim Jamaat* (represented by Mr. Y.A. Mansoor), intends to develop a residential area on a portion of Portion 93 of the farm Rondebosch 403 JS, Middelburg. The proposed development will comprise residential stands, an institutional stand, private open space and roads. The proposed site is ±5 ha in extent and located adjacent to Riyadh Street, Eastdene X1, Middelburg.

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 ultimate aim of an environmental impact assessment is to *"identify, predict and evaluate the actual and potential risks for and impacts on the geographical, physical, biological, social, economic and cultural aspects of the environment, in order to find the alternative and options that best avoid negative impacts altogether, or where negative impacts cannot be avoided, to minimise and manage negative impacts to acceptable levels, while optimising positive impacts, to ensure that ecological sustainable development and justifiable social and economic development outcomes are achieved."* (DEA, 2017).

The proposed activity would require a Basic Assessment process since the following listed activities (as identified in the Environmental Impact Assessment Regulations, 2014 (as amended)) are triggered:

Listing	Activity
Listing Notice 1 (GN R327 of 7 April 2017) Listed Activity 12	*The development of (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a water course;- excluding (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such development occurs within an urban area; (ee) where such development occurs within existing roads, road reserves or railway line reserves; or (ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.*
Listing Notice 1 (GN R327 of 7 April 2017) Listed Activity 27	*The clearance of an area of 1 hectares 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.*

Listing	Activity
Listing Notice 1 (GN R327 of 7 April 2017) Listed Activity 28	*Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 1 April 1998 and where such development: (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare.*
Listing Notice 3 (GN R324 of 7 April 2017) Listed Activity 14	*The development of (i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.*

AdiEnvironmental cc. was appointed as independent environmental consultant to conduct the required Basic Assessment and compile the necessary documentation.

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.

The overall aim of the process is to provide the competent authority with adequate information to make an informed decision regarding the proposed activity, thereby ensuring that activities with an unacceptable degree of negative impacts are not authorized and that authorized activities are undertaken in a manner where environmental impacts are managed to acceptable levels.

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.

Diagram 1 provides a schematic description of the Basic Assessment process followed and the current status of the process.

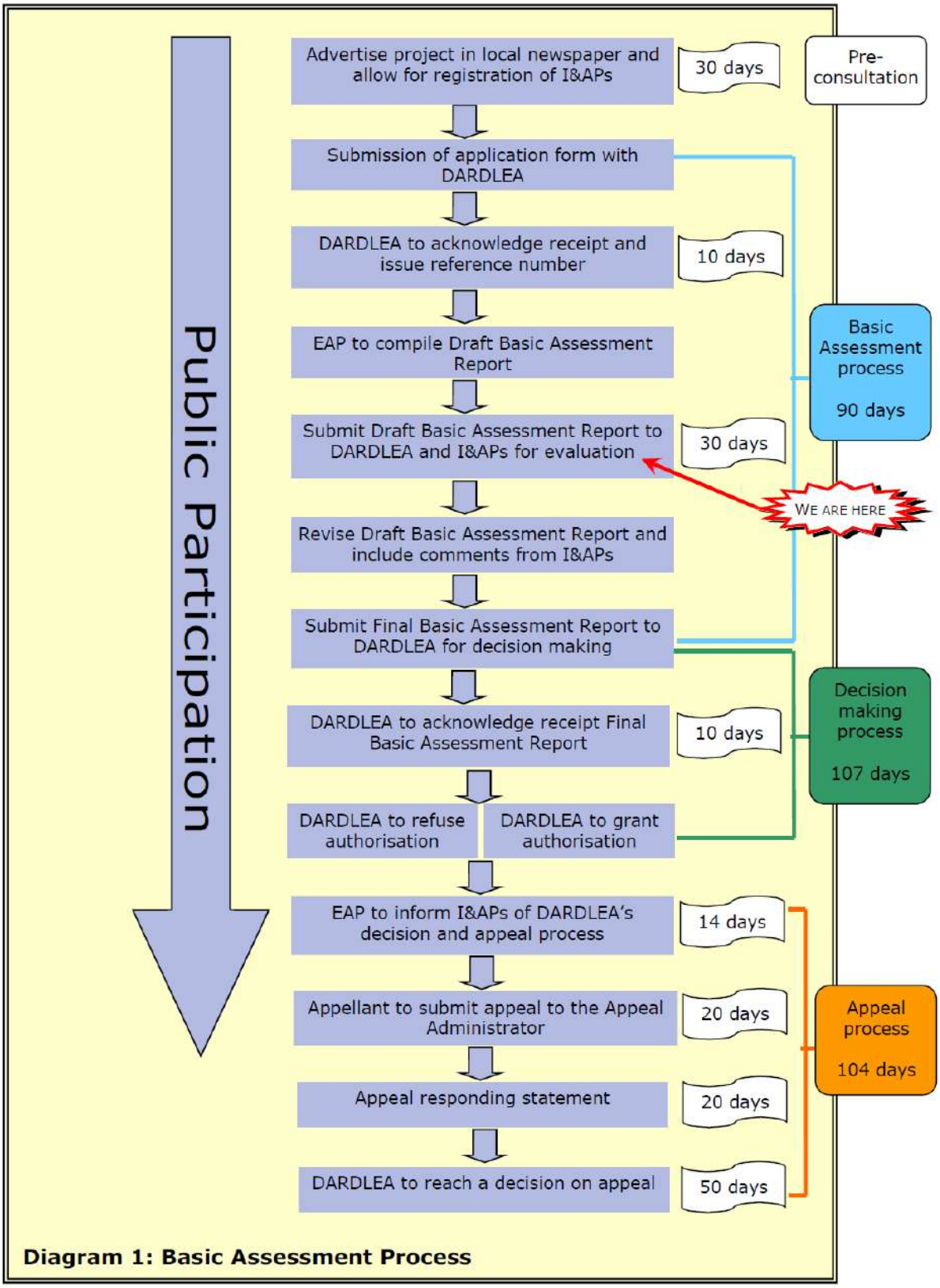


Diagram 1: Basic Assessment Process

SECTION 2: CONTACT DETAILS

As per Appendix 1 of the EIA Regulations, 2014 (as amended), this section provides the following details:

> *(i) the EAP who prepared the report; and*
> *(ii) the expertise of the EAP, including a curriculum vitae.*

In addition, the contact details of the applicant and the specialists who conducted the required specialist studies are also provided.

2.1 Details of the project applicant

Name of Applicant	Middelburg Muslim Jamaat
NPO Registration No	032-554-NPO
Address	P.O. Box 2211 Middelburg 1050
Contact Person	Mr. Y.A. Mansoor
Telephone number	013-691 5700
Cell number	083 778 8735
E-mail	yacoob@liketh.co.za

2.2 Details of the Environmental Assessment Practitioner (EAP)

The Middelburg Muslim Jamaat appointed AdiEnvironmental cc, an independent environmental consultancy, to undertake the Basic Assessment process for the proposed development in accordance with the Environmental Impact Assessment Regulations (EIA), 2014 (as amended).

Name of company	AdiEnvironmental cc
Company registration number	CK99/036174/23
Address	P.O. Box 647 Witbank, 1035
Environmental Assessment Practitioner 1 (EAP1)	Adrienne (Adie) Erasmus *M.Sc* *Pr. Sci. Nat. (400078/96)*
Environmental Assessment Practitioner 2 (EAP2)	Riana Janse van Rensburg *M. Env. Mgt.*
Telephone number	013-697 5021
Fax number	013-697 5021
Cell number	083 271 8260
E-mail	adie@adienvironmental.co.za riana@adienvironmental.co.za

Ms. A. Erasmus has an M.Sc with more than 20 years environmental management experience. She is a Professional Natural Scientist (Botanical and Ecological Science) registered with South African Council for Natural Scientific Professions. Ms. R. Janse van Rensburg has an M. Env. Mgt with more than 17 years environmental management experience.

Ms. Erasmus and Ms. Janse van Rensburg have been involved in the management and execution of numerous environmental assessments. The Curriculum Vitae of the Environmental Assessment Practitioners (EAPs) are provided in Appendix 2 together with a list of projects completed to date.

Both EAPs comply with the requirements as stipulated in Regulation 13 of the EIA Regulations, 2014 (as amended) in terms of independence, expertise, objectivity, etc. The declaration and affirmation by the EAPs is included in the front of this document.

AdiEnvironmental cc has no vested interest (other than fair remuneration) in the approval of this project, and hereby declares its independence as required by the EIA Regulations, 2014 (as amended).

2.3 Details of the specialists

Specialist studies were undertaken as part of the Basic Assessment process to address issues that required further investigation. The following specialists were appointed by the EAP:

Specialist Study	Consultant	Qualifications
Heritage Assessment	Prof Anton van Vollenhoven (Archaetnos Culture and Cultural Consultants)	• BA • BA (HONS) Archaeology • MA Archaeology • Post-Graduate Diploma in Museology • Diploma Tertiary Education • DPhil Archaeology • MA Cultural History • Management Diploma • DPhil History *ASAPA Accreditation: 166* *SASCH Accreditation: CH001*
Palaeontological Assessment	Dr Heidi Fourie (Heidi Fourie Consulting)	• B.Sc Geology and Zoology • Ph.D Palaeontology *Member: Palaeontological Society of SA.*

The Curriculum Vitae and declarations of independence of the above-mentioned specialists are provided in Appendix 2.

SECTION 3: DESCRIPTION OF THE ACTIVITY

The purpose of this section is to present sufficient project information to interested and affected parties, stakeholders and government departments in terms of the design parameters applicable to the project.

This section therefore provides information on the following as per Appendix 1 of the EIA Regulations, 2014 (as amended):

- *A description of the scope of the proposed activity;*
- *A description of the activities to be undertaken including associated structures and infrastructure;*
- *A plan which locates the proposed activity as well as associated structures and infrastructure (i.e. conceptual design/layout plan).*

It should be noted that the project description details are preliminary at this early stage of the project life-cycle. It is thus possible that some of the design parameters may change during the detailed design phase. However, the project description used in this Basic Assessment Report assumes a worst-case scenario, where the maximum development footprint and all associated infrastructure are taken into account.

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

3.1.1 Introduction

The applicant, Middelburg Muslim Jamaat, intends to develop a residential area on a portion of Portion 93 of the farm Rondebosch 403 JS, Middelburg. The said site is located adjacent to Riyadh Street, Eastdene X1, Middelburg (Figure 3.1).

The proposed development will comprise of:

- 21 Residential 1 stands,
- 1 Institutional stand (for religious purposes),
- Private Open Space; and
- roads.

The average stand size will be 909m^2, which is in line with the surrounding residential area.

The development will be a gated community (with a screen wall, security gate and guard house) so as to ensure adequate security for the residents.

3.1.2 Location of site

The proposed development will be located on a portion of Portion 93 of the farm Rondebosch 403 JS, Middelburg. This site is located adjacent to Riyadh Street, Eastdene X1, Middelburg (Figure 3.1).

The entire property is 25 ha in extent, of which ±5 ha will be utilized for the development.

Figure 3.1 indicates the location of the site and Table 3.1 the property details.

Table 3.1: Details of the property

Farm	Rondebosch 403 JS
Portion	A portion of Portion 93 (Portion of Portion 5)
Title Deed Number	T97820/98
21 Digit SG Code	T0JS00000000040300093
Registered Landowner	Middelburg Muslim Jamaat
Size of property	25 ha
Size (footprint) of site	±5ha
Centre Co-ordinates of site	25°46'03.50"S 29°29'35.97"E
Magisterial District	Steve Tshwete Local Municipality Nkangala District Municipality
Closest Town	Middelburg

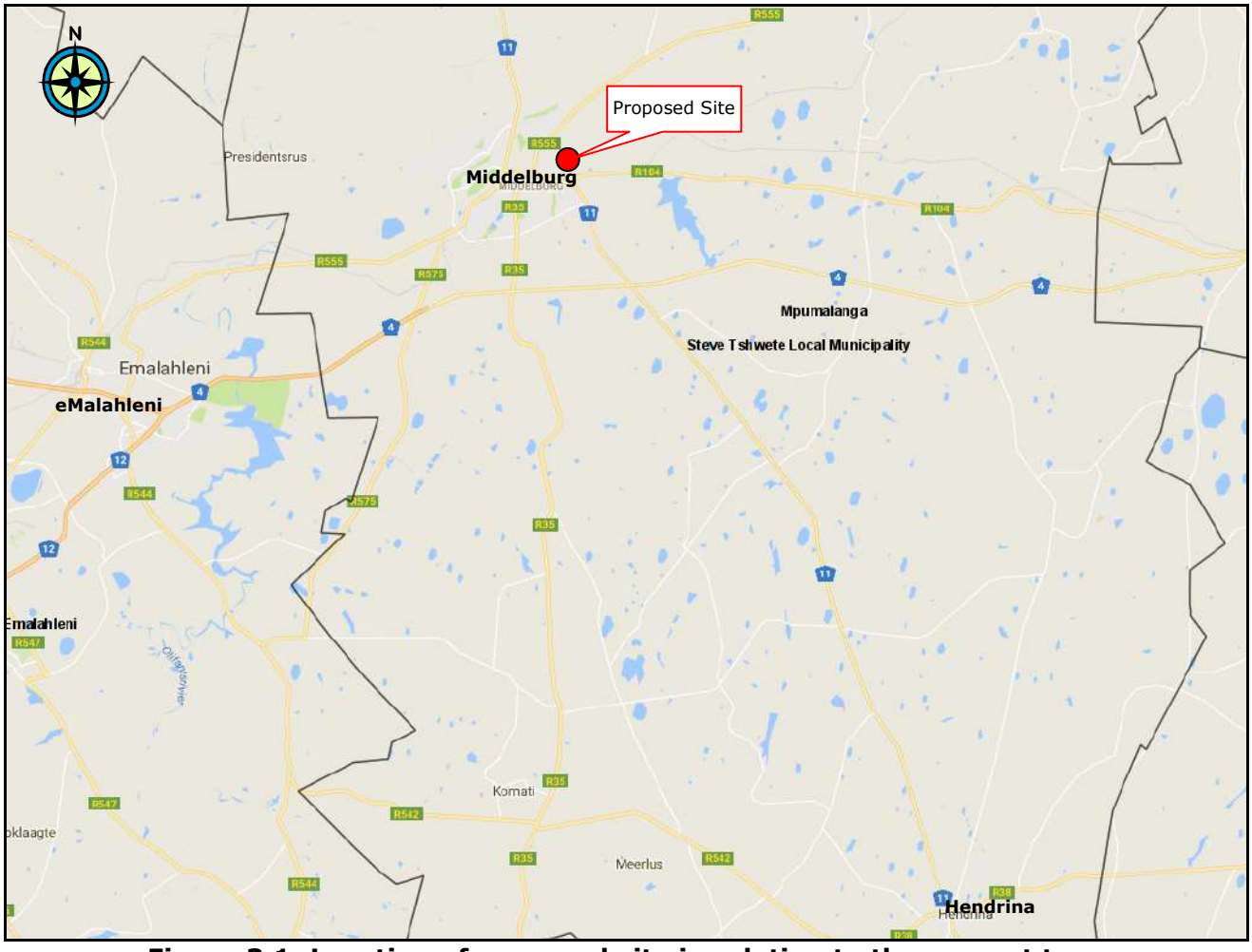


Figure 3.1: Location of proposed site in relation to the nearest towns

3.1.3 Layout plan

Figure 3.2 provides an indication of the proposed layout plan as designed by Urban Dynamics Town and Regional Planners (hereafter referred to as Urban Dynamics, 2018). A copy of the town planning memorandum is provided in Appendix 3.

Table 3.2 provides an indication of the proposed zonings and number of stands.

Table 3.2: Proposed zonings (taken from Urban Dynamics, 2018)

Zoning	Density	Area (m^2)	Quantity
Residential 1	544.1m^2 - 2060,3 m^3	19 092.6	21
Institutional	n/a	9 547.4	1
Private Open Space	n/a	14 438	2
Streets	n/a	5 200	n/a
Total		**48 278**	**23**

Residential 1

A total of 21 'Residential 1' stands are proposed. The stands sizes will vary between 544.1m^2 - 2060,3 m^3 with an average size of 909.21m^2. According to Urban Dynamics (2018), this is in line with the residential density in the surrounding area.

As indicated in Figure 3.2, the residential stands will be located in the eastern and southern portions of the site adjacent to a wetland area. A screen wall, with a security gate and guard house, will be provided so as to ensure adequate security for the residents.

A Clearvu fence will be erected along the boundary abutting the Public Open Space in order to allow residents a view of this area. Residents will also be allowed to access the Public Open Space area through a pedestrian security gate.

Institutional

An Institutional stand (9547.4 m^2) is provided in the western portion of the site for the purpose of a mosque, which will cater for the needs of the greater Eastdene community.

To facilitate the flow of traffic, the mosque will be accessed from Riyadh Street (western boundary) and exited via the Right-of-Way servitude gravel road located on the southern boundary (Figure 3.2).

Private Open Space

The wetland area and 20 m buffer zone will be zoned Private Open Space and will be 14 438 m^2 in extent (Figure 3.2). Residents will be able to access this area through a pedestrian security gate.

According to Urban Dynamics (2018), parks/open spaces form an integral part of a development and are necessary for the functionality of an area as well as providing recreational spaces for the residents.

The layout plan does not cater for standalone parks, since the wetland located in the northern portion of the site dictated the location of the open space.

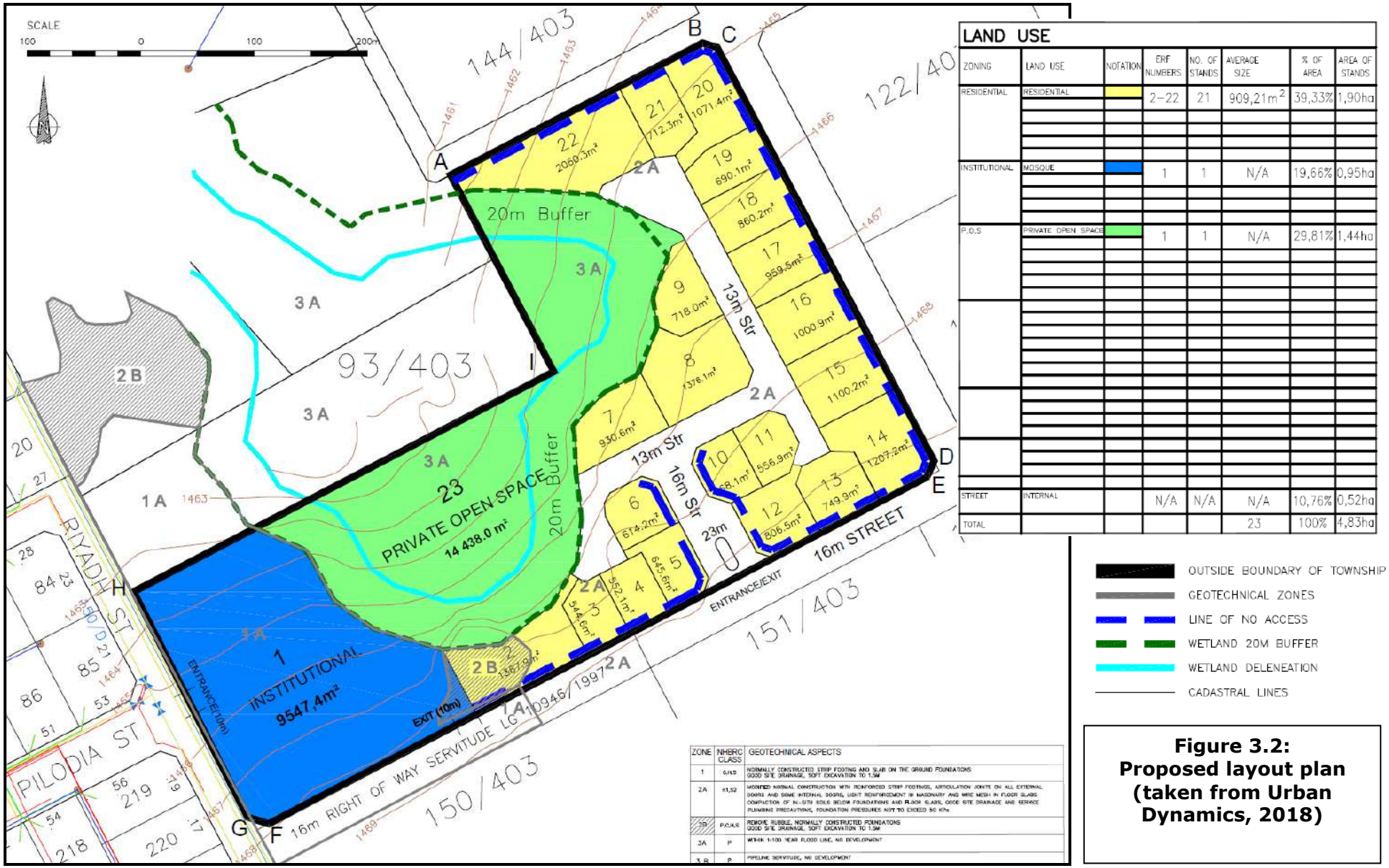


Figure 3.2: Proposed layout plan (taken from Urban Dynamics, 2018)

3.2 Services required

The said site is located on the edge of the Middelburg urban area and is currently not serviced by the Steve Tshwete Local Municipality. Connections to existing services are available in the adjacent residential area.

BTW & Associates (Pty) Ltd. (hereafter referred to as Bouwer, 2018a) was appointed to investigate the civil engineering services required for the proposed development. A copy of the engineering report is provided in Appendix 4.

The link services (roads and electricity) and the internal reticulation (water, sewer, electricity, streets and street lighting) of the development will be done by the developer to the satisfaction of the Steve Tshwete Local Municipality.

The applicant will be responsible for the installation of the services, whereafter the services will be handed over to the municipality.

3.2.1 Water

During the construction phase, the various contractors would have to provide potable water to the site workers.

During the operational phase, potable water will be provided by the Steve Tshwete Local Municipality (STLM), who is the Water Service Authority and the Water Services Provider, in terms of the Water Services Act (Act 108 of 1997).

Water supply

The STLM is licensed by the Department of Water and Sanitation (license no B33/2/2005) to abstract 13.3 x 10^6 m^3/annum from the Middelburg Dam, located in the Klein Olifants River.

The raw water is purified at the Vaalbank Water Treatment Works and then distributed to the various reservoirs and water reticulation networks of Middelburg. The current treatment capacity is 44 000 kl/day.

The proposed development will be supplied with potable water from the Nasaret reservoirs. According to Bouwer (2018a), the reservoirs have a combined capacity of 19 Ml.

Water demand

According to Bouwer (2018a), the proposed development will have an estimated Daily Water Demand of **33.5 kl/day**. A summary of the water requirements is provided in Table 3.3.

Table 3.3: Water demand (taken from Bouwer, 2018a)

Description	Erven	Estimated Demand	Water Demand (kl/day)
Residential 1	21	1 500 l/erf/day	31.5
Institutional (Mosque)	1	2 kl/day	2
Public Open Space	1	-	0
Roads	1	-	0
Estimated Average Daily water Demand			**33.5 kl/day**

Water reticulation network

According to Bouwer (2018a), the proposed development will connect to the existing 110 mm diameter water line located in Eastdene x1. The proposed connection point will be in Riyadh Street as indicated in Figure 3.3.

A new 110 mm uPVC Class 9 main line will be installed along the perimeter of the site. This main line will also be extended in a northerly direction in order to serve the adjacent smallholdings (Figure 3.3).

An internal water reticulation network located within the road reserve will also be provided (Figure 3.3). A metered water connection will be provided within each stand, which will enable the local municipality to carry out meter readings.

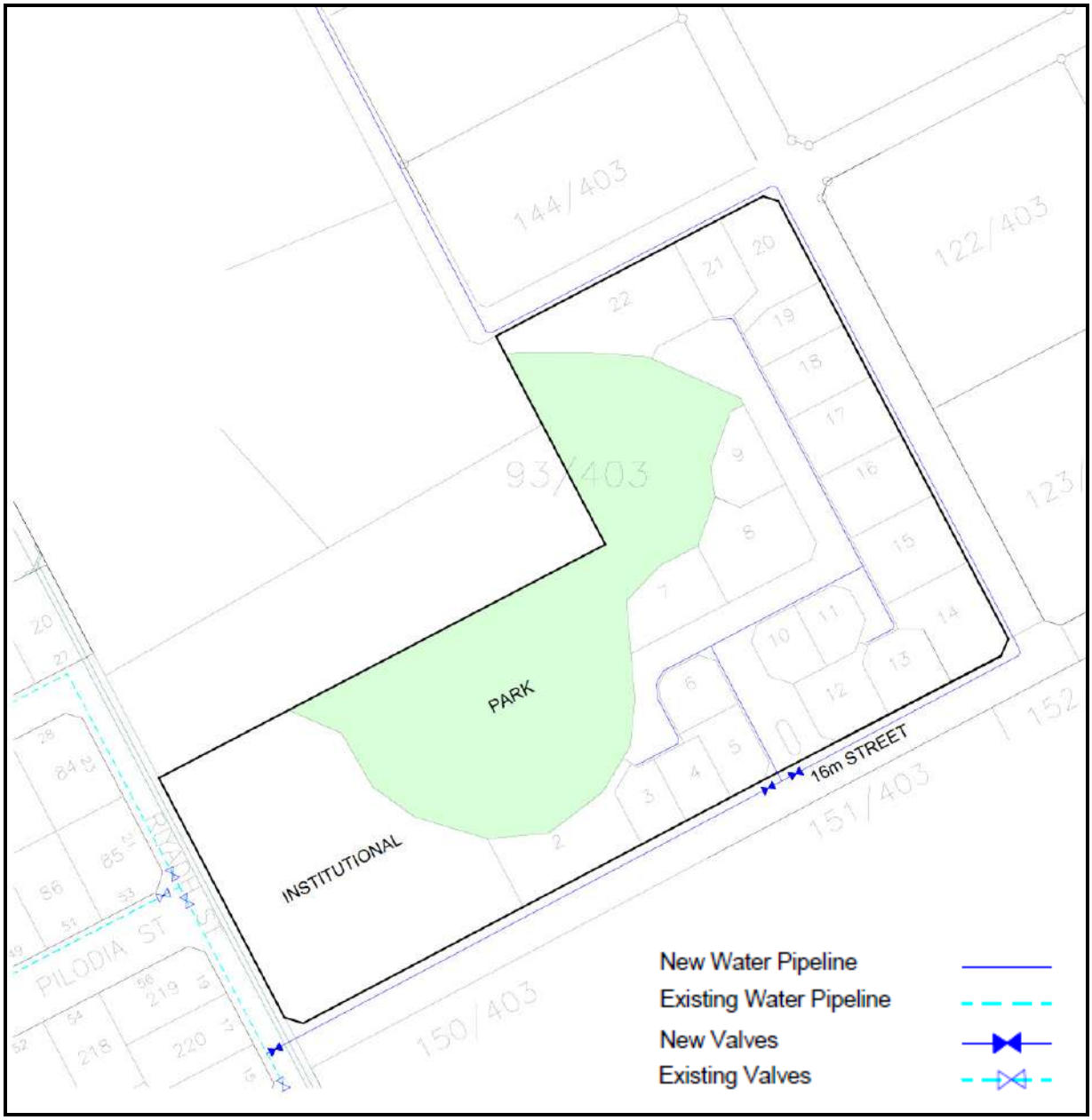


Figure 3.3: Water reticulation network (taken from Bouwer, 2018a)

Table 3.4 provides details of the proposed internal water reticulation network to be provided in order to meet the requirements of the STLM.

Table 3.4: Water reticulation design parameters (taken from Bouwer, 2018a)

Service Standards	Design Parameters
Level of service	Level 4 - on site reticulation
Fire risk	Low risk - group 1
Design Parameter	
Average daily potable water demand	33.5 kl/day
Peak factor	4
Peak flow	2.25 l/s
Reservoir storage capacity required (48 h of average daily demand)	97 kl
Flow at fire hydrants	900 l/min (15 l/s)
Duration of fire flow	2 hours
Minimum pressure in network - normal flow	12 m
Minimum pressure in network - fir flow	7 m
Maximum pressure in network	90 m
Maximum spacing of fire hydrants	240 m
Scour valves	Fire hydrant locations to be such that they can also serve as scour valves
Isolation valve spacing	To allow for isolation of sections of maximum 600 meters by closing maximum 4 valves
Erf connections	All stands to be provided with individual metered water connections.
Materials (sizes and type)	
Minimum pipe diameter	110 mm diameter
Pipe type and class	uPVC Class 9
Hydrant valves	Sluice t type
Valve type	Waterworks gate valves with cap top and non-rising spindles
Construction Parameters	
Minimum cover to pipes in road reserves and servitudes	800 mm
Minimum cover to pipes at road crossings	1 200 mm

3.2.2 Electricity

LTZ Consulting Electrical Engineers (hereafter referred to as Stoltz, 2018) was appointed to investigate the availability of electrical services for the proposed development. A copy of the report is provided in Appendix 4.

According to Stoltz (2018), overhead electrical infrastructure from both Eskom and the STLM are present in the surrounding area. The proposed development falls under the jurisdiction of Eskom and would therefore connect to the existing Eskom infrastructure. Overhead power lines are present on the southern and eastern boundaries of the site.

According to Stoltz (2018), the total estimated additional load required for the proposed development is **128.1 kVA** as set out in Table 3.5.

Table 3.5: Total load requirement (taken from Stoltz, 2018)

Load	Quantity	After Diversified Maximum Demand (ADMD)	kVA
Residential 1	21	5.1	107.1
Institutional	1	15	15
Street lights	15	0.2	3
Gate house	1	3	3
		Total further demand (kVA)	**128.1**

According to Stoltz (2018), Eskom confirmed that capacity is available for the proposed development.

3.2.3 Sewage

During the construction phase, the contractor would have to provide chemical toilets on site.

During the operational phase, the development will connect to the existing outfall sewer located north of the site as well as to the existing sewer network in Eastdene X1.

Wastewater treatment

Sewage will be treated at the licensed (No 03/B12D/CFG1/4814) Boskrans Wastewater Treatment Plant (WWTP). According to Bouwer (2018a), the WWTP was upgraded in 2015 as indicated in Table 3.6 and does have available capacity (17 Ml/day). More detail regarding the capacity of the plant is provided in Table 3.6.

Table 3.6: Details of Boskrans Wastewater Treatment Plant (taken from Bouwer, 2018a)

Name of wastewater treatment plant	Boskrans Wastewater Treatment Plant
Present capacity of the plant	45 M./day
Present quantity of sewage treated	28 Ml/day
Capacity available	17 Ml/day
Planned refurbishment	The WWTP was upgraded in 2015
Quaternary catchment area	B12E
Sewage treatment plant licensed	Yes
License number	03/B12D/CFGi/4814
Effluent standard	Special Limit

Wastewater treatment demand

According to Bouwer (2018a), the proposed development will have an estimated wastewater treatment demand of **24.6 kl/day** as indicated in Table 3.7. Bouwer (2018a) indicated that treatment capacity is available (Table 3.6).

Table 3.7: Estimated wastewater treatment demand (taken from Bouwer, 2018a)

Description	Erven	Estimated sewage produced	Total quantity sewage per day (kl/day)
Residential 1	21	1 100 //stand/day	23.1
Institutional	1	1 500 l/day	1.5
Public Open Space	1	-	0
Roads	1	-	0
Estimated Average Daily water Demand			**24.6 kl/day**

Sewer reticulation network

A complete waterborne sewage system will be provided with a sewer connection point at each stand (Bouwer, 2018a).

The sewer reticulation will be connected to two existing networks, due to the development being located on a watershed.

The Residential stands will connect to the existing outfall sewer from Rockdale, which crosses the smallholdings located north of the site (Figure 3.4). The institutional stand will connect to the existing midblock sewer network in Eastdene X1, between Medina Street and Pilodia Avenue (Figure 3.4).

According to Bouwer (2018a), the slope of the property is adequate to install gravity sewer systems towards the proposed connection points.

Table 3.8 provides details of the proposed internal sewer reticulation to be provided in order to meet the requirements of the Steve Tshwete Local Municipality.

Table 3.8: Sewer reticulation design parameters (taken from Bouwer, 2018a)

Service Standards	Design Parameters
Level of service	Level 4 - full waterborne sewer system
Design Parameter	
Average daily sewage produced	24.6 kl/day
Peak factor	PDWF = 2.5; PWWF = 4
Infiltration	25%
Average flow	0.37 l/s
Peak dry weather flow	0.93 l/s
Peak wet weather flow	1.49 l/s
Minimum flow speed	0.7 m/s
Minimum slope - 160 mm diameter pipe	1: 200
Service Standards	
Maximum manhole spacing	80 m
Materials (Sizes and Type)	
Minimum sewer collector	160 mm diameter
House connections	110 mm diameter
Reticulation	uPVC Class 34 sewer pipes
Sewage rising main	uPVC Class 9
Manholes	Pre-cast circular concrete chambers
Manhole covers	Concrete
Manhole size: <2 000 mm depth Manhole size: >2 000 mm depth	1 000 mm diameter 1 500 mm diameter
Construction Parameters	
Minimum cover to pipes in servitudes	800 mm
Minimum cover to pipes at road crossings	1 200 mm

Figure 3.4: Sewer reticulation network (taken from Bouwer, 2018a)

3.2.4 Waste management

During the construction phase, building rubble and a small amount of domestic waste would be generated. The contractor would have to provide adequate containers for the collection of waste. The applicant would have to ensure that the contractors remove the said building rubble and domestic waste to the registered Rietfontein Waste Disposal Site.

Any hazardous waste (e.g. soil contaminated with fuel/oil, paint tins, etc.) would have to be disposed at a Hazardous Waste Disposal Facility by a company dealing with such waste.

During the operational phase, the refuse will be collected by the Steve Tshwete Local Municipality's refuse removal unit and will be disposed of at the registered Rietfontein Waste Disposal Site.

According to Bouwer (2018a), it is estimated that approximately 0.54 tons of waste would be produced per day, taking into account the estimated number

of people (i.e. 108) and the waste generation rate (i.e. 5 kg waste/person/day). This equates to approximately **197.1 tons/year**.

3.2.5 Storm water control measures

No storm water management infrastructure is present on site. In addition, no existing storm water systems are present near the site, to which the proposed development could connect. At present, storm water flows overland in a north westerly direction towards the valley bottom wetland and the Klein Olifants River. The applicant will therefore have to install the required storm water management measures on the said property.

A storm water management plan was drafted for the proposed development by BTW & Associates (Pty) Ltd. (hereafter referred to as Bouwer, 2018b). A copy of the storm water management plan is provided in Appendix 4.

Bouwer (2018b) used the size of the site, topography, vegetation coverage, rainfall figures and development footprint to determine the before and after development flows of storm water on site (Table 3.9). Refer to Appendix C of Appendix 4 (storm water management plan) for the Rational Method calculation sheets.

Table 3.9: Before and after development flows (taken from Bouwer, 2018b)

Occurrence Interval	Before Development (m^3/s)	After Development (m^3/s)
1:2 year	0,042	0,096
1:5 year	0,059	0,136
1:10 year	0,073	0,169
1:20 year	0,092	0,212
1:50 year	0,129	0,299
1:100 year	0,170	0,394

According to Bouwer (2018b), the 'after development storm water' flows are approximately 2.3 times the 'before development storm water' flows.

Figure 3.5: Roads and storm water plan (taken from Bouwer, 2018a)

To ensure that the increased surface runoff does not impact on the valley bottom wetland present on site, or lead to flooding and erosion, Bouwer (2018b) recommended the following with regards to the storm water system:

- Storm water to be drained on surface along the paved internal and access roads;
- Infiltration down the verges of the roads to prevent the accumulation of storm water;
- Storm water to be released at frequent intervals to limit the concentration of released water.

The proposed storm water flow directions and release intervals are indicated in Figure 3.5.

3.2.6 Access road

The existing road network through Eastdene will be utilized to access the proposed development (Figure 3.5).

Access to the Institutional stand will be provided from both Riyadh Street and the Right-of-Way servitude gravel road (Figure 3.1).

Access to the gated residential development will only be provided at one point on the southern boundary of the site i.e. from the existing 16 m Right-of-Way servitude gravel road (Figure 3.5). The portion of the road extending past the site will be paved. An internal road with a 13 m road reserve will be constructed to access the various erven (Figure 3.2).

According to Bouwer (2018a), the access streets (with 16 m road reserves) will be designed as Class 4 roads, whilst the internal streets (with 13 m road reserves) will be designed as Class 5 roads. Bouwer (2018a) recommended that the roads be constructed with interlocking, segmented paving with concrete barrier kerbs around the corners and mountable kerbs on straight sections.

More information regarding the street design parameters and pavement design is provided in the engineering report (Appendix 4).

3.2.7 Fire fighting

According to Bouwer (2018a), fire hydrants will be provided as part of the water reticulation network (see Section 3). The fire hydrants will have a maximum spacing of 240 m and flow of 900 l/min (15 l/s).

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

3.3 Reason for project

The growth of the Eastdene community and the expansion of the existing Middelburg Muslim School have led to a demand for housing in the area. According to Urban Dynamics (2018), no vacant erven are available in Eastdene for purchase from the STLM.

Since the Eastdene residential area can only expand in an easterly direction, the Middelburg Muslim Jamaat (applicant) purchased the said property for development purposes.

SECTION 4: APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

The primary legal requirement for this project stems from the need for a Basic Assessment (BA) and Environmental Authorisation (EA) in terms of National Environmental Management Act, 1998 (NEMA) (Act 107 of 1998) and the Environmental Impact Assessment Regulations, 2014 (as amended).

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 NEMA, 1998 (Act 107 of 1998), a number of activities that require an environmental impact assessment (either a Basic Assessment (BA) or a full Environmental Impact Assessment (EIA)) before undertaking these activities.

The proposed activity would require a Basic Assessment process since the following listed activities (as identified in the Environmental Impact Assessment Regulations, 2014 (as amended)) are triggered:

Listing	Activity
Listing Notice 1 (GN R327 of 7 April 2017) Listed Activity 12	*The development of (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a water course;- excluding (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such development occurs within an urban area; (ee) where such development occurs within existing roads, road reserves or railway line reserves; or (ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.*
Listing Notice 1 (GN R327 of 7 April 2017) Listed Activity 27	*The clearance of an area of 1 hectares 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.*
Listing Notice 1 (GN R327 of 7 April 2017) Listed Activity 28	*Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 1 April 1998 and where such development: (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare.*
Listing Notice 3 (GN R324 of 7 April 2017) Listed Activity 14	*The development of (i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.*

Appendix 1 of the EIA Regulations, 2014 (as amended) prescribes the content of the Basic Assessment Report and supporting documentation that must be submitted to the competent authority in order to obtain an EA. Table 4.1 provides an overview of where the requirements of Appendix 1 of the EIA Regulations (2014) are addressed in this BA Report.

Table 4.1: Content of the Basic Assessment Report in accordance with Appendix 1 of the EIA Regulations, 2014 (as amended)

APPENDIX 1 OF GN 326 OF 7 APRIL 2017	SECTION IN BA REPORT
3(1) A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include—	
(a) details of— (i) the EAP who prepared the report; and (ii) the expertise of the EAP, including a curriculum vitae;	 (i) Section 2 (ii) Section 2 and Appendix 2
(b) the location of the activity, including: (i) the 21 digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name; (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	 (i) Section 5.1 (ii) Section 5.1 (iii) Section 5.1
(c) a plan which locates the proposed activity or activities applied for as well as associated structures and infrastructure at an appropriate scale; or, if it is— (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	Figure 5.1 - Topographical map; Figure 5.2 - Aerial view
(d) a description of the scope of the proposed activity, including— (i) all listed and specified activities triggered and being applied for; and (ii) a description of the activities to be undertaken including associated structures and infrastructure;	 (i) Section 1.1 (ii) Section 3; Section 7
(e) a description of the policy and legislative context within which the development is proposed including— (i) an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and (ii) how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments;	 (i) Section 4; Table 4.2 (ii) Section 4; Table 4.2
(f) a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	Section 3; Section 7; Section 10
(g) a motivation for the preferred site, activity and technology alternative;	Section 7
h) a full description of the process followed to reach the proposed preferred alternative within the site, including— (i) details of all the alternatives considered;	 (i) Section 7
(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	(ii) Section 6; Section 11 and Appendices 10 to 13
(iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	(iii) Section 6; Table 6.4
(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	(iv) Section 5
(v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts— (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated;	(v) Section 8
(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;	(vi) Section 8
(vii) positive and negative impacts that the proposed activity and alternatives will	(vii) Section 8

APPENDIX 1 OF GN 326 OF 7 APRIL 2017	SECTION IN BA REPORT
have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	
(viii) the possible mitigation measures that could be applied and level of residual risk;	(viii) Section 9 (EMPr)
(ix) the outcome of the site selection matrix;	(ix) Section 7
(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and	(x) N/A
(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity;	(xi) Section 7.5
(i) a full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including— (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;	Section 8
(j) an assessment of each identified potentially significant impact and risk, including— (i) cumulative impacts; (ii) the nature, significance and consequences of the impact and risk; (iii) the extent and duration of the impact and risk; (iv) the probability of the impact and risk occurring; (v) the degree to which the impact and risk can be reversed; (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and (vii) the degree to which the impact and risk can be avoided, managed or mitigated;	Section 8
(k) where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report;	Section 5; Section 9 (EMPr); Section 10
(l) an environmental impact statement which contains— (i) a summary of the key findings of the environmental impact assessment; (ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	(i) Section 10 (ii) Section 9 (EMPr) and Figure 9.1 (iii) Section 7; Section 10
(m) based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management outcomes for the development for inclusion in the EMPr;	Section 9 (EMPr)
(n) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;	Section 10
(o) a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	Section 10
(p) a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	Section 10
(q) where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised;	N/A
(r) an undertaking under oath or affirmation by the EAP in relation to — (i) the correctness of the information provided in the reports; (ii) the inclusion of comments and inputs from stakeholders and I&APs; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties; and	Front of Document
(s) where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	N/A
(t) any specific information that may be required by the competent authority; and	N/A
(u) any other matters required in terms of section 24(4)(a) and (b) of the Act.	N/A

Table 4.2 provides a summary of the key policy and legislative requirements applicable to the proposed project, including how it was considered in the preparation of the report.

Table 4.2: Applicable legislation, policies and/or guidelines

Legislation/policies/guidelines	Aim of legislation, policy or guideline	Where considered in BA Report	Adherence of proposed activity
Environmental Management			
The Constitution of the Republic of South Africa, 1996 (Act 108 of 1996)	To establish a Constitution with a Bill of Rights for the RSA. It sets out of a number of fundamental environmental rights (Section 24).	Throughout the Basic Assessment process.	The development will not be harmful to the health or wellbeing of surrounding landowners/users. Mitigation measures will be implemented to ensure that the environment is not polluted or degraded.
National Environmental Management Act, 1998 (Act 107 0f 1998) and amendments	To provide for the integrated management of the environment. Chapter 1 sets out the national environmental principles. Chapter 5 deals specifically with integrated management. Chapter 7 deals with compliance and enforcement with specific reference to Section 28 (duty of care)	Throughout the Basic Assessment process.	Environmental management principles and general objectives of Integrated Environmental Management taken into account throughout the Basic Assessment process.
Environmental Impact Assessment Regulations, 2014 and amendments (GN 324, 325, 326, 327)	Regulations pertaining to environmental impact assessments.	Throughout the Basic Assessment process. Listed Activities 12, 27 and 28 of GN 327 and Listed Activity 14 of GN 324.	Basic Assessment process undertaken for the proposed development in accordance with the requirements of the Regulations.
Public Participation Guideline in terms of EIA Regulations, 2017	Guideline on the public participation process	Section 6 - Public participation	Adjacent landowner/users, relevant stakeholders and interested and affected parties were consulted to obtain input with regards to the proposed development and to resolve any queries or concerns with regards to the activity.
Guideline on Need and Desirability in terms of EIA Regulations, 2017	Guideline with regards to need and desirability of activities	Section 3 - Project description Section 7 - Alternatives Section 10 - Impact statement	The need and desirability of the proposed development was considered during the Basic Assessment process.
Biodiversity			
National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) and amendments	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	Section 5.7 - Vegetation Section 5.8 - Animal life	Mitigation measures in terms of the protection of the wetland on site are indicated in the EMPr (Section 9).

Legislation/policies/guidelines	Aim of legislation, policy or guideline	Where considered in BA Report	Adherence of proposed activity
	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 Biodiversity Framework (NBF, 2008)	To co-ordinate and align the efforts of the organisations and individuals involved in conserving and managing South Africa's biodiversity	Section 5.7 - Vegetation Section 5.8 - Animal life	Mitigation measures in terms of the protection of the wetland on site are indicated in the EMPr (Section 9).
National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004): National List of Ecosystems that are threatened and in need of protection (9 December 2011).	The purpose of listing threatened ecosystems is primarily to reduce the rate of ecosystem and species extinction. This includes preventing further degradation and loss of structure, function and composition of threatened ecosystems. The purpose of listing protected ecosystems is primarily to preserve witness sites of exceptionally high conservation value.	Section 5.7 - Vegetation	The proposed development is not located within any threatened ecosystems listed in the NEM: Biodiversity Act.
Threatened or Protected Species Regulations (GN 152 of 23 February 2007)	To further regulate the permit system in terms of restricted activities involving threatened or protected species.	Section 5.7 - Vegetation Section 5.8 - Animal life	No threatened or protected species are present on site.
List of Protected Tree Species under the National Forests Act, 1998 (Act No. 84 of 1998)	Provides a list of protected tree species.	Section 5.7 - Vegetation	No protected tree species are present on site.
National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) and amendments	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.	Section 5.7 - Vegetation Section 5.8 - Animal life	The site is not located within or near any protected area listed in the NEM: Protected Areas Act.
National Protected Areas Expansion Strategy (NPAES, 2008)	To achieve cost-effective expansion of the protected area network that enhances ecological sustainability and	Section 5.7 - Vegetation	The site is not located within or near a proposed expansion area.

Legislation/policies/guidelines	Aim of legislation, policy or guideline	Where considered in BA Report	Adherence of proposed activity
	resilience to climate change.		
Mpumalanga Nature Conservation Act, 1998 (Act 10 of 1998) and amendments	To control nature conservation in Mpumalanga.	Section 5.7 - Vegetation Section 5.8 - Animal life	No conservation areas, CBA's or ESA's are indicated in the Mpumalanga Biodiversity Sector Plan (MBSP, 2013) on the site.
Conservation of the Agricultural Resources Act, 1983 (Act 43 of 1989) and amendments	To provide control over the utilization of the natural resources of the Republic in order to promote the conservation of soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith.	Section 5 - Biophysical description Section 9 - EMPr	Mitigation measures to be implemented during construction and operation to ensure compliance with the CARA Act. Mitigation measures included in the EMPr, Section 9.
Alien and Invasive Species Regulations, 1 August 2014	Regulations regarding alien and invasive species.	Section 5.7 - Vegetation Section 5.8 - Animal life Section 9 - EMPr	Mitigation measures to be implemented during construction and operation to ensure that alien and invasive species are controlled. Mitigation measures included in the EMPr, Section 9.
Water			
National Water Act, 1998 (Act 36 of 1998) and amendments	To control water management aspects.	Section 3 - Storm water management Section 5.9 - Surface water and wetlands Section 9.5.7 - Water management	A wetland is present on site. Mitigation measures are indicated in the EMPr (Section 9). A water use license application was submitted to DWS for the following water uses under Section 21 of the Act: ▪ 21(c) and (i) - A wetland is present on site.
National Freshwater Ecosystem Priority Assessment (NFEPA) of 2012 and implementation manual.	Provides strategic spatial priorities for conserving South Africa's freshwater ecosystems and supporting sustainable use of water resources.	Section 5.8 - Animal life Section 5.9 - Surface water and wetlands	The site is not located within a NFEPA priority area.
Best Practice Guidelines published by the Department of Water Affairs and Forestry: G1 - Storm Water Management	Provides best practice principles and guidelines in terms of water management.	Section 3 - Storm water management Appendix 4 - Storm water management plan	A storm water management plan was drafted (Section 3; Appendix 4) to be implemented on site to prevent erosion and the siltation of the surface water environment. Mitigation measures are included in the EMPr, Section 9.
Waste			
National Environmental Management: Waste Act, 2008 (Act 59 of 2008) and amendments	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.	Section 3 - Project description Section 9 - Waste management	A waste management license is not required for this project. Waste management measures will however, be implemented. Mitigation measures are included in the EMPr, Section 9.
Nkangala District Municipality Integrated Waste Management Strategy	A strategy dealing with waste.	Section 3 - Project description Section 9 - Waste management	Waste management measures will be implemented during construction and operation. Management measures provided in Section 9.
Steve Tshwete Local Municipality Integrated	To regulate the management of waste	Sections 3 and Section 9 - Waste	Site is located within the urban edge. Waste

Legislation/policies/guidelines	Aim of legislation, policy or guideline	Where considered in BA Report	Adherence of proposed activity
Waste Management By-Laws	within the Steve Tshwete Local Municipal area.	management	management measures will be implemented. Mitigation measures are included in the EMPr, Section 9.
Development Planning			
Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013)	To provide a framework for spatial planning and land use management	Section 3 - Description of activity Appendix 3 - Townplanning Memorandum	A townplanning process is being conducted by Urban Dynamics Town and Regional Planners for the rezoning of the property (Appendix 3).
Integrated Development Plan for the Steve Tshwete Local Municipality	Broad spatial framework guidelines for the Steve Tshwete Local Municipality.	Appendix 3 - Townplanning Memorandum	The IDP was taken into account in the townplanning process.
Spatial Development Framework for the Steve Tshwete Local Municipality	Spatially based policy guidelines whereby changes, needs and growth in the region can be managed to benefit the whole community.	Section 5.17 - Sense of place Figure 5.29	In the SDF, the site is indicated as 'future Rural Residential'. An application was submitted as part of the townplanning process to amend the SDF to allow for a 'Residential 1' development.
Sub-division of Agricultural Land, 1970 (Act 70 of 1970)	To control the subdivision and, in connection therewith, the use of agricultural land.	The site will be subdivided from the remainder of Portion 93.	An application for the subdivision of the development site was lodged as part of the townplanning process.
National Framework for Sustainable Development (NFSD, 2008)	To enunciate South Africa's national vision for sustainable development and indicate strategic interventions to re-orientate South Africa's development path in a more sustainable direction. It proposes a national vision, principles and areas for strategic intervention that will enable and guide the development of the national strategy and action plan.	Throughout the Basic Assessment process.	Sustainable development principles taken into account throughout the Basic Assessment process.
National Development Plan 2030 (NDP, 2012)	The NDP aims to eliminate poverty and reduce inequality by 2030. These goals can be realized by drawing on the energies of its people, growing an inclusive economy, building capabilities, enhancing the capacity of the state, and promoting leadership and partnerships throughout society.	Section 3.3 - Reason for development Section 10 - Impact statement	The proposed development will create employment opportunities during the construction and operational phases.
Heritage Resources			
National Heritage Resources Act, 1999 (Act 25 of 1999) and amendments	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.	Section 5.13 - Sites of archaeological/cultural interest Section 9 - EMPr	A Heritage Impact Assessment and Palaeontological Impact Assessment were conducted. Mitigation measures in terms of palaeontology and archaeology are provided in Section 9.
Air Quality			
National Environmental Management: Air	To reform the law regulating air quality	Section 5.11 - Air quality	An emissions license is not required.

Legislation/policies/guidelines	Aim of legislation, policy or guideline	Where considered in BA Report	Adherence of proposed activity
Quality Act, 2004 (Act 39 of 2004) and amendments	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.	Section 9 - EMPr	
Highveld Priority Area Air Quality Management Plan, 2011	To achieve and maintain compliance with the ambient air quality standards across the HPA, using the Constitutional principle of progressive realisation of air quality improvements. The AQMP for the HPA provides the framework for implementing departments and industry to include AQM in business planning to ensure effective implementation and monitoring.	Section 5.11 - Air quality	The development is located within the Highveld Priority Area. The development will however, not produce emissions as it is a residential development, which would be provided with electricity.
Noise			
Noise Regulations (GN 154 of 1992)	To set out rules relative to the control of noise.	Section 5.12 - Noise Section 9 - EMPr	Site is located within the urban edge. Residents to adhere to the noise by-laws. Mitigation measures to reduce noise provided in the EMPr, Section 9.
Steve Tshwete Local Municipality by-law with regards to noise and control.	To regulate noise within the Steve Tshwete Local Municipal area.	Section 5.12 - Noise Section 9 - EMPr	
Health and Safety			
Health Act, 1977 (Act 63 of 1977) and amendments	To promote public health.	Section 9 - EMPr	Mitigation measures to reduce potential impacts on the site workers provided in the EMPr, Section 9.
Occupational Health and Safety Act, 1993 (Act 85 of 1993) and amendments	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.	Section 9 - EMPr	Mitigation measures to reduce potential impacts on the contractors and employees provided in the EMPr, Section 9.
National Building Regulations and Standards Act, 1977 (Act 103 of 1977) and amendments	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.	Section 3 - Project description	The buildings will be constructed according to the National Building Regulations.

Legislation/policies/guidelines	Aim of legislation, policy or guideline	Where considered in BA Report	Adherence of proposed activity
National Veld and Forest Fire Act, 1998 (Act 101 of 1998) and amendments	To prevent and combat veld, forest and mountain fires throughout South Africa.	N/A	Natural grassland vegetation is present north and east of the site. The adjacent property owners will be responsible for fire breaks.
General			
Protection of Personal Information Act, 2013 (Act 4 of 2013)	The purpose of this act is to give effect to the constitutional right to privacy by safeguarding personal information and to regulate the manner in which personal information may be processed.	Throughout Basic Assessment process.	Throughout Basic Assessment process.
Promotion of Access to Information Act, 2000 (Act 2 of 2000) and amendments	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.	Throughout Basic Assessment process.	Throughout Basic Assessment process.
Promotion of Administrative Justice Act, 2000 (Act 3 of 2000) and amendments	The Act aims to make the administration (e.g. Government and Parastatals) effective and accountable to people for its actions.	Throughout Basic Assessment process.	Throughout Basic Assessment process.

SECTION 5: BIOPHYSICAL DESCRIPTION

Appendix 1 of the EIA Regulations (2014, as amended) requires a description of *"the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects".*

This section provides an overview of the environmental features of the site and surrounding area, which includes the biophysical, socio-economic and cultural/heritage aspects. The aim of this section is to provide information on the current baseline conditions of the site that will be used to identify potential impacts of the development on the environment and vice versa in Section 8 (Impact Assessment) of this report.

5.1 Location of the site

The proposed residential development would be located on a portion of Portion 93 of Rondebosch 403 JS, Middelburg (Figure 5.1). The site is located on the outskirts of Middelburg adjacent to Riyadh Street, Eastdene X1.

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

Site	Latitude (S):			Longitude (E):		
93/403	25°	45‘	56.15“S	29 °	29‘	28.8“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	4	0	3	0	0	0	9	3

The said property falls under the jurisdiction of the Steve Tshwete Local Municipality (MP313) and the Nkangala District Municipality.

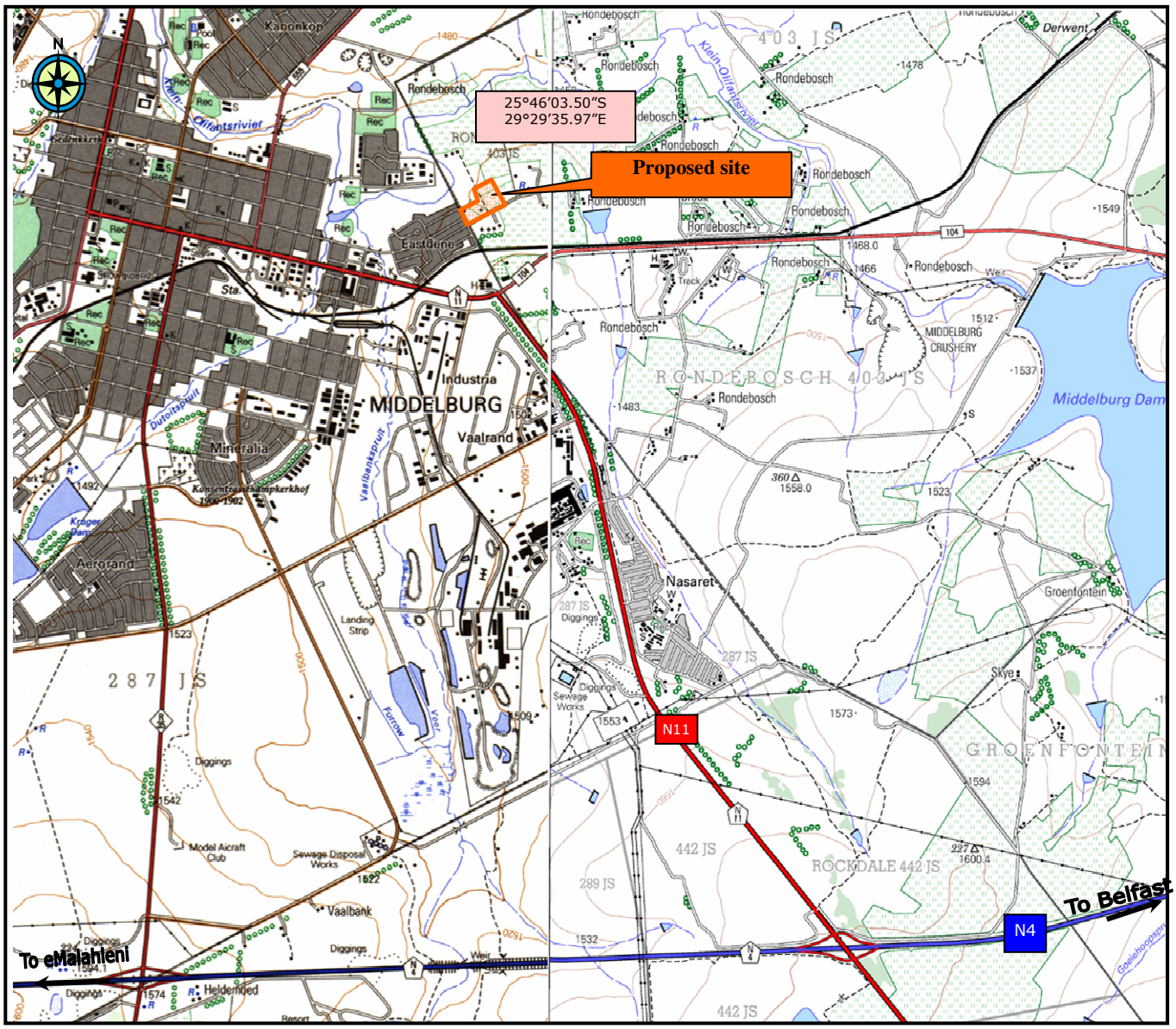


Figure 5.1: Location of site *(taken from 1: 50 000 2529 DC and DD-not to scale)*

5.2 Climate

5.2.1 Regional 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 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.

The site occurs in Mpumalanga and falls in the summer rainfall region, which is characterised by thunderstorm activity and relatively low average rainfall. The mean annual rainfall is 735mm compared to the mean annual potential evaporation of 1500mm. Pertinent climate data was obtained from the Middelburg (No.0515/826) and Belfast (No. 0517/0109) weather stations.

5.2.2 Mean monthly rainfall

The average number of days per month having rainfall depths in excess of 0.1mm, together with the average monthly depth of rainfall, are given in Table 5.1.

Table 5.1: Average monthly rainfall depths (mm) and days with rainfall of > 0.1mm.

Month	Average Depth	Average Days
January	132	13.8
February	103	11.2
March	88	9.5
April	42	6.5
May	19	2.9
June	7	1.5
July	9	1.7
August	8	0.9
September	22	3.7
October	63	8.3
November	124	13.0
December	118	13.1
Total	**735**	**86.1**

5.2.3 Rainfall intensities

The maximum rainfall intensities recorded at the relevant weather stations are shown in Table 5.2.

Table 5.2: Maximum rainfall intensities.

24 Hour Rainfall Depths (mm)			
Maximum recorded	**1:50 Yr. Storm**	**1:100 Yr. Storm**	**1:200 Yr. Storm**
117	104	118	134

5.2.4 Mean annual evaporation

The mean monthly evaporation figures recorded at the relevant weather stations are given in Table 5.3. The data in the table was obtained using an 'A' Pan.

Table 5.3: Mean monthly evaporation figures

Month	Evaporation (mm)	Rainfall (mm)	Monthly deficit (mm)
January	160	132	28
February	140	103	37
March	110	88	22
April	110	42	68
May	85	19	66
June	70	7	63
July	75	9	66
August	110	8	102
September	140	22	118
October	160	63	97
November	160	124	36
December	180	118	62
Total Average	**1500**	**735**	**765**

5.2.5 Mean monthly maximum and minimum temperatures

The average and actual maximum and minimum temperatures between the weather stations are given in Table 5.4.

Table 5.4: Mean monthly maximum and minimum temperatures (ºC)

Month	Daily Maximum	Daily Minimum	Highest Temperature	Lowest Temperature
January	27.2	13.7	32.0	9.1
February	26.8	13.4	30.8	9.0
March	26.8	11.4	30.2	6.4
April	23.9	7.4	27.9	1.4
May	21.3	2.2	26.1	-2.9
June	18.5	-1.8	22.4	-6.0
July	18.4	-1.7	23.0	-5.8
August	21.4	0.8	26.0	-4.1
September	24.0	5.3	29.2	-1.3
October	26.0	10.1	31.2	4.4
November	26.2	11.8	31.8	5.9
December	27.1	13.2	31.2	7.8
Yearly Average	**23.9**	**7.2**	**28.4**	**2.0**

5.2.6 Prevailing wind direction

Wind pattern data obtained from the Middelburg weather station is presented in Table 5.5.

Table 5.5: Mean monthly wind speed and direction

Month	N		NE		E		SE		S		SW		W		NW	
	N	v	n	v	N	v	N	v	N	v	n	v	n	V	n	v
January	161	3.0	287	3.2	44	3.1	92	3.3	122	3.6	96	3.3	109	3.7	48	4.5
February	142	2.9	295	3.2	44	3.1	74	3.4	112	3.4	101	2.9	141	3.9	60	4.2
March	152	2.8	304	3.3	36	3.1	54	3.1	100	3.4	104	2.9	139	3.4	63	3.5
April	170	2.7	211	3.3	47	3.2	95	3.4	149	3.6	146	2.8	87	3.4	39	3.0
May	172	2.6	166	2.9	59	3.4	89	3.7	162	3.9	167	2.9	67	3.0	51	3.3
June	146	2.5	149	3.0	54	3.6	117	3.0	157	3.8	166	2.7	86	3.2	43	3.2
July	162	2.5	184	2.9	51	3.9	99	3.9	142	3.6	143	2.8	79	3.4	53	4.2
August	174	5.4	180	3.4	40	3.5	86	4.1	141	4.1	182	3.0	83	3.2	40	4.4
September	197	3.2	223	3.8	27	3.5	70	3.9	131	4.3	171	3.3	84	4.0	41	3.9
October	190	3.4	243	3.7	33	3.6	71	3.6	142	4.0	160	3.8	83	4.3	42	3.6
November	174	3.2	225	3.6	28	3.1	68	3.1	185	3.8	154	3.5	92	4.1	40	3.9
December	180	3.1	254	3.4	34	3.0	69	3.3	154	3.5	135	3.3	95	4.0	40	4.0
Average	**188**	**2.0**	**227**	**3.3**	**41**	**3.3**	**82**	**3.8**	**141**	**3.8**	**146**	**3.1**	**95**	**3.7**	**47**	**3.8**

n = average direction frequency per 1000 readings v = velocity (m/s)

5.2.7 The incidence of extreme weather conditions

Being located on the Highveld, the area is prone to extreme weather on a regular basis. These weather conditions include droughts, floods and strong gusty winds prior to and during thunderstorms. Frost also occurs on an average of 120 to 150 days between April and September.

5.2.8 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

Portion 93 of the farm Rondebosch 403 JS is registered to the Middelburg Muslim Jamaat (Title Deed No T97820/1998) A copy of the title deed is provided in Appendix 1.

5.3.2 Zoning of the site

The property is zoned as 'Agricultural'. A copy of the Zoning Certificate is provided in Appendix D of Appendix 3.

5.3.3 Size of the site

The entire property is 25 ha in extent, of which ±5 ha will be utilized for the proposed development. The said site will be subdivided from the remainder of the property as part of the townplanning process.

5.3.4 Servitudes

A 16 m wide Right-of-Way servitude (SG No 10946/1997) in favour of the public is registered against the property (Figure 5.2). The servitude road provides access to surrounding properties. The Right-of-Way does however, not affect the proposed development as it is located on the southern boundary.

The property is also subject to a 6 m wide sewer line servitude (SG No 10946/1997), which is located near the Klein Olifants River (Figure 5.2). This sewer line does not extend onto the proposed development site.

As per the Servitude Certificate (Appendix E of Appendix 3), a 4 m wide sewer line servitude (SG No 1407/2011) is also registered against the property. This sewer line is located north of the proposed site and would therefore not affect the proposed development site.

5.3.5 Land use and existing infrastructure

Figure 5.2 can be consulted for an aerial view of the site taken in 2018.

Currently, the site is vacant and only used for grazing purposes (cattle and horses; Photo 5.1).

Photo 5.1: Horses and cattle grazing on site

Some building rubble, ruins (possibly farmstead) and possibly a dilapidated pig sty are present in the southern portion of the site (Figure 5.2; Photos 5.2 and 5.4). A demolished borehole filled with rocks, an old water tank and cement dam were also recorded (Figure 5.2; Photo 5.3). Building rubble, general waste/scrap metal and garden waste are dumped in the southern portion of the site, in and around the dilapidated buildings.

Photo 5.2: A view of the farmstead ruins in the southern portion of the site

Photo 5.3: View of the old borehole

Photo 5.4: Remnants of possible pigsty

The site is accessed by means of a gravel road, which extends through the site and provides access to the homestead/smallholding in the northern portion of Portion 93 (Figure 5.2; Photo 5.4). The majority of the site is fenced, with an access gate on the southern boundary (Figure 5.2; Photo 5.5).

Photo 5.4: A view of the gravel road extending through the site

Photo 5.5: A view of the fence around the site

It is evident from the aerial view that the eastern portion of the site was cultivated in the past (Figure 5.2).

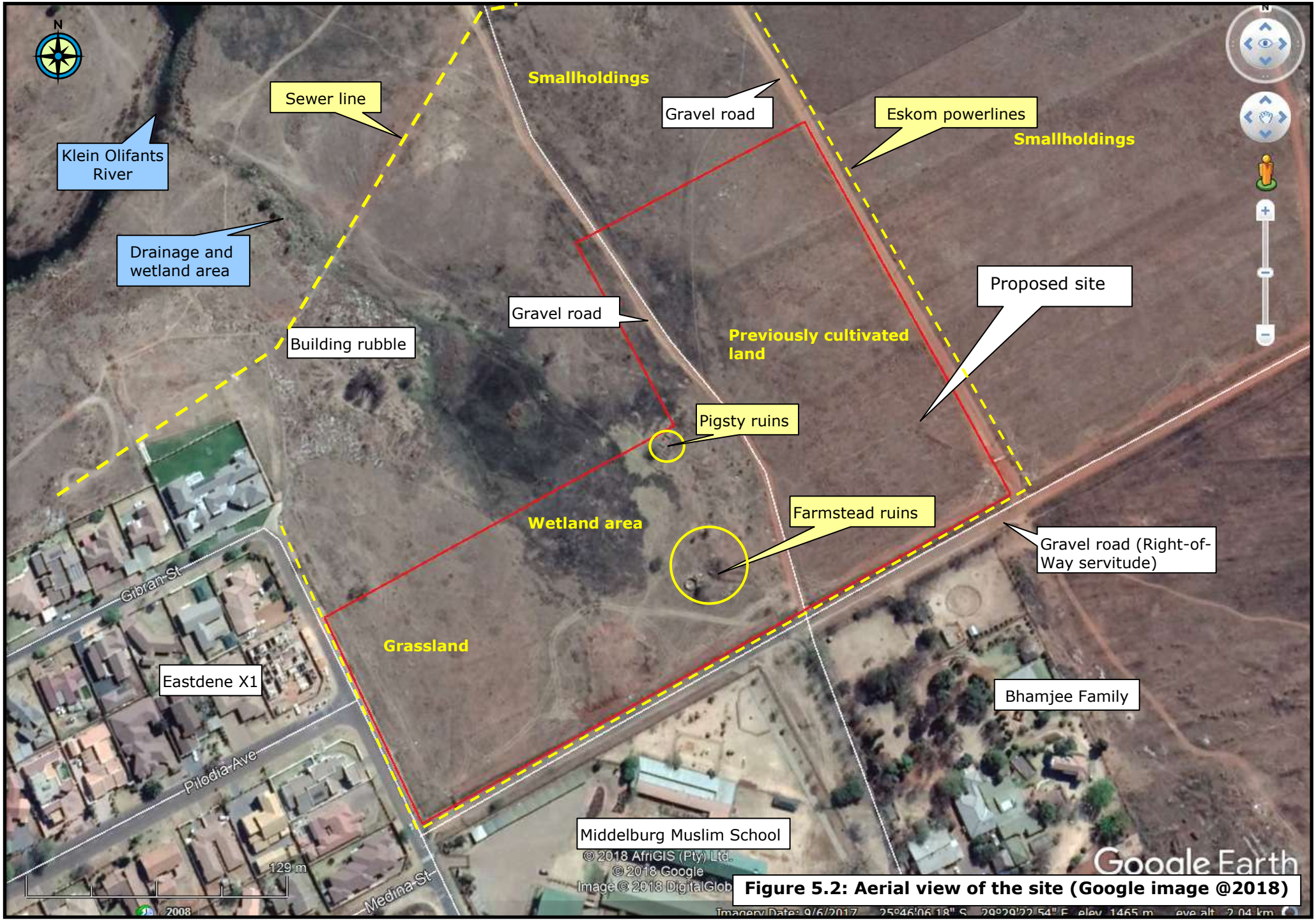


Figure 5.2: Aerial view of the site (Google image @2018)

5.3.6 Surrounding land uses

The site is located within the urban edge of the Steve Tshwete Local Municipality and is surrounded by various land uses. Figures 5.2 and 5.3 can be consulted for an indication of the surrounding land uses.

Figure 5.3: Surrounding land uses

The site is bordered on the east and north by property belonging to the applicant (Middelburg Muslim Jamaat). These properties are in the process of being subdivided into smallholdings (Figure 5.3). The properties further east (Figure 5.3) are zoned and used for agricultural purposes.

A Right-of-Way servitude gravel road forms the southern boundary of the site, with the Middelburg Muslim School located just south of this road (Figure 5.2; Photos 5.6 and 5.8). A Transnet railway line and the R104 provincial road to Belfast are located further south (Figure 5.3).

The residential area, Eastdene X1, is located on the western boundary of the site (Figure 5.3; Photo 5.7).

Municipal and Eskom powerlines are present along the western, southern and eastern boundaries (Photo 5.8).

Photo 5.6: The Middelburg Muslim School

Photo 5.7: Eastedene X1

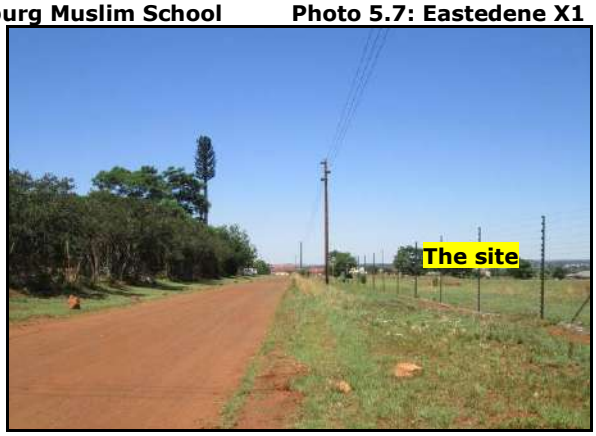


Photo 5.8: Right-of-Way gravel road and Eskom powerlines

The 4 SAI Military Base is located northwest of the site (Figure 5.3). Also west of the site are Public Open Spaces (which includes the Klein Olifants River), which are registered to the Steve Tshwete Local Municipality.

A municipal sewer line extends through the drainage/wetland area and smallholdings north of the site (Figure 5.2).

Other land uses in the area are generally associated with the provision of services for example telephone lines, roads, water and sewer pipelines, etc.

5.4 Geology

A geotechnical study was undertaken by Engeolab cc (hereafter referred to as Cilliers & Hansmeyer, 2018) to determine the suitability of the site for the proposed development. It should be noted that the geotechnical study was conducted over the entire Portion 93. A copy of the report is provided in Appendix 5. This report should be consulted with regards to methodology used.

According to Cilliers & Hansmeyer (2018), the site is underlain by remnants of Dwyka tillite, which is underlain by older shale of the Loskop Formation and intruded by a large diabase sill (Figure 5.4). The diabase underlies most of the eastern portion of the site and is generally deeply weathered. The western portion is underlain by shale of the Loskop Formation (Figure 5.5) which was exposed between 0.7 m and 1 m below natural ground level.

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

Limited outcrop of shale of the Loskop Formation was encountered in the vicinity of TP11, located outside of the northern boundary of the site (Figure 5.5).

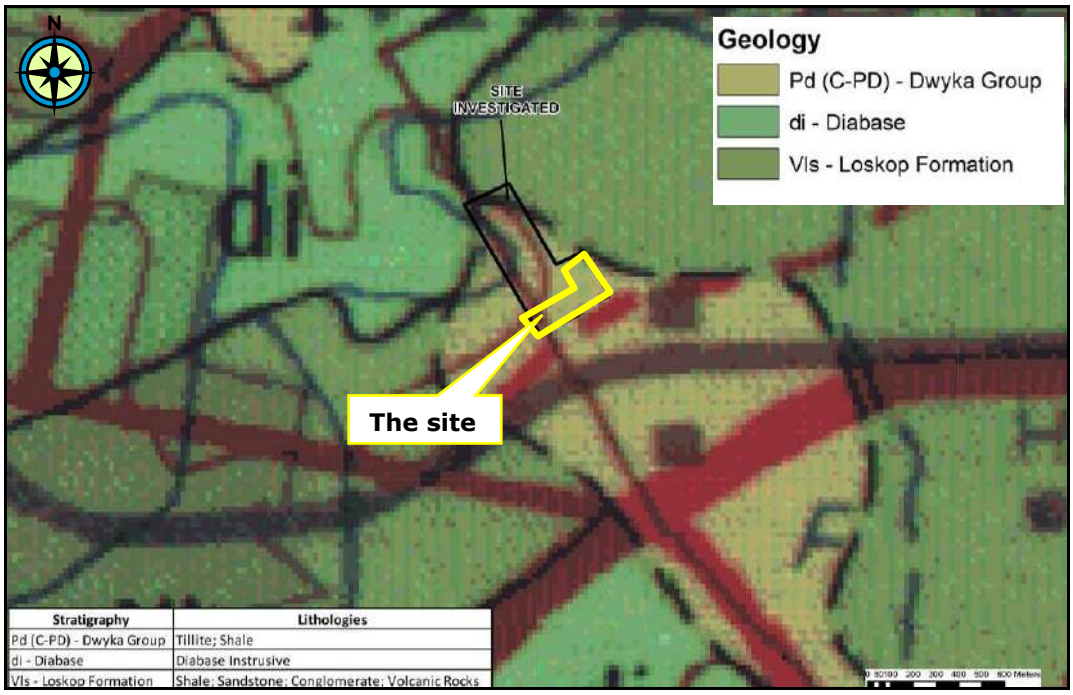


Figure 5.4: Geology of the site (taken from Cilliers & Hansmeyer, 2018)

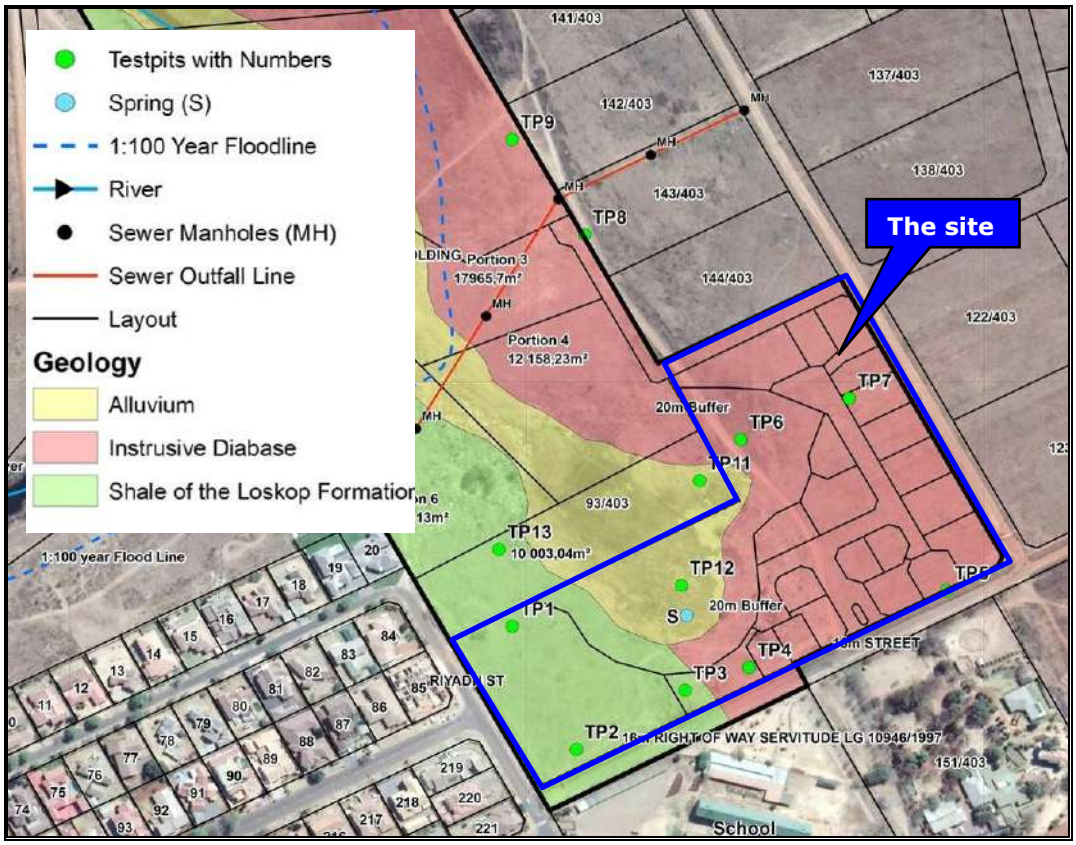


Figure 5.5: Site specific geology (taken from Cilliers & Hansmeyer, 2018)

5.5 Topography

The proposed site lies at approximately 1460 meters above mean sea level (mamsl). Both the eastern and western portions of the site slopes slightly towards a centrally located wetland.

Overall, the site has an even slope of ± 1.5% to 3.8% in a north westerly direction towards the Klein Olifants River. The 5m contour intervals on site are indicated in Figure 5.6.

The topography on site and in the surrounding area has been impacted upon by activities such as residential developments, roads, agriculture, dumping of building rubble, school, etc.

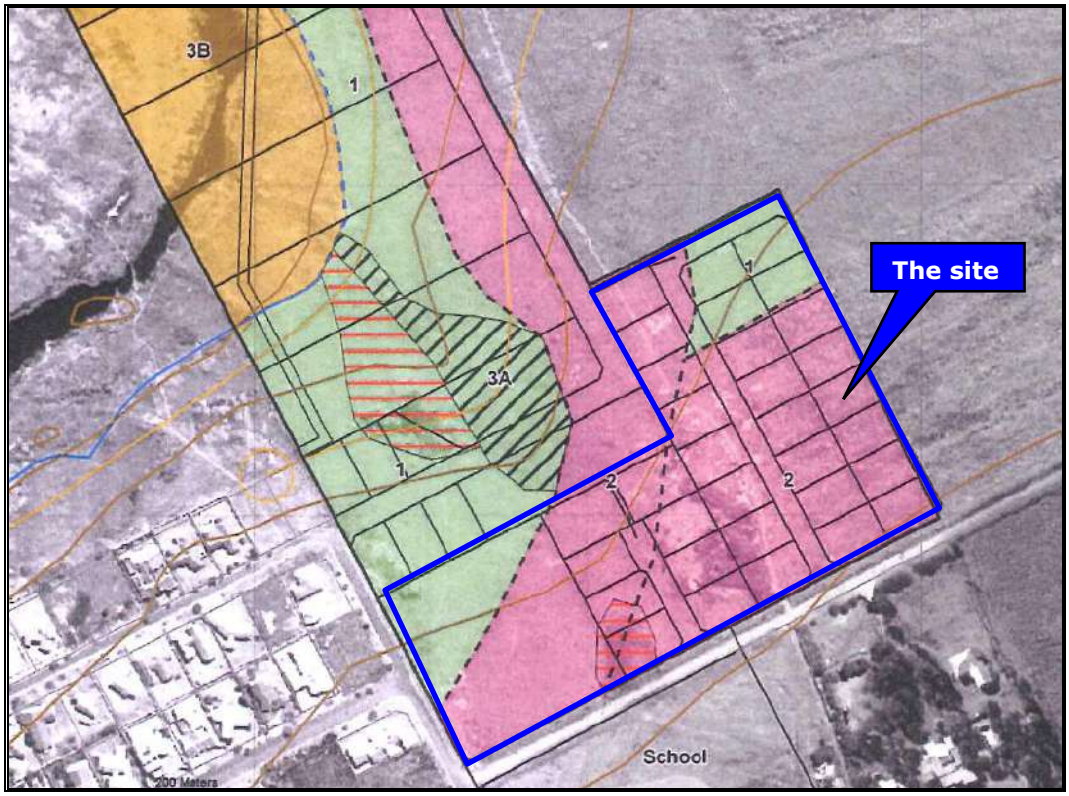


Figure 5.6: Contours of the site (taken from Hansmeyer, 2010)

According to the AGIS Comprehensive Map drafted by the Department of Agriculture, Forestry and Fisheries, average slopes in the area range between <2% – 8% as indicated in Figure 5.7. These slopes are suitable for development purposes.

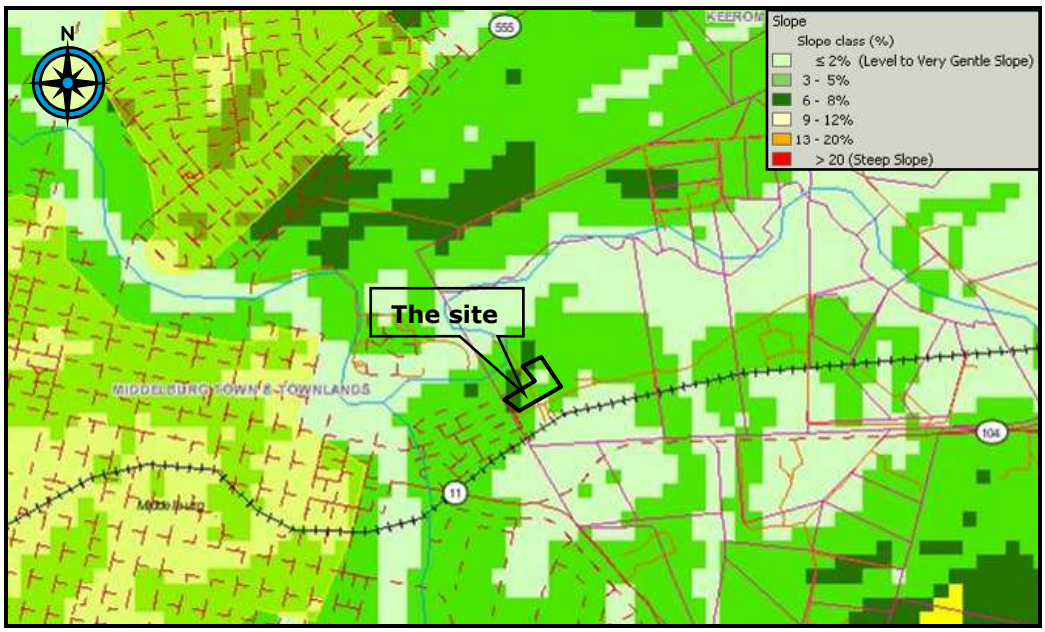


Figure 5.7: Slope of the proposed site (taken from Department of Agriculture, Forestry and Fisheries)

The terrain type of the proposed site is indicated as plains with open low hills or ridges as indicated in Figure 5.8.

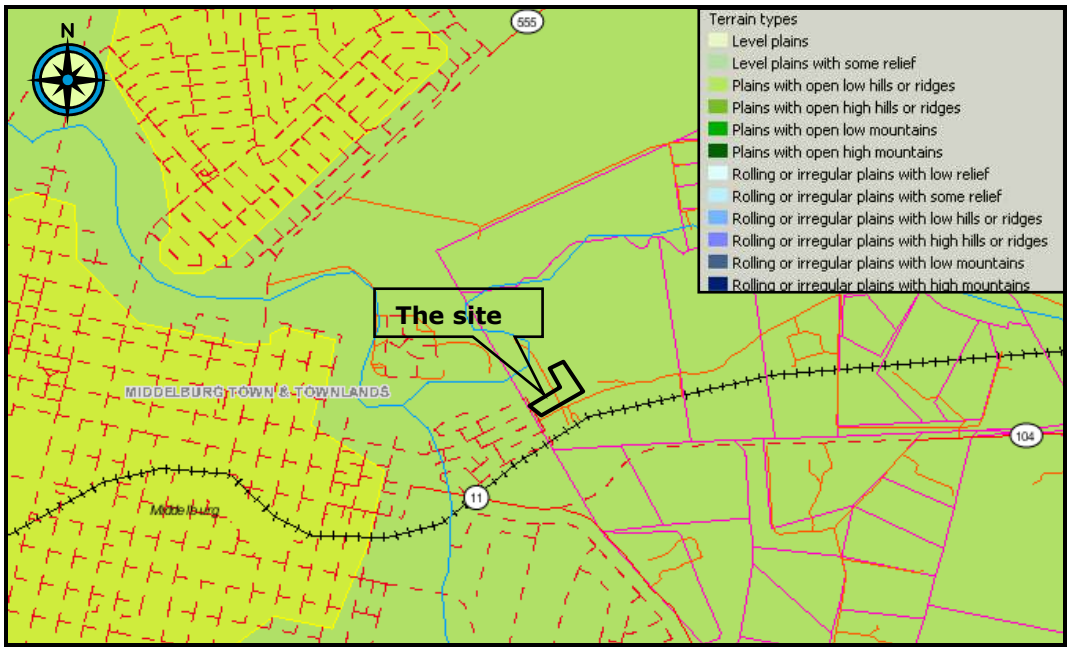


Figure 5.8: Terrain type of the proposed site (taken from Department of Agriculture, Forestry and Fisheries)

5.6 Soil

5.6.1 General

According to the AGIS Comprehensive Atlas of the Department of Agriculture, Forestry and Fisheries, the soils of the area are yellow and/or greyish with low to medium base status as indicated in Figure 5.9.

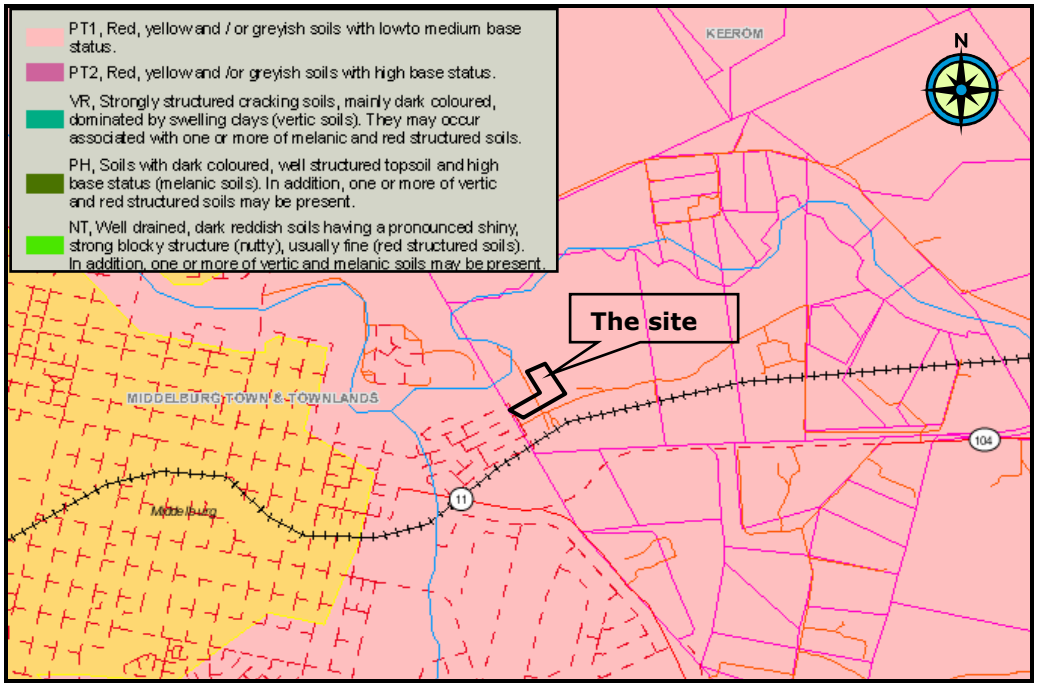


Figure 5.9: Generalized soil patterns (taken from Department of Agriculture, Forestry and Fisheries)

According to Davis (2012), the terrestrial soils are moderately clayey and red (high chroma). Slight mottling of the soil was noted in areas of temporary wetness, whereas the seasonally to permanently saturated areas displayed typically gleyed colouring.

5.6.2 Soil properties

A geotechnical study was undertaken by Engeolab cc (hereafter referred to as Cilliers & Hansmeyer, 2018) to determine the suitability of the site for the proposed development. It should be noted that the geotechnical study was conducted over the entire Portion 93. A copy of the report is provided in Appendix 5. This report should be consulted with regards to methodology used.

Eight (8) test pits were excavated on site using a tractor-loader-backhoe (TLB). Figure 5.10 provides a cross section of the applicable test pit profiles. The location of these test pits is indicated in Figure 5.11.

According to Cilliers & Hansmeyer (2018), the site is predominantly blanketed by hillwash, which is underlain by a well defined pebble marker over a diabase sill or shale of the Loskop Formation (Figure 5.10). A large swathe of alluvium blankets the contact zone between the shale and the younger intrusive diabase in the centre of the site (Figures 5.5 and 5.10).

The diabase varies from dark maroon-brown clayey sand, grading into light yellow to dull khaki, sugary textured clayey sand. Diabase gravels and boulders were recorded on occasion.

Figure 5.10: Cross sections of test pits TP1 - TP7 and TP12 (taken from Cilliers & Hansmeyer, 2018)

According to Cilliers & Hansmeyer (2018), the shallow competent shale in the western portion of the site is regarded as ideal founding medium for shallow foundations. Competent founding is generally present from 0.7 to 1 m below surface with an estimated presumed bearing value of >450 KPa.

The central and eastern portions of the site are dominated by thick, brown-maroon, loose clayey sands and silts. The soil cover may be used for shallow foundations, provided that they are in the medium dense substrate and some compaction is carried out in the bases of strip footings. The estimated presumed bearing value for the structures on these soils is 50 - 75 KPa.

The moisture content, grading modulus and plasticity index of the soils were used to determine the heave activity of the site soils. Table 5.6 provides a summary of the laboratory test results.

Table 5.6: Summary of laboratory test results (taken from Cilliers & Hansmeyer, 2019)

TP No	Depth (m)	Material type	Origins	% MC (Moisture Content)	PI (Plasticity Index)	% Clay	GM (Grading Modulus)	Heave Activity
4	0.4 - 2	Clayey Sand	Diabase Residuum	12.1	15	28.4	0.85	Medium
5	0.8 - 2	Clayey Sand	Hillwash Pebble Marker	12.1	13	36.9	0.78	Low
6	0.1 - 0.6	Clayey Sand	Diabase Residuum	13.4	9	26.6	1.03	Low
6	0.6 - 1.8	Silt	Diabase Residuum	12.4	18	47.6	0.4	Low
7	0.7 - 1.7	Clayey Sand	Diabase Residuum	21	9	30.7	0.84	-
7	1.7 - 2	Clay	Diabase Residuum	10.5	12	36.5	0.56	Low
12	0.7 - 1.8	Clay	Diabase Residuum	23	20	29.1	0.66	Medium

According to Cilliers and Hansmeyer (2018), the cover soils and diabase residuum generally recorded a potential heave activity of 'low to medium' (Table 5.6). The medium active clays associated with diabase residuum, recorded soil movements ranging between 7.5 and 15mm.

Settlement of up to 12mm (at a bearing pressure of 50 KPa) is expected within the loose clayey sand present in the central and eastern portions of the site. However, settlement within the weathered Loskop shale in the western portion of the site is not expected to exceed 5mm.

Natural slope failures are not anticipated, since the grading and plasticity of the cover soils and residuum indicate angles of internal friction of between 25º and 35º (Table 5.6). However, precautions would have to be taken when service trenches of >1.5m deep are excavated.

In terms of excavation characteristics, Cilliers & Hansmeyer (2018) indicated that pick/shovel and TLB mechanical excavation (soft excavation) will be adequate to excavate up to a depth of 2.5m (i.e. through the cover soils, tillite and soft excavatable clayey diabase residuum) in the central and eastern portions of the site (Figure 5.11).

Soft excavation up to a depth of 1.5m will apply in the western portion of the site. However, intermediate excavation (powerful excavators) will be required to excavate the less weathered Loskop shale below 1.5m (Figure 5.11).

According to Cilliers & Hansmeyer (2018), the top cover soils (hillwash and pebble marker) comply with the requirements of G9 class pavement construction material and can therefore be used for selected layer and subgrade pavement layers. The diabase residuum (G8) is also suitable for these purposes.

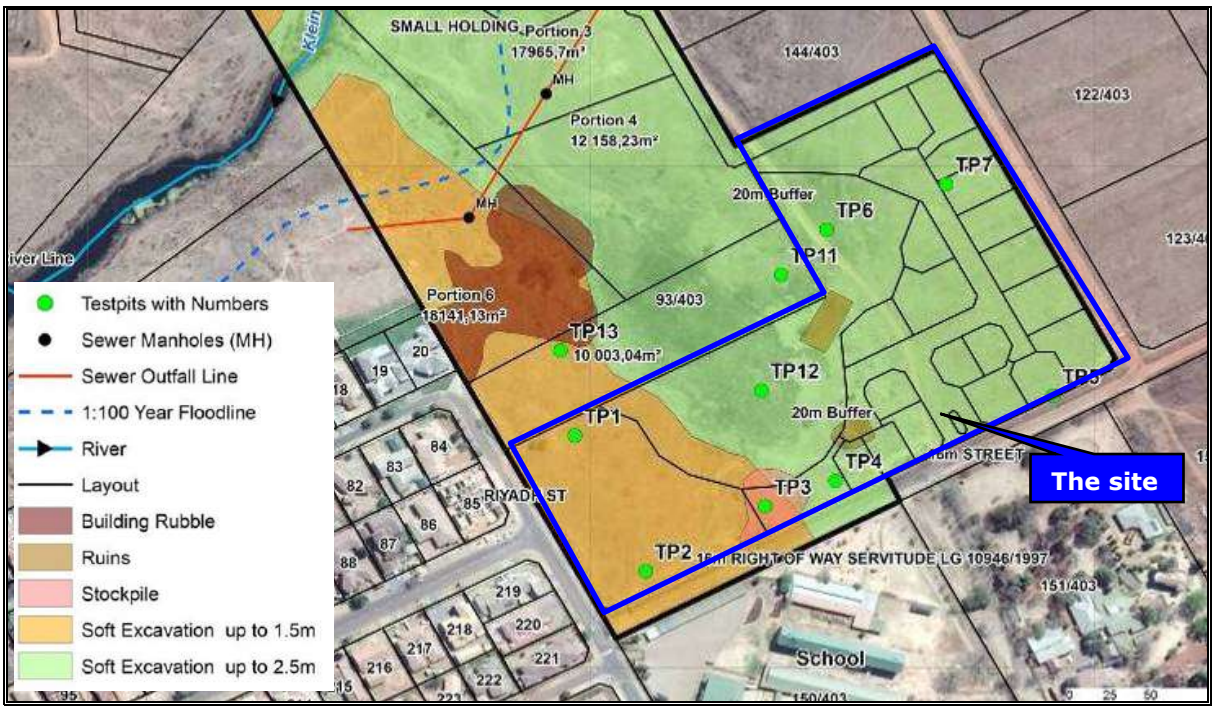


Figure 5.11: Excavation map (taken from Cilliers & Hansmeyer, 2018)

5.6.3 Geotechnical zones identified

Cilliers & Hansmeyer (2018) identified four (4) geotechnical zones on site based on the soil properties. The location of the geotechnical zones are indicated in Figure 5.12 and a description is provided in Table 5.7.

Table 5.7: Geotechnical zones identified (taken from Cilliers & Meyer, 2017)

Zone (Figure 5.12)	NHBRC Class	Geotechnical Aspects	Structural Solutions
1A (western portion of site)	C,H,S	Underlain by competent shale. Estimated total soil movement <5mm.	▪ Normally constructed (strip footing and slab-on-the-ground) foundations. ▪ Good site drainage. ▪ Soft excavation to 1.5m.
2A (eastern portion of site)	H1, S2	Underlain by decomposed diabase. Estimated total soil movement 7.5 - 15mm.	▪ Modified normal construction with reinforced strip footings. ▪ Articulation joints on all external doors and some internal doors. ▪ Light-reinforcement in masonry and wire mesh in floor slabs. ▪ Compaction of in-situ soils below foundations and floor slabs. ▪ Good site drainage and service/plumbing precautions. ▪ Foundation pressures not to exceed 50 KPa.
2B	P, C, H, S	Building rubble mixed with soil.	▪ Remove rubble, normally constructed foundation. ▪ Good site drainage. ▪ Soft excavation to 1.5m.
3A (central portion of site)	P	Within wetland.	No development.

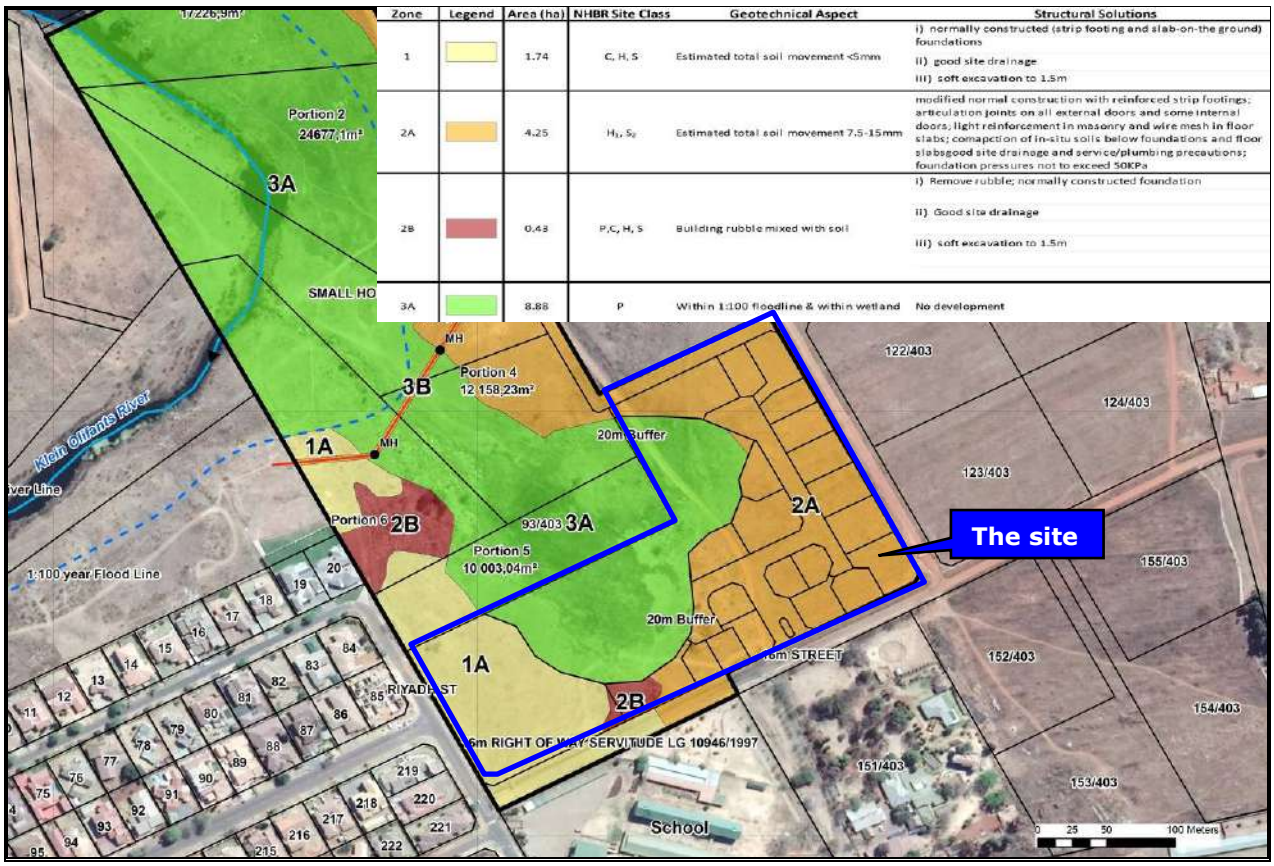


Figure 5.12: Geotechnical zones identified (taken from Cilliers & Hansmeyer, 2018).

5.6.4 Agricultural potential/land capability

Figure 5.2 provides an aerial view of the proposed site. From this aerial view, it is evident that no cultivation has recently taken place on site. However, during the site visit it was evident that portions of the site were previously cultivated.

In terms of land capability, the proposed site is indicated according to the Department of Agriculture, Fisheries and Forestry as moderate potential arable land (Figure 5.13).

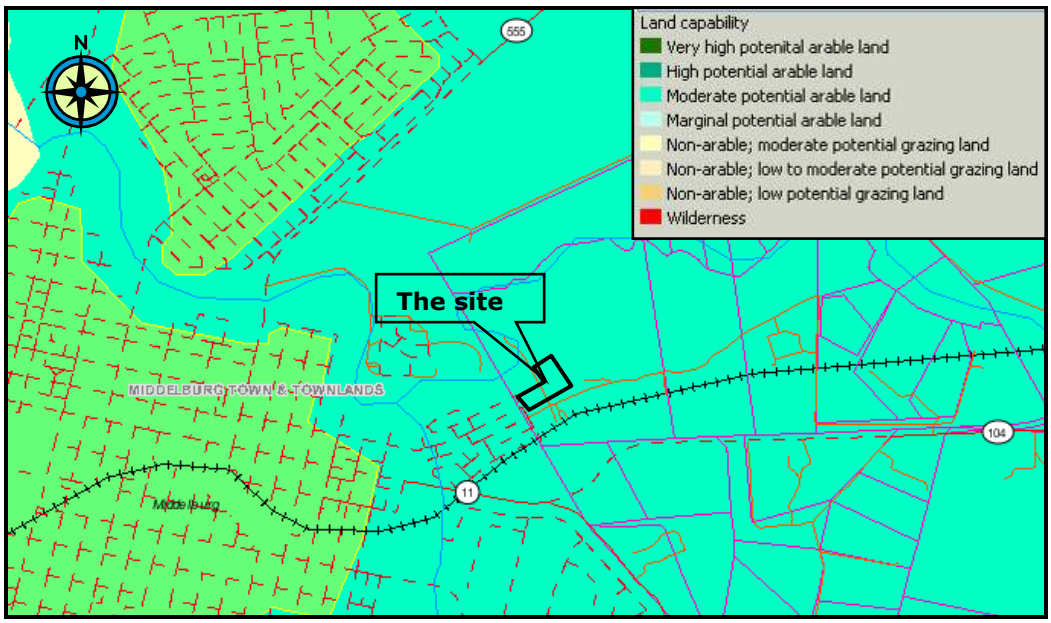


Figure 5.13: Land capability of the proposed site (taken from Department of Agriculture, Forestry and Fisheries)

Looking at grazing capacity, Figure 5.14 (Department of Agriculture, Forestry and Fisheries) indicates the area as transformed rangeland.

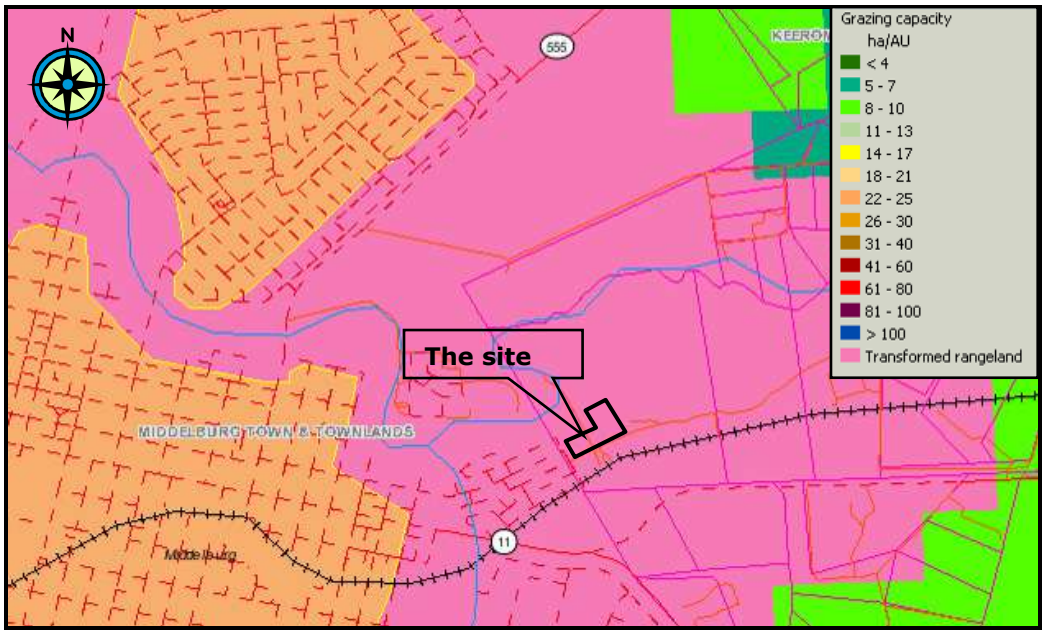


Figure 5.14: Grazing capacity of the proposed site (taken from Department of Agriculture, Forestry and Fisheries)

The Department of Agriculture, Forestry and Fisheries classified the land type of the site as Ba (Figure 5.15). The Ba land type comprises of plinthic soils (with subsurface accumulation of iron and manganese oxides due to fluctuating water table) with low to intermediate base status. Red soils are widespread. Upland duplex and black clay soils are rare.

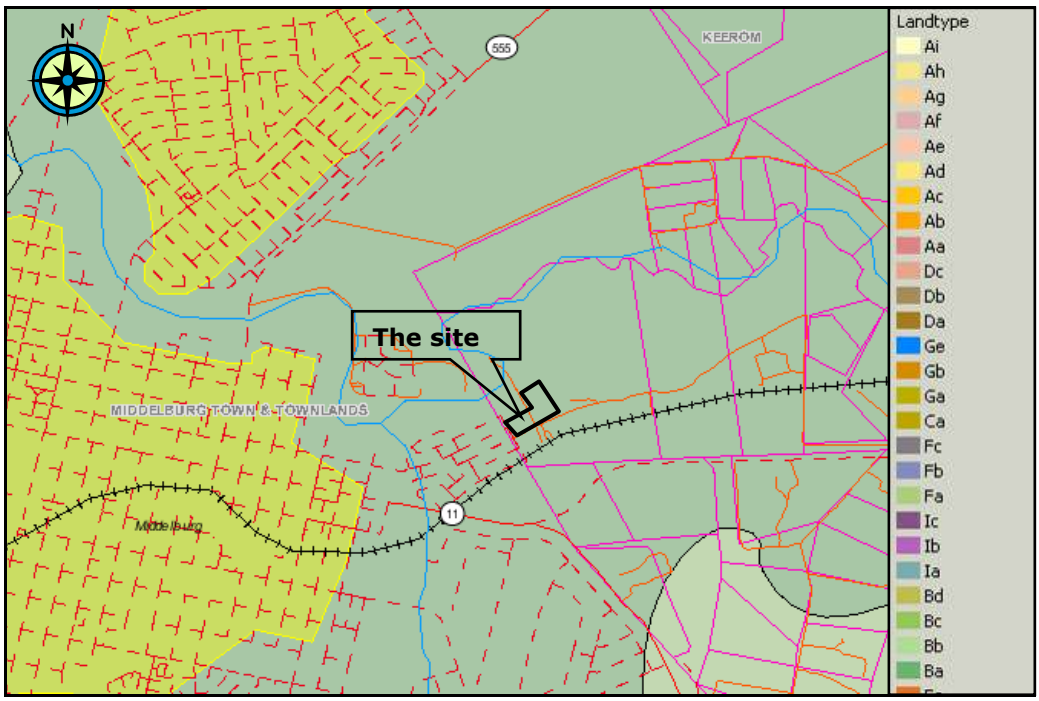


Figure 5.15: Land type of the proposed site (taken from Department of Agriculture, Forestry and Fisheries)

5.6.5 Impacts on soil

Impacts on the soil include the construction and decommissioning of the old farmstead and associated outbuildings on site, the gravel access road, past agricultural activities and the dumping of waste and building rubble on site. According to Cilliers & Hansmeyer (2018), a fairly large stockpile of soil mixed with building rubble is present on the southern boundary of the site (Figure 5.10)

5.7 Natural vegetation

5.7.1 Regional vegetation and conservation status

According to the '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) (Mucina & Rutherford, 2006; Figure 5.16). 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 Roossenekal 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 *Searsia* is most prominent.

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.

According to Hoare (2012), the thresholds for listing in this legislation are higher than in the scientific literature, which means there are fewer ecosystems listed in the National Ecosystem List versus in the scientific literature.

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

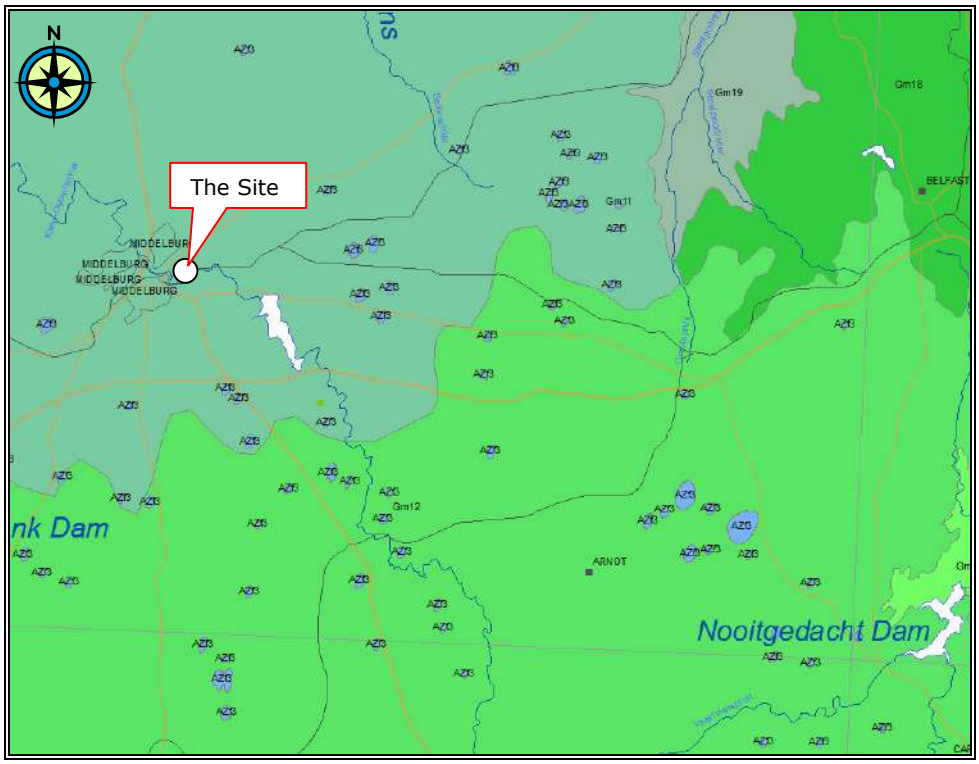


Figure 5.16: Vegetation type (taken from Mucina and Rutherford, 2006)

The site and surrounding area is indicated as a **'Critical Biodiversity Area (CBA)'** and **'No Natural Habitat Remaining'** (Figure 5.17) in terms of the terrestrial biodiversity assessment of the Mpumalanga Biodiversity Conservation Plan (2006).

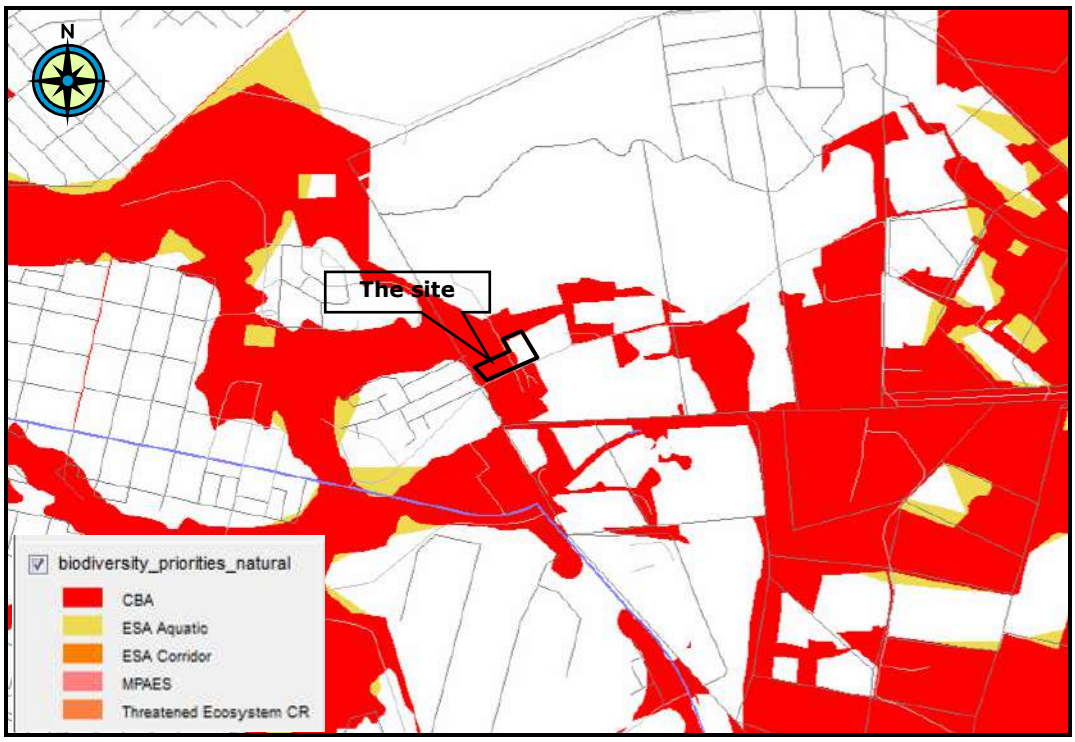


Figure 5.17: Terrestrial biodiversity assessment of the Mpumalanga Biodiversity Conservation Plan, 2006

The Mpumalanga Tourism and Parks Agency reviewed and updated the Mpumalanga Biodiversity Conservation Plan (2006) in order to align the spatial data with the bioregional plan requirements of the South African National Biodiversity Institute (SANBI) and surrounding provinces.

The Mpumalanga Biodiversity Sector Plan (MBSP, 2013) was subsequently developed. The 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).

This plan is also used to determine whether or not Listing Notice 3 (GN R324) of the Environmental Impact Assessment Regulations, 2014 (as amended) is triggered.

According to the MBSP (2013), the majority of the site is classified as '**Other Natural Areas**' (Figure 5.18). The previously cultivated area in the eastern portion of the site is classified as **'Heavily Modified'** (Figure 5.18).

No Critical Biodiversity Areas, Ecological Support Areas or Ecological Corridors are present on or near the site (Figure 5.18). The provincial assessment therefore attributes relatively low conservation value to the vegetation on site, despite the fact that any remaining natural vegetation is classified as being Endangered in the scientific literature and Vulnerable in the National Ecosystem List.

The proposed project would therefore not trigger any listed activities in Listing Notice 3 of the EIA Regulations, 2014 (as amended) in terms of the systematic biodiversity plan.

Figure 5.18: Terrestrial biodiversity assessment of the Mpumalanga Biodiversity Sector Plan, 2013

5.7.2 Vegetation found on site and surrounds

David Hoare Consulting cc (hereafter referred to as Hoare, 2012) conducted a vegetation survey of the entire Portion 93 in April 2012. The proposed development site was included in this survey. A copy of the report is provided in Appendix 6 and should be consulted with regards to the methodology used.

The vegetation on site comprises mainly grassland and secondary grassland in previously cultivated areas (Figure 5.19). Wetland vegetation is present within and adjacent to the wetland located in the central portion of the site (Figure 5.19). Various degraded areas associated with alien trees and exotic plant species (Figure 5.19) are also present on site.

Hoare (2012) identified the following vegetation units on site (Figure 5.19):

- Grassland;
- Secondary grassland;
- Disturbed grassland;
- Wetland;
- Degraded areas.

A total of 144 plant species were recorded on site (Hoare, 2012). Nineteen (19) of the plant species were naturalized exotics and an additional 8 declared weeds or invader plants. The proportion of naturalized exotic and invader species is moderate to low (19%) (Hoare, 2012). A comprehensive list of all the plant species noted on site is provided in Appendix 3 of Appendix 6.

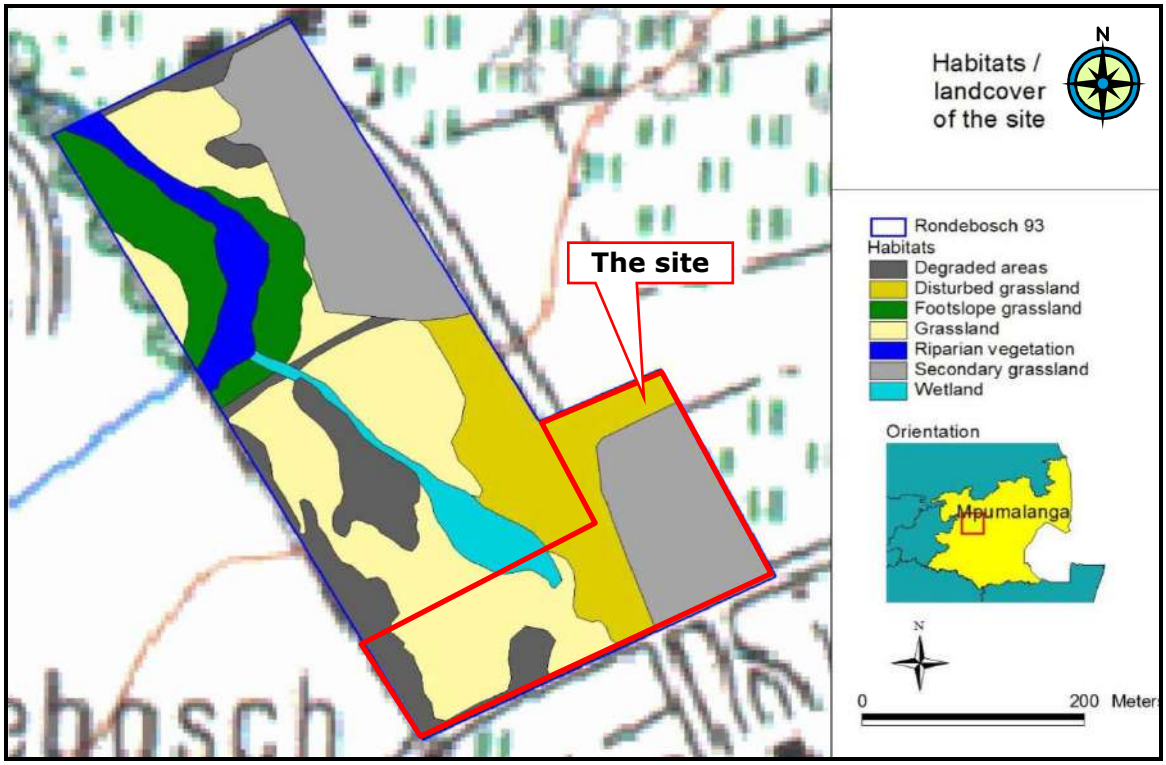


Figure 5.19: Vegetation units identified on the site (taken from Hoare, 2012)

5.7.2.1 Grassland (Figure 5.19)

According to Hoare (2012), the grassland on site is mixed and has a natural species composition typical of grassland in sandy soils, but a moderate species richness (Photo 5.9). Dominant species include *Heteropogon contortus*, *Hyparrhenia hirta*, *Themeda triandra*, *Cymbopogon pospischillii*, *Cymbopogon excavatus* and *Eragrostis chloromelas*.

Photo 5.9: A view of the grassland in the western portion of the site.

5.7.2.2 Secondary grassland (Figure 5.19)

The secondary grassland occurs in areas that were previously cultivated (i.e. the eastern portion of the site). The perennial grass cover is good however, the species richness is generally low (Photo 5.10). Dominant species include, *Hyparrhenia hirta*, *Melinis nerviglumis*, *Sporobolus africanus*, *Eragrostis chloromelas* and *Cynodon dactylon*.

Photo 5.10: A view of the secondary grassland in the eastern portion of the site.

5.7.2.3 Disturbed grassland (Figure 5.19)

The disturbed grassland is present adjacent to the gravel access road and in the area surrounding the old farmstead (Photo 5.11). According to Hoare (2012), the species composition is similar to that of the natural grassland. The vegetation was previously disturbed but has recovered to a natural state.

Photo 5.11: Disturbed grassland in the central/eastern portions of the site

5.7.2.4 Wetland (Figure 5.19)

A spring is located in the central part of the site. The overflow from the spring and surface water runoff flows along a drainage area towards the Klein Olifants River. Wetland vegetation (i.e. plant species that are typical of permanently moist areas) is found within this drainage area (Photo 5.12). Dominant species include *Typha capensis*, *Agrostis lachnantha*, *Cotula species*, *Fimbristylis complanata*, *Juncus effusus* and *Cyperus species*. This species composition is typical of areas that are permanently moist, although surface water does not necessarily need to be present. According to Hoare (2012), 27 of the indigenous species found on site are indicators of wetland conditions. See Appendix 3 of Appendix 6 for further details.

Photo 5.12: The drainage area/wetland in the central portion of the site

5.7.2.5 Degraded areas (Figure 5.19)

Plant species indicative of disturbance were found in areas where building rubble was dumped, adjacent to roads and footpaths, excavated areas, etc. (Photo 5.13). Species include *Datura ferox*, *Cyperus esculentus*, *Cynodon dactylon*, *Cleome monophylla* and *Portulaca oleraca*, and, in older sites, *Hyparrhenia hirta*, *Eragrostis chloromelas* and *Salvia* species.

Photo 5.13: Degraded vegetation in the southern portion of the site

5.7.3 Sensitivity Assessment

Hoare (2012) conducted a sensitivity assessment to identify the areas on site that could have high conservation value or may be sensitive to disturbance. The habitat sensitivity map for the site is presented in Figure 5.20.

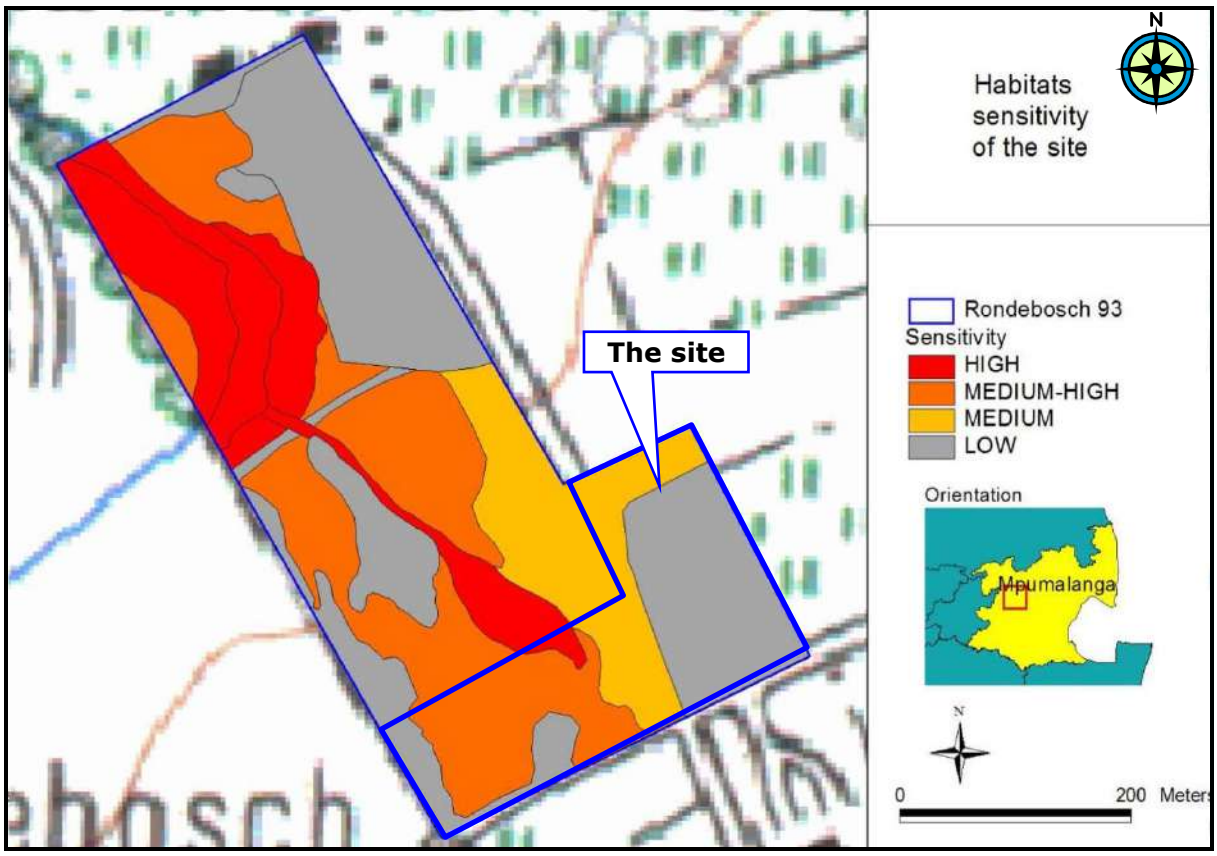


Figure 5.20: Habitat sensitivity of the site (taken from Hoare, 2012)

As indicated in Figure 5.20, the vegetation within the drainage/wetland area was classified as having **High** sensitivity. **This area is considered to provide high value ecosystem goods and services.**

The area of **Medium-High** sensitivity comprises the natural grassland found in the western portion of site (Figure 5.20). The biodiversity of the natural grassland is moderate and is confirmed habitat for a declining plant species (*Hypoxis hemerocallidea*).

The disturbed grassland on site was classified as having a **Medium** sensitivity (Figure 5.20).

The secondary grassland (previously cultivated eastern portion) and degraded areas are regarded as having a **Low** sensitivity (Figure 5.20).

5.7.4 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).

According to Hoare (2012), six plant species are listed as declining for the quarter degree grid in which the site is located (2529 CD) and surrounding grids. The species names and habitat description are provided in Appendix 1 of Appendix 6.

Of the six plant species that could occur on site, Hoare (2012) found only one declining/Orange List species (*Hypoxis hemerocallidea)*. It was found in

various places within the natural grassland. This plant species is mainly declining because of medicinal harvesting and habitat loss.

Suitable habitats are present on site for the other five declining species: C*rinum bulbispermum, Crinum macowanii*, *Callilepis leptophylla*, *Ilex mitis* and *Eucomis autumnalis*. However, none of these species were found on the site (Hoare, 2012).

5.7.5 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.

According to Hoare (2012), no protected tree species were found on site.

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.

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.

Boophone disticha was found in one location on site (Hoare, 2012). This plant species is declining since it is heavily harvested for the medicinal plant trade.

5.7.6 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 5.8 lists the invaders recorded by Hoare (2012) on the site.

Table 5.8: Declared weeds and alien invasive plant species (taken from Hoare, 2012)

Latin name	Category
Pennisetum clandestinum	Proposed declared invader
Agave americana	Proposed declared invader
Datura stramonium	Declared weeds category 1
Datura ferox	Declared weeds category 1
Ipomoea purpurea	Declared weeds category 1
Morus alba	Declared invaders category 2
Populus x canescens	Declared invaders category 2
Melia azeradach	Declared invader category 3

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

As indicated in Table 5.8, a number of alien trees are present on site. These trees are mostly located in the centre of the site near the old farmstead. Kikuyu grass is also present.

5.8 Animal life

5.8.1 Regional conservation status

According to the MBSP (2013) the site is classified as '**Heavily Modified'** and **'Other Natural Areas'** in terms of the Terrestrial Biodiversity Assessment (Figure 5.18).

The site is also classified as **'Heavily Modified'** and **'Other Natural Areas'** in terms of the Freshwater Biodiversity Assessment (Figure 5.23).

'Other Natural Areas' (ONAs) are defined as:

Natural areas that are potentially available to changes in land-use, subject to environmental authorisation processes. Although they are not identified to support freshwater CBAs or ESAs, they still provide important ecosystem services. Freshwater ONAs are particularly important in buffers around rivers and wetlands to reduce siltation and improve water quality. Old lands were included under Freshwater ONAs because of their functional importance in supporting and maintaining freshwater CBAs.

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 are present on or near the site (Figure 5.23).

5.8.2 Animal life found on site and surrounds

As indicated in Section 5.7, the following vegetation units were identified on site (Figure 5.19):

- Grassland;
- Secondary grassland;

- Disturbed grassland;
- Wetland;
- Degraded areas.

Currently, the grassland vegetation on site is utilized for grazing purposes. Cattle and horses were noted on site. No other large animal species were noted to be present.

Although it is unlikely that large animal species would permanently inhabit the proposed site (due to the human activity in the surrounding area), it is expected that a number of smaller species (e.g. rodents, birds, reptiles and amphibians) would be found on site as ample habitat is available.

The grassland (natural, secondary and disturbed) could provide habitat for small antelope (e.g. Common Duiker), small mammals (e.g. Mongoose), reptiles and birds. The wetland vegetation would also provide good habitat for small mammals, reptiles and aquatic species (e.g. frogs).

Scrub hare pellets, dragonflies and butterflies were noted within the wetland and natural grassland vegetation, which indicates that the site is utilized by smaller species.

Bird species like the Laughing Dove (*Streptopelia senegalensis)*, Pied Crow (*Corvus albus)* and Red Bishops (*Euplectes orix*) were noted near the wetland and Klein Olifants River.

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

5.8.3 Species of Conservation Concern

No Species of Conservation Concern (e.g. Giant Bullfrog, Hedgehog, Serval, etc.) were noted on site during the site visits. It is unlikely that Species of Conservation Concern will be present on site due to human activity in the area and the fragmented nature of the remaining grassland/wetland vegetation. The possibility that Red Data species may occur in the area is however, not excluded.

The Giant Bullfrog has not been recorded within the quarter degree square within which the site is located (Haacke, 2011). It is unlikely that Bullfrogs will occur in the area due to the soil conditions and the fact that the Klein Olifants River is not suitable for reproduction.

The "Near Threatened" hedgehog and the "Data Deficient" African Weasel may however, be present in the area (Rautenbach, 2011). Although grassland habitat is available on site, these mammals were not noted during the site visits.

In terms of birdlife, the grassland habitat would offer suitable foraging habitat for Lesser Kestrel (Geyser, 2012). However, this species is only likely to forage over the grassland areas on rare occasions during migration.

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 B12D quaternary catchment (Figure 5.21).

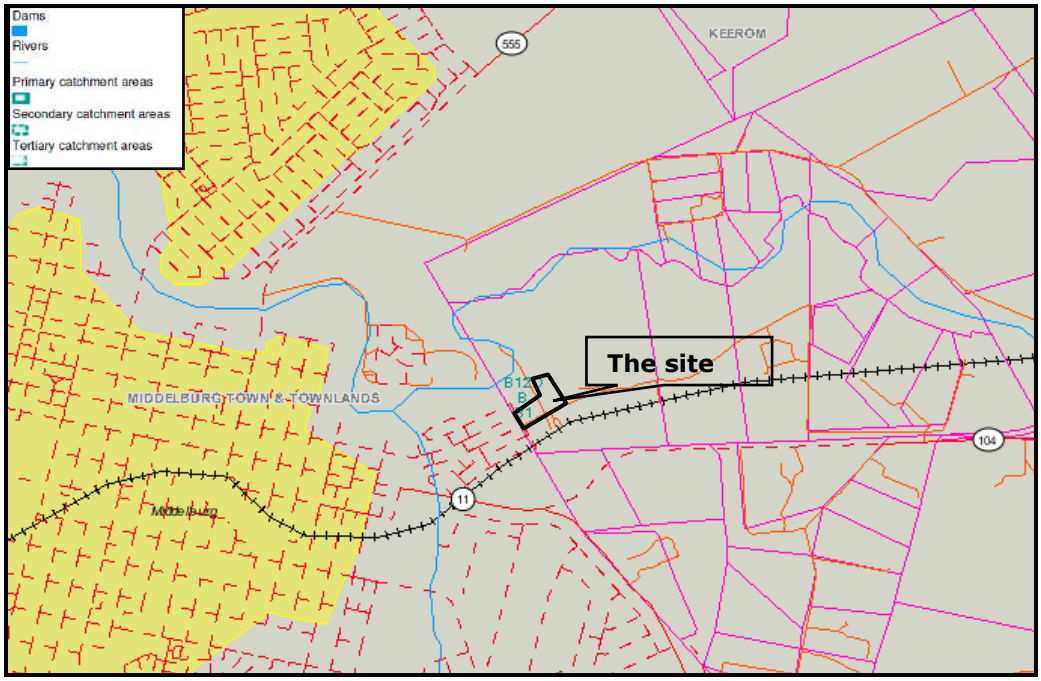


Figure 5.21: Tertiary Catchment (taken from Department of Agriculture, Forestry and Fisheries)

The table below provides more details regarding the B12D quaternary catchment.

Area (Ha)	Mean Annual Precipitation (mm)	Mean Annual Runoff (mm)	MAR as a % of MAP	Study area as % of the catchment
32 610	702.68	38.1	5.42	0.29

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 Ecological Category of the B12D quaternary catchment to be maintained is a D.

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.

According to the MBSP Freshwater Biodiversity Assessment (2013), the proposed development site does NOT fall within an Ecological Support Area (ESA): Important subcatchment (Figure 5.16).

It should be noted that the MBSP Freshwater Biodiversity Assessment (2013) includes information obtained from the National Freshwater Ecosystem Priority Areas (NFEPA) and threatened freshwater ecosystems databases (National Biodiversity Assessment, 2011).

5.9.2 Floodline

The Klein Olifants River is located north west of the proposed site (Figure 5.22). It is a requirement in terms of Section 144 of the National Water Act, 1998 (Act 36 of 1998) that all townships must be located outside of the 1:100 year floodline. As indicated in Figure 5.22, the said site is not affected by the 1: 100 year floodline.

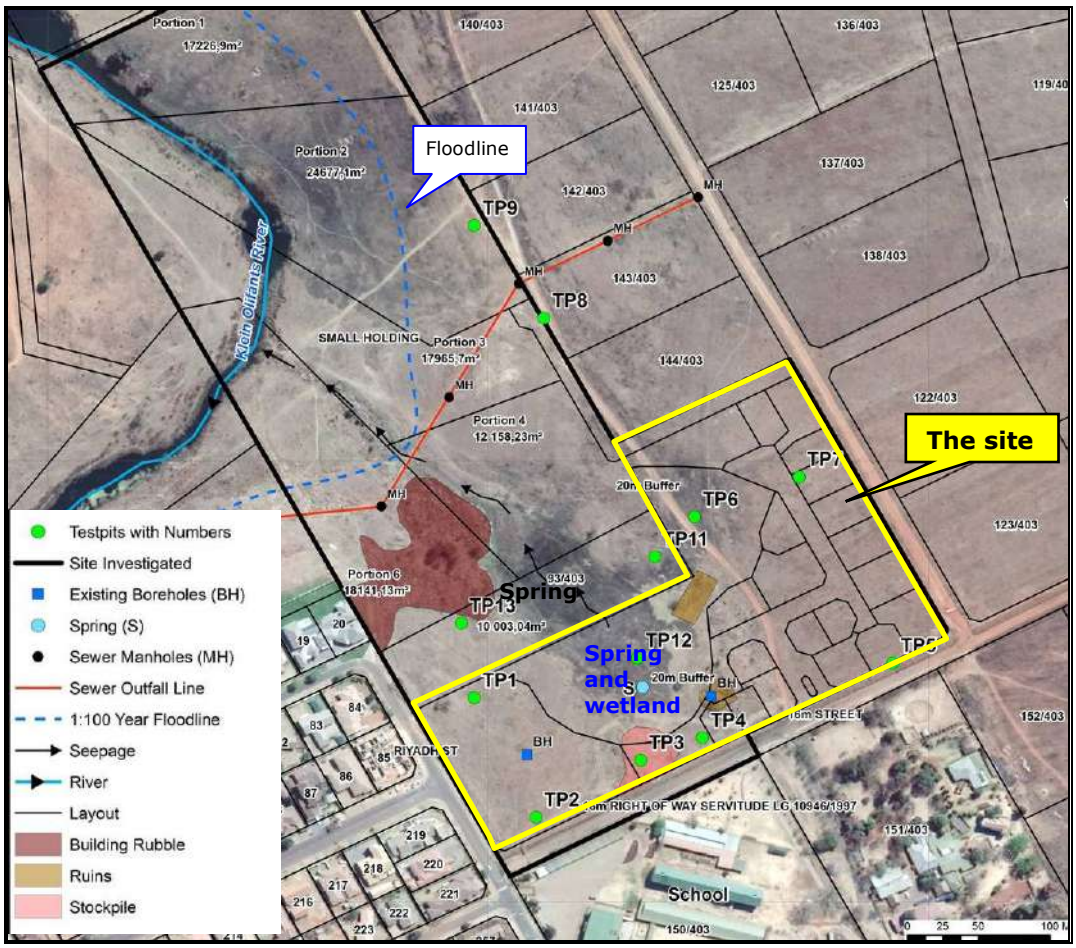


Figure 5.22: The site in relation to the floodline (taken from Cilliers & Hansmeyer, 2018)

5.9.3 Surface water runoff

The eastern and western portions of the site drain towards a spring/wetland located in the centre of the site. The overflow from the spring as well as surface water runoff from rain flows along a natural drainage area towards the Klein Olifants River (Figure 5.22). Surface water runoff is thus in a north westerly direction towards the Klein Olifants River.

5.9.4 Wetlands

The Mpumalanga Biodiversity Sector Plan (MBSP, 2013) does not indicate any important wetlands or wetland clusters on site (Figure 5.23). The closest ESA Wetland and Mpumalanga Highveld Wetland is located approximately 200m to the north west of the site (Figure 5.23).

A wetland assessment and delineation study was undertaken by S Davis of Wetland Consulting Services (referred to as Davis, 2012) for Portion 93 of Rondebosch 403 JS. The said development site was included in this study.

A copy of the report is provided in Appendix 7. The said report should be consulted with regards to the methodology used in this assessment and limitations of the study.

Figure 5.23: Freshwater biodiversity assessment of the Mpumalanga Biodiversity Sector Plan, 2013

5.9.4.1 Wetland types

According to Davis (2012), a hillslope seepage wetland (Photo 5.14) was identified in the central portion of the site. This wetland extends in a north westerly direction, along a drainage line, to the Klein Olifants River (Figure 5.22). A riparian habitat (which is located off-site) was identified adjacent to the Klein Olifants River (Figure 5.24).

Figure 5.24 provides an indication of the location of the wetlands as well as the recommended 20 m buffer zone.

Photo 5.14: View of the hillslope seepage wetland in central portion of site

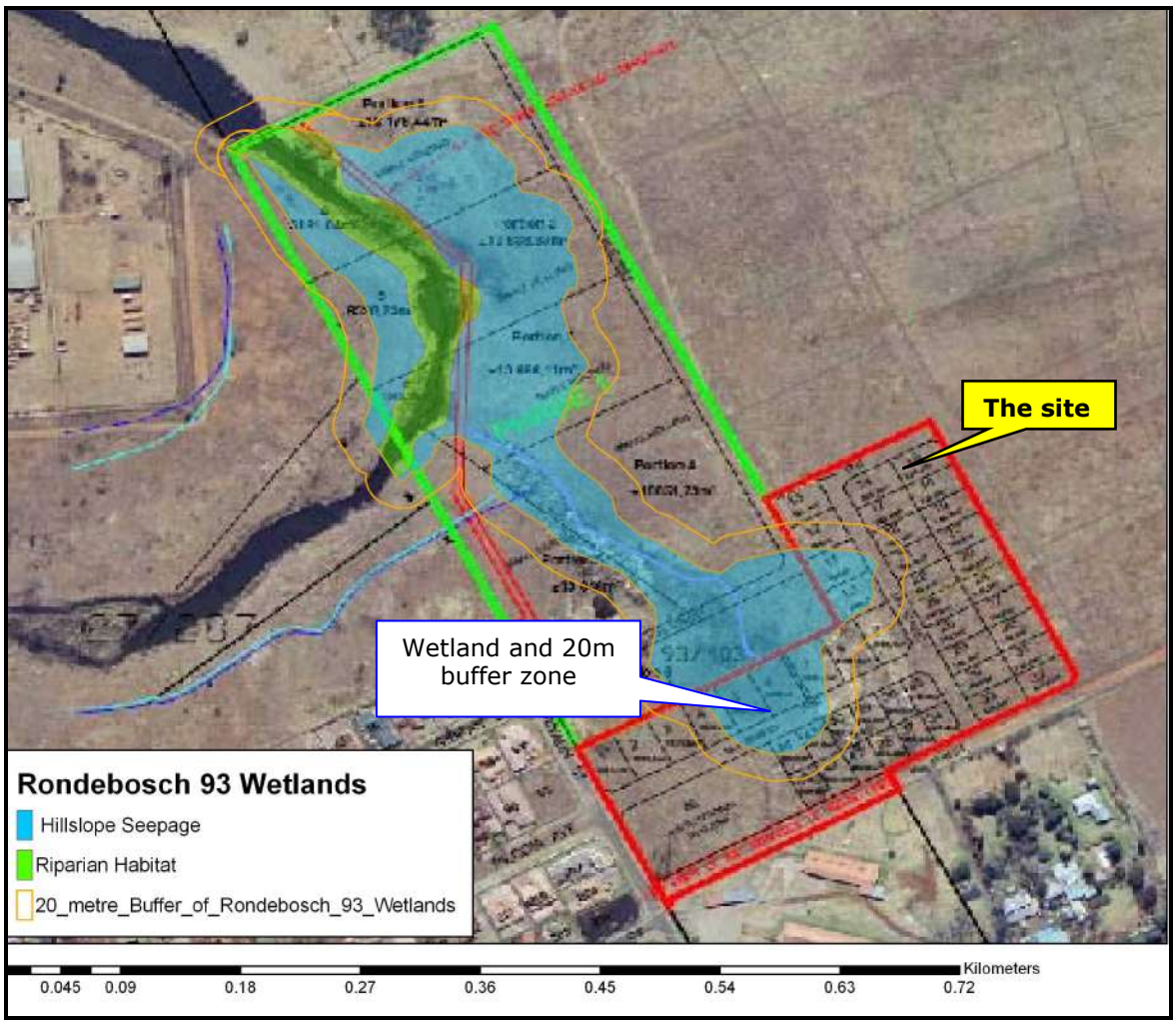


Figure 5.24: Wetlands present on site and on the remainder of Portion 93 (taken from Davis, 2012)

Hillslope seepage wetland

According to Davis (2012), the hillslope seepage wetland extending from the site to the Klein Olifants River can be differentiated into two types (Figure 5.24) based on the source of flow inputs namely:

- The hillslope seepage 'arm' that extends through the central portion of the site (on-site wetland; Figure 5.24) receives flow inputs from surface runoff (precipitation) and subsurface runoff (spring).
- The narrow bands of hillslope seepage located along the margins of the riparian habitat (off-site wetland adjacent to the Klien Olifants River; Figure 5.24) receive flow inputs from surface runoff (upslope and precipitation) as well as water inputs from seasonal overtopping of the river channel associated with the Klein Olifants River.

According to Davis (2012), hillslope seepage wetlands are usually dominated by diffuse, subsurface movement of flows, which are maintained at or near the soil surface by an aquitard or aquiclude. The aquitard or aquiclude prevents the water from infiltrating deeper into the soil profile, which gives rise to a shallow, perched water table. The shallow water table influences the soil and the vegetation community.

As indicated in Section 5.6, slight mottling of the soil was observed in areas of temporary wetness, whereas the soil in the seasonally to permanently saturated area displayed typically gleyed colouring.

Wetland vegetation in the temporary wet areas included grass species such as *Imperata cylindrica*, *Eragrostis plana* and *Hemarthria altissima*. In the seasonally to permanently saturated areas, the wetland vegetation was dominated by *Typha capensis, Agrostis lacnantha*, *Fimbristylis complanata*, *Juncus effusus* and *Cyperus* species (Photo 5.14).

Riparian habitat (off-site; Figure 5.22)
The riparian habitat is located north west of the site along the banks of the Klein Olifants River. It is dominated by tall tussock grasslands (e.g. *Miscanthus junceus, Conyza scabrida* and *Searsia* species) and small shrubs.

5.9.4.2 Present Ecological Status of wetland (PES)

Figure 5.25 provides an indication of the Present Ecological Status of the wetlands.

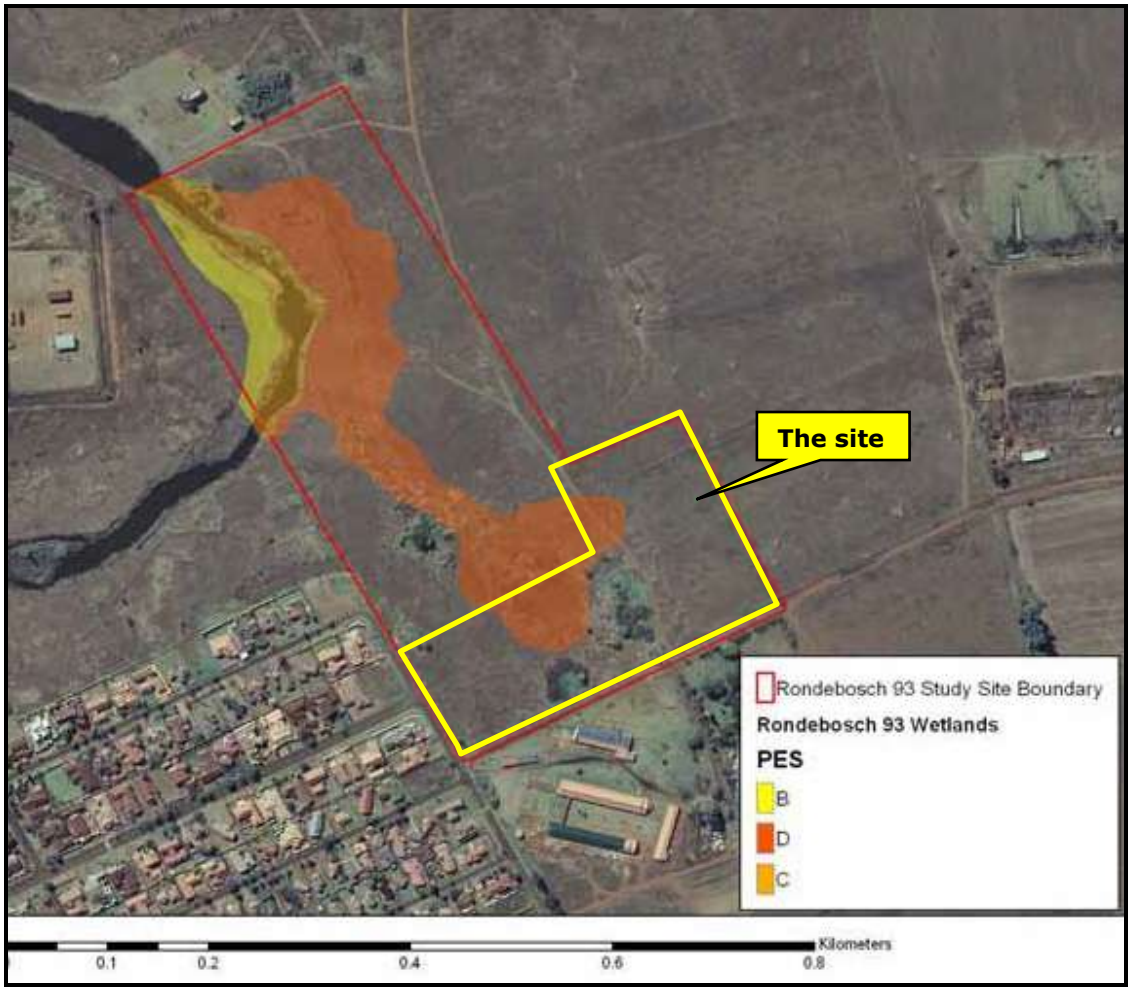
The hillslope seepage wetland habitat located on site and east of the Klein Olifants River (Figure 5.25) was found to be significantly impacted and modified (Davies, 2012). Building rubble was disposed within the wetland and surrounding area, which led to a concentration of flows along preferential flow pathways, sedimentation and the establishment of exotic vegetation.

In addition, a municipal sewer line was installed across the downstream wetland by the Steve Tshwete Local Municipality. According to Davis (2012), this will lead to further flow concentration, erosion of the wetland soils, head cut formation as well as the impoundment of flows upstream and increased soil saturation. Other impacts include litter, land use changes in the area and vehicle and human traffic within the wetland.

The hillslope seepage wetland located on site and east of the Klein Olifants River was assigned a PES category of D (i.e. Largely Modified) due to it being largely modified (Figure 5.25).

The hillslope seepage wetland located west of the Klein Olifants River (i.e. off-site wetland; Figure 5.24) is in a good condition since the area is relatively inaccessible. Some impacts, such as exotic plant species were noted. However, the hillslope seepage wetland is considered largely natural and was given a PES rating B (i.e. Largely Natural) (Figure 5.25).

The riparian habitat (which is located off-site; Figure 5.24) was found to be moderately modified and assigned a PES rating C (i.e. Moderately Modified) (Figure 5.25), due to the extensive encroachment of exotic plant species.



Legend

A	*Unmodified, or approximates natural condition*
B	*Largely natural with few modifications, but with some loss of natural habitats*
C	*Moderately modified, but with some loss of natural habitats*
D	*Largely modified. A large loss of natural habitat and basic ecosystem function has occurred.*
E	*Seriously modified. The losses of natural habitat and ecosystem functions are extensive*
F	*Critically modified. Modification has reached a critical level and the system has been modified completely with almost complete loss of natural habitat.*

Figure 5.25: Present Ecological State of the wetlands on site and on the remainder of Portion 93 (taken Davis, 2012)

5.9.4.3 Ecological Importance and Sensitivity (EIS) of the wetland

Although the wetlands on site and on the remainder of Portion 93 are linked to the Klein Olifants River (which can be considered of high ecological importance), they have been given a low/marginal Ecological Importance and Sensitivity (EIS) status of D (Davis, 2012). The reason for the low EIS status is due to the fact that the wetlands are small, with a limited biodiversity and in relatively poor condition ecologically. The wetlands near the Klein Olifants River may however, provide feeding and breeding habitat for species associated with the river and riparian habitat.

The potential contribution to biodiversity support is limited and the wetlands are not considered to be especially ecologically important and sensitive.

5.9.4.4 Functional assessment of wetlands

According to Davis (2012), hillslope seepage wetlands have the capacity to improve the quality of water passing through the wetland into nearby streams or rivers. In addition, the vegetation cover within the wetlands can limit erosion and subsequent sediment transfer into downstream watercourses. Excess sediment reduces habitat quality for aquatic organisms.

Although hillslope seepage wetlands are not generally considered to play an important role in flood attenuation, the seeps can retain some water and reduce surface run-off early in the season. It is expected that the off-site wetlands located adjacent to the Klein Olifants River and the riparian habitat will play some role in flood water attenuation during high flow events. The contribution towards water quality improvement and flood attenuation is however, expected to be small.

The most important service provided by the wetlands is believed to be biodiversity maintenance (Davis, 2012). Although the biodiversity support function of the wetland on site is small in relation to larger systems, the wetlands still form a mosaic of moisture regimes that provide a wide range of microhabitats for faunal and floral species.

5.9.4.5 Buffer zone

All wetlands are considered to be of high sensitivity. A buffer zone therefore needs to be implemented to mitigate the impact of the development on these sensitive features. According to Davis (2018), a vegetated buffer zone along the edge of the wetland would (to some degree) dissipate the velocity of surface flows, encourage infiltration and sift out particulate pollutants. It would also act as a noise and disturbance buffer to fauna utilizing the wetland.

Davis (2012) recommended a 20m wetland buffer zone around the wetlands as suggested in the Mpumalanga Biodiverstiy Conservation Plan (2006).

Wetland Consulting Services (Pty) Ltd. was requested to utilize the Wetland Buffer Determination Tool to determine whether the original 20m wetland buffer zone is still applicable. This tool is used to calculate a buffer based on the anticipated impacts as a result of the proposed development. A copy of this report is provided in Appendix 7.

Using this tool, Davis (2018) determined the site based buffer zone as follows:

Development type	Site-based aquatic impact buffer requirements (without additional mitigation measures)	Revised aquatic impact buffer requirements (including additional mitigation measures
High density urban - residential high impact	40	18

According to Davis (2018), the buffer to be applied to the development is 18m, based on the implementation of the mitigation measures indicated in the Basic Assessment Report and the conditions of the Water Use License.

The project team decided to design around the original 20m wetland buffer zone (see Layout Plan - Figure 3.2). This buffer zone was also recommended by the Department of Water and Sanitation (see Section 6).

5.10 Groundwater

According to Hansmeyer (2010), the regional groundwater information indicates:

- groundwater quality of Class 0 to Class 1 (which is suitable for long term human consumption)
- low to medium borehole yields (i.e. 1900 to 12 400 l/hr).

Two dysfunctional boreholes were recorded by Cilliers & Hansmeyer (2018) on site. The one borehole is located at the old farmstead ruins and the other one in the western portion of the site (Figure 5.22). According to Cilliers & Hansmeyer (2018), the borehole casings were backfilled with soil and rubble and no measurements or samples could be taken.

A spring and hillslope seepage wetland are located in the central portion of the site (Figure 5.22). Overflow from the spring as well as surface water runoff from rain flows along a natural drainage area towards the Klein Olifants River (Figure 5.22).

Seepage was recorded within the wetland area at 1.8m below surface (TP12; Figures 5.10 and 5.11). No development is recommended for this area (Cilliers & Hansmeyer, 2018).

According to Cilliers & Hansmeyer (2018), the balance of the site is dry and no ponding or groundwater seepage recorded.

5.11 Air quality

The proposed site is located in the Steve Tshwete Municipal area hot spot, which extends across the Steve Tshwete Local Municipality from its border with eMalahleni 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 (HPA; Republic of South Africa, 2011). 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.

Three main nodes of non-compliance with ambient standards occur within this hotspot. The said site is located within the Middelburg node. In the Middelburg node, both modelled 24-hour SO_2 and PM10 standards are frequently exceeded. Ambient monitoring at Middelburg, a site influenced by industrial sources, confirms the PM10 exceedances. This hot spot is mostly attributed to emissions from the metallurgical industries and residential fuel burning. The contribution of industries in the area dominates the source contributions for all pollutants considered. In terms of PM10, residential fuel burning does contribute a sizeable percentage to ambient concentrations.

Ambient air quality monitoring stations

Five ambient air quality monitoring stations are operated and maintained in the Highveld Priority Area (HPA) by the South African Weather Service (SAWS). These stations are located in eMalahleni (Witbank), Middelburg, Ermelo, Secunda and Hendrina and were installed in 2008. The SAWS manages the network which includes routine maintenance, calibration, data management and reporting.

At each of the said stations the following is measured: PM10, PM2.5, SO_2, NO, NO_2, NO_x, O_3, CO, benzene, toluene, ethylbenzene and xylene. In addition, the following meteorological data is also measured: wind speed, wind direction, ambient temperature, relative humidity, rainfall, solar radiation, barometric pressure.

- Middelburg Station

The Middelburg Station is located nearest the proposed site (i.e. ±5km towards the south west in the residential area of Aerorand). This site was selected to measure the impact of emissions from mining and industry especially the large industrial sources such as Columbus Stainless and Middelburg Ferrochrome.

Monitoring Station	Co-ordinates	Monitoring Period	Pollutant Sources
Middelburg	S-25.79070; E29.462801	August 2008 - present	Large industrial sources (Columbus Stainless and Middelburg Ferrochrome, industries to the south and mine dumps to the north west, no local impact from domestic fuel burning.

- Wind roses

Wind roses summarise the occurrence of winds at a location, representing their strength, direction and frequency. Table 5.9 summarises the dominant winds and wind speed for each month as measured at the Middelburg Station.

Table 5.9: Dominant wind and wind speed for Middelburg from August 2016 to July 2017 (@ Middelburg Station)

MONTH	DOMINANT WIND	FREQUENCY OF OCCURRENCE (%)	WIND SPEED (maximum) (m/s)
August 2016	SE	17%	6
September 2016	NW	20%	10.99
October 2016	NW	20%	10.99
November 2016	NW	24%	10.05
December 2016	NW	20%	6
January 2017	SE	20%	8.75
February 2017	SE	22%	6
March 2017	SE	27%	6.82
April 2017	SE	18%	4
May 2017	SE	20%	7.97
June 2017	NW & SE	16% & 15%	6 & 4
July 2017	SE	18%	4

As is evident from Table 5.9, winds in the area are relatively stable with the dominant wind directions being north westerly and south easterly winds.

- Ambient air quality

According to the HPA: Air Quality Management Plan (2011), industrial sources are by far the largest contributor of SO_2 and NO_x, accounting for approximately 99.57 % of SO_2 and 95.97% of NO_x emissions. Mining is the largest contributor of PM10 emissions.

Although the site is located within the urban edge, it is located only 2.7km from the industrial sources in Middelburg (e.g. Columbus Stainless) and 7.5km from the nearest coal mine. Other sources in the vicinity that could impact on the ambient air quality include:

- Emissions from vehicles utilizing the surrounding roads (e.g. Rhiyadh Street);
- Dust from traffic utilizing the gravel right-of-way servitude road;
- Dust from agricultural activities towards the east;
- Smoke emitted from veld fires.

5.12 Noise

In general, the area is relatively quiet. The major contributing factor to the ambient noise level of the site would be as a result of:

- Traffic utilizing the surrounding roads (e.g. Rhiyadh Street and gravel access roads);
- Activities associated with the nearby Middelburg Muslim School;
- Residential and agricultural activities taking place in the surrounding area;
- Activities at the nearby military base.

5.13 Sites of archaeological and cultural interest

5.13.1 Cultural Heritage sensitivity

A Heritage Impact Assessment (HIA) is required in terms of Section 38 of the National Heritage Resources Act (Act 25 of 1999) for any development or other activity that will change the character of a site and exceeds 5 000m^2.

A Phase I Heritage Impact Assessment (HIA) was undertaken by Dr. A. van Vollenhoven of Archaetnos Culture and Cultural Resource Consultants (referred to as Van Vollenhoven, 2018). A copy of the report is provided in Appendix 8. This report should be consulted with regards to methodology used as well as limitations of the study.

Stone Age

The Stone Age is the period in human history when lithic material was mainly used to produce tools (Coertze & Coertze, 1996). In South Africa the Stone Age can be divided into three periods, namely:

- Early Stone Age (ESA) 2 million – 150 000 years ago;
- Middle Stone Age (MSA) 150 000 – 30 000 years ago;
- Late Stone Age (LSA) 40 000 years ago – 1850 - A.D.

No Stone Age sites are indicated on a map contained in a historical atlas of the area (Bergh 1999). The closest known Stone Age occurrence is that of rock art close to the Olifants River to the south of Witbank (Bergh 1999). This should rather be seen as a lack of research in the area and not as an indication that such features do not occur.

Van Vollenhoven (2018) did not record any natural shelters during the survey. It is therefore possible that people did not stay here for long periods. The relative closeness of the Klein Olifants River and ample grazing would have made it a prime spot for hunting and obtaining water in the past. Therefore, it can be assumed that Stone Age people would have moved through the area.

No Stone Age material was however, found during the survey.

Iron Age

The Iron Age is the name given to the period of human history when metal was mainly used to produce metal artefacts (Coertze & Coertze, 1996).

In South Africa it can be divided in two separate phases, namely:

- Early Iron Age (EIA) 200 – 1000 A.D.
- Late Iron Age (LIA) 1000 – 1850 A.D.

Huffman (2007) however indicates that a Middle Iron Age should be included. His dates, which now seem to be widely accepted in archaeological circles, are:

- Early Iron Age (EIA) 250 – 900 A.D.
- Middle Iron Age (MIA) 900 – 1300 A.D.
- Late Iron Age (LIA) 1300 – 1840 A.D.

No Iron Age sites are indicated around the town of Middelburg, but this may only indicate a lack of research. The good grazing and access to water in the area would have provided a good environment for Iron Age people although building material may have been reasonably scarce.

No Iron Age occurrences were identified during the survey.

Historical Age

The historical age started with the first recorded oral histories in the area. It includes the migration of people that were able to read and write.

Due to factors such as population growth and a decrease in mortality rates, more people inhabited the country during the recent historical past. Therefore, more cultural heritage resources from this era have been left on the landscape.

At the beginning of the 19th century the Phuthing, a South Sotho group, stayed in the vicinity of modern day Bethal. During the Difaquane they fled to the south (Bergh 1999).

The first white traveller to visit these surroundings was Robert Scoon in 1836. White farmers only settled here after 1859.

Farm buildings, structures and objects from this period are therefore expected in the area. During past surveys, many graveyards from this time period were identified in the surrounding area (Archaetnos database). Remains of historical structures and buildings was identified on Portion 52, Rondebosch.

Van Vollenhoven (2018) identified two (2) sites from the Historical Age on the proposed development site, namely:

- Site No. 1 - Ruins of historical farm yard;
- Site No. 2 - Building ruins.

The location of these two sites are indicated in Figure 5.26.

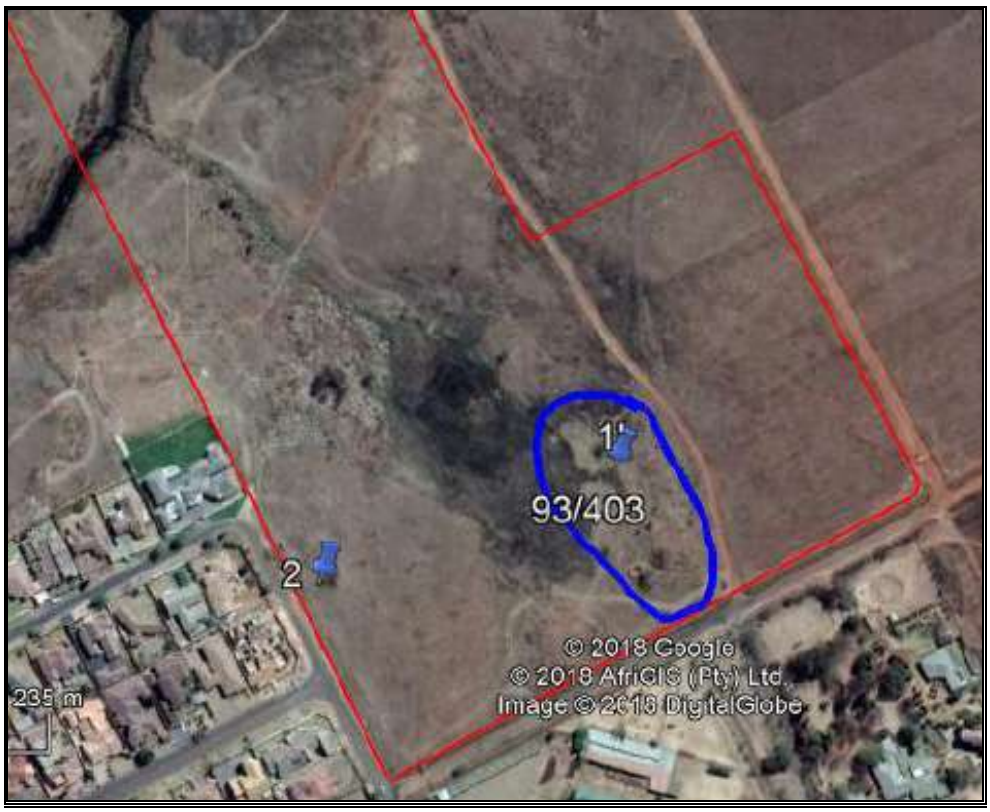


Figure 5.26: Location of heritage sites identified on site (taken from Van Vollenhoven, 2018)

Site No. 1 - Ruins of historical farm yard (Figure 5.26)
Site No. 1 comprises the ruins of a farm house and outbuildings, which are in an extremely bad state (Photos 5.16 and 5.17). According to Van Vollenhoven (2018), two of the outbuildings look like the remains of pigsties. The other outbuilding in such a poor conditions that it could not be identified. The buildings were constructed from stone, bricks and cement. The remains are spread over a relatively large area.

Photo 5.16: Remaining stone wall that may have been the foundation of a farm house

Photo 5.17: Possible remains of a pigsty

Van Vollenhoven (2018) gave the building remains of Site No. 1 a field rating of Local Grade IIIC (i.e. **low significance**). The buildings may be destructed without a formal permit application, at the discretion of the relevant heritage authority.

Site No. 2 - Building ruins (Figure 5.26)
The ruins at Site No. 2 comprise of a one room structure of about 3 X 4m. It was probably a farm workers dwelling and was constructed using clay and stone (Photo 5.18).

Photo 5.18: Remains of a possible farm worker's dwelling

Van Vollenhoven (2018) gave the building remains of Site No. 2 a field rating of Local Grade IIIC (i.e. **low significance**). The buildings may be destructed without a formal permit application, at the discretion of the relevant heritage authority.

Conclusion:
As indicated, Van Vollenhoven (2018) identified two sites of cultural heritage significane on site. Both sites are however, of negligible value. The development may therefore proceed, once the report has been approved by SAHRA.

In addition, Van Vollenhoven (2017) indicated that the subterranean presence of historical sites, graves, objects or features may be uncovered during

construction, in which case work should cease immediately and an archaeologist contacted.

5.13.2 Palaeontological sensitivity

According to the palaeontological map supplied by the South African Heritage Resources Agency (SAHRA, 2018), the palaeontological sensitivity of the proposed site is deemed as Moderate (area indicated in green; Figure 5.27). In view of this, a desktop assessment is required as indicated in Figure 5.27.

The palaeontological sensitivity of a site is closely related to the underlying geology, since fossils mainly occur in rocks of sedimentary nature and not in rocks from igneous or metamorphic nature.

According to Cilliers and Hansmeyer (2018), the site is underlain by remnants of Dwyka tillite, which is underlain by older shale of the Loskop Formation and intruded by a large diabase sill (Figure 5.4). The potential impact of the development on fossil heritage is Low for the Loskop Formation and Moderate for the Dwyka Group.

Dr. Heidi Fourie (hereafter referred to as Fourie, 2018) was subsequently appointed to conduct a Palaeontological Impact Assessment – Field Study. A copy of the said report is provided in Appendix 9 and should be consulted with regards to the methodology used as well as the limitations of the study.

The aim of a Phase 1 Field Study is to ascertain if any palaeontological sensitive material is present within the proposed development site, to indicate the potential impact on the fossil heritage and state if any mitigation or conservation measures need to be implemented.

Fourie (2018) indicated that the Dwyka Group may contain visible fossils, therefore a field survey (and not a desktop assessment) was necessary.

Figure 5.27: Requirement for palaeontological study (taken from SAHRA, 2018)

According to Fourie (2018), trace fossils (from fish and various anthropods) are relatively abundant in the shales occurring near the top of the Dwyka Group. Plants fossils include lycopods, moss, pre-*Glossopteris* flora, pollen, spores and wood. Microfossils include foraminifers, sponge spicules, and radiolarians, coprolites, bivalves, brachiopods and nautiloids also occur. Photo 5.28 provides an indication of the fossils that could occur in the Dwyka Group.

A summary of the fossil heritage within the Dwyka Group and the Loskop Formation is provided in Table 5.10.

Table 5.10: Summary of fossil heritage within the Dwyka Group and the Loskop Formation (taken from Groenewald and Groenewald, 2014)

Subgroup / Supergroup	Group	Formation	Fossil Heritage	Comment
Karoo Supergroup	Dwyka	-	Spores, pollen, plant remains, arthropod trackways, and fish trails.	Important and under collected
Proto - Waterberg	-	Loskop	Trace fossils and cyanobacteria, but not common.	More common in the Makgabeng Formation

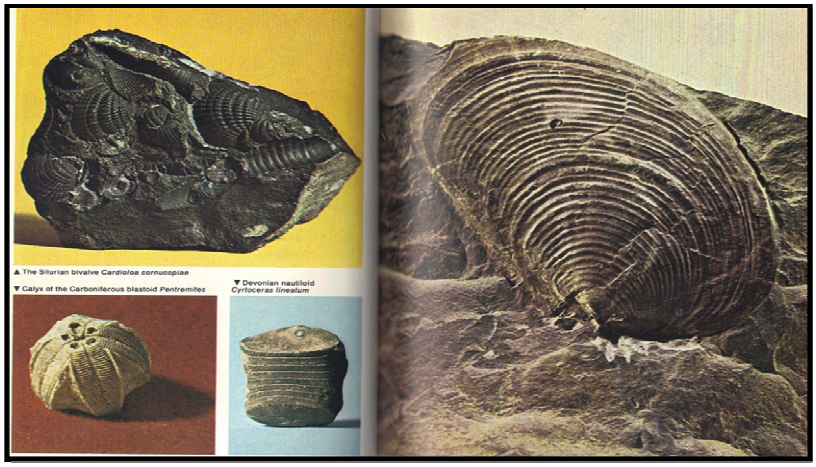


Figure 5.28: Examples of fossils that could occur in the Dwyka Group sediments (DeZanche and Mietto 1977).

Plant fossils have been described from outcrops of the Dwyka Group in Limpopo Province, with special reference in the Springbok Flats region. Outcrops are however rare in the Mpumalanga Province and any recording of fossils will be highly significant (Groenewald and Groenewald 2014). Fourie (2018) did however, not record any fossils on site.

Potential threats of the development were identified as: earth moving equipment/machinery (for example front end loaders, excavators, graders, dozers) during construction, the sealing-in or destruction of fossils by development, vehicle traffic and human disturbance.

Fourie (2018) raised no objection to the proposed development and indicated that the development may go ahead with caution. A Phase 2 Palaeontological Impact Assessment is not required since **no surface fossils were found** during the walk through.

However, special care must be taken during the construction phase (e.g. digging, drilling, blasting, excavating of foundations, removal of overburden, etc.) as a site visit may have missed a fossiliferous outcrop. A protocol for finds and management plan are provided in Appendix 2 of Appendix 9.

5.14 Sensitive landscapes

A spring and hillslope seepage wetland are located in the central portion of the site as indicated in Section 5.9. All wetlands are considered to be of high sensitivity. A 20m wetland buffer zone was recommended within which no development may take place.

Two heritage sites (i.e. ruins of historical buildings) are present on site as indicated in Section 5.13. These ruins/remains are however, in a bad state and of negligible value. According to Van Vollenhoven (2018), the development may proceed, once the report has been approved by SAHRA.

5.15 Visual aspects

The natural slope of the site is towards the north west in the direction of the Klein Olifants River (Figure 5.1).
The site is visible from all the surrounding properties due to the relatively flat nature of the area. The site is most visible from the houses adjacent to Riyadh Street in Eastdene, the adjacent smallholdings, the Middelburg Muslim School, the SAI4 Military Base and the adjacent road network.

5.16 Traffic

The existing road network through Eastdene will be utilized to access the proposed development (Figure 3.5).

The said site is bordered on the west by Riyadh Street and on the south by a Right-of-Way servitude gravel road.

In general, the traffic in the area is of a residential nature since the site is located adjacent to Eastdene. The Right-of-Way servitude gravel road provides access to smallholdings and farms located towards the east and north east.

The Middelburg Muslim School is located south of the site and generates high volumes of traffic during the early morning and mid-afternoon peak hours.

5.17 Sense of place

The proposed site is situated within the urban edge of the Steve Tshwete Local Municipality (Figure 5.29). According to Urban Dynamics (2018), the urban edge is a term used in the Spatial Development Framework (SDF) to indicate the demarcated area for the limit of urban expansion. In other words, the areas within that demarcated line could be considered for urbanization and the areas outside the line for rural activities.

The proposed site falls within an area identified in the SDF (2015) for future Rural Residential development (e.g. smallholdings) (Figure 5.29).

However, the proposed development will be a natural extension of the existing Eastdene residential area and the proposed mosque will serve the surrounding community.

Urban Dynamics (2018) will lodge an application with the Steve Tshwete Local Municipality to amend the SDF (which is currently under review) to allow for Residential 1 development.

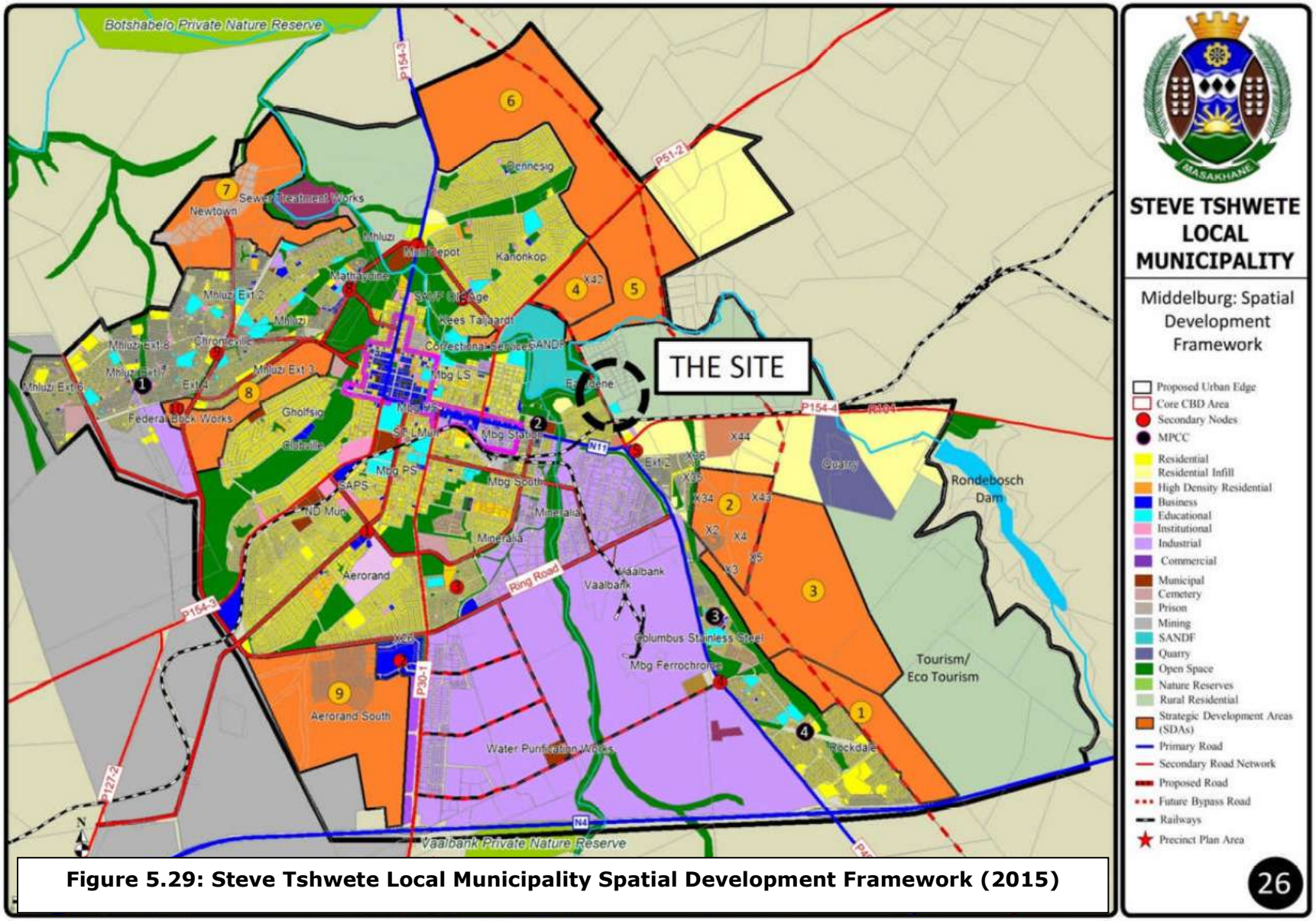


Figure 5.29: Steve Tshwete Local Municipality Spatial Development Framework (2015)

SECTION 6: DESCRIPTION OF THE PUBLIC PARTICIPATION PROCESS

The public participation process is defined in the Public Participation (PP) Guideline (2017) as *"a process by which potential interested and affected parties are given opportunity to comment on, or raise issues relevant to, the application.*"

According to the PP Guideline (2017), some characteristics of a comprehensive PP process include providing role-players with clear, accurate and understandable information about the activity, allowing them to voice their support, concerns and questions regarding the project and encouraging transparency and accountability in decision-making.

Interested and affected parties/role players also have a responsibility towards ensuring a successful public participation process and must ensure that:

a. comments are submitted within the specified timeframes or any extension of a timeframe agreed to by the applicant or the EAP;
b. comments are submitted directly to the EAP; and
c. any direct business, financial, personal or other interest which the I&AP may have in the approval or refusal of the application is disclosed to the EAP.

This section of the report provides an overview of the public participation process followed to date and represents the Comments and Response Report as required in terms of Section 44 of the EIA Regulations, 2014 (as amended) and the PP Guideline, 2017.

The public participation process was designed to satisfy the requirements of Chapter 6 and Appendix 1 of the EIA Regulations, 2014 (as amended) as well as the PP Guideline, 2017.

The following information is provided in this section of the report:

- Details regarding the advertising of the project (Section 6.1);
- Comment received in response to advertising and the distribution of the Background Information Document (Sections 6.2 to 6.8);
- A list of registered interested and affected parties, stakeholders and government departments (Section 6.5);
- A map indicating directly affected and adjacent landowners (Figure 6.2);
- A summary of the comments received from I&APs and a response from the EAP (Table 6.6).
- Supporting documentation e.g. copies of e-mails, notices, Background Information Document (BID), comment sheets, etc. (Appendices 7, 8 and 9).

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 (as amended), was placed in the local newspaper, Middelburg Observer, on Friday, 9 November 2018. A copy of the advert is provided in Appendix 10.

The Middelburg Observer is distributed in Middelburg, Belfast, Hendrina, eMalahleni, Groblersdal and surrounding areas to more than 285 distribution points with approximately 21 500 copies sold each Friday.

6.1.2 On-site advertising

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

- On-site at the access gate to the site (A3; Figure 6.1 - Photo 6.1);
- On the site fence at the corner of Riyadh and Madina Streets (A1; Figure 6.1 – Photo 6.2);
- On the notice board at the Eastdene Public Library (A3; Figure 6.1 - Photo 6.3).

A copy of the notice was also loaded onto the company website: http://adienvironmental.co.za.

A copy of the notice is provided in Appendix 10.

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

6.1.3 Informing I&APs via the internet

A copy of the following documentation was loaded onto the AdiEnvironmental cc. website (http://adienvironmental.co.za):

- Copy of the notice;
- Background Information Document (BID; Appendix 11).

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 10.

6.1.4 Feedback from the advertising process

No persons registered as an interested and affected party in terms of the advertising process.

There was thus no need for a public meeting.

6.2 Directly affected landowner/user

Middelburg Muslim Jamaat

The proposed development site is located on a portion of Portion 93 of the farm Rondebosch 403 JS (Figure 5.1) which is registered to the Middelburg Muslim Jamaat. A copy of the Deeds Office Property report is provided in Appendix 1.

The Middelburg Muslim Jamaat is also the applicant for the proposed development.

No outside party will thus be directly impacted by the proposed project.

Figure 6.1: Aerial view of notice placements

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 11) 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
Government Departments			
Department of Agriculture, Forestry and Fisheries (DAFF)	F. Mashabela R. Mabule	Email (dated: 12 November 2018; Appendix 12) with BID forwarded.	Yes. See Section 6.3.1
Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA) - Directorate: Land Use and Soil Management – Ermelo	J. Venter	Email (dated: 12 November 2018; Appendix 12) with BID forwarded.	Acknowledged receipt per email (dated: 12 November 2018; Appendix 12).
Department of Co-operative	M. Loock	Email (dated: 12	Yes. See Section

AUTHORITY/ STAKEHOLDER	CONTACT PERSON	CORRESPONDENCE SENT	COMMENTS
Governance and Traditional Affairs (COGTA)	X. Mamba	November 2018; Appendix 12) with BID forwarded.	6.3.2
Department of Mineral Resources	S. Mathavela	Email (dated: 12 November 2018; Appendix 12) with BID forwarded.	None
Department of Public Works, Roads and Transport	J. Mojapelo	Email (dated: 12 November 2018; Appendix 12) with BID forwarded.	Yes. See Section 6.3.3
Department of Rural Development and Land Reform (Commission on Restitution of Land Rights)	F.Z. Mdushani	Email (dated: 12 November 2018; Appendix 12) with BID forwarded.	Yes. See Section 6.3.4
Department of Water and Sanitation (DWS)	N.S. Maliaga	Email (dated: 12 November 2018; Appendix 12) with BID forwarded.	None
Stakeholders			
Distriks Landbou Unie Middelburg	J.P.J. Schmahl	Email (dated: 12 November 2018; Appendix 12) with BID forwarded.	None
Eskom Distribution (Land & Rights)	T. Ludere	Email (dated: 12 November 2018; Appendix 12) with BID forwarded.	None
Eskom Transmission	L. Motsisi	Email (dated: 12 November 2018; Appendix 12) with BID forwarded.	None
Middelburg Chamber of Business and Commerce	M. Hanekom	Email (dated: 12 November 2018; Appendix 12) with BID forwarded.	None
Mpumalanga Provincial Heritage Authority	B. Moduka	Email (dated: 12 November 2018; Appendix 12) with BID forwarded.	None
Mpumalanga Tourism and Parks Agency (MTPA) – Land Advisory Unit	K. Narasoo	Email (dated: 12 November 2018; Appendix 12) with BID forwarded.	None
South African Heritage Resources Agency (SAHRA)	J. Lavin (SAHRA website)	Loaded on SAHRA website on 12 December 2018.	Yes. See Section 6.3.5
Telkom	J. Smit	Email (dated: 12 November 2018; Appendix 12) with BID forwarded.	None
Transnet Freight Rail	T Mavulwana	Email (dated: 12 November 2018; Appendix 12) with BID forwarded.	None
Transvaalse Landbou Unie	D. du Plessis	Email (dated: 12 November 2018; Appendix 12) with BID forwarded.	None
Local Authorities			
Nkangala District Municipality	S. Links	Email (dated: 12	None

AUTHORITY/ STAKEHOLDER	CONTACT PERSON	CORRESPONDENCE SENT	COMMENTS
	A. Thwala	November 2018; Appendix 12) with BID forwarded.	
Steve Tshwete Local Municipality	M. Mahamba	Email (dated: 12 November 2018; Appendix 12) with BID forwarded.	None
Steve Tshwete Local Municipality	Councillor T. Mnisi	Email (dated: 22 February 2019; Appendix 12) with BID forwarded.	None

6.3.1 Department of Agriculture, Forestry and Fisheries

A letter (dated: 14 November 2019; Appendix 12) was received from Mr. F. Mashabela from the Department of Agriculture, Forestry and Fisheries (DAFF). Mr. Mashabela indicated the following:

Department of Agriculture, Forestry and Fisheries, Directorate: Land Use and Soil Management administer the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) (CARA) and makes provision for the conservation of the natural agricultural resources through maintaining the production potential of land.

Recommendations:
The Department of Agriculture, Forestry and Fisheries will comment based on forthcoming studies, documentation and information that may become available as the process progresses.

Response from AdiEnvironmental
See Table 6.4.

6.3.2 Department of Co-operative Governance and Traditional Affairs (COGTA)

A letter (dated: 16 January 2019; Appendix 12) was received from Mr. T.P. Nyoni from the Department of Co-operative Governance and Traditional Affairs. The following was indicated:

1. *Your application with the above subject bears reference.*
2. *The application is supported and that the issues raised below be considered by the applicant and the decision maker.*

2.1 Approval from Steve Tshwete Municipality in terms of the SPLUM By-law for land use application must be obtained.
2.2 Building plans for any/all existing and future structures must be submitted to the local municipality for approval.
2.3 Comments and approval from relevant Departments must be obtained and applicant must adhere to any conditions in this regard.
2.4 The proposed development must be provided with services in line with the norms and standards of the Department of Human Settlement. However, precautions must always be taken to ensure that the services can accommodate any unexpected future growth and absorb demand pressure.
2.5 The flood line has to be considered and calculated and precautionary measures have to be taken to address any possibilities of flooding.

Response from AdiEnvironmental
See Table 6.4.

6.3.3 Department of Public Works, Roads and Transport

A letter (dated: 14 November 2018; Appendix 12) was received from Mr. J. Mojapelo from the Department of Public Works, Roads and Transport. The following was indicated:

> *We are at this stage unable to give comprehensive comments as we do not know as yet what the final route, with regard to our Provincial Roads, of the above will be.*
>
> *We shall be able to give our comments after or towards the finalization of your EIA.*

Response from AdiEnvironmental

See Table 6.4.

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

A letter (dated: 13 November 2018; Appendix 12) was received from FZ Mdushani of the Regional Land Claims Commission: Mpumalanga Province in which the following was indicated:

> *According to our database there is a land claim lodged against the mentioned farm, however only ptns 2, 15, 17, 21, 85 & 159 have been researched at this stage. We are still researching if there are other possible land claims on the farm.*
>
> *It is not within the powers of the Commission on Restitution of Land Rights to grant or withhold permission for the development or alienation in respect of land being claimed until such a claim has been gazetted, unless such development would constitute an obstruction to the achievement of the aims and objectives of the Restitution of Land Rights Act 22 of 1994. In such instances application can be made in the Land Claims Court in terms of Section 6(3) of the Restitution Act; this can be done at any stage after the claim has been lodged - even before the publishing of such a claim in terms of Section 11 of the Restitution of Land Rights Act 22 of 1994.*

Response from AdiEnvironmental

See Table 6.4.

6.3.5 South African Heritage Resources Agency

A letter (dated: 22 November 2018; Ref: 13192; Appendix 12) was received from the South African Heritage Resources Agency (SAHRA) indicating the following:

> *In terms of the National Heritage Resources Act, no 25 of 1999 (NHRA), heritage resources, including archaeological or palaeontological sites over 100 years old, graves older than 60 years, structures older than 60 years are generally protected. They may not be disturbed without a permit from the relevant heritage resources authority. In contexts of development applications, the developer must ensure that no heritage resources will be impacted by the proposed development, by lodging an application to SAHRA and submitting detailed development specifications as a notification of intent to develop. If the application is made in terms of s. 38 (8) of the NHRA then it is incumbent on the developer to ensure that a Heritage Impact Assessment (HIA) is undertaken, as s. 38(2) does not apply. Such a study should follow the SAHRA impact assessment guidelines and section 38(3).*

Any earth moving activities pose a threat to palaeontological and heritage resources, particularly in relatively undisturbed areas. Koppies, Mountains and River valleys are sensitive to these types of heritage resources. The area proposed for development is underlain by moderately sensitive fossiliferous rock strata that may be impacted by the development as well as the potential to impact on heritage resources.

Therefore, the South African heritage Resources Agency (SAHRA) Archaeology, Palaeontology and Meteorites (APM) Unit requires that a HIA and a desktop palaeontological assessment is conducted by suitably qualified archaeologist and palaeontologist respectively.

Response from AdiEnvironmental
See Table 6.4.

6.4 Adjacent landowners/users

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.

Contact details for the adjacent landowners/users were obtained and they were informed of the proposed development through the advertising process, telephonically and in writing. A Background Information Document (BID) was also distributed. A copy of the Background Information Document is provided in Appendix 11.

The Background Information Document included the following information:

- Project name and reference number;
- Applicant name;
- Legal requirements and list of activities to be authorised;
- Details of the EAP;
- Description of the public participation process;
- Responsibilities of I&APs;
- Date by which I&APs must register and forward comment;
- A link to the EAP website for an electronic copy of the Background Information Document and Basic Assessment Report;
- Project and property description;
- Locality map;
- Proposed layout plan.
- Short description of the process to be followed and proposed timeline;
- Comment sheet.

Comments received from the adjacent landowners/users in response to the advertising and distribution of the Background Information Document are indicated below.

Table 6.2 provides an indication to which adjacent landowner/user Background Information Documents (BIDs; Appendix 11) were forwarded in order to inform them of the proposed project and to obtain their issues of concern. Figure 6.2 indicates the location of the various landowners as well as the closest homesteads.

Table 6.2: Identified adjacent land owners/users who received BIDs

PROPERTY (FIGURE 6.2)	LANDOWNER/ CONTACT PERSON	CORRESPONDENCE	COMMENTS
KLEINFONTEIN 432 JS (Figure 6.2)			
6/403	Zowitsky Trust Contact: Jess and Dave Martin; Karel Zowitski	E-mail (dated: 13 November 2018; Appendix 13) with BID forwarded.	Yes. See Section 6.4.1.
Portion of 93/403	Muslim Jamaat Contact: Middelburg Muslim School	E-mail (dated: 13 November 2018; Appendix 13) with BID forwarded.	None
Portion of 93/403	Middelburg Muslim Jamaat Contact: Y Mansoor	E-mail (dated: 16 August 2017; Appendix 13) with BID forwarded.	None
96, 97, 99, 100, 101/403	AKFM Prop Inv cc Contact: Y Mansoor	E-mail (dated: 13 November 2018; Appendix 13) with BID forwarded.	None
98/403	Akbar Mohamed Ismail	No contact details	
107 and 108/403	Solly Latif Family Inv Holdings Pty Ltd Contact: Solly Latief	E-mail (dated: 13 November 2018; Appendix 13) with BID forwarded.	None
121/403	Abdool Satar Suliman	E-mail (dated: 21 November 2018; Appendix 13) with BID forwarded.	None
122/403	Gaf's Prop Inv cc Contact: J. Gani	E-mail (dated: 21 November 2018; Appendix 13) with BID forwarded.	None
123/403	Latifa T Mahomed Tayob	Contacted telephonically on 21 November 2018. Left messages. No response.	None
124/403	Mohsin Seedat	E-mail (dated: 21 November 2018; Appendix 13) with BID forwarded.	None
125/403	Mohamed Rafiek Pilodia	E-mail (dated: 21 November 2018; Appendix 13) with BID forwarded.	None
126/403	Middelburg Muslim Jamaat Contact: Y Mansoor	E-mail (dated: 13 November 2018; Appendix 13) with BID forwarded.	None
127/403	Sajeda Gardee	E-mail (dated: 21 November 2018; Appendix 13) with BID forwarded.	None
128/403	Ebrahim Mahomed Seedat	Contacted telephonically on 21 November 2018. No answer.	None
129/403	Omar Irshad	E-mail (dated: 21 November 2018; Appendix 13) with BID forwarded.	Yes. See Section 6.4.2
130/403	Hoosen Bhayla Contact: H. Bhayla and N. Carrim	E-mail (dated: 27 November 2018; Appendix 13) with BID forwarded.	Yes. See Section 6.4.3
137/403	Abdool Guffar Ayob Gani Suliman	Contacted telephonically on 21 November 2018. Left messages. No response.	None
138/403	Pebblestone Prop 110 cc Contact: S. Ismail	E-mail (dated: 23 November 2018; Appendix 13) with BID forwarded.	None
139/403	Mahomed AS Cassim	E-mail (dated: 21 November 2018; Appendix 13) with BID	None

PROPERTY (FIGURE 6.2)	LANDOWNER/ CONTACT PERSON	CORRESPONDENCE	COMMENTS
		forwarded.	
140/403	Ahmed Mahomed Kola	E-mail (dated: 21 November 2018; Appendix 13) with BID forwarded.	None
141/403	FYZ Inv Pty Ltd Contact: M. Karrim	E-mail (dated: 26 November 2018; Appendix 13) with BID forwarded.	None
142/403	Haajiera Bibi Bhikhoo	Contacted telephonically on 21 November 2018. Left messages. No response.	None
143/403	Rabia Mahomed Kadwa Contact: M. Kadwa	E-mail (dated: 23 November 2018; Appendix 13) with BID forwarded.	None
144/403	Moosa Kassim Kadwa Contact: M. Kadwa	E-mail (dated: 23 November 2018; Appendix 13) with BID forwarded.	None
145/403	Aboo Baker Bhamjee Trust	E-mail (dated: 13 November 2018; Appendix 13) with BID forwarded.	None
Erf 326	Ismail Osman	E-mail (dated: 13 November 2018; Appendix 13) with BID forwarded.	None
Erf 84	Burglar Awake Alarms Contact: M. Ravat	E-mails (dated: 23 and 29 November 2018; Appendix 13) with BID forwarded.	None
Erf 85	Ali Mohamed Osman	E-mail (dated: 13 November 2018; Appendix 13) with BID forwarded.	None
Erf 219	Riaz Pilodia	E-mail (dated: 13 November 2018; Appendix 13) with BID forwarded.	None
Erf 220	Kapesh	Phoned - 20 November 2018. E-mail (dated: 26 November 2018; Appendix 13) with BID forwarded.	Yes. See Section 6.4.4
Erf 221	Muhammed Carrim	E-mail (dated: 23 November 2018; Appendix 13) with BID forwarded.	None
Erf 257	Clinton Naidoo	Contacted telephonically on 21 November 2018. Left messages. No response.	None
Erf 258	No information	No contact details.	
Erf 343	Steve Tshwete Local Municipality	Email (dated: 12 November 2018; Appendix 13) with BID forwarded.	Yes. See Section 6.3.6
Nearby business	Battlefields Paintball Contact: Imran Pilodia	E-mail (dated: 13 November 2018; Appendix 13) with BID forwarded.	None

Plot	Owner
96	AKFM Prop Inv cc
97	AKFM Prop Inv cc
98	Akbar Mohamed Ismail
99	AKFM Prop Inv cc
100	AKFM Prop Inv cc
101	AKFM Prop Inv cc
107	Solly Latif Family Inv Holdings Pty Ltd
108	Solly Latif Family Inv Holdings Pty Ltd
121	Abdool Satar Suliman
122	Gaf's Prop Inv cc
123	Latifa T Mahomed Tayob
124	Mohsin Seedat
125	Mohamed Rafiek Pilodia
126	Middelburg Muslim Jamaat
127	Sajeda Gardee
128	Ebrahim Mahomed Seedat
129	Omar Irshad
130	Hoosen Bhayla
137	Abdool Guffar Ayob Gani Suliman
138	Pebblestone Prop 110 cc
139	Mahomed AS Cassim
140	Ahmed Mahomed Kola
141	FYZ Inv Pty Ltd
142	Haajiera Bibi Bhikhoo
143	Rabia Mahomed Kadwa
144	Moosa Kassim Kadwa
145	Aboo Baker Bhamjee Trust
Erf 326	Ismail Osman
Erf 84	Mahesh
Erf 85	Ali Mohamed Osman
Erf 219	Riaz Pilodia
Erf 220	Kapesh
Erf 221	Muhammed Carrim
Erf 257	Clinton Naidoo
Erf 258	

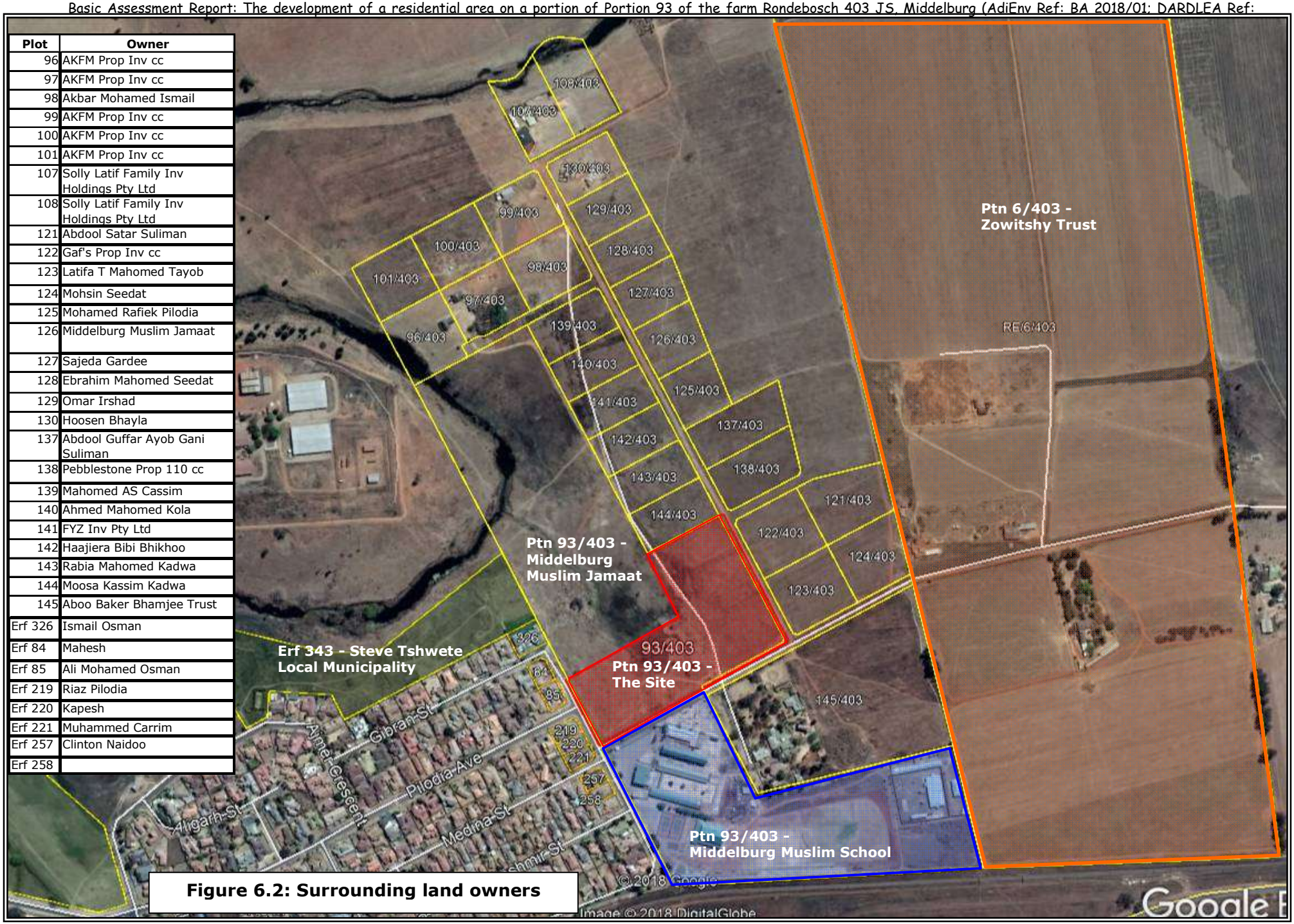


Figure 6.2: Surrounding land owners

6.4.1 Zowitsky Trust (Figure 6.2)

Portion 6 of the farm Rondebosch 403 JS (east of the site; Figure 6.2) is registered to Zowitsky Trust.

A completed comment sheet (dated: 18 November 2018; Appendix 13) and an e-mail (dated: 18 November 2018; Appendix 12) was received from Mr. D. Martin regarding the proposed development.

The following was indicated in the comment sheet:

How do you think the proposed activity will impact on you?

1. *The access proposed is currently off a private road to 3 properties. With the increased traffic who and how will the road be maintained?*
2. *Security and access control is key - how will the increased number of employees access this development - via Eastdene?*
3. *I have sent a more detailed email reply.*

Any suggestions to mitigate potential impacts?

Need full description of security, employee routes, road design and control.

Please provide details of any other parties who should be consulted.

We also represent Karel Zowitsky BA 13.

Please disclose any direct business, financial, personal or other interest that you may have in the approval or refusal of the application.

We are residents and use the proposed access road on a daily basis.

The following was indicated in the e-mail:

I am replying on behalf of myself (BA 12) and Karel Zowitsky (BA 13) of farm Rondebosch 403 JS and have the following comments.

1. *The proposed access to the development is off a private road to officially three residents viz Bhamjee, Zowitsky and Martin.*

2. *It is not stated how the affected part of this private road will be designed, constructed and maintained. Who will maintain the road and how will safety be ensured due to the increased traffic volumes? Drainage of storm water from the School is currently a problem. It must be noted that large articulated vehicles traverse this road.*

3. *Security and access is key and we need to understand what access routes will be planned for the envisaged increased number of employees in this development. Access routes will not be allowed through our property and provision will have to be made to the west of our western boundary.*

4. *What provision for parking has been made at the Institutional Centre as there should be no interference with normal access down the private road?*

5. *I know previous assessments established the presence of specific giant toad in this area – has this been checked?*

We would appreciate full disclosure of the information relevant to the above questions to allow us to make an informed decision.

Response from AdiEnvironmental
See Table 6.4.

6.4.2 Irshad Omar (Figure 6.2)

Portion 129 of the farm Rondebosch 403 JS (north east of the site; Figure 6.2) is registered to Irshad Omar.

Mr. Omar indicated the following in an e-mail (dated: 22 November 2018; Appendix 13):

For the record, I would like to confirm that I have no comments or issues of concern with the proposed development.

Response from AdiEnvironmental
See Table 6.4.

6.4.3 Hoosen Bhayla (Figure 6.2)

Portion 130 of the farm Rondebosch 403 JS (north east of the site; Figure 6.2) is registered to Hoosen Bhayla.

Completed comment sheets were received from Mr. Bhayla (dated: 30 November 2018; Appendix 13) and N. Carrim (dated: 30 November 2018).

The following was indicated in these comment sheets:

Hoosen Bhayla

How do you think the proposed activity will impact on you?
This project is good, it will benefit our community, create more housing, more jobs. It will also benefit the school that is located in the area.

Any suggestions to mitigate potential impacts?
N/A

Please provide details of any other parties who should be consulted.
N/A

Please disclose any direct business, financial, personal or other interest that you may have in the approval or refusal of the application.
N/A

Nadiya Carrim

How do you think the proposed activity will impact on you?
The development near the school will allow more housing, better services, allow school to grow. Community will benefit from growth and work opportunities. Great idea to develop.

Any suggestions to mitigate potential impacts?
None

Please provide details of any other parties who should be consulted.
Shabeera Bavaddin

Please disclose any direct business, financial, personal or other interest that you may have in the approval or refusal of the application.
None

Response from AdiEnvironmental
See Table 6.4.

6.4.4 Erf 220 - Kapesh (Figure 6.2)

Mr. Kapesh resides on Erf 220, which is located in Riyad Street directly opposite the proposed development (Figure 6.2).

Mr. Kapesh telephonically indicated the following 20 November 2018:

It is good news that the open field opposite his house will be developed. It is a security risk and they will feel safer if the property is developed.

Response from AdiEnvironmental
See Table 6.4.

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 3 April 2019 (see cover letter and application dated: 3 April 2019; Appendix 1). In addition, a date for a meeting and site visit was requested.

6.6 List of Interested and Affected Parties

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

Table 6.3: List of Interested and Affected Parties

INTERESTED AND AFFECTED PARTY LIST	
Organisation	**Name**
Government Departments	
Department of Agriculture, Forestry and Fisheries (DAFF)	F. Mashabela R. Mabule
Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA) - Directorate: Land Use and Soil Management – Ermelo	J. Venter
Department of Co-operative Governance and Traditional Affairs (COGTA)	M. Loock X. Mamba
Department of Mineral Resources	S. Mathavela
Department of Public Works, Roads and Transport	J. Mojapelo
Department of Rural Development and Land Reform (Commission on Restitution of Land Rights)	F.Z. Mdushani

INTERESTED AND AFFECTED PARTY LIST	
Department of Water and Sanitation (DWS)	N.S. Maliaga
Other Organisations/Stakeholders	
Distriks Landbou Unie Middelburg	J.P.J. Schmahl
Eskom Distribution (Land & Rights)	T. Ludere
Eskom Transmission	L. Motsisi
Middelburg Chamber of Business and Commerce	M. Hanekom
Mpumalanga Provincial Heritage Authority	B. Moduka
Mpumalanga Tourism and Parks Agency (MTPA) – Land Advisory Unit	K. Narasoo
South African Heritage Resources Agency (SAHRA)	J. Lavin (SAHRA website)
Telkom	J. Smit
Transnet Freight Rail	T Mavulwana
Transvaalse Landbou Unie	D. du Plessis
Local Municipality and Municipal Councillor	
Nkangala District Municipality	S. Links A. Thwala
Steve Tshwete Local Municipality	M. Mahamba
Steve Tshwete Local Municipality	Councillor T. Mnisi

Surrounding Landowners	
Property (Figure 6.2)	**Landowner/Contact person**
6/403	Zowitsky Trust Contact: Jess and Dave Martin; Karel Zowitski
Portion of 93/403	Middelburg Muslim Jamaat Contact: Middelburg Muslim School
Portion of 93/403	Middelburg Muslim Jamaat Contact: Y Mansoor
96, 97, 99, 100, 101/403	AKFM Prop Inv cc Contact: Y Mansoor
98/403	Akbar Mohamed Ismail
107 and 108/403	Solly Latif Family Inv Holdings Pty Ltd Contact: Solly Latief
121/403	Abdool Satar Suliman
122/403	Gaf's Prop Inv cc Contact: J. Gani
123/403	Latifa T Mahomed Tayob
124/403	Mohsin Seedat
125/403	Mohamed Rafiek Pilodia

INTERESTED AND AFFECTED PARTY LIST	
126/403	Middelburg Muslim Jamaat Contact: Y Mansoor
127/403	Sajeda Gardee
128/403	Ebrahim Mahomed Seedat
129/403	Omar Irshad
130/403	Hoosen Bhayla Contact: H. Bhayla and N. Carrim
137/403	Abdool Guffar Ayob Gani Suliman
138/403	Pebblestone Prop 110 cc Contact: S. Ismail
139/403	Mahomed AS Cassim
140/403	Ahmed Mahomed Kola
141/403	FYZ Inv Pty Ltd Contact: M. Karrim
142/403	Haajiera Bibi Bhikhoo
143/403	Rabia Mahomed Kadwa Contact: M. Kadwa
144/403	Moosa Kassim Kadwa Contact: M. Kadwa
145/403	Aboo Baker Bhamjee Trust
Erf 326	Ismail Osman
Erf 84	Burglar Awake Alarms Contact: M. Ravat
Erf 85	Ali Mohamed Osman
Erf 219	Riaz Pilodia
Erf 220	Kapesh
Erf 221	Muhammed Carrim
Erf 257	Clinton Naidoo
Erf 258	No information
Erf 343	Steve Tshwete Local Municipality
Nearby business	Battlefields Paintball Contact: Imran Pilodia

6.7 Summary of issues and response

Appendix 1 (3)(h)(iii) of the EIA Regulations, 2014 (as amended) requires that a summary of the issues raised by interested and affected parties be provided in the Basic Assessment Report as well as an indication of the manner in which the issues were addressed.

Table 6.4 provides such a summary as well as the response from the EAP.

6.8 Evaluation of Draft Basic Assessment Report

As indicated in Section 11, the Draft Basic Assessment Report (BAR) will be made available to I&APs, stakeholders and government departments for a 30-day review period.

Hard copies of the document will be submitted to relevant authorities. A hard copy and electronic copy of the Draft BAR will be made available to the interested and affected parties and stakeholders consulted and/or registered as part of the process (refer to Table 6.3).

The various departments, stakeholders and I&APs will be requested to forward any comments on the report to the consultant within the 30-day period provided. These comments will be included and addressed in:

- Section 11 (Evaluation of Draft Basic Assessment Report);
- Table 11.1 (Summary of Issues of Concern and Response); and
- Appendix 14;

of the Final Basic Assessment Report.

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

An e-mail will be forwarded to the various departments, stakeholders and interested and affected parties informing them of the comments received and the submission of the Final BAR for decision making.

Table 6.4: Summary of issues of concern and response

Issue	I&AP, Stakeholders, Authority (Section of Report)	Response
Access road and parking		
The proposed access to the development is off a private road to officially three residents viz Bhamjee, Zowitsky and Martin. Security and access is key and we need to understand what access routes will be planned for the envisaged increased number of employees in this development. Access routes will not be allowed through our property and provision will have to be made to the west of our western boundary.	Zowitsky Trust (Section 6.4.1)	The development will be a gated community (with a screen wall, security gate and guard house) so as to ensure adequate security for the residents. As indicated in Section 3.2.6, the existing road network through Eastdene will be utilized to access the proposed development (Figure 3.5).
It is not stated how the affected part of this private road will be designed, constructed and maintained. Who will maintain the road and how will safety be ensured due to the increased traffic volumes? Drainage of storm water from the School is currently a problem. It must be noted that large articulated vehicles traverse this road.		Access to the gated residential development will only be provided at one point on the southern boundary of the site i.e. from the existing 16 m Right-of-Way servitude gravel road (Figure 3.5). The portion of the road extending past the site will be paved. According to Bouwer (2018a), the access road will be designed as a Class 4 road. An internal road with a 13 m road reserve will be constructed to access the various erven (Figure 3.2). The access road will be constructed by the developer to the satisfaction of the Steve Tshwete Local Municipality. Storm water management measures would also have to be provided as part of this road construction.
What provision for parking has been made at the Institutional Centre as there should be no interference with normal access down the private road.		To facilitate the flow of traffic, the mosque will be accessed from Riyadh Street (western boundary) and exited via the Right-of-Way servitude gravel road located on the southern boundary (Figure 3.1). Parking will thus be provided within the development.
Townplanning		
The application is supported and that the issues raised below be considered by the applicant and the decision maker. ▪ *Approval from Steve Tshwete Municipality in terms of the SPLUM By-law for land use application must be obtained.*	Department of Co-operative Governance and Traditional Affairs (COGTA) (Section 6.3.2)	A land use application was submitted by the townplanners (Urban Dynamics) to the Steve Tshwete Local Municipality. A copy of the townplanning memorandum is provided in Appendix 3.
Approval of building plans		
Building plans for any/all existing and future structures must be submitted to the local municipality for approval.	Department of Co-operative Governance and Traditional Affairs (COGTA) (Section 6.3.2)	Noted and applicant informed.
Floodline		
The flood line has to be considered and calculated and precautionary measures have to be taken to address any possibilities of flooding.	Department of Co-operative Governance and Traditional Affairs (COGTA) (Section 6.3.2)	The proposed development is located outside of the 1: 100 year floodline of the Klein Olifants River (see Section 5.9.2 and Figure 5.22).
Services (water, sewage, etc.)		
The proposed development must be provided with services in line with the norms and standards of the Department of Human Settlement. However, precautions must always be taken to ensure that the services can accommodate any unexpected future growth and absorb demand pressure.	Department of Co-operative Governance and Traditional Affairs (COGTA) (Section 6.3.2)	Service provision for the proposed development was investigated as indicated in Section 3.2. A copy of the engineering report and the electrical report is provided in Appendix 4. The proposed development can connect to existing services in the area. In addition, sufficient capacity is available.
Land Claim		
According to our database there is a land claim lodged against the mentioned farm, however only ptns 2, 15, 17, 21, 85 & 159 have been researched at this stage. We are still researching if there are other possible land claims on the farm.	Department of Rural Development and Land Reform (Commission on Restitution of Land Rights) (Section 6.3.4)	It is noted that currently, no land claims have been lodged against Portion 93 of the farm Rondebosch 403 Js.
Biodiversity		
I know previous assessments established the presence of specific giant toad in this area – has this been checked	Zowitsky Trust (Section 6.4.1)	See Section 5.8.3. The previous assessments conducted for the proposed eastern bypass route were reviewed. According to Haacke (2011), the Giant Bullfrog has not been recorded within the quarter degree square within which the site is located. It is unlikely that Bullfrogs will occur in the area due to the soil conditions and the fact that the Klein Olifants River is not suitable for reproduction.
Heritage and Palaeontology		
In terms of the National Heritage Resources Act, no 25 of 1999 (NHRA), heritage resources, including archaeological or palaeontological sites over 100 years old, graves older than 60 years, structures older than 60 years are generally protected. They may not be disturbed without a permit from the relevant heritage resources authority. In contexts of development applications, the developer must ensure that no heritage resources will be impacted by the proposed development, by lodging an application to SAHRA and submitting detailed development specifications as a notification of intent to develop. If the application is made in terms of s. 38 (8) of the NHRA then it is incumbent on the developer to ensure that a Heritage Impact Assessment (HIA) is undertaken, as s. 38(2) does not apply. Such a study should follow the SAHRA impact assessment guidelines and section 38(3).	South African Heritage Resources Agency (Section 6.3.5)	A Phase 1 Heritage Impact Assessment was conducted for the proposed development (see Section 5.13 and Appendix 8). A Palaeontological Assessment - Phase 1 Field Study was conducted for the proposed development (see Section 5.13 and Appendix 9). Copies of these reports were loaded on the South African Heritage Resources Information System (SAHRIS). A printout of the webpage is provided in Appendix 12.

Table 6.4: Summary of issues of concern and response		
Issue	**I&AP, Stakeholders, Authority (Section of Report)**	**Response**
Any earth moving activities pose a threat to palaeontological and heritage resources, particularly in relatively undisturbed areas. Koppies, Mountains and River valleys are sensitive to these types of heritage resources. The area proposed for development is underlain by moderately sensitive fossiliferous rock strata that may be impacted by the development as well as the potential to impact on heritage resources. *Therefore, the South African heritage Resources Agency (SAHRA) Archaeology, Palaeontology and Meteorites (APM) Unit requires that a HIA and a desktop palaeontological assessment is conducted by suitably qualified archaeologist and palaeontologist respectively*		To date, no further comment has been received from SAHRA.
General - Positive		
For the record, I would like to confirm that I have no comments or issues of concern with the proposed development.	Irshad Omar (Section 6.4.2)	Noted, thank you.
This project is good, it will benefit our community, create more housing, more jobs. It will also benefit the school that is located in the area.	Hoosen Bhayla (Section 6.4.3)	Noted, thank you.
The development near the school will allow more housing, better services, allow school to grow. Community will benefit from growth and work opportunities. Great idea to develop.	Nadiya Carrim (Section 6.4.3)	Noted, thank you.
It is good news that the open field opposite his house will be developed. It is a security risk and they will feel safer if the property is developed.	Erf 220 - Kapesh (Section 6.4.4)	Noted, thank you.
General		
Ms. Carrim requested that Ms. Shabeera Bavaddin also be consulted.	Nadiya Carrim (Section 6.4.3)	Ms. Bavaddin was contacted telephonically on numerous occasions. Unfortunately, the call was never answered.
The Department of Agriculture, Forestry and Fisheries will comment based on forthcoming studies, documentation and information that may become available as the process progresses.	Department of Agriculture, Forestry and Fisheries (Section 6.3.1)	Noted. The Department will be informed of the availability of the Draft Basic Assessment Report for review.
We are at this stage unable to give comprehensive comments as we do not know as yet what the final route, with regard to our Provincial Roads, of the above will be. We shall be able to give our comments after or towards the finalization of your EIA	Department of Public Works, Roads and Transport (Section 6.3.3)	Noted. The Department will be informed of the availability of the Draft Basic Assessment Report for review.
Comments and approval from relevant Departments must be obtained and applicant must adhere to any conditions in this regard.	Department of Co-operative Governance and Traditional Affairs (COGTA) (Section 6.3.2)	Noted. The Draft Basic Assessment Report will be made available to all relevant Departments for review.

SECTION 7. DESCRIPTION OF ALTERNATIVES

According to Appendix 1 of the EIA Regulations, 2014 (as amended), one of the objectives of the basic assessment process is to identify the alternatives considered for the proposed development and to rank these alternatives in terms of the potential impacts identified in order to identify the preferred alternatives.

The EIA Regulations (2014; as amended) defines alternatives as:
"different means of meeting the general purpose and requirements of the activity, which may include alternatives to the -

a. *property on which or location where the activity is proposed to be undertaken;*
b. *type of activity to be undertaken;*
c. *design or layout of the activity;*
d. *technology to be used in the activity; or*
e. *operational aspects of the activity;*

and includes the option of not implementing the activity."

In addition to the above-mentioned, Section 24O(1)(b)(iv) of NEMA requires that the competent authority must take into account *"where appropriate, any feasible and reasonable alternatives to the activity which is the subject of the application and any feasible and reasonable modifications or changes to the activity that may minimise harm to the environment."*

This section therefore provides a detailed description of the various alternatives investigated and process followed to decide on the preferred alternatives to be implemented.

The following alternatives were investigated:

- 7.1: Alternative sites;
- 7.2: Alternative layout plans;
- 7.3: Alternative service provision (water, electricity, sewage and storm water);
- 7.4: No-go option.

7.1 Alternative sites

The growth of the Eastdene community and the expansion of the existing Middelburg Muslim School have led to a demand for housing in the area. Since the Eastdene residential area can only expand in an easterly direction, the Middelburg Muslim Jamaat (applicant and landowner) decided to develop the said site.

The applicant decided upon the development of the proposed site for the following reasons:

- The said site belongs to the applicant (Middelburg Muslim Jamaat).
- The intention is to develop the site to its full potential.
- The Eastdene residential area can only expand in an easterly direction, and the said site is located on the eastern boundary of Eastdene.
- The residential area will thus be an extension of Eastdene.
- Easy access to the adjacent school.

- The growth of the community warrants the establishment of a new mosque within the said area.

No alternative sites with regards to the proposed development were identified.

7.2 Alternative layout plans

Three (3) alternative layouts for the proposed development were investigated, namely:

- 7.2.1: Layout 1 - original layout (2012);
- 7.2.2: Layout 2 - taking the wetland into account (2012);
- 7.2.3: Layout 3 - preferred alternative (2018)

7.2.1 Layout 1 - original layout (2012) (Figure 7.1)

The original layout plan was drafted for the proposed development in 2012. Figure 7.1 provides an indication of this layout plan.

Layout 1 comprised of the following:

- 45 Residential stands;
- 1 Institutional stand;
- Main access to the site from Riyadh Street;
- Secondary access from the Right-of-Way servitude and the eastern boundary of the site.

Figure 7.1: Layout 1 - original layout (taken from Urban Dynamics, 2012)

The wetland study (Appendix 7) identified a hillslope seepage wetland in the central portion of the site (Figure 7.2). Stands 3-12, 18-21, 40-45 and the Institutional stand (Stand 46) were affected by the wetland and 20m wetland buffer zone. No development is allowed within a wetland area and its associated wetland buffer since it is seen as a sensitive landscape and requires protection.

Figure 7.2: Layout plan 1 indicating wetland and 20m wetland buffer zone (taken from Davis, 2012)

Since no development may take place within the wetland area and its associated wetland buffer zone, ***Layout 1 was discarded*** and a new layout plan drafted.

7.2.2 Layout 2 - taking the wetland into account (2012) (Figure 7.3)

As indicated in Section 7.2.1, Layout 1 was discarded since some of the stands were located within a wetland area and its associated wetland buffer. Therefore, a new layout plan had to be drafted.

Subsequently, the number of stands was reduced to 33 (from 46) to accommodate the wetland and associated 20m wetland buffer zone.

Layout 2 comprised of the following as indicated in Figure 7.3:

- 33 Residential stands;
- 1 Institutional stand;
- Public Open Space;
- Access to the various stands from the Right-of-Way servitude and the eastern boundary of the site;
- Access to the Institutional stand from the Right-of-Way servitude and Riyadh Street.

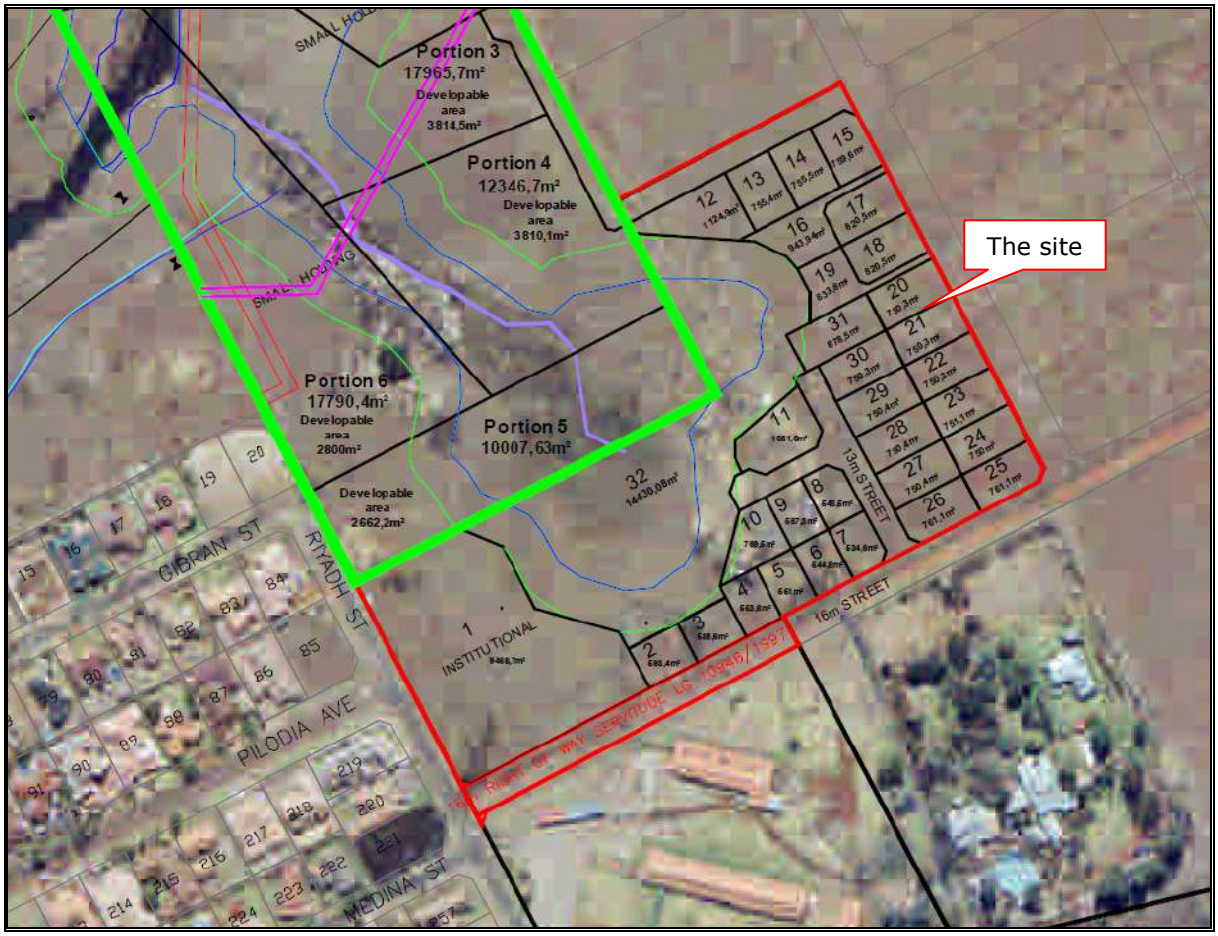


Figure 7.3: Layout 2 - taking the wetland into account (taken from Urban Dynamics, 2012);

As indicated in Figure 7.3, changes had to be made to the location of the residential and institutional stands, the internal road network and the access roads in order to accommodate the wetland area and its associated wetland buffer.

Stands 2 - 7 would have obtained direct access from the Right-of-Way servitude and stands 12 - 25 from the eastern boundary of the site.

Layout 2 was however, discarded by the applicant since the intention was to provide a gated community. Individual access from the Right-of-Way servitude and the eastern boundary of the site would have made this impossible.

7.2.3 Layout 3 - preferred alternative (2018) (Figure 7.4)

Since Layout 2 was discarded by the applicant, a new layout had to be drafted by Urban Dynamics.

As requested by the applicant, Layout 3 makes provision for a gated community (with a screen wall, security gate and guard house) so as to ensure adequate security for the residents.

Layout 3 comprises of the following as indicated in Figure 7.4:

- 21 Residential stands;
- 1 Institutional stand;

- Private Open Space;
- Internal road network;
- Main access from the Right-of-Way servitude;
- Access to the Institutional stand from the Right-of-Way servitude and Riyadh Street.

A more detailed description of this layout plan is provided in Section 3.1 of this report.

Figure 7.4: Layout 3 - preferred alternative (taken from Urban Dynamics, 2018)

Layout 3 is the preferred layout plan since it incorporates the wetland and associated 20m wetland buffer zone. In addition, all stands would be accessed from internal roads, making a gated community possible.

Table 7.1 provides a summary of the advantages and disadvantages of the various alternative layout plans investigated as well as an indication of the preferred alternative.

Table 7.1: Matrix for determining the preferred layout

Alternative	Advantages	Disadvantages	Ranking	Option selected
Alternative layout plans				
7.2.1: Layout 1 - original layout (2012) (Figure 7.1)	√ 46 stands could be provided on the site.	x **The layout plan did not take the wetland and associated 20m wetland buffer zone into account.**	0 Fatal flaw	No
7.2.2: Layout 2 - taking the wetland into account (2012) (Figure 7.3)	√ The wetland and associated 20m wetland buffer zone was taken into account. √ 34 stands could be provided on the site.	x Stands 2 - 7 would obtain direct access from the Right-of-Way servitude; x Stands 12 - 25 would obtain direct access from the eastern boundary of the site; x The developer would not be able to fence the proposed development. A gated community would thus not be possible.	2nd Option	No
7.2.6: Layout 3 - preferred alternative (2018) *(Figure 7.4)*	√ *The wetland and associated 20m wetland buffer zone was taken into account.* √ *All stands would be accessed from internal roads;* √ *A gated community is possible since the site can be fenced.*	x *Space is available for only 22 stands.*	*1 Preferred*	***Yes***

Legend: 0 = Fatal Flaw; 1 = Preferred Option; 2 = Second Option; 3 = Third Option

7.3 Alternative service provision

Alternatives were investigated in terms of:

- 7.3.1: Water provision;
- 7.3.2: Electricity;
- 7.3.3: Sewage disposal;
- 7.3.4: Storm water management.

7.3.1 Water provision

During the operational phase, potable water needs to be provided to the residents and people utilizing the Institutional stand. According to Bouwer (2018a), the proposed development will have an estimated Daily Water Demand of **33.5 kl/day** as indicated in Table 3.1.

The following alternatives in terms of water provision were investigated:

- Alternative 1 - water from Steve Tshwete Local Municipality;
- Alternative 2 - surface water;
- Alternative 3 - groundwater.

Alternative 1 - water from Steve Tshwete Local Municipality

The said site is located adjacent to the existing residential area of Eastdene. Although the site is not currently serviced by the Steve Tshwete Local Municipality (STLM), it can be connected to the existing water network.

According to Bouwer (2018a), the proposed development will be supplied with potable water from the Nasaret reservoirs and will connect to the existing 110mm diameter water line located in Eastdene x1. More information in this regard is provided in Section 3.2.1.

Alternative 2 - surface water

The Klein Olifants River is located approximately 250m north west of the proposed site. Obtaining water from this river was not considered due to the following:

- A hydrological study would have to be conducted to determine if a sustainable volume of water is available from the Klein Olifants River;
- The surface water could be polluted as a result of activities taking place upstream of the site;
- A water treatment plant would have to be installed;
- A pipeline would have to be installed from the river, across a wetland, to the site;
- A pump would have to be installed in the stream, which could be risky in terms of theft;
- A servitude would have to be registered across the adjacent property;
- A water use license would be required from the Department of Water and Sanitation.

Alternative 3 - groundwater

Alternative 3 entails the abstraction of groundwater from new or existing boreholes near the site.

According to Cilliers & Meyer (2018), the two boreholes on site were filled and can no longer be utilized. A geohydrological study would have to be conducted and new boreholes drilled to determine if a sustainable water supply could be provided.

7.3.2 Electricity

According to Stoltz (2018), the total estimated additional load required for the proposed development is **128.1 kVA** as indicated in Table 3.3.

Overhead electrical infrastructure from both Eskom and the STLM are present in the surrounding area. Overhead power lines are present on the southern and eastern boundaries of the site.

Alternative 1 - electricity from the Steve Tshwete Local Municipality

According to Stoltz (2018), the proposed development falls under the jurisdiction of Eskom and can therefore not connect to the STLM electrical network.

Alternative 2 - obtaining electricity from Eskom

According to Stoltz (2018), the proposed development falls under the jurisdiction of Eskom and would therefore connect to the existing Eskom infrastructure. Eskom confirmed that capacity is available for the proposed development as indicated in Section 3.2.2.

7.3.3 Sewage disposal

According to Bouwer (2018a), the proposed development will have an estimated wastewater treatment demand of **24.6 kl/day** as indicated in Table 3.5.

Alternative 1 - connecting to the Steve Tshwete Local Municipality sewer system

The said site is located adjacent to the existing residential area of Eastdene. Although the site is not currently serviced by the Steve Tshwete Local Municipality (STLM), it can be connected to the existing sewer network.

According to Bouwer (2018a), the sewer reticulation will be connected to two existing sewer networks, due to the development being located on a watershed. The residential stands will connect to the existing outfall sewer from Rockdale, which crosses the smallholdings located north of the site (Figure 3.4). The Institutional stand will connect to the existing midblock sewer network in Eastdene X1, between Medina Street and Pilodia Avenue (Figure 3.4).

Sewage will be treated at the licensed Boskrans Wastewater Treatment Plant (WWTP). According to Bouwer (2018a), the WWTP was upgraded in 2015 as indicated in Table 3.4 and does have available capacity (17 Ml/day).

Alternative 2 - sewage treatment/package plant

This alternative would entail the installation of a sewage treatment/package plant to treat the sewage from the proposed development.

This option was not considered due to the following:

- The estimated wastewater treatment demand may not warrant the installation of a sewage treatment/package plant (increased construction and maintenance costs);
- Residential stands would have to be removed to make space for a sewage treatment/package plant;
- Could result in pollution of the wetland and Klein Olifants River if not operated correctly;
- If the sewage treatment/package plant is not functioning properly, it could impact on the residents in terms of odours;

- A water use license would be required from the Department of Water and Sanitation.

Alternative 3 - septic tank with French drain
Septic tanks with French drains are no longer accepted by the Department of Water and Sanitation due to the potential pollution risks. This option was thus not considered.

7.3.4 Storm water management

At present, storm water flows overland in a north westerly direction towards the Klein Olifants River. The applicant will therefore have to install the required storm water management measures on the said property.

Alternative 1- connecting to an existing Steve Tshwete Local Municipality storm water system
No storm water management infrastructure is present on site. In addition, no existing storm water systems are present near the site, to which the proposed development could connect.

Alternative 2 - new storm water system
A new storm water system will be established for the said site as indicated in Section 3.2.5.

Bouwer (2018b) recommended the following with regards to the storm water system:

- Storm water to be drained on surface along the paved internal roads and the access roads;
- Infiltration down the verges of the roads to prevent the accumulation of storm water;
- Storm water to be released at frequent intervals to limit the concentration of released water.

The proposed storm water flow directions and release intervals are indicated in Figure 3.5. A copy of the storm water management plan (drafted by Bouwer, 2018b) is provided in Appendix 4.

Table 7.2 provides a summary of the advantages and disadvantages of the various alternatives investigated in terms of service provision, as well as an indication of the preferred alternatives.

Table 7.2: Matrix for determining the preferred alternative in terms of service provision

Alternative	Advantages	Disadvantages	Ranking	Option selected
Alternative service provision				
7.3.1 Water provision				
Alternative 1 - water from Steve Tshwete Local Municipality	√ *The development can connect to the existing water pipeline in Eastdene X1.* √ *Potable water is available from the Nasaret reservoirs.*		*1 Preferred*	***Yes***
Alternative 2 - surface water		x **A hydrological study would have to be conducted to determine if a sustainable volume of water is available from the Klein Olifants River;** x The surface water could be polluted as a result of activities taking place upstream of the site; x A water treatment plant would have to be installed; x **A pipeline would have to be installed from the river, across a wetland, to the site in order to abstract water from the stream;** x A pump would have to be installed in the stream, which would be risky in terms of theft; x A servitude would have to be registered across the adjacent property; x A water use license would be required from the Department of Water and Sanitation.	0 Fatal flaw	No
Alternative 3 - groundwater		x The two boreholes on site were filled and can no longer be utilized; x A geohydrological study would have to be conducted and new boreholes drilled to determine if a sustainable water supply could be provided.	2nd Option	No
7.3.2 Electricity				
Alternative 1 - electricity from the Steve Tshwete Local Municipality	√ Existing municipal powerlines are present in the area.	x **The proposed development falls under the jurisdiction of Eskom and can therefore not connect to the STLM electrical network.**	0 Fatal flaw	No
Alternative 2 - obtaining electricity from Eskom	√ *Overhead powerlines from Eskom are present on the southern and eastern boundaries of the site;* √ *The proposed development falls under the jurisdiction of Eskom and can connect to the existing Eskom infrastructure;*		*1 Preferred*	***Yes***

Alternative	Advantages	Disadvantages	Ranking	Option selected
	√ *Eskom confirmed that capacity is available for the proposed development.*			
7.3.3 Sewage disposal				
Alternative 1 - connecting to the Steve Tshwete Local Municipality sewer system	√ *The development can connect to the existing outfall sewer from Rockdale (which crosses the smallholdings located north of the site) and to the existing midblock sewer network in Eastdene X1;* √ *Sufficient capacity is available at the licensed Boskrans Wastewater Treatment Plant.*		*1 Preferred*	***Yes***
Alternative 2 - sewage package plant		x The estimated wastewater treatment demand may not warrant the installation of a sewage treatment/package plant (increased construction and maintenance costs); x Residential stands would have to be removed to make space for a sewage treatment/package plant; x Could result in pollution of the wetland and Klein Olifants River if not operated correctly; x If the sewage treatment/package plant is not functioning properly, it could impact on the residents in terms of odours; x A water use license would be required from the Department of Water and Sanitation.	*2nd Option*	No
Alternative 3 - septic tank and French drain		x **Septic tanks with French drains are no longer accepted by the Department of Water and Sanitation due to the potential pollution risks.**	0 Fatal flaw	No
7.3.4 Storm water management				
Alternative 1 - connecting to an existing Steve Tshwete Local Municipality storm water system		x **No storm water management infrastructure is present on site. In addition, no existing storm water systems are present near the site, to which the proposed development could connect.**	0 Fatal flaw	No
Alternative 2 - new storm water system	√ *A storm water management plan was drafted and will be implemented for the proposed development.*		*1 Preferred*	***Yes***

Legend: 0 = Fatal Flaw; 1 = Preferred Option; 2 = Second Option; 3 = Third Option

7.4 The 'No Project Option'

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

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

- There would still be a need for residences and a mosque in the community;
- A prime development site would stay vacant;
- The existing land use (i.e. vacant property) would continue;
- Other potential uses for the site would have to be investigated;
- The applicant could sell the property.

It is anticipated that this development will add to the development potential and economic growth of the area and provide the required housing.

7.5 Concluding statement on alternatives

In summary, the following alternatives are deemed feasible and will be assessed in Section 8 of this document:

Section	Alternative	Description
7.1	Site 1	The said site located on a portion of Portion 93 of the farm Rondebosch 403 JS, Middelburg (Figure 5.2).
7.2.3	Layout 3	Layout plan for the development of a gated community. The wetland and associated 20m wetland buffer zone was taken into account (Figure 3.2).
7.3.1	Water provision - Alternative 3	The development will be connected to the STLM water network.
7.3.2	Electricity - Alternative 2	Electricity will be obtained from Eskom.
7.3.3	Sewage disposal - Alternative 1	The development will be connected to the STLM sewer network.
7.3.4	Storm water management - Alternative 2	A new storm water system will be installed.

Mitigation and management measures to reduce any potential negative impacts relating to any of these alternatives are provided in Section 9 of this report.

SECTION 8: ENVIRONMENTAL IMPACT DESCRIPTION AND EVALUATION

8.1 Introduction

As required in terms of Appendix 1 of the EIA Regulations (2014), this section of the report describes the impacts and risks identified (physical and social) as a result of the proposed project, including:

- an indication of the preferred alternatives;
- the methodology used in determining and ranking the potential impacts;
- the nature, significance, consequence, extent, duration and probability of the impacts during all phases of the development;
- the degree to which these impacts can be avoided, managed, mitigated, reversed or may cause irreplaceable damage;
- positive impacts;
- cumulative impacts;
- mitigation measures to be implemented.

The impacts presented in this section were identified through the status quo of the environment, specialist input, experience of the EAPs and comment from I&APs.

8.2 Description of the preferred alternatives

Section 7 provides a detailed description of all alternatives investigated with regards to this project. As indicated in Section 7.5, the following alternatives are deemed feasible and will be assessed in Section 8.5:

Section	Alternative	Description
7.1	Site 1	The said site located on a portion of Portion 93 of the farm Rondebosch 403 JS, Middelburg (Figure 5.2).
7.2.3	Layout 3	Layout plan for the development of a gated community. The wetland and associated 20m wetland buffer zone was taken into account (Figure 3.2).
7.3.1	Water provision - Alternative 3	The development will be connected to the STLM water network.
7.3.2	Electricity - Alternative 2	Electricity will be obtained from Eskom.
7.3.3	Sewage disposal - Alternative 1	The development will be connected to the STLM sewer network.
7.3.4	Storm water management - Alternative 2	A new storm water system will be installed.

8.3 Development phases

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**

8.3.1 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.

No actual construction took place on site. Thus, no impacts are associated with the planning and design phase.

8.3.2 Construction phase

The construction phase would involve the pegging of the stands, installation of services and construction of access roads and buildings.

This would involve the following:

- Clearing of vegetation;
- Levelling of the site;
- Excavation of trenches;
- Installation and connection of services;
- Construction of access roads;
- Laying of the required foundations;
- Building of the outer structures;
- Installation of the required internal fittings;
- Rehabilitation of the disturbed areas (i.e. landscaping).

Section 8.5 provides details with regards to potential impacts identified during the construction phase.

8.3.3 Operational phase

The operational phase would involve the utilisation of the various buildings and infrastructure associated with the proposed Residential and Institutional stands.

Section 8.5 provides details with regards to potential impacts identified during the operational phase.

8.3.4 Decommissioning phase

If required, this phase would involve the decommissioning of the buildings constructed as part of this development (see Section 8.3.2).

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.

Section 8.5 indicates some of the potential impacts identified during the decommissioning phase.

8.4 Approach and methodology

This section presents the proposed approach to assessing the potential impacts, with the aim of determining the significance of these impacts. The impact will be determined for each aspect of the environment with and without the implementation of mitigation measures. This allows for a prediction of how the impact can be managed or mitigated.

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

- **Nature of impact (i.e. description of the impact)**

- **Extent (i.e. spatial scope or geographical extent of the impact to the receiving environment)**

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 (i.e. length of permanence of the impact. In other words, how long will the impact last)**

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 (i.e. likelihood that the impact will occur)**

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/intensity of impact (i.e. degree of alteration to the affected receiving environment)**

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 (i.e. whether the impact will have a positive (beneficial) or negative (detrimental) effect on the receiving environment)**

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

8.5 Description of potential impacts

The following section provides an indication of the environmental features that will be impacted (directly and indirectly) during the construction, operational and decommissioning phases of the proposed project.

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.

Please note: Only the most important mitigation measures associated with identified impacts are indicated in this section. The Environmental Management Programme Report (EMPr) (included in this report as Section 9) provides a comprehensive description of the various mitigation and management measures proposed to ensure minimal impact on the environment.

8.5 DIRECT AND INDIRECT IMPACTS – CONSTRUCTION AND OPERATION OF A RESIDENTIAL AREA																				
ENVIRONMENTAL FEATURE(S)	**PREDICTED IMPACT CONSTRUCTION PHASE TIME PERIOD: DEPENDS ON SALE OF STANDS AREA: 5 ha**	**EXTENT**	**DURATION**	**PROBABILITY**	**SIGNIFICANCE (PRE-MITIGATION)**	**SIGNIFICANCE (POST MITIGATION)**	**PREDICTED IMPACT OPERATIONAL PHASE TIME PERIOD: DEPENDS ON ECONOMIC SITUATION AREA: 5 ha**	**EXTENT**	**DURATION**	**PROBABILITY**	**SIGNIFICANCE (PRE-MITIGATION)**	**SIGNIFICANCE (POST MITIGATION)**	**PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE TIME PERIOD: UNKNOWN AREA: 5 ha**	**EXTENT**	**DURATION**	**PROBABILITY**	**SIGNIFICANCE (PRE-MITIGATION)**	**SIGNIFICANCE (POST MITIGATION)**
TOPOGRAPHY	▪ The site slopes in a north westerly direction towards the Klein Olifants River. However, the site and surrounding area are relatively flat. ▪ The topography has already been impacted upon by the construction and decommissioning of an old farmstead, roads and agriculture. ▪ In general, the removal of vegetation, sloping of the site and the formation of voids and topographical highs would result in changed runoff patterns and an increased risk of soil erosion, which could impact on the drainage area and wetland.	SITE	PERMANENT	DEFINITE	MEDIUM NEGATIVE	LOW NEGATIVE	Direct impact on topography will continue, which in turn will impact upon the runoff from the site.	SITE	LONG	DEFINITE	MEDIUM NEGATIVE	LOW NEGATIVE	The decommissioning and rehabilitation of the site would have a positive impact on the topography since the infrastructure will be removed and the site will be top soiled and shaped to conform to the original slope of the area.	SITE	LONG	DEFINITE	LOW POSITIVE	LOW POSITIVE
GEOLOGY	▪ The site is underlain by remnants of Dwyka tillite, which is underlain by older shale of the Loskop Formation and intruded by a large diabase sill. ▪ The direct impact on geology will depend on the depth of the excavations required for the construction of the buildings and installation of services. The possible impact on the underlying geology cannot be mitigated.	SITE	PERMANENT	PROBABLE	LOW NEGATIVE	LOW NEGATIVE	NONE since no further construction will take place.						NONE					
SOILS/ GEOTECHNICAL	• During construction, the soil of an area of ±5ha 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	• 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 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	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.	SITE	SHORT	PROBABLE	LOW NEUTRAL	LOW NEUTRAL
	• Sediment transport and erosion may occur following the clearing of the site in preparation of construction. This could impact on the wetland and associated wetland buffer should mitigation measures not be implemented.	SITE	SHORT	PROBABLE	LOW NEGATIVE	LOW NEGATIVE	▪ It is unlikely that soil erosion will take place during the operational phase, since the roads and parking areas would be surfaced, a storm water management system would be in place and open areas would be landscaped. Sediment transport and erosion may however occur should the disturbed areas not be rehabilitated.	SITE	SHORT	IMPROBABLE	LOW NEGATIVE	LOW NEGATIVE	Soil erosion could occur if the site is not revegetated properly after decommissioning.	SITE	SHORT	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE

8.5 DIRECT AND INDIRECT IMPACTS – CONSTRUCTION AND OPERATION OF A RESIDENTIAL AREA																				
ENVIRONMENTAL FEATURE(S)	**PREDICTED IMPACT CONSTRUCTION PHASE TIME PERIOD: DEPENDS ON SALE OF STANDS AREA: 5 ha**	**EXTENT**	**DURATION**	**PROBABILITY**	**SIGNIFICANCE (PRE-MITIGATION)**	**SIGNIFICANCE (POST MITIGATION)**	**PREDICTED IMPACT OPERATIONAL PHASE TIME PERIOD: DEPENDS ON ECONOMIC SITUATION AREA: 5 ha**	**EXTENT**	**DURATION**	**PROBABILITY**	**SIGNIFICANCE (PRE-MITIGATION)**	**SIGNIFICANCE (POST MITIGATION)**	**PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE TIME PERIOD: UNKNOWN AREA: 5 ha**	**EXTENT**	**DURATION**	**PROBABILITY**	**SIGNIFICANCE (PRE-MITIGATION)**	**SIGNIFICANCE (POST MITIGATION)**
SOILS/ GEOTECHNICAL	▪ The western portion of the site (i.e. proposed institutional stand) is located within Geotechnical Zone 1A, which is underlain by competent shale. The shallow competent shale is regarded as ideal founding medium for shallow foundations. Competent founding is generally present from 0.7 to 1 m below surface. Normally constructed foundations would apply. ▪ According to Cilliers & Hansmeyer (2018), soft excavation of up to 1.5m will apply in this area. However, intermediate excavation (powerful excavators) will be required to excavate the less weathered Loskop shale below 1.5m. The underlying geology could thus impact on the construction activities in terms of increased costs and time.	SITE	LONG	HIGHLY PROBABLE	LOW NEGATIVE	LOW NEGATIVE	▪ It is unlikely that buildings constructed on the institutional stand will be impacted by the underlying geology and soils during the operational phase.	SITE	LONG	HIGHLY PROBABLE	LOW NEGATIVE	LOW NEGATIVE	NONE since the underlying geology will not have an impact on the decommissioning activities.					
	▪ The eastern portion of the site (i.e. proposed residential stands) is located within Geotechnical Zone 2A (Figure 5.12), which is underlain by decomposed diabase and would require modified normal construction (e.g. strip footings, articulation joints, light re-inforcement and compaction of in-situ soils). ▪ Cilliers & Hansmeyer (2018) indicated that pick/shovel and TLB mechanical excavation (soft excavation) will be adequate to excavate up to a depth of 2.5m (i.e. through the cover soils, tillite and soft excavatable clayey diabase residuum) in the eastern portion of the site. ▪ The geology and soils of the site could impact on the residential structures if mitigation measures were not implemented.	SITE	LONG	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	▪ The residential structures will continue to be impacted upon through the operational phase if mitigation measures were not implemented.	SITE	LONG	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	NONE since the underlying geology and soils will not have an impact on the decommissioning activities.					
	• Geotechnical Zone 2B is located in the southern portion of the site (Figure 5.12) and comprises of building rubble mixed with soil. According to Cilliers & Hansmeyer (2018), normally constructed foundations would be required once the building rubble has been removed. • Any buildings constructed within Stand 2 (Figure 3.2) could be impacted should all the building rubble not be removed during the construction phase.	SITE	LONG	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	The structures on Stand 2 will continue to be impacted upon through the operational phase if mitigation measures were not implemented.	SITE	LONG	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	NONE since no further construction will take place.					
	• Geotechnical Zone 3A is located in the central portion of the site (Figure 5.12) and comprises the wetland area. No development is recommended within this zone. • According to the layout plan (Figure 3.2), this area will be zoned 'Private Open Space' and will not be developed.						NONE						NONE					
	Soil pollution may occur if: • the construction vehicles are not maintained/repaired 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	Soil pollution could occur if: • waste management measures are not implemented; • the sewer infrastructure is not properly installed and maintained or does not have sufficient capacity resulting in leaking manholes, etc.	SITE	LONG	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	Soil pollution may occur if: • The vehicles are not maintained/repaired 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	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE

8.5 DIRECT AND INDIRECT IMPACTS – CONSTRUCTION AND OPERATION OF A RESIDENTIAL AREA																				
ENVIRONMENTAL FEATURE(S)	**PREDICTED IMPACT CONSTRUCTION PHASE TIME PERIOD: DEPENDS ON SALE OF STANDS AREA: 5 ha**	**EXTENT**	**DURATION**	**PROBABILITY**	**SIGNIFICANCE (PRE-MITIGATION)**	**SIGNIFICANCE (POST MITIGATION)**	**PREDICTED IMPACT OPERATIONAL PHASE TIME PERIOD: DEPENDS ON ECONOMIC SITUATION AREA: 5 ha**	**EXTENT**	**DURATION**	**PROBABILITY**	**SIGNIFICANCE (PRE-MITIGATION)**	**SIGNIFICANCE (POST MITIGATION)**	**PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE TIME PERIOD: UNKNOWN AREA: 5 ha**	**EXTENT**	**DURATION**	**PROBABILITY**	**SIGNIFICANCE (PRE-MITIGATION)**	**SIGNIFICANCE (POST MITIGATION)**
LAND USE	The property is zoned for agriculture. It is currently vacant and only used for grazing purposes (some cattle and horses). The site is located adjacent to the existing Eastdene residential area. The proposed land use would be a natural extension of the residential area.	SITE	LONG	DEFINITE	LOW NEUTRAL	LOW NEUTRAL	The land use will change from agriculture to residential and institutional. However, the new land use will be compatible with that of the surrounding area. The change in land use will lead to a natural extension of the existing Eastdene residential area. The proposed mosque will serve the surrounding community.	SITE	LONG	DEFINITE	LOW NEUTRAL	LOW NEUTRAL	The decommissioning and rehabilitation of the site would allow for a different land use on site. The impact will depend on the existing land use in the area.					
NATURAL VEGETATION/ ANIMAL LIFE	▪ 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). ▪ The development of the site will impact directly on approximately 3ha of Rand Highveld Grassland and the associated animal habitat.	SITE	LONG	DEFINITE	MEDIUM NEGATIVE	MEDIUM NEGATIVE	NONE. No further direct impact on vegetation or animal life since no further construction activities will take place.						The vegetation that re-established within the development during the operational phase would be impacted upon by decommissioning. However, the rehabilitation of the site after decommissioning would be positive, unless the area is not rehabilitated properly and alien species are introduced.	SITE	LONG	PROBABLE	MEDIUM POSITIVE	MEDIUM POSITIVE
	▪ The natural grassland on site was classified as having Medium-High sensitivity, the disturbed grassland as having a Medium sensitivity and the secondary grassland as Low sensitivity (Figure 5.20). ▪ The central portion of the site comprises wetland vegetation of High, Medium-High and Medium sensitivity. ▪ According to Hoare (2012), the areas of High sensitivity should be excluded from development. As per the layout plan, no development will take place within the wetland area (High sensitivity). The wetland vegetation would thus not be directly impacted upon by the construction activities. ▪ The development would however, impact on vegetation of Medium-High sensitivity.	SITE	LONG	DEFINITE	MEDIUM NEGATIVE	MEDIUM NEGATIVE	NONE. No further direct impact on vegetation or animal life since no further construction activities will take place.							SITE	LONG	PROBABLE	MEDIUM POSITIVE	MEDIUM POSITIVE
	▪ The wetland located in the centre of the site (area of High sensitivity) could be indirectly impacted upon if the 20m wetland buffer zone is not demarcated prior to construction, and construction vehicles or workers move outside of the development footprint into the wetland/buffer zone. The wetland could also be impacted should spoil and building material be stored within this area, resulting in a loss of vegetation, habitat and wetland functions.	SITE	SHORT	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	The area of High sensitivity (i.e. wetland area and associated 20m wetland buffer zone) could be impacted upon during the operational phase if the area was not properly demarcated (fenced) and vehicle access restricted.	SITE	LONG	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE						
	▪ One Orange List plant species (*Hypoxis hemerocallidea*) and a Declining plant species (*Boopone disticha*) were noted on site. The construction of the residential area and mosque could impact on these plant species if they are not identified, protected and/or relocated before any construction commences.	SITE	PERMANENT	HIGHLY PROBABLE	HIGH NEGATIVE	LOW NEGATIVE	No further direct impact since no further construction activities will take place.											
	▪ The removal of the alien and invader species present in the degraded area (i.e. western and southern boundaries and at the old farmstead) during construction will have a positive impact on the surrounding vegetation in terms of preventing the spread of these plants.	SITE	PERMANENT	DEFINITE	LOW POSITIVE	LOW POSITIVE	Alien plants could be introduced into areas disturbed by construction, which are not rehabilitated. If alien plants are utilized in the gardens, they could spread and impact on the surrounding vegetation and wetland area.	SITE	LONG	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE						

8.5 DIRECT AND INDIRECT IMPACTS – CONSTRUCTION AND OPERATION OF A RESIDENTIAL AREA																		
ENVIRONMENTAL FEATURE(S)	**PREDICTED IMPACT CONSTRUCTION PHASE TIME PERIOD: DEPENDS ON SALE OF STANDS AREA: 5 ha**	**EXTENT**	**DURATION**	**PROBABILITY**	**SIGNIFICANCE (PRE-MITIGATION)**	**SIGNIFICANCE (POST MITIGATION)**	**PREDICTED IMPACT OPERATIONAL PHASE TIME PERIOD: DEPENDS ON ECONOMIC SITUATION AREA: 5 ha**	**EXTENT**	**DURATION**	**PROBABILITY**	**SIGNIFICANCE (PRE-MITIGATION)**	**SIGNIFICANCE (POST MITIGATION)**	**PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE TIME PERIOD: UNKNOWN AREA: 5 ha**	**EXTENT**	**DURATION**	**PROBABILITY**	**SIGNIFICANCE (PRE-MITIGATION)**	**SIGNIFICANCE (POST MITIGATION)**
SURFACE WATER/SENSITIVE LANDSCAPES	▪ No rivers or streams are present on site. ▪ A wetland is present in the central portion of the site. The development will however, not impact directly on the wetland as the institutional and residential stands are located outside of the wetland and associated 20m wetland buffer zone. ▪ The earthworks required during the construction phase would result in changed runoff patterns, which could indirectly impact on the wetland and the downstream vegetation in terms of erosion and sedimentation.	SITE	SHORT	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	▪ No direct impact since the institutional and residential stands are located outside of the wetland and associated 20m wetland buffer zone. ▪ During the operational phase, increased yields could be expected due to increased paved areas and buildings, which would facilitate increased run-off quantities due to quicker run-off and less infiltration into the soil. This could lead to soil erosion if proper storm water control measures are not implemented, which could impact on the wetland and downstream vegetation. ▪ Diffuse flows could be concentrated into confined flows, which might be discharged as point discharges into the wetland system. This may lead to extensive erosion at the points of discharge and downstream of the discharge points. ▪ The storm water management plan (Bouwer, 2018) must be implemented.	SITE	LONG	HIGHLY 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 entering the wetland and eventually the Klein Olifants River. It would thus have a positive impact on surface water.	SITE	LONG	HIGHLY PROBABLE	MEDIUM POSITIVE	MEDIUM POSITIVE
	▪ Surface water runoff may be polluted if the construction vehicles are not maintained/repaired resulting in oil leaks and fuel spills, waste management measures are not implemented and proper ablution and sanitation facilities are not provided for the site workers to use on site. This could impact on the wetland located in the centre of the site and downstream surface water environments.	SITE	SHORT	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	▪ The water quality of the drainage area/wetland and Klein Olifants River could be impacted upon by run-off water containing contaminants such as hydrocarbons, nutrients, sediment, litter, etc. collected in the urban area. Indirect pollution of surface water could also take place if the sewage system does not have sufficient capacity and is not maintained on a regular basis and proper waste management measures are not implemented. The quality of surface water generally declines following urbanization, which could impact on downstream users.	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. This would result in clean runoff from the site.	SITE	LONG	HIGHLY PROBABLE	MEDIUM POSITIVE	MEDIUM POSITIVE
GROUNDWATER	▪ No direct impact on the groundwater is expected as a result of construction. ▪ Cilliers & Hansmeyer (2018) identified a seepage area in the central portion of the site (Geotechnical Zone 3A). This area was also identified by Davis (2012) as a hillslope seepage wetland. Both specialists recommended that no development takes place here. The area was subsequently zoned 'Private Open Space' and will not be developed (Figure 3.2). The wetland area and associated groundwater would thus not be directly impacted.						▪ No groundwater will be abstracted for the operational activities. Thus, no direct impacts in terms of groundwater abstraction is expected as municipal water will be provided. ▪ Groundwater associated with the wetland/drainage area could be indirectly impacted upon if proper sanitation facilities and waste management measures are not put in place and maintained (especially within/near the wetland area).	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 entering the storm water infrastructure. It would thus have a positive impact on groundwater.	SITE	LONG	DEFINITE	MEDIUM POSITIVE	MEDIUM POSITIVE

8.5 DIRECT AND INDIRECT IMPACTS – CONSTRUCTION AND OPERATION OF A RESIDENTIAL AREA																	
ENVIRONMENTAL FEATURE(S)	**PREDICTED IMPACT CONSTRUCTION PHASE TIME PERIOD: DEPENDS ON SALE OF STANDS AREA: 5 ha**	**EXTENT**	**DURATION**	**PROBABILITY**	**SIGNIFICANCE (PRE-MITIGATION)**	**SIGNIFICANCE (POST MITIGATION)**	**PREDICTED IMPACT OPERATIONAL PHASE TIME PERIOD: DEPENDS ON ECONOMIC SITUATION AREA: 5 ha**	**EXTENT**	**DURATION**	**PROBABILITY**	**SIGNIFICANCE (PRE-MITIGATION)**	**SIGNIFICANCE (POST MITIGATION)**	**PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE TIME PERIOD: UNKNOWN AREA: 5 ha**	**EXTENT**	**DURATION**	**PROBABILITY**	**SIGNIFICANCE (PRE-MITIGATION)**	**SIGNIFICANCE (POST MITIGATION)**
SITES OF ARCHAEOLOGICAL/ CULTURAL INTEREST	The site is underlain by remnants of Dwyka tillite, which is underlain by older shale of the Loskop Formation and intruded by a large diabase sill (Figure 5.4). The potential impact of the development on fossil heritage is Low for the Loskop Formation and Moderate for the Dwyka Group. The direct impact on the palaeontology will depend on the depth of the excavations required for the buildings and services, and if any fossiliferous outcrop is found. Fourie (2018) raised no objection to the proposed development and indicated that the development may go ahead. However, special care must be taken during the construction phase (e.g. digging, drilling, blasting, excavating of foundations, removal of overburden, etc.) as a site visit may have missed a fossiliferous outcrop.	SITE	PERMANENT	IMPROBABLE	LOW NEGATIVE	LOW NEGATIVE	NONE since no further construction will take place.						NONE					
	According to Van Vollenhoven (2018), no Stone Age or Iron Age sites were noted on or near the proposed site. In addition, no graves are known to be present on site. Two sites from the Historical Age (remains of buildings; Figure 5.26) were however, identified. The construction activities will have a direct impact on these sites. According to Van Vollenhoven (2018), these building remains are of Low significance and may be destructed without a formal permit application, at the discretion of the relevant heritage authority.	SITE	PERMANENT	DEFINITE	LOW NEGATIVE	LOW NEGATIVE											
AIR QUALITY	Dust generation and vehicle emissions due to construction activities and use of heavy machinery could impact on site workers, residents of Eastdene and children attending the Middelburg Muslim School. The extent of the impact would depend on the time of year, wind direction and velocity and portion of the property being developed. Mitigation measures would have to be implemented.	SITE	SHORT	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	▪ During the operational phase, no direct impact on the air quality is anticipated due to the development being supplied with electricity. ▪ The internal roads of the residential area would be paved and therefore no dust generation will take place. ▪ However, vehicle emissions could impact on the air quality of the site and immediate surroundings due to the increased number of vehicles utilizing the roads.	SITE	LONG	PROBABLE	LOW NEGATIVE	LOW NEGATIVE	Dust generation and vehicle emissions due to decommissioning activities and use of heavy machinery could impact on site workers, residents of the adjacent smallholdings, residents of Eastdene and children attending the Middelburg Muslim School. The extent of the impact would depend on the time of year, wind direction and velocity.	SITE	SHORT	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE
VISUAL	The site is visible from all the surrounding properties due to the relatively flat nature of the area. Construction activities will be highly visible from the adjacent smallholdings (north and southeast), adjacent farms (east), Eastdene (west), military base (northwest), Middelburg Muslim School (south) and nearby roads. The construction site would have to be kept neat and tidy.	SITE	SHORT	DEFINITE	MEDIUM NEGATIVE	LOW NEGATIVE	▪ The residential area and mosque will be visible from the adjacent smallholdings, Eastdene, Middelburg Muslim School, military base and surrounding streets. ▪ It is expected that the mosque will be higher than the surrounding buildings making it visible to the surrounding area in general. ▪ It would thus be very important to keep the development neat and tidy at all times and ensure that the mosque is well maintained.	SITE	LONG	DEFINITE	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. If the site is rehabilitated properly it could have a positive impact in terms of visual aspects.	SITE	LONG	PROBABLE	LOW POSITIVE	MEDIUM POSITIVE

8.5 DIRECT AND INDIRECT IMPACTS – CONSTRUCTION AND OPERATION OF A RESIDENTIAL AREA																		
ENVIRONMENTAL FEATURE(S)	**PREDICTED IMPACT CONSTRUCTION PHASE TIME PERIOD: DEPENDS ON SALE OF STANDS AREA: 5 ha**	**EXTENT**	**DURATION**	**PROBABILITY**	**SIGNIFICANCE (PRE-MITIGATION)**	**SIGNIFICANCE (POST MITIGATION)**	**PREDICTED IMPACT OPERATIONAL PHASE TIME PERIOD: DEPENDS ON ECONOMIC SITUATION AREA: 5 ha**	**EXTENT**	**DURATION**	**PROBABILITY**	**SIGNIFICANCE (PRE-MITIGATION)**	**SIGNIFICANCE (POST MITIGATION)**	**PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE TIME PERIOD: UNKNOWN AREA: 5 ha**	**EXTENT**	**DURATION**	**PROBABILITY**	**SIGNIFICANCE (PRE-MITIGATION)**	**SIGNIFICANCE (POST MITIGATION)**
NOISE	Noise generated due to construction activities and use of heavy machinery could impact on site workers, adjacent smallholdings, Eastdene and the Middelburg Muslim School. Construction activities should be limited to daylight hours and noise should be kept as low as possible near the southern boundary of the site (i.e. near the Middelburg Muslim School).	SITE	SHORT	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	Noise generation would be due to noise associated with residential activities and increased traffic. The impact should not be significant since the site is located on the edge of town adjacent to an existing residential area. The mosque will be located within the community who would attend the mosque. Any noise emitted from the mosque should therefore be acceptable to the local community.	SITE	LONG	HIGHLY PROBABLE	LOW NEGATIVE	LOW NEGATIVE	In general, the use of heavy machinery for decommissioning activities would impact on the surrounding area in terms of noise.	SITE	SHORT	PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE
TRAFFIC	▪ 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 road network. The deliveries would however, not occur on a continuous basis.	SITE	SHORT	PROBABLE	LOW NEGATIVE	LOW NEGATIVE	▪ No direct impact expected. However, the operational phase will result in an increase in traffic along Riyadh Street and other streets in the Eastdene residential area. ▪ According to the layout plan (Figure 3.2), the Right-of-Way servitude would be utilized to obtain access to the development. The people currently using the Right-of-Way servitude could thus be impacted upon in terms of increased traffic. ▪ The section of the Right-of-Way servitude extending past the site would however, be surfaced. The additional traffic should therefore not have a negative impact on the condition of the road.	LOCAL	LONG	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	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. Impact on traffic after decommissioning will however, depend on the intended end land use.	SITE	SHORT	PROBABLE	LOW NEGATIVE	LOW NEGATIVE
SENSE OF PLACE	The proposed site falls within the area identified in the Spatial Development Framework of the Steve Tshwete Local Municipality (2015) as Rural Residential development (e.g. smallholdings). However, the proposed development will be a natural extension of the existing Eastdene residential area and the proposed mosque will serve the surrounding community. The proposed development should therefore not impact on the sense of place of the area.	SITE	LONG	HIGHLY PROBABLE	LOW NEUTRAL	LOW NEUTRAL	The proposed site falls within the area identified in the Spatial Development Framework of the Steve Tshwete Local Municipality (2015) as Rural Residential development (e.g. smallholdings). However, the proposed development will be a natural extension of the existing Eastdene residential area and the proposed mosque will serve the surrounding community. The proposed development should therefore not impact on the sense of place of the area.	SITE	LONG	HIGHLY PROBABLE	LOW NEUTRAL	LOW NEUTRAL	The impact of the decommissioning of the development on sense of place will depend on the character of the area at that time as well as the intended end land use.					

8.5 DIRECT AND INDIRECT IMPACTS – CONSTRUCTION AND OPERATION OF A RESIDENTIAL AREA																				
ENVIRONMENTAL FEATURE(S)	**PREDICTED IMPACT CONSTRUCTION PHASE TIME PERIOD: DEPENDS ON SALE OF STANDS AREA: 5 ha**	**EXTENT**	**DURATION**	**PROBABILITY**	**SIGNIFICANCE (PRE-MITIGATION)**	**SIGNIFICANCE (POST MITIGATION)**	**PREDICTED IMPACT OPERATIONAL PHASE TIME PERIOD: DEPENDS ON ECONOMIC SITUATION AREA: 5 ha**	**EXTENT**	**DURATION**	**PROBABILITY**	**SIGNIFICANCE (PRE-MITIGATION)**	**SIGNIFICANCE (POST MITIGATION)**	**PREDICTED IMPACT PHASE: DECOMMISSIONING PHASE TIME PERIOD: UNKNOWN AREA: 5 ha**	**EXTENT**	**DURATION**	**PROBABILITY**	**SIGNIFICANCE (PRE-MITIGATION)**	**SIGNIFICANCE (POST MITIGATION)**
INTERESTED AND AFFECTED PARTIES	The development will add to the development potential and economic growth of the area and provide the required housing.	LOCAL	LONG	HIGHLY PROBABLY	MEDIUM POSITIVE	MEDIUM POSITIVE	The development will add to the development potential and economic growth of the area and provide the required housing.	LOCAL	LONG	HIGHLY PROBABLY	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.					
	Job opportunities would be provided during the construction phase.	SITE	SHORT	DEFINITE	MEDIUM POSITIVE	MEDIUM POSITIVE	Job opportunities would be provided during the operational phase.	SITE	LONG	DEFINITE	MEDIUM POSITIVE	MEDIUM POSITIVE						
	Eskom powerlines are present on the eastern and southern boundaries of the site. Eskom and its users could be impacted if the powerlines are damaged in any way by the construction activities.	SITE	SHORT	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	Eskom and its users could be impacted if the powerline is damaged in any way during the operational phase.	SITE	SHORT	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE						
	The connection of the services (water, electricity, sewage) to the municipal infrastructure could impact on the residents of Eastdene in terms of service interruptions. The residents could also be impacted upon if the existing services do not have sufficient capacity for the proposed development.	SITE	SHORT	HIGHLY PROBABLE	MEDIUM NEGATIVE	LOW NEGATIVE	The residents could be impacted upon if the existing services do not have sufficient capacity for the proposed development.	SITE	LONG	DEFINITE	MEDIUM NEUTRAL	MEDIUM NEUTRAL						
	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	NONE since no contractors will be on site during the operational phase.											
	Other impacts in terms of the natural environment, noise, odours, visual, traffic, etc. are indicated in the above-mentioned sections.						Other impacts in terms of the natural environment, noise, odours, visual, traffic, etc. are indicated in the above-mentioned sections.											

8.6 'No project' impacts

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

- There would still be a need for residences and a mosque in the community;
- A prime development site would stay vacant;
- The existing land use (i.e. vacant property) would continue;
- Other potential uses for the site would have to be investigated;
- The applicant could sell the property.

It is anticipated that this development will add to the development potential and economic growth of the area and provide the required housing.

8.7 Cumulative impacts

The proposed development together with all other developments in Middelburg would impact on the services (e.g. water, sewage, electricity, roads, etc.) provided by the local municipality. The Steve Tshwete Local Municipality must ensure that the required services are provided.

The proposed development would also add to the cumulative impact of traffic on Riyadh Street and surrounding residential roads. Proper access points must be constructed in order to prevent a potential impact on the general road user. The road infrastructure must also be maintained.

Approximately 5ha of Rand Highveld Grassland (classified as Vulnerable) will be lost as a result of the development, which will lead to an overall loss of this vegetation type. An Orange Listed and a Declining plant species were noted on site. The development of the site without the required mitigation measures will lead to a further decline in the number of specimens.

A wetland is located in the central portion of the site. Any indirect impacts on this wetland area would have a cumulative impact on wetlands in general since another wetland system would be lost.

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

SECTION 9: ENVIRONMENTAL MANAGEMENT PROGRAMME

9.1 Definition and objectives

As indicated in Regulation 19(4) of the EIA Regulations, 2014 (as amended), an Environmental Management Programme (EMPr) must form part of the Basic Assessment Report.

The EMPr was compiled in accordance with Appendix 4 of the EIA Regulations, 2014 (as amended) 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 (as amended), 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 8).

9.2 Contact details of Environmental Assessment Practitioner

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 Assessment Practitioner who prepared the EMPr are provided in Section 2 of this Basic Assessment Report.

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

9.3 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.

A detailed description of the proposed development and aspects covered by the EMPr is provided in Section 3 and Section 7 of this Basic Assessment Report.

In summary, the following alternatives as indicated in Section 7.5 and Section 8 will be implemented:

Section	Alternative	Description
7.1	Site 1	The said site located on a portion of Portion 93 of the farm Rondebosch 403 JS, Middelburg (Figure 5.2).
7.2.3	Layout 3	Layout plan for the development of a gated community. The wetland and associated 20m wetland buffer zone was taken into account (Figure 3.2).
7.3.1	Water provision - Alternative 3	The development will be connected to the STLM water network.
7.3.2	Electricity - Alternative 2	Electricity will be obtained from Eskom.
7.3.3	Sewage disposal - Alternative 1	The development will be connected to the STLM sewer network.
7.3.4	Storm water management - Alternative 2	A new storm water system will be installed.

Mitigation and management measures with regards to these alternatives are provided in Section 9.5.

9.4 Sensitivity mapping

An EMPr must provide -
(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.

Section 5 of this Basic Assessment Report provides a description of the biophysical environment of the site.

Sensitive areas identified on/near the site include the following (Figure 9.1):

- Hillslope seepage wetland with associated 20m wetland buffer zone (High Sensitivity) located in the central portion of the site;
- Two building remains (Site No 1 and Site No 2) older than 60 years of age (Low Significance).

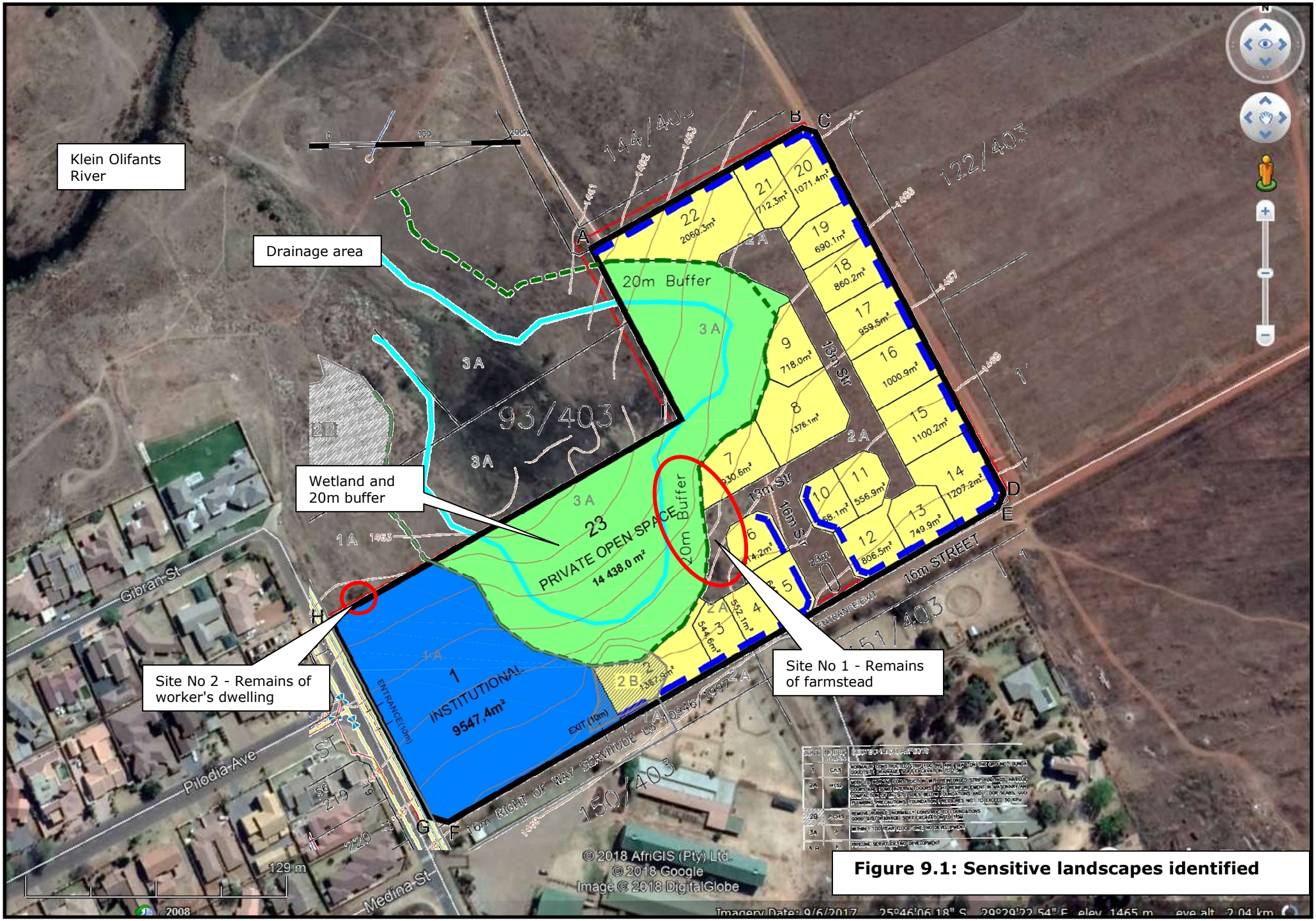


Figure 9.1: Sensitive landscapes identified

Wetland area (Figure 9.1)
As indicated in Figure 9.1, the wetland area and associated 20m wetland buffer zone in the central portion of the site are zoned 'Private Open Space' and would not be developed. However, indirect impacts (e.g. increased runoff, erosion, etc.) could take place which would necessitate the implementation of mitigation measures as indicated in Section 9.5.

Building remains (Figure 9.1)
As indicated in Figure 9.1, the building remains will be directly impacted by the proposed development. However, according to Van Vollenhoven (2018) the building remains of Site No 1 and Site No 2 are of low significance and may be destructed without a formal permit application, at the discretion of the relevant heritage authority.

9.5 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 outcomes contemplated in paragraphs (d) 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.

9.5.1 Construction site office

Impact management outcome:

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

Mitigation and management measures:

- A suitable site must be selected, demarcated and fenced for the construction site office within the demarcated site boundaries.
- No overnight accommodation may be provided at the construction site office.
- Chemical toilets must be provided for use by the site workers. These must be serviced on a regular basis. No long drop toilets may be allowed.
- Potable water must be made available to site workers.
- Proper waste management facilities must be provided as part of the construction site office.
- No waste may be burnt, buried or dumped on site.
- No dumping of any kind of waste (domestic, general, building rubble, etc.) may take place on site or in the surrounding area. All waste must be removed to the licensed Rietfontein Waste Disposal Site.
- No servicing of vehicles may take place on site.

- The contractors must adhere (at all times) to the requirements of the Occupational Health and Safety Act, 1993 (Act 85 of 1993).
- The contractors must ensure that the necessary protective gear (PPE) is worn at all times and that signs are erected to warn workers to use hearing protection as well as any other hazards.

9.5.2 Construction activities

Impact management outcome:
To ensure that the activities that occur during the construction phase have the least impact on the natural environment, site workers and adjacent landowners/users

General

a. The applicant must comply with the conditions of the issued Environmental Authorisation and the issued Water Use Licence.
b. Before construction, the applicant must appoint a person who will be responsible for the day-to-day implementation of the EMPr (including Environmental Awareness Training) and who will report to the site manager.
c. The applicant must also appoint an ECO who will have the responsibility of monitoring and reporting on compliance (on a monthly basis) with the conditions of the Environmental Authorisation as well as monitoring and reporting on the implementation of the EMPr.
d. The wetland and the 20m wetland buffer zone must be fenced off prior to the commencement of construction and no activities or infrastructures may be permitted within the fenced area. Appropriate signage must be placed to indicate the sensitivity of the wetland and wetland buffer and the need to remain outside of the fenced area.
e. The developer should refrain from undertaking any activities within the identified wetland.
f. All construction activities must be limited to the said site. The said site must be properly demarcated and the footprint kept as small as possible.
g. No unnecessary removal of vegetation may take place outside of the demarcated area.
h. Area to be cleared of vegetation must be limited in order to reduce the potential for dust generation during the windy months and erosion during the rainy season.
i. Dust suppression measures must be implemented during dry and windy periods.
j. Proper waste management measures must be implemented for the site.
k. No stockpiling of building material or dumping of building waste may take place on adjacent properties.
l. 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.
m. All site workers/contractors must be informed that no poaching/trapping of animals will be allowed.
n. 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.

o. No water may be abstracted from the Klein Olifants River or the wetland located on site.
p. If water from the Klein Olifants River is to be used for dust suppression, a water use license in terms of the National Water Act, 1998 (Act 36 of 1998), must be obtained from the Department of Water and Sanitation.
q. Topsoil must be removed and stockpiled for landscaping of the site (i.e. gardens, etc.).
r. If soil erosion is noted, appropriate remediation measures must be implemented.
s. Proper storm water drainage must be provided in order to prevent the ponding of water on site.
t. All construction activities must be limited to daylight hours in order to prevent any impact on the surrounding residents.
u. Proper signage, warning signals, a barrier, etc. (i.e. required safety measures) must be provided along Riyadh Street to warn the road users that the access road is being constructed. These signs must also be visible at night.
v. All machinery used during the construction phase must be properly muffled and maintained so as to reduce noise generation to a minimum.
w. Site workers must be instructed to keep noise to a minimum when in close proximity to the school.
x. If any archaeological remains are exposed during the construction phase, the construction must be terminated immediately and the Provincial Heritage Resources Authority must be notified. In this regard, the applicant must take note of the requirements in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999).
y. 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.
z. If any palaeontological material is exposed during digging, excavating, drilling or blasting SAHRA must be notified and mitigation measures in terms of a protocol for finds would have to be implemented. All construction activities must be stopped and a palaeontologist must be called to site.
aa. If blasting is required, the requirements of the Explosives Act, 2003 (Act 15 of 2003) must be put in place in order to prevent any impact on site workers, adjacent landowners/users, etc.
bb. 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.

<u>Geotechnical recommendations</u>
Impact management outcome: 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.

The following recommendations were made by Cilliers & Hansmeyer (2018) and must be implemented:

Geotechnical Zone 1A (Figure 5.12):
- Normal construction and soft excavation to 1.5m will apply.

- Spread and/or strip footings to be founded directly on the weathered shale 0.8 m below surface.
- Bearing pressures not to exceed 200KPa. Separate investigations will be required for heavier loads.
- A structural engineer to verify the Serviceability Limit State of the proposed residential structures.

Geotechnical Zone 2A (Figure 5.12):

- Modified normal construction will apply.
- Spread and/or strip footings to be founded at a depth not less than 0.5m below surface.
- Bearing pressures not to exceed 50KPa.
- Footing excavations to be deepened by 100mm for every additional KPa contemplated above 50KPa.
- Where applicable, footing bases to be compacted prior to construction of the foundations and floor slabs.
- Light-reinforcement required in masonry and wire mesh in floor slabs.
- Articulation joints required on all external doors and some internal doors.
- Good site drainage and service/plumbing precautions.

Geotechnical Zone 2B (Figure 5.12):

- Building rubble to be removed. Thereafter, normally constructed foundations will apply.

Geotechnical Zone 3A (wetland area; Figure 5.12):

- No development to be allowed in this area.

For all areas:

- Surface water to be collected and disposed of in appropriately designed storm water channels to minimize ingress to the foundation soils and to prevent further erosion to access road verges and drainage channels.
- Foundation excavations to be inspected at the time of construction by a competent person, to ensure that the materials are adequate for the proposed structures and that they are in accordance with the recommendations of the geotechnical report.
- The excavation of terraces and road cuts and the placement of engineered fills must be controlled with adequate field tests to ensure that the quality and specified densities are achieved during compaction.

<u>Recommendations regarding vegetation</u>
Impact management outcome: To ensure that the activities that occur during the construction phase have the least impact on the natural vegetation.

- The regulations in terms of the Conservation of Agricultural Resources Act, 1983, and the Mpumalanga Nature Conservation Act, 1998 (Act 10 of 1998) with regards to declared alien species must be noted and complied with.
- The area of High sensitivity (i.e. wetland) should be excluded from development (Hoare, 2012). An adequate buffer (20m wetland buffer

zone as recommended by Davis, 2018) should be maintained around this area.

- Mpumalanga Tourism and Parks Board (MTPA) officials should be consulted regarding the Orange Listed and Declining plant species that occur on site (Hoare, 2012). A permit may be required if these individuals are to be destroyed. If development of the site is approved, individual plants should be rescued according to MTPA guidelines.

Recommendations regarding the wetland

Impact management outcome: To avoid an impact on the hillslope seepage (located in the central portion of the site) during the construction and operational phases of the development.

The following recommendations were made by Davis (2012; 2018) and must be implemented:

- No development may take place within the hillslope seepage wetland identified on site and its associated wetland buffer (i.e. 20m).
- The wetland and the 20m wetland buffer zone must be fenced off prior to the commencement of construction and no activities or infrastructures may be permitted within the fenced area. Appropriate signage must be placed to indicate the sensitivity of the wetland and wetland buffer and the need to remain outside of the fenced area.
- The vegetation structure and density within the wetland buffer must be maintained during both the construction and operational phases in its pre-development state, namely, as moderately robust vegetation with good interception potential (e.g. good condition tufted grass stands). Therefore, the buffer zone should not be converted to regularly mowed lawns and neither it nor the wetlands should be utilised for activities which may result in a permanent decrease in vegetation robustness, e.g.: overgrazing.
- No surface or stormwater flows should be released directly into either the delineated wetland or the recommended buffer zone.
- The rubble and building material that has previously been dumped within the wetlands should be removed. This will improve the ecological condition of the wetlands.
- Exotic and alien vegetation should be removed or controlled, so far as this does no increase the likelihood of soil erosion or channel bank collapse.

Recommendations regarding storm water

Impact management outcome: To reduce the potential impact of storm water drainage from the site on the surrounding area (and hillslope seepage wetland) in terms of soil erosion, sedimentation and flooding.

The following recommendations were made by Davis (2018) and Bouwer (2018b) and must be implemented:

- A stormwater management plan should be compiled for the proposed development showing the anticipated surface flow volumes and how surface flows within and off the development footprint will be managed to prevent altered characteristics of flows entering the wetlands and water resource (Davis, 2018).
- The storm water management plan drafted by Bouwer (2018b) must be implemented.

- If it is necessary to convey surface flows away from the construction footprint using drainage channels, the area where water disperses out of a drain or channel must be suitable for such and must not be susceptible to erosion. The channels should be lined (if flow velocities are expected to be high) or flow control practices should be installed, such as vegetated channels, with rip rap energy dissipaters or gabions, etc., if required. Drains that convey surface runoff should also contain energy brakes (such as lining with stones, grass or gabions) to reduce the water velocity and therefore the risk of erosion. All such channels should decant outside of the delineated wetland buffer zone boundaries.
- Where construction, and therefore vegetation clearing, occurs on slopes, sediment controls should be placed immediately downslope of the construction footprint (but outside the buffer zone) to intercept sediment. Such controls could include sediment basins, sediment fences, or similar. The same measures should be put in place downslope of soil or materials stockpiles or of any platforms created which may act as a sediment source during construction. The purpose being to prevent sediment inputs and increased turbidity to the wetlands. Such measures should be detailed in a construction storm water management plan for both phases of the development.
- It is recommended that as far as is practically possible, the residential development be designed, or landowners encouraged, to implement Water Sensitive Urban Design (WSUD), a strategy which aims to reduce the extent of impermeable surfaces and reduce changes in runoff characteristics from developed areas. This method involves the incorporation of features, such as vegetated swales, permeable paving, infiltration trenches and rainwater tanks for water storage and harvesting for onsite purposes, into the development design, in order to help maintain or replicate pre-development runoff characteristics (See Armitage *et. al*., 2014). Such strategies could be incorporated into a stormwater management plan for the development.
- No surface or stormwater flows should be released directly into either the delineated wetland or the recommended wetland buffer.
- Minimise and use one transportation route where possible.
- Storm water retardation to be employed either through the use of bunding, placement of straw bales or the use of sandbags. Planting of rapidly growing grasses is recommended after construction to stabilise disturbed soil and to retard sheet flow.
- Exposed soil to be stabilised by utilising an appropriate best management practice and preferable stabilisation to take place within 12 hours.
- No soil to remain unstabilised for more than two days between 1 October and 30 April.
- No soil to remain unstabilised for more than seven days between 1 May and 30 September.
- The engineers to be appointed for the detailed design of the storm water drainage system must take into consideration matters raised in the storm water management plan for finalising the roadworks, paving and drainage facilities in order to achieve the proposed storm water management proposals.

9.5.3 Rehabilitation of the environment after construction

Impact management outcome:

1) *To ensure that the disturbed area due to construction activities is properly rehabilitated and maintained.*
2) *To control the growth of declared weeds and/or invader plants.*
3) *To ensure that any declared weeds and/or invader plants do not establish on site and spread to the hillslope seepage wetland (located in the central portion of the site) or the Klein Olifants River (located north west of the site).*

Mitigation and management measures:

a. Before construction, topsoil must be removed and stockpiled in a demarcated area within the 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.
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 Site ECO.
d. Sufficiently compact the reinstated soil to ensure stability.
e. 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.
f. The topsoil should not be compacted.
g. Proper storm water control measures and erosion control must be implemented to prevent erosion of the newly rehabilitated areas during heavy rainfall.
h. Temporary erosion control measures (e.g. geo-textile silt fences, diversion ditches, sediment traps, sandbags, etc.) and temporary seeding with fast growing annuals to be kept in place to control erosion until the long-term erosion control methods are established and functioning.
i. If soil erosion is noted, appropriate remediation measures must be implemented.
j. For rehabilitation purposes, a seed mix comprising of grass species indigenous to the area should be used. Grass seeds can be collected from the surrounding area and used on site. Mowed grass with seeds can be used for mulching.
k. Use brush packing on bare areas that may be trampled by livestock.
l. The planting of any alien invader plant species as part of landscaping should be prohibited in order to prevent the spread of invasive species from the site.
m. 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.
n. An alien and invasive species control and monitoring plan as required in terms of the Alien and Invasive Species Regulations under the National Environmental Management Biodiversity Act (Act 10 of 2004) should be compiled and implemented.

o. Regular site inspections to be conducted to identify any declared weeds and/or invader plants. If identified, the plants to be eradicated using appropriate methods.

p. Several alien and invasive species resemble indigenous species, especially as seedlings. Care must be taken not to control indigenous species during the control of invasive species.

q. 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.

A post-construction audit by the Site ECO must be conducted to ensure that any shortcomings are identified and addressed.

9.5.4 Operational activities

a. The applicant must comply with the conditions of the issued Environmental Authorisation and the issued Water Use Licence.

b. All operational activities must be limited to the said site.

c. The storm water management measures must be inspected on a regular basis in order to ensure that the structures are functional (not blocked) and not causing flooding of the surrounding roads or contamination of the clean storm water. This will be of particular importance at the start and during the rainy season.

d. The water and sewer infrastructure should be inspected on a regular basis to ensure that there are no blockages/leakages or spillage.

e. Proper waste management measures must be implemented for the site.

f. The site must be kept clean and tidy at all times and may not be littered with waste lying outside of waste bins.

g. No waste may be burnt, buried or dumped on site.

h. Where possible, recycling of waste must be encouraged and appropriate bins provided for the recycling initiative.

i. It is recommended that as far as is practically possible, the residential developments be designed, or landowners encouraged, to implement Water Sensitive Urban Design (WSUD), a strategy which aims to reduce the extent of impermeable surfaces and reduce changes in runoff characteristics from developed areas. This method involves the incorporation of features, such as vegetated swales, permeable paving, infiltration trenches and rainwater tanks for water storage and harvesting for onsite purposes, into the development design, in order to help maintain or replicate pre-development runoff characteristics (See Armitage *et. al*., 2014). Such strategies could be incorporated into a stormwater management plan for the development.

j. The overall management of the site and associated infrastructure will be of utmost importance and therefore the implementation of these mitigation measures must be monitored and audited on a regular basis.

k. It is recommended that the developer and new residents become involved with the local Community Policing Forum (CPF) in order to combat crime (e.g. burglaries, etc).

9.6 Implementation and monitoring of the EMPr

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 9.6.1) 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 Steve Tshwete 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:

9.6.1 Environmental Awareness Plan (EAP)

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 site office.

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 8 of this document while mitigation measures to be implemented are provided in Section 9.

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.

The applicant must ensure that the site workers undergo the necessary environmental awareness training before commencing with activities on the site. The applicant must thus ensure that the site workers are aware of the Environmental Authorisation and this EMPr and understand the contents thereof.

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.

9.6.2 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 (EMPr);
- 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 during both the construction and operational phases. Any complaints received with regards to the project must be recorded in the complaints register. The following information must be recorded:

- Date and time 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.

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.

9.6.3 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:
Site Environmental Control Officer (SECO): The applicant must appoint a person who will be responsible for the day-to-day implementation of the EMPr (including Environmental Awareness Training) and will report to the site manager.

Environmental Control Officer/Auditor (ECO): The applicant must appoint an 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 monthly 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	• 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	• 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	• 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	• 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.

<u>Operational phase:</u>
The applicant will be responsible for auditing and corrective action during the operational phase of the development.

SECTION 10: ENVIRONMENTAL IMPACT STATEMENT

10.1 Introduction

The applicant, *Middelburg Muslim Jamaat* (represented by Mr. Y.A. Mansoor), intends to develop a residential area on a portion of Portion 93 of the farm Rondebosch 403 JS, Middelburg. The proposed development will comprise residential stands, an institutional stand, private open space and roads. The proposed site is 5.13 ha in extent and located adjacent to Riyadh Street, Eastdene X1, Middelburg.

The average stand size will be 909m^2, which is in line with the surrounding Eastdene residential area. The development will be a gated community (with a screen wall, security gate and guard house) so as to ensure adequate security for the residents.

The proposed site falls within an area identified in the Steve Tshwete Spatial Development Framework (SDF, 2015) for future Rural Residential development (e.g. smallholdings). However, the growth of the Eastdene community and the expansion of the existing Middelburg Muslim School have led to a demand for housing in the area. According to Urban Dynamics (2018), no vacant erven are available in Eastdene for purchase from the STLM. The proposed development will thus be a natural extension of the existing Eastdene residential area and the proposed mosque will serve the community.

It should be noted that Urban Dynamics (2018) will lodge an application with the Steve Tshwete Local Municipality (STLM) to amend the SDF (which is currently under review) to allow for Residential 1 development. The STLM has already approved the sub-division of Portion 93 of the farm Rondebosch 403 JS (letter dated: 16 October 2018; Ref: 15/4/2-40771).

10.2 Alternatives

Section 7 provides a detailed description of all alternatives investigated with regards to this project. As indicated in Section 7.5, the following alternatives were deemed feasible and were assessed in Section 8.5:

Section	Alternative	Description
7.1	Site 1	The said site located on a portion of Portion 93 of the farm Rondebosch 403 JS, Middelburg (Figure 5.2).
7.2.3	Layout 3	Layout plan for the development of a gated community. The wetland and associated 20m wetland buffer was taken into account (Figure 3.2).
7.3.1	Water provision - Alternative 3	The development will be connected to the STLM water network.
7.3.2	Electricity - Alternative 2	Electricity will be obtained from Eskom.
7.3.3	Sewage disposal - Alternative 1	The development will be connected to the STLM sewer network.
7.3.4	Storm water management - Alternative 2	A new storm water system will be installed.

10.3 Potential impacts identified

The environmental features of the site and surrounding area are described in Section 5 of this report. Potential impacts on the environment (both positive and negative) that are expected to take place are detailed in Section 8 while Section 9 provides mitigation measures to be implemented in order to reduce the said impacts.

Impacts in terms of geology, topography, soil, animal life, land use, air quality, noise and visual would be limited to the site and immediate surroundings and of low to medium significance. The negative impacts that are expected to occur are generally associated with construction activities and would be of short duration. These impacts can be managed through the implementation of the EMPr (see Section 9 of this report).

As indicated in Section 8, the development of the site will impact on approximately 3ha of Rand Highveld Grassland and the associated animal habitat. The natural grassland on site was classified (Hoare, 2012) as having Medium-High sensitivity, the disturbed grassland as having a Medium sensitivity and the secondary grassland as Low sensitivity (Figure 5.20).

The central portion of the site comprises wetland vegetation of High, Medium-High and Medium sensitivity (Hoare, 2012). Davis (2012) identified a hillslope seepage wetland in the central portion of the site (Figure 5.24) and indicated that no development should take place within this area. This wetland extends in a north westerly direction, along a drainage line, to the Klein Olifants River. This wetland area (Geotechnical Zone 3A) was also identified as a no development area as part of the geotechnical study (Cilliers and Hansmeyer, 2018).

No development is allowed within a wetland area since it is seen as a sensitive landscape and requires protection. Wetlands provide natural habitat for various plants, aquatic species, birds, etc.

Davis (2012) indicated that a 20m wetland buffer is applicable in terms of the identified hillslope seepage wetland. This wetland buffer was also recommended by the Department of Water and Sanitation (letter dated: 14 September 2018; Appendix 14). The development footprint area and wetland boundaries must be clearly demarcated as No-Go Areas before any construction takes place and site workers informed accordingly.

According to the layout plan and superimposed wetland delineation (Figure 9.1), the proposed development will **NOT** directly impact on the wetland and its associated 20m wetland buffer since this area was zoned 'Private Open Space' and will be fenced.

Although the wetland will not be directly impacted upon, the development of the said site would lead to a number of indirect impacts such as increased runoff, changes in the hydrology of the wetland system, increases in sediment input and turbidity, and deterioration of water quality (due to the inputs of nutrients and various contaminants) during the operational phase. The importance of maintaining the ecological integrity and functioning of the wetland must be recognized by the developers and the residents.

Davis (2018) recommended that as far as is practically possible, the landowners must be encouraged to implement Water Sensitive Urban Design

(WSUD), a strategy which aims to reduce the extent of impermeable surfaces and reduce changes in runoff characteristics from developed areas. This method involves the incorporation of features such as vegetated swales, permeable paving, infiltration trenches and rainwater tanks (for water storage and harvesting for onsite purposes) into the development design, in order to help maintain or replicate pre-development runoff characteristics.

The other mitigation measures indicated in Section 9 (including the storm water management plan (Appendix 4)) must be implemented to reduce the potential indirect impact of the development on the wetland system. In addition, the developers must comply with the conditions stipulated in the amended Water Use Licence (Appendix 14) issued by the Department of Water and Sanitation.

In terms of sites of archaeological and/or cultural interest, Van Vollenhoven (2018) identified two sites from the Historical Age, i.e. remains of buildings (Figure 5.26). The construction activities will have a direct impact on these sites. These building remains are however, of Low significance and may be destructed without a formal permit application, at the discretion of the relevant heritage authority.

In terms of Palaeontological Sensitivity, Fourie (2018) raised no objection to the proposed development and indicated that the development may go ahead. However, special care must be taken during the construction phase (e.g. digging, drilling, blasting, excavating of foundations, removal of overburden, etc.) as fossiliferous outcrop may be present.

Since the site is located adjacent to a residential area, school and smallholdings and therefore very visible, the management of the site during the construction phase will be of utmost importance, not only from a visual point of view but also to minimize any negative impact on the environment and interested and affected parties. Regular monitoring and auditing of the activities should take place during the construction phase.

10.4 Public participation

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

The proposed development site belongs to the project applicant and the development of the said site will thus not impact directly on any other interested and affected party.

Issues of concern received through this public participation process and the way in which these issues were addressed are detailed in Section 6 and Table 6.4.

No objections in terms of the proposed development were received.

Three of the surrounding landowners indicated that the proposed development would be beneficial to the community in terms of growth, housing, job opportunities and the provision of services.

10.5 Assumptions, uncertainties and gaps in knowledge

The following assumptions and limitations are applicable to this report:

- The report is based on project information provided by the applicant.
- In determining the significance of impacts after mitigation, it is assumed that the proposed mitigation measures will be implemented by the applicant during the construction and operational phases of the development.
- Due to the subterranean nature of fossils and heritage resources, objects or features may be uncovered during the construction phase.
- The data presented in the specialist reports are based on single site visits, which are deemed sufficient for the purposes of this BA process.

10.6 Reasoned opinion as to whether the proposed activity should be authorised (or not)

Based on the findings of this Basic Assessment Report, it is felt that the proposed project could be approved subject to the implementation of the mitigation measures proposed in the Environmental Management Programme (EMPr) provided in Section 9 of this report.

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. The development 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).

In view of the findings of this Basic Assessment, the following listed activities can be approved:

Listing	Activity
Listing Notice 1 (GN R327 of 7 April 2017) Listed Activity 12	*The development of (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a water course;- excluding (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such development occurs within an urban area; (ee) where such development occurs within existing roads, road reserves or railway line reserves; or (ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.*
Listing Notice 1 (GN R327 of 7 April 2017) Listed Activity 27	*The clearance of an area of 1 hectares 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.*

Listing	Activity
Listing Notice 1 (GN R327 of 7 April 2017) Listed Activity 28	*Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 1 April 1998 and where such development: (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare.*
Listing Notice 3 (GN R324 of 7 April 2017) Listed Activity 14	*The development of (i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.*

10.7 Reasons why the activity should be authorised (or not)

It is recommended that the activity be authorised for the following reasons:

√ The proposed development site belongs to the project applicant.
√ No Interested and Affected Party will be directly impacted upon.
√ No objections from Interested and Affected Parties were received.
√ The proposed project will not have any negative impacts on the environment that cannot be mitigated and managed.
√ The layout plan was revised in order to take into account the delineated hillslope seepage wetland and its associated 20m wetland buffer.
√ The 20m wetland buffer was recommended by the Department of Water and Sanitation (Appendix 14).
√ The proposed site is suitable for development purposes as the site is relatively flat with a gentle slope in a north westerly direction.
√ The site is also suitable for development from a geotechnical point of view, provided that the mitigation measures as indicated by Cilliers & Hansmeyer (2018) and included in the EMPr (Section 9) are implemented.
√ The development can connect to the existing municipal water and sewerage networks and be provided with the required municipal services.
√ Electricity can be obtained from existing Eskom power lines located on the eastern and southern boundaries of the site. Eskom confirmed that capacity is available for the proposed development.
√ Access to the development will be provided from Riyadh Street and the Right-of-Way servitude gravel road. The portion of the servitude road extending past the site will be paved.
√ The proposed development will be a natural extension of the existing Eastdene residential area and the proposed mosque will serve the surrounding community.
√ It is anticipated that this development will add to the development potential and economic growth of the area and provide the required housing.

Based on the above-mentioned, it is evident that:

- the proposed development is necessary (need);
- the proposed development will be located on an appropriate site (desirability);
- the development will benefit the local/regional community.

Therefore the need and desirability of the said project was determined through the Basic Assessment process.

10.8 Period for which the EA is required

Construction (i.e. pegging of stands, installation of services, fencing of site, etc.) will commence as soon as all the relevant authorisations have been obtained.

The development of the various stands will however depend on the market and the demand for stands as well as the individual stand owners.

It is therefore estimated that the period for which the EA is required is 10 years.

10.9 Conditions to be included in the EA

The following conditions should be included in the Environmental Authorisation:

- *The management and monitoring measures as indicated in Section 9 (EMPr) of the Basic Assessment Report must be implemented.*
- *The conditions stipulated in the Water Use Licence issued by the Department of Water and Sanitation must be adhered to.*

SECTION 11: EVALUATION OF DRAFT BASIC ASSESSMENT REPORT

11.1 Availability of Basic Assessment Report

The Draft Basic Assessment Report (dated: April 2019) 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;
- Steve Tshwete Local Municipality;
- Mpumalanga Tourism and Parks Agency.

A hard copy and electronic copy of the Draft 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 11.2).

The hard copy will be made available at the Eastdene Public Library (Middelburg). The electronic version will be made available on the company website (www.adienvironmental.co.za) and on compact disc (cd) (on request).

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.

The Final 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.

11.2 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 (DAFF)	F. Mashabela R. Mabule
Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA) - Directorate: Land Use and Soil Management – Ermelo	J. Venter
Department of Co-operative Governance and Traditional Affairs (COGTA)	M. Loock X. Mamba
Department of Mineral Resources	S. Mathavela
Department of Public Works, Roads and Transport	J. Mojapelo

INTERESTED AND AFFECTED PARTY LIST	
Department of Rural Development and Land Reform (Commission on Restitution of Land Rights)	F.Z. Mdushani
Department of Water and Sanitation (DWS)	N.S. Maliaga
Other Organisations/Stakeholders	
Distriks Landbou Unie Middelburg	J.P.J. Schmahl
Eskom Distribution (Land & Rights)	T. Ludere
Eskom Transmission	L. Motsisi
Middelburg Chamber of Business and Commerce	M. Hanekom
Mpumalanga Provincial Heritage Authority	B. Moduka
Mpumalanga Tourism and Parks Agency (MTPA) – Land Advisory Unit	K. Narasoo
South African Heritage Resources Agency (SAHRA)	J. Lavin (SAHRA website)
Telkom	J. Smit
Transnet Freight Rail	T Mavulwana
Transvaalse Landbou Unie	D. du Plessis
Local Municipality and Municipal Councillor	
Nkangala District Municipality	S. Links A. Thwala
Steve Tshwete Local Municipality	M. Mahamba
Steve Tshwete Local Municipality	Councillor T. Mnisi

Surrounding Landowners	
Property (Figure 6.2)	**Landowner/Contact person**
6/403	Zowitsky Trust Contact: Jess and Dave Martin; Karel Zowitski
Portion of 93/403	Middelburg Muslim Jamaat Contact: Middelburg Muslim School
Portion of 93/403	Middelburg Muslim Jamaat Contact: Y Mansoor
96, 97, 99, 100, 101/403	AKFM Prop Inv cc Contact: Y Mansoor
98/403	Akbar Mohamed Ismail
107 and 108/403	Solly Latif Family Inv Holdings Pty Ltd Contact: Solly Latief
121/403	Abdool Satar Suliman
122/403	Gaf's Prop Inv cc Contact: J. Gani
123/403	Latifa T Mahomed Tayob
124/403	Mohsin Seedat
125/403	Mohamed Rafiek Pilodia

INTERESTED AND AFFECTED PARTY LIST	
126/403	Middelburg Muslim Jamaat Contact: Y Mansoor
127/403	Sajeda Gardee
128/403	Ebrahim Mahomed Seedat
129/403	Omar Irshad
130/403	Hoosen Bhayla Contact: H. Bhayla and N. Carrim
137/403	Abdool Guffar Ayob Gani Suliman
138/403	Pebblestone Prop 110 cc Contact: S. Ismail
139/403	Mahomed AS Cassim
140/403	Ahmed Mahomed Kola
141/403	FYZ Inv Pty Ltd Contact: M. Karrim
142/403	Haajiera Bibi Bhikhoo
143/403	Rabia Mahomed Kadwa Contact: M. Kadwa
144/403	Moosa Kassim Kadwa Contact: M. Kadwa
145/403	Aboo Baker Bhamjee Trust
Erf 326	Ismail Osman
Erf 84	Burglar Awake Alarms Contact: M. Ravat
Erf 85	Ali Mohamed Osman
Erf 219	Riaz Pilodia
Erf 220	Kapesh
Erf 221	Muhammed Carrim
Erf 257	Clinton Naidoo
Erf 258	No information
Erf 343	Steve Tshwete Local Municipality
Nearby business	Battlefields Paintball Contact: Imran Pilodia

11.3 Comments received

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

REFERENCES

- Bouwer, J.L. 2018a. **Civil Engineering Services Report: Portion 93 of the Farm Rondebosch 403 JS, Middelburg, Mpumalanga Province.** Report prepared by: BTW & Associates (Pty) Ltd. Report dated: 23 October 2018. Report number: 20336-REP-004.

- Bouwer, J.L. 2018b. **Stormwater Management Plan: Portion 93 of the Farm Rondebosch 403 JS, Middelburg, Mpumalanga Province.** Report prepared by: BTW & Associates (Pty) Ltd. Report dated: 16 August 2018. Report number: 20336-REP-003.

- Cilliers, B.D. & P.G. Hansmeyer. 2018. **Geotechnical Investigation: Portion 93 Rondebosch 403 JS, Middelburg, Mpumalanga (Volume I and Volume II).** Report prepared by: Engeolab (Pty) Ltd. Report dated: November 2018. Report number: LL3209.

- Council for Geoscience. **1: 250 000 Geological Series Map, 2528 Pretoria**.

- Davis, S. 2012. **Wetland Delineation and Assessment for the Proposed Development of Rondebosch 93.** Report prepared by: Wetland Consulting Services (Pty) Ltd. Report dated: May 2012. Report number: 870/2012.

- Davis, S. 2018. **Technical Memorandum: Application of the Wetland Buffer Determination Tool to Wetlands on a Portion of Portion 93 of the Farm Rondebosch 403 JS, Middelburg, Mpumalanga.** Report prepared by: Wetland Consulting Services (Pty) Ltd. Report dated: 18 April 2018. Report number: 1304-2018.

- DEA (Department of Environmental Affairs). 2017. **Guideline on Need and Desirability.**

- Department of Environmental Affairs and Tourism. 2010 and 2012. **Highveld Priority Area Ambient Monitoring Stations Monthly Report.**

- Fourie, H. 2018. **The Development of a Residential Area on a Portion of Portion 93 of the Farm Rondebosch 403 JS, Middelburg. Palaeontological Impact Assessment: Phase 1 Field Study.** Report dated: 14 January 2019.

- Hoare, D. 2012. **Specialist Study on the Vegetation and Flora of RE 93 Farm Rondebosch, Middelburg, Mpumalanga.** Report prepared by: David Hoare Consulting cc. Report dated: 4 June 2012.

- **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.

- Rautenbach, R.F. 2011. **Avifaunal Habitat Assessment of Middelburg Eastern Bypass and Alternative Routes.** Report dated: July 2012. Report prepared by: Galago Environmental Biodiversity Specialists.

- **South African Heritage Resources Information System (SAHRIS).** 2015. [www.sahra.org.za/sahris].

- South African Weather Service. 2016 and 2017. **Highveld Priority Area Air Quality Monitoring Network. Monthly Reports August 2016 - July 2017.**

- Stoltz, M. 2018. **Electrical Services Report Rev B: Rondebosch 93 Township Establishment.** Report prepared by: LTZ Consulting. Report dated: 29 October 2018.

- Urban Dynamics Mpumalanga (Pty) Ltd. 2018. **Motivating Memorandum in Support of an Application for Township Establishment on a Portion of Portion 93 of the Farm Rondebosch 403 JS, Steve Tshwete Local Municipality.** Report dated: November 2018.

- Van Vollenhoven, A.C. 2018. **A Report on a Cultural Heritage Impact Assessment for the Proposed Development of a Residentail Area on a Portion of Portion 93 of the Farm Rondebosch 403 JS, Middelburg, Mpumalanga Province.** Report prepared by: Archaetnos Culture & Cultural Resource Consultants. Report dated: 5 December 2018. Report number: AE01859V.

APPENDIX 1:

APPLICATION FORM

- Cover letter from AdiEnvironmental cc (dated: 3 April 2019; Ref: BA 2018/01) 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

- A. Erasmus *Pr. Sci. Nat.*
- R. Janse van Rensburg
- List of projects completed by A. Erasmus and R. Janse van Rensburg
- A. van Vollenhoven
- H. Fourie

APPENDIX 3:

TOWNPLANNING MEMORANDUM

- Urban Dynamics Mpumalanga (Pty) Ltd. 2018. **Motivating Memorandum in Support of an Application for Township Establishment on a Portion of Portion 93 of the Farm Rondebosch 403 JS, Steve Tshwete Local Municipality.** Report prepared by Urban Dynamics Mpumalanga (Pty) Ltd. Report dated: November 2018.

APPENDIX 4:

SERVICES REPORT

- Bouwer, J.L. 2018a. **Civil Engineering Services Report: Portion 93 of the Farm Rondebosch 403 JS, Middelburg, Mpumalanga Province.** Report prepared by: BTW & Associates (Pty) Ltd. Report dated: 23 October 2018. Report number: 20336-REP-004.
- Bouwer, J.L. 2018b. **Stormwater Management Plan: Portion 93 of the Farm Rondebosch 403 JS, Middelburg, Mpumalanga Province.** Report prepared by: BTW & Associates (Pty) Ltd. Report dated: 16 August 2018. Report number: 20336-REP-003.
- Stoltz, M. 2018. **Electrical Services Report Rev B: Rondebosch 93 Township Establishment.** Report prepared by: LTZ Consulting. Report dated: 29 October 2018.

APPENDIX 5:

GEOTECHNICAL REPORT

- Cilliers, B.D. & P.G. Hansmeyer. 2018. **Geotechnical Investigation: Portion 93 Rondebosch 403 JS, Middelburg, Mpumalanga (Volume I and Volume II).** Report prepared by: Engeolab (Pty) Ltd. Report dated: November 2018. Report number: LL3209.

APPENDIX 6:

VEGETATION STUDY

- Hoare, D. 2012. **Specialist Study on the Vegetation and Flora of RE 93 Farm Rondebosch, Middelburg, Mpumalanga.** Report prepared by: David Hoare Consulting cc. Report dated: 4 June 2012.

APPENDIX 7:

WETLAND STUDY

- Davis, S. 2012. **Wetland Delineation and Assessment for the Proposed Development of Rondebosch 93.** Report prepared by: Wetland Consulting Services (Pty) Ltd. Report dated: May 2012. Report number: 870/2012.
- Davis, S. 2018. **Technical Memorandum: Application of the Wetland Buffer Determination Tool to Wetlands on a Portion of Portion 93 of the Farm Rondebosch 403 JS, Middelburg, Mpumalanga.** Report prepared by: Wetland Consulting Services (Pty) Ltd. Report dated: 18 April 2018. Report number: 1304-2018.

APPENDIX 8:

HERITAGE REPORT

- Van Vollenhoven, A.C. 2018. **A Report on a Cultural Heritage Impact Assessment for the Proposed Development of a Residential Area on a Portion of Portion 93 of the Farm Rondebosch 403 JS, Middelburg, Mpumalanga Province.** Report prepared by: Archaetnos Culture & Cultural Resource Consultants. Report dated: 5 December 2018. Report number: AE01859V.

APPENDIX 9:

PALAEONTOLOGICAL REPORT

- Fourie, H. 2018. **The Development of a Residential Area on a Portion of Portion 93 of the Farm Rondebosch 403 JS, Middelburg. Palaeontological Impact Assessment: Phase 1 Field Study.** Report dated: 14 January 2019.

APPENDIX 10:

ADVERTISING OF THE PROJECT

- A copy of the advertisement published in the Middelburg Observer, 9 November 2018.
- A copy of the on-site notice.
- Printout of company website page www.adienvironmental.co.za – Document Downloads.

APPENDIX 11:

BACKGROUND INFORMATION DOCUMENT

APPENDIX 12:

CORRESPONDENCE WITH AUTHORITIES

- E-mail from AdiEnvironmental cc (dated: 12 November 2018) to:

AUTHORITY/ STAKEHOLDER	CONTACT PERSON
Department of Agriculture, Forestry and Fisheries	Mashabela, F R Mabule
Department of Agriculture, Rural Development, Land and Environmental Affairs - Directorate: Land Use and Soil Management – Ermelo	Venter, J
Department of Co-Operative Governance and Traditional Affairs	Loock, M Mamba, X
Department of Mineral Resources	Mathavhela, S
Department of Roads and Transport	Mojapelo, J
Department of Rural Development and Land Reform (Commission on Restitution of Land Rights)	Ndaba, F
Department of Water and Sanitation	Maliaga, NS

- E-mail from AdiEnvironmental cc (dated: 12 November 2018) to:

Distriks Landbou Unie Middelburg	Schmahl, JPJ
Eskom Distribution	Ludere, T
Eskom Transmission	Motsisi, L
Middelburg Chamber of Business and Commerce	Hanekom, M
Mpumalanga Heritage Resources Agency	Moduka, B
Mpumalanga Tourism and Parks Agency	Narasoo, K
Nkangala District Municipality	Links, S; Thwala, A
Steve Tshwete Local Municipality	Mahamba, M
Telkom	Smit, J
Transnet	Mavulwana, T
Transvaalse Landbou Unie	Du Plessis, D

- Webpage printout (dated: 12 November 2018): South African Heritage Resources Information System (SAHRIS).
- E-mail from AdiEnvironmental cc (dated: 22 February 2019) to Councillor Mnisi.
- E-mail from the Department of Agriculture, Rural Development, Land and Environmental Affairs (J. Venter) (dated: 12 November 2018) to AdiEnvironmental cc.
- Letter from the Department of Agriculture, Forestry and Fisheries (dated: 14 November 2018; Ref: Lusm 10/8/1/18/Nls/MP) to AdiEnvironmental cc.
- Letter from the Department of Co-operative Governance and Traditional Affairs (dated: 16 January 2019; Ref: 12/1/4/1/2/2/3/3) to AdiEnvironmental cc.
- Letter from the Department of Public Works, Roads and Transport (dated: 14 November 2018; Ref: F09/11/1/1/3-403JS) to AdiEnvironmental cc.
- Letter from the Commission on Restitution of Land Rights (dated: 13 November 2018) to AdiEnvironmental cc.
- Letter from the South African Heritage Resources Agency (SAHRA) (dated: 22 November 2018; Ref: 13192) to AdiEnvironmental cc.
- Webpage printout (dated: 28 January 2019): South African Heritage Resources Information System (SAHRIS).

APPENDIX 13:

CORRESPONDENCE WITH INTERESTED AND AFFECTED PARTIES

- E-mail from AdiEnvironmental cc (dated: 13 November 2018) to:

Property	Landowner/Contact person
6/403	Dave Martin
Portion of 93/403	Middelburg Muslim School
Portions of 93, 96, 97, 99, 100, 101 and 126/403	Y Mansoor
107 and 108/403	Solly Latief
145/403	Bhamjee Family
Erf 326	Ismail Osman
Erf 85	Ali Mohamed Osman
Erf 219	Riaz Pilodia
Nearby business	Battlefields Paintball

- E-mail from AdiEnvironmental cc (dated: 21 November 2018) to:

Property	Landowner/Contact person
122/403	J. Gani
125/403	Mohamed Rafiek Pilodia
127/403	Sajeda Gardee
128/403	Ebrahim Mahomed Seedat
129/403	Omar Irshad
137/403	Abdool Guffar Ayob Gani Suliman
139/403	Mahomed AS Cassim
140/403	Ahmed Mahomed Kola

- E-mail from AdiEnvironmental cc (dated: 23 November 2018) to:

Property	Landowner/Contact person
138/403	Saley Ismail
143/403	M. Kadwa
Erf 84	M. Ravat
Erf 221	Muhammed Carrim

- E-mail from AdiEnvironmental cc (dated: 26 November 2018) to:

Property	Landowner/Contact person
141/403	Mohammed Karrim
Erf 220	Kapesh

- E-mail from AdiEnvironmental cc (dated: 27 November 2018) to Nadiya Carrim.
- E-mail from AdiEnvironmental cc (dated: 29 November 2018) to M. Ravat (Burglar Awake Alarms).
- Completed comment sheet (dated: 18 November 2018) from Dave Martin.
- E-mail from Dave Martin (dated: 18 November 2018) to AdiEnvironmental cc.
- E-mail from AdiEnvironmental cc (dated: 19 November 2018) to Dave Martin.
- E-mail from Irshad Omar (dated: 22 November 2018) to AdiEnvironmental cc.
- Completed comment sheet (dated: 30 November 2018) from Hoosen Bhayla.
- Completed comment sheet (dated: 30 November 2018) from Nadiya Carrim.

APPENDIX 14:

WATER USE LICENCE

- Letter from the Department of Water and Sanitation (dated: 14 September 2018) regarding the 20m wetland buffer.
- Licence in terms of Chapter 4 of the National Water Act, 1998 (Act no. 36 of 1998) (dated: 28 March 2019; Ref: 06/B12D/ACI/8821).