

**Environmental Basic Assessment of the  
Proposed Waterkloof Mosque and Residential Development,  
Rustenburg  
REF No: NWP/EIA/112/2021**



**Draft Environmental Basic Assessment Report and  
Environmental Management Plan**

**14 April 2022**

### Document Journey: Basic Assessment Report

Title	Date	Author/s
<b>Draft Environmental Basic Assessment of the Proposed Waterkloof Mosque and Residential Development, Rustenburg</b>	March 2022	Dr Rashieda Davids
	April 2022	Reviewer: Ms Sanusha Govender

### Distribution List

Date	Entity / Department / Organisation
14 April 2022	North West Department of Economic Development Environment and Tourism
14 April 2022	Department of Agriculture, Forestry and Fisheries
14 April 2022	Department of Agriculture, Land Reform and Rural Development
14 April 2022	Department of Water Affairs
14 April 2022	Department of Mineral Resources and Energy
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14 April 2022	Department of Water and Sanitation – North West
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14 April 2022	North West Department of Public Works and Roads
14 April 2022	North West Province Department of Community Safety & Transport Management
14 April 2022	South African National Roads Agency
14 April 2022	South African Heritage Resource Agency
14 April 2022	Listed Interested and Affected Parties

## EXECUTIVE SUMMARY

The Waterfall Islamic Trust intends to develop a Mosque, classrooms and residential infrastructure on the farm Remaining Extent of Portion 209 of the farm Waterkloof Portion 305, in Rustenburg, Gauteng. EnviroHeart Consulting Pty Ltd was appointed to undertake an Environmental Basic Assessment (BA) process in application of Environmental Authorisation (EA). The Competent Authority responsible for the Decision is the Northwest Department of Economic Development, Conservation and Tourism.

The proposed project triggers listed activities in term of the National Environmental Management Act (NEMA, Act No. 107 of 1998), and the associated 2014 EIA Regulations GN R982 (as amended) and Listing Notices: GN No. 327 (Listing Notice 1) and GN No. 324 (Listing Notice 3), which require environmental authorisation prior to commencing.

This report constitutes the Draft Basic Assessment Report (DBAR). This DBAR abides to the NEMA Regulations and as such includes details on the proposed project and alternatives, specialist studies undertaken, all identified potential positive and negative impacts and the outcome of the environmental impact assessment undertaken. This DBAR described and assessed potential biophysical, social, economic, heritage and agricultural impacts, and identified mitigation measures for adverse impacts, or enhancement measures for positive impacts.

The following specialist study was undertaken:

- Terrestrial Biodiversity and Soil Survey.

Other studies/processes that were considered include:

- |                                      |                                 |
|--------------------------------------|---------------------------------|
| – Town Planning Rezoning Application | JLJ Town Planning               |
| – Geotechnical issues                | J. Arkert Engineering Geologist |
| – Engineering Services               | EPS Consulting Engineers        |

The alternatives that were assessed for the proposed developments are:

### **Alternative 1: Sustainable drainage through incorporation of green spaces – Preferred Alternative**

To facilitate sustainable stormwater management, Alternative 1 will include natural features such as grassed areas, within each residential erf and for the Mosque; fishponds and landscaped gardens will be included.

### **Alternative 2: Hard surfacing of open areas with paving**

Alternative 2 will see majority of the open areas paved with hard surfacing. This alternative requires less maintenance in the long term.

### **Alternative 3: No-Go Alternative**

The No-go alternative implies that the proposed Mosque and Residential Development will not be realised.

Each alternative was assessed for the three phases of development, Construction, Operation and Closure.

The tables below provide a summary of the potential impacts and their ratings.

**Impact Assessment Tables Key:**

Significance Score	Significance	Description
≥ 17	<b>High</b>	This impact will affect ecological, socio-economic and health functions and will result in a significant benefit or risk.
≥10 <17	<b>Moderate</b>	The impact is of medium significance may have an effect on ecological, socio-economic and health functions, and could result in a moderate benefit or risk.
< 10	<b>Low</b>	The impact of low significance is not likely to affect the ecological, socio-economic and health functions in a noticeable way and is unlikely to result in significant benefit or risk.

**Key**

≥ 17	High negative impact (-)
≥10 <17	Moderate negative impact (-)
< 10	Low negative impact (-)
< 10	Low positive impact (+)
≥10 <17	Moderate positive impact (+)
≥ 17	High positive impact (+)

## IMPACT STATEMENT

The EAP is of the opinion that there are no fatal flaws to the proposed project, and that the proposed developments should be approved, with the implementation of the Environmental Management Programme.

The proposed residential development is in alignment with the planning framework set out in the Rustenburg Integrated Development Plan (IDP) and the Strategic Development Framework, in terms of providing housing and community upliftment in the demarcated area. The proposed project will address a key challenge as indicated in the IDP, namely, “high demand for formal and affordable housing.” The proposed development will promote and stimulate socio-economic development of the area, providing jobs and economic development. The proposed use of the property for the provision of affordable two and three bedroom units, contributes to the intention of local government for the future residential expansion of the area. Furthermore, the proposed development will provide a place of worship, and contribute to enhanced social upliftment for the local community.

The proposed development will be located within the urban edge, within land allocated for single residential use. The development will not impact any sensitive ecological features of significance. Furthermore, Alternative 1 (preferred alternative) of the proposed development will incorporate natural features and landscaping, that will attract biodiversity to the site.

The EAP is satisfied that suitable measures have been identified for each potential impact, to either mitigate negative impacts or enhance positive impacts.

**Potential Impact Summary Table: Waterkloof Mosque and Residential Development**

	A1 & A2 (Same for both)	A1	A2	No-go
<b>Operational Phase</b>				
Potential Loss of Topsoil and Dust	High (-)	Moderate (-)		
Impacts on fauna and avifauna	Moderate (-)	Low (-)		
Pollution of groundwater resources due to hazardous chemical spills from heavy machinery	Moderate (-)	Low (-)		
Invasive alien invasive plant species	High (-)	Low (-)		
Heritage Impacts	Low (-)	Low (-)		
Traffic impacts	Moderate (-)	Low (-)		
Impact on livelihoods	Moderate (+)	Moderate (+)		
Potential noise disturbance due to construction	Low (-)	Low (-)		
Potential agricultural impact	High (-)	Moderate (-)		
<b>Construction and Operational Phases</b>				
Progressing economic development	Moderate (+)	High (+)		
<b>Operational Phase</b>				
Impacts from groundwater seepage	Moderate (-)	Low (-)		
Traffic impacts	Moderate (-)	Low (-)		
Impact on livelihoods	High (+)	High (+)		
Potential noise disturbances	Moderate (+)	Low (-)		
Impacts on fauna and avifauna		Low (-)	Low (-)	Moderate (-)
Potential impacts of soils		Moderate (-)	Low (-)	Moderate (-)
<b>Impacts Applicable to No-Go Alternative</b>				
Loss of opportunity for economic investment to Rustenburg Municipality				High (-)
Loss of opportunity for job creation				High (-)
Loss of opportunity for affordable housing				Moderate (-)
Loss of opportunity for place of worship				Moderate (-)

## **PUBLIC PARTICIPATION DETAILS**

As part of the Public Participation Process, this Draft BAR, is being made available for public comment for 30 days, from **14 April – 18 May 2022**. Please submit your comments on this report via email to the **Environmental Assessment Practitioner: Dr Rashieda Davids, [waterkloof@enviroheart.co.za](mailto:waterkloof@enviroheart.co.za), Cell: 082 305 1352**.

Hard copies of the Draft BAR is available for review during the comment period at the following venue:

- Rustenburg Public Library–Heystek Street, Rustenburg North West - 0145903294
- Electronic copies of the Draft BAR will also be available from EnviroHeart upon request.

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## 1 Introduction

The Waterkloof Islamic Trust intends to develop a Mosque, classrooms and residential infrastructure on the farm Waterkloof Portion 305, in Rustenburg, Gauteng. EnviroHeart Consulting Pty Ltd was appointed to undertake an Environmental Basic Assessment (BA) process in application of Environmental Authorisation (EA). The proposed project triggers listed activities in term of the National Environmental Management Act (NEMA, Act No. 107 of 1998), and the associated 2014 EIA Regulations GN R982 (as amended) and Listing Notices: GN No. 327 (Listing Notice 1) and GN No. 324 (Listing Notice 3), which require environmental authorisation prior to commencing. The Competent Authority responsible for the Decision is the Northwest Department of Economic Development, Conservation and Tourism (NDEDCT).

This Draft Basic Assessment Report (DEIR) provides details of the development proposal, the biophysical and socio-economic environment, and investigates and assesses the potential impacts associated with the proposed development. This Report was preceded by the Application Form for Environmental Authorisation, which was accepted by the NDEDCT.

### 1.1.1 Property Details and Surrounding Land use

The proposed development will take place on Remainder of Portion 209 (Portion of Portion 98) of the farm Waterkloof 305 JQ, situated at 27°43'3.8"S 27°16'45'03"E. The site lies south of Waterkloof Mall and can be accessed from the R24 Provincial Road. The total footprint of the site is 9,5873 ha. The remaining portion of the farm has been transferred to the South African National Roads Agency (5972 m<sup>2</sup> extent). See **Appendix A, Figure 1** for the proposed development site and **Appendix A, Figure 2** for the locality map.

### 1.2 Details of the Applicant

Project applicant:	Waterkloof Islamic Trust		
Contact person:	Haroon Mayet		
Physical address:	38 Greenway Road, Greenside, Johannesburg		
Postal address:	P.O. Box 5038, Zinniaville, Rustenburg		
Postal code:	0299	Cell:	0749094852
Telephone:		Fax:	
E-mail:	handyprojhb@gmail.com		

### 1.3 Competent Authority

Details of the Applicant and Competent Authority are provided in Table 1 and Table 2, and details of the EAP and specialist team are provided Table 3 and Table 4.

**Table 1: Details of the Applicant**

Applicant	Waterfall Islamic Trust (Reg No.: IT345/2021(D)
Director	Mr Haroon Mayet
Address	P O Box 5038, Zinniaville, Rustenburg, 0299
Email	Handyprojhb@gmail.com
Tel:	+27 74 909 4852

**Table 2: Details of the Competent Authority**

Competent Authority	Department of Economic Development, Environment, Conservation and Tourism
Case Officers	Mr Thato Leoto
Address	80 Kerkstraat, Rustenburg, 0299
Email	thatoleoto@nwpg.gov.za
Tel	014 597 3597

#### 1.4 Details of the EAP Who Prepared the Report

Details of the EAP project team who p undertook this BA process are provide din Table 3. EnviroHeart Consulting has no vested interest in the Proposed project other than fair payment for consulting services rendered as part of the BA process, and declares its independence as required by the EIA Regulations, 2014 (as amended).

**Table 3: Environmental Assessment Practitioner (EAP) Qualifications**

<b>EAP Organisation</b>	<b>EnviroHeart Consulting</b>  EnviroHeart Consulting was appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the BA Process. Rashieda Davids is acting as Project Manager and EAP and Sanusha Reddy as the Reviewer and EAP.
<b>Name</b>	<b>Qualifications</b>
<b>Dr Rashieda Davids Project Reviewer and EAP</b>	<ul style="list-style-type: none"> <li>• Doctor of Philosophy (PhD) Environmental Science, 2021, University of KwaZulu-Natal</li> <li>• MSc Geography, 2015, University of Pretoria</li> <li>• BSc (Hons) Environmental and Geographical Science, 2005, University of Cape Town</li> <li>• BSc Environmental and Geographical Science and Ocean &amp; Atmosphere Science, 2004, University of Cape Town</li> </ul>
Rashieda is a Registered Environmental Assessment Practitioner (EAP) (EAPASA 2016:17) and a Certified Professional Natural Scientist (Pr.Sci.Nat. 400162/12, Environmental Science). She holds 16 years of relevant experience, shared between the private, public and research environmental sectors.	
<b>Ms Sanusha Reddy Project Manager &amp; EAP</b>	BSc: Environment and Development (2005), University of Durban Westville
Sanusha is a seasoned Sustainability and Environmental Consultant, with 16 years of experience. She is an established Senior Environmental Assessment Practitioner, undertaking Environmental assessments, Bankable Feasibility Assessments, Audits, Carbon Tax and Environmental Management Plans in the agricultural, civil construction and urban nodal developments. Sanusha is a Member of the International Association for Impact Assessment of South Africa (IAIASa).	

### 1.4.1 Details of the Specialist Studies

Specialist studies undertaken as part of the BA are listed below.

**Table 4: Specialists Studies Undertaken in the EIA Phase and Qualifications of Specialists**

Specialist Study	Lead Specialist
<b>A Terrestrial And Soil Screening Assessment For The Proposed Waterkloof Development</b>	<p><b>The Biodiversity Company</b></p> <p><b>Michael Schrenk</b>, Project Scientist: Michael completed his professional Civil and Environmental engineering degree at the University of the Witwatersrand in 2016. He has been working in the fields of project management, biodiversity and habitat assessment and ecological restoration for over 3 years.</p> <p><b>Ivan Baker</b>, Project Scientist: Ivan Baker is Cand. Sci Nat registered (119315) in environmental science and geological science. Ivan is an experienced wetland and ecosystem service specialist, a hydropedologist and pedologist. He completed his MSc in environmental science and hydropedology at the North-West University of Potchefstroom.</p> <p><b>Mr Andrew Husted</b>, Project Reviewer. Andrew is Pr Sci Nat registered (400213/11) in the following fields of practice: Ecological Science, Environmental Science and Aquatic Science. Andrew is an Aquatic, Wetland and Biodiversity Specialist with more than 12 years' experience in the environmental consulting field. Andrew has completed numerous wetland training courses, and is an accredited wetland practitioner, recognised by the DWS, and also the Mondi Wetlands programme as a competent wetland consultant.</p>

## 2 Development Proposal

The proposed development consist of land uses as per Table 5.

**Table 5: Proposed land uses**

Land Use	Area (m <sup>2</sup> )	FAR	Units
Residential 1	45 452	-	68
Residential 2 (40 Units / ha)	17 172	-	69
Special for mosque and student boarding	9 495	-	300 seats
Special for access and roads	18 766	-	-

## **2.1 Mosque, classrooms and boarding facilities**

The development will include a place of worship (Mosque), with classrooms and a boarding facility on the west end of the property, Erven 1 and 2. (Appendix A, Figure 3). The Mosque footprint will be of  $\pm 1370 \text{ m}^2$  extent, and will be a two-storey building, including classrooms. The Mosque will include ancillary facilities (Library, Education and Administration). The Mosque will apply its Constitutional right to the call to prayer, which will be set at a low audible level to avoid disturbance of adjacent properties.

The boarding facilities will include accommodation/rooms for a few students each, and will have a communal dining room and kitchen. Students will be accommodated from within Rustenburg and surrounding towns that will sleep over for a maximum of 1 to 3 days at a time. The student boarding component will have a footprint of  $\pm 382 \text{ m}^2$ .

## **2.2 Residential Units**

The proposed residential component on Erven 2 and 5, on the western portion of the property, will include the affordable 2 and three bedroom units, namely:

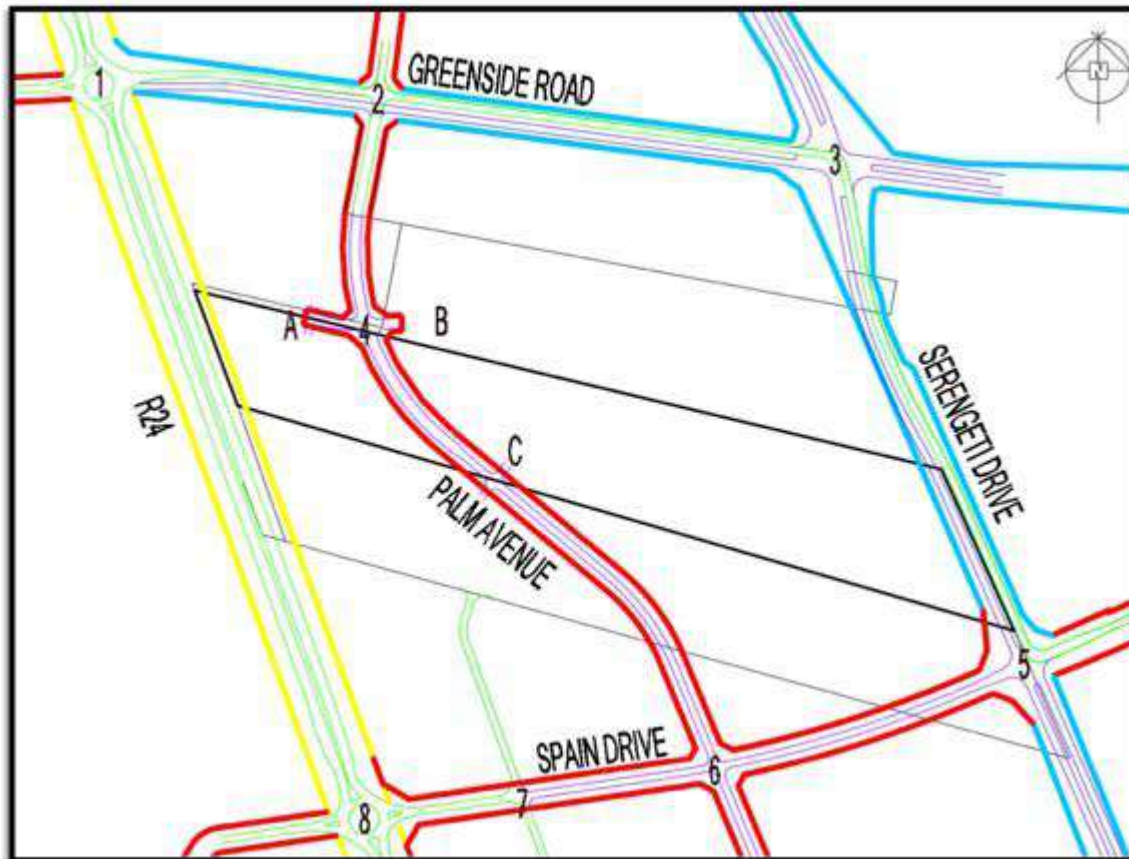
- Five (5) ground and first floor three (3) bedroom simplexes of  $118 \text{ m}^2$  floor areas each
- Five 5 ground and first floor two (2) bedroom simplexes  $91 \text{ m}^2$  floor areas each, and
- Fifteen (15) three-bedroom duplexes of  $\pm 145 \text{ m}^2$  floor area. There will also be one  $\pm 60 \text{ m}^2$  staff quarters.

The east end of the property will include the development of  $\pm 73$  residential units (Appendix A, Figure 3). Erven 6 to 73 will be developed as single Residential erven, with a minimum size of  $650 \text{ m}^2$  each.

## **2.3 Road Construction**

New internal roads will be constructed, to provide the mosque, and residential components with access. The roads will be situated in 13 meter wide road reserves (Appendix A, Figure 4). These internal roads will be classified as class 5 local streets and will be to provide access to individual erven.

Part of the site has been transferred to the South African National Roads Agency, for the construction of a planned new road, of 25 meters in diameter. The construction of this road was not assessed as part of this Basic Assessment as it is already approved as part of the Roads Master Plan (2019), which confirmed the proposed alignment Palm Avenue, an approved Class 4 Collector Road, dividing the project site into two (Figure 1).



**Figure 1: Primary Roads in the Study Area, showing the planned SANRAIL Road Palm Avenue (extracted from the TIA)**

## 2.4 Current and Proposed Zoning

The property is zoned as 'Agricultural' in terms of the Rustenburg Local Municipality Land Use Scheme, 2021. A Rezoning Application is being made concurrently (Consultants: JLJ Town Planning), for the proposed developments. The proposed township will consist of seventy five (75) erven with the following zonings:

Erf 1 to be zoned "Special for Public Worship, ancillary facilities and Boarding house".

Erf 2 to be zoned "Residential 2"

Erf 3 to be zoned "Special for access and road purposes"

Erf 4 to be zoned "Special for road purposes"

Erf 5 to be zoned "Residential 2"

Erven 6-73 to be zoned "Residential 1 with a density of One dwelling per 650"

Erf 74 to be zoned "Special for road purposes."

Erf 75 to be zoned "Special for road purposes."

## 2.5 Services [Electricity,Water,Waste]

Details of the services required for the proposed development, as described below, were obtained from the Technical Report Provision of Civil Engineering Services (EPS Consulting Engineers).

The water and sewerage reticulation design will be accordance with the "Guidelines for Human Settlement Planning and Design", (Red Book), compiled under the patronage of the Department of Housing by the CSIR, 2000.

Storm water and road systems will be designed according to the “Guidelines for Human Settlement Planning and Design”, (Red Book), compiled under the patronage of the Department of Housing by the CSIR, 2000. The specifications applicable for the construction are SANS 1200.

### 2.5.1 Bulk Water supply

The proposed developments will connect to existing municipal water service network, namely a 315mm uPVC bulk water pipeline, owned and operated by the Rustenburg Local Municipality. This pipeline is located parallel to, and on the western side of the R24. The internal water network for the development will connect directly to this pipeline. See Appendix A, Figure 5. for the proposed water services plan.

The water demand was calculated as per Table 6 below.

**Table 6: Water demand for the proposed development**

Land Use	Units	Annual Average Daily Demand (AADD)	Water Demand (kℓ/d)
Residential 1	68	1 000ℓ/day/unit	68.0
Residential 2 (40 Units / ha)	69	800ℓ/day/unit	55.2
Mosque	1	2 000ℓ/day	2.0
<b>Total</b>			<b>125.2</b>

### 2.5.2 Electricity

The operation of the mosque and residential development will require electricity and will connect to the existing medium voltage networks in the surrounding area. However, the existing network will need to be upgraded, and extended to Hills Substation. The Proponent will need to contribute towards electrical engineering for external and link services to the proposed development.

These bulk services contributions will be utilized to connect and upgrade the existing external network on behalf of the Rustenburg Local Municipality.

The site is located approximately 1500m north-west of the existing Waterkloof Hill 33/11kv substation, from where electricity is meant to be supplied to the proposed development.

A street lighting system will be incorporate which will be designed and installed to be in accordance with the SANS 048. The operation and maintenance street lighting for public roads are handed over to the local authority.

### 2.5.3 Wastewater and sewage

The proposed development will connect to existing bulk sewerage infrastructure situated approximately 1.5 km east of the township, within the Waterkloof Hills X 5 development. The internal reticulation of the site will connect to this point via gravity sewer. Given that the site is situated at higher elevation that the existing bulk line, no pump stations will be required, and the internal network’s runoff will be able to gravitate to the existing network via a new bulk line as described above.



The estimated sewer flow for the proposed development will be at 80% of the average daily water demand (Table 6). Provision is made for full-flush sanitation. The internal sewerage system will be designed to accommodate the average annual daily flow (AADF) and to service every unit and development structure within the development.

The transportation of sewerage will be via a gravity line to the south-eastern corner of the development, from where it will gravitate to the connection point as mentioned above.

The sewer pipeline will be 160mm in diameter, at a minimum depth of 1m.

**Table 7: Estimated sewerage flow**

Land Use	Units	Annual Average Daily Flow (AADF)	Sewerage Outflow (kℓ/d)
Residential 1	68	800ℓ/day/unit	54.4
Residential 2 (40 Units / ha)	69	640ℓ/day/unit	44.2
Mosque	0.95 Ha	1600ℓ/day	1.6
<b>Total</b>			<b>100.2</b>

#### **2.5.4 Solid waste**

The proposed development is expected to generate solid waste of approximately 1850kg per week. Waste will be collected on a weekly basis by The Rustenburg Local Municipality. Alternatively, the “Body Corporate” of the development can make private arrangements to transport the waste to a registered landfill site as required.

A screened of area should be provided to store the waste on site until removal, the area should not negatively impact on the public or adjacent properties.

#### **2.5.5 Stormwater Management**

An internal stormwater network will be constructed to capture and redirect runoff to the existing storm water system on the south-eastern boundary of the development. The existing network consist of a 750 mm diameter concrete pipe laid at a minimum gradient of 1:66.

The terrain project site possessed a natural drainage pattern towards the east, via sheet flow. The design of the stormwater system will be in accordance with the “Guidelines for Human Settlement Planning and Design” compiled under the patronage of the Department of Housing by the CSIR, DWAF and design specifications of the Local Authority.

Run-off and peak flow rates will be calculated according to selected return periods and outflow points. For the major system design, the 1:50-year recurrence interval will be used and the for storm water design of the subsurface system, 1:5-year recurrence interval will be used. Water will be discharged into natural water courses via a formal drainage system of pipes or canals, or similar systems connecting to natural water courses near the proposed development.

In order to minimise the impact of the development on the stormwater characteristics of the adjacent properties, the drainage system will be designed by utilizing:

- Surface drainage where possible.
- Sub-surface (underground) pipe systems to convey storm water from higher laying areas.
- Erosion protection, stabilisation of erodible materials, and sediment control.
- Retention where applicable.

Erosion protection will either be in the form of open drains and shallow side drains, or they could consist of standard municipal type kerbs or mountable kerbs. Energy dissipaters will be provided at the lower end of each watercourse and at sites where the drainage is diverted away from roads.

### **3 Need and Desirability of the Proposed Developments**

The need and desirability of the proposed project was identified based on the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) Guideline on Need and Desirability (August 2011) and the Integrated Environmental Management Guideline Series 9: Guideline on Need and Desirability, which was promulgated in terms of the EIA Regulations, 2010 in Government Notice 891 of 2014, and updated by the Department of Environmental Affairs in 2017.

The consideration of need and desirability in EIA decision-making involves the consideration of the strategic context of the project with cognisance of societal needs and broader public interest. Furthermore, the Guideline states that development must not exceed ecological limits, and that short-term and long-term public interested must be considered in light of the promotion of justifiable social and economic development, whereby environmental, social and economic sustainability are simultaneously achieved.

In line with the questions posed in the latest Guideline Document on the assessment of Need and Desirability (DEA, 2017) the following is noted in terms of the need and desirability of the proposed Waterkloof Islamic Trust Mosque and Residential Development.

#### **3.1 Socio-economic Considerations**

The proposed residential development is in alignment with the planning framework set out in the Rustenburg Integrated Development Plan (IDP) in terms of providing housing and community upliftment in the demarcated area. The proposed project will address a key challenge as indicated in the IDP, namely, “high demand for formal and affordable housing.”

The Rustenburg Spatial Development Framework (SDF), 2022, outlines desired patterns of land use, growth and special development areas. In terms of the SDF, the proposed development site is situated within the urban edge, within the “single residential” land use category. The proposed development therefore aligns with the vision of the Rustenburg SDF, as it will contribute to the establishment of integrated, economically viable and sustainable communities, through the promotion of infill development, mitigating urban urban sprawl. The provision of affordable 2 and 3 bedroom units will satisfy the demands that exist for residential units in this area, which are presently not available. Demand is evident from the adjacent Roan Ridge Sectional title development, which is approximately 100 meters from the project site, with 174 housing units. All units are sold out and rented, and there is additional demand for more units (Town Planning Report, JLJ Town Planning, 2022).

The proposed development will promote and stimulate socio-economic development of the area, providing jobs and economic development. The proposed use of the property for the provision of affordable two and

three bedroom units, contributes to the intention of local government for the future residential expansion of the area.

Furthermore, the proposed development will provide a place of worship, and contribute to enhanced social upliftment for the local community. The Mosque will include an educational component, including classrooms and boarding facilities for students who come from neighbouring areas to seek knowledge. The development of this place of worship and education facility is aligned with the Constitution as it allows the practice of religion. Section 15 (1) of The Bill of Rights, states, *“Everyone has the right to freedom of conscience, religion, thought, belief and opinion.”*

### 3.2 Ecological Integrity Considerations

The Guideline poses numerous questions related to the impact of the proposed development on biological diversity and natural resources, and associated ecosystem services. The proposed development will be located within the urban edge, within land allocated for single residential use. The development will not impact any sensitive ecological features of significance. Furthermore, Alternative 1 (preferred alternative) of the proposed development will incorporate natural features and landscaping, that will attract biodiversity to the site.

## 4 Legislative Framework

This chapter details legislation and policy relevant to the Basic Environment Impact Assessment Reporting (BAR) process. A summary of the key environmental legislation and relevant policies and/or guidelines is provided below.

### 4.1 National Framework

<b>The Constitution of the Republic of South Africa, 1996 (Act 108 of 1996) (the Constitution)</b>
The Constitution is the legal reference source for environmental law in South Africa and therefore, all environmental aspects should be interpreted within the context of the Constitution. The Applicant is undertaking this EIA process to ensure that the proposed development does not cause undue harm to environment and affect the rights enshrined in the Constitution. As such, the EIA process will identify prevention and mitigation measures for potential impacts on the environment.
<b>National Environmental Management Act, 1998 (Act No 107 of 1998) and EIA Regulations (December 2014) (NEMA)</b>
NEMA is South Africa’s overarching framework for environmental legislation. NEMA establishes principles for decision-making on matters affecting the environment. The principles under NEMA, aim to implement the environmental policy of South Africa and serve as a general framework for environmental planning. Organs of state must exercise functions under NEMA and all other law to protect and manage of the environment. NEMA principles include internationally recognised environmental law norms, and some principles specific to South Africa, including the (1) Preventive principle; (2) Precautionary principle (3) Polluter pays principle and (4) Equitable access for the previously disadvantaged to ensure human well-being.
Chapter 5 of NEMA promotes integrated environmental management. Impacts associated with activities that maybe detrimental to the environment and socio-economic conditions are required to have authorisation. Activities that may significantly affect the environment and socio-economic conditions must

be, investigated, and assessed and granted authorisation prior to their implementation. NEMA defines the organ of state charged with authorizing and or permitting the activity. The Environmental Impact Assessment (EIA) Regulations were promulgated under GNR 982 of 2014, as amended by GNR 326 (2017) and 706 (2018). Listing Notices provide activities that would require an Environmental Authorisation (EA) prior to commencement: GNR 983, as amended by 327 and 706 (Listing Notice 1, Basic Assessment); GN R984, as amended by GN R325 (Listing Notice 2, Scoping and Environmental Impact Reporting) and GN R985, as amended by GN R324 and 706 (Listing Notice 3, Basic Assessment).

In line with Chapter 5 of NEMA, this EIA will ensure that development is socially, environmentally, and economically sustainable and aim to promote environmental management that places people and their needs at the forefront of its concerns, and serve their physical, psychological, developmental, cultural, and social interests equitably.

All EIA Guidelines have been considered in the preparation of this BAR.

#### **National Water Act, 1998 (Act No. 36 of 1998) (NWA)**

The NWA is the fundamental law for managing water resources in South Africa and provides for the equitable and sustainable use, protection and conservation, of water resources. It is also concerned with the allocation of equitable access of water resources within South Africa. Section 19 of the NWA deals with pollution prevention and remedying effects, and in particular the situation where pollution of a water resource occurs or might occur as a result of activities on land. Water pollution prevention measures is the responsibility of the party who owns, controls, occupies or uses the land in question. Where these measures are not taken, the catchment management agency concerned may institute necessary measures to prevent the pollution, or to remedy its effects, and to recover all reasonable costs from the persons responsible for the pollution. The NWA includes requirements for water use licencing, whereby water use includes taking water from a water course, altering the bed, bank, course or characteristics of a water course, storing water, reducing stream flow, diversion of water or discharging of waste or water containing waste into a water resources, disposing of waste in a manner that may have detrimental impacts on a water resource and recreational use of water. Water use licencing is not required for this project.

#### **National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA)**

The NEMBA, as amended, provides for the management and conservation of South Africa's biodiversity within the framework of NEMA, and for the protection and sustainable use of species and ecosystems and biological resources. This Act also provides for the protection of species and ecosystems that require national protection and considers the management of alien and invasive species.

The following regulations were published under NEMBA:

2020 Alien and Invasive Species Regulations (25 September 2020)

2020 Alien and Invasive Species Lists (from 1 March 2021)

Guidelines for Monitoring, Control and Eradication Plans

National Environmental Management: Biodiversity Act, 2004: Threatened and Protected Species Regulations; and

National list of Ecosystems Threatened and in need of Protection under Section 52(1) (a) of the Biodiversity Act (GG 34809, GN R.1002, 9 December 2011).

#### **National Environmental Management Protected Areas Act, 2003 (Act No 57 of 2003) (NEMPAA)**

The NEMPAA provides for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity, for the establishment of a national register of all national, provincial, and local protected areas and for the management of those areas in accordance with national norms and standards.

#### **National Veld and Forest Fire (Act 101 of 1998)**

The Act aims to combat and prevent forest, mountain and veld fires in South Africa and provides a fire emergency rating system. Regulations on offences and penalties are provided in Chapter 6. In terms of Chapter 4, owners must prepare and maintain a firebreak, acquire equipment to fight fires, and have personnel available to combat fires.

#### **National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEMWA)**

The NEMWA regulates the management of waste, and the control and licensing of waste management activities. It also provides for national norms and standards for regulating the management of waste by all spheres of government; to provide for specific waste management measures. The Act aims to provide reasonable measures to prevent pollution and ecological degradation in order to protect health and the environment, and for securing ecologically sustainable development; to provide for specific waste management measures; to provide for the licensing and control of waste management activities; to provide for the remediation of contaminated land; to provide for the national waste information system; to provide for compliance and enforcement; and to provide for matters connected therewith.

Section 26. Prohibition of unauthorised disposal, states that (1) No person may- (a) dispose of waste, or knowingly or negligently cause or permit waste to be disposed of, in or on any land, waterbody or at any facility unless the disposal of that waste is authorised by law; or (b) dispose of waste in a manner that is likely to cause pollution of the environment or harm to health and well-being.

The new list of waste management activities was published under GN R921 of 29 November 2013. Included in the new list are activities listed under Category A, B and C for which a Waste Management Licence (WML) is not required. Note that the proposed project will not constitute a Waste Management Licence, the norms and standards for waste management under the Act will be duly observed.

#### **Conservation of Agricultural Resources Act (Act 43 Of 1983) (CARA)**

The purpose of CARA is to provide for control over the utilization of the natural agricultural resources in South Africa, to promote the conservation of the soil, the water sources, and the vegetation, to combat weeds and invader plants; and for matters connected therewith.

#### **The National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA)**

The National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) is the principal legislation that regulates and protects the management of heritage resources in South Africa. This act is enforced through the National Heritage Regulations GN R 548 (2000). The North West Heritage Resources Agency is the competent authority for the study area.

## **4.2 Provincial Framework: North-West Province**

#### **Rustenburg Local Municipality Integrated Development Plan, 2022- 2027**

The IDP applies across all three spheres of government, namely; local, provincial and national. It is an overarching organisational plan that defines the way forward for development and planning. The directive is to deliver on providing residents with essential services, namely; clean running water, electricity, sanitation and decent housing. The planning framework set out in the Rustenburg IDP is in alignment with the proposed residential development in terms of providing housing and community upliftment in the demarcated area. Therefore this development is aligned to the goals set out in the IDP.

#### **The North-West Biodiversity Management Act, Act 4 of 2016**

The North West Biodiversity Management Act 4 of 2016 has been published and will commence on a date to be determined by the responsible member. It serves only as best practice to date and is not enacted. Note, the Act aims to provide for the management and conservation of the North West Province's biophysical environment and protected areas within the framework of NEMA. It provides for, *inter alia*, the protection of species and ecological-systems that warrant provincial protection and for the sustainable use of indigenous biological resources. This Act has been reviewed in terms of the relevant development, a biodiversity study was commissioned to ensure protection and management of species.

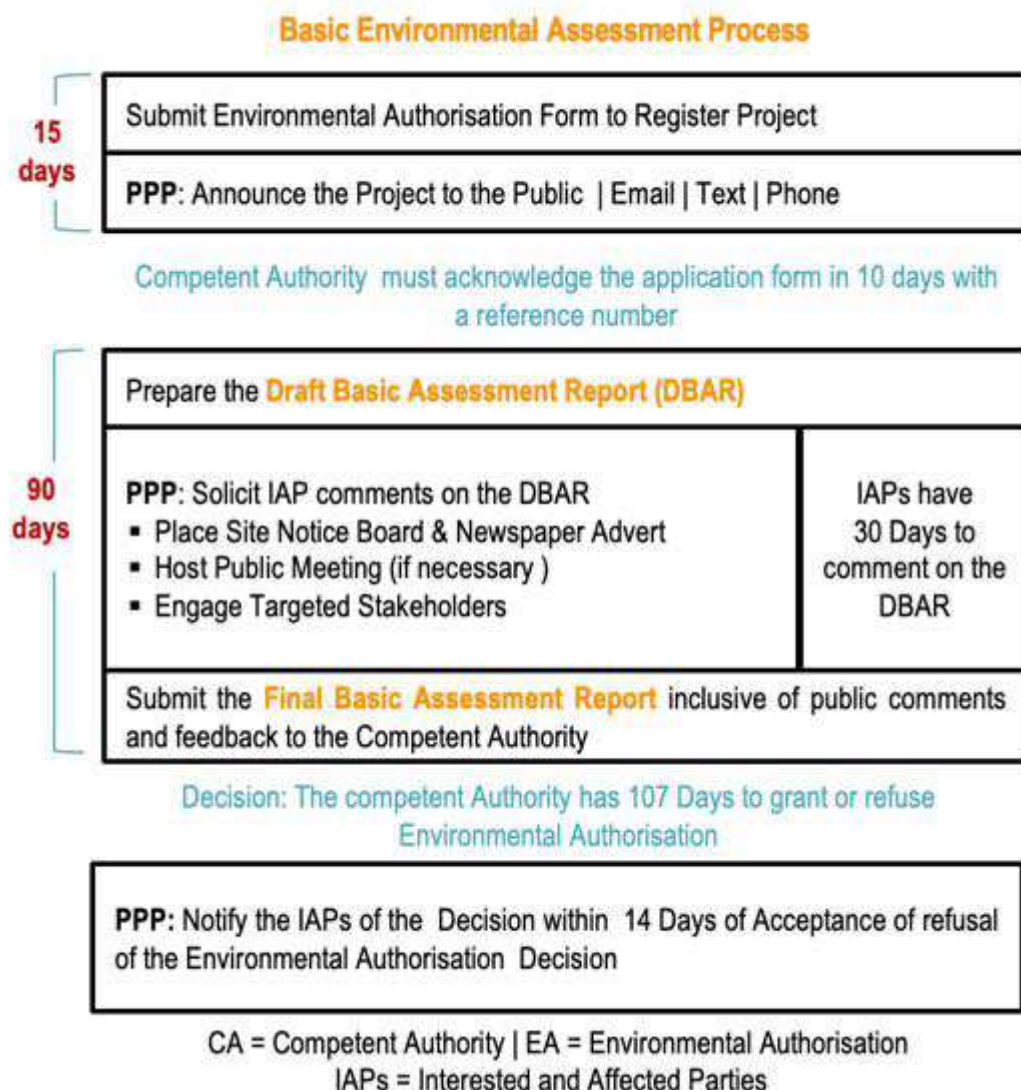
#### **North West Provincial Spatial Development Framework, 2012/2013**

North West Provincial Development Plan (PDP) is predominantly based on the National Development Plan (NDP) in an attempt to align with the objectives and priorities it identifies, as well as with the vision for 2030 of a united South Africa. The PDP highlights the need for the creation of spaces that are liveable, equitable,

sustainable, resilient to address the housing shortages in the area. Middle to low income residential developments as proposed is aligned to the goals of the PDP.

### 4.3 Overview of Basic Environmental Impact Assessment Process

An Application for Environmental Authorisation in terms of the National Environmental Management Act (NEMA) (Act No. 107 of 1998) and the 2014 EIA Regulations (as amended in 2017) was made for the proposed project. See Appendix B for acknowledgement of receipt. In terms of NEMA, the lead decision-making authority for the EIA is the Department of Economic Development, Environment, Conservation and Tourism (DEDECT). The process for seeking authorisation is undertaken in accordance with Government Notice (GN) No. 326 (7 April 2017), promulgated in terms of Chapter 5 of NEMA. Based on the types of activities involved, which include activities listed in GN No. 327 (Listing Notice 1) and GN No. 324 (Listing Notice 3) of 7 April 2017, the requisite environmental assessment for the project is a Basic Assessment process. Figure 2 Provides an overview of the EIA process and associate timeframes for each phase. We are currently in the Draft Basic Assessment Report (BAR) Phase. Table 8 provides the full list of activities and describes the proposed project components that trigger each listed activity.



**Figure 2: Basic Environmental Assessment Process (NEMA 2014, as amended)**

**Table 8: Listed Activities Triggered by the Proposed Development**

Legislation	Applicable Activities / Chapters / Sections	Description of Related project Components
GN R327 of 7 April 2017: Listing Notice 1 Activity 27	<i>The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan. (i) 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; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.</i>	The proposed site contains indigenous vegetation of more than 1 hectare in extent. The proposed Mosque and residential development footprint will approximately 10 hectares in extent.
GN R327 Listing Notice 1 Activity 28	<i>Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development: (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; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.</i>	The proposed site is zoned for Agricultural use and contains a small mango orchard. The proposed Mosque and residential development footprint will be approximately 10 hectares in extent.
Activity 12 of Listing Notice 3	<i>The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</i>  <i>vi. Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.</i>	The proposed site contains indigenous vegetation and the proposed Mosque and residential development footprint will approximately 10 hectares in extent.  The project site is located within 100 m from an artificial wetland.

## **5 Description of the Receiving Environment**

To better understand the terrestrial biodiversity and aquatic characteristics of the site and to properly understand potential impacts of the proposed development on the receiving environment, this BAR considered a specialist study and civil planning reports.

The following specialist study was commissioned as part of this BA:

- Terrestrial and Soil Survey, Prepared by The Biodiversity Company (Appendix C1).

Other studies/reports considered are:

- Town Planning Application Memorandum. Prepared by JLJ Town Planning and Development Consultants
- Engineering Geotechnical Investigation Report of the Eastern Part of RE Portion 209 of Waterkloof 305-JQ, Rustenburg. Prepared by J Arkert Engineering Geologist.
- Traffic Report. Prepared by EPS Consulting Engineers.

### **5.1 General Description and Status Quo**

The property is currently predominantly vacant and is not used for any Agricultural purposes.

At the eastern corner of the property, there are three (3) small brick structures, within which people live. The Proponent is currently engaged in discussions with these occupants, and the intention is to have them relocated should the application be approved. EnviroHeart was not able to reach the occupants during the site visits, but has made plans to have a personal meeting with them as part of the Public Participation Process for the BA.

#### **5.1.1 Adjacent Land uses**

The adjacent land uses are predominantly residential, with the large Waterfall Hill Residential Development to the east, and Roan Ridge Residential Development to the north of the site. Immediately south of the site is a driving range, and properties east of the site are used for agricultural purposes (Appendix A, Figure 6).

### **5.2 Socio-economic**

Rustenburg Local Municipality forms part of the North-West Province and is located in Bojanala District Municipality. The total geographical area is 3,423 km<sup>2</sup>. Importantly Rustenburg Local Municipality contains Royal Bafokeng Nation, which is a tribal community and key stakeholder in Rustenburg Local Municipality. Royal Bafokeng Nation occupies over 1500 km<sup>2</sup> of land located north of Rustenburg Local Municipality.

There are 719 000 people estimated to reside with the Rustenburg Local Municipality, with a growth rate of 3.03% per annum (between 2010 and 2020), double the South African growth rate at (1.59%). The Rustenburg Local Municipality highlights that there is a significantly larger share of young working age people (20 to 34 years) approximately 32.8% of the population size compared to 26.4% nationally. The numbers are indicative of migrant migration either from abroad, or from the more rural areas in the country looking for better opportunities.

The share of children between the ages of 0 to 14 years is smaller (23.4%) in Rustenburg compared to South Africa (28.3%). Demand for expenditure on schooling as percentage of total budget within Rustenburg Local Municipality will therefore be lower than that of South Africa.



HIV is still a significant social depression for the Rustenburg Local Municipality. In 2020, 110 000 people in were infected with HIV, which is 39.5% of the municipal population. The number of infections in the North-West Province increased from 458,000 in 2010 to 586,000 in 2020. Nationally the number of people that are infected increased by an average annual growth rate of 2.31% (from 2010 to 2020).

In 2020, the Rustenburg Local Municipality achieved an annual growth rate of -10.39% which is a significant lower GDP growth than the North-West Province's -8.05%, but is lower than that of South Africa, where the 2020 GDP growth rate was -6.96%. Similar to the short-term growth rate of 2020, the longer-term average growth rate for Rustenburg (-0.73%) is also significantly lower than that of South Africa (-0.64%).

In 2020, the mining sector accounted for R 52.1 billion or 76.6% of the total GVA in the Rustenburg Local Municipality. The sector that contributes the second most to the GVA of the Rustenburg Local Municipality is the community services sector at 6.4%, followed by the finance sector with 5.2%. The sector that contributes the least to the economy of Rustenburg Local Municipality is the agriculture sector with a contribution of R 383 million or 0.56% of the total GVA.

In 2020, Rustenburg employed 216 000 people. 186 000 in 2020 were formally employed. In 2020, 94 600 people were unemployed in Rustenburg, which is an increase of 43 300 from 51 300 in 2010. In terms of education, the number of people without any education decreased from 2010 to 2020 with an average annual rate of -1.43%.

### **5.3 Heritage Aspects**

Due to the largely disturbed and transformed nature of the site from agricultural activities (mango orchards), dumping of construction rubble and demolition of old buildings on site, it is unlikely that any heritage impacts could result. During the site visit, no sites of heritage / archaeological value or artifacts were identified on site.

### **5.4 Visual Aspects**

The proposed development is surrounded by residential / farmstead, business establishments and guest houses. Despite the current zoning being agriculture, majority of the surrounding land uses are in keeping with the proposed development. The proposed development is therefore expected to have a negligible visual impact.

### **5.5 Traffic Aspects**

A Traffic Impact Assessment (TIA) was undertaken by EPS Engineers. A summary of the findings presented below.

The TIA considered all traffic related to determine the effect of the change in land use on the public road network. The upgrades (and estimated costs) required to accommodate the expected traffic was determined. The following key aspects were included in the study:

- Trip generation
- Capacity analysis
- Required improvements
- Configurations and design aspects
- Traffic management
- Pedestrian and public transport facilities
- Parking
- Improvement costs and contributions.

The proposed project was analysed according to the standards of the relevant *South African Traffic Impact and Site Traffic Assessment Manuals*. The Study included a site investigation to ensure that all transport facilities that are currently available could be assessed. Furthermore, the investigation was used to assess whether it would be practically possible to implement the proposed development plans. Traffic counts and trip generation was undertaken. The expected peak hour trips generated by the development were determined using the South African Trip Data Manual (TMH 17) as summarised in Table 9. The trips generated were based on the worst-case scenario if the proponent were to exercise all the rights being applied for. The weekday PM peak period was determined as the most critical period and was therefore used during the capacity analysis.

**Table 9: Trip Generation**

Land use	Extent	AM Trip Rate	AM Split	PM Trip Rate	PM Split	AM In	AM Out	PM In	PM Out
Place of Public Worship (560)	300 Seats	0.05	55:45	0.65	55:45	8	7	107	88
Residential 1 (210)	68 units	1	25:75	1	70:30	17	51	48	20
Residential erf 2 (231)	39 units	0.85	25:75	0.85	70:30	8	25	23	10
Residential erf 5 (231)	30 units	0.85	25:75	0.85	70:30	6	19	18	8
<b>Total</b>						<b>39</b>	<b>102</b>	<b>196</b>	<b>126</b>

### Trip Distribution

Approximately 80% of the trips will be generated/originate from the R24 coming from Rustenburg (Northern Approach), 5% from the R24 coming from Olifantsnek (Southern approach) and 15% from the Waterkloof hills development and Kroondal (Eastern Approach).

For the purposes of this study, it was assumed that Palm Avenue between Access 6 and Intersection 6 would not be constructed at this stage. The trips therefore all approach the site from the north from intersection 2. This is to determine the effect of the current traffic demand on the infrastructure which will be available during the design year. Should the remainder of Palm Avenue and Spain Drive be constructed this would further disperse the traffic demand and reduce congestion. The worst-case scenario was therefore evaluated.

As part of the TIA, three scenarios were analysed:

- **Scenario 1** is performed for the **design year** including the traffic generated by the development; **excluding** any mitigation measures proposed by the study.
- **Scenario 2** is performed for the **design year** including traffic generated by the development; **including** any mitigation measures proposed by the study.
- **Scenario 3** is performed for the **planning year** including traffic generated by the development **as well as** any latent rights; **including** mitigation measures proposed by the study.

The peak hour traffic flows on the external road network were determined for each of the above-mentioned scenarios for the weekday PM peak periods.

The design horizon assessment is determined based on the design and land use rights which will be implemented at the current stage. The planning horizon year assessment is based on the total available land use rights which could be exercised on the property 5 years after the completion of the development (2027) and includes any latent rights known of in the area. The purpose of the planning horizon year assessment is to determine whether it is physically possible to accommodate the proposed land use rights. The mitigation measures implementable by the applicant are based on the design horizon year and NOT the planning horizon year.

The TIA noted that improvements are required to accommodate scenario 3, but those are not a prerequisite for the current development to take place. Rather they indicate the improvements which the authority should plan for in the future. For Scenario 2, upgrades include the construction of Palm Avenue and two access points on the either side of the property boundary, where Palm Avenue traverses.

The TIA concluded that should the developer comply with the recommendations made in the TIA, the application can be supported from a traffic engineering point of view. However, the Proponent will be required to:

- Construct a portion of Palm Avenue, two access points and walkways along Greenside Avenue.
- Provide sufficient pedestrian and public transport facilities on site.

## **5.6 Topography**

The Rustenberg area typically comprises slightly undulating plains, with more than 80% with slopes less than 5%, and mountain, hills and lowlands with moderate relief, with 50 -8-% sloping less than 5%.

The study site slopes down towards the east at a gentle gradient of 3 to 4%.

## **5.7 Geotechnical Investigations**

Information below was summarised from the Geotechnical Investigation, undertaken by J Arkert Engineering geologists.

The investigation included a desktop literature review, fields investigation and laboratory work to assess soil samples.

### **5.7.1 Site geology**

The literature review and site observations confirmed the site is underlain by norite and gabbro of the Main Zone of the Rustenburg Layered Suite, Bushveld Igneous Complex. Due to deep and extensive chemical weathering, the rockmass has been reduced to residual silty sand and gravels at depth and active clayey soils close to the surface. The depth of this material varies considerably as can be seen on the site in isolated places, where bedrock is juxtaposed with completely weathered residual clay and gravels.

The geotechnical investigation revealed that the entire site is underlain uniformly by norite at a depth of 1.2m to 2.5m, which in places appears to grade into gabbro and norite, while no structural features were identified that will affect the geology.

### **5.7.2 Hydrology**

The average annual rainfall in this area is approximately 750mm, most of which occurs as heavy, isolated thunder showers between October and March. Storm water runoff is primarily in the form of sheetwash towards the eastern side of the property. No groundwater seepage was recorded in any of the test pits excavated on the site.

### 5.7.3 Findings from geotechnical investigation

The study noted that the Collapse Potential tests completed on the soils indicated that they are marginally collapsible and compressible (Fig 3). The magnitude of the anticipated collapse and consolidation / settlements are 5 – 10 mm. These values have been calculated by assuming that 700mm wide strip footings will be placed at an average depth of 0.8m below natural ground surface and the foundations would apply a bearing pressure of 100kPa. The magnitude of the heave movement of the soils at foundation level were determined to be 10 – 15 mm. The soil activity has been plotted as being medium. Numerous mitigation measures were proposed to ensure soil stability during construction and operation of the proposed project, which have been incorporated in the EMPr.

#### 5.7.3.1 Roads and Terraces

In-situ soils were classified to determine the suitability of this material for the construction of terraces and pavement layers. The soils classify as G10 material and may therefore be used as the in-situ sub-grade. Due to the high PI values recorded in these soils it is recommended that suitable materials for use in the selected layers, sub-base and base course layers must be imported from a commercial source.

#### 5.7.3.2 Stormwater Management

To address the heave and collapse potential present in the soil structure, the study strongly recommends that sound stormwater management is implemented around each building. This includes taking precautions (as outlines in the (EMPr) to limit the amount of moisture reaching the foundation and thereby reducing the risk of settlement occurring

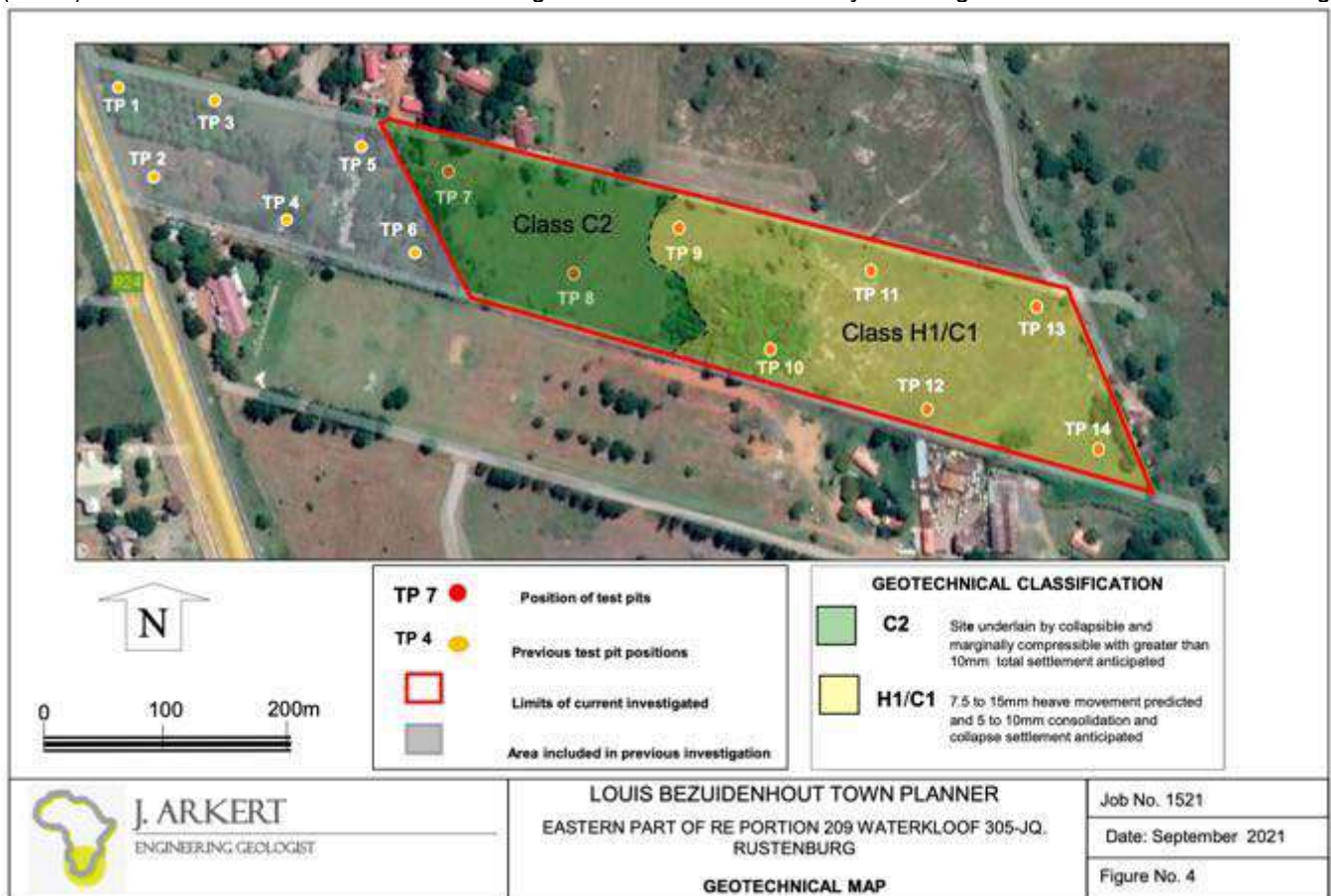


Figure 3: Geotechnical classifications (extracted from Geotechnical Report, J Arkert.

## **5.8 Biophysical Environment**

The National web-based Screening Tool was used to obtain an overview of the project area, as needed in the 2014 EIA regulations and using the National Web based Environmental Screening Tool. The report flagged the following relevant themes as having either a high or very high sensitivity:

- Agriculture Theme – High sensitivity
- Aquatic Biodiversity Theme – Very High sensitivity
- Terrestrial Biodiversity Theme - Very High sensitivity.

Based on the above a Terrestrial and Soil Screening Study was undertaken as part of this BA. Information on the biodiversity characteristics of the project area, as detailed below, was summarised from the Terrestrial and Soil Screening Study for The Proposed Waterkloof Development, undertaken by The Biodiversity Company (Appendix C1).

## **5.9 Terrestrial and Soil Screening Assessment**

The EAP commissioned a Screening Study only, as from the initial desktop and site inspection by the EAP the site appeared to have a low ecological sensitivity. The Screening Assessment was undertaken by The Biodiversity Company (Appendix C1). Based on the outcomes of the screening assessment, it was confirmed that a full ecological assessment was not needed.

Details of the Terrestrial and Soil Screening Study are presented below.

### **5.9.1 Study Methodology**

The study included both desktop and fields assessments.

A desktop spatial study, was undertaken using a Geographic Information System (GIS), to assess the project general area and habitat in relation to the most relevant spatial datasets. The assessment is based on spatial data that is provided by various sources including the provincial environmental authority and the South African National Biodiversity Institute (SANBI). The assessment considered the following four spatial datasets that may be relevant to the project area:

- National Freshwater Ecosystem Priority Area (NFEPA) Rivers and Wetlands;
- National Biodiversity Assessment (NBA) Wetlands;
- Strategic Water Source Areas (SWSA); and
- Topographical River Lines.

### **5.9.2 Desktop Study**

A summary of the desktop study is provided in Table 10, and related maps are provided below.

**Table 10: Desktop Spatial Features examined**

<b>Desktop Information Considered</b>	<b>Relevant/Not relevant</b>
North-West Biodiversity Sector Plan	The project area falls within an Ecological Support Areas 'ESA1 area.' A natural biodiversity corridor within the Magaliesberg Biosphere Reserve ( <b>Fig 4</b> ).
National Biodiversity Assessment (NBA) 2018: Ecosystem Threat Status	The project area is situated within a 'Least Concern' ecosystem.  Two headline indicators assessed in the NBA are ecosystem threat status and ecosystem protection level. 'Ecosystem threat status' refers to degree to which ecosystem are still in-tact or losing vital aspects of their structure. Ecosystem types are categorised based on the proportion of each ecosystem type that remains in good ecological condition, as Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT) or Least Concern (LC) ( <b>Fig 5</b> ).
NBA 2018: Ecosystem Protection Level	The terrestrial ecosystem associated with the project area is rated as 'Poorly Protected' (PP), meaning that not enough of this ecosystem type occurs in national parks or other formally protected areas ( <b>Fig 6</b> ).
Watercourses: National Freshwater Ecosystem Priority Area (NFEPA) Rivers and Wetlands	A GIS analysis revealed that four Rank 6 'critically modified' artificial wetland systems occur within the 500 m Department of Water and Sanitation (DWS) regulation area, and two occur within the 100 m NEMA regulation area. None of the wetlands identified are priority wetlands ( <b>Fig 7</b> ).
Watercourses: NBA Wetlands	Irrelevant: There are no wetlands within the 500 m regulatory area
Watercourses: Strategic Water Source Area (SWSA) - 2021 dataset	Irrelevant: The project area does not fall within a SWSA
Watercourses: Topographical River Lines (Grid 2527)	Irrelevant: No rivers intercept the project area or occur within the regulation area
National Protected Areas Expansion Strategy (NPAES)	Two spatial datasets were utilised for this assessment: <ul style="list-style-type: none"> <li>• National Protected Areas Expansion Strategy (NPAES); and</li> <li>• South African Protected and Conservation Areas Database (SAPAD and SACAD).</li> </ul> Irrelevant: The project area does not overlap with any NPAES area ( <b>Fig 8</b> ).
Protected Areas	The project area is within 5 km of a protected area and within the Magaliesberg Biosphere Reserve. The area is also close to a Ramsar site.
Vegetation Type	Moot Plains Bushveld of the Central Bushveld Bioregion, within the Savanna Biome ( <b>Fig 9</b> ).
Important Bird and Biodiversity Areas (IBA)	The project area occurs within the Magaliesberg IBA.
Soil sensitivity	Two classes of land capability sensitivity are located within the project area.





Figure 4: Project area superimposed on the North-West Biodiversity Sector Plan

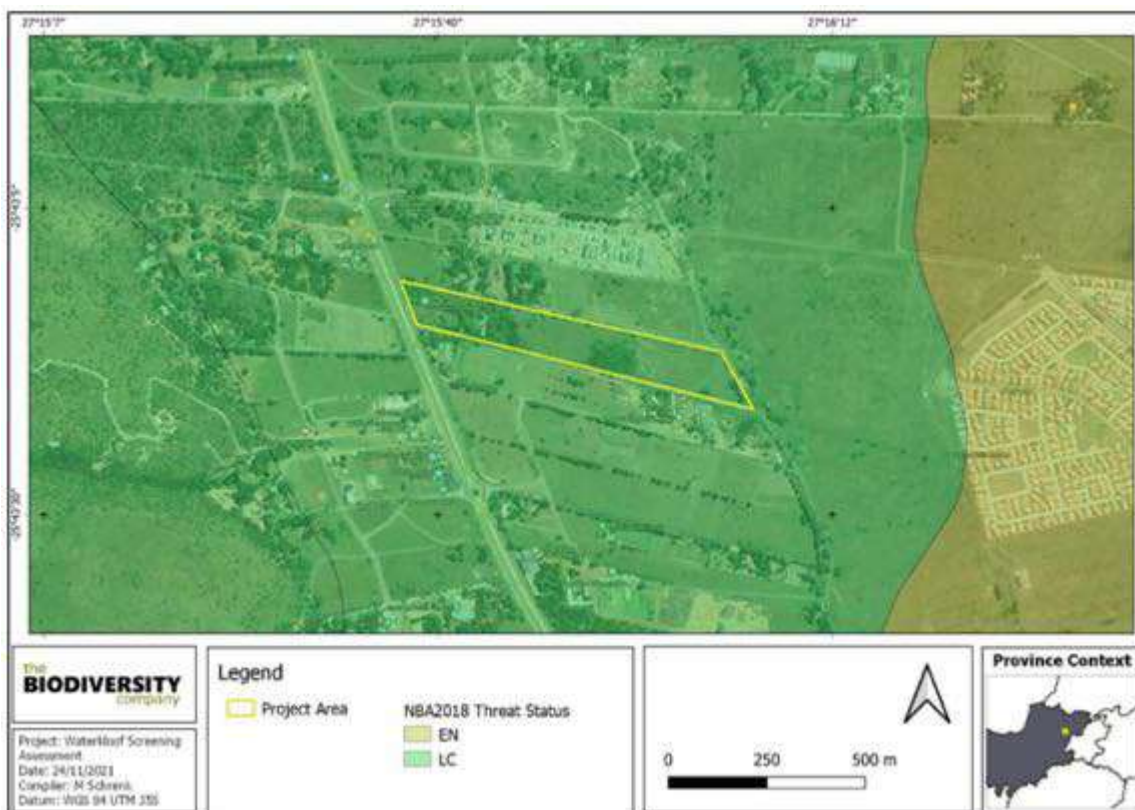
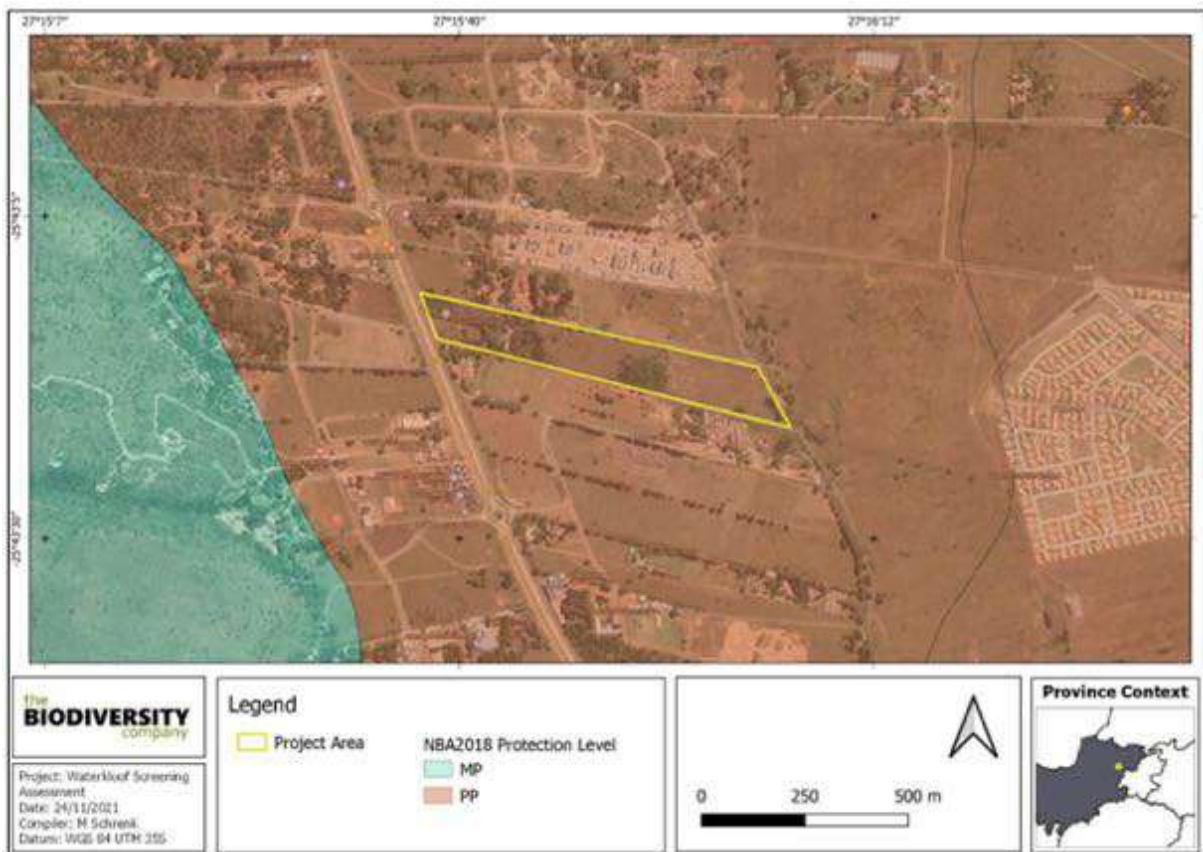


Figure 5: Ecosystem threat status of the proposed development project site



**Figure 6: Regional level of protection of terrestrial ecosystem found with the proposed project site (NBA, 2018)**

### 5.9.3 Watercourses

Figure 7 below shows the project site in relation to watercourses. Note that the 500 m regulated area refers to the area within which a water use becomes triggered as per section 21 of the National Water Act (Act No 36 of 1998). The 100 m regulated area refers to the stipulated area as per item vi. (h. North-West) of Activity 12 of the latest Environmental Impact Assessment Regulations Listing Notice 3, as per GNR324 (Gazette No. 40772 of 07 April 2017) related to the National Environmental Management Act (Act No. 107 of 1998).



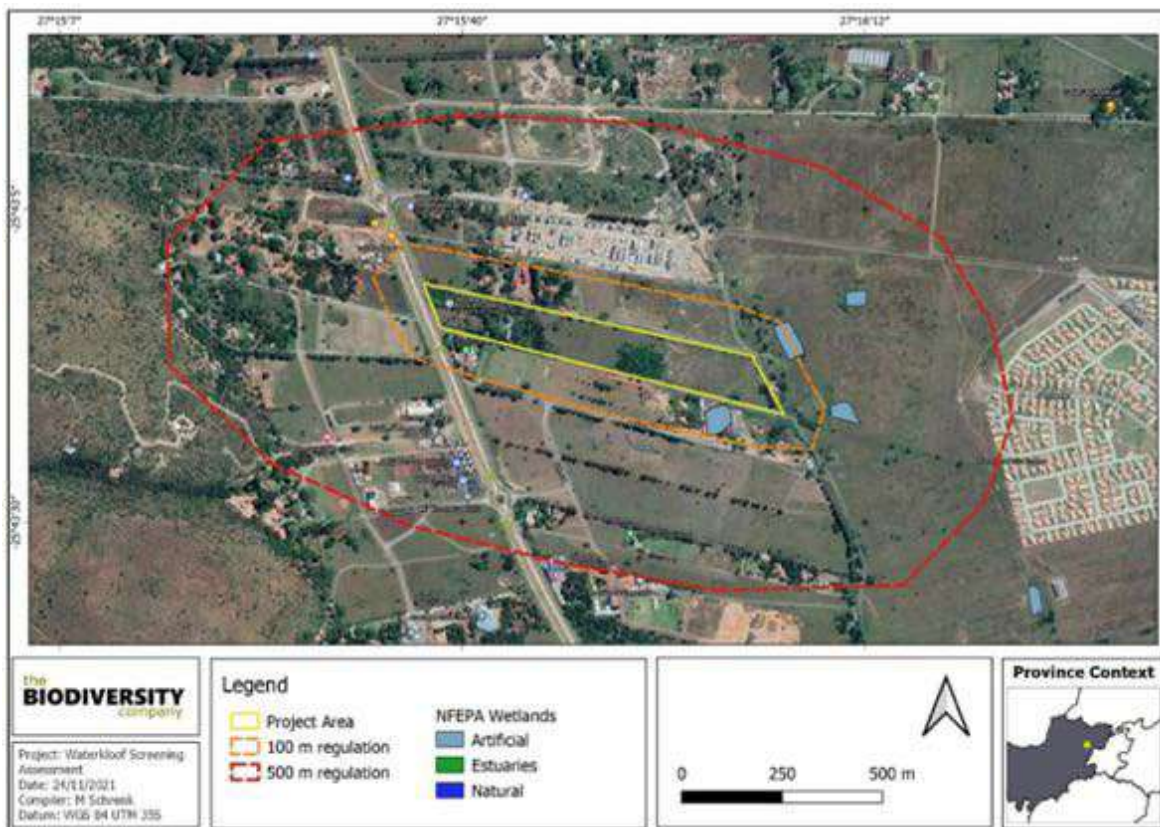


Figure 7: Relevant watercourse datasets in relation to the project area

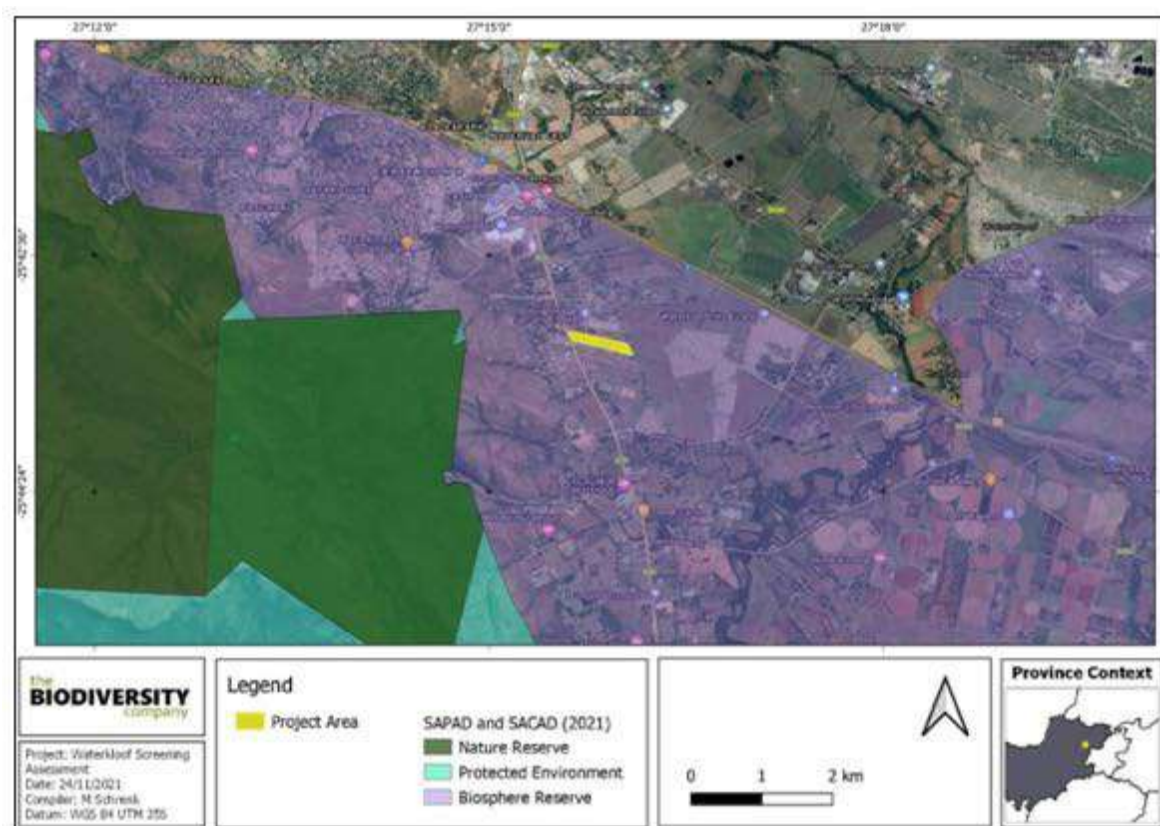


Figure 8: Project areas location in relation to SAPAD and SACAD databases

## 5.9.4 Flora

The project area falls within the Moot Plains Bushveld vegetation type, between the Gold Reef Mountain Bushveld and Marikana Thornveld (Mucina & Rutherford, 2018). This vegetation type consists of open to closed, often thorny savanna dominated by various species of *Acacia* (*Vachellia*), in the bottomlands and plains, as well as woodlands of varying height and density on the lower hillsides. The herbaceous layer is dominated by grasses (Mucina & Rutherford, 2006). According to Mucina and Rutherford (2006), the Moot Plains Bushveld vegetation type is classified as Vulnerable with only 13% statutorily conserved.

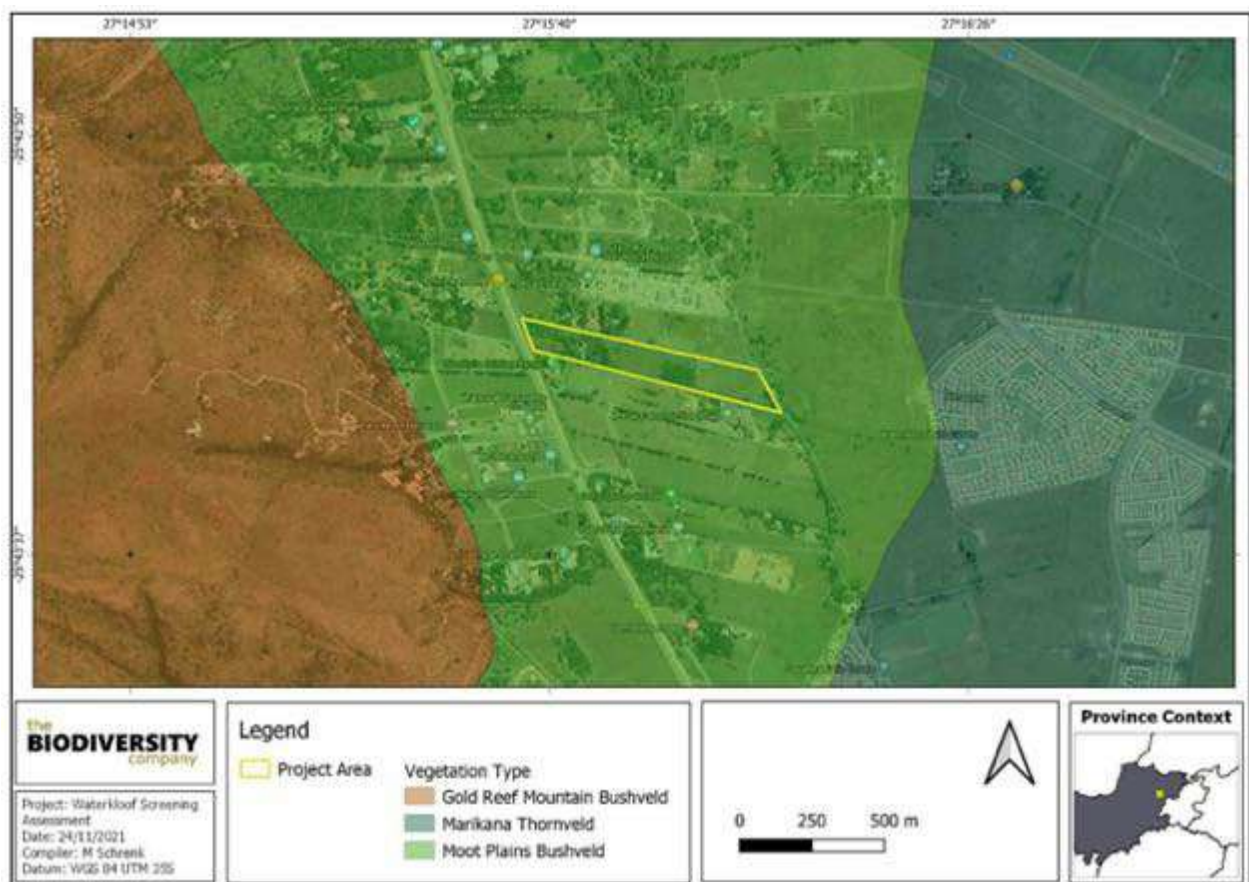


Figure 9: Vegetation type based on the Vegetation Map of South Africa, Lesotho & Swaziland (BGIS, 2018)

## 5.9.5 Fauna

No formal faunal assessment was completed for the assessment. The animal theme sensitivity for the area is classified as 'medium' due to the probability of *bnv* occurring in the area. The expected probability of these two species occurring at the site is moderately low.

## 5.9.6 Soil Sensitivity

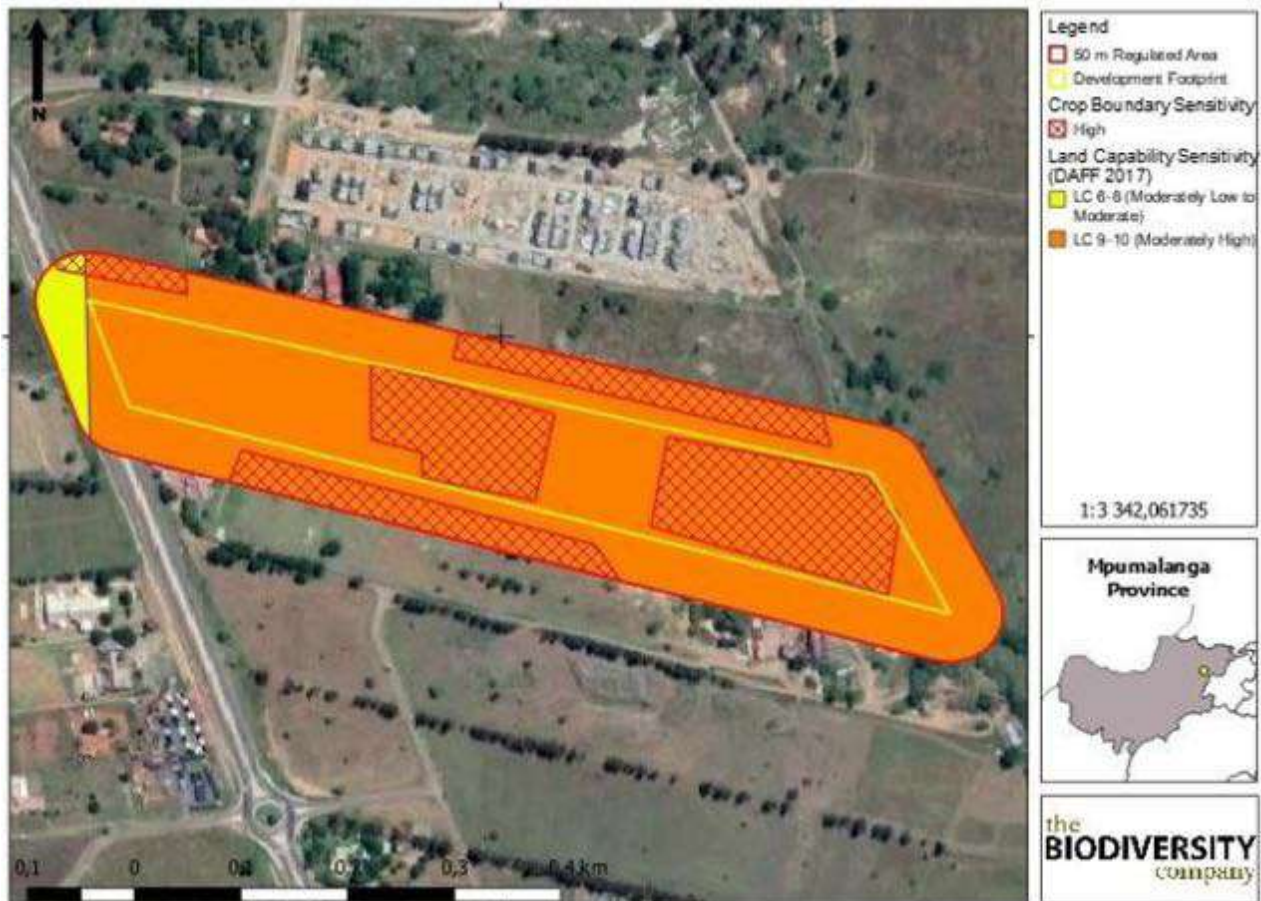
According to DAFF, 2017, two classes of land capability sensitivity are located within the project area, namely "Moderate" and "High" (Fig 8). Five land capability classes were identified within the 50 m regulated area, namely;

— Land capability class 6 to 8 (Low to Moderate); and



- Land Capability 9 to 10 (Moderately High).

As for the crop boundary sensitivity (DEA, 2021), various areas classified as having “High” sensitivity was identified within the 50 m regulated area. It is worth noting that these areas are indicative of sensitive agriculture land uses rather than potential (Figure 10).



**Figure 1:** Land capability and crop boundary sensitivity

### 5.9.7 Field Survey

Historically, the property was used as a homestead, surrounded by informal-formal agricultural activities, mainly of *Mangifera indica* (Indian Mango). Historical satellite imagery and ground truthing confirmed that between the years of 2005 and 2009 the central portion of the property was cleared for the planting of additional seed, however the land has since moderately recovered. No further significant land-use alterations were observed when studying historical imagery or conducting the field survey.

#### 5.9.7.1 Terrestrial

The project area was found to be in a transformed to modified state (Fig 11). Figure 10 shows the portions of the site regarded as transformed with low sensitivity, concentrated on the western and eastern parts of the site. Transformed areas include mango orchards, invasive alien plant infestation, demolition and associated construction waste/rubble, trenching, soil and domestic waste dumping (Fig 12). Due to the historical land use of the property being predominately residential (homestead), many of the large mature trees that are present are considered ornamentals (many of which are either exotic/introduced, or invasive).

The remaining portions of the site exist in a modified state, with low-moderate sensitivity. These areas have been modified due to long term disturbances such as human and livestock ingress; however, they do maintain a healthy population of indigenous grasses and support large populations of the indigenous *Indigofera melanadenia* and *Aloe maculate* (Fig 13). Within these sections there are extensive portions of healthy indigenous vegetation that occur in areas larger than 300 square meters and 1 ha.

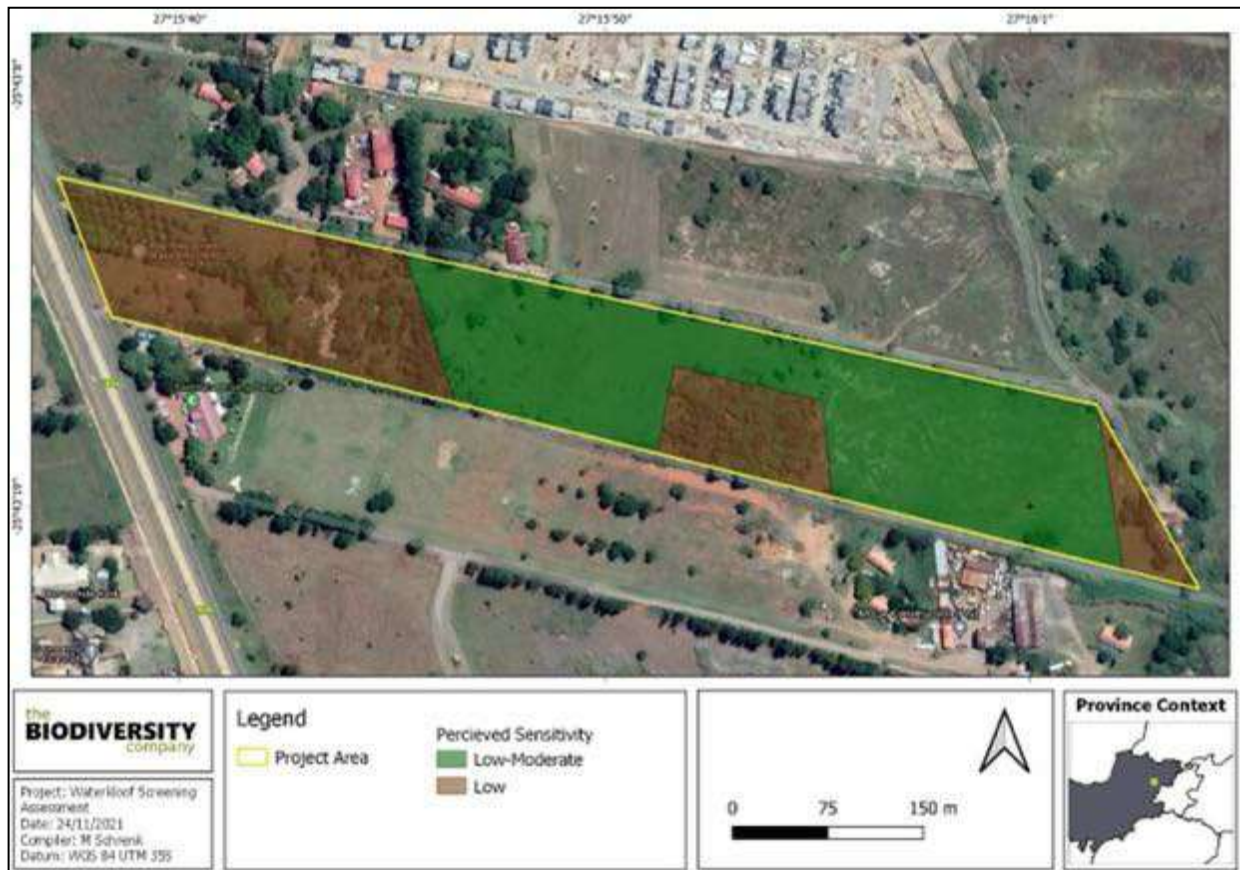


Figure 2: Preliminary sensitivity delineations for the project area





**Figure 3: Photographs of the project area, transformed state (low sensitivity)**



**Figure 13: Photographs of the project area, modified state (low-moderate sensitivity)**



### 5.9.8 Soils

The presence of a Hutton soil form was identified from the soil survey, which is regarded as a high sensitivity soil form (Figure 14). The Hutton soil form typically is characterised by high land capability values, which concur with the desktop findings by means of the land capability sensitivity data (DAFF, 2017).



**Figure 4: Example of a red-apedal horizon from the Hutton soil form**

This soil form would be suitable for agricultural land uses (Indian Mango orchards), which is in line with the high sensitivity agricultural rating as indicated by the DEA Screening Tool (2021). Indian Mango orchards were identified on-site, which correlates well with the high sensitivity crop boundary areas indicated by the screening tool.

### **5.9.9 Watercourses**

The desktop survey revealed four nearby artificial wetlands, however upon reviewing historical satellite imagery, it was found that these locations have not been utilised/filled for over 10 years. Only one small dam was used up to 2009, likely as an irrigation supply dam for the adjacent agricultural land at that time. Based on this, a wetland assessment is not considered to be necessary for these systems.

### **5.10 Specialist Terrestrial Biodiversity Statement**

The Biodiversity Company noted the following in conclusion: *“The screening assessment did not identify any potential fatal flaws for the proposed development of Rem. Ptn 209 Waterkloof 305-JQ Rustenburg.”*

## 6 Impact Assessment

This chapter describes and assesses all identified potential impacts that may occur due to the proposed developments, during the construction, operation and decommissioning phases. Potential impacts include biophysical environmental impacts, including terrestrial biodiversity, aquatic biodiversity, and water related impacts; and potential impacts on the human environment, including social and economic impacts, which were identified during the Scoping Phase of the EIA.

### 6.1 Impact Assessment Rating Methodology

All identified positive and negative impacts are based on the general approach to impact significance assessment applied in South Africa (Department of Environmental Affairs and Tourism 2002 and the requirements for impact assessment in the 2017 Amendments of the Environmental Impact Assessment Regulations, 2014 (DEA GNR 326, 2017). Impacts will be ranked and scored in terms of five assessment criteria (Department of Environmental Affairs and Tourism 2002): (1) Extent: spatial scale of the impact; (2) Magnitude: degree of the impact; (3) Duration: time scale of the impact; 4) Reversibility: degree to which the outcome can be reversed; and 5) Probability: of the impact occurrence.

**Table 11: Evaluation and Ranking Criteria to Assess the Impact Significance of Potential Impacts**

Evaluation components	Description Criteria and/or Ranking scale
MAGNITUDE of NEGATIVE IMPACT (at the indicated spatial scale)	5 - Very high: Bio-physical and/or social functions and/or processes might be severely altered. 4 - High: Bio-physical and/or social functions and/or processes might be considerably altered. 3 - Medium: Bio-physical and/or social functions and/or processes might be notably altered. 2 - Low : Bio-physical and/or social functions and/or processes might be slightly altered. 1 - Very Low: Bio-physical and/or social functions and/or processes might be negligibly altered. 0 - Zero: Bio-physical and/or social functions and/or processes will remain unaltered
MAGNITUDE of POSITIVE IMPACT (at the indicated spatial scale)	5 - Very high (positive): Bio-physical (air, water, soil, wetlands) and/or social (human well-being) functions and/or processes might be substantially enhanced. 4 - High (positive): Bio-physical (air, water, soil, wetlands) and/or social (human well-being) functions and/or processes might be considerably enhanced. 3 - Medium (positive): Bio-physical and/or social (human well-being) functions and/or processes might be notably enhanced. 2 - Low (positive): Bio-physical and/or social (human well-being) functions and/or processes might be slightly enhanced. 1 - Very Low (positive): Bio-physical and/or social (human well-being) functions and/or processes might be negligibly enhanced. 0 - Zero (positive): Bio-physical and/or social (human well-being) functions and/or processes will remain unaltered.
DURATION (timeframe during which the impact will be experienced)	5 - Permanent 4 - Long term: > 10 years or until the activity ceases. 3 - Medium term: 1- 10 years 2 - Short term: < 1 year. 1 - Immediate
EXTENT (spatial scale/influence of impact)	5 - International: Beyond National boundaries. 4 - National: Beyond Provincial boundaries and within National boundaries. 3 - Regional: Beyond 5 km of the proposed development and within Provincial boundaries. 2 - Local: Within 5 km of the proposed development. 1 - Site-specific: On site or within 100 m of the site boundary. 0 - No impact
REVERSIBILITY of impact (can the impact of the intervention be reversed?)	5 - Impact cannot be reversed. 4 - Low potential that impact might be reversed. 3 - Moderate potential that impact might be reversed. 2 - High potential that impact might be reversed. 1 - Impact will be reversible. 0 - No impact.
PROBABILITY (of occurrence). In most cases, the impact has occurred as the intervention has been implemented. Thus, many impacts score 5 in this category.)	5 - Definite: The impact will occur. 4 - High probability: It is most likely that the impact will occur (>75% chance) 3 - Medium probability: the impact may occur (50% - 75% chance) 2 - Low probability: 25% - 50% chance that the impact may occur. 1 - Improbable: <25% chance of the potential impact occurring.



CUMULATIVE Impacts	High: The activity is one of several similar past, present or future activities in the same geographical area, and might contribute to a very significant combined impact on the natural, cultural, and/or socio-economic resources of local, regional or national concern. Medium: The activity is one of a few similar past, present or future activities in the same geographical area, and might have a combined impact of moderate significance on the natural, cultural, and/or socio-economic resources of local, regional or national concern. Low: The activity is localised and might have a negligible cumulative impact. None: No cumulative impact on the environment.
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Using these five assessment criteria, the significance of each outcome was determined, whereby the significance (**S**) of the impact is determined by the probability (**P**) of the particular impact occurring, and the consequence (**C**) of the impact. The consequence is determined by combining the spatial (geographical) extent (**E**), magnitude (**M**), duration (**D**), and reversibility (**R**), applicable to the specific impact. The formula then is **S = C (E+M+D+R) / 4) x P**.

**Table 12: Rating Scale for Potential Impacts**

Significance Score	Significance	Description
≥ 17	<b>High</b>	This impact will affect ecological, socio-economic and health functions and will result in a significant benefit or risk.
≥10 <17	<b>Moderate</b>	The impact is of medium significance may have an effect on ecological, socio-economic and health functions, and could result in a moderate benefit or risk.
< 10	<b>Low</b>	The impact of low significance is not likely to affect the ecological, socio-economic and health functions in a noticeable way and is unlikely to result in significant benefit or risk.

#### Key

≥ 17	High negative impact (-)
≥10 <17	Moderate negative impact (-)
< 10	Low negative impact (-)
< 10	Low positive impact (+)
≥10 <17	Moderate positive impact (+)
≥ 17	High positive impact (+)

## 6.2 Mitigation and Monitoring

As part of the impact assessment, mitigation measures are proposed for potential negative impacts, and enhancement measures for potential positive impacts. The recommended mitigation or enhancement measures influence the final impact significance rating and have bearing on the selection of preferred alternatives. All recommended mitigation measures are incorporated in the Draft EMP for the proposed Waterkloof Mosque and Residential Development (Appendix E). Where needed, measures for monitoring impacts on the property over time are proposed, and are also incorporated into the Draft EMP.

## 6.3 Project Phases Assessed

**Construction Phase:** This is the commencement phase and constitutes the clearing of vegetation, installation of services (water and sewerage pipelines and installation of electrical infrastructure) construction of buildings (mosque and residential units), construction of internal roads.

**Operational Phase:** General operation activities, including operation of the Mosque, classrooms and boarding house, residential activities.

**Closure Phase:** Given the permanent nature of the structures forming part of the proposed development, closure is unlikely. However, management measures for potential decommissioning of the development are provided in the Draft EMPr.

## **6.4 Alternatives Assessed**

The following alternatives were assessed in this Basic Assessment.

### **Alternative 1: Sustainable drainage through incorporation of green spaces**

To facilitate sustainable stormwater management, Alternative 1 will include natural features such as grassed areas, within each residential erf and for the Mosque, fishponds and landscaped gardens will be included. These grassed areas. These natural areas will manage and absorb rainfall, attenuate runoff, and allow water to soak into the ground (natural groundwater recharge) with reduced levels of pollution. This alternative requires ongoing maintenance to ensure that green spaces are kept in a condition that provide ecosystem services and attract biodiversity.

### **Alternative 2: Hard surfacing of open areas with paving**

Alternative 2 will see majority of the open areas paved with hard surfacing. This alternative requires less maintenance in the long term.

### **No-Go Alternative**

The No-go alternative implies that the proposed Mosque and Residential Development will not be realised. Should the project not go ahead, the following can be noted:

- The site will fail to align to the requirements of the SDF, for it to be used for residential purposes.
- The land is presently not used as productive agricultural land. Based on the surrounding land uses that are predominantly residential and commercial, the future agricultural use of this portion, in isolation from other agricultural activities is unlikely.
- The high demand for housing in Rustenburg will not be met, further limiting opportunities for socio-economic development of Rustenburg.
- The much-needed jobs for Rustenburg, from construction and operation of the development, will not be realised.
- The site will remain vacant and be exposed to risks of illegal occupation and degradation. This poses threats to neighbouring developments and property values of the local area.
- The provision of a place of Worship will not be met and this right as per the Constitution will not be fulfilled. Potential benefits to the local economy and tourism benefits from stop-overs/visits by Muslim travellers passing through the local area would not be realised.

## **7 Description and Assessment of Impacts**

Identified potential impacts have been assessed in this chapter. Impacts were assessed for all relevant phases of the proposed development, namely, construction, operation and closure. Only the phase of the development that was relevant to the impact was assessed.

## 7.1 Potential Biophysical Impacts

### 7.1.1 Loss of Topsoil and Dust

**Construction Phase:** Soil will be excavated to prepare the site for construction of buildings and laying of pipework's. As a result, the natural cycle will be broken, exposing the bare soil to erosion, windblown soil loss and dust pollution. **The significance of this impact will be moderate before mitigation, and low after mitigation.**

**Table 13: Potential Loss of Topsoil and Dust**

Construction Phase	Significance = Consequence (Magnitude + Duration + Extent + Reversibility) / 4 X Probability	
Significance Pre-mitigation	-17,5	$S = C (4 + 5 + 1 + 4) / 4 \times 5$
Significance Post-mitigation	-12	$S = C (3 + 5 + 1 + 3) / 4 \times 4$
<b>Mitigation Measures</b> <ul style="list-style-type: none"> <li>Topsoil to be stockpiled separately on piles not higher than 2 – 3m. Topsoil to be stored in a single pile to avoid disturbance.</li> <li>Topsoil should be used for rehabilitation of disturbed areas, or donated to agricultural uses on neighbouring farms (See Section 8.4 for more details on topsoil reuse).</li> <li>It must be anticipated that core stones and boulders may be encountered in the excavations throughout the site.</li> <li>Erosion must be controlled by appropriate erosion control techniques including the use of sandbags, organic material. If erosion occurs, appropriate corrective actions must be investigated and implemented to minimise any further erosion from taking place.</li> <li>Vehicles must use designated routes and parking areas.</li> <li>Implement dust suppression measures on exposed surfaces susceptible to windblown dust.</li> </ul>		

### 7.1.2 Impacts on fauna and avifauna

The Terrestrial and Soil Study identified that the animal theme sensitivity was medium, given the probability of two species occurring, *Dasymys robbertsii* and *Crociodura maquassiensis*. However, the probability is moderately low. The disturbed nature of the site contributes to moderately low probability of faunal species on site; however, potential impacts on fauna are assessed for Alternative 1 and 2, and mitigation measures are proposed.

**Construction Phase:** Activities such as noise, vibration and dust may cause disturbance of fauna and avifauna. However, this is temporary. All construction activities must avoid sensitive areas to prevent impacts on avifauna. **The significance of this impact will be moderate (-) before and low (-) after mitigation for both A1 and A2.**

**Operational Phase:** The proposed development is expected to reduce available green space for fauna and flora species that may visit the site. For A1, the proposed development will include green spaces and landscaping, while Alternative 2 (A2) will not. The potential impact is greater for Alternative 2 (A2) (moderate (-) before and after mitigation), given that this alternative does not include landscaping and green areas within each erf. For A1, the significance of the potential impact on fauna and avifauna is low (-) before and after mitigation.

**The significance of this impact will be moderate before mitigation, and low after mitigation.**

**Table 14: Impacts on fauna and avifauna**

A1 & A2: Construction Phase	Significance = Consequence (Magnitude + Duration + Extent + Reversibility) / 4 X Probability
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Significance Pre-mitigation	-8,25	$S = C(3 + 2 + 2 + 4) / 4 \times 3$
Significance Post-mitigation	-7,5	$S = C(2 + 2 + 2 + 4) / 4 \times 3$
<b>A1: Operational Phase</b>		
Significance Pre-mitigation	-9,75	$S = C(4 + 5 + 2 + 5) / 4 \times 4$
Significance Post-mitigation	-6	$S = C(3 + 4 + 1 + 5) / 4 \times 3$
<b>A2: Operational Phase</b>		
Significance Pre-mitigation	-15	$S = C(4 + 5 + 2 + 5) / 4 \times 4$
Significance Post-mitigation	-10,5	$S = C(3 + 4 + 1 + 5) / 4 \times 3$
<u>Construction &amp; Operational Mitigation Measures</u> <ul style="list-style-type: none"> <li>A qualified environmental control officer must identify species affected during construction and implement training for staff on site to ensure no loss of animals.</li> <li>Green spaces must be managed to ensure that ecological integrity is maintained.</li> <li>Strictly avoid trapping or persecution of fauna and avifauna.</li> </ul>		

### 7.1.3 Potential impacts of soils

**Operational Phase:** The geotechnical investigation identified heave and collapse potential present in the soils on site, particularly after heavy rain, and proposed measures to mitigate potential impacts on infrastructure. The significance of this impacts is slightly less for A2 than A1 due to the potential for water seepage from green spaces on each erf. However, the implementation of mitigation measures will result in the potential impact being low (-) for both alternatives.

For both A1 and A2, the significance of this impact will be moderate (-) before mitigation for A1 and A2, and low (-) after mitigation.

**Table 15: Degradation of surrounding habitats from improper solid waste disposal**

Operational Phase (A1) <small>Significance = Consequence (Magnitude + Duration + Extent + Reversibility) / 4 X Probability</small>		
Significance Pre-mitigation	-14	$S = C(4 + 5 + 1 + 4) / 4 \times 4$
Significance Post-mitigation	-5,5	$S = C(2 + 5 + 1 + 3) / 4 \times 2$
Operational Phase (A2) <small>Significance = Consequence (Magnitude + Duration + Extent + Reversibility) / 4 X Probability</small>		
Significance Pre-mitigation	-10,5	$S = C(4 + 5 + 1 + 5) / 4 \times 3$
Significance Post-mitigation	-5,5	$S = C(2 + 5 + 1 + 3) / 4 \times 2$
<u>Mitigation measures</u>  Implement sound stormwater management measures around each building. It is suggested that the precautions presented below are considered to limit the amount of moisture reaching the foundation and thereby reducing the risk of settlement occurring. All water bearing services must be provided with flexible couplings where pipes enter the buildings. <ol style="list-style-type: none"> <li>A 1200mm wide apron paving must be provided around the perimeter of the structures. Joints between the paved areas and the walls of the buildings should be sealed with a flexible sealant to prevent moisture reaching the foundations.</li> <li>Storm water management around the structures must facilitate the efficient disposal of excess water from the site.</li> <li>No flower beds, garden taps, trees or down pipe discharge must be allowed adjacent to the building structures, and must be placed as far away as possible. Appropriate planning for landscaping and garden placement must be done.</li> </ol>		

### 7.1.4 Impacts from groundwater seepage

Although no shallow ground water seepage was encountered on the site, it is anticipated that the level of the perched water table may fluctuate considerably after periods of sustained rainfall. Groundwater seepage can affect foundations of the building usually occurs after heavy rainfall, when groundwater levels rise, and additional water in the soil creates hydrostatic pressure against foundations.

**Operational Phase:** The subsurface drainage may be cause impacts on foundations and building, and lead reduced air quality in buildings due to mould, cracks, bubbles in paint and rust. Appropriate precautions, which may include sub-surface drainage systems must therefore be implemented beneath all the structures and paved areas. **For both A1 and A2, the significance of this impact will be moderate (-) before mitigation for A1 and A2, and low (-) after mitigation.**

#### 7.1.5 Table 16: Impacts from groundwater seepage

Operation Phase (A1 and A2)	Significance = Consequence (Magnitude + Duration + Extent + Reversibility) / 4 X Probability	
Significance Pre-mitigation	-13	$S = C (4 + 4 + 1 + 4) / 4 \times 4$
Significance Post-mitigation	-8,25	$S = C (3 + 4 + 1 + 3) / 4 \times 3$
Operational Mitigation Measures		
<ul style="list-style-type: none"> <li>Appropriate precautions, which may include sub-surface drainage systems must be implemented beneath all the structures and paved areas.</li> </ul>		

#### 7.1.6 Pollution of groundwater resources due to hazardous chemical spills from heavy machinery

**Construction Phase:** During construction the use of heavy vehicles and machinery could result in spillages of hazardous fluids that may contaminate groundwater sources. Poor management will lead to spills, which seep into the ground, resulting in the pollution of water sources. **For both A1 and A2, the significance of this impact will be moderate (-) before mitigation for A1 and A2, and low (-) after mitigation.**

**Table 17: Pollution of water resources due to hazardous chemical spills from heavy machinery**

Construction Phase (A1 and A2)	Significance = Consequence (Magnitude + Duration + Extent + Reversibility) / 4 X Probability	
Significance Pre-mitigation	-13	$S = C (4 + 4 + 1 + 4) / 4 \times 4$
Significance Post-mitigation	-6,75	$S = C (2 + 4 + 1 + 2) / 4 \times 3$
Construction Mitigation Measures		
<ul style="list-style-type: none"> <li>Prevent any spillage of hazardous substances onto the ground. Should any spill occur, immediately implement remediation measures, e.g., use of a spill kit.</li> <li>No fuel storage in the working area. Fuel may be only stored in designated bunded areas.</li> <li>A qualified environmental control officer must be present during construction activities as detailed in the EMP.</li> <li>Environmental Audits must be conducted as specified in the EMP.</li> <li>Ensure that vehicles are maintained to avoid leakages of fuels and oils.</li> </ul>		

#### 7.1.7 Invasive alien plant species

**Construction and Operational Phases:** The site currently contains invasive alien plants that must be cleared during construction. During construction and operation of the proposed development, disturbed areas are at risk of being invaded by alien plants. Therefore, the potential for invasion without mitigation is high. **The significance of this impact will be high before mitigation, and low after mitigation.**

**Closure Phase:** Although closure of the development is unlikely, should it occur, an alien invasive management plan must be completed before site closure as invasive plants will mostly like spread across the property with no management. **The significance of this impact will be high before mitigation, and moderate after mitigation.**

**Table 18: Invasive alien invasive plant species**

Construction and Operational Phase (A1 and A2) Significance = Consequence (Magnitude + Duration + Extent + Reversibility) / 4 X Probability		
Significance Pre-mitigation	-16.25	$S = C (5 + 4 + 2 + 4) / 4 \times 5$
Significance Post-mitigation	-3,5	$S = C (3 + 4 + 2 + 3) / 4 \times 3$
Closure Phase (A1 and A2)		
Significance Pre-mitigation	-18.75	$S = C (4 + 5 + 2 + 4) / 4 \times 5$
Significance Post-mitigation	-6,75	$S = C (3 + 3 + 1 + 2) / 4 \times 3$
<u>Construction &amp; Operational Mitigation Measures</u> <ul style="list-style-type: none"> <li>An Invasive Alien Plant control plan should be developed and implemented prior to construction, and during operation.</li> </ul>		
<u>Closure Mitigation Measures</u> <ul style="list-style-type: none"> <li>Closure site audit must be implemented to ensure that alien invasive are eradicated before exiting the site.</li> </ul>		

## 7.2 Heritage Impacts

No heritage impacts are expected. However, mitigation measures in the event that heritage artifacts are found during construction have been included in the EMP. **The potential impact on heritage resources is rated as low (negligible) before and after mitigation.**

**Table 19: Potential impact to heritage resources**

Construction Phase (Significance = Consequence (Magnitude + Duration + Extent + Reversibility) / 4 X Probability)		
Activities	Without mitigation	With mitigation
Loss of heritage resources	$- 2 = (1 + 1 + 1 + 1) / 4 \times 2$	$- 2 = (1 + 1 + 1 + 1) / 4 \times 2$
<u>Mitigation</u> Train construction staff on potential heritage features and what to do in the event that any are uncovered during site clearing.		

## 7.3 Traffic Impacts

**Construction Phase:** Increased traffic, including construction vehicles, heavy machinery and construction staff vehicles will access the site during construction. The current gravel access road may be damaged due to heavy use or inclement weather. **The significance of this impact will be low (-) before and after mitigation.**

**Operational Phase:** Based on the TIA, there will be an increase in traffic during operation, however, the present and planned traffic network will suitably accommodate the traffic increases. However, mitigation measures are proposed to enhance the flow of traffic during operation. **The significance of this impact will be low (-) before and after mitigation.**

**Table 20: Traffic Impacts**

Construction Phase	Significance = Consequence (Magnitude + Duration + Extent + Reversibility) / 4 X Probability	
Significance Pre-mitigation	-12.25	$S = C(4 + 2 + 3 + 1) / 4 \times 5$
Significance Post-mitigation	-9	$S = C(3 + 2 + 3 + 1) / 4 \times 4$
Operational Phase		
Significance Pre-mitigation	-15	$S = C(4 + 3 + 3 + 4) / 4 \times 4$
Significance Post-mitigation	-9,75	$S = C(2 + 4 + 1 + 1) / 4 \times 2$

Mitigation Measures:

Required upgrades as per the TIA:

The following upgrades are required to accommodate scenario 2:

- Construction of Palm Avenue between intersection 2 and access C.
- Construction of Access A.
- Construction of Access C.

Road access and spacing:

- The spacing between intersections and access points can be seen in figure below:

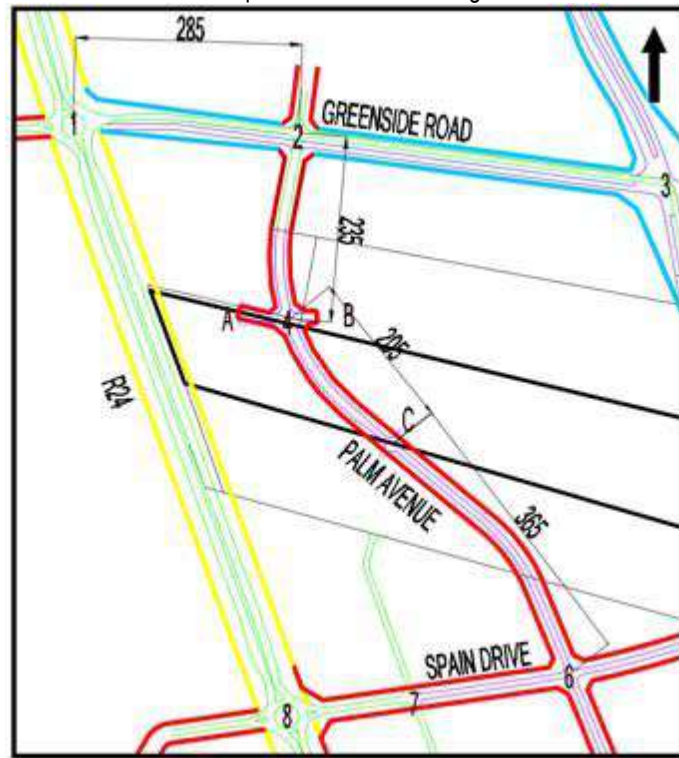


Figure: Intersection and Access spacing

Traffic management:

- Traffic management in the form of access control boom gates will be designed during the SDP and STA. These control mechanisms must be situated no less than 25 meters from the erf boundary in order to ensure sufficient thought length.

Pedestrian walkways

- Pedestrian walkways should be constructed within the site boundary and should be 1.8 meters wide where possible. The external roads currently have unpaved road shoulders which pedestrians use to walk on. It is therefore recommended that walkways be.

Public Transport Facilities

- The development is not expected to generate high volumes of public transport trips. The existing laybys along the R24 will be sufficient.



- During the completion of the Site Traffic Assessment a sweep path analysis must be done to ensure that heavy vehicles accessing the site are able to manoeuvre as intended. The busses and heavy vehicles must enter and exit the site nose first.

#### Parking

- Parking provision and design should meet the standards set in chapter 15 of the TMH 16 document as well as the parking requirements of Rustenburg Local Municipality. According to the Rustenburg land use management scheme 2005.

## 7.4 Potential Agricultural Impact

The proposed project will impact on land that is zoned for agriculture; however, the new landowner has no intention to use the property for agricultural use and has therefore submitted a Rezoning Application for the land to be zoned as Residential 1 and 2 and Place of Worship. The proposed rezoning is in line with SDF, which has allocated this area for single residential use. As such, the proposed development is in keeping with the strategic plan.

The Terrestrial Screening Study noted that the soil on the property is of good quality for agricultural use. Topsoil is a finite resource and crucial for agriculture, providing essential oxygen and nutrients for crops to grow and retains moisture during dry periods. It is suggested that topsoil be removed and saved for beneficial reuse, e.g. small subsistence gardens on the property, or sold / donated to neighbouring farmers for use in agricultural activities.

**Construction Phase: The significance of this impact will be high (-) before mitigation, and moderate (-) after mitigation.**

**Table 21: Potential agricultural impact**

Construction	Significance = Consequence (Magnitude + Duration + Extent + Reversibility) / 4 X Probability	
Significance Pre-Enhancement	- 17,5	$S = C(4 + 5 + 1 + 4) / 4 \times 5$
Significance Post-Enhancement	+ 12	$S = C(3 + 5 + 1 + 3) / 4 \times 4$
Recommended Enhancement Activities: <ul style="list-style-type: none"> <li>▪ Remove and store the upper layers of topsoil and subsoil prior to construction. Strip topsoil when its in the driest condition. Wherever possible, use tracked equipment to reduce compaction.</li> <li>▪ Identify suitable location for soil stockpiles. Store topsoil no higher than 3m and subsoil not higher than 5m.</li> <li>▪ Develop method statements for preserving or saving soils prior to construction.</li> <li>▪ While stripping, visually scan soil for an potential heritage or archaeological artifacts and immediately stop works in the event that such artifacts are identified.</li> </ul>		



## Method

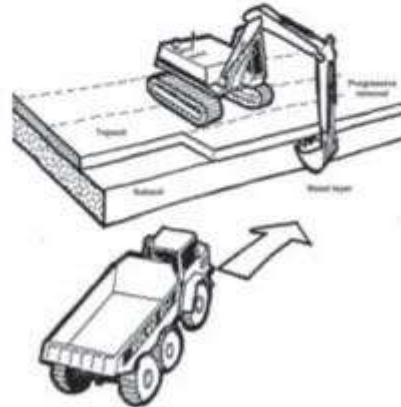
Remove surface vegetation by blading off, by scarification and raking, or kill off by application of a suitable non-residual herbicide applied not less than two weeks before stripping commences.

The method illustrated below is the preferred method for minimising damage to topsoil. It shows the transport vehicle running on the basal layer under subsoil as subsoil is also to be stripped. If only topsoil is to be stripped, the vehicle would run on the subsoil layer.

Stripping should be undertaken by the excavator standing on the surface of the topsoil, digging the topsoil to its maximum depth and loading into site or off-site transport vehicles.

Alternative stripping methods that can be shown to afford the same degree of soil protection are acceptable.

An archaeological watching brief might have to be accommodated during topsoil stripping.



Methods for saving topsoil for reuse (extracted from Construction Code of Practice for the Sustainable Use of Soils on Construction Sites

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/716510/pb13298-code-of-practice-090910.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/716510/pb13298-code-of-practice-090910.pdf)

## 7.5 Potential Socio-Economic Impacts

The total construction value of the proposed development is estimated at R 50 million. The proposed project will provide ±73 affordable two and three bedroom residential units, that will be sold to individual purchasers. Revenue by means of rates for the Rustenburg Municipality will contribute to the GDP.

### 7.5.1 Impact on Livelihoods

**Construction Phase:** The construction phase will last for approximately 18 months and also result in approximately 100 temporary jobs. Enhancement measures are directed towards amplifying the impact for local communities. Furthermore, spin off benefits from increased demands for goods and services from local business / construction suppliers may boost jobs on those business to meet the output demand. **The significance of this impact will be moderate (+) before and after mitigation.**

**Operational Phase:** Permanent jobs will be associated with the proposed development will include: Four (4) staff at the Mosque, two (2) managing agents on the residential component, four (4) site security and three (3) maintenance staff. This would be ±19 permanent staff members. **The significance of the impact on livelihoods will be moderate (+) before mitigation, and high (+) after mitigation.**

**Table 22: Impact on Livelihoods**

Construction Phase Significance = Consequence (Magnitude + Duration + Extent + Reversibility) / 4 X Probability		
Significance Pre-Enhancement	+ 11,5	$S = C(3 + 2 + 3 + 1) / 4 \times 5$
Significance Post-Enhancement	+ 13,75	$S = C(4 + 3 + 3 + 1) / 4 \times 5$
Operational Phase		
Significance Pre-mitigation	+ 20	$S = C(4 + 5 + 3 + 4) / 4 \times 5$
Significance Post-mitigation	+ 21,25	$S = C(5 + 5 + 3 + 4) / 4 \times 5$
Recommended Enhancement Activities: <ul style="list-style-type: none"> <li>Procure labour, goods and services from local youth and women and identify opportunities as far as possible.</li> <li>Provide training opportunities throughout the operational phase.</li> <li>Consider instituting benefits such as a Provident Fund that can increase staff retention and provide options for financial education and security for staff in the long term.</li> </ul>		

### 7.5.2 Progressing economic development

There is a possibility that the proposed development may progress economic development in the short and long term by:

- Investing approximately R 50 million into in the economy through infrastructural development and contributing to GDP.
- The residential development would provide demand for goods and services from residents, providing opportunities for local businesses and SMME's to establish.
- The residential development will result in increased property values of the surrounding area, increasing potential revenues from property sales.
- Facilitating long term job creation that could result in spin off benefits to extended families.
- Attracting visitors to the local areas though the Mosque h could potentially boost tourism revenue.

**Construction and Operational Phase:** The proposed project will contribute to the local economy in a variety of way, as mentioned above. The potential positive impact on progressing economic development will be **moderate** (+) before enhancement and high (+) post enhancement.

**Table 23: Progressing economic development**

Construction and Operational Phases Significance = Consequence (Magnitude + Duration + Extent + Reversibility) / 4 X Probability		
Significance Pre-Enhancement	+ 14	$S = C(4 + 3 + 3 + 4) / 4 \times 4$
Significance Post-Enhancement	+ 20	$S = C(5 + 4 + 3 + 4) / 4 \times 5$
Enhancement Activities: <ul style="list-style-type: none"> <li>Procure goods and services from local youth and women and identify opportunities to increase this quota during the operational phase.</li> <li>Broad-Based Black Economic Empowerment (BBBEE) targets should be set.</li> <li>Procure a goods and services from the local area, e.g. building materials.</li> <li>Share information on the Mosque to gain more visitors from Muslim travellers passing through Rustenburg and encourage their participation in the local economy.</li> </ul>		

### 7.5.3 Potential noise disturbances

**Construction Phase:** During construction noise will be generated from construction activities and increased use of heavy vehicles. This will be temporary and during working hours. **The significance of the impact will be low (-) before and after mitigation during construction.**

**Operational Phase:** The potential increase in residents and vehicles on site would likely result in increased ambient noise levels, related to people talking, dogs barking or music, all of which are expected in a residential area. May result in increased noise levels The Muslim call to prayer occurs five times per day, for 3-5 minutes. The call to prayer is common practice in South Africa and is predominantly accepted. However there have been instances where complaints have been made due to the call to prayer resulting in noise disturbance to certain people neighbouring the Mosque. Section 15 of South Africa's Constitution provides for religious freedom, which can be expressed on a variety of ways, including church bells ringing on Sunday mornings, or a muezzin calling from a mosque for prayer. This section should be read together with section 31, which guarantees the right of a person belonging to a religious community to enjoy and practise her religion with other members of that community. Certain municipalities, e.g. Tshwane, states that social activities such as church bells and the athaan (call to prayer) should be seen as socially acceptable activities, which "*must be accepted by all as a healthy aspect of our urban community life, albeit as diverse groups and individuals within a community.*" For Muslims residing in the residential development adjoining the Mosque the call to prayer will certainly be seen as positive impact. However, the undue noise disturbance of neighbours must be avoided, and the athaan must be rendered in a reasonable manner, and not be excessively loud or take place at unreasonable times. **The significance of the impact will be moderate (-) before and low (-) after mitigation for operation.**

**Table 24: Potential noise disturbance due to construction and athaan (call to prayer from Mosque)**

Table 2.14: Potential noise disturbance due to construction and duration (can be prevented from mosque)

Construction Phase		Significance = Consequence (Magnitude + Duration + Extent + Reversibility) / 4 X Probability	
Significance Pre-Mitigation	-8,75	S = C (3 + 2 + 1 + 1) / 4 X 5	
Significance Post- Mitigation	-7,5	S = C (2 + 2 + 1 + 1) / 4 X 5	
Operational Phase			
Significance Pre-mitigation	-10	S = C (3 + 5 + 1 + 1) / 4 X 4	
Significance Post-mitigation	-9	S = C (2 + 2 + 1 + 1) / 4 X 4	
<u>Mitigation Measures Construction</u>			
<ul style="list-style-type: none"><li>Construction site must be fenced off.</li><li>Implement measures to avoid any potential noise, hazard or nuisance to neighbouring properties or communities.</li><li>A complaints register must be kept on site.</li><li>Ensure that vehicles are properly maintained to avoid undue noise.</li></ul>			
<u>Mitigation Measures Operation</u>			
<ul style="list-style-type: none"><li>Adjust the volume of the amplifier to low to reduce impacts on neighbours.</li><li>Adhan should be timed to not last longer than three to five minutes.</li><li>Consider performing the first (pre-dawn) and last (night) calls to prayer unamplified.</li></ul>			

## 7.6 Impacts of Alternatives

The significance for majority of the impacts were the same; except for two impacts:

- 'impacts on fauna and avifauna', where A1 was rated as low (-) and A2 as moderate (-), and
- 'potential impacts of soils' where both A1 and A1 were rated as moderate (-) before and low (-) after.

**A1 is the preferred alternative.** A1 will provide additional green space within each erf, and landscaping that will be more attractive to biodiversity and aesthetically pleasing to residents.

### 7.6.1 No-Go Alternative

The no-go alternative implies that the proposed Waterkloof Mosque and Residential Development will not go ahead.

Should the project not be approved, the positive socio-economic impacts as assessed in Sections 7.5.1 and 7.5.2 will not be realised. The initial economic investment into Rustenburg Local Municipality of approximately R 50 000 000.00, and indirect spin off benefits of job creation, provision of affordable housing, education facilities, religious/cultural tourism will not be realised.

The No-go alternative would also mean that the potential negative impacts will not take place. However, based on the specialists studies and assessment in this EIA, the mitigation and rehabilitation measures that will be implemented as part of the EMPr will be suitable to mitigate these impacts.

**Table 25: No-go Alternative**

All Phases	Significance = Consequence (Magnitude + Duration + Extent + Reversibility) / 4 X Probability	
Loss of opportunity for economic investment to Rustenburg Municipality	-20	$S = C(4 + 5 + 3 + 4) / 4 \times 5$
Loss of opportunity for job creation	-20	$S = C(5 + 5 + 2 + 4) / 4 \times 5$
Loss of opportunity for affordable housing	-15	$S = C(4 + 5 + 2 + 4) / 4 \times 4$
Loss of opportunity for place of worship	-15	$S = C(4 + 5 + 2 + 4) / 4 \times 4$

## 7.7 Summary of Impacts

Table 26 below contains a summary of the impacts identified and their significance ratings.

Only certain potential impacts were not applicable to all alternatives. Where cells were left is blank, the impacts were not applicable.

### KEY:

Significance Score	Significance	Description
$\geq 17$	<b>High</b>	This impact will affect ecological, socio-economic and health functions and will result in a significant benefit or risk.
$\geq 10 < 17$	<b>Moderate</b>	The impact is of medium significance may have an effect on ecological, socio-economic and health functions, and could result in a moderate benefit or risk.
$< 10$	<b>Low</b>	The impact of low significance is not likely to affect the ecological, socio-economic and health functions in a noticeable way and is unlikely to result in significant benefit or risk.
$\geq 17$	High negative impact (-)	
$\geq 10 < 17$	Medium negative impact (-)	
$< 10$	Low negative impact (-)	
$< 10$	Low positive impact (+)	
$\geq 10 < 17$	Medium positive impact (+)	
$\geq 17$	High positive impact (+)	

Table 26: Impact Summary Table: Waterkloof Mosque and Residential Development

	A1 & A2 (Same for both)		A1		A2		No-go
Operational Phase							
Potential Loss of Topsoil and Dust	High (-)	Moderate (-)					
Impacts on fauna and avifauna	Moderate (-)	Low (-)					
Pollution of groundwater resources due to hazardous chemical spills from heavy machinery	Moderate (-)	Low (-)					
Invasive alien invasive plant species	High (-)	Low (-)					
Heritage Impacts	Low (-)	Low (-)					
Traffic impacts	Moderate (-)	Low (-)					
Impact on livelihoods	Moderate (+)	Moderate (+)					
Potential noise disturbance due to construction	Low (-)	Low (-)					
Potential agricultural impact	High (-)	Moderate (-)					
Construction and Operational Phases							
Progressing economic development	Moderate (+)	High (+)					
Operational Phase							
Impacts from groundwater seepage	Moderate (-)	Low (-)					
Traffic impacts	Moderate (-)	Low (-)					
Impact on livelihoods	High (+)	High (+)					
Potential noise disturbances	Moderate (+)	Low (-)					
Impacts on fauna and avifauna			Low (-)	Low (-)	Moderate (-)	Moderate (-)	
Potential impacts of soils			Moderate (-)	Low (-)	Moderate (-)	Low (-)	
Impacts Applicable to No-Go Alternative							
Loss of opportunity for economic investment to Rustenburg Municipality							High (-)
Loss of opportunity for job creation							High (-)
Loss of opportunity for affordable housing							Moderate (-)
Loss of opportunity for place of worship							Moderate (-)

## **8 Environmental Management Programme**

A Draft Environmental Management Programme (EMPr) has been compiled in terms of section 24N of NEMA EIA Regulations and contains the following:

- detailed descriptions of aspects of the proposed Waterkloof Mosque and Residential Developments and associated maps;
- description of the objectives and outcomes of impact management, including management statements, identified impacts and risks to be avoided, mitigated and managed and a process for all phases of the development, including (1) planning and design; (ii) pre-construction activities, (iii) construction activities, (iv) rehabilitation activities post construction and (v) operational activities.
- Description of proposed management actions, including methods and frequency of monitoring those actions, that need to be implemented on site to avoid, modify, remedy, control or stop any action that may cause detrimental impacts such as pollution or environmental degradation.
- Comply with financial provisions for rehabilitation.
- An environment awareness plan for staff on environmental risks.

Refer to Appendix D for the EMPr.

## **9 Public Participation Process**

The public participation process (PPP) is being undertaken in terms of the National Environmental Management Act (NEMA) and GN No. 326 (7 April 2017) and associated Chapter 6, that specifies regulations pertaining to PPP.

### **9.1 Notice of Proposed EIA Process**

This BA complied with Regulations 41 and 42: Notice was given of the proposed project and stakeholders were invited to participate in a variety of ways; via a site notice board, newspaper advertisement (Rustenburg Herald) and project notification letters, via letter drop and email. The project was announced on 13 April 2021 (Appendix E)

Table 29 provides a list of the organs of state relevant to this project.



**Table 27: State Departments Invited to Participate**

<b>State Department</b>	<b>Name</b>
Department of Agriculture, Forestry and Fisheries	D Nhlakad
Department of Agriculture- North West	Lebo Diale
Department of Agriculture, Forestry and Fisheries	Mashudu Marubini
Department of Agriculture, Land Reform and Rural Development	N Mpume
Department of Agriculture, Forestry and Fisheries	Portia Makitla
Department of Forestry, Fisheries and the Environment	Aulicia Maifo
Department of Mineral Resources	Kgauta Mokoena
Department of Mineral Resources and Energy	Wolsey Barnard
Department of Water and Sanitation - North West	Abe Abrahams
Local Authorities	S Nawa
Organs of State	Chris De Bruyn
Organs of State	Shaun Grant
Rustenburg Local Municipality	Victor Makona
Rustenburg Local Municipality	Ruben Moatshe
Rustenburg Local Municipality	Thembi Ntabanyane
Rustenburg Local Municipality	Walter Senne
Rustenburg Local Municipality	Kelebogile Mekgoe
Rustenburg Local Municipality	Lilian Sefike
Rustenburg Local Municipality	Ziyanda Mateta
Rustenburg Local Municipality	Kgomtoso Mthembu
North West Department of Public Works and Roads	Alfred Mafune
North West Department of Economic Development Environment and Tourism	Ouma Skosana
North West Province Department of Community Safety & Transport Management	Bailey Mahlakoleng
North West Province Department of Local Government and Traditional Affairs	Mpho Molosi
North West Province Department of Local Government and Traditional Affairs	Seth Ramagaga
North West Provincial Heritage Resources Agency	Mothabane Mosiane
North West Provincial Heritage Resources Agency	Shahnaz Omar
SANRAL	Nicole Abrahams
South African Heritage Resource Agency	Elijah Katsetse
South African Heritage Resources Agency	Natasha Higgitt
South African National Parks	Howard Hendricks
South African National Roads Agency Limited	Michael Yorke-Hart
South African National Roads Agency (SANRAL)	T Mashele

## 9.2 Newspaper Advertisement

Regulation 42 (c) (i) (e): The DBAR was advertised for public comment via Rustenburg Herald, in both in English on 13 April 2022 (Appendix E2).



### **9.3 Identification of interested and affected parties and comments on reports**

Regulation 42, 43 and 44: An I&AP database was developed (Appendix E2). All I&APs on the database were contacted via email and notified about the proposed development. I&APs were asked if they wanted to be kept informed on the new proposed development, or if they wanted to be removed from the database as per the POPIA Act No. 4 of 2013. The database was updated and revised based on responses. All I&APs were notified about the proposed project via telephone and email and invited to participate as I&APs via telephone and/or email. They also received electronic copies of the Draft BAR and invitation to submit their comments.

## **10 Environmental Impact Statement**

The EAP is of the opinion that there are no fatal flaws to the proposed project, and that the proposed developments should be approved, with the implementation of the Environmental Management Programme.

The proposed residential development is in alignment with the planning framework set out in the Rustenburg Integrated Development Plan (IDP) and the Strategic Development Framework, in terms of providing housing and community upliftment in the demarcated area. The proposed project will address a key challenge as indicated in the IDP, namely, “high demand for formal and affordable housing.” The proposed development will promote and stimulate socio-economic development of the area, providing jobs and economic development. The proposed use of the property for the provision of affordable two and three bedroom units, contributes to the intention of local government for the future residential expansion of the area. Furthermore, the proposed development will provide a place of worship, and contribute to enhanced social upliftment for the local community.

The proposed development will be located within the urban edge, within land allocated for single residential use. The development will not impact any sensitive ecological features of significance. Furthermore, Alternative 1 (preferred alternative) of the proposed development will incorporate natural features and landscaping, that will attract biodiversity to the site.

The EAP is satisfied that suitable measures have been identified for each potential impact, to either mitigate negative impacts or enhance positive impacts.

**Based on the assessment, the EAP is of the opinion that Alternative 1 should be approved.**

## **11 Conclusions and Way Forward**

The EAP has made every effort to identify all the potential issues and impacts that could arise due to the proposed Waterkloof Mosque and Residential Development. However, this DBAR is now being made available for comment to ensure that all potential impacts that could arise due to the proposed development are adequately identified and addressed.

## **PUBLIC REVIEW OF DBAR**

This Report is being made available for a 30-day public and authority comment period, from **14 April – 18 May 2022**. Interested and Affected Parties (I&APs) may obtain additional information or present comments on the Draft EIR.

The Report will be finalised based on comments received and the Final BAR will then be submitted to DEDECT.

**For more information, please contact:  
Dr Rashieda Davids or Ms. Sanusha Reddy  
Environmental Assessment Practitioners  
Mobile: +27 82 305 1352 / +27 84 219 8000  
waterkloof@enviroheart.co.za**

## References

- Aslan, C.E. and Dickson, B.G. 2020. Non-native plants exert strong but under-studied influence on fire dynamics. *NeoBiota*, 61: 47–64.
- Department of Environmental Affairs and Tourism. 2002. *Impact Significance, Integrated Environmental Management, Information Series 5*. Page Department of Environmental Affairs and Tourism.
- Fish, L., Mashau, A.C., Moeaha, M.J. & Nembudani, M.T. 2015. Identification Guide to Southern African Grasses: An Identification Manual with Keys, Descriptions, and Distributions. SANBI, Pretoria.
- Griffiths, C., Day, J. & Picker, M. (2016). *Freshwater Life: A Field Guide to the Plants and Animals of Southern Africa*. Struik Nature, Cape Town.
- Le Maitre, D.C., Seyler, H., Holland, M., Smith-Adao, L.B., Nel, J.L., Maherry, A. & Witthüser, K. 2018. Identification, Delineation and Importance of the Strategic Water Source Areas of South Africa, Lesotho and Swaziland for Surface Water and Groundwater. WRC Report No TT 754/1/18, Water Research Commission, Pretoria.
- Mucina, L. & Rutherford, M.C. (Eds.). 2006. The vegetation of South Africa, Lesotho and Swaziland. *Strelizia* 19. South African National Biodiversity Institute, Pretoria, South African.
- Mucina, L., Rutherford, M.C. & Powrie, L.W. (Eds.). 2007. Vegetation map of South Africa, Lesotho and Swaziland. 1:1 000 000 scale sheet maps. 2nd ed. South African National Biodiversity Institute, Pretoria.
- National Biodiversity Assessment spatial data. 2018. <http://bgis.sanbi.org/>. Accessed January 2021.
- Nel JL, Murray KM, Maherry AM, Petersen CP, Roux DJ, Driver A, Hill L, Van Deventer H, Funke N, Swartz ER, Smith-Adao LB, Mbona N, Downsborough L and Nienaber S. 2011. Technical Report for the National Freshwater Ecosystem Priority Areas project. WRC Report No. K5/1801.
- POSA. 2016. Plants of South Africa - an online checklist. POSA ver. 3.0. <http://newposa.sanbi.org/>.
- SANBI-BGIS. 2017. Technical guidelines for CBA Maps: Guidelines for developing a map of Critical Biodiversity Areas & Ecological Support Areas using systematic biodiversity planning.
- SAPAD (South Africa Protected Areas Database) and SACAD (South Africa Conservation Areas Database) (2021). <http://egis.environment.gov.za>
- Shrader AM, Little I, Coverdale B, Patel T. 2016. A conservation assessment of *Ourebia ourebi*. In Child MF, Roxburgh L, Do Linh San E, Raimondo D, Davies-Mostert HT, editors. *The Red List of Mammals of South Africa, Swaziland and Lesotho*. South African National Biodiversity Institute and Endangered Wildlife Trust, South Africa.
- Skinner, J.D. & Chimimba, C.T. 2005. *The Mammals of the Southern African Sub-region*. Cambridge University Press, Cape Town.
- Skowno, A.L., Raimondo, D.C., Poole, C.J., Fizzotti, B. & Slingsby, J.A. (eds.). 2019. South African National Biodiversity Assessment 2018 Technical Report Volume 1: Terrestrial Realm. South African National Biodiversity Institute, Pretoria.

# APPENDICES

## **Appendix A: Maps**

Figure 1: Proposed Development Site

Figure 2 : Locality Map

Figure 3 and 4: Development Layout and Township Plan

Figure 5: Proposed Water Services Master Plan

Figure 6: Land Use Map



Figure 1: Proposed Development Site



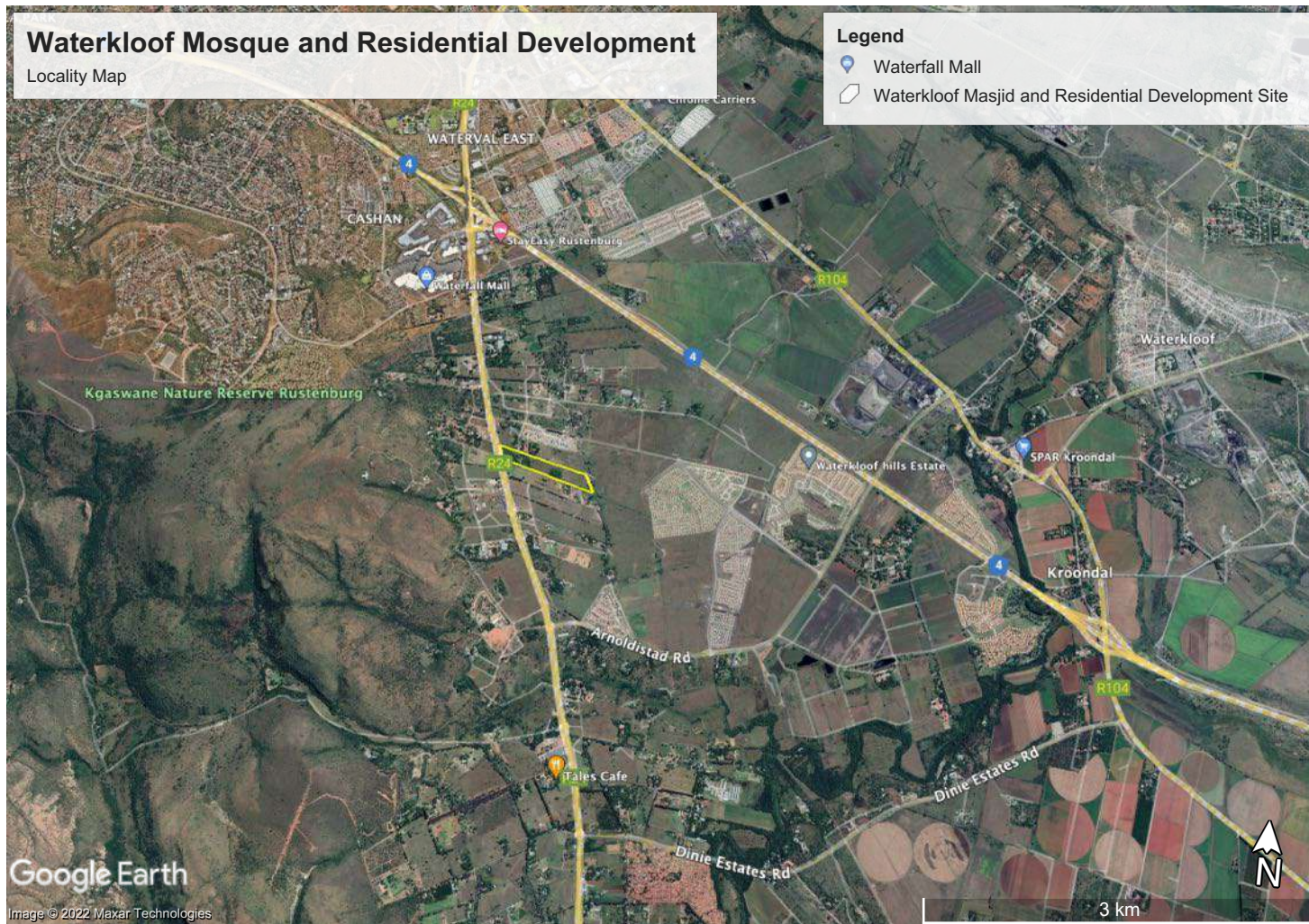


Figure 2 : Locality Map

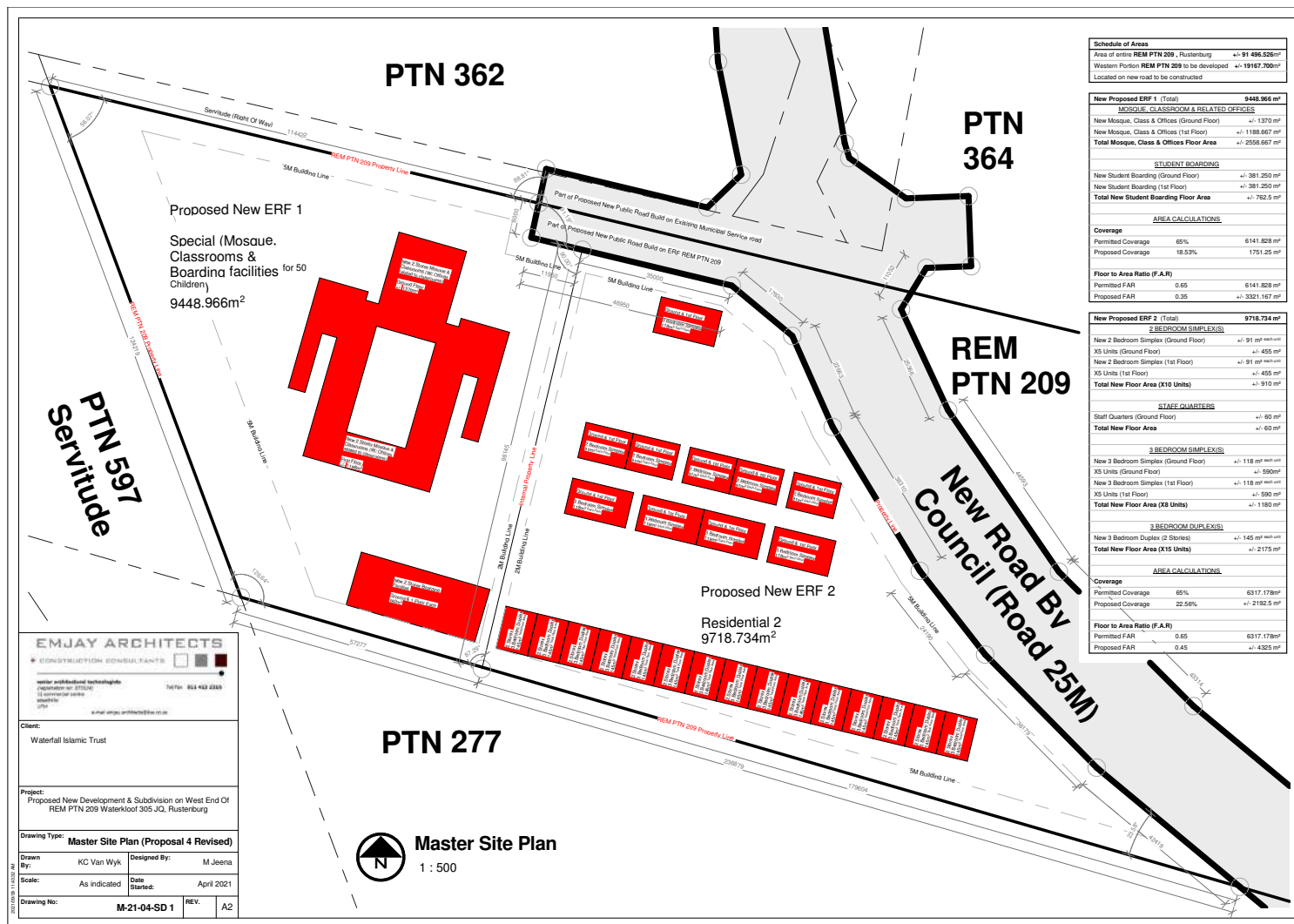


Figure 3: Proposed Mosque, classrooms and boarding facilities



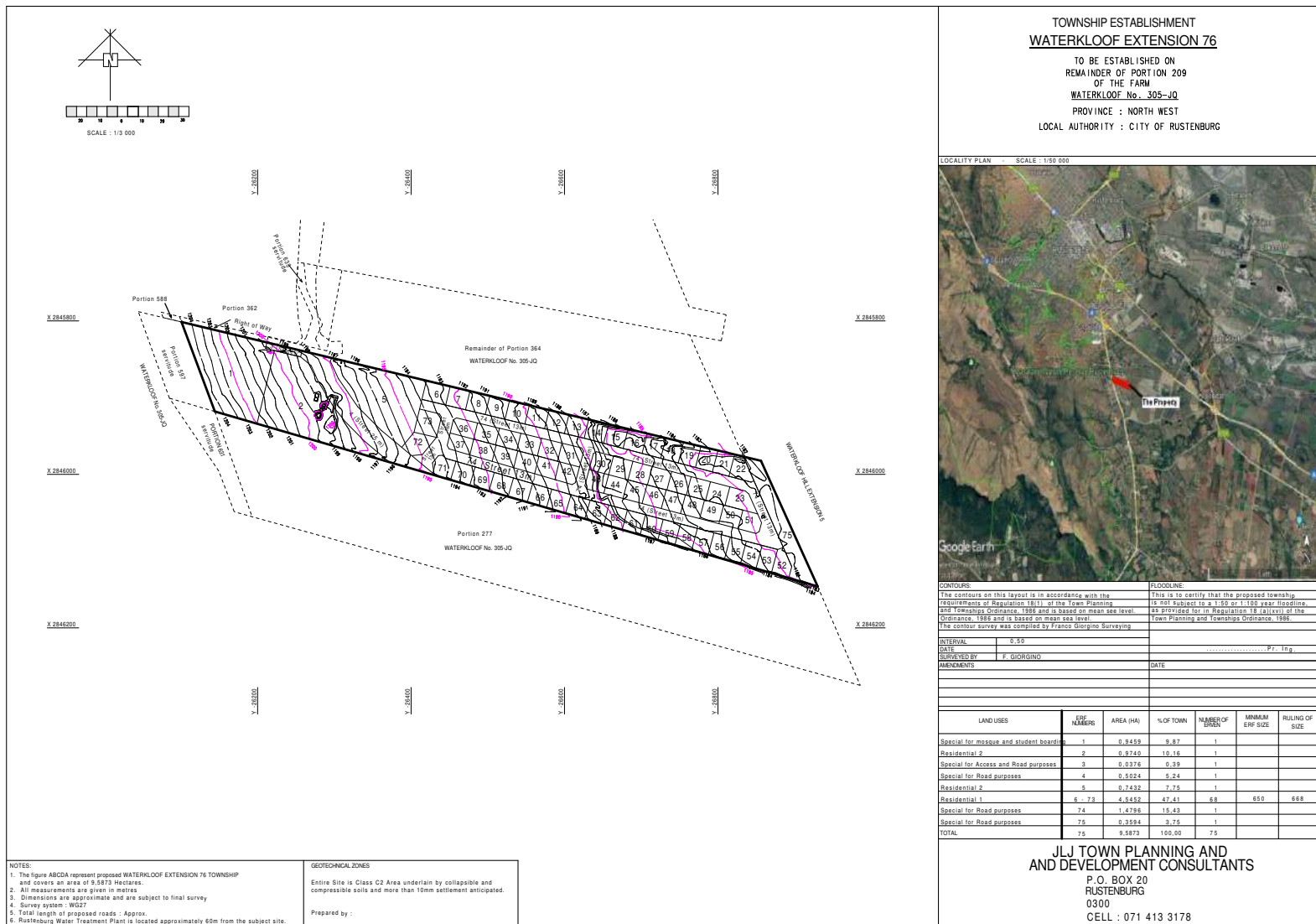
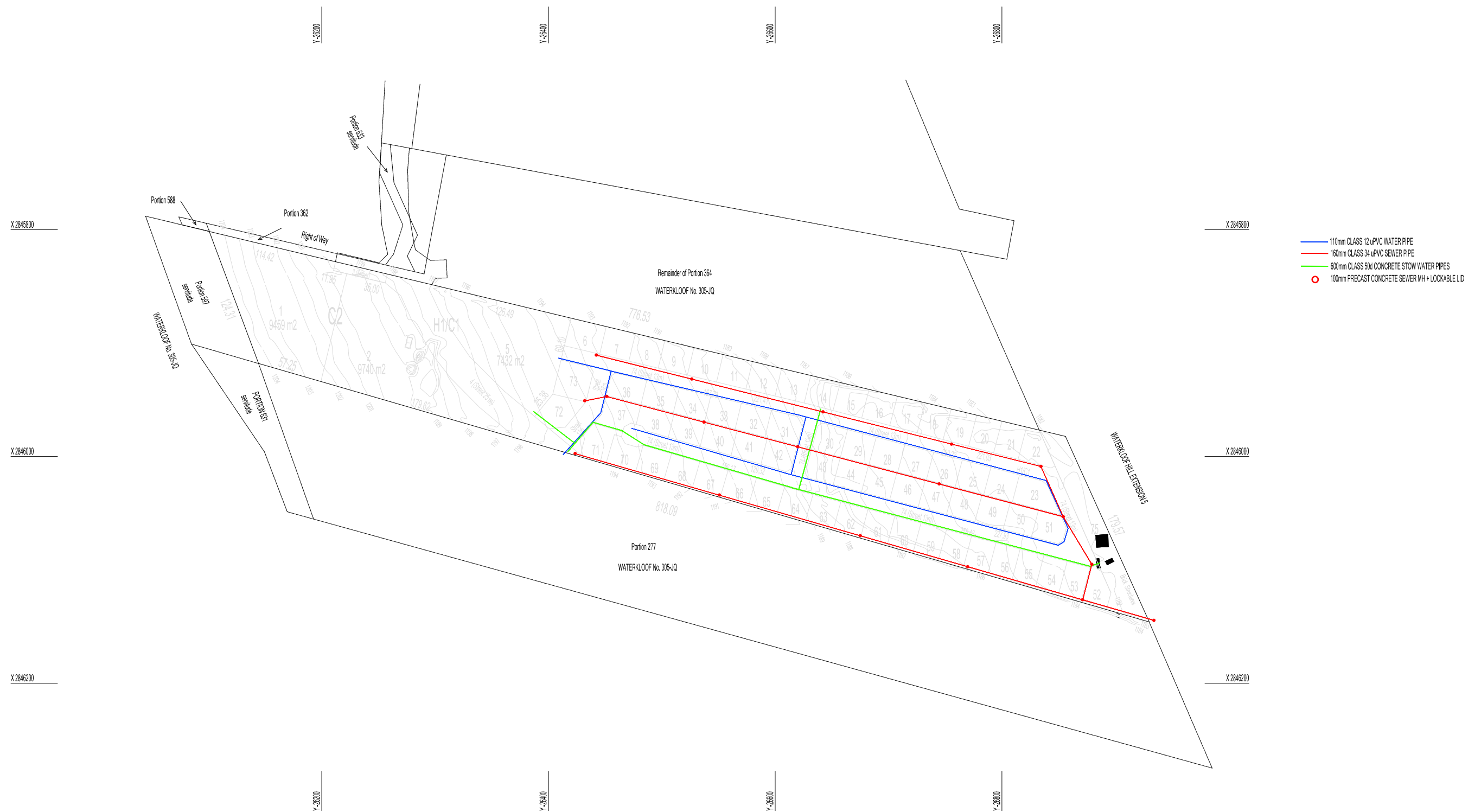
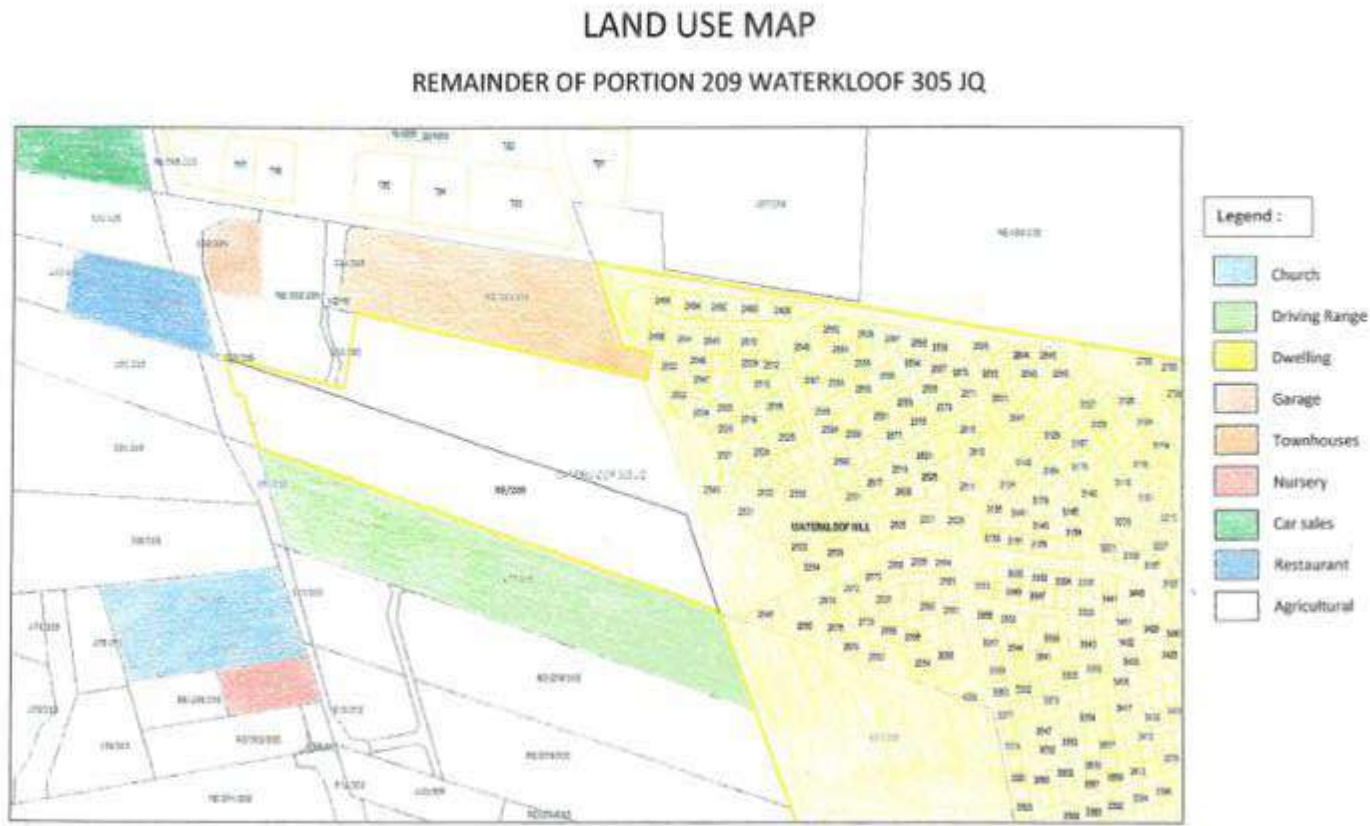


Figure 4: Township plan



✓



**Figure 6 :Land use map (supplied by JLJ Town Planning)**

## **Appendix B:**

### **Acknowledgement of Receipt of Application Form**



**dedect**

Department:

Economic Development, Environment, Conservation and Tourism  
North West Provincial Government  
REPUBLIC OF SOUTH AFRICA



AgriCentre Building  
Cnr. Dr. James Moroka  
Stadium Rd  
Private Bag X2039  
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Fax: +27(18) 384 0104

Reference: NWP/EIA/112/2021

Attention: Haroon Mayet  
Waterkloof Islamic Trust  
P.O Box 5038  
ZINNIIVILLE RUSTENBURG  
0299

Cell No.: 074 909 4852  
E-Mail: [handyprojhb@gmail.com](mailto:handyprojhb@gmail.com)

Dear Sir/ Madam

APPLICATION FOR ENVIRONMENTAL AUTHORISATION FOR THE PROPOSED WATERKLOOF MOSQUE AND RESIDENTIAL DEVELOPMENT ON THE REMAINING EXTENT OF PORTION 209 OF THE FARM WATERKLOOF 305 JQ, ACTIVITY NUMBER 27 (i) (ii) IN GN. NO. R.327 AND ACTIVITY NUMBER 12 IN GN. NO. R.324 OF ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS 2014, RUSTENBURG LOCAL MUNICIPALITY, NORTH WEST PROVINCE

The Department have received the above mentioned Application for Environmental Authorisation on 28 February 2022, and the Application Form has been accepted. You are requested to submit one hard copy and one soft copy of the report compiled in terms of Appendix 1 of Environmental Impact Assessment Regulations to the assigned official.

Please note that the application has been assigned to Mr. Thato Loeto, Rustenburg Office, reachable at (014) 597 3597/ 071 879 8029 or [thato@nwpg.gov.za](mailto:thato@nwpg.gov.za) and for

80 Kerkstraat  
Rustenburg  
0299

Kindly quote this reference number and the name of the officer it has been assigned to and submit all any future correspondence in respect of the application including notification to be used for public participation to the assigned officer. Please draw the applicant's attention to the fact that the activity may not commence prior to the decision being issued by the Department.

Yours Faithfully

Ms. Ellis Thebe  
Environmental Officer Control Grade B: Development Impact Management  
Date: 02/03/2022



Together we move North West forward.



## **Appendix C: `**

### **Specialist Studies**



## **Appendix C1:**

**Terrestrial and Soil Survey, Prepared by The  
Biodiversity Company**



# **A TERRESTRIAL AND SOIL SCREENING ASSESSMENT FOR THE PROPOSED WATERKLOOF DEVELOPMENT**

**Waterkloof, Rustenburg, North-West  
Province**

November 2021

**CLIENT**



**Prepared by:**

**The Biodiversity Company**

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# 1 Introduction

The Biodiversity Company was commissioned to conduct a terrestrial biodiversity and soil screening assessment for the proposed development of Rem. Ptn 209 Waterkloof 305-JQ Rustenburg. Utilising both a desktop study as well as a field survey the screening assessment establishes a quantitative and qualitative measure of the receiving environment. These results are assessed and presented in order to advise on any potential fatal flaws or further specialist assessments that may be activated/required by the proposed development.

## 1.1 Terms of Reference

The Terms of Reference (ToR) included the following:

- Description of the baseline receiving environment specific to the field of expertise (general surrounding area as well as site specific environment);
- Identification and description of any ecological constraints or fatal flaws pertaining to the project area; and
- Compilation of a screening report.

## 1.2 Project Location

The project area is located in Rustenburg, North-West. A locality map of the project region is shown in

Figure 1-1 and a close-up map of the specific project area is presented in Figure 1-2.





Figure 1-1 Locality of the project area

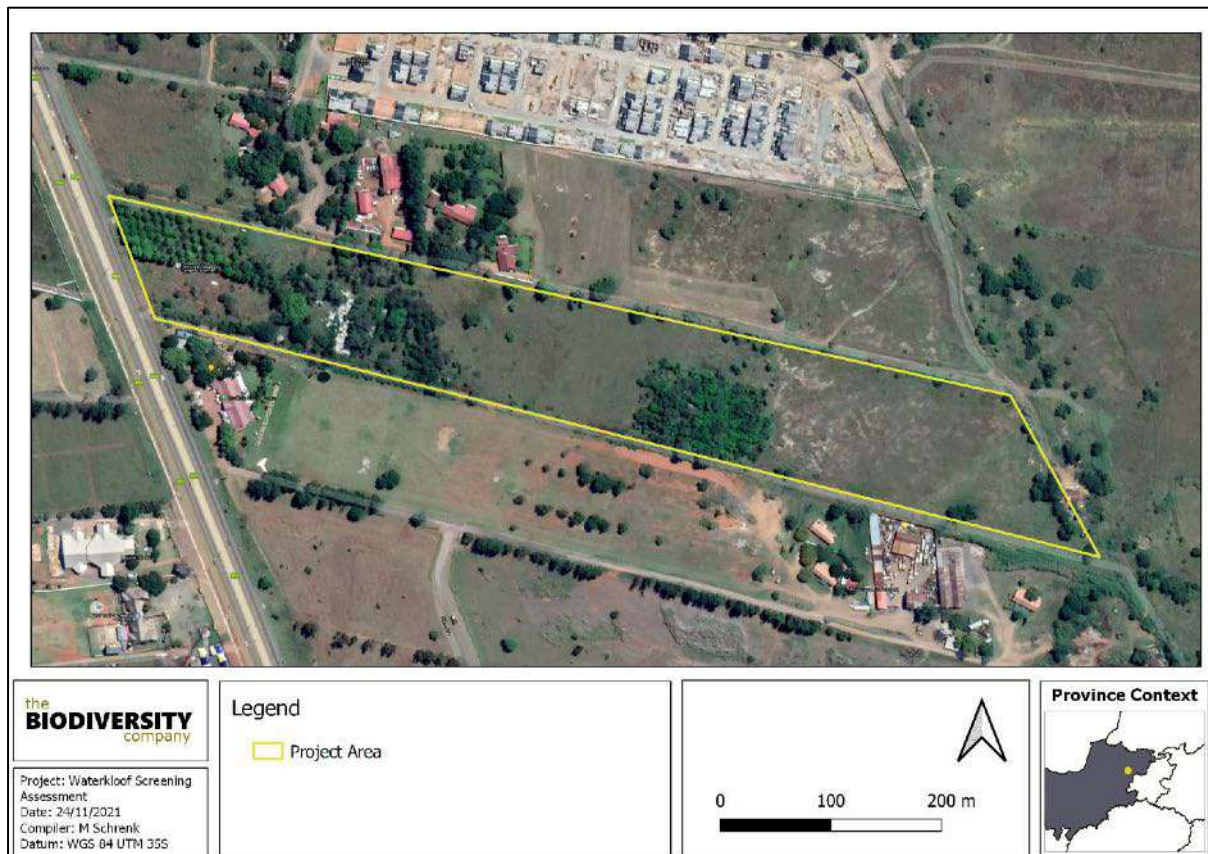


Figure 1-2 The project area

### 1.3 Background

The proposed development is to cover the entire site footprint with mixed land uses, including road and residential.

A screening report was completed on the 16<sup>th</sup> of October 2021, as per the 2014 EIA regulations and using the National Web based Environmental Screening Tool. The report flagged the following relevant themes as having either a high or very high sensitivity:

- Agriculture theme – High sensitivity
- Aquatic Biodiversity Theme – Very High sensitivity
- Terrestrial Biodiversity Theme - Very High sensitivity

### 1.4 Limitations





The following limitations should be noted for the assessment:

- Only a single season survey was conducted, this would constitute a wet season survey;
- The datasets considered for the assessment are considered to be the most recent and suitable data for the intended purposes; and



- This assessment only constitutes an ecological screening and does not constitute a full assessment.

## 1.5 Specialist Details

<b>Report Name</b>	<b>A TERRESTRIAL AND SOIL SCREENING ASSESSMENT FOR THE PROPOSED WATERKLOOF DEVELOPMENT</b>	
<b>Submitted to</b>		
<b>Report Writer</b>	<b>Michael Schrenk</b> 	<p>Michael completed his professional Civil and Environmental engineering degree at the University of the Witwatersrand in 2016. He has been working in the fields of project management, biodiversity and habitat assessment and ecological restoration for over 3 years.</p>
<b>Report Writer</b>	<b>Ivan Baker</b> 	<p>Ivan Baker is Cand. Sci Nat registered (119315) in environmental science and geological science. Ivan is an experienced wetland and ecosystem service specialist, a hydropedologist and pedologist. He completed his MSc in environmental science and hydropedology at the North-West University of Potchefstroom.</p>
<b>Report reviewer</b>	<b>Andrew Husted</b> 	<p>Andrew Husted is Pr Sci Nat registered (400213/11) in the following fields of practice: Ecological Science, Environmental Science and Aquatic Science. Andrew is an Aquatic, Wetland and Biodiversity Specialist with more than 12 years' experience in the environmental consulting field. Andrew has completed numerous wetland training courses, and is an accredited wetland practitioner, recognised by the DWS, and also the Mondi Wetlands programme as a competent wetland consultant.</p>
<b>Declaration</b>	<p>The Biodiversity Company and its associates operate as independent consultants under the auspice of the South African Council for Natural Scientific Professions. We declare that we have no affiliation with or vested financial interests in the proponent, other than for work performed under the Environmental Impact Assessment Regulations, 2017. We have no conflicting interests in the undertaking of this activity and have no interests in secondary developments resulting from the authorisation of this project. We have no vested interest in the project, other than to provide a professional service within the constraints of the project (timing, time and budget) based on the principals of science.</p>	

## 2 Desktop Spatial Study

A desktop spatial study, principally undertaken using a Geographic Information System (GIS), was conducted to assess the project general area and habitat in relation to the most relevant spatial datasets. The assessment is based on spatial data that is provided by various sources including the provincial environmental authority and SANBI. The desktop analysis results are listed in Table 2-1 and a breakdown of each important dataset assessed is subsequently presented.

Table 2-1 Desktop spatial features examined.

Desktop Information Considered	Relevant/Not relevant	Section
<b>North-West Biodiversity Sector Plan</b>	The project area falls within an Ecological Support Areas 'ESA1 area'	2.1.1
<b>National Biodiversity Assessment (NBA) 2018: Ecosystem Threat Status</b>	The project area is situated within a 'Least Concern' ecosystem	2.1.2
<b>NBA 2018: Ecosystem Protection Level</b>	The terrestrial ecosystem associated with the project area is rated as 'Poorly Protected'	2.1.2
<b>Watercourses: National Freshwater Ecosystem Priority Area (NFEPA) Rivers and Wetlands</b>	Four Rank 6, 'critically modified' artificial wetland systems occur within the 500 m DWS regulation area, two occur within the 100 m NEMA regulation area. None of the wetlands are priority wetlands	2.1.3
<b>Watercourses: NBA Wetlands</b>	Irrelevant: There are no wetlands within the 500 m regulatory area	2.1.3
<b>Watercourses: Strategic Water Source Area (SWSA) - 2021 dataset</b>	Irrelevant: The project area does not fall within a SWSA	2.1.3
<b>Watercourses: Topographical River Lines (Grid 2527)</b>	Irrelevant: No rivers intercept the project area or occur within the regulation area	2.1.3
<b>National Protected Areas Expansion Strategy (NPAES)</b>	Irrelevant: The project area does not overlap with any NPAES area	2.1.4
<b>Protected Areas</b>	The project area is within 5 km of a protected area and within the Magaliesberg Biosphere Reserve. The area is also close to a Ramsar site	2.1.4
<b>Vegetation Type</b>	Moot Plains Bushveld of the Central Bushveld Bioregion, within the Savanna Biome	2.1.5
<b>Important Bird and Biodiversity Areas (IBA)</b>	The project area occurs within the Magaliesberg IBA	-
<b>Soil sensitivity</b>	Two classes of land capability sensitivity are located within the project area	2.1.6

### 2.1 Spatial Features Assessed

#### 2.1.1 North-West Biodiversity Sector Plan

The North-West Biodiversity Sector Plan classifies areas within the province on the basis of its contribution to reach the conservation targets within the province. These areas are classified as either Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs).

Critical Biodiversity Areas (CBAs) are terrestrial and aquatic areas of the landscape that need to be maintained in a natural or near-natural state to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. Thus, if these areas are not maintained in a natural or near natural state then biodiversity targets cannot be met. Ecological Support Areas (ESAs) are areas that are not essential for meeting biodiversity representation targets but play an important role in supporting the ecological functioning of critical biodiversity areas and/or in delivering ecosystem services that support socio-economic development. As illustrated by Figure 2-1 the project area falls within an ESA1 area: A natural biodiversity corridor within the Magaliesberg Biosphere Reserve. (READ, 2015).

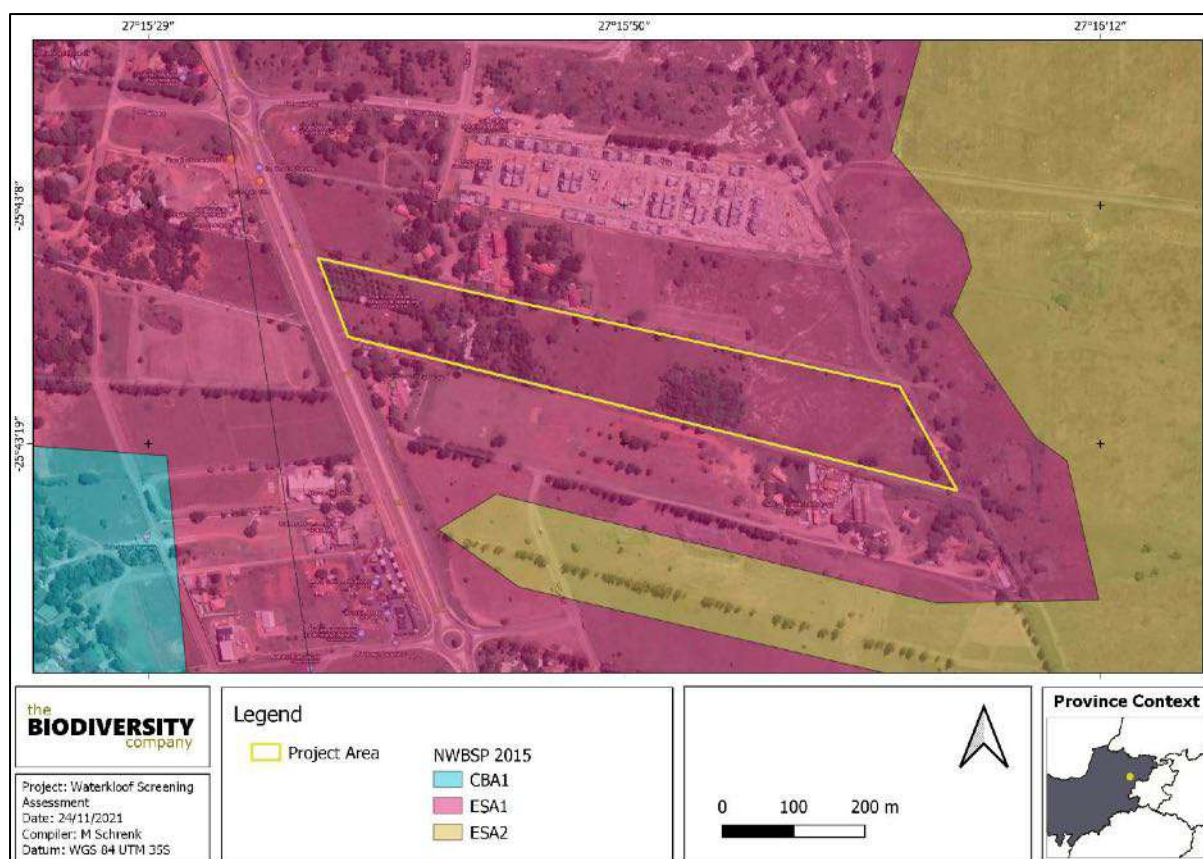


Figure 2-1 The project area superimposed on the North-West Biodiversity Sector Plan

## 2.1.2 The National Biodiversity Assessment

The NBA was completed as a collaboration between the South African Biodiversity Institute (SANBI), the Department of Environmental Affairs (DEA) and other stakeholders, including scientists and biodiversity management experts throughout the country over a three-year period (Skowno *et al.*, 2019).

The purpose of the NBA is to assess the state of South Africa's biodiversity with a view to understanding trends over time and informing policy and decision-making across a range of sectors (Skowno *et al.*, 2019).

The two headline indicators assessed in the NBA are *ecosystem threat status* and *ecosystem protection level* (Skowno *et al.*, 2019).

### 2.1.2.1 Ecosystem Threat Status and Ecosystem Protection Level

Ecosystem threat status outlines the degree to which ecosystems are still intact or alternatively losing vital aspects of their structure, function and composition, on which their ability to provide ecosystem services ultimately depends (Skowno *et al.*, 2019).

Ecosystem types are categorised as Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT) or Least Concern (LC), based on the proportion of each ecosystem type that remains in good ecological condition (Skowno *et al.*, 2019).



The project area was superimposed on the terrestrial ecosystem threat status database. As seen in this figure, the proposed development is situated within an ecosystem type that is listed as LC (Figure 2-2).

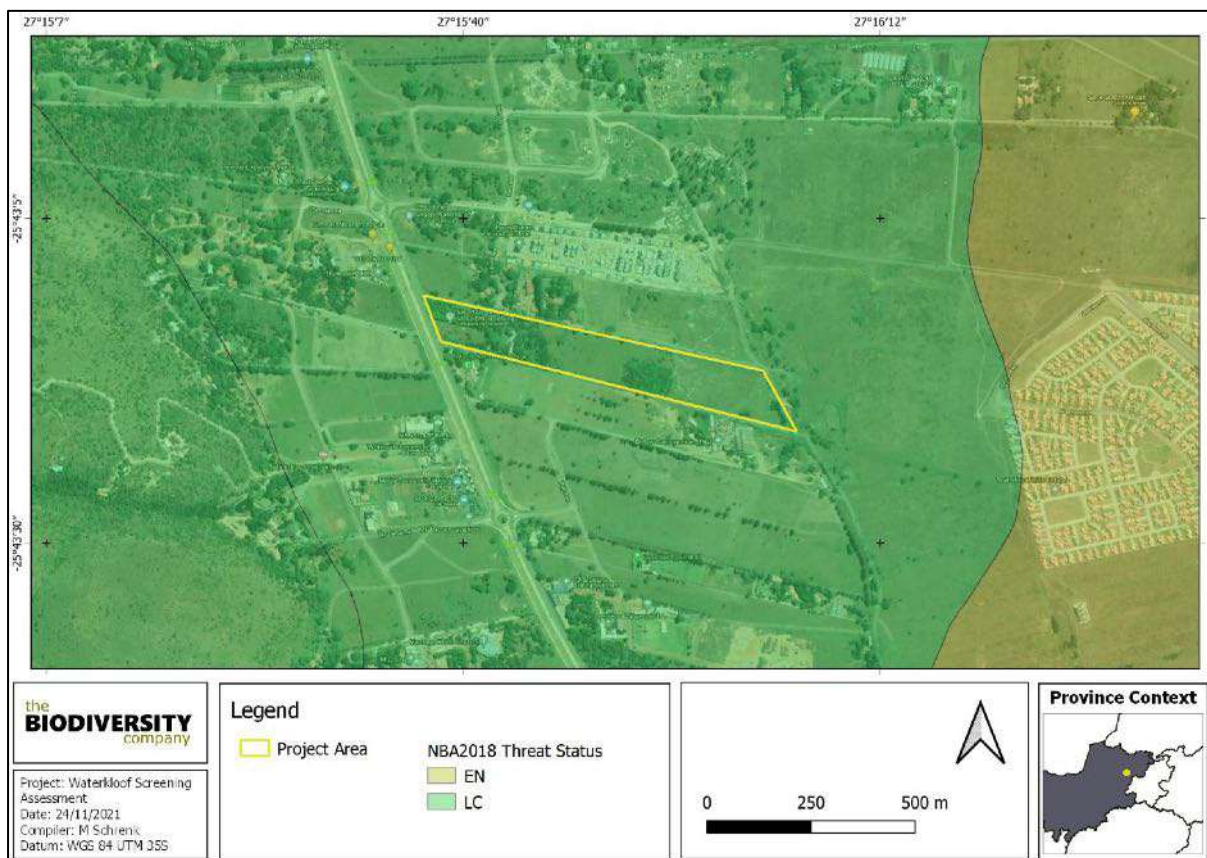


Figure 2-2 The project area showing the regional ecosystem threat status of the associated terrestrial ecosystems (NBA, 2018)

Ecosystem protection level informs on whether ecosystems are adequately protected or under-protected. Ecosystem types are categorised as Not Protected (NP), Poorly Protected (PP), Moderately Protected (MP) or Well Protected (WP), based on the proportion of each ecosystem type that occurs within a protected area recognised in the Protected Areas Act (Skowno *et al.*, 2019).

The project area was superimposed on the ecosystem protection level map to assess the protection status of terrestrial ecosystems associated with the development (Figure 2-3). Based on Figure 2-3 the terrestrial ecosystems associated with the development are rated as PP for the entire project area. This means that these ecosystems are considered inadequately protected as not enough of this ecosystem occurs in areas such as national parks or other formally protected areas.

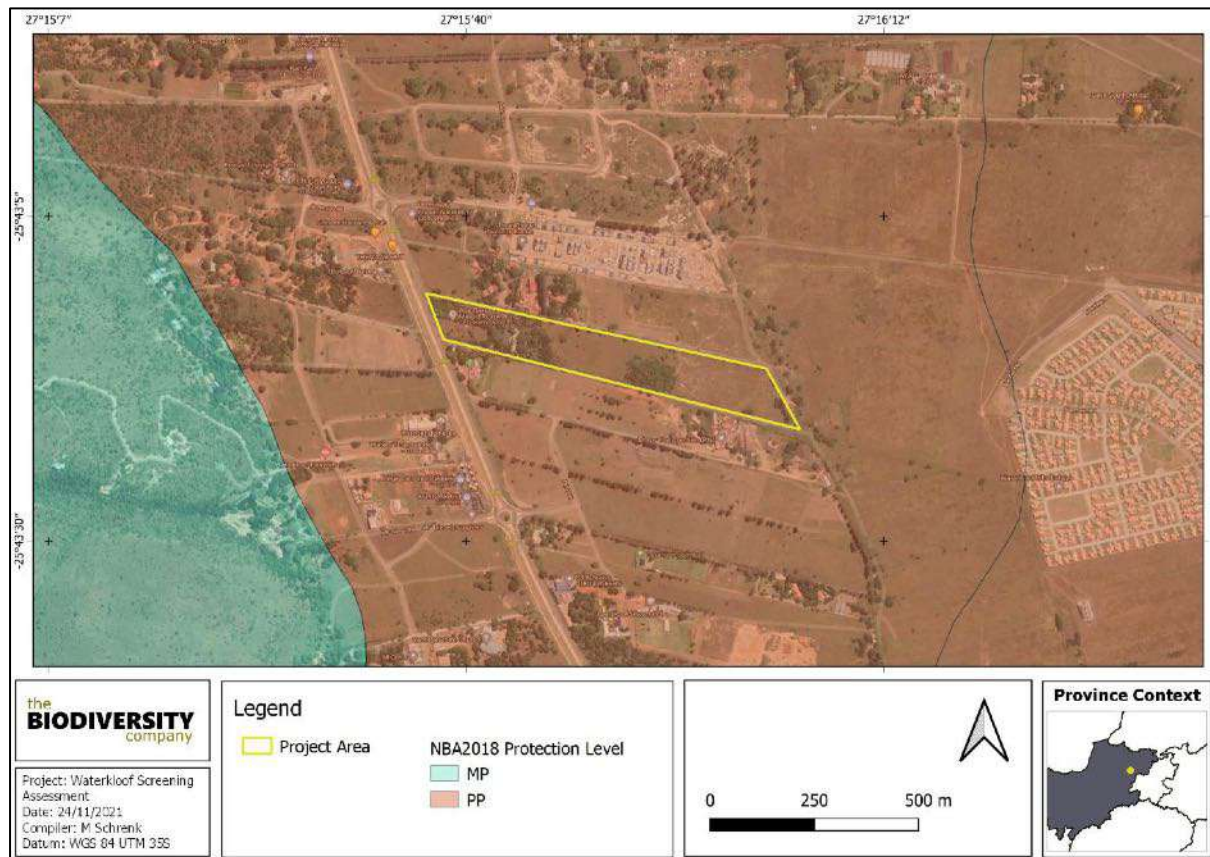


Figure 2-3 The project area showing the regional level of protection of terrestrial ecosystems (NBA, 2018)

### 2.1.3 Watercourses

This assessment considered four spatial datasets that may be relevant to the project area:

- NFEPA Rivers and Wetlands;
- NBA Wetlands;
- SWSA; and
- Topographical River Lines.

The National Freshwater Ecosystem Priority Area (NFEPA) database for rivers and wetlands was compiled by SANBI in 2011. The wetland delineations were based largely on remotely-sensed imagery and therefore did not include historic wetlands lost through drainage, ploughing and concreting. The river ecosystems were identified using a GIS layer provided by the DWS. A GIS analysis revealed that four 'critically modified' artificial wetland systems occur within the 500 m DWS regulation area, and two occur within the 100 m NEMA regulation area. None of the wetlands identified are considered priority wetlands. Refer to Figure 2-4 below for an overview of the site relevance to the NFEPA database.

The NBA Wetlands spatial dataset is part of the South African Inventory of Inland Aquatic Ecosystems (SAIIAE) which was released as part of the National Biodiversity Assessment (NBA) 2018. The National Wetland Map 5 includes inland wetlands and estuaries associated with river line data and many other relevant data sets within the SAIIE 2018. No wetlands occur within the regulation boundary according to this dataset.



Strategic Water Source Areas (SWSAs) refer to the areas that cover 10% of South Africa's total land area and provide a disproportionate total of 50% of the country's water runoff. SWSAs are national ecological infrastructure assets that are essential for water security, which in turn underpins national development goals. (Lötter, M.C. & Le Maitre, D., 2021). The Project area does not occur within any surface water SWSA.

The topographical river line data set from the "2527" quarter degree square was used to identify convex topographical features which potentially could indicate river and wetland areas. No river lines were identified within the 500 m regulated area.

Note that the 500 m regulated area refers to the area within which a water use becomes triggered as per section 21 of the National Water Act (Act No 36 of 1998). The 100 m regulated area refers to the stipulated area as per item vi. (h. North-West) of Activity 12 of the latest Environmental Impact Assessment Regulations Listing Notice 3, as per GNR324 (Gazette No. 40772 of 07 April 2017) related to the National Environmental Management Act (Act No. 107 of 1998).

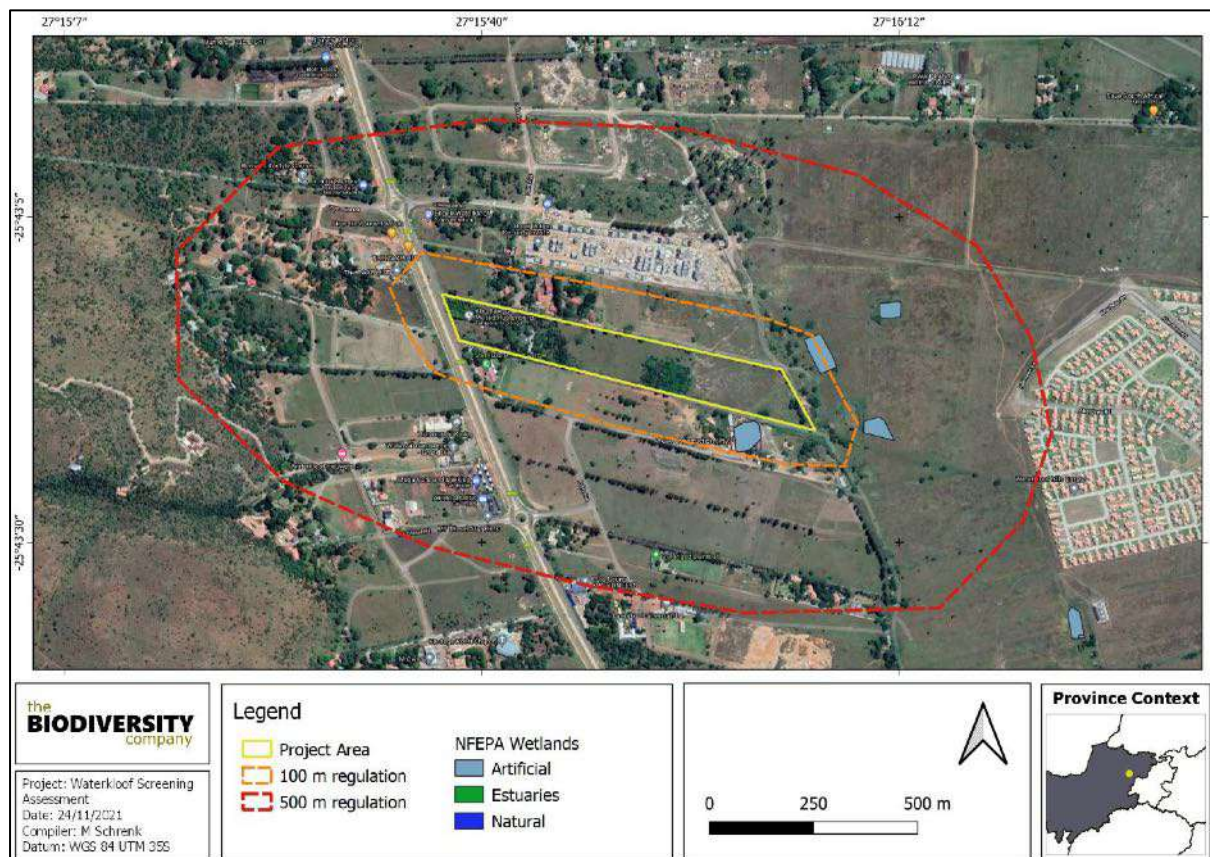


Figure 2-4 The project area in relation to all relevant watercourse datasets

## 2.1.4 Protected and Conservation Areas

Two spatial datasets were utilised for this assessment:

- National Protected Areas Expansion Strategy (NPAES); and
- South African Protected and Conservation Areas Database (SAPAD and SACAD).

No portion of the project area overlaps with the NPAES database.

The DEA maintains a database of Protected and Conservation Areas, the Protected Areas and Conservation Areas (PACA) Database Scheme classifies these into types and sub-types.

The definition of protected areas used in these documents follows the definition of a protected area as defined in the National Environmental Management: Protected Areas Act, (Act 57 of 2003). Chapter 2 of the Act sets out the following types of protected areas:

- Special nature reserves;
- National parks;
- Nature reserves;
- Protected environments (1-4 declared in terms of the Act);
- World heritage sites declared in terms of the World Heritage Convention Act;
- Marine protected areas declared in terms of the Marine Living Resources Act;
- Specially protected forest areas, forest nature reserves, and forest wilderness areas declared in terms of the National Forests Act, 1998 (Act No. 84 of 1998); and
- Mountain catchment areas declared in terms of the Mountain Catchment Areas Act, 1970 (Act No. 63 of 1970).

The project area lies within 5 km of the Kgaswane Mountain Nature Reserve (also a Ramsar site) and the Magaliesberg Protected Natural Environment. Additionally, the area is within the Magaliesberg Biosphere Reserve (Figure 2-5).

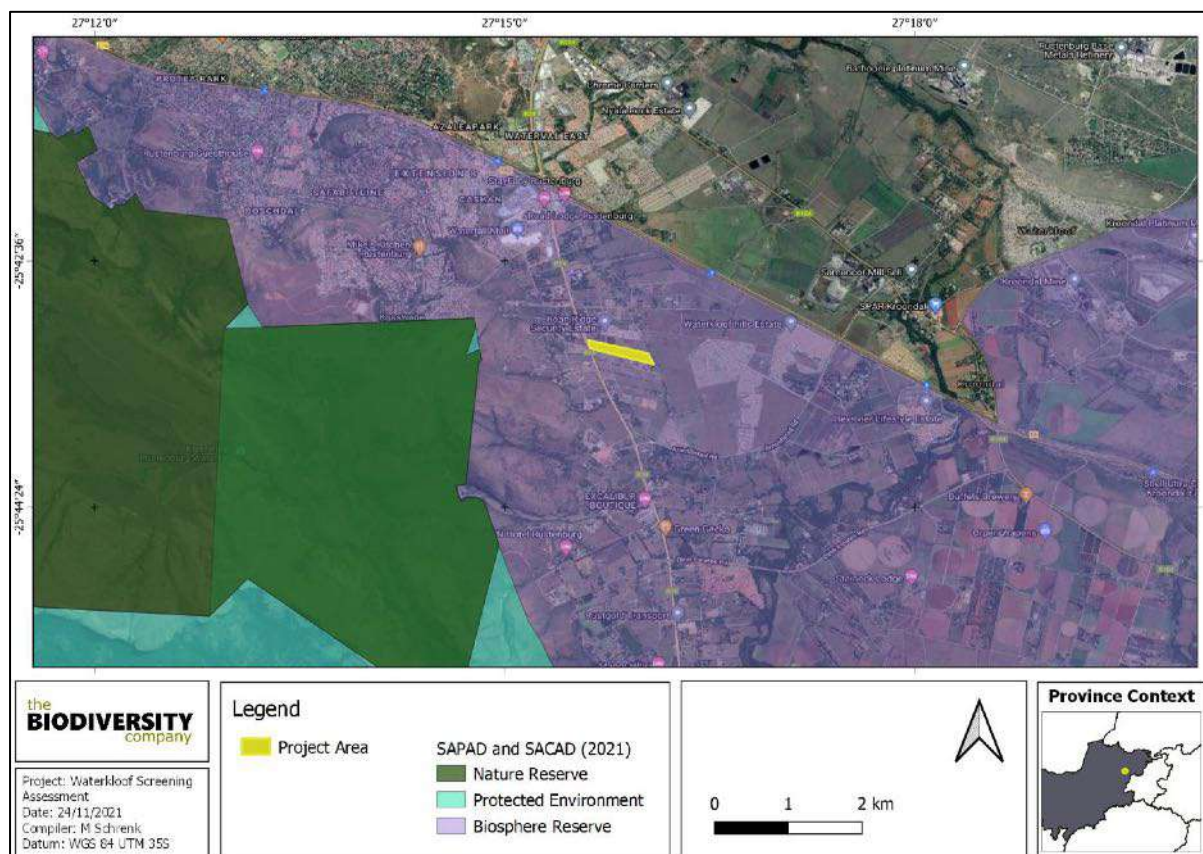


Figure 2-5 The location of the project area in relation to the latest SAPAD & SACAD databases



## 2.1.5 Vegetation Assessment

The project area falls within the Moot Plains Bushveld vegetation type, between the Gold Reef Mountain Bushveld and Marikana Thornveld (Mucina & Rutherford, 2018) (Figure 2-6).

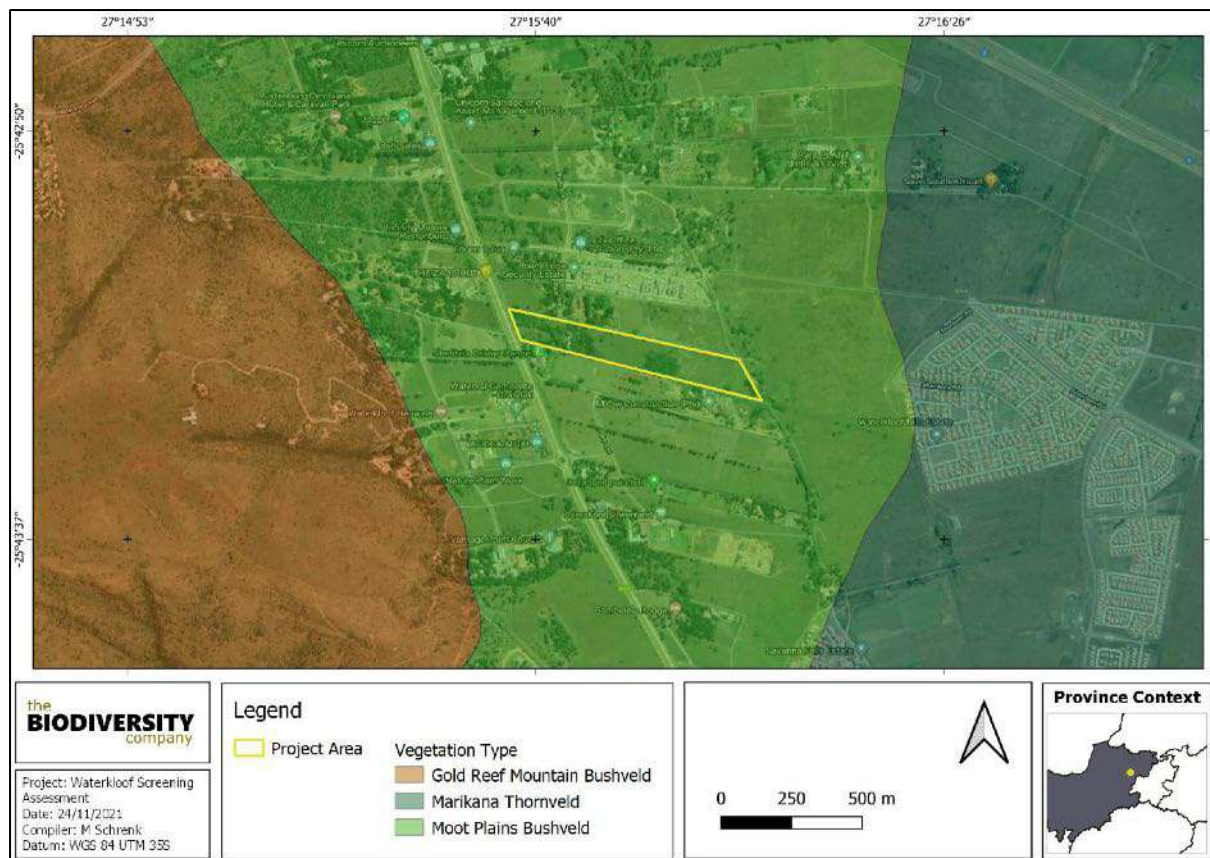


Figure 2-6 Project area showing the vegetation type based on the Vegetation Map of South Africa, Lesotho & Swaziland (BGIS, 2018)

The Moot Plains Bushveld vegetation type consists of open to closed, often thorny savanna dominated by various species of *Acacia* (*Vachellia*) in the bottomlands and plains as well as woodlands of varying height and density on the lower hillsides. The herbaceous layer is dominated by grasses (Mucina & Rutherford, 2006). According to Mucina and Rutherford (2006), the Moot Plains Bushveld vegetation type is classified as Vulnerable with only 13% statutorily conserved.

## 2.1.6 Soil Sensitivity

According to DAFF, 2017, two classes of land capability sensitivity are located within the project area, namely “Moderate” and “High” (see Figure 2-7). Five land capability classes were identified within the 50 m regulated area, namely;

- Land capability class 6 to 8 (Low to Moderate); and
- Land Capability 9 to 10 (Moderately High).

As for the crop boundary sensitivity (DEA, 2021), various areas classified as having “High” sensitivity was identified within the 50 m regulated area. It is worth noting that these areas are indicative of sensitive agriculture land uses rather than potential.

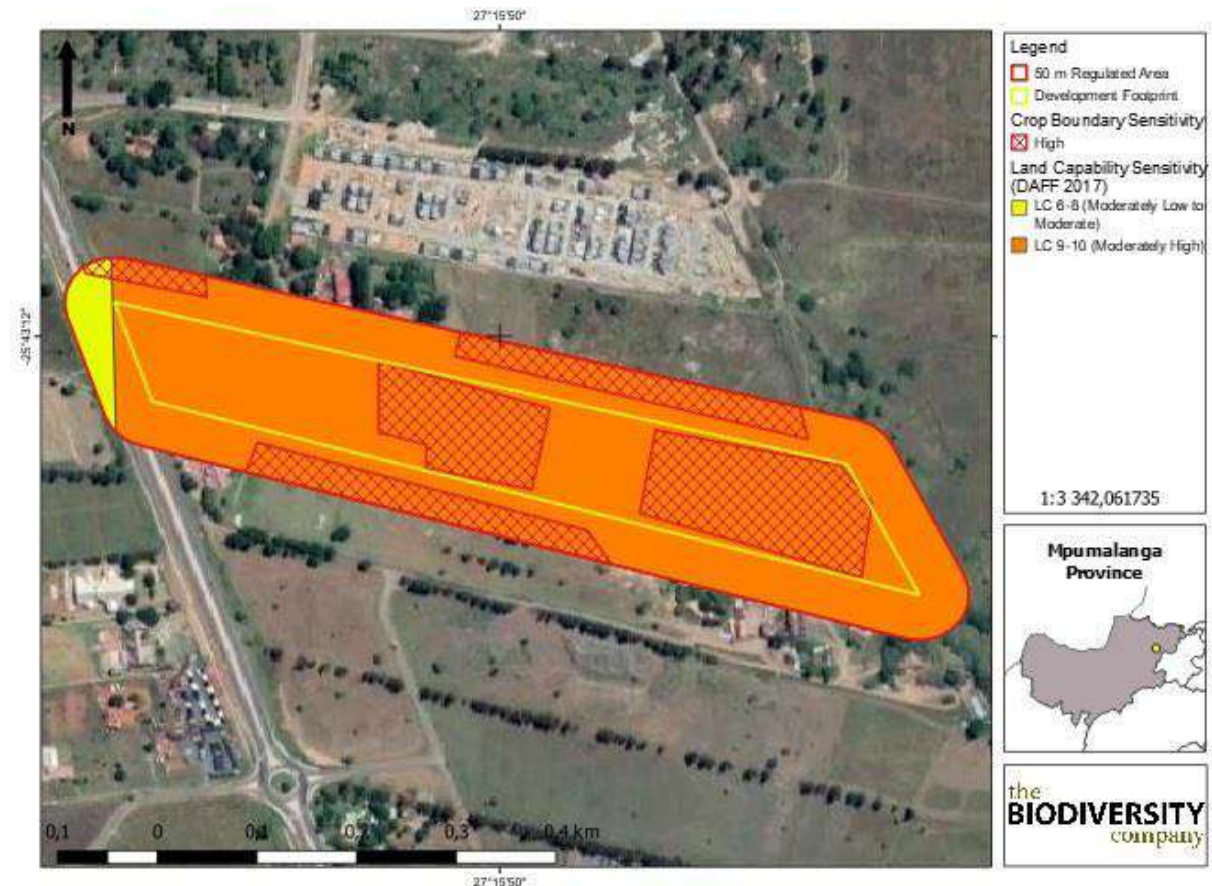


Figure 2-7 Land capability and crop boundary sensitivity

### 3 Field Survey

The property was historically used as a homestead surrounded by informal-formal agricultural activities, chiefly being the planting of *Mangifera indica* (mango). Historical satellite imagery and ground truthing confirmed that between the years of 2005 and 2009 the central portion of the property was cleared for the planting of additional seed, however the land has since moderately recovered. No further significant land-use alterations were observed when studying historical imagery or conducting the field survey.



### 3.1 Terrestrial

The project area was found to be in a transformed to modified state. Portions of the area that are regarded as transformed include locations subjected to orchard planting, demolition and associated construction waste/rubble, trenching, soil dumping, domestic waste dumping and alien invasive plant infestations (Figure 3-2). Due to the historical land use (namely residential homestead) many of the large mature trees that are present on site are considered ornamentals (many of which are either exotic/introduced, or invasive). These transformed portions of the site, concentrated towards the western and central sections as illustrated in Figure 3-1, are regarded as having a low sensitivity.

The remaining portions of the site exist in a modified state. These areas have been subjected to long term disturbances such as human and livestock ingress; however, they do maintain a healthy population of indigenous grasses and also support large populations of the indigenous *Indigofera melanadenia* and *Aloe maculata* (Figure 3-3). These modified sections of the project area (also depicted in Figure 3-1 below) are considered to have a low-moderate sensitivity, and it is noted that within these sections there are extensive portions of healthy indigenous vegetation that occur in areas larger than 300 square meters and 1 ha.

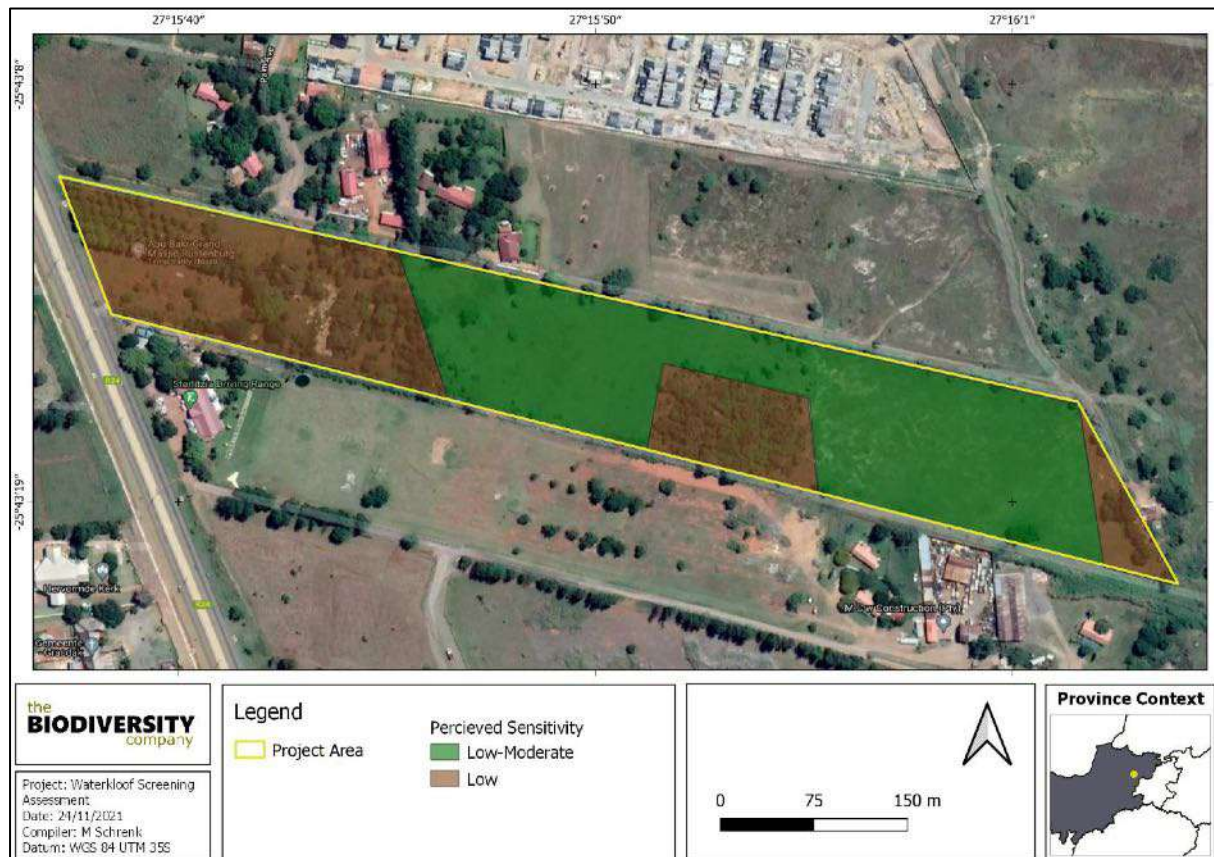


Figure 3-1 Preliminary sensitivity delineations for the project area





Figure 3-2 Photographs of the project area, transformed state (low sensitivity)



Figure 3-3 Photographs of the project area, modified state (low-moderate sensitivity)



### 3.2 Soils

The findings from the soil survey indicates the presence of a Hutton soil form, which in itself is regarded as a high sensitivity soil form. The Hutton soil form typically is characterised by high land capability values, which concur with the desktop findings by means of the land capability sensitivity data (DAFF, 2017).



*Figure 3-4 Example of a red-apedal horizon from the Hutton soil form*

Furthermore, it is worth noting that some agricultural land uses are undertaken within the project area, which is also indicated by the DEA Screening Tool (2021). Indian Mango orchards were identified on-site, which correlates well with the high sensitivity crop boundary areas indicated by the screening tool.



Figure 3-5 Orchard identified on-site (Indian Mango)

## 4 Conclusion

The screening assessment did not identify any potential fatal flaws for the proposed development of Rem. Ptn 209 Waterkloof 305-JQ Rustenburg.

### 4.1 Terrestrial

The site sensitivity is classified as low to low-moderate as approximately half of the project area is transformed, and the other half is in a modified state. According to the recently published Government Notice 320 (dated 20 March 2020) and Government Notice 1150 (dated 30 October 2020) in terms of NEMA: “Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation” it is likely that a Specialist Terrestrial Biodiversity Compliance Statement will be required in order to obtain authorisation.

The following Listing Notices are expected to be applicable for the development of the project area (relating to terrestrial biodiversity):

- Activity 27 of LN1: The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.
- Activity 12 of LN3: The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. (Note that this activity may not be activated as although the project area occurs within the Magaliesberg Biosphere Reserve, it is located on the boundary of the reserve and not within the core. This is as per item i. (h. North-West) of Activity 12 of the latest Environmental Impact Assessment Regulations Listing Notice 3, as per GNR324 (Gazette No. 40772 of 07 April 2017) related to the National Environmental Management Act (Act No. 107 of 1998).
- No formal faunal assessment was completed for the assessment. The animal theme sensitivity for the area is classified as ‘medium’ due to the probability of *Dasymys*

*robbertsii* and *Crocidura maquassiensis* occurring in the area. The expected probability of these two species occurring at the site is moderately low.



Figure 4-1 The animal theme sensitivity for the area

## 4.2 Soils

High sensitivity soils are expected within the 50 m regulated area, which is also emphasised by the “High” sensitivities indicated by DAFF (2017). Cognisance have been made of the recently published Government Notice 320 in terms of NEMA dated 20 March 2020: “Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation”. According to the latter, in the event that “High” sensitivity soils are expected within 50 m of a proposed development, a full agro-eco assessment must be carried out. It is therefore recommended that such an assessment be carried out to identify potential impacts towards soil resources. It is recommended that the Gauteng Department of Agriculture and Rural Development be consulted to advise on the requirement for a comprehensive agricultural potential assessment. The project area is currently zoned for agriculture but the site is classified as single residential, and the surrounding land uses are residential/commercial and classified as such. The proposed development is in keeping with surrounding land uses.

## 4.3 Watercourses

It is noted that four nearby artificial wetlands were recorded from the desktop study, however upon reviewing historical satellite imagery it was found that these locations have not been



utilised/filled for over 10 years. Only one small dam was used up to 2009, likely as an irrigation supply dam for the adjacent agricultural land at that time. Based on this, a wetland assessment is not considered to be necessary for these systems.

## 5 References

References can be made available on request.

## **Appendix C2:**

### **Traffic Impact Assessment**





# TRAFFIC IMPACT ASSESSMENT

## TOWNSHIP ESTABLISHMENT ON RE OF PTN 209, WATERKLOOF

Rustenburg Local Municipality

Client: Islamic trust

Prepared by: Simeon J. du Preez  
Pr. Eng.: 20180326  
Overseen by: W. Engelbrecht  
Pr. Eng.: 820135

R24

Arnoldstad Rd

**Date:** 22/09/2021  
**Report Number:** 4194-TIA-00  
[www.epsengineers.co.za](http://www.epsengineers.co.za)  
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## Executive Summary

JLJ Town Planning has been appointed to apply for township establishment of the proposed township Waterkloof Extension 76. The township will be established on Ptn. 209 Waterkloof 305 JQ. The proposed establishment will result in 9.6 Ha of agricultural land being rezoned to Special for mosque and student housing, Residential 1 and Residential 2. EPS Engineers was appointed by the client to perform a Traffic Impact Assessment (TIA) in support of the application. In this TIA, all traffic related items were considered to determine the effect of the change in land use on the public road network. The upgrades (and estimated costs) required to accommodate the expected traffic was determined.

The following key aspects have been included in the study:

- Trip generation
- Capacity analysis
- Required improvements
- Configurations and design aspects
- Traffic management
- Pedestrian and public transport facilities
- Parking
- Improvement costs and contributions

The application has been analyzed according to the standards of the relevant TMH (16,17 and 26) documents. It has been determined that, should the developer comply with the recommendations made in this report, the application can be supported from a traffic engineering point of view.

*EPS Consulting Engineers was appointed by the Islamic trust to perform a Traffic Impact Assessment on the proposed township Waterkloof Extension 76. It is herewith certified that this Traffic Impact Assessment has been prepared according to the requirements of the South African Traffic Impact and Site Traffic Assessment Manuals.*



Simeon du Preez  
Pr. Eng. 20180326



# 1 Development Particulars

## 1.1 Location

The development is located South of the N4 and east of the R24 (national and provincial roads) approximately 6 km southeast of the Rustenburg CBD. The development location can be seen highlighted red in Figure 1 below:

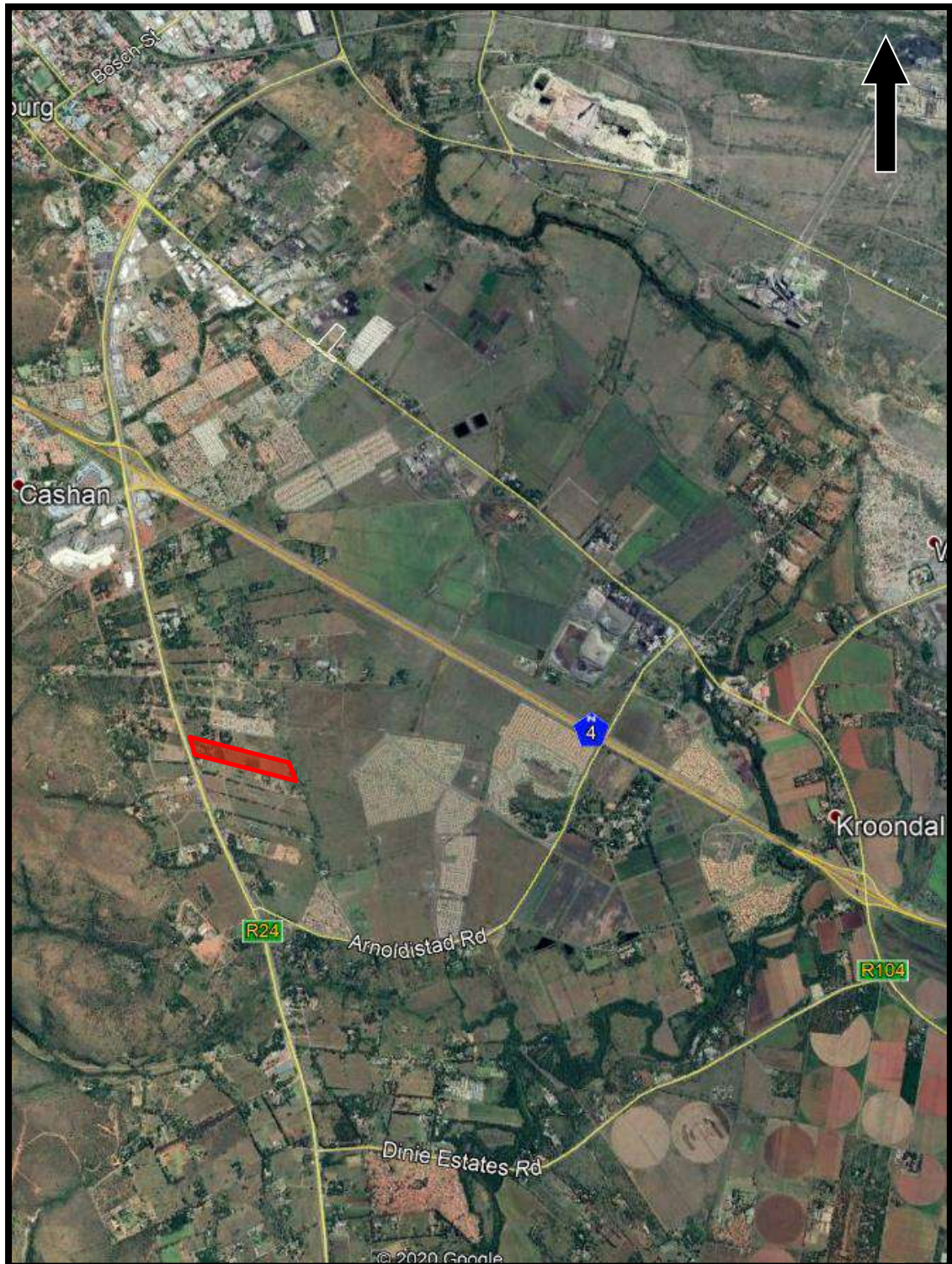


Figure 1: Locality Plan

## 1.2 Development Parameters

The township comprises of various land uses as seen summarised in the table below.

**Table 1: Land Use**

Land Use	Existing extent	New extent
Agricultural	9.6 Ha	0 Ha
Special (Mosque)	0	0.95 Ha
Residential 1	0	4.5 Ha (68 erven)
Residential 2	0	1.71 Ha (40 units/Ha=68 units)
Roads	0	3.4 Ha

## 2 Study Area Information

### 2.1 Primary Study Area

The following figure indicates the main roads that are considered within the primary study area. The yellow, blue and red road reserve boundaries were provided by Civil Concepts (on behalf of SANRAL) and form part of the approved Rustenburg Roads Master Plan. The roads indicated in green are existing roads (or currently under construction) while the roads indicated in blue are planned roads.

The figure also indicates the road names intersection numbers and access letters that will be used for the remainder of the study.



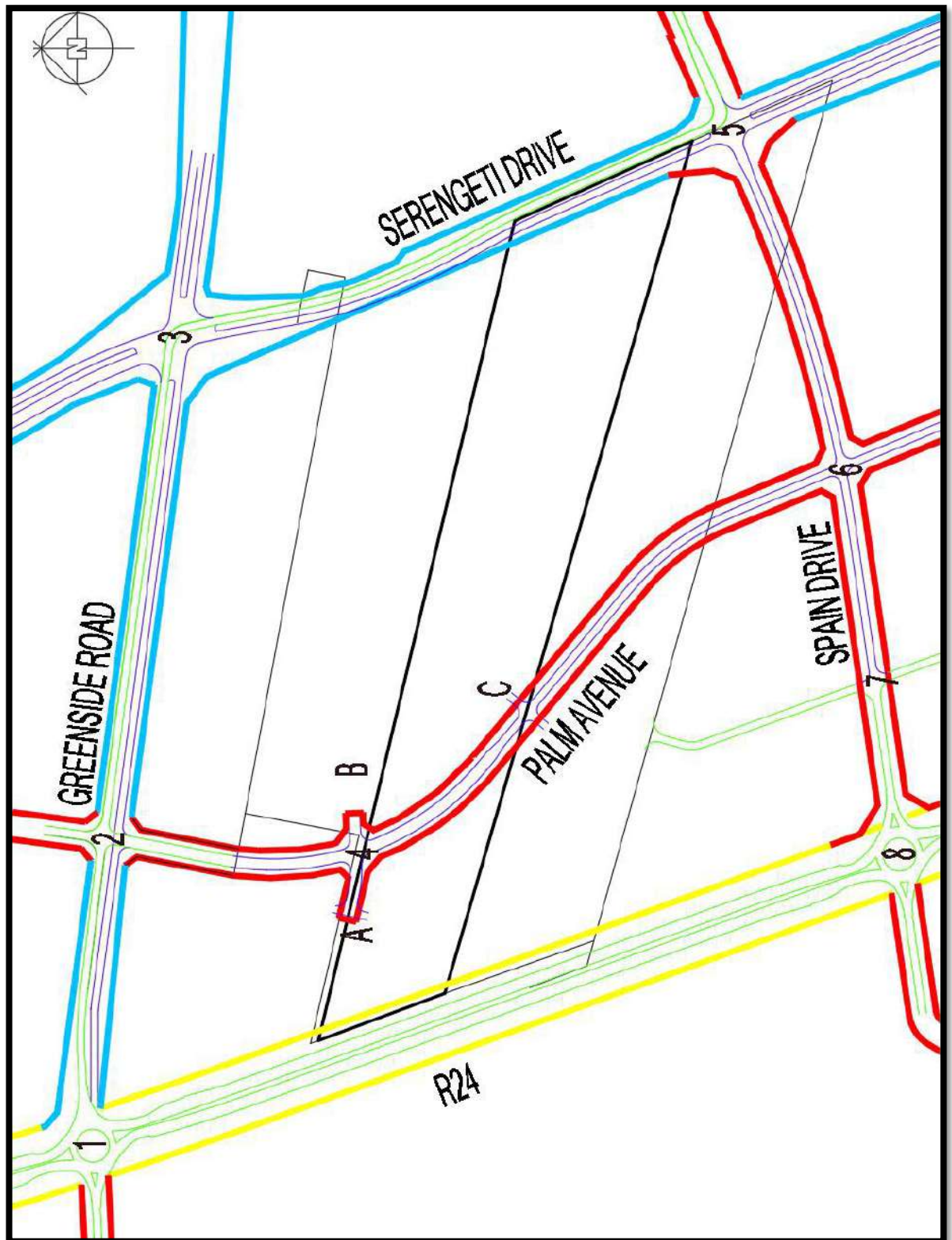


Figure 2: Primary Study Area

## 2.2 Roads

### 2.2.1 Existing Roads

A description of each of the roads which fall within the study area has been listed in Table 2.

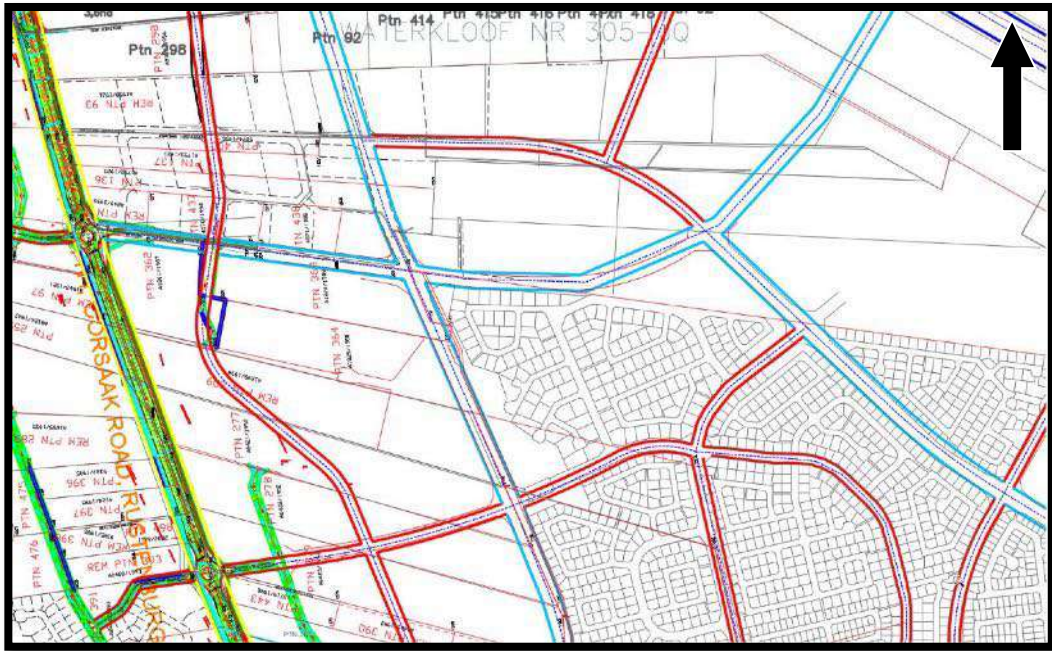
**Table 2: Existing Roads**

Road	Class	Speed Limit	Description
<b>R24</b>	2- Major Arterial	80 km/h	R24 is a dual carriageway 4 lane road with a raised median island. The road has been constructed with 2 lane traffic circles spaced at approximately 800 meters. The R24 is managed by SANRAL and serves as a mobility route providing limited access to individual properties.
<b>Greenside Road</b>	3- Minor Arterial	80 km/h	The road has only been constructed partially between Intersection A and B as a single carriageway two lane road. According to the available master planning for the area this road will finally be constructed as a dual carriageway 4 lane road.
<b>Serengeti Drive</b>	3- Minor Arterial	80 km/h	The unnamed street will be referred to as Northern Arterial for the remainder of this study. The road has not yet been constructed. According to the available master planning for the area this road will finally be constructed as a dual carriageway 4 lane road.
<b>Spain Drive</b>	4a- Major Collector	60 km/h	Okavango Drive is a single carriageway two lane road. The road functions as a collector street for lower order roads. Limited access to properties can also be permitted.
<b>Palm Drive</b>	4a- Major Collector	60 km/h	Okavango Drive is a single carriageway two lane road. The road functions as a collector street for lower order roads. Limited access to properties can also be permitted.

### 2.2.2 New External Roads

The most applicable master planning used by RLM for the study area is the R24 Master Plan which was developed by SANRAL's consultants when the R24 was upgraded. The master plan only considers class 1 to class 4a roads and does not include the lower order access road network. A portion of the master plan has been extracted and can be seen in Figure 4. The plan's colour coding works as follows:

Yellow-Class 2  
Blue-Class 3  
Red-Class 4a



**Figure 3: Master Plan Extract**

Figure 2 has been developed based on the approved township plans for the Waterkloof Hills development as well as the master plan developed by SANRAL. As seen in Figure 2 and Figure 4 the following roads will be required in order to provide access to the new development:

1. Palm Avenue from intersection 2 to access C.

The construction of the remainder of Palm Avenue (from access C to Intersection 6) as well as the construction of Spain drive between Intersection 5 and 7 are not a prerequisite for the approval of this application. However, if the development charge is large enough (after construction of the required sections) and the neighbouring property owners are willing then the developer may use the remaining development charges to construct these sections as far as the development charges permit.

### **2.2.3 New Internal Roads**

In order to provide the mosque, residential 1 and residential 2 erven with access, a new internal road network must be designed and constructed. The roads will be situated in 13-meter-wide road reserves as indicated in the township plan. These internal roads will be classified as class 5 local streets and their purpose will be to provide access to individual erven.

## **2.3 Public transport and Pedestrian facilities**

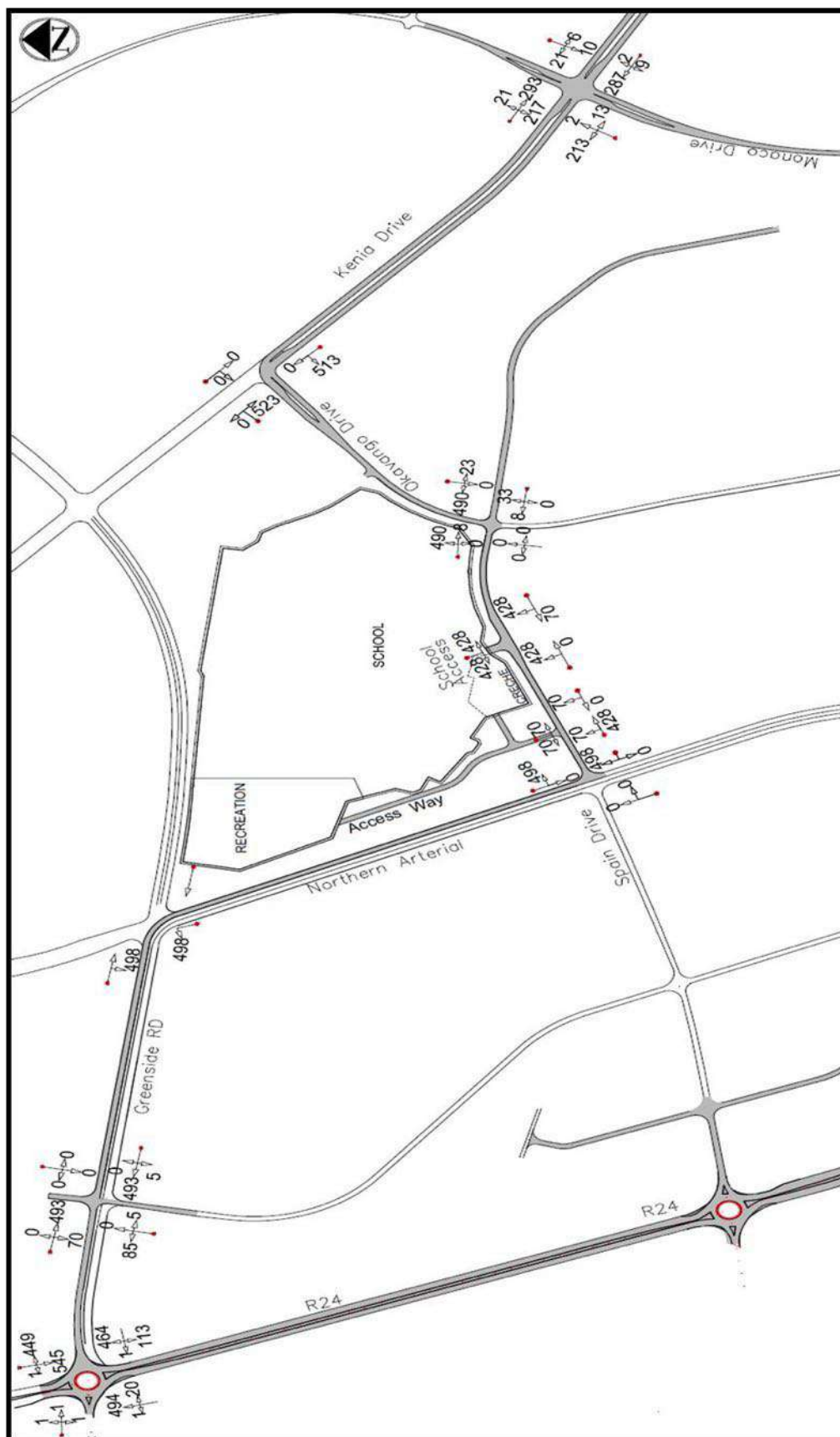
Currently the nearest public transport facility is the public transport layby constructed along the R24 at Intersection A.

## **2.4 Latent rights**

Latent rights refer to land uses in the area which have been approved but are not yet in use. These rights will influence the traffic volumes and distribution in future years.

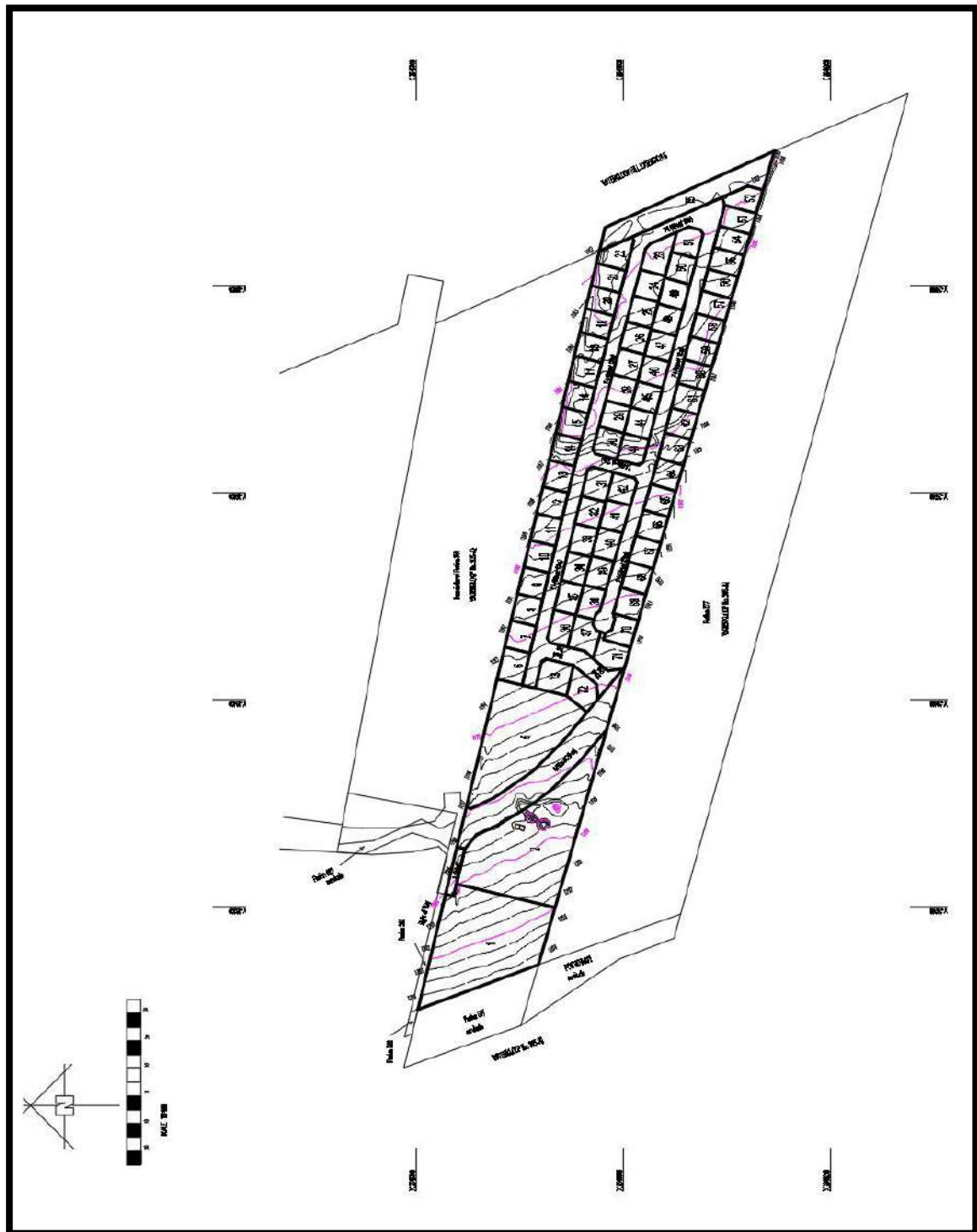
A traffic impact assessment<sup>(6)</sup> was prepared by Tech IQ for the Waterkloof Hills township. A second traffic impact assessment<sup>(7)</sup> was prepared by EPS Engineers for the Royal Bafokeng school which is currently under construction. The following extracts from the TIA's indicate the expected trip generation once the entire township and school have been constructed.





It is important to note that the traffic volumes seen in Figure 5 include background traffic (which was counted in June 2020) as well as the expected trips generated by the approved Waterkloof Hills development and school.





### Figure 5: Township plan

## 2.5 Plans

The proposed township plan prepared by JLJ Town Planning (no plan number or date available) can be seen in the following figure:

For a full resolution image please refer to the original plan submitted by the applicant.

### 3 Site Investigation

A site investigation was done on Thursday the 16<sup>th</sup> of September 2021 by Simeon du Preez. The investigation was done to ensure that all transport facilities that are currently available could be assessed. Furthermore, the investigation was used to assess whether it would be practically possible to implement the plans submitted. Photos taken during the investigation can be seen in **Appendix A**.

### 4 Traffic Demand Estimation

#### 4.1 Traffic Counts

12-hour traffic counts were performed on Monday the 8<sup>th</sup> of June 2020. The counts were performed at Intersection 1.

The traffic counts were done during level 3 of the national lockdown due to Covid-19 and consequently an adjustment has been made to account for the deficit in normal traffic volumes. Traffic counts performed across the country have indicated that during lockdown level 1 traffic volumes decreased by approximately 80% while during lockdown level 2 the traffic volumes decreased by 65%. Lockdown level 3 saw most sectors reopening with most workers expected to return to work. A conservative estimate of 40% reduction in traffic was therefore estimated. All the traffic counts were therefore increased by 40% in order to account for the deficit in traffic.

According to Ester Schmidt of the Johannesburg Roads Agency an annual growth rate of 2.5% could be expected on Gauteng's roads. Due to the current economic conditions across the entire country, similar growth figures can be expected in Rustenburg. The design horizon year (2022) volumes were therefore escalated by 2.5% per annum for 5 years to determine the planning horizon year's (2027) background traffic.

For details of the traffic counts refer to **Appendix B**.

#### 4.2 Trip Generation

The expected peak our trips generated by the development have been determined using the South African Trip Data Manual (TMH 17) and have been summarised in Table 3.

Land use	Extent	AM Trip Rate	AM Split	PM Trip Rate	PM Split	AM In	AM Out	PM In	PM Out
Place of Public Worship (560)	300 Seats	0.05	55:45	0.65	55:45	8	7	107	88
Residential 1 (210)	68 units	1	25:75	1	70:30	17	51	48	20
Residential 2 erf 2 (231)	39 units	0.85	25:75	0.85	70:30	8	25	23	10
Residential 2 erf 5 (231)	30 units	0.85	25:75	0.85	70:30	6	19	18	8
Total						39	102	196	126

**Table 3: Trip Generation**

The trips generated have been calculated according to the trip rates in the TMH 17 document <sup>(4)</sup> and have been based on the worst-case scenario if the developer were to exercise all the rights being applied for. The weekday PM peak period was determined as the most critical period and was therefore used during the capacity analysis.

### 4.3 Trip Distribution

The trips have been distributed using engineering judgment. It is expected that 80 % of the trips will be generated from the R24 coming from Rustenburg (Northern Approach). 5% of the trips will originate from the R24 coming from Olifantsnek (Southern approach). The remaining 15% of trips are expected to originate from the Waterkloof hills development and Kroondal (Eastern Approach).

For the purposes of this study, it was assumed that Palm Avenue between Access 6 and Intersection 6 would not be constructed at this stage. The trips therefore all approach the site from the north from intersection 2. This is to determine the effect of the current traffic demand on the infrastructure which will be available during the design year. Should the remainder of Palm Avenue and Spain Drive be constructed this would further disperse the traffic demand and reduce congestion. The worst-case scenario is therefore being evaluated.

The following figure illustrates how the generated traffic volumes were distributed:

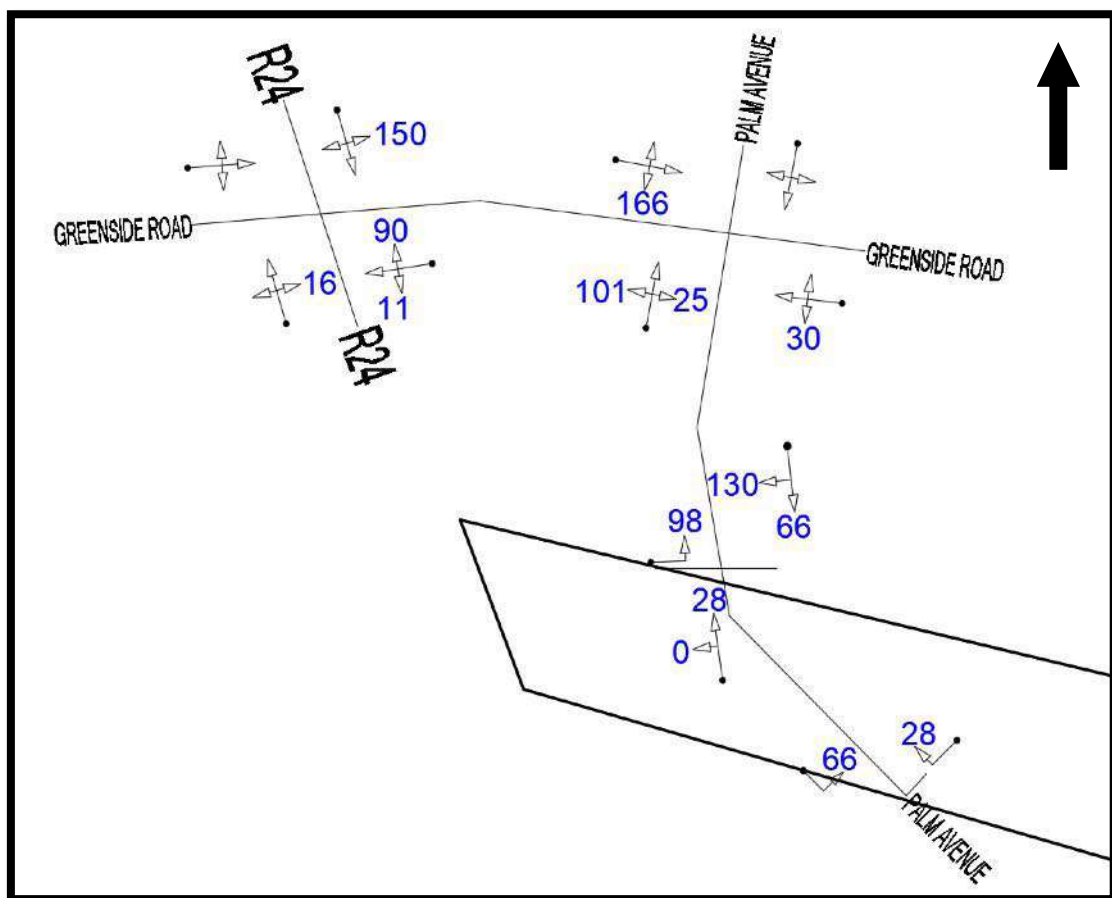


Figure 6: Trip Distribution

#### 4.4 Demand Side Mitigation

The residential 2 units situated next to the place of worship will reduce the trips generated by the place of worship. The reduction in trips has however been excluded from the traffic analysis in order to ensure that the worst-case scenario is evaluated.

#### 4.5 Anticipated Improvements

The anticipated improvements mentioned in this section, are improvements that have already been proposed, and are expected to be done within the study area regardless of the improvements that might be required for this development. The improvements required in terms of this study will be determined during the capacity analysis.

The construction of Greenside Road between intersection 2 and 3 as well as Serengeti Drive between intersection 3 and 5 is currently under construction. The construction is planned to be complete before the applicant's development will be constructed.

Greenside road between intersection 1 and 2 has been planned as a dual carriageway road, however it is currently only constructed as a single carriageway 2 lane road.

### 5 Traffic Impact Assessment

#### 5.1 Method

The assessment scenarios described in this section are based on the scenarios defined under clause 2.12.1 of the TMH 16 document<sup>(3)</sup>. The capacity analysis is used to determine the required mitigation measures and is based on the design horizon year (2022). The design horizon assessment is determined based on the design and land use rights which will be implemented at the current stage. The planning horizon year assessment is based on the total available land use rights which could be exercised on the property 5 years after the completion of the development (2027) and includes any latent rights known of in the area. The purpose of the planning horizon year assessment is to determine whether it is physically possible to accommodate the proposed land use rights. The mitigation measures implementable by the applicant are based on the design horizon year and NOT the planning horizon year. The scenarios analysed in this study are as follows:

**Scenario 1** is performed for the **design year** including the traffic generated by the development; **excluding** any mitigation measures proposed by the study.

**Scenario 2** is performed for the **design year** including traffic generated by the development; **including** any mitigation measures proposed by the study.

**Scenario 3** is performed for the **planning year** including traffic generated by the development **as well as** any latent rights; **including** mitigation measures proposed by the study.

The peak hour traffic flows on the external road network have been determined for each of the above-mentioned scenarios for the weekday PM peak periods. The following trips have been calculated:

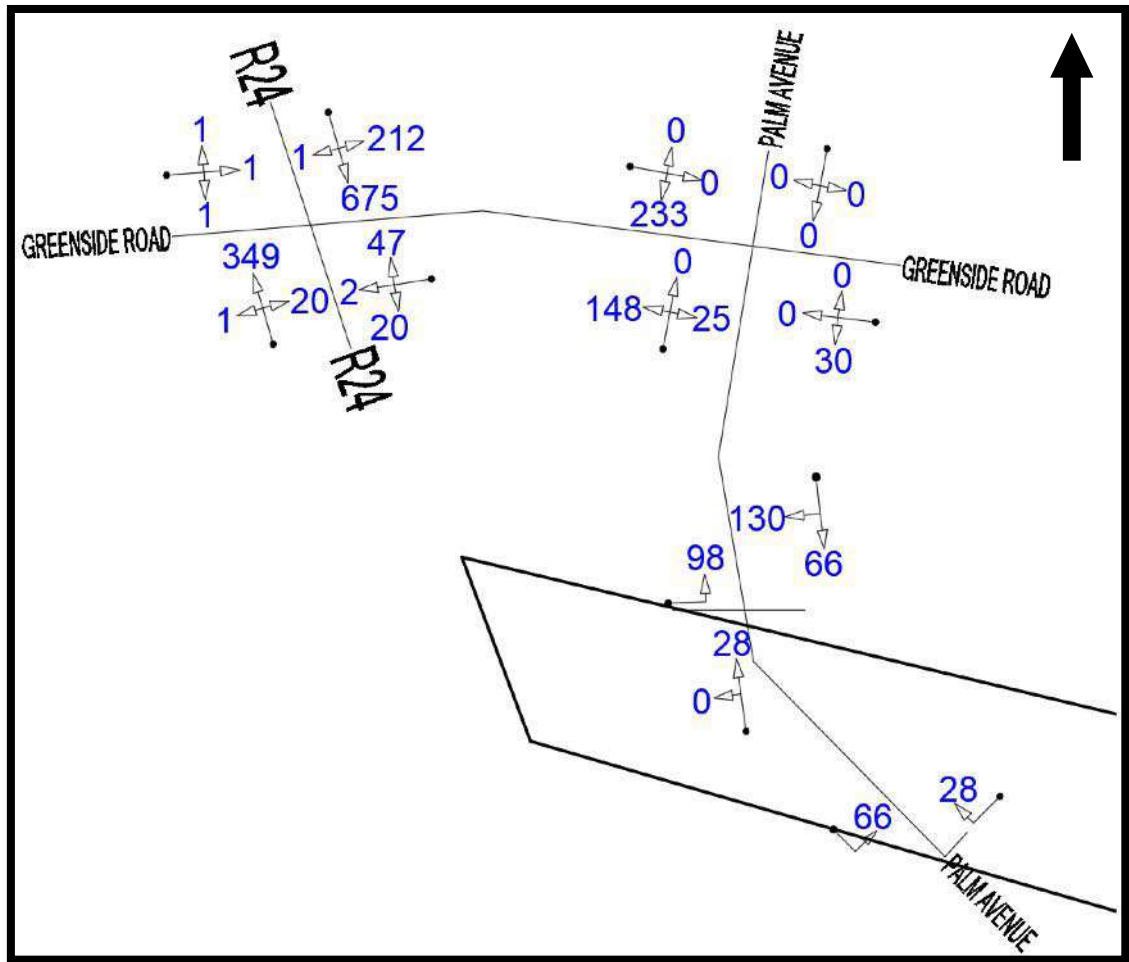


Figure 7: Scenario 1 and 2 traffic volumes



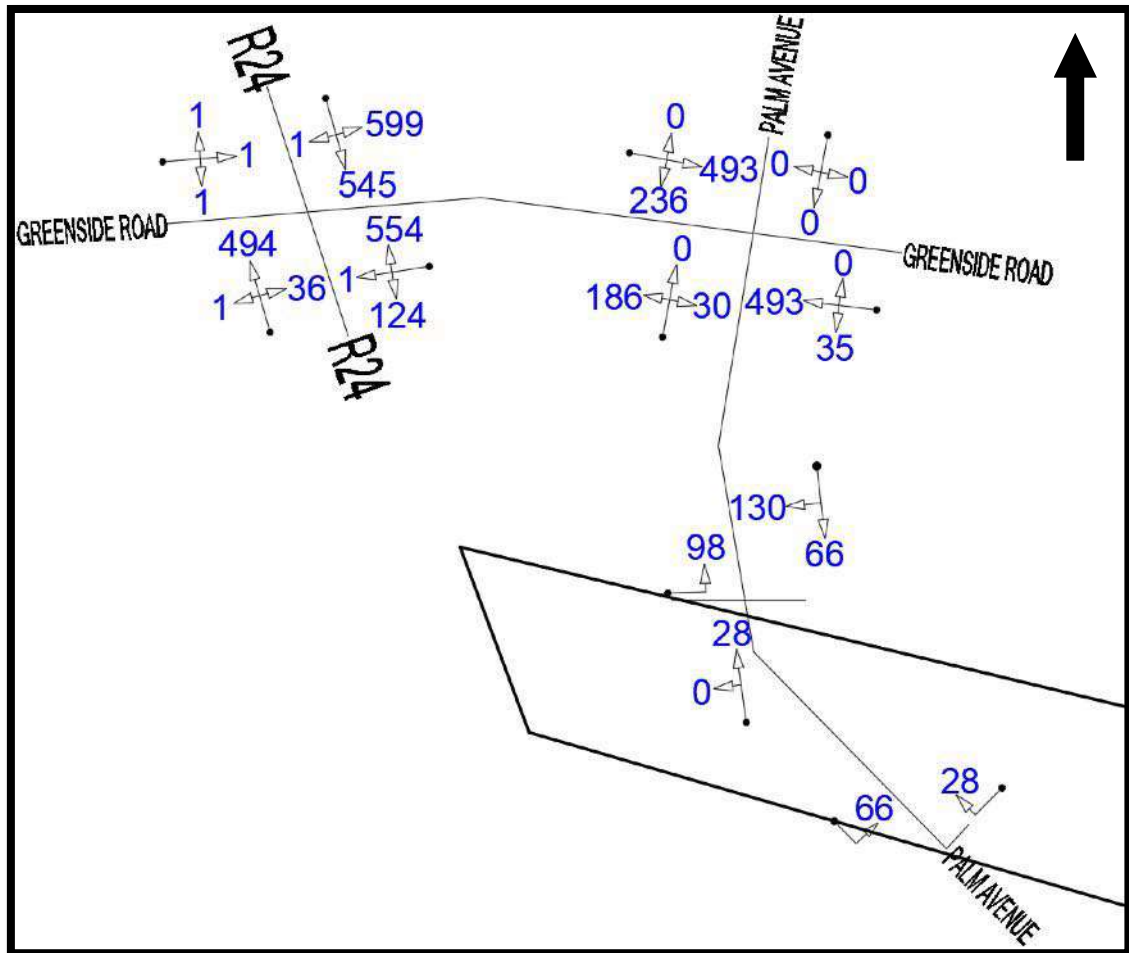
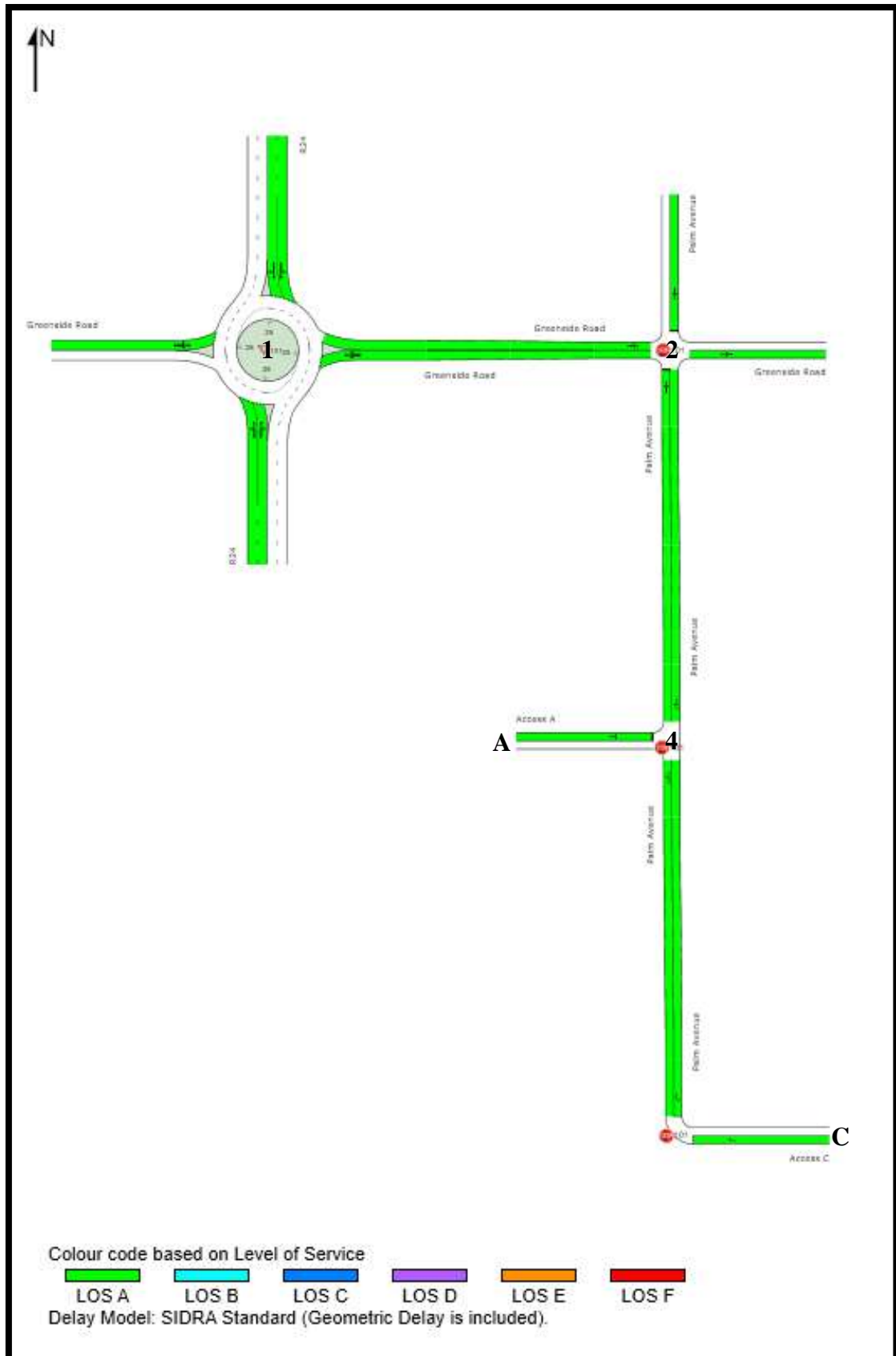


Figure 8: Scenario 3 traffic volumes

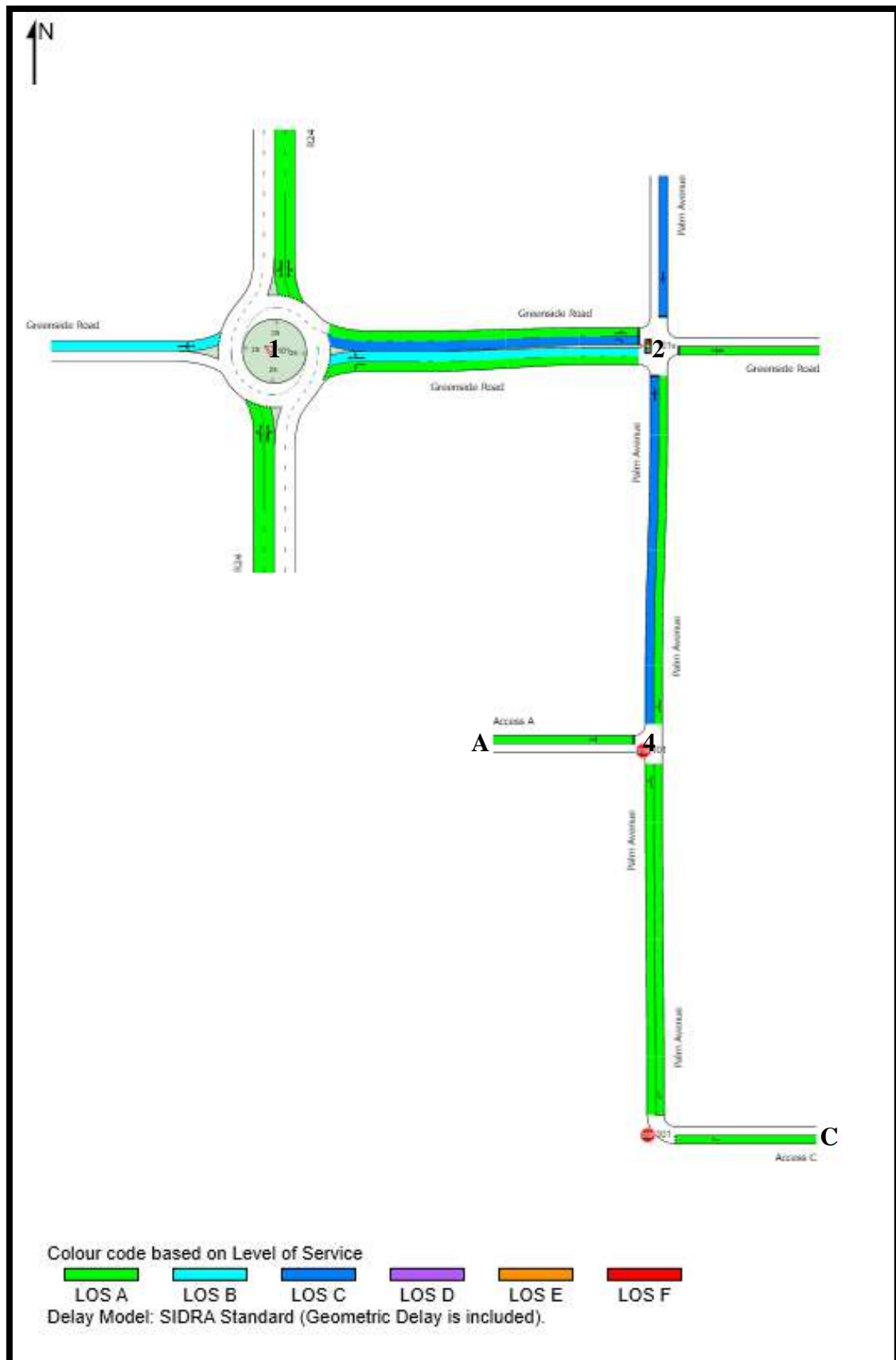
## 5.2 Capacity Analysis

A capacity analysis was done for the network within the study area. The following LOS results were obtained for scenarios 1-3 during the PM peak period. For detailed output results please refer to **Appendix C**.



**Figure 9: Scenario 1 PM LOS**

As seen in Figure 9, the entire network operates at LOS A without any improvements. It is therefore not required to analyse scenario 2 (since scenario 1 has the same traffic volumes as scenario). This implies that the applicant will need to construct the necessary roads to gain access but no further upgrades to the existing infrastructure is required to accommodate the anticipated traffic volumes generated by the development.



**Figure 10: Scenario 3 AM LOS**

As seen in Figure 11, the network is physically capable of accommodating the expected trips generated during the planning horizon year (2027). It should be noted that the upgrades required to accommodate this scenario are not a prerequisite for the applicant to proceed with the development. However, should the development charges be sufficient

the applicant can build these upgrades. The upgrades required for scenario 3 are as follows:

1. Construction of second carriageway on Greenside Road between intersection 1 and 2.
2. Conversion of Intersection 2 (Stop control) to a signalized intersection.

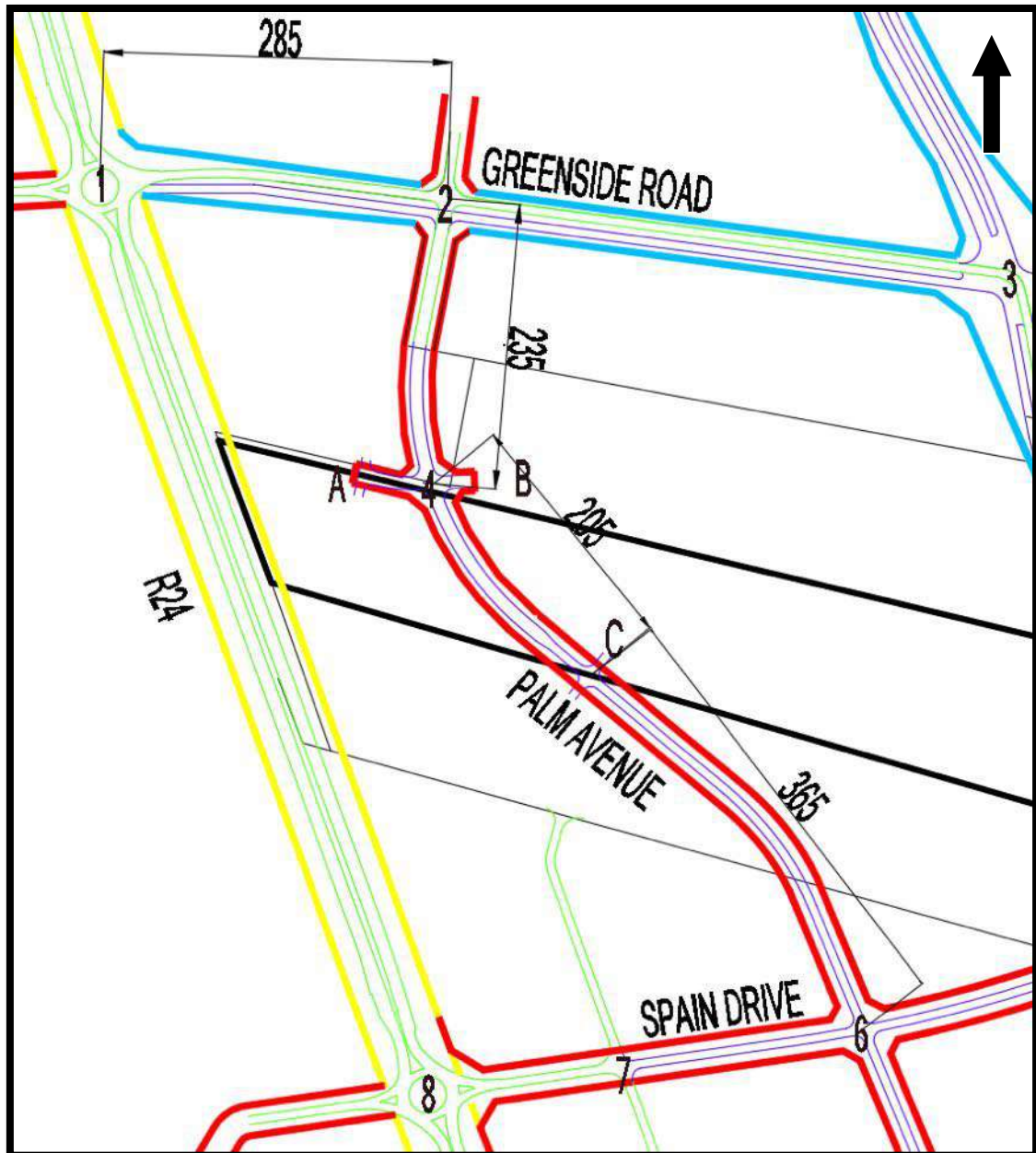
### **5.3 Required Improvements and configuration**

According to the TMH manuals, scenario 3 is analysed to determine if the proposed land use can be practically accommodated. The improvements required to accommodate scenario 3 are not a prerequisite for the current development to take place but rather indicate the improvements which the authority should plan for in the future. The following upgrades are required to accommodate scenario 2:

1. Construction of Palm Avenue between intersection 2 and access C.
2. Construction of Access A.
3. Construction of Access C.

### **5.4 Road access and spacing**

The spacing between intersections and access points can be seen in the following figure:



**Figure 11: Intersection and Access spacing**

The minimum required access spacing for signalised intersections on class 4a roads is 150 meters.

There are no issues foreseen with the provided access spacing.

## 5.5 Traffic Management

Traffic management in the form of access control boom gates will be designed during the SDP and STA. These control mechanisms must be situated no less than 25 meters from the erf boundary in order to ensure sufficient thought length.

## 5.6 Pedestrian Facilities

Pedestrian walkways should be constructed within the site boundary and should be 1.8 meters wide where possible. The external roads currently have unpaved road shoulders which pedestrians use to walk on. It is therefore recommended that walkways be



constructed on the southern side of Greenside Road between intersection 1 and 2. If the development charges permit, walkways can also be constructed along Palm Avenue.

## **5.7 Public Transport Facilities**

The development is not expected to generate high volumes of public transport trips. The existing laybys along the R24 will be sufficient.

During the completion of the Site Traffic Assessment a sweep path analysis must be done to ensure that heavy vehicles accessing the site are able to manoeuvre as intended. The busses and heavy vehicles must enter and exit the site nose first.

## **5.8 Parking**

Parking provision and design should meet the standards set in chapter 15 of the TMH 16 document as well as the parking requirements of Rustenburg Local Municipality. According to the Rustenburg land use management scheme 2005.

# **6 Improvement Costs and Development Charges**

Exact improvement costs will be determined during the feasibility study phase of the project. The following figures are rough estimates for the cost of the required upgrades:

1. Palm Avenue between Intersection 2 and Access C: R 3 million
2. Access A: R 350 000
3. Access C: R 300 000
4. Walkway between Intersection 1 and 2: R 180 000

According to the current engineering services contribution policy of the municipality the development charges (at the time of this study) are R 3.012 million (excluding VAT). The development charges will however be recalculated at the time that the service agreement is compiled.

# **7 Conclusions and Recommendations**

The proposed establishment of Waterkloof X 76 will result in 9.6 Ha of Agricultural land being rezoned for a Mosque, 68 Residential 1 units and 68 Residential 2 units. EPS Engineers was appointed by the client to perform a Traffic Impact Assessment (TIA) for the township establishment. During this TIA, all traffic related items were considered to determine the effect of the change in land use on the public road network. The upgrades (and estimated costs) required to accommodate the expected traffic were determined.

The applicant will be required to construct a portion of Palm Avenue, two access points and walkways along Greenside Avenue. The applicant will need to provide sufficient pedestrian and public transport facilities on site. These will be determined during the development of the SDP.

The township establishment has been analyzed according to the standards of the relevant TMH (16,17 and 26) documents. It has been determined that, should the developer comply with the recommendations made in this report, the application can be supported from a traffic engineering point of view.

## 8 References

- (1) RUSTENBURG-ROADS-MASTERPLAN,  
[www.epsengineers.co.za/images/Rustenburg%20Roads%20Masterplan.pdf](http://www.epsengineers.co.za/images/Rustenburg%20Roads%20Masterplan.pdf) , 2016
- (2) South African Traffic Impact and Site Traffic Assessment Standards and Requirements Manual, TMH 16, June 2011
- (3) South African Traffic Impact and Site Traffic Assessment Manual, COTO, April 2011
- (4) South African Trip Data Manual, TMH 17, April 2011
- (5) South African Road Classification and Access Management Manual, TMH 26, July 2011
- (6) Proposed Mixed-use development on several portions of the farm Waterkloof 305, Traffic Impact Study and Site Traffic Assessment, Tech IQ Consulting Engineers, September 2014
- (7) Traffic Impact Assessment, Rezoning of Waterkloof Hills X 5, EPS Engineers, August 2020

## Appendix A-Site photos



**Figure 12: R24/Greenside Intersection (1)**



**Figure 13: Greenside Road**





**Figure 14: Intersection 2**



**Figure 15: Future location of Greenside Road**



**Figure 16: Future location of Serengeti Drive**



## Appendix B- Traffic Counts

TOTAL SUMMARY																
TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY		
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL		
07:30	07:45	2	-	-	-	85	2	4	-	13	7	98	-	211		826
07:45	08:00	1	-	-	1	90	-	2	2	6	10	103	3	218		822
08:00	08:15	-	-	-	-	48	-	-	-	7	5	82	3	145		774
08:15	08:30	-	-	-	-	55	1	2	4	-	9	85	1	157		731
08:30	08:45	1	-	-	-	67	-	5	-	3	6	81	-	-		683
08:45	09:00	1	-	-	-	47	1	2	-	3	-	81	2	137		602
09:00	09:15	1	-	-	-	47	-	2	-	3	7	88	1	149		
09:15	09:30	-	-	-	-	47	-	3	-	2	3	81	-	136		
09:30	09:45	-	-	-	-	-	-	-	-	-	-	-	-	-		
09:45	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-		285
10:00	10:15	-	-	-	-	-	-	-	-	-	-	-	-	-		136
10:15	10:30	-	-	-	-	-	-	-	-	-	-	-	-	-		0
10:30	10:45	-	-	-	-	-	-	-	-	-	-	-	-	-		0
10:45	11:00	-	-	-	-	-	-	-	-	-	-	-	-	-		0
11:00	11:15	-	-	-	-	-	-	-	-	-	-	-	-	-		0
11:15	11:30	-	-	-	-	2	-	-	-	-	-	2	-	-		4
11:30	11:45	3	-	-	-	50	-	2	-	4	7	75	-	141		145
11:45	12:00	3	-	-	-	58	1	6	-	10	10	95	-	183		328
12:00	12:15	-	-	-	-	63	1	2	-	2	4	76	2	150		478
12:15	12:30	1	-	4	1	53	-	3	-	-	10	75	1	-		622
12:30	12:45	3	1	1	1	61	1	1	-	5	7	77	-	-		639
12:45	13:00	1	-	-	-	58	1	2	-	4	9	76	2	153		609
13:00	13:15	1	-	-	-	61	-	2	-	3	10	79	-	-		615
13:15	13:30	-	-	2	1	62	-	3	-	4	8	78	-	158		625
13:30	13:45	-	-	-	-	66	1	1	-	4	9	102	3	186		653
13:45	14:00	-	-	-	-	65	-	4	2	8	8	126	-	213		713
14:00	14:15	-	-	-	-	52	-	2	-	9	11	105	-	179		736
14:15	14:30	1	1	1	-	54	2	2	-	11	14	126	-	212		790
TOTAL		21	2	8	4	1 544	25	64	9	147	189	2 180	19	3 583		

PEAK HOUR SUMMARY																
TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY		
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK	
06:00	07:00	2	-	-	-	353	14	14	1	46	35	389	1	855	AM PEAK	
06:00	07:00	0.50	-	-	-	0.83	0.58	0.70	0.25	0.58	0.88	0.94	0.25		AM PHF	
14:00	15:00	1	1	1	-	237	3	9	2	32	42	459	3	790	MID PEAK	
14:00	15:00	0.47	0.82	-	-	-	-	0.87	0.62	0.38	-	0.50			MID PHF	

Traffic counts performed at the R24/Greenside Intersection on Monday the 8<sup>th</sup> of June.

## Appendix C- SIDRA Output

### LANE SUMMARY

Site: 101 [1 (Site Folder: General)]

Network: N101 [Scenario 1  
(Network Folder: General)]

New Site  
Site Category: (None)  
Roundabout

Lane Use and Performance															
	DEMAND FLOWS		ARRIVAL FLOWS		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total veh/h]	HV %	[Total veh/h]	HV %	veh/h	v/c	%	sec		[Veh]	[Dist] m		m	%	%
South: R24															
Lane 1 <sup>d</sup>	213	5.0	213	5.0	1461	0.146	100	4.1	LOS A	0.3	2.1	Full	500	0.0	0.0
Lane 2	198	5.0	198	5.0	1354	0.146	100	4.7	LOS A	0.3	2.1	Full	500	0.0	0.0
Approach	411	5.0	411	5.0		0.146		4.4	LOS A	0.3	2.1				
East: Greenside Road															
Lane 1 <sup>d</sup>	77	5.0	77	5.0	824	0.093	100	9.9	LOS A	0.1	1.0	Full	270	0.0	0.0
Approach	77	5.0	77	5.0		0.093		9.9	LOS A	0.1	1.0				
North: R24															
Lane 1 <sup>d</sup>	521	5.0	521	5.0	1614	0.323	100	4.0	LOS A	0.7	5.0	Full	500	0.0	0.0
Lane 2	465	5.0	465	5.0	1441	0.323	100	4.0	LOS A	0.7	5.0	Full	500	0.0	0.0
Approach	987	5.0	987	5.0		0.323		4.0	LOS A	0.7	5.0				
West: Greenside Road															
Lane 1 <sup>d</sup>	3	5.0	3	5.0	936	0.004	100	7.0	LOS A	0.0	0.0	Full	140	0.0	0.0
Approach	3	5.0	3	5.0		0.004		7.0	LOS A	0.0	0.0				
Intersection	1478	5.0	1478	5.0		0.323		4.4	LOS A	0.7	5.0				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

<sup>d</sup> Dominant lane on roundabout approach

Approach Lane Flows (veh/h)											
South: R24											
Mov.	L2	T1	R2	Total	%HV						
From S						Cap.	Deg.	Lane	Prob.	Ov.	
To Exit:	W	N	E			veh/h	satn v/c	Util. %	SL Ov. %	Lane No.	
Lane 1	1	212	-	213	5.0	1461	0.146	100	NA	NA	
Lane 2	-	176	22	198	5.0	1354	0.146	100	NA	NA	
Approach	1	388	22	411	5.0		0.146				
East: Greenside Road											
Mov.	L2	T1	R2	Total	%HV						
From E						Cap.	Deg.	Lane	Prob.	Ov.	
To Exit:	S	W	N			veh/h	satn v/c	Util. %	SL Ov. %	Lane No.	
Lane 1	22	2	52	77	5.0	824	0.093	100	NA	NA	
Approach	22	2	52	77	5.0		0.093				

North: R24										
Mov. From N To Exit:	L2	T1	R2	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
	E	S	W							
Lane 1	236	286	-	521	5.0	1614	0.323	100	NA	NA
Lane 2	-	464	1	465	5.0	1441	0.323	100	NA	NA
Approach	236	750	1	987	5.0		0.323			
West: Greenside Road										
Mov. From W To Exit:	L2	T1	R2	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
	N	E	S							
Lane 1	1	1	1	3	5.0	936	0.004	100	NA	NA
Approach	1	1	1	3	5.0		0.004			
Total %HV Deg Satn (v/c)										
Intersection	1478	5.0		0.323						

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

Merge Analysis											
	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: R24											
Merge Type: Not Applied											
Full Length Lane	1			Merge Analysis not applied.							
Full Length Lane	2			Merge Analysis not applied.							
East Exit: Greenside Road											
Merge Type: Not Applied											
Full Length Lane	1			Merge Analysis not applied.							
North Exit: R24											
Merge Type: Not Applied											
Full Length Lane	1			Merge Analysis not applied.							
Full Length Lane	2			Merge Analysis not applied.							
West Exit: Greenside Road											
Merge Type: Not Applied											
Full Length Lane	1			Merge Analysis not applied.							

## LANE SUMMARY

Site: 101 [1 - Copy (Site Folder: General)]

Network: N101 [Scenario 3  
(Network Folder: General)]

New Site  
Site Category: (None)  
Roundabout

Lane Use and Performance															
	DEMAND FLOWS		ARRIVAL FLOWS		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[ Total veh/h ]	[ HV % ]	[ Total veh/h ]	[ HV % ]	veh/h	v/c	%	sec		[ Veh ]	[ Dist m ]		m	%	%
South: R24															
Lane 1 <sup>d</sup>	314	5.0	314	5.0	892	0.352	100	7.5	LOS A	1.1	8.1	Full	500	0.0	0.0
Lane 2	276	5.0	276	5.0	784	0.352	100	8.7	LOS A	1.0	7.6	Full	500	0.0	0.0
Approach	590	5.0	590	5.0		0.352		8.1	LOS A	1.1	8.1				
East: Greenside Road															
Lane 1	138	5.0	138	5.0	605	0.228	100	8.3	LOS A	0.4	2.6	Full	270	0.0	0.0
Lane 2 <sup>d</sup>	618	5.0	618	5.0	996	0.620	100	13.9	LOS B	1.9	14.0	Full	270	0.0	0.0
Approach	756	5.0	756	5.0		0.620		12.9	LOS B	1.9	14.0				
North: R24															
Lane 1 <sup>d</sup>	674	5.0	674	5.0	1562	0.431	100	4.1	LOS A	1.3	9.6	Full	500	0.0	0.0
Lane 2	599	5.0	599	5.0	1388	0.431	100	4.1	LOS A	1.3	9.4	Full	500	0.0	0.0
Approach	1272	5.0	1272	5.0		0.431		4.1	LOS A	1.3	9.6				
West: Greenside Road															
Lane 1 <sup>d</sup>	3	5.0	3	5.0	584	0.006	100	10.0	LOS B	0.0	0.1	Full	140	0.0	0.0
Approach	3	5.0	3	5.0		0.006		10.0	LOS B	0.0	0.1				
Intersection	2621	5.0	2621	5.0		0.620		7.5	LOS A	1.9	14.0				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akapelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

<sup>d</sup> Dominant lane on roundabout approach

Approach Lane Flows (veh/h)											
South: R24											
Mov. From S To Exit:	L2	T1	R2	Total	%HV						
	W	N	E			Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
Lane 1	1	313	-	314	5.0	892	0.352	100	NA	NA	
Lane 2	-	236	40	276	5.0	784	0.352	100	NA	NA	
Approach	1	549	40	590	5.0		0.352				
East: Greenside Road											
Mov. From E To Exit:	L2	T1	R2	Total	%HV						
	S	W	N			Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
Lane 1	138	-	-	138	5.0	605	0.228	100	NA	NA	
Lane 2	-	2	616	618	5.0	996	0.620	100	NA	NA	

Approach	138	2	616	756	5.0		0.620				
North: R24											
Mov. From N To Exit:	L2	T1	R2	Total	%HV		Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
	E	S	W				Cap. veh/h				
Lane 1	668	8	-	674	5.0		1562	0.431	100	NA	NA
Lane 2	-	598	1	599	5.0		1388	0.431	100	NA	NA
Approach	668	606	1	1272	5.0			0.431			
West: Greenside Road											
Mov. From W To Exit:	L2	T1	R2	Total	%HV		Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
	N	E	S				Cap. veh/h				
Lane 1	1	1	1	3	5.0		584	0.006	100	NA	NA
Approach	1	1	1	3	5.0			0.006			
Total %HV Deg.Satn (v/c)											
Intersection	2621	5.0			0.620						

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

Merge Analysis											
	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate % veh/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: R24											
Merge Type: Not Applied											
Full Length Lane	1			Merge Analysis not applied.							
Full Length Lane	2			Merge Analysis not applied.							
East Exit: Greenside Road											
Merge Type: Not Applied											
Full Length Lane	1			Merge Analysis not applied.							
Full Length Lane	2			Merge Analysis not applied.							
North Exit: R24											
Merge Type: Not Applied											
Full Length Lane	1			Merge Analysis not applied.							
Full Length Lane	2			Merge Analysis not applied.							
West Exit: Greenside Road											
Merge Type: Not Applied											
Full Length Lane	1			Merge Analysis not applied.							



## **Appendix D:**

### **Draft Environmental Management Programme**

# Proposed Waterkloof Mosque and Residential Development, Rustenburg

REF No: NWP/EIA/112/2021



## **Environmental Management Plan DRAFT REPORT**

**13 April 2022**

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# 1 Introduction

The Waterkloof Islamic Trust intends to develop a Mosque, classrooms, and residential infrastructure on the farm Waterkloof Portion 305, in Rustenburg, Gauteng. EnviroHeart Consulting Pty Ltd was appointed to undertake an Environmental Basic Assessment (BA) process in application of Environmental Authorisation (EA). The proposed project triggers listed activities in term of the National Environmental Management Act (NEMA, Act No. 107 of 1998), and the associated 2014 EIA Regulations GN R982 (as amended) and Listing Notices: GN No. 327 (Listing Notice 1) and GN No. 324 (Listing Notice 3), which require environmental authorisation prior to commencing. The Competent Authority responsible for the Decision is the Northwest Department of Economic Development, Conservation and Tourism (NDEDCT).

This EMPr informs all relevant parties; namely, the Developer, the Manager, the Environmental Control Officer (ECO) and all other staff employed at the proposed development of their legislated duties. All parties should note that obligations imposed by the EMPr are legally binding once this EMPr is approved by NDEDCT.

## 1.1 Objectives of this EMPr

The general objectives of the EMPr are to:

- Ensure compliance with the regulatory authority stipulations and guidelines which could be local, provincial, national and/or international.
- Establish a method of monitoring and auditing environmental management practices during all phases of the activity.
- Ensure that there is sufficient allocation of sufficient financial resources to ensure that the EMPr is implemented,
- Provide feedback for continual improvement in environmental and social aspects.
- Institute practices and protocols to identify and respond to unforeseen environmental and social impacts.
- Identify mitigation measures which could reduce and mitigate impacts to minimal levels.
- Identify enhancement measures for positive beneficial impacts.
- Create management structures that address the concerns and complaints of Interested and Affected Parties.
- Ensure that safety recommendations are complied with.

## 1.2 Property Extent of this EMPr

The proposed development will take place on Remainder of Portion 209 (Portion of Portion 98) of the farm Waterkloof 305 JQ, situated at 27°43'3.8"S 27°16'45'03"E. The site lies south of Waterkloof Mall and can be accessed from the R24 Provincial Road. The total footprint of the site is 9,5873 ha. The remaining portion of the farm has been transferred to the South African National Roads Agency (5972 m<sup>2</sup> extent). See **Appendix 1, Figure 1** for the proposed development site and **Appendix 1, Figure 2** for the locality map.



## 2 Legalisation Relevant to this EMPr

Table 2 below lists key legislation that governs the development of this EMPr directly. Refer to the EIR for the full list of applicable legislation.

**Table 1: Applicable Legislation**

Legislation / Policy / Guideline	Authority	Permit / Licence / Authorisation
National Environmental Management Act (NEMA) (Act No. 107 of 1998, as amended) Environmental Impact Assessment (EIA) Regulations (2014 and subsequent 2017 amendments)	NDEDCT	Environmental Authorisation

### 2.1 Details of the Environmental Assessment Practitioners

EnviroHeart Consulting was appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the Scoping and Environmental Assessment Process. Rashieda Davids is acting as the Project Reviewer and EAP and Sanusha Govender as the Project Manager and EAP. Details of the EAPs are provided in Table 3.

**Table 2: EAP Qualifications**

EAP Organisation	EnviroHeart Consulting
Name	Qualifications
Dr Rashieda Davids Project Reviewer and EAP	<ul style="list-style-type: none"> <li>• Doctor of Philosophy (PhD) Environmental Science, 2021, University of KwaZulu-Natal</li> <li>• MSc Geography, 2015, University of Pretoria</li> <li>• BSc (Hons) Environmental and Geographical Science, 2005, University of Cape Town</li> <li>• BSc Environmental and Geographical Science and Ocean &amp; Atmosphere Science, 2004, University of Cape Town</li> </ul>
Rashieda is a Registered Environmental Assessment Practitioner (EAP) (EAPASA 2016:17) and a Certified Professional Natural Scientist (Pr.Sci.Nat. 400162/12, Environmental Science). She holds 15 years of experience, shared between the private, public and research environmental sectors.	
Ms Sanusha Reddy Project Manager & EAP	<b>BSc: Environment and Development (2005), University of Durban Westville</b>
Sanusha is a seasoned Sustainability and Environmental Consultant, with 15 years of experience. She is an established Senior Environmental Assessment Practitioner, undertaking Environmental assessments, Bankable	

<b>EAP Organisation</b>	<b>EnviroHeart Consulting</b>
<b>Name</b>	<b>Qualifications</b>
Feasibility Assessments, Audits, Carbon Tax and Environmental Management Plans in the agricultural, civil construction and urban nodal developments.	

### 3 Project Description

The development proposal consists of land uses:

- Residential 1
- Residential 2
- Special Mosque & student boarding
- Special for access and roads.

#### 3.1 Mosque, classrooms, and boarding facilities

The development will include a place of worship (Mosque), with classrooms and a boarding facility on the west end of the property, Erven 1 and 2. The Mosque footprint will be of  $\pm 1370 \text{ m}^2$  extent, and will be a two-storey building, including classrooms. The Mosque will include ancillary facilities (Library, Education and Administration). The Mosque will apply its Constitutional right to the call to prayer, which will be set at a low audible level to avoid disturbance of adjacent properties.

The boarding facilities will include accommodation/rooms for a few students each, and will have a communal dining room and kitchen. Students will be accommodated from within Rustenburg and surrounding towns that will sleep over for a maximum of 1 to 3 days at a time. The student boarding component will have a footprint of  $\pm 382 \text{ m}^2$ .

#### 3.2 Residential Units

The proposed residential component on Erven 2 and 5, on the western portion of the property, will include the affordable 2- and three-bedroom units, namely:

- Five (5) ground and first floor three (3) bedroom simplexes of  $118 \text{ m}^2$  floor areas each
- Five 5 ground and first floor two (2) bedroom simplexes  $91 \text{ m}^2$  floor areas each, and
- Fifteen (15) three-bedroom duplexes of  $\pm 145 \text{ m}^2$  floor area. There will also be one  $\pm 60 \text{ m}^2$  staff quarters.

The east end of the property will include the development of  $\pm 73$  residential units. Erven 6 to 73 will be developed as single Residential erven, with a minimum size of  $650 \text{ m}^2$  each.

#### 3.3 Road Construction

New internal roads will be constructed, to provide the mosque, and residential components with access. The roads will be situated in 13 meter wide road reserves. These internal roads will be classified as class 5 local streets and will be to provide access to individual erven.

Part of the site has been transferred to the South African National Roads Agency, for the construction of a planned new road, of 25 meters in diameter. The construction of this road was not assessed as part of this Basic

Assessment as it is already approved as part of the Roads Master Plan (2019), which confirmed the proposed alignment Palm Avenue, an approved Class 4 Collector Road, dividing the project site into two.

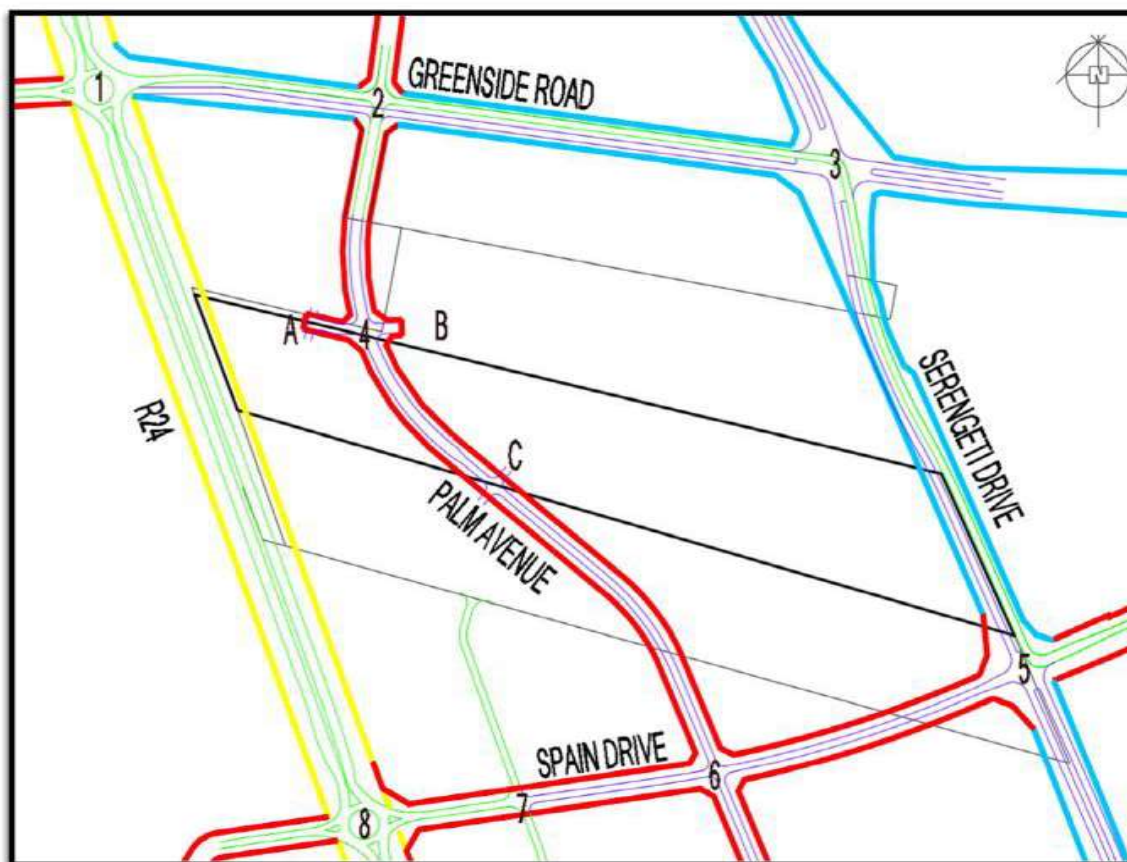


Figure 1: Primary Roads in the Study Area, showing the planned SANRAI Road Palm Avenue.

## **4 Roles and Responsibilities**

### **4.1 The Manager**

The Manager / operator (FM) will be responsible for implementing the EMPr to achieve the environmental and social objectives stipulated hereto. FM must ensure that the EMP is practical and has financial ability to implement the EMPr as stipulated. Should this not be possible it is the responsibility of the FM to consult with the compliance team at NDEDCT to remedy the gaps. The FM is responsible for the overall implementation of the EMPr in accordance with the requirements of the Developer and the EA.

FM must employ, and ECO as stipulated in the EMPr. The FM must ensure that all contractors comply with the requirements of this EMPr.

### **4.2 The Environmental Control Officer (ECO)**

The ECO is responsible for undertaking site audits to monitor the implementation of this EMPr. The EA will note the frequency of site audits. Should this be a requirement, the ECO will be responsible for the monitoring, reviewing, and verifying of compliance with this EMPr and conditions of the EA by the FM.

The ECO must:

- Keep an update file of all Authorisations and Permits.
- Inspect the site and surrounding areas to determine compliance with the EMPr, EA and any other conditions. Ensuring that activities on site comply with all relevant environmental legislation.
- Undertake an internal review of the EMPr and submitting any changes to the FM and the authority for review and approval as applicable.
- Checking that the required measure were implemented to mitigate the impacts resulting from non-compliance. Reporting all incidences of non-compliance.
- Recommending additional environmental protection measures, should this be necessary.
- Providing feedback on any environmental issues.

#### **4.2.1 Qualifications of the ECO**

The ECO must have the following skills and qualifications:

- In dept knowledge of all relevant environmental policies, legislation, guidelines, and standards relevant to the Site. The ability to conduct inspections and audits and to produce thorough, informative reports. The ability to manage public communication and complaints.
- The ability to implement environmental systems. Proven competence in the application of the following integrated environmental management tools:



- Understanding of Environmental Impact Assessment; Environmental Management Plans/ Programme, Environmental auditing, Mitigation and optimization of impacts, Monitoring and evaluation of impacts, Environmental management systems.

#### **4.3 Plans to Accommodate all Site Sensitives**

The BA identified and described all the natural and sensitive ecological features and species present on site. A Terrestrial and Soil Screening Assessment was undertaken. (Refer to Basic Assessment Report) Recommendations have been aligned to Section 6 below. The implementation of the Terrestrial and Soil Screening Assessment must be undertaken and strictly adhered to, as they are crucial to mitigate the impacts identified in the BA.

## 5 Monitoring Plan

The FM will be responsible for the implementation of all monitoring, mitigation, and management measures, as well as compliance with the EMP, the way this may be done would be through quarterly site inspections, weekly observations reported by workers or personally overserved. Tables 5, 6 and 7 below detail environmental management activities and objectives.

**Table 3: Environmental Monitoring Activities**

Activity	Aspects	Monitoring	Responsibly Person	Monitoring and reporting frequency
All activities throughout the project	Flora	Vegetation clearing at the project areas must be monitored to ensure no unnecessary disturbance is taking place. This should be done on a weekly basis during the construction phase.	FM	Monthly
		The encroachment of alien invasive plant species should be monitored within the project area on a monthly basis and appropriate corrective measures must be undertaken on a monthly basis.	FM	Monthly
	Soil erosion	Daily site inspection will be undertaken by the site manager to ensure that all soil erosion mitigation measures are in place and implemented adequately. Trampling effects must be delt with immediately.	FM	Daily
	Surface Water	Surface water quality is recommended to be monitored quarterly during the construction phase and the frequency can be reduced to quality post-construction.	FM	Quarterly
	Hydrocarbons	Daily inspections of machinery must be undertaken and spill trays will be placed under the machinery to collect any hydrocarbon leaks and spillages in the event it is required. Should spillages occur, the soil must be cleared and treated utilising bioremediation techniques. Should the soil not be adequately treated on site, the soil must be removed from the sites and disposed of at a waste handling facility.	FM	Daily
	Domestic waste	Bins will be placed at various places around the project area to collect the domestic waste and will be disposed of at a registered waste handling facility.	FM	Daily

## 6 Impact Management Outcomes and Measures to Be Implemented

The following section provides management measures that were identified as part of the BA, for the three development phases; namely, (1) Construction; (2) Operational Phase, and (3) Closure Phase. The purpose of the management objectives is to inform on the mitigations required to lower the risk of the impacts associated with the proposed activity and provide measures for improving the conservation value of the property.

### 6.1 Construction Phase

The Construction phases include all activities that are required to render the project ready to begin construction and during construction. A qualified environmental control officer must be present during construction activities.

**Table 4: Environmental Management Activity and Objectives: Construction Phase**

Activities	1. Site clearing	
Aspect Affected	Potential Impacts	Mitigation Measure
Soils	Soil erosion  Dust pollution  Soil compaction (Vehicles and General Construction Activities)	<ul style="list-style-type: none"><li>▪ Prior to site clearing, the working areas must be clearly marked.</li><li>▪ Only clear vegetation as demarcated by the ECO / FM.</li><li>▪ Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all areas of construction. This includes wetting of exposed soft soil surfaces and not conducting activities on windy days which will increase the likelihood of dust being generated.</li><li>▪ Only remove topsoil when and where necessary.</li><li>▪ Only the designated access routes are to be used.</li><li>▪ Topsoil to be stockpiled separately on piles not higher than 2 – 3m.</li></ul>

Activities	1. Site clearing	
Aspect Affected	Potential Impacts	Mitigation Measure
	Loss of topsoil	<ul style="list-style-type: none"> <li>▪ Topsoil to be dumped in a single pile to avoid disturbance.</li> <li>▪ Topsoil should be used for rehabilitation of disturbed area.</li> <li>▪ Erosion must be controlled by appropriate erosion control techniques including the use of sandbags and organic material.</li> <li>▪ If erosion occurs, appropriate corrective actions must be investigated and implemented to minimise any further erosion from taking place.</li> <li>▪ Eroded areas must be rehabilitated using the appropriate techniques and re-vegetated using indigenous flora.</li> <li>▪ Ensure proper storm water management.</li> <li>▪ Vehicles must use designated routes and parking areas.</li> <li>▪ Ensure that dust control measures are implemented during the construction phase to avoid windblown dust.</li> <li>▪ Keep gravel roads well maintained to avoid erosion.</li> <li>▪ The condition of the proposed conservation areas must be monitored for dust and erosion impacts.</li> </ul>
Soil and Water Contamination	Waste disposal	<ul style="list-style-type: none"> <li>▪ Waste management must be a priority and all waste must be collected and stored effectively. All solid waste collected shall be disposed of at a licensed disposal facility. Where a registered disposal facility is not available close to the project area, the Contractor shall provide a method statement regarding waste management. Under no circumstances may domestic waste be burned on site.</li> <li>▪ Refuse bins will be emptied and secured. Temporary storage of domestic waste shall be in covered waste skips. Maximum domestic waste storage period will be 10 days. Recycling is encouraged.</li> <li>▪ All storage of hazardous and non-hazardous chemicals and waste must be in a bunded area with sufficient capacity to contain stored products.</li> <li>▪ Berms must be erected around the construction sites to prevent contamination.</li> <li>▪ A spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be</li> </ul>

Activities	1. Site clearing	
Aspect Affected	Potential Impacts	Mitigation Measure
		<p>complete and available on site. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use.</p> <ul style="list-style-type: none"> <li>▪ Any contaminated soils must be disposed of in an appropriate manner.</li> <li>▪ Construction chemicals, such as paints and hydrocarbons, should be used in an environmentally safe manner with correct storage as per each chemical's specific storage descriptions.</li> <li>▪ Ensure that all oil changes, refueling and lubrication of equipment's is done away from the waterbody and in a manner such that any spillage will not enter the waterbody.</li> <li>▪ Vehicles must be inspected regularly for leaks.</li> <li>▪ Drip trays must be placed under vehicles and machinery that are being serviced.</li> <li>▪ Appropriate sanitary facilities must be provided. Portable toilets must be pumped dry to ensure the system does not degrade over time and spill into the surrounding area.</li> <li>▪ Where a registered disposal facility is not available close to the project area, the Contractor shall provide a method statement with regard to waste management. Under no circumstances may domestic waste be burned on site.</li> <li>▪ Refuse bins will be emptied and secured. Temporary storage of domestic waste shall be in covered waste skips. Maximum domestic waste storage period will be 10 days. Recycling is encouraged.</li> <li>▪ Portable toilets must be pumped dry to ensure the system does not degrade over time and spill into the surrounding area.</li> </ul>
Vegetation and habitats		<ul style="list-style-type: none"> <li>▪ All development areas must be clearly demarcated. No development is to occur in no-go areas</li> <li>▪ Materials may not be stored for extended periods of time and must be removed from the project area once the construction phase has been concluded. Use of re-usable/recyclable materials are recommended.</li> <li>▪ Areas of indigenous vegetation outside of the direct project footprint, should under no circumstances be fragmented or disturbed further.</li> <li>▪ Areas that have been disturbed but will not undergo development must be revegetated with indigenous vegetation.</li> </ul>



Activities	1. Site clearing	
Aspect Affected	Potential Impacts	Mitigation Measure
		<ul style="list-style-type: none"> <li>Open areas that remain following construction should be re-vegetated immediately.</li> <li>If alien vegetation is encountered, these species should be removed in the correct way and timeously</li> </ul>
Fauna	Impacts on avifauna	<ul style="list-style-type: none"> <li>Activities such as noise, vibration and dust may cause disturbance of avifauna. However, this is temporary. All construction activities must avoid sensitive areas to prevent impacts on avifauna.</li> <li>No trapping, killing, or poisoning of any wildlife is to be allowed. Strictly avoid persecution of fauna and pesticide use.</li> <li>Identify measures to mitigate illegal hunting of fauna and avi-fauna on the farm.</li> <li>A qualified environmental control officer must identify species affected and implement training for staff on site to ensure no loss of animals.</li> </ul>
Natural habitats	Degradation of surrounding habitats from improper solid waste disposal	<ul style="list-style-type: none"> <li>Ensure that a waste management programme is in place.</li> <li>Prevent any disposal of waste in the natural environment.</li> <li>All solid waste must be disposed of at a licensed waste disposal facility.</li> </ul>
Invasive alien plants	Alien Encroachment	<ul style="list-style-type: none"> <li>The footprint area of the construction should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas thereby causing further encroachment of invasive species.</li> <li>Develop and implement the Alien Invasive control plan.</li> </ul>
Roads and traffic	Traffic Impacts	<ul style="list-style-type: none"> <li>Ensure that gravel roads are adequately always maintained.</li> <li>Schedule delivery and collection vehicles appropriately to avoid too many vehicles being on site at the same time.</li> <li>Identify a suitable source of gravel for resurfacing and avoid unsightly dongas created by unplanned and poorly managed gravel pits.</li> <li>No gravel pits can be created on site withing sensitive areas.</li> </ul>

Activities	1. Site clearing	
Aspect Affected	Potential Impacts	Mitigation Measure
Social	Socio-Economic: Impact on Livelihoods	<ul style="list-style-type: none"> <li>▪ As far as possible, employ people from the local area for construction activities.</li> <li>▪ Procure goods and services from local youth and women and identify opportunities to increase this quota during the operational phase.</li> <li>▪ Broad-Based Black Economic Empowerment (BBBEE) targets should be set.</li> <li>▪ Procure a certain quota of goods and services from the local area. Possible goods include fresh produce and interior decor items, and potential services that could be obtained include maintenance of infrastructure.</li> </ul>
	Increased health, safety, and security risks	<ul style="list-style-type: none"> <li>▪ Implement a Health and Safety Plan to mitigate and manage risks on site, which includes a protocol to monitor and assess healthy and safety risks during construction and operation.</li> <li>▪ Construction site must be fenced off.</li> <li>▪ Implement measures to avoid any potential dust, noise, hazard, or nuisance to neighboring properties or communities.</li> <li>▪ A complaints register must be kept on site.</li> <li>▪ Adequate water, sanitation, energy, and waste management facilities must be available on site.</li> <li>▪ All contractors must abide by rules for responsible conduct not to endanger lives.</li> <li>▪ Clear signage at the gate on the availability/ non-availability of jobs will assist in communicating this message to job seekers.</li> <li>▪ Security personnel should secure the site and be trained.</li> </ul>

## 6.2 Operational Phase

**Table 5: Environmental Management Activity and Objectives: Operational Phase**

Activities	Operational Activities <ul style="list-style-type: none"> <li>Waste Management</li> </ul>	
Aspect Affected	Potential Impacts	Mitigation Measure
Roads and traffic	Traffic Impacts	<ul style="list-style-type: none"> <li>Ensure that roads are adequately always maintained.</li> <li>Schedule delivery and collection vehicles appropriately to avoid too many vehicles being on site at the same time.</li> </ul>
Social	Socio-economic Impact: livelihoods and economic development	<ul style="list-style-type: none"> <li>Employ permanent workers.</li> <li>Provide training opportunities throughout the operational phase.</li> <li>Procure goods and services from local youth and women and identify opportunities to increase this quota during the operational phase.</li> <li>Broad-Based Black Economic Empowerment (BBBEE) targets should be set.</li> <li>Procure a certain quota of goods and services from the local area. Possible goods include fresh produce and interior decor items, and potential services that could be obtained include maintenance of infrastructure.</li> </ul>
	Increased health, safety, and security risks	<ul style="list-style-type: none"> <li>Implement a Health and Safety Plan to mitigate and manage risks on site, which includes a protocol to monitor and assess healthy and safety risks during operation.</li> <li>Adequate water, sanitation, energy, and waste management facilities must be available on site.</li> <li>Security personnel should secure the site and be trained.</li> </ul>

		<ul style="list-style-type: none"> <li>Promote a secure and hygienic business environment, as well as the preparation of safe food. Reliable basic services (water, electricity, sanitation, waste management) will have to be in place to ensure safe and hygienic food handling.</li> </ul>
Waste management	Environmental Degradation	<ul style="list-style-type: none"> <li>Waste management must be a priority and all waste must be collected and stored effectively. All solid waste collected shall be disposed of at a licensed disposal facility.</li> <li>Where a registered disposal facility is not available close to the project area, the Contractor shall provide a method statement regarding waste management. Under no circumstances may domestic waste be burned on site.</li> <li>Waste management must be a priority and all waste must be collected and stored effectively.</li> <li>Refuse bins will be emptied and secured. Temporary storage of domestic waste shall be in covered waste skips. Maximum domestic waste storage period will be 10 days. Recycling is encouraged.</li> </ul>
Storm Water	Flooding	<p>All water bearing services must be provided with flexible couplings where pipes enter the buildings.</p> <ul style="list-style-type: none"> <li>A 1200mm wide apron paving must be provided around the perimeter of the structures. Joints between the paved areas and the walls of the buildings should be sealed with a flexible sealant to prevent moisture reaching the foundations.</li> <li>Storm water management around the structures must facilitate the efficient disposal of excess water from the site.</li> <li><b>No</b> flower beds, garden taps, trees or down pipe discharge must be allowed adjacent to the building structures and must be placed as far away as possible. Appropriate planning for landscaping and garden placement must be done.</li> </ul>

### 6.3 Closure Phase

**Table 6: Environmental Management Activity and Objectives: Closure Phase**

<b>Activities</b>	<p>Closure Activities</p> <ul style="list-style-type: none"> <li>Reuse of building Space</li> <li>Demolition</li> </ul>
-------------------	---

Aspect Affected	Potential Impacts	Mitigation Measure
Social	Loss of community facility	<ul style="list-style-type: none"> <li>▪ In the event the Mosque is closed, engagement must be undertaken with the community to see how these services can still be met.</li> </ul>
Demolition	Contamination of soil	<ul style="list-style-type: none"> <li>▪ The Site must be completely rehabilitated to its natural condition.</li> </ul>



## **7 Environmental Awareness**

### **7.1 Training**

The Manager must ensure that employees and any contractors, undertaking activities on the site undergo Environmental Awareness Training, must be trained regarding the implementation of the EMPr and the general environmental legal requirements.

The Manager must keep all records of all training interventions. A signed register of attendance must be kept for proof.

All employees must be made aware of:




- Environmental legislation,
- Proper Domestic and operational waste procedures, which includes appropriate ablution use.
- The importance of implementing environmental policies and the benefits to themselves and society.
- Specific environmental impacts, actual or potential, may be occur in their daily activities.
- Roles and responsibilities set out in the relevant environmental procedures.
- The importance of protective gear for safety on site.
- Identifying what is a natural resource, e.g., water and what the importance of management is.
- Emergency preparedness and response requirements, particularly firefighting.
- The consequences from deviating from the training procedures.
- The mitigation measures set out in this EMPr.
- Details regarding the identification and reporting of heritage resources.
- Details of how to minimize the production of waste and re-use, recover and recycle waste where possible.

## **Appendix A:**



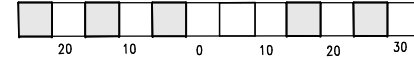
# Waterkloof Mosque and Residential Development, Rustenburg

**Legend**

-  Rustenburg
-  Rustenburg Mall
-  Waterkloof Islamic trust Masjed and Residential







GEOTECHNICAL ZONES

Site classification is Class C2 and H1/C1 Area underlain by collapsible and compressible soils and more than 10mm settlement anticipated.

Prepared by : J. Arkert Geologist

TO BE ESTABLISHED ON  
REMAINDER OF PORTION 209  
OF THE FARM  
WATERKLOOF No. 305-JQ

LOCAL AUTHORITY : CITY OF RUSTENBURG



CONTOURS:	FLOODLINE:
The contours on this layout is in accordance with the requirements of Regulation 18(1) of the Town Planning and Townships Ordinance, 1986 and is based on mean sea level.	This is to certify that the proposed township is not subject to a 1:50 or 1:100 year floodline, as provided for in Regulation 18 (a)(xvii) of the Town Planning and Townships Ordinance, 1986.

P.O. BOX 20  
RUSTENBURG  
0300  
CELL : 071 413 3178



## **Appendix E:**

**Public Consultation (I&AP Database, Notice Boards,  
Advertisement and Correspondence)**

## **Appendix E1: Newspaper article**



## Learners visit Vaalkop Water Treatment Plant for World Water Day



Learners learning about the importance of water conservation.

**RUSTENBURG HERALD - RUSTENBURG** - As part of Impala Rustenburg's school support programme, a competition was held to create awareness among mine community schools about the importance of protecting water resources.

Learners were required to write a one-page essay on how they plan to protect South Africa's scarce water resources and how they can play a part in saving water in their communities. The top 30 Grade 10 and 11 learners from eight high schools in Impala Rustenburg's mine communities were selected to participate in an educational day trip to Magalies Water's Vaalkop Water Treatment Plant on World Water Day (22 March).

"We are proud to invest in campaigns that highlight environmental issues with the purpose of changing behaviour to ensure that we build more environmentally sustainable and robust communities," said Mark Munroe, CE Impala Rustenburg.

The campaign was a collaborative effort between Impala Rustenburg and Magalies Water and sought to raise awareness about water conservation, environmental sustainability and climate change. Learners visited the Vaalkop Water Treatment Plant, one of Magalies Water's four treatment plants. At Vaalkop, the learners received presentations from Magalies Water on geographic information systems, scientific services, public relations, and plant operations, as well as career options within the various fields. This was followed by a plant tour, from the water inlet point to the water treatment centre, including an overview of the supervisory control and data acquisition system.

"Thank you to all the learners who took part in the competition and congratulations to our top 30 learners whose essays were well written and demonstrated their understanding that South Africa is a water scarce country. We hope that all the learners who took part in the competition will continue to implement their plans to save water at their schools and in their communities," said Annah Kgaswane, Impala Rustenburg's Head of Environmental.

Congratulations to learners who achieved the top five slots, and who are a credit to their schools: Thethe Secondary School, Matsukubane Secondary School and Mmanape Secondary School.



### Notification: Availability of the draft Basic Assessment Report and Public Participation Process for the proposed Waterkloof Mosque and Residential Development, Rustenburg, North-West Province

The Waterfall Islamic Trust intends to develop a Mosque, classrooms and residential infrastructure on the farm Waterkloof Portion 305, in Rustenburg, North West Province (situated at 27°43'3.8"S 27°16'45'03"E). The proposed project triggers listed activities in terms of the National Environmental Management Act (NEMA, Act No. 107 of 1998), and the associated 2014 Environmental Impact Assessment Regulations GN R982 (as amended) and Listing Notices: GN No.327 (Listing Notice 1) and GN No. 324 (Listing Notice 3), which require Environmental Authorisation (EA) prior to commencing.

EnviroHeart Consulting (Pty) Ltd., was appointed to undertake an Environmental Basic Assessment (BA) process in application of the EA. The Competent Authority responsible for the Decision is the Northwest Department of Economic Development, Conservation and Tourism (DEDECT).

An EA is required from DEDECT, prior to the commencement of the proposed development, in terms of the NEMA and the EIA Regulations of 2014 (as amended in 2017). The draft BA Report for the proposed project is available for review and comment from Thursday, 14 April 2022 until Wednesday, 18 May 2022 at the following venues:

- Rustenburg Public Library—Heystek Street, Rustenburg North West - 014 590 3294
- An electronic copy of the Draft Scoping will also be available from EnviroHeart upon request.

To register your interest and obtain further information, please contact: **Dr Rashieda Davids** (Environmental Assessment Practitioner), Email: waterkloof@enviroheart.co.za, Cell: +27 82 305 1352/ +27 84 219 8000.

## Darts Killer Fun-aand

**RUSTENBURG HERALD - RUSTENBURG** - Rustenburg Impala Dartklub het op Donderdag 31 Maart die maandelikse pret Killerkompetisie gehou. Rustenburg Impala Dartklub speel elke Dinsdag en Donderdag darts by 4Shots Pub & Grill. Almal is welkom om te kom saam speel van 18:15 af. Dit is duidelik darts is vir oud en jonk. Kontak Estie by 083 609 4285. Kom speel saam elke laaste Donderdag van die maand.



Rustenburg Impala Dartklub het op Donderdag 31 Maart die maandelikse pret Killerkompetisie gehou. Francois du Plessis het vir die wenners elk 'n bottel van sy eie Patriot Rum geskenk. Die wenners is Dean Cowley en Zander Stoltz. Zander Stoltz het ook die meeste bulls gegooi.



Die plaatwenners is Piet Walker en Joe Maree. Baie dankie Francois du Plessis vir die prysoorhandiging.



Die prys vir die meeste Shangais vir die aand is gedeel deur Dolf Breytenbach en Joe Maree. Francois du Plessis van 4Shots Pub oorhandig die pryse.



Tweede plek in die Rustenburg Impala Dartklub se Fun Killer-aand is Walker van der Merwe en Alexe Rautenbach. Francois van 4Shots Pub oorhandig die pryse.

## Rustenburg Cycling Club at Double90

**RUSTENBURG HERALD - RUSTENBURG** - Double90 is a men, women and mixed team time-trial that covers over 180km. On 9 April it took place in Clarens and Rustenburg Cycling Club is very proud of its members who participated.



Gregg Taylor (7:17), Adriaan du Plooy and Zeldu du Pisani (7:17).

Pictured here are Justin Brown, Johan vd Merwe, Danie Lombaard, Lood vd Berg, Vaughan Townsend, Morne Petzer, JP Stringer and front Christo and Suzette van Staden, Herman de Bruin, Justin van der Linde and Peter Miovski.



Adriaan du Plooy (6:48).



Jon Andrews (first Master 50+ Cradle Mountain Trophy 75km - 02:57).





**EnviroHeart Consulting**  
EAPASA and Pr Sci Nat Registered

## **Notification: Availability of the Draft Basic Assessment Report and Public Participation Process for the proposed Waterkloof Mosque and Residential Development, Rustenburg, North-West Province**

The Waterfall Islamic Trust intends to develop a Mosque, classrooms and residential infrastructure on the farm Waterkloof Portion 305, in Rustenburg, North West Province (situated at 27°43'3.8"S 27°16'45'03"E).



The proposed project triggers listed activities in term of the National Environmental Management Act (NEMA, Act No. 107 of 1998), and the associated 2014 Environmental Impact Assessment Regulations GN R982 (as amended) and Listing Notices: GN No.327 (Listing Notice 1) and GN No. 324 (Listing Notice 3), which require Environmental Authorisation (EA) prior to commencing.

EnviroHeart Consulting (Pty) Ltd., was appointed to undertake an Environmental Basic Assessment (BA) process in application of the EA. The Competent Authority responsible for the Decision is the North West Department of Economic Development, Conservation and Tourism (DEDECT). The Draft BA Report for the proposed project is available for review and comment from Thursday, **14 April 2022 until Wednesday, 18 May 2022** at the following venues:

- **Rustenburg Public Library–Heystek Street, Rustenburg North West.**  
**Tel: 0145903294**
- **An electronic copy of the Draft Basic Assessment Report is available from EnviroHeart upon request.**

**To register your interest and obtain further information, please contact:**

**Dr Rashieda Davids, Environmental Assessment Practitioner**

**Email: [waterkloof@enviroheart.co.za](mailto:waterkloof@enviroheart.co.za) | Cell: +27 82 305 1352/ +27 84 219 8000**

## **Appendix E2: I&AP database**

Stakeholder	First Name	Last Name	Position	Department
	Anneliza	Collett		Department of Agriculture, Forestry and Fisheries
	Hettie	Buys	Administration & Registration Clerk	Department of Agriculture, Forestry and Fisheries
	Ragna	Redelstorff		
Agri North West	P	Du Toit		
Agri North West Farmers Union	Eric	van wyk		
Birdlife South Africa	Janine	Goosen		
BirdLife South Africa	Samantha	Ralston-Paton	Manager	Birds and Renewable Energy
BirdLife South Africa	Simon	Gear		
Building Energy South Africa (Pty) Ltd	Magdalena	Michalowska		
Department of Agriculture, Forestry and Fisheries	D	Nhlakad		AgriLand Liaison office
Department of Agriculture- North West	Lebo	Diale		
Department of Agriculture, Forestry and Fisheries	Mashudu	Marubini	Delegate to the Minister	
Department of Agriculture, Land Reform and Rural Development	N	Mpume		
Department of Agriculture, Forestry and Fisheries	Portia	Makitla	Biodiversity Officer	Biodiversity Mainstreaming EIA
Department of Forestry, Fisheries and the Environment	Aulicia	Maifo		Biodiversity Conservation
Department of Mineral Resources	Kgauta	Mokoena		
Department of Mineral Resources and Energy	Wolsey	Barnard	Deputy Director	Programmes and Projects
Department of Water and Sanitation - North West	Abe	Abrahams		
Grasslands Society of Southern Africa	Freyne	du Toit		
Local Authorities	S	Nawa		Rustenburg Local Municipality
Organs of State	Chris	De Bruyn		North West Environmental Forum
Organs of State	Shaun	Grant		Rustenburg Olifantsnek Corridor Landowners Association
Rustenburg Local Municipality	Victor	Makona		
Rustenburg Local Municipality	Ruben	Moatshe		Rustenburg Local Municipality
Rustenburg Local Municipality	Thembi	Ntabanyane		Water & Sewage

Rustenburg Local Municipality	Walter	Senne		
Rustenburg Local Municipality	Kelebogile	Mekgoe		Integrated Environmental Management
Rustenburg Local Municipality	Lilian	Sefike		Integrated Environmental Management
Rustenburg Local Municipality	Ziyanda	Mateta		Sewage
Rustenburg Local Municipality	Kgomtoso	Mthembu	Adminstrator	Ward Councillor (35)
North West Department of Public Works and Roads	Alfred	Mafune	Acting Chief Director: Roads Management	
North West Department of Economic Development Environment and Tourism	Ouma	Skosana		
North West Province Department of Community Safety & Transport Management	Bailey	Mahlakoleng	Head of Department	
North West Province Department of Local Government and Traditional Affairs	Mpho	Molosi		
North West Province Department of Local Government and Traditional Affairs	Seth	Ramagaga	Acting Head of Department	
North West Provincial Heritage Resources Agency	Motlhabane	Mosiane		
North West Provincial Heritage Resources Agency	Shahnaz	Omar		
SANRAL	Nicole	Abrahams	Environmental Coordinator: Western Region	
South African Heritage Resource Agency	Elijah	Katsetse		
South African Heritage Resources Agency	Natasha	Higgitt	Heritage Officer	
South African National Parks	Howard	Hendricks	Snr GM	Policy & Governance Conservation Services Division
South African National Roads Agency Limited	Michael	Yorke-Hart		
South African National Roads Agency (SANRAL)	T	Mashele		
WESSA	John	Wesson		
WESSA	Lemson	Petha		
Wildlife and Environment Society of South Africa (WESSA)	John	Wesson		

Wildlife and Environment Society of South Africa (WESSA)	Morgan	Griffiths	Environmental Governance Programme Manager	Port Elizabeth Office - Environmental Governance Programme
Landowner	W. J	de Beer		
Landowner	Sakkie	Ferreira		
MCW Construction				
SANRAL				
Landowner	Owner			
Royal Bafokeng Platinum				



## **Appendix E3: Correspondence**

**From:** waterkloof@enviroheart.co.za  
**Subject:** FW: Environmental Basic Assessment of the Proposed Waterkloof Mosque and Residential Development, Rustenburg  
**Date:** 13 April 2022 at 17:12  
**To:** Sanusha Sanusha@enviroheart.co.za, rashieda@enviroheart.co.za  
**Bcc:** [REDACTED]

W

Dear Interested and Affected Parties (IAP),

The Waterfall Islamic Trust intends to develop a Mosque, classrooms and

residential infrastructure on the farm Waterkloof Portion 305, in Rustenburg, North West Province (situated at 27°43'3.8"S 27°16'45'03"E).

The proposed project triggers listed activities in term of the National Environmental Management Act (NEMA, Act No. 107 of 1998), and the associated 2014 Environmental Impact Assessment Regulations GN R982 (as amended) and Listing Notices: GN No.327 (Listing Notice 1) and GN No. 324 (Listing Notice 3), which require Environmental Authorisation (EA) prior to commencing.

EnviroHeart Consulting (Pty) Ltd., was appointed to undertake an Environmental Basic Assessment (BA) process in application of the EA. The Competent Authority responsible for the Decision is the Northwest Department of Economic Development, Conservation and Tourism (DEDECT).

The draft BA Report for the proposed project is available for review and comment from Thursday, **14 April 2022 until Wednesday, 18 May 2022** at the following venues:

- Rustenburg Public Library–Heystek Street, Rustenburg North West - 0145903294
- An hard copy of the Draft Basic Assessment Report will also be available from EnviroHeart upon request.

To register your interest and obtain further information, please contact: Dr Rashieda Davids (Environmental Assessment Practitioner) using the contact information below.

Email: waterkloof@enviroheart.co.za  
Cell: +27 82 305 1352/ +27 84 219 8000.

Kind regards,  
Rashieda Davids

## **Appendix F: EAP Declaration**



**dedect**

Department:  
Economic Development, Environment, Conservation and Tourism  
North West Provincial Government  
REPUBLIC OF SOUTH AFRICA



AgriCentre Building  
Cnr. Dr. James Moroka  
&  
Stadium Rd

**CHIEF DIRECTORATE: ENVIRONMENTAL SERVICES**  
**DIRECTORATE: ENVIRONMENTAL QUALITY MANAGEMENT**

Enquiries: Ouma Skosana  
Tel: +27 (18) 389 5156  
Email: [oskosana@nwpg.gov.za](mailto:oskosana@nwpg.gov.za)  
Fax: +27(18) 384 0104

Private Bag X2039  
MMABATHO 2735  
[www.nwpg.gov.za](http://www.nwpg.gov.za)

**DETAILS OF EAP AND DECLARATION OF INTEREST**

(For official use only)

File Reference Number:  
NEAS Reference Number:  
Date Received:

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014

**PROJECT TITLE**

Waterkloof Mosque and Residential Development on the Remaining Extent of the Farm Waterkloof  
305 JQ

**1. Details of EAP**

**Environmental Assessment  
Practitioner (EAP):<sup>1</sup>**

Contact person:

Postal address:

Postal code:

Telephone:

E-mail:

Professional affiliation(s) (if  
any)

EnviroHeart Consulting Pty Ltd

Dr Rashieda Davids

9 7<sup>th</sup> Avenue, Houghton Estate

2198

Cell:

+27 82 305 1352

Fax:

[rashieda@enviroheart.co.za](mailto:rashieda@enviroheart.co.za)

Certified Environmental Assessment Practitioner, Environmental Assessment  
Practitioners of South Africa (EAPASA) (2019:16)

Certified Professional Scientist, South African Council of Natural Scientific Professions  
(SACNASP) (Pr.Sci.Nat. 400162/12)



Project Consultant:	EnviroHeart Consulting		
Contact person:	Ms Sanusha Govender		
Postal address:	9 7 <sup>th</sup> Avenue, Houghton Estate		
Postal code:	2198	Cell:	084 219 8000
Telephone:	sanusha@enviroheart.co.za	Fax:	
E-mail:			

## 1. Declaration by Environmental Assessment Practitioner

I, Dr Rashieda Davids ) of EnviroHeart Consulting Pty Ltd., declare that;

- I act as the independent environmental practitioner in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in Regulation 18 of the regulations when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- **I will keep a register of all interested and affected parties that participated in a public participation process; and**
- **I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not**
- **all the particulars furnished by me in this form are true and correct;**
- **will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and**
- **I realise that a false declaration is an offence in terms of Regulation 48 and is punishable in terms of section 49B (2) of the Act.**

## 2. Disclosure of Vested Interest (delete whichever is not applicable)

*Details of EAP and Declaration of Interest  
EIA Regulations, 2014*





- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014;
- I have a vested interest in the proposed activity proceeding, such vested interest being:

Not applicable.



Signature of the Environmental Assessment Practitioner

EnviroHeart Consulting Pty Ltd

Name of company

14 April 2022

Date

Signature of the Commissioner of Oaths

Date

Designation

Official stamp:

