DRAFT ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT

The proposed residential development on Portion 20 (Remaining Extent) of the Farm Lilyvale 2313, Bloemfontein, Free State

Applicant: Peyper Developments (PTY) LTD
MDA Ref No: 40880
DESTEA Ref No: EMS/12(ii)(a),19,28(ii),15,12/23/03
NEAS Ref No: FSP/EIA/0000506/2023
Date: August 2023

mda
Town & Regional Planners, Environmental & Development Consultants

Physical Address: 9 Barnes Street, Westdene, Bloemfontein, 9301
Postal Address: P.O. Box 100982, Brandhof, 9324
Tel: 051 4471583, Fax: 051 448 9839
E-mail: admin@mdagroup.co.za

TABLE OF CONTENTS

Annexures:

ANNEXURE A: MAPS

ANNEXURE B: PROPOSED LAYOUT MAP

ANNEXURE C: SPECIALIST REPORTS

ANNEXURE C_1: ECOLOGICAL REPORT

ANNEXURE C_2: HERITAGE IMPACT ASSESSMENT

ANNEXURE C_3: ROADS AND STORMWATER

ANNEXURE C_4: SERVICES REPORTS (CIVIL & ELECTRICAL)

ANNEXURE C_5: GEOTECHNICAL REPORT

ANNEXURE C_6: TRAFFIC IMPACT STUDY

ANNEXURE D: PUBLIC PARTICIPATION

ANNEXURE D_1: NEWSPAPER ADVERTISEMENT

ANNEXURE D_2: SITE NOTICE

ANNEXURE D_3: REGISTERED IAP'S

ANNEXURE D_4: PROOF OF NOTIFICATION

ANNEXURE D_5: COMMENTS RECEIVED AND RESPONSE

ANNEXURE E: ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

1. INTRODUCTION

1.1. BACKGROUND TO THE STUDY

The proposed development will consist of a relatively large area with an extent of 24.5467 hectares situated on Portion 20 (Remaining Extent) of the Farm Lilyvale 2313. This area is situated along the northern outskirts of Bloemfontein in an area currently in high demand for residential developments. The site is largely surrounded by existing residential areas with high density residential areas towards the eastern side of the proposed development (Shellyvale).

The density and layout that can be accommodated on the proposed site is dependent on the topography (including flood lines and storm water drainage) of the proposed development site. The proposed development area is still dominated by natural vegetation and includes plains, ridges and two distinct watercourses.

There is currently only one existing entrance (De Bruin Street) situated in the development. The existing entrance is located on the South-Western side of the proposed development. Should authorization be granted, an additional entrance will also be situated on the South-Western side of the development, as indicated in the Roads and Stormwater Services Report.

1.2 TERMS OF REFERENCE

The objective of this study is to conduct a scoping exercise. The broad terms of reference for a scoping exercise are to:

- Scope for issues that would be associated with this planned project.
- Conduct an initial investigation into biophysical and socio-economic aspects, focusing on key issues.
- Identify potential impacts.
- Advise the proponent about the potential impacts (positive and negative impacts) of their planned development, as well as the implications for the design, construction and operational phases of the project.
- Facilitate public input on environmental and social matters.

1.3 APPLICABLE LEGISLATION AND GUIDELINES

This process has been conducted in terms of the relevant legislative requirements, namely in terms of the following regulations:

- National Environmental Management Act (Act No 107 of 1999)
- National Environmental Management: Waste Act (Act No 59 of 2008)
- National Biodiversity Act (Act No 10 of 2004)
- National Heritage Resources Act (Act No 25 of 1999)
- National Water Act (Act No 36 of 1998)

The Environmental Impact Assessment Regulations, 2014 promulgated in terms of Sections 24(5), 24M and 44 of the National Environmental Management Act (Act No. 107 of 1998) determine the Environmental Impact Assessment (EIA) process that should be followed for certain listed activities, which may have a detrimental effect on the environment.

The proposed development includes certain listed activities that may not commence without environmental authorization from the component authority and in respect of which the investigation, assessment and communication of potential impact of activities must follow the procedure as described in Sections 26 - 35 of the Environmental Impact Assessment Regulations, 2010.

The relevant activities are listed below:

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended	Reason for inclusion
Activity 12	The development of – (ii) Infrastructure or structures with a physical footprint of 100 square metres or more; Where such development occurs – (a) Within a watercourse (b) In front of a development setback; or (c) If no development setback exists, within 32 metres of a watercourse, measured	The development of infrastructures will be undertaken within / within a close proximity to watercourses

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended	Reason for inclusion
	from the edge of a watercourse.	
Activity 19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from (i) a watercourse; but excluding where such infilling, depositing, dredging, excavation, removal or moving— (a) will occur behind a development setback; (b) is for maintenance purposes undertaken in accordance with a maintenance management plan; (c) falls within the ambit of activity 21 in this Notice, in which case that activity applies; (d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or (e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies. "watercourse" means (a) a river or spring; (b) a natural channel in which water flows regularly or intermittently;	The development of infrastructures will be undertaken within / within a close proximity to watercourses. The infilling / depositing of material will be undertaken in within these sections.

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended	Reason for inclusion
	(c) a wetland, pan, lake or dam into which, or from which, water flows; and (d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse as defined in the National Water Act, 1998 (Act No. 36 of 1998); and a reference to a watercourse includes, where relevant, its bed and banks.	
Activity 28	Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 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.	The proposed residential development will be undertaken on property currently zoned as Agricultural.

Activity No(s):	Provide the relevant Scoping and EIA Activity(ies) as set out in Listing Notice 2 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
Activity 15	The clearance of an area of 20 hectares or more of indigenous vegetation, excluding 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.	The proposed development of an area of 24.5467 hectares will be undertaken.

An application for Scoping and EIA was submitted to the Free State Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA) on the 16th of February 2023. The final Scoping Report was submitted in April 2023 and approved on 15 May 2023. The draft EIA Report is currently being circulated for comment.

2. ENVIRONMENTAL ASSESSMENT PRACTITIONERS

2.1 DETAILS OF THE TEAM THAT PREPARED THE REPORT

A multi-disciplinary team of specialists contributed to the information presented in this document:

Description	Contact Person	Company
Co-ordination, Supervision, Management	Mr. Neil Devenish	MDA Consultants
Public Participation and Scoping Report	Me. Hanlie Stander	MDA Consultants
EIA Report and EMPr	Me. Marguerite Cronje	For MDA Consultants

2.2 EXPERTISE OF THE TEAM TO CARRY OUT THE EIA PROCEDURES

2.2.1. Mr. Neil Devenish

Key qualifications:

- Key competencies and experience include development control applications (applications and appeals pertaining to rezoning, consolidations, subdivisions etc.) township establishment applications, environmental management and control applications.

Education:

- B.A. (Sociology, Geography) University of the Free State, SA, 1994
- Master of Town and Regional Planning, University of the Free State, SA, 1996
- Managing the Environmental Impact Assessment Process, Environmental Management Unit, PU for CHE, 2000
- Environmental Management Consulting, South African Institute of Ecologists & Environmental Scientists, 2001
- Water Law of South Africa, The South African Institution of Civil Engineers (SAICE), 2006
- Introduction to SAMTRAC, Hazard Identification and Risk Assessment, NOSA, NQF Level 5, 2015
- Carbon Tax Workshop, PWC, 2019

2.2.2. Me. Hanlie Stander

Key qualifications:

- Key competencies and experience include environmental management and research in zoology.
- Registered at IAIAsa.
- EAPASA: Registered Environmental Assessment Practitioner: Number 2019/1997

Education:

- B.Sc. (Zoology), University of the Free State, 2005
- B.Sc. Honours (Zoology), University of the Free State, 2006
- M.Sc. Zoology, University of the Free State, 2013

2.2.3. Me. Marguerite Cronje

Key qualifications:

- Key competencies and experience include environmental management and research in zoology.
- Member of IAIAsa.
- EAPASA: Registered Environmental Assessment Practitioner: Number 2020/682

Education:

- B.Sc. (Zoology), University of the Free State, 2002
- B.Sc. Honours (Zoology), University of the Free State, 2003
- M.Sc. Diploma (Equine Science), University of Edinburgh, Scotland, UK, 2005
- Masters in Environmental Management, University of the Free State, 2008

3. PROJECT INFORMATION

3.1 PARTICULARS OF APPLICANT

The particulars of the Applicant are summarised as follows:

Name of the Applicant:	Peyper Developments (PTY) LTD
Name of contact person for applicant (if other):	Pieter Joubert
RSA Identity/ Passport Number:	[redacted]
Responsible position, e.g., Director, CEO, etc.:	Director
Company/ Trading name (if any):	Peyper Developments (PTY) LTD
Company Registration Number:	[redacted]
BBBEE status:	[redacted]
Physical address:	[redacted]
Cell:	[redacted]
Telephone:	[redacted]
E-mail:	[redacted]

Personal information withheld in terms of the POPI Act (Act 14 of 2013)

3.2 DESCRIPTION OF THE PROPOSED ACTIVITY

The site for the proposed development, namely Portion 20 (Remaining Extent) of the farm Lilyvale 2313, Bloemfontein, belongs to the applicant [Peyper Developments (PTY) LTD] (refer to **Annexure E** for Title Deeds). The proposed development is a high value, medium density residential unit development.

The provision of services will be undertaken in accordance with the Services Agreement reached between the Town Owner and the Mangaung Metropolitan Municipality. The development measures 24.5 ha in total. See the table in 3.2.1 for the land uses and sizes allowed by the proposed township establishment. Refer to the proposed site layout in **Annexure B**.

3.2.1 Land uses and sizes of proposed development

A portion of the proposed development site is subject to both the 1:50 year and 1:100-year flood lines. No permanent residential buildings will be constructed in these flood line areas, as indicated.

The Private Open Spaces are allocated to cover an area of 4.7 ha and will add esthetic and environmental value to the development. The Open Spaces is also largely the result of:

- Corridors of natural veld between the erven that will act as drainage lines as well as areas of migration for species
- 30m wide 132kV power line servitude
- Heritage Resources found on site.

The advantages of the Open Space System are:

- Allowing species (small mammals, birds, reptiles, amphibians, insects and plants) to migrate and colonize uninhabited areas
- Keeping the normal ecosystem functioning in place
- Keeping the biodiversity in balance
- Protection of Heritage Resources

All Open Spaces will be zoned as "Private Open Space" implying that the maintenance thereof will be the responsibility of the Body Corporate of the proposed development.

The Design Standards are according to the Mangaung Metro Design Criteria which is based on the "Guidelines for Human Settlement Planning and Design (The Red Book, July 2019).

The proposed zoning of each of the proposed erven can be summarized as follows:

Zoning	No. of erven	Area (Ha)	%
Residential 1 (Single Dwellings)	69	7.4797	30.47
General Residential 3 (Townhouses)	6	9.6935	39.49
Private Open Space	2	4.7026	19.16
Street	5	2.6710	10.88
TOTAL	82	24.5467	100

Please note that the layout has been amended in consultation with the Heritage Specialist to exclude the rectangular stone walled structure from the proposed development footprint by including it into the "green" Private Open Space.

3.2.2 Water provision

The Total Average Water Demand of the new domestic water demand is estimated at 156.0 kℓ/day, with a peak demand of 3.718ℓ/s. This excludes the Fire Flow Requirements.

A Capacity Analyses Request was submitted to the relevant Municipality. Feedback can be summarized as:

- The current bulk reservoir supply zone is the Rayton Tower Reservoir.
- The area is currently supplied from the Rayton Tower Reservoir.
- The said reservoir has insufficient storage capacity for the zone's current or future water demand.
- Based on the outcome of the theoretical hydraulic model simulation, there is insufficient capacity in the network to supply the minimum operating pressure during peak times. In addition, there is insufficient capacity in the network to supply the required fire flow and pressure in the vicinity of the development when modelled at the connection point.

3.2.3 Sewerage

The total average sewer demand of the new domestic sewer demand is 137.0 kℓ/day, with a peak demand of 2.854ℓ/s.

A Capacity Analysis Request was submitted to the relevant municipality. The municipality indicated that there is no existing or planned sewer infrastructure to service the development. In addition, feedback from the municipality can be summarized as follows:

- The waste water catchment area has been identified as the Northern WWTW.
- There is insufficient infrastructure available for the development.
- The downstream sewer network as well as the Northern WWTW has insufficient capacity to accommodate the development's wastewater effluent.
- The existing sewerage reticulation is insufficient for the development.

It is recommended that the said municipality continues with the planning for the construction of the new planned bulk outfall sewer pipeline.

3.2.4 Waste management

The Mangaung Metropolitan Municipality will remove and process the solid waste during the operational phase.

3.2.5 Roads and traffic

The existing road network of the surrounding area influenced the proposed road network. Provision was made to link up the existing bordering road with the planned road network.

One existing entrance is currently available. Please refer to **Annexure B** for more information on the proposed road network.

A Traffic Impact Assessment is included in **Annexure C6** of this EIA Report. In addition, all the planned roads and access road(s) will be evaluated by all the relevant officials.

3.2.6 Storm water infrastructure

The proposed development area drains in a north-eastern direction.

Currently, no underground storm water network is located within the proposed development area. Thus, all storm water will be handled above ground and will be accommodated in the proposed new road network of the development, where dispersal thereof will take place to the open space at the north-eastern side of the development.

The capacity of the storm water network will be designed for a 1:5-year storm event. The runoff from all the new developments or densification of existing developments may not exceed the pre-development runoff for the applicable minor or major frequency design flood and the necessary detention facilities must therefore be provided on the erf / development. There will therefore be retention of the storm water as per municipal request. This retention of the storm water will be done on the proposed development area.

Retention of the storm water will be done with contour humps on the lower side of the development.

3.2.7 Electricity provision

The electrical consultants have compiled an Electricity Supply and Network Services Report (refer to **Annexure C4**).

A total estimated electrical connection of 955kVA is required for the proposed development. There is currently no electrical infrastructure available on site and the applicant will be required to install electrical infrastructure and services. Centlec has however confirmed that with the fulfillment of the requirements in the Electrical Services Report, they have no objection to the proposed development.

More details regarding electricity provision are available in the Electrical Services Report which is included in **Annexures C4**.

3.2.8 Safety and Security on site

The developer will ensure that the construction contracts include safety and security measures, during the construction phase.

Recommendations to minimise the impacts of the proposed project on aspects associated with Safety and Security on Site		
Planning Phase	**Construction Phase**	**Operational Phase**
• The construction contracts should include safety and security measures to be implemented during the construction phase.	• Safety and security measures should be implemented during the construction phase.	• It is recommended that the local police monitor the site on a regular basis.

3.3 NEED AND DESIRABILITY OF PROPOSED ACTIVITY

A need for high value residential housing units in Bloemfontein was identified. The proposed development is thus in accordance with the relevant Municipality's Integrated Development Plan (IDF). The proposed project will also contribute to the achievement of the Development Objectives of the said Municipality, due to the stimulation of economic growth in the area that will be undertaken.

The proposed township establishment will contribute to the economy of

Bloemfontein as the higher order land use means a higher income for the Mangaung Metropolitan Municipality in the form of rates and taxes. Much needed job opportunities will also be created, temporary jobs during development and construction of the properties and permanent jobs when occupation by owners take place.

The proposed development will not have a negative impact on the surrounding land uses, but will rather fulfil a need for housing that exists and simultaneously compliment non-residential uses.

During the construction phase, unskilled workers could be trained in the construction field. It is recommended that the construction team should make use of local labour for most of the construction work and that workers should be trained. During the operational phase, additional employment opportunities exist as maintenance workers, housekeepers, etc.

3.4 DESCRIPTION OF FEASIBLE AND REASONABLE ALTERNATIVES

3.4.1 Site alternatives

The chosen site on which the planned development is being planned, excelled in the following deciding factors:

- It is a vacant open space, which has become a refuse-dumping site
- It is a site with a high potential as residential area as it is situated on the southern side of the N1
- Surface water features
- The site's accessibility also played a deciding role.

Site alternatives are not applicable for this project due to the fact that the proposed development is an extension of the existing town of Bloemfontein. The applicant is the owner of the proposed development property. The application site falls within the jurisdiction of the Mangaung Municipal Land Use Scheme. The Spatial Development Framework (SDF) of the Mangaung Metropolitan Municipality earmarks this area for future residential development and therefore for formal township developments. Thus, no site alternative will therefore be considered throughout the application.

3.4.2 Activity alternatives

The proposed activity was identified by the developer to consist predominantly of a residential development, expanding the existing town of Bloemfontein. The Spatial Development Framework (SDF) of the Mangaung Metropolitan Municipality earmarks this area for future residential development and therefore for formal township developments. No other activities were considered in this application due to the assessed need and feasibility of the proposed activity as in not be considered throughout the application.

3.4.3 Design alternatives

The unique character and appeal of the area were taken into consideration with the design philosophy. Various layout alternatives were considered by the applicant and town planners, also taking terrain, heritage and environmental constraints into account. The topography of the area is suited for the township development and it had a significant effect on the design of the proposed layout plan. This alternative will therefore not be considered throughout the application.

3.4.4 No-go option

The no-go option means keeping the status quo, i.e., not expanding housing options for the town of Bloemfontein. Due to the locality of the site and close proximity to Bloemfontein, development, especially residential development, will eventually expand to the proposed development site. The site will therefore not remain vacant for many years to come. Sensitive areas that will be protected through the proposed development may be encroached upon if not formally protected. There are also economic benefits to Bloemfontein through development of the area.

3.5 ASSUMPTIONS

It is assumed that the information obtained from all the different sources such as the site inspections, desktop assessments as well as the information provided in the specialist reports are accurate.

3.6 LIMITATIONS

In terms of the specialist studies, limiting factors include the following:

- The current disturbances to the proposed site (such as the vegetation cover) limited a complete inspection of the ground for surface remnants of archaeological and historical material.

4. ENVIRONMENTAL ASPECTS

4.1 LITERATURE REVIEW

Literature on the environment pertinent to this area and its immediate environs has been reviewed. The literature included published and unpublished reports: Mucina & Rutherford 2006 and Smithers 1986 and others.

4.2 INFORMATION ON THE METHODOLOGY OF SCOPING & EIA

This report addresses the biophysical as well as the socio-economic environments. The information was captured in the following manner:

- Site visits were conducted determine the setting, visual character and land-uses in the area.
- Site surveys to identify any plant and animal populations that could be impacted by the development.
- The project plans were superimposed onto the gathered baseline environmental information to identify possible impacts.
- Discussions were held with the client to identify specific aspects of the development which could affect the environment.
- Interested and/or Affected Parties (IAP's) were identified and informed by on-site notices, hand delivered notices, registered post as well as advertisements to capture issues that could affect the environment.
- Identification of positive as well as negative issues.
- Specialist studies were undertaken.
- Draft reports were circulated for comment.
- Comments were addressed and included in final reports.
- Recommendations were made for the mitigation of impacts identified during this exercise.

4.3 DESCRIPTION OF THE ENVIRONMENT

Developments such as these do have various impacts on the environment. These impacts have to be managed in order to have the minimum environmental impact, with the maximum benefit to man.

4.3.1 Biophysical Environment

The proposed development will consist of a relatively large area with an extent of 24.5467 hectares situated on Portion 20 (Remaining Extent) of the Farm Lilyvale 2313. This area is situated along the northern outskirts of Bloemfontein in an area currently in high demand for residential developments.
The site is largely surrounded by existing residential areas with high density residential areas to the east of it (Shellyvale). The site itself is still dominated by natural vegetation and includes plains, ridges and two distinct watercourses.

According to Mucina & Rutherford (2006) and utilising current mapping resources (National Biodiversity Assessment 2018) the site is indicated to fall within Bloemfontein Karroid Shrubland (Gh 8) and Winburg Grassy Shrubland (Gh 10). Both of these are currently listed as being of Least Concern (LC) under the National List of Threatened Ecosystems (Notice 1477 of 2009) (National Environmental Management Biodiversity Act, 2004). However, recent studies and research has indicated that the Bloemfontein Karroid Shrubland vegetation type is increasingly under pressure from urban development and that a large portion has already been transformed. The vegetation type also contains numerous elements of conservation significance which includes a high proportion of protected and rare plant species, a unique habitat and species assemblage and high diversity of plant species (Brown & Du Preez 2014, Dingaan & Du Preez 2002, Dingaan & Du Preez 2017, Potts & Tidmarch 1937, Seaman *et al* 1994).

The Free State Province Biodiversity Management Plan (2015) has identified areas which are essential to meeting conservation targets for specific vegetation types, i.e., Critical Biodiversity Areas. The proposed residential development is as an Ecological Support Area 1 (ESA 1). Although this is not a Critical Biodiversity Area it still functions in ecological support of such surrounding areas.

The vegetation on the site is dominated in general, by a well-developed grass layer, especially the western portion of the site which is dominated by a dense grass layer. A scattered and sparse tree and shrub layer is also present but does not form dense clumps and remains sparse over the site. This is diagnostic of the Winburg Grassy Shrubland vegetation type. A low ridge with a high degree of surface dolerite rock sheets also occurs in the eastern portion of the site. This provides

suitable habitat for a range of small succulents, geophytes and several other growth forms. This is considered characteristic of the Bloemfontein Karroid Shrubland vegetation type. Along the two small watercourses on the site a prominent wetland vegetation structure is also present with sedges, herbaceous plants and Bulrush being dominant. Although the majority of the site is still dominated by natural vegetation several impacts are also present which do contribute toward disturbance. General disturbance on the site is also confirmed by a prominent component of exotic weeds where disturbance is most prominent.

A low dolerite ridge with associated low hills occurs in the western portion of the site. The low ridge system occurring in the eastern portion of the site is clearly characteristic of the Bloemfontein Karroid Shrubland vegetation type and is therefore of significant conservation value. Here the species diversity is also relatively high and with a high proportion of protected species. The vegetation type is however not currently regarded as a Threatened Ecosystem. Despite this, evidence suggests that this area must still be considered to be of high conservation value. It is therefore recommended that a significant portion of this ridge be excluded from development. This excluded portion should aim for a representative sample of approximately 30% of this ridge which should be retained as private open space and be conserved.

Despite the somewhat degraded and modified condition of the two small watercourses / wetlands in the north western and south eastern corners of the site they still remain sensitive with a high conservation value. Both these watercourses feed into the National Freshwater Priority Area (NFEPA) Seven Dams Stream System which is of very high conservation value. These watercourses also function in terms of water transportation, storm water management, flood attenuation and wetland habitat. Both these watercourses should therefore be excluded from development in order to preserve their functioning and prevent downstream impacts caused by the development.

As previously discussed, the site, especially the ridge system, contains a high number of protected species. This also contributes to the conservation value of the ridge system. These include the trees, *Olea europaea* subsp. *africana,* which do not transplant easily and will have to be removed where they occur outside private open space. Specimens should be incorporated into the design of the development but where this is not possible, permits must be obtained to remove

these trees but can be offset by using saplings in the landscaping of the development. The site contains numerous geophytic and succulent species which are easily transplanted. A portion of the protected species listed above will also remain intact in the portion of the ridge being excluded as private open space. Any plants being transplanted can also be moved to this portion of open space which will form a refugia for a significant proportion of these species with significant conservation value.

The exotic species occurring on the site, and especially those exotic succulents which have invaded the rocky ridge habitat must be eradicated prior to construction. Furthermore, and of more importance is that these species should be eradicated from the portions of private open space including that portion of the rocky ridge being preserved and the two small watercourses on the site. It is therefore recommended that the eradication of exotic species be maintained and form part of the management of the residential development throughout the lifetime of the development.

The impact significance has been determined and without mitigation several impacts are anticipated to be quite high. However, if recommendations as indicated above are implemented, i.e., excluding a portion of the rocky ridge and exclusion of the two watercourses and transplanting of any remaining protected geophytic or succulent species to the remaining private open space, the impacts will be significantly decreased.

4.3.1.1 Climate

The area is located in a Summer-rainfall area, with a Mean Annual Precipitation of 550 mm. Much of the rainfall is of convectional origin. Heavy downpours may occur during thunderstorms. During the construction phase, storm water run-off from the cleared areas may cause storm water management / erosion issues. The impact is temporary and can be mitigated by the Environmental Management Programme (EMPr) during the construction phase. Erosion of soil stockpiles and denuded areas can also occur. In addition, the topography of the site, combined with an increase in impermeable surfaces such as roads, roofs, paved areas, will lead to a rapid and larger storm water flow.

Mean Annual Temperature is at 15°C, indicating a warm-temperate climatic regime. Winters can be very cold and frost incidence is high (40 days per year). During winter, the low temperatures can cause water pipes to freeze and subsequently burst. This may lead to water leakages and erosion.

Dust generation, due to the prevailing north-westerly winds, may cause a negative impact downwind of the construction sites. The impact is temporary and can be mitigated by the Environmental Management Programme to be implemented during the construction phase.

Recommendations to minimise the impacts of the proposed project on aspects associated with the Climate		
Planning Phase	**Construction Phase**	**Operational Phase**
• Proper planning for landscaping and storm water management is necessary to minimise the impact that the proposed project may have	• The Environmental Management Programme will address control of dust generation as well as storm water run-off	• Storm water infrastructures such as gutters, canals and drains must be kept clean of debris to prevent blocking of the storm water system

4.3.1.2 Geology of area

A low dolerite ridge with associated low hills occurs in the western portion of the site. The low ridge system occurring in the eastern portion of the site is clearly characteristic of the Bloemfontein Karroid Shrubland vegetation type and is therefore of significant conservation value. Here the species diversity is also relatively high and with a high proportion of protected species. The vegetation type is however not currently regarded as a Threatened Ecosystem. Despite this, evidence suggests that this area must still be considered to be of high conservation value. It is therefore recommended that a significant portion of this ridge be excluded from development. This excluded portion should aim for a representative sample of approximately 30% of this ridge which should be retained as private open space and be conserved.

No noteworthy possible environmental impacts (geological) are envisaged due to the proposed development.

4.3.1.3 Topography, terrain forms & habitats

The area is characterized by undulating hills covered by disturbed grassland. The following table gives a description of the terrain and habitat type that can be found in the area of proposed development.

Terrain form		Habitat types	
Hill top	**X**	Grassland	**X**
Hill side	**X**	Karoo	
Low Hills	**X**	Karroo Shrubland	**X**
Plains		Karroid (scattered)	
Ridges		Natural forest	
Flat		Plantations	
Valley		Ploughed or fallow fields	
River bank		Riparian	
Wetland		Savanna	
Gradual slope		Shrub	
Watercourses	**X**	Wetland	
		Other	

During the construction phase, storm water run-off from cleared areas could pose a problem to the aquatic system of the seasonal drainage lines in the area. The impact will be temporary and could be ameliorated through the Environmental Impact Management Programme. During the operational phase, the topography of the site, combined with an increase in impermeable surfaces (such as roofs, roads, paving, etc.) will lead to a rapid and larger storm water flow.

4.3.1.4 Soils of area

The Geotechnical Report is included in **Annexure C5**.

Possible environmental impacts (soil) associated with the proposed development include the possibility of erosion of soils in areas with no or sparse vegetation. Care must be taken to rehabilitate degraded vegetation as quickly as possible or to use erosion control measures such as gabions to stabilize the soil where necessary.

4.3.1.5 Vegetation of area

According to Mucina & Rutherford (2006) and utilising current mapping resources (National Biodiversity Assessment 2018) the site is indicated to fall within Bloemfontein Karroid Shrubland (Gh 8) and Winburg Grassy Shrubland (Gh 10). Both of these are currently listed as being of Least Concern (LC) under the National List of Threatened Ecosystems (Notice 1477 of 2009) (National Environmental Management Biodiversity Act, 2004). However, recent studies and research has indicated that the Bloemfontein Karroid Shrubland vegetation type is increasingly under pressure from urban development and that a large portion has already been transformed. The vegetation type also contains numerous elements of conservation significance which includes a high proportion of protected and rare plant species, a unique habitat and species assemblage and high diversity of plant species (Brown & Du Preez 2014, Dingaan & Du Preez 2002, Dingaan & Du Preez 2017, Potts & Tidmarch 1937, Seaman *et al* 1994).

The Free State Province Biodiversity Management Plan (2015) has identified areas which are essential to meeting conservation targets for specific vegetation types, i.e., Critical Biodiversity Areas. The proposed residential development is as an Ecological Support Area 1 (ESA 1). Although this is not a Critical Biodiversity Area it still functions in ecological support of such surrounding areas.

The vegetation on the site is dominated in general, by a well-developed grass layer, especially the western portion of the site which is dominated by a dense grass layer. A scattered and sparse tree and shrub layer is also present but does not form dense clumps and remains sparse over the site. This is diagnostic of the Winburg Grassy Shrubland vegetation type. A low ridge with a high degree of surface dolerite rock sheets also occurs in the eastern portion of the site. This provides suitable habitat for a range of small succulents, geophytes and several other growth forms. This is considered characteristic of the Bloemfontein Karroid Shrubland vegetation type. Along the two small watercourses on the site a prominent wetland vegetation structure is also present with sedges, herbaceous plants and Bulrush being dominant. Although the majority of the site is still dominated by natural vegetation several impacts are also present which do contribute toward disturbance. General disturbance on the site is also confirmed by a prominent component of exotic weeds where disturbance is most prominent.

A low dolerite ridge with associated low hills occurs in the western portion of the site. The low ridge system occurring in the eastern portion of the site is clearly characteristic of the Bloemfontein Karroid Shrubland vegetation type and is therefore of significant conservation value. Here the species diversity is also relatively high and with a high proportion of protected species. The vegetation type is however not currently regarded as a Threatened Ecosystem. Despite this, evidence suggests that this area must still be considered to be of high conservation value. It is therefore recommended that a significant portion of this ridge be excluded from development. This excluded portion should aim for a representative sample of approximately 30% of this ridge which should be retained as private open space and be conserved.

Despite the somewhat degraded and modified condition of the two small watercourses / wetlands in the north western and south eastern corners of the site they still remain sensitive with a high conservation value. Both these watercourses feed into the National Freshwater Priority Area (NFEPA) Seven Dams stream system which is of very high conservation value. These watercourses also function in terms of water transportation, storm water management, flood attenuation and wetland habitat. Both these watercourses should therefore be excluded from development in order to preserve their functioning and prevent downstream impacts caused by the development.

As previously discussed, the site, especially the ridge system, contains a high number of protected species. This also contributes to the conservation value of the ridge system. These include the trees, *Olea europaea* subsp. *africana*, which do not transplant easily and will have to be removed where they occur outside private open space. Specimens should be incorporated into the design of the development but where this is not possible, permits must be obtained to remove these trees but can be offset by using saplings in the landscaping of the development. The site contains numerous geophytic and succulent species which are easily transplanted. Permits must be obtained for the removal of the protected species. Protected species will also remain intact in the portion of the ridge being excluded as private open space. Any plants being transplanted can also be moved to this portion of open space which will form a refugia for a significant proportion of these species with significant conservation value.

The exotic species occurring on the site, and especially those exotic succulents which have invaded the rocky ridge habitat must be eradicated prior to construction. Furthermore, and of more importance is that these species should be eradicated from the portions of private open space including that portion of the rocky ridge being preserved and the two small watercourses on the site. It is therefore recommended that the eradication of exotic species be maintained and form part of the management of the residential development throughout the lifetime of the development.

As a result of the planned development, various plant communities are unlikely to survive at the sites where construction activities will take place.

4.3.1.6 Animals of the area

A survey was also undertaken to assess the fauna occurring on the site and in adjacent areas, with particular emphasis on the detection of threatened species likely to occur.

Due to the presence of humans in the area, most of the larger mammal species have been killed or scared away (Smithers 1986).

The findings of the Ecological Assessment of the site are included in **Annexure C1**.

Although no major impacts are anticipated in terms of animal species, measure can be undertaken to increase the suitability of the site for small animals such as garden birds, bees and butterflies.

4.3.1.7 Aquatic systems

Despite the somewhat degraded and modified condition of the two small watercourses / wetlands in the northwestern and south eastern corners of the site they still remain sensitive with a high conservation value. Both these watercourses feed into the National Freshwater Priority Area (NFEPA) Seven Dams Stream System which is of very high conservation value. These watercourses also function in terms of water transportation, storm water management, flood attenuation and wetland habitat. Both these watercourses should therefore be

excluded from development in order to preserve their functioning and prevent downstream impacts caused by the development.
The findings of the Ecological Assessment of the site will be included in the EIA Report.

4.3.1.8 1:100-year flood line

Refer to Annexure B for site layout plan including the 1:100-year flood line. The development is subject to the development setback line ensuring that no permanent structures are built within the 1:100-year flood line.

4.3.1.9 Historical, archaeological or cultural sites

An archaeological impact assessment has been undertaken to assess the site and determine whether any artifacts, rock paintings, other significant material or graves are present at or near the site and is included in **Annexure C2**. An Addendum to the Heritage Impact Assessment is also included in **Annexure C2**, which takes amendments made to the site development plan into consideration to include the rectangular stonewalled structure.

As far as the palaeontological heritage is concerned, the proposed development will primarily affect geologically insignificant volcanic rock (dolerite). It is recommended that the proposed development may proceed with no further palaeontological assessments required, provided that all development activities are restricted to the demarcated footprint.

The proposed development will impact the following historically significant structures:

- The remains of a circular-shaped sangar;
- The remains of a rectangular, stonewalled building located on a dolerite outcrop near the southern perimeter of the footprint;
- Possible remains of an ash heap with potential for artifact preservation.

The sangar, rectangular stonewalled building and ash heap form part of a historically significant landscape, central to the South African War and its aftermath. These remains represent the last remaining traces of

British military occupation of Bloemfontein during and shortly after the South African War.
The following recommendations were made:

- All development activities are restricted to within the boundaries of the proposed footprint;
- The sangar and rectangular stonewalled building are protected as part of a designated open / green area, accompanied by appropriate information displays and preferably with a clearly visible fence during the construction phase of the development.
- The ash heap area covering approximately 60 m2 is protected as part of a designated open / green area, preferably capped by grass.

Refer to the Heritage Impact Assessment and the Addendum in **Annexure C2** for more information.

4.3.1.10 Visual Impact and Light Pollution

The visual impact of the proposed development in the landscape is the function of several factors of which the viewing distance, visual absorption capacity and landform are measurable. Other factors are difficult to categorize because they are subjective viewpoints.

The visual impact for the proposed development is largely due to:

- The topography in terms of elevation and aspect.
- The vegetative cover in terms of its extent and height.
- The extent of the proposed development.
- The distance from point of origin.
- The low visual absorption capacity of the surrounding landscape.

A development of this kind is expected to generate more light from general lighting by residences, street lighting etc. Lighting recommendations will be made to minimize the impact of lighting on the surrounding rural area. These recommendations are included in the EIA Report under Sections 6.7 and 6.8.

It should be noted that, due to its close proximity to the already developed town of Bloemfontein, the new development will form a unit with the main town, which in comparison to the natural landscape, already have a significant visual impact.

4.3.1.11 Noise

Should blasting be required, all relevant parties will be notified prior to any blasting events.

4.3.2 Socio-Economic Environment

The proposed development is expected to promote and enhance the existing Bloemfontein economic and service sector. It is not foreseen that the proposed development will have a negative socio-economic impact on the region. In fact, it will act as catalyst for stabilising economic growth in the region by creating a wide variety of job opportunities during the construction and operational phases.

4.3.2.1 Surrounding Land Uses

The proposed development will consist of a relatively large area with an extent of 24.5467 hectares situated on Portion 20 (Remaining Extent) of the Farm Lilyvale 2313. This area is situated along the northern outskirts of Bloemfontein in an area currently in high demand for residential developments.

The site is largely surrounding by existing residential areas with high density residential areas to the east of it (Shellyvale). In addition, the N1 is also located adjacent to the proposed development site. Refer to the locality plan in **Annexure A**.

4.4 DESCRIPTION OF POSSIBLE ENVIRONMENTAL IMPACTS, ISSUES AND CUMULATIVE IMPACTS

Developments such as these do have, like many other types of developments, various direct but also indirect impacts on the environment. These impacts have to be managed in order to have the minimum environmental impact and the maximum benefit to man.

Issues identified during the Scoping process are listed below:

4.4.1 Vegetation destruction

The site earmarked for development is covered by natural vegetation. Parts of the natural and disturbed vegetation of the development

footprint on the site will ultimately be destroyed by the development of residential erven and subsidiary infrastructure.

An Ecological Assessment has been undertaken to assess the sensitivity of the natural vegetation on the site, whether protected or endangered plant and animal species are present and make recommendations regarding conservation of the vegetation type, if necessary, or removal of protected plants. This study is included in **Annexure C1**.

4.4.2 Impact on wetlands

No development is planned in or near wetland areas. These areas will however be demarcated and protected. In areas where roads will have to cross drainage lines, it will be designed and constructed in such a way that the hydrology of the drainage line will not be negatively affected.

4.4.3 Soil suitability

The aims of a Geotechnical Assessment are to investigate the subsurface conditions of the soils and determine whether the soils are suitable for the proposed development and make recommendations regarding foundations. The Geotechnical Assessment is included in **Annexure C5**.

4.4.4 Bulk infrastructure

The proposed development will include the following infrastructure that could have possible impacts on the environment. These include:

- Water provision
- Storm water drainage
- Electrical infrastructure
- Roads
- Sanitation
- Solid waste disposal

A Civil Services Report and an Electrical Services Report, to indicate the provision of engineering services required for the proposed development, have been compiled and are included in **Annexure C4**.

4.4.5. Traffic Impact

Due to the extent of, and the increase of trips anticipated as a result of the proposed development, a traffic impact study has been undertaken. This study is included in **Annexure C6**.

4.4.6 Visual Impact

The visual impact of the proposed development in the landscape is the function of several factors of which the viewing distance, visual absorption capacity and landform are measurable. Other factors are difficult to categorize because they are subjective viewpoints.

The visual impact for the proposed development is largely due to:

- The topography in terms of elevation and aspect.
- The vegetative cover in terms of its extent and height.
- The extent of the proposed development.
- The distance from point of origin.
- The low visual absorption capacity of the surrounding landscape.

4.4.7 Light Pollution

A development of this kind is expected to generate more light from general lighting by residences, street lighting etc. Lighting recommendations have been made to minimize the impact of lighting on the surrounding rural area. These recommendations are included in Section 6.7.

4.5 SPECIALIST STUDIES AND SPECIALIZED PROCESSES

As per the Screening Tool Report, the following Specialist Assessments have been identified for inclusion in the Assessment Report, based on the selected classification and the environmental sensitivities of the proposed development footprint.
It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

Indication of Specialist Assessments identified for inclusion in the Assessment Report by means of the Screening Tool Report.

No.	Specialist Assessment	Description	Reason for inclusion / exclusion
1	Landscape/Visual Impact Assessment	Low to Medium Sensitivity	The proposed development will have a medium-high visual impact, largely due to: • The extent of the development (especially the planned properties on top of the plateau • distance from roads and the existing town • the low-medium visual absorption capacity of the surrounding landscape • Due to the close proximity of the existing town of Bloemfontein, this new development will form a unit with the main town, which in comparison to the natural landscape, already have a significant visual impact. Mitigation measures will be implemented to soften the visual impact: • The style and architectural character of the buildings of the planned development are planned to blend with the typical character of the developments in Bloemfontein • Over time, newly planted trees around buildings will further soften the visual impact With the above in mind, it is recommended that a Landscape/Visual Impact Assessment is not required.

No.	Specialist Assessment	Description	Reason for inclusion / exclusion
2	Archaeological and Cultural Heritage Impact Assessment	Low Sensitivity to a Very High Sensitivity, as the site occurs within: • 150m of a Grade IIIa Heritage site • 100m of a Grade IIIb Heritage Site • Within 2km of a Grade II Heritage Site	A Heritage Assessment was undertaken
3	Palaeontology Impact Assessment	Medium Sensitivity	A Heritage Assessment was undertaken.
4	Terrestrial Biodiversity Impact Assessment	Very High Sensitivity Ecological Support Area 1 & 2	The overall percentage ground cover is considered to be relatively low. This is considered largely a result of communal overgrazing in the area which reduces the natural vegetation cover. An Ecological Assessment was undertaken.
5	Aquatic Biodiversity Impact Assessment	Very High Sensitivity, as it is listed as a strategic water source area	An Ecological Assessment was undertaken.
6	Socio-Economic Assessment		Through this planned development, numerous job opportunities will be created, especially in the lower income sector. During the construction phase unskilled workers could be

No.	Specialist Assessment	Description	Reason for inclusion / exclusion
			trained in the construction field. It is recommended to make use of local labour (where possible) for most of the construction work and that workers should be trained. During the operational phase additional job opportunities exist as maintenance workers, housekeepers, security, etc. With the above in mind, it is suggested that a socio-economic assessment is not required.
7	Plant Species Assessment	Low to Medium Sensitivity	An Ecological Assessment was undertaken.
8	Animal Species Assessment	Medium Sensitivity, due to the possible occurrence of *Hydrictis maculicollis*	An Ecological Assessment was undertaken.
9	Civil Aviation	High Sensitivity as the site is within: • 15km of a Civil Aviation Radar • Within 8km of other Civil Aviation Aerodromes.	An application has been submitted to CAA.
10	Defence Theme Sensitivity	Medium to Very High Military and Defense Site	MDA has contacted DoD for their written comments on the Defence Sensitivity on the proposed site. Any feedback

No.	Specialist Assessment	Description	Reason for inclusion / exclusion
			received will be included in the fScoping Report.

In addition, the following studies were undertaken, and included in the EIA:

No.	Study	Aim	Consultant
1	Traffic Impact Study	Aim of this study is to determine the traffic impact of the proposed development and to make provision therefore.	KMA Consulting Engineers Mr K Marais P.O. Box 52054 Langenhovenpark BLOEMFONTEIN 330 051 446 2647
2	Roads & Stormwater Services Report	To assess the existing stormwater and floodlines and to advise on design and Municipal policy.	Thusabatho Consulting Engineers
3	Bulk Civil Services Report	The aim of this report is to establish design criteria, to evaluate and quantify the availability of existing services, to design internal services and to evaluate geotechnicalservices.	Thusabatho Consulting Engineers
4	Electrical Services Report	The purpose of an electrical services report is to discuss the availability and/or capacity of electricity from the local supply authority and in this case the	FCE Consulting Engineers 39 Brebner Street Westdene Bloemfontein 9301 051 4038596

No.	Study	Aim	Consultant
		supply authority is Centlec.	
5	Geotechnical, Structural and Services Report	The purpose of the investigation was to determine the feasibility of the area in terms of soil suitability for the proposed development, as well as the founding conditions for the structures.	Simlab P.O. Box 6249 Bloemfontein 9300 051 4470224

5. PUBLIC PARTICIPATION

5.1 INTRODUCTION AND OBJECTIVES

As an important component of the EIA process, the Public Participation Process involves public inputs from Interested and / or Affected Parties (IAP's) according to Chapter 6 of the NEMA 2014 Regulations, as amended. IAP's may comment during the EIA of the proposed project.

The key objectives of the public participation process are to:

- Identify a broad range of IAP's, and inform them about the proposed project.
- Understand and clearly document all issues, underlying concerns and suggestions raised by the IAP's.
- Identify areas that require further specialist investigation.

5.2 METHODOLOGY

The following actions have already been undertaken as part of the Scoping process:

- Advertisements in the local newspapers.
- Written notices to identified IAP's.
- On-site notices.

The Draft Scoping Report was sent out for a 30-day comment period to all identified IAP's. The draft EIA Report (current report) is currently being circulated for comment to all registered IAP's.

5.2.1 Identification of key IAP's

Key IAP's, are the following types of organizations:

- Surrounding landowners
- Authorities
- GO's
- NGO's
- Business and civic organizations.

See **Annexure D3** for a list of IAP's.

5.2.2 Notification of potential IAP's of EIA:

i) Newspaper advertisements: (Annexure D1)

Newspaper	Date of advertisement
Bloem Nuus / Bloem News	29 September 2022

ii) On site notices: On site notices were also placed at the site on the 30th of September 2022 allowing 30 days for public response **(Annexure D2)**.

iii) Written notices: Written notices of the intent to apply for environmental authorisation were sent to adjacent landowners. In addition, the following identified interested and affected parties and were given a 30-day comment period on the dScoping Report:

- All parties registered as IAP's
- Mangaung Metropolitan Municipality: City Manager
- Mangaung Metropolitan Municipality: Town Planning Division
- Mangaung Metropolitan Municipality: Environmental Division
- Mangaung Metropolitan Municipality: Relevant Ward Councillor
- SAHRA: Free State
- SAHRA: On-line
- DWS
- Department of Agriculture, Forestry and Fisheries
- Department of Defence: Tempe
- Civil Aviation Authority

5.2.3 Public comments

Comments were received on the initial notification as well as the draft Scoping Report. Please refer to **Annexure D** for more information. The draft EIA Report is currently being circulated for comment. Any comments on the draft EIA Report will be included in the final EIA Report.

5.3 SUMMARY OF KEY ISSUES RAISED BY THE IAP's

Please refer to the following table for a list of comments received on the initial notification.

Nr	Commenting Party	Comments	Response
1	[redacted]	2022/10/03 Additional information was requested. 2022/10/11 Commented that the relevant party has no objection against the proposed development.	2022/10/10 Copy of the proposed layout map and a GoogleEarth Marker was forwarded to the relevant party. 2022/10/12 MDA responded by acknowledging the e-mail sent on the 11th of October 2022.
2	[redacted]	2022/10/05 Additional information was requested on the proposed project. 2022/10/24 Additional information requested regarding the proposed project, specifically regarding the services that will be provided / constructed, including the roads.	2022/10/05 Proposed layout map & GoogleEarth view was provided. 2022/10/27 The following information was provided: 1. Proposed Layout Map 2. Services Report 3. Roads and Stormwater Services Report A copy of the Traffic Impact Report will be forwarded as soon as it is made available to our office.

Nr	Commenting Party	Comments	Response
3	[redacted]	2022/10/07 1. Will blasting activities be undertaken? This will have an impact on our structures. There are massive rocks where you want to develop. 2. My autistic daughter gets home schooling, so the noise levels will have a major impact on her well-being. My wife also works from home. 3. How far do you want to build from my wall and also will it be double storey buildings? If it is too close to my wall, this can devalue my property.	2022/10/07 We will note your concern as part of the Public Participation Process and your concern will be formally included in the Environmental Impact Study. You will also receive our response to your concern in an attempt to mitigate the issue. Please do not hesitate to contact us if you need any additional information in this regard.
4	[redacted]	2022/10/04 We received below email and attachment and request additional information on the proposed development to understand the impact on our surrounding area.	2022/10/10 With reference to the e-mail below, the following: 1. [redacted] was notified of the proposed project, as Staresimul (PTY) LTD is the landowner of the following properties: [redacted]

Nr	Commenting Party	Comments	Response
			[redacted] 2. Find attached hereto a copy of the proposed layout map. 3. A GoogleEarth Marker is also attached hereto. Please indicate if any additional information regarding the proposed project is required.
5	[redacted]	2022/10/03 Requested additional information telephonically.	2022/10/03 A copy of the proposed layout was forwarded to [redacted]

Personal information withheld in terms of the POPI Act (Act 14 of 2013)

The following comments were received on the Draft Scoping Report:

Nr	Commenting Party	Comments	Response
1	Department of Agriculture, Land Reform and Rural Development	The property in question is privately owned and the Directorate: Property Management within the relevant department has no objection to the application.	Comments noted.
2	[redacted]	Thanked MDA for the information provided.	Comments noted.

Nr	Commenting Party	Comments	Response
	• [redacted]		
3	Mangaung Metro Municipality • Ms N. Mabunda (HoD Planning) Comments dated 27 March 2023.	1. A detailed EMRr must be compiled. 2. An ECO must be appointed. 3. A buffer zone must be included between the proposed development and the open space for conservation. 4. Storm water management on site is required. 5. An alien vegetation and control monitoring programme must be developed. 6. Building structures should be north facing and building material should be legally obtained and recyclable building material is preferred. 7. Consent must be acquired from Municipal Water and Sanitation, unit Engineering Service. 8. The proposed development must comply with the	1. An EMPr is included on the EIA Report in Annexure G. 2. Noted and included in the EMPr. 3. Noted and included in EMPr. 4. A Roads and Stormwater Services Report is included in the EIA Report in Annexure C3. 5. Noted and included in the EMPr. 6. Noted. 7. Noted and in process as part of the Town Planning process. 8. Noted.

Nr	Commenting Party	Comments	Response
		principles of environmental management	
4	South African Heritage Resources Agency • S. Ngcatsha Comments dated 5 April 2023	1. Further comments will be issued once the draft EIA Report have been attached to the case on SAHRIS	1. Noted. The draft EIA report will be uploaded onto SAHRIS for comments.
5	Department of Water & Sanitation • Dr T. Ntili Comments dated 18 April 2023	1. The developer should liaise with the Mangaung Metropolitan Municipality (MMM) to determine what infrastructure should be built to accommodate the development. Information on how water provision requirements are to be met if there is a delay in implementation of the bulk water supply upgrades / sewerage must be provided to DWS. 2. It is concerning that the applicant has indicated that the recommendations provided on the	1. Noted and in process. 2. The statement that the recommendations will not prevent the proposed development to proceed, but merely inform municipal infrastructure upgrades to accommodate the development were taken from the Services Report (included in Annexure C4). This statement pertains to the development being possible with necessary Municipal upgrades and will most definitely not be possible if

Nr	Commenting Party	Comments	Response
		draft Scoping Report will not prevent the development from proceeding, as there is no assurance that the upgrades will occur in the specified period (3 years). 3. In consideration of the frequent sewage blockages and spillages in the sewer network, what will the development put in place to assure that spillages and blockages do not occur or are contained to avoid contamination of water resources?	Municipal infrastructure upgrades are not undertaken. Our apologies for the confusion. 3. Sewer infrastructure will need to be constructed and upgraded before any development can take place. The infrastructure will need to be maintained by the Municipality, which is a concern with little guarantee of proper maintenance of infrastructure at present. The applicant can however report any spillages and blockages asap, but your concern on the cumulative impact on possible contamination of surrounding water resources is noted.

Personal information withheld in terms of the POPI Act (Act 14 of 2013)

Comments will be included in the final EIA Report to DESTEA.

6. IMPACT ASSESSMENT

6.1 METHODOLOGY

Impact assessment must take into account the nature, scale and duration of effects on the environment and whether such effects are positive (beneficial) or negative (detrimental). Each issue / impact is also assessed according to the project stages from planning, through construction and operation to the decommissioning phase (if applicable). Where necessary, the proposal for mitigation or optimisation of an impact is noted. A brief discussion of the impact and the rationale behind the assessment of its significance has also been included.

A rating system is applied to the potential impact on the receiving environment and includes an objective evaluation of the mitigation of the impact. In assessing the significance of each issue the following criteria was used:

Impact rating criteria

Nature	A brief description of the environmental aspect being impacted upon by a particular action or activity is presented.
Extent (Scale)	Considering the area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales and as such bracketing ranges are often required. This is often useful during the detailed assessment phase of a project in terms of further defining the determined significance or intensity of an impact. Site — Within the construction site Local — Within a radius of 2 km of the construction site Regional — Between 2 and 30 km from the site National — The whole of South Africa
Duration	Indicates what the lifetime of the impact will be. Short-term — The impact will either disappear with mitigation or will be mitigated through natural processes in a span shorter than the construction phase Medium-term — The impact will last for the period of the construction phase, where after it will be entirely negated Long-term — The impact will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter Permanent — The only class of impact which will be non-transitory. Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient
Intensity	Describes whether an impact is destructive or benign. Low — Impact affects the environment in such a way that natural, cultural and social functions and processes are not affected. Medium — Effected environment is altered, but natural, cultural and social functions and processes continue albeit in a modified way.

	High	Natural, cultural and social functions and processes are altered to extent that they temporarily cease.
	Very high	Natural, cultural and social functions and processes are altered to extent that they permanently cease.
Probability	Describes the likelihood of an impact actually occurring.	
	Improbable	Likelihood of the impact materializing is very low.
	Possible	The impact may occur.
	Highly probable	Most likely that the impact will occur.
	Definite	Impact will certainly occur.
Significance	Significance is determined through a synthesis of impact characteristics. It is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required.	
	Low impact	No permanent impact of significance. Mitigatory measures are feasible and are readily instituted as part of a standing design, construction or operating procedure.
	Medium impact	Mitigation is possible with additional design and construction inputs.
	High impact	The design of the site may be affected. Mitigation and possible remediation are needed during the construction and/or operational phases. The effects of the impact may affect the broader environment.
	Very high impact	The design of the site may be affected. Intensive remediation as needed during construction and/or operational phases. Any activity which results in a "very high impact" (negative) is likely to be a fatal flaw.
Status	Denotes the perceived effect of the impact on the affected area.	
	Positive (+)	Beneficial impact
	Negative (-)	Deleterious or adverse impact
	Neutral Impact is neither beneficial nor adverse.	
	It is important to note that the status of an impact is assigned based on the *status quo* – i.e. should the project not proceed. Therefore not all negative impacts are equally significant.	

6.2 VEGETATION DESTRUCTION

The site earmarked for development is covered by natural vegetation. Parts of the natural and disturbed vegetation of the development footprint on the site will ultimately be destroyed by the development of residential erven and subsidiary infrastructure. The possible environmental impacts (vegetation) that the proposed project may have, have been determined as significant and without mitigation several impacts are anticipated to be high. However, if recommendations as indicated below are implemented, i.e., excluding a portion of the rocky ridge and exclusion of the two watercourses and transplanting of any remaining protected geophytic or succulent species to the remaining private open space, the impacts will be significantly decreased. Refer to **Annexure C1** for the Ecological Report.

Assessment: Vegetation Destruction						
Nature	Most of the natural vegetation on the site (81%) will be transformed by the development and subsidiary infrastructure, thereby resulting in loss of animal life too.					
	Extent	**Duration**	**Intensity**	**Probability**	**Significance**	**Status**
Without Mitigation	Local	Long term	High	Highly probable	High	Negative
With Mitigation	Site	Long term	Medium	Highly probable	Low	Negative

Recommendations to minimise the impacts of the proposed project on the Vegetation Aspects		
Planning Phase	**Construction Phase**	**Operational Phase**
• The rocky ridge on the site has been confirmed to be of high conservation value. It is therefore recommended that a significant portion of this ridge be excluded from development. • This excluded portion should aim for a representative sample of approximately 30% of this ridge which should be retained as private open space and be conserved indefinitely. • These areas of private open space should however be incorporated into the development to increase the	• Excluded portions of the ridge system should be treated as no-go areas during the construction phase and kept as natural areas. This should include that the area not be used as stockpile areas, laydown areas, parking or any other activities associated with construction. • The site contains numerous geophytic and succulent species which are easily transplanted. Permits must be obtained and these transplanted to areas of private open space where they will remain unaffected • It is recommended	• It is recommended that the development refrain from introducing any game or domestic animals such as horses to the remaining private open space as these will within a short period trample the vegetation layer and defeat the purpose of the exclusion.

aesthetic value of it and walkways should also be considered through these areas for the benefit of the inhabitants. • Scattered specimens of the protected Wild Olive tree, *Olea europaea* subsp. *africana*, will not transplant easily and will have to be removed where they occur outside private open space. Specimens should be incorporated into the design of the development but where this is not possible, permits must be obtained to remove these trees but can be offset by using saplings in the landscaping of the development.	that a suitably qualified ecologist/botanist be consulted during this process to provide expert input. • The process of transplanting should be undertaken during the rainy season when deciduous geophytes will be visible. Should it be necessary to establish a temporary nursery area, this should be constructed, overseen and maintained by a suitably qualified person. • The exotic species occurring on the site, and especially exotic succulents must be eradicated prior to construction. It is also recommended that the eradication of exotic species be maintained and form part of the management of the residential development throughout the lifetime of the development. Where category 1 and 2	

	weeds occur, they require removal by the property owner according to the Conservation of Agricultural Resources Act, No. 43 of 1983 and National Environmental Management: Biodiversity Act, No. 10 of 2004.	

6.3 IMPACT ON WETLANDS

No development is planned in or near wetland areas. These areas will however be demarcated and protected. In areas where roads will have to cross drainage lines, it will be designed and constructed in such a way that the hydrology of the drainage line will not be negatively affected.

Assessment: Wetlands						
Nature	Possible destruction of / damage to wetland areas due to development / construction activities.					
	Extent	**Duration**	**Intensity**	**Probability**	**Significance**	**Status**
Without Mitigation	Regional	Long term	High	Highly probable	High	Negative
With Mitigation	Site	Medium term	Medium	Possible	Low	Negative

Recommendations to minimise the impacts of the proposed project on the Wetland Aspects		
Planning Phase	**Construction Phase**	**Operational Phase**
• The two small watercourses / wetlands in the north western and south eastern corners of the site they still	• Wetland areas will be demarcated and protected during construction activities.	

remain sensitive with a high conservation value and should therefore be excluded from development in order to preserve their functioning and prevent downstream impacts caused by the development (Appendix A: Map 1 & 2). They should also be incorporated into the design in order to enhance the aesthetic value of the development. • Where infrastructure such as roads, powerlines, pipelines, etc. will require crossing these watercourses, the design of these structures should be such to minimise obstruction of flow and should keep disturbance of the watercourses to a minimum. Adequate rehabilitation should be implemented where the watercourses have been disturbed. • The necessary authorisations must be acquired from Department of		

Water and Sanitation (DWS) where the two watercourses will be affected by the development. • It is recommended that an adequate storm water management system be designed for the development to manage runoff and allow it to enter the two watercourses system on the site.		

6.4 SOIL SUITABILITY

In terms of the Geotechnical (Phase 1) Investigation undertaken (refer to **Annexure C5**), materials which occur on site consist of a low to medium potential expansiveness according to the Van der Merwe Method (1964). Collapsibility and total settlement were also calculated using models and Oedometer test results, respectively. The site has two definite combined site classifications of H/C/S and H2/S1 and with geotechnical constraints of 2ABCDI3F. Recommendations are made for single and double storey masonry structures and the final decision on the type of foundation to be used should be made by a Structural Engineer. Refer to the Geotechnical Investigation for more detail.

Assessment: Soil Suitability						
Nature	Suitability of the soil and geotechnical constraints for the proposed development.					
	Extent	**Duration**	**Intensity**	**Probability**	**Significance**	**Status**
Without Mitigation	Regional	Permanent	High	Definite	Very high	Negative
With Mitigation	Regional	Long term	Medium	Possible	Medium	Neutral / Positive

Recommendations to minimise the impacts of the proposed project on the Soil Aspects		
Planning Phase	**Construction Phase**	**Operational Phase**
• A geotechnical investigation was undertaken to test the founding conditions of the site. • The final decision on the type of foundation to be used for the applicable structure should be made and designed by a Structural Engineer.	• Materials to be used in backfilling and layer works must be stockpiled and tested to confirm material quality. • The construction phase of the project should be treated as an augmentation of the geotechnical investigation. • Gabions or enviroblocks can be used to stabilize the soil at areas that are steeper than 45°. • During excavation activities, the topsoil must be stripped and properly stored for later use during landscaping / rehabilitation. • Topsoil stockpiles must be protected against erosion.	• Care must be taken to rehabilitate degraded vegetation as quickly as possible. • Proper landscaping is necessary to minimise the impact of erosion.

6.5 BULK INFRASTRUCTURE

The proposed development will include the following infrastructure that could have possible impacts on the environment. These include:

- Water provision
- Storm water drainage
- Electrical infrastructure
- Roads
- Sanitation
- Solid waste disposal

Refer to **Annexures C3** and **C4** for the Roads and Stormwater Services Report and Services Report, respectively. The area drains in a north-eastern direction and the site is not subject to any flood lines. There is currently no underground stormwater network in the area. At present there is insufficient capacity in the network for water provision and sewerage. Solid waste will need to be removed by the Mangaung Metro Municipality during the operational phase of the proposed development. As the site has no electrical infrastructure, the applicant will be required to bear the cost of electrical infrastructure and services for the proposed development.

Assessment: Bulk Infrastructure						
Nature	Increase in load on the available bulk services.					
	Extent	**Duration**	**Intensity**	**Probability**	**Significance**	**Status**
Without Mitigation	Regional	Permanent	High	Definite	Very high	Negative
With Mitigation	Regional	Long term	Medium	Possible	Medium	Neutral / Positive

Recommendations to minimise the impacts of the proposed project on aspects associated with Bulk Infrastructure		
Planning Phase	**Construction Phase**	**Operational Phase**
• Retention of stormwater must be provided for on site with contour humps on the lower side of the proposed development. • The proposed development can connect to the existing municipal 90mm diameter water distribution pipeline. A booster pump system will be installed on the main water line as per the	• All construction activities must be contained within construction areas in order to prevent peripheral impacts on surrounding natural habitat. • Topsoil should be removed where trenches are to be excavated and used for rehabilitation. • Erosion must be prevented at all times. • Employees should	• Regular inspections of the water pipe routes must be conducted to identify leakages • Pipe bursts / leakages should be restored as soon as possible to prevent loss of water and to prevent erosion. • Regular inspections of the sewage pipe routes must be conducted to identify leakages (if any).

Recommendations to minimise the impacts of the proposed project on aspects associated with Bulk Infrastructure		
Planning Phase	**Construction Phase**	**Operational Phase**
municipal fire department requirements to provide sufficient fire flow and pressure. Approval of the designs and specifications will need to be done by the local authorities. • The developer should liaise with the relevant Municipality to determine what water infrastructure should be built to accommodate the development, through their bulk contribution according to the Bloemfontein Internal Water Masterplan (2018). • It is recommended that the relevant municipality upgrades the water to be able to supply the distribution zone's minimum fire flow and pressure requirements in accordance with its current land-use zoning. • It is recommended that the relevant	make use of chemical toilets • Chemical toilets should be provided on site • Chemical toilets should be serviced on a regular basis • The content of the chemical toilets should be removed from site and handled according to Best Practices. • The contractor should remove all construction waste as well as general waste generated during the construction phase • The said waste should be removed on a regular basis • Hazardous waste , if any, should be collected and disposed of according to Best Practices. • The illumination of construction sites will be temporary • Care must be taken to lower light pollution • Regular inspections should be	• Blockages should be cleared as soon as possible to prevent sewage pollution. • A proper collection system should be developed by the relevant municipality to collect and dispose all domestic waste at each household. • Any waste spills should be cleaned immediately and the content thereof handled according to Best Practices. • Regular inspections should be conducted to identify electrical faults

Recommendations to minimise the impacts of the proposed project on aspects associated with Bulk Infrastructure		
Planning Phase	**Construction Phase**	**Operational Phase**
municipality continues with the current planning to decrease the Rayton Tower's distribution zone size and to implement other planned water network upgrades. • Thus, careful planning of the bulk water reticulation network should be undertaken in order to ensure effective operation of the system. • Municipal planning for the construction of a new bulk outfall sewer pipeline is required as existing sewerage reticulation is insufficient for the proposed development. • A proper collection system should be developed to collect and dispose all construction and domestic waste. • Careful planning of the lighting of streets and general areas is necessary in order to lower light pollution	conducted to identify electrical faults.	

Recommendations to minimise the impacts of the proposed project on aspects associated with Bulk Infrastructure		
Planning Phase	**Construction Phase**	**Operational Phase**
without compromising safety. • The design of the bulk supply system as well as the wiring in general should be undertaken according to best practices.		

6.6 TRAFFIC IMPACT

A Traffic Impact Study was undertaken and is included in **Annexure C6**. The proposed development can potentially result in 300 new trips during peak morning and afternoon periods. Most of the analysed intersections will have to be upgraded due to capacity considerations and to comply with geometric standards, in some instances irrespective of the development under consideration.

Assessment: Traffic Impact						
Nature	Increase in traffic on surrounding roads.					
	Extent	**Duration**	**Intensity**	**Probability**	**Significance**	**Status**
Without Mitigation	Regional	Permanent	High	Definite	Very high	Negative
With Mitigation	Local	Long term	Medium	Possible	Medium	Negative / Neutral

Recommendations to minimise the impacts of the proposed project on aspects associated with and increase in Traffic		
Planning Phase	**Construction Phase**	**Operational Phase**
• The planning of the road network will be done in collaboration with	• The generation of dust should be mitigated • Degraded	• Disturbed areas should be rehabilitated as soon as possible

Civil and Traffic Engineers and is based on acceptable engineering and town planning norms. • The recommendations stated in the Traffic Impact Assessment should be assessed and implemented in the road design.	vegetation should be rehabilitated as soon as possible • Hydroseeding / planting of sods / grass can also be implemented, where necessary • Proper landscaping is required to limit the occurrence of erosion • Gabions / enviroblocks can be used to stabilise the soil at slopes steeper than 45°. • Topsoil should be stripped and stockpiled for use during rehabilitation / landscaping • Stockpiled topsoil should be protected against erosion	• Proper landscaping is necessary to minimise the impact of erosion

6.7 VISUAL IMPACT & LIGHT POLLUTION

The visual impact of the proposed development in the landscape is the function of several factors of which the viewing distance, visual absorption capacity and landform are measurable. Other factors are difficult to categorize because they are subjective viewpoints.

The visual impact for the proposed development is largely due to:

- The topography in terms of elevation and aspect.
- The vegetative cover in terms of its extent and height.
- The extent of the proposed development.
- The distance from point of origin.
- The low visual absorption capacity of the surrounding landscape.

A development of this kind is also expected to generate more light from general lighting by residences, street lighting etc.

Assessment: Visual Impact & Light Pollution						
Nature	The landscape will be altered by the development.					
	Extent	**Duration**	**Intensity**	**Probability**	**Significance**	**Status**
Without Mitigation	Regional	Long term	Medium	Definite	High	Negative
With Mitigation	Regional	Long term	Medium	Highly probable	Low	Neutral

Recommendations to minimise the impacts of the proposed project on the Visual and Light Pollution Aspects		
Planning Phase	**Construction Phase**	**Operational Phase**
• The style and agricultural character of the planned buildings should preferably blend with the typical character of the developments in the nearby area. • The planning phase should include the planning of planting of indigenous trees, as this will limit the visual impact over time	• Construction site should be kept clean and tidy. This also includes the plant and material storage area. • The use of floodlights to illuminate construction sites must be limited. All floodlights should be installed in such a way that the light and glare does not unnecessarily increase light pollution.	• The visual impact will be softened by proper landscaping of the open spaces and by planting of trees and shrubs in the developed area.

7. ENVIRONMENTAL IMPACT STATEMENT

7.1 SUMMARY OF KEY FINDINGS

- Protected tee and plant species occur on site.
- There are two watercourses on site.
- Sensitive areas and historical features were identified and are incorporated in the site development plan as protected open space areas.
- A Geotechnical investigation has made recommendations with regard to foundations types required for the site.
- The existing water infrastructure currently does not have sufficient capacity for the proposed development.
- At present there is insufficient capacity in the existing network for water provision and sewerage for the proposed development.
- There is currently no electrical infrastructure for the proposed development, but Centlec has confirmed they will be able to supply electricity.
- In terms of traffic impact, 300 new trips during morning and evening peak periods are anticipated. Intersections will therefore need to be upgraded.
- Job creation (mainly during construction) and GDP growth are anticipated.

7.2 SUMMARY OF POSITIVE & NEGATIVE IMPACTS

Positive	**Negative**
Job opportunities, mainly during the construction phase.	Destruction of natural vegetation within the development footprint.
Upgrade of bulk services (pending service agreement).	Possible damage to wetland areas due to construction activities.
Upgrading of surrounding road intersections.	Increase in load on available bulk services.
	Increase in traffic.
	Visual impact due to the landscape being altered.

Refer to the draft EMPr in **Annexure E** for recommended mitigation measures.

8. CONCLUSION & EAP DECLARATION

The proposed development will consist of a relatively large area with an extent of 24.5467 hectares situated on Portion 20 (Remaining Extent) of the Farm Lilyvale 2313. This area is situated along the northern outskirts of Bloemfontein in an area currently in high demand for residential developments. The site is largely surrounding by existing residential areas with high density residential areas towards the eastern side of the proposed development (Shellyvale).

The aim of this development is to establish a high value, medium density residential development in Bloemfontein. The property is ideally suited and is located adjacent to existing suburbs within the Bloemfontein area.

The following potential impacts were identified during the scoping phase:

- Vegetation destruction
- Impact on wetlands
- Soil suitability
- Bulk infrastructure
- Traffic impact
- Visual impact
- Light pollution

The identified issues were assessed by means of specialist assessments. Specialist studies undertaken included:

- Ecological Assessment
- Heritage Impact Assessment
- Roads & Stormwater Services Report
- Civil Services Report
- Electrical Services Report
- Geotechnical Report
- Traffic Impact Study

Sensitive and historical areas will be conserved by including these areas in private open spaces. The no-go alternative, i.e. keeping the site in its current state and not proceeding with the proposed development, is only recommended if bulk civil services and road upgradings can't be accommodated. This would then also only be

temporary of nature. It is expected that the natural areas and historical features on the site would further deteriorate if left as is.

An Environmental Management Programme (EMPr) is required for the activity to minimize any negative impacts during the different phases of the development, especially the construction phase. The EMPr contains guidelines and recommendations for minimizing the impacts identified during the EIA as well as address the rehabilitation of disturbed areas. A Draft EMPr is included in **Annexure E** of this report. With responsible construction and rehabilitation practices, most negative impacts anticipated can be mitigated.

A well planned and very professionally designed development is proposed for a site which already lies along the urban edge of Bloemfontein.

In light of the above and in the view of the Environmental Assessment Practitioner (EAP), the information contained in this report and the documentation attached hereto is sufficient to make a decision in respect of the activity applied for. There is no obvious environmental reason for Environmental Authorisation to be denied. It is however essential that a service agreement is in place between the Applicant and the Municipality for the provision and upgrading of bulk civil infrastructure.

The EIA process was conducted objectively and the information provided in this report is correct. All comments and inputs from I&AP's received to date have been included to DESTEA. Specialist input and recommendations have also been included.

9. LITERATURE

MUCINA, L. & RUTHERFORD, M.C. (eds) (2006). *The vegetation of South Africa, Lesotho and Swaziland*. *Strelitzia* 19. South African National Biodiversity Institute, Pretoria.

SMITHERS, R. (1986). *Land Mammals of Southern Africa.* Johannesburg: MacMillan, South Africa Ltd.