
FINAL ENVIRONMENTAL ASSESSMENT REPORT

THE PROPOSED TOWNSHIP DEVELOPMENT ON THE FARM KLOOF 2921 BLOEMFONTEIN, FREE STATE

Location: The Farm Kloof 2921, Bloemfontein, Free State
Applicant: Hennie Lambrechts Argitekto
Competent Authority: The Free State Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEa)
MDA Ref No: 40729
DESTEa Ref No: EMS/28(i),15(i)/18/17
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Executive Summary

The owners of The Farm the Kloof No. 2921, District Bloemfontein, Free State Province identified a need to develop the said property for residential purposes and have appointed MDA Town and Regional Planners, Environmental and Development Consultants to apply for an environmental authorisation to the DESTEA for the proposed Township Establishment. The current document serves as the subsequent Final Environmental Impact Assessment (EIA) following the application, Draft - and Final Scoping Reports as well as the Draft EIA.

The main purpose of the project is to provide more housing to Bloemfontein to ensure a continuous expansion of available housing for the community. The planning of the residential development has been undertaken in conjunction with the ecological and archaeological assessments and as a result the sensitive areas have been excluded from development and will be retained as private open space. The proposed layout will thus result in the lowest impact as long as other mitigation measures such as transplanting of protected species are also adhered to. Furthermore the archaeological assessment confirmed that no graves or items of archaeological significance are present on the site. Thus it was concluded that the proposed development can proceed provided that all excavation activities are restricted within the boundaries of the development footprint. The site is bordered on the east by the R700 tarred road and residential developments to the north (Somerton) and the south (Wild Olive) and situated approximately 1 km north of the Northridge Mall shopping center on the R700. The extent of the site is approximately 49.1106 hectares.

The Final EIA has been conducted in terms of the 2014 EIA Regulations as amended in 2017 which fall under the National Environmental Management Act 107 of 1998 (NEMA) to obtain Environmental Authorisation (EA). The EIA Regulations under the NEMA consist of two categories of activities namely: Activities which require a Basic Assessment Process, and Activities which require both a Scoping and an EIA Report for an EA. The activities associated with the proposed project require a Scoping and an EIA Report for an EA and fall under Regulation GNR 325 (Listing Notice 2) of the 2014 EIA Regulations, as well as Regulation GNR 327 (Listing Notice 1) of the 2014 EIA Regulations as amended on 07 April 2017.

The Scoping and EIA process falls under Activity 15 of Listing Notice 2 (GNR 325) of the 2014 EIA Regulations as amended on 07 April 2017: "The clearance of an area of 20 hectares or more of indigenous vegetation".

The key objectives of the Scoping report were to:

- Facilitate the introduction of stakeholders to the project and to provide information regarding the project;
- Assist in the identification process of main stakeholders;
- Identify possible issues, concerns and values relating to the project;
- Identify important issues and impacts related to the project and set the stage for these impacts and issues to be addressed in the EIA;
- Identify all regulatory and legislative requirements;
- Define the process ahead and establish the extent of the subsequent EIA;
- 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;
- Advise the applicant 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.

After careful consideration of all aspects as identified during the Scoping Report as well as the identification of all stake holders the Final EIA report was compiled. The key objectives of the EIA Report are as follows;

- The identification of the need and desirability of the proposed project;
- To evaluate, discuss and conduct a comparative assessment of the potential alternatives identified during the initial phase of the project (if applicable);
- To identify and assess the possible advantages and disadvantages that the proposed project might have on the environment and community involved;
- To provide a description and explanation of the methodology used in order to determine the significance of potential environmental impacts related to the proposed project;
- To provide a summary of the findings and recommendations as stipulated in the necessary and / or conducted specialist studies;
- To provide a in depth description of all environmental issues as identified by specialists and the findings of the scoping phase of the project;
- The thorough assessment relating to the significance of each identified environmental issue as well as the provision of an indication relating to the

extent to which these issues can be addressed using different mitigation measures;

- To provide a description of any assumptions, uncertainties and gaps in knowledge;
- The provision of an environmental impact statement containing the key findings of the assessment and comparative assessments of the positive and negative implications of the proposed project;
- To assist in and provide the necessary tools and identification procedures in order to Draft the Environmental Management Programme (EMPr);

LIST OF ABBREVIATIONS

CBD	-	CENTRAL BUSINESS DISTRICT
DESTEA	-	DEPARTMENT OF ECONOMIC, SMALL BUSINESS DEVELOPMENT, TOURISM AND ENVIRONMENTAL AFFAIRS
EA	-	ENVIRONMENTAL AUTHORISATION
EAP	-	ENVIRONMENTAL ASSESSMENT PRACTITIONER
EIA	-	ENVIRONMENTAL IMPACT ASSESSMENT
EMPR	-	ENVIRONMENTAL MANAGEMENT PROGRAMME
I&APS	-	INTERESTED AND AFFECTED PARTIES
MMM	-	MANGAUNG METROPOLITAN MUNICIPALITY
NEMA	-	NATIONAL ENVIRONMENTAL MANAGEMENT ACT
SAHRA	-	SOUTH AFRICAN HERITAGE RESOURCE AGENCY
SDF	-	SPATIAL DEVELOPMENT FRAMEWORK

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1. PROJECT INTRODUCTION

MDA has been appointed by the applicant (i.e. Hennie Lambrechts Argitekthe) to undertake the Environmental Impact Assessment (EIA) process for the proposed township development. The proposed development is situated on The Farm Kloof 2921, Bloemfontein, Free State. The area proposed for the township development is approximately 49 hectares in extent.

The applicant of the abovementioned property identified a need to develop the property for residential purposes given the location of the property as well as current development trends in the surrounding areas. Therefore the applicant applied for an Environmental Authorization to the Free State Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEa) in order to subsequently establish a township development on the property.

The EIA Report focuses on the possible environmental impacts of the proposed township development on the receiving environment. A multidisciplinary approach was adopted and undertaken in order to design an integrated proposed development which will have minimal environmental impacts. **Table 1** below depicts a summary of the proposed development.

Table 1. Summary of the proposed project	
Project Name	The proposed Township Development on the Farm Kloof 2921, Bloemfontein, Free State
Site Location	The Farm Kloof 2921, Bloemfontein, Free State Latitude: 29° 3'21.42"S ; Longitude: 26°13'39.90"E The site is bordered by the R700 (Kenneth Kaunda Road) to the east, and situated approximately 1 km north of the Northridge Mall shopping centre on the R700.
Surveyor-General 21 Digit Code	F00300000000292100000
Development Footprint	Approximately 49 hectares
Proposed Layout of Development	Mainly residential, with mixed uses such as business, health care, private open spaces and public open spaces.

Development around cities and towns are necessary to accommodate an ever-growing population. Areas along the boundaries of cities and towns are usually in a degraded state due to the impact of the large population these areas house.

The owners of The Farm the Kloof No. 2921, District Bloemfontein, Free State Province identified a need to develop the said property for residential purposes and applied for an environmental authorisation to the DESTEA for the proposed Township Establishment.

The proposed layout plan was designed according to the ecological assessment conducted on the 9th of April 2015 and a follow-up survey was conducted on the 21st of September 2017 in order to ensure that a comprehensive assessment was conducted.

The planning of the residential development has been undertaken in conjunction with the ecological and archaeological assessments and as a result the most sensitive areas have been excluded from development and will be retained as private open space. This layout will result in the lowest impact as long as other mitigation measures such as transplanting of protected species are also adhered to. Furthermore the archaeological assessment confirmed that no graves or items of archaeological significance are present on the site. Thus it

was concluded that the proposed development can proceed provided that all excavation activities are restricted within the boundaries of the development footprint.

Local economic conditions and the existing residential, business, office and commercial developments surrounding the proposed development property, make the proposed development suitable to the area. Also, the existing main arterial route (R700) in close proximity to the properties as well as already existing business / residential type land uses throughout the area (especially along the main arterial), plays a deciding role as to the character of the area and therefore land uses.

The application property is included in the “Urban Edge” of the Spatial Development Framework (SDF) of the Mangaung Metropolitan Municipality (MMM), but is not included in the jurisdiction area of a Town Planning Scheme / Land Use Scheme. The application property is earmarked in the said SDF for future residential development and therefore no longer falls under the jurisdiction of the Department of Agriculture, Forestry and Fisheries. The application property falls under the jurisdiction of the controlling authority, namely the MMM.

1.1 Project Schedule

The EIA Report is undertaken in accordance with the National Environmental Management Act (NEMA) EIA Regulations, 2014. Please refer to **Table 2** for the anticipated time frames in accordance to the NEMA EIA Regulations 2014.

1.2 Short summary of project proceedings to date

The competent authority to approve the proposed township development is the DESTEA. Furthermore the site does not have implications for international environmental commitments or relations; and will not take place within an area protected by means of an international environmental instrument. Furthermore the site is not a conservancy; a protected natural environment; a proclaimed private nature reserve; a natural heritage site; the buffer zone or transitional area of a biosphere reserve; or the buffer zone or transitional area of a world heritage site. Therefore, the competent authority has been correctly identified, based on the above reasons.

A pre application meeting was conducted with the DESTEA, on the 6th of February 2018 in order to consult the Department regarding the triggered listed activities (please refer to **Annexure D** for a copy of the consultation presentation). Following the meeting it was concluded that the identified activities as discussed in Section 3.6.2 is sufficient and the specialist studies as listed in Section 3.7 are sufficient with regards to the proposed township development. Following the pre consultation the Draft and Final Scoping reports were compiled and submitted to all I&APs and DESTEA. The comments received during this period along with the findings and recommendations of the Specialist studies were then used to identify possible environmental impacts and issues which were used to compile the EMPr as well as the Final EIA Report.

Project Phase	Initial notification of proposed project	Application and Draft Scoping Report	Processing of comments and information received	Final Scoping Report	Draft EIA and Draft EMPr submission / amendments	Final EIA and Final EMPr submission	Record of Decision	Appeal process and notification of EA
Description	I&APs & Stakeholder identification	Application submission to DESTEA	Process comments and amend information	Amendments and update PPP Submission of Final Scoping Report to DESTEA	Provision of information in terms of studies, impacts, mitigation measures and recommendations	Amendments and final submission	Granting / refusal of EA	Notifying I&APs , including stakeholders on EA
Time frame	February 2018	March 2018	May/June 2018	June 2018	September 2018	October 2018	DESTEA Dependant	N/A
Duration	30 days	30 days	5 days	5 days	30 days	+/-120 days	N/A	35 days
Status	Completed	Completed	Completed	Completed	Completed	Completed	To be completed	To be completed

2. DETAILS OF ENVIRONMENTAL ASSESSMENT PRACTITIONERS

A multi-disciplinary team of specialists contributed to the information presented in this document **Table 3** and **Table 4** summarizes the environmental assessment practitioner's (EAP) expertise and involvement in the proposed project.

Table 3. EAP Details	
Division / Aspect	Key EAP
<ul style="list-style-type: none">• Co-ordination, Supervision, Management	Mr. Neil Devenish (MDA Consultants)
<ul style="list-style-type: none">• Biophysical and Visual Aspects• Public Participation and Report writing	Me. Lee-Anne Dreyer (MDA Consultants)

2.1 Expertise of the EAP

Table 4. Expertise of EAP	
EAP	Details
Mr. Neil Devenish	<p>Key qualifications:</p> <ul style="list-style-type: none"> • 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. <p>Education:</p> <ul style="list-style-type: none"> • 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
Me. Lee-Anne Dreyer	<p>Key qualifications:</p> <ul style="list-style-type: none"> • Environmental management & research • Environmental impact assessment and report writing <p>Education:</p> <ul style="list-style-type: none"> • B.Sc. Town and Regional Planning – University of North West, South Africa, 2009 • M.EM Environmental Management – University of the Free State, South Africa, 2013

2.2 Contact Details of the EAPs

Table 5. MDA Contact Details	
Telephone no	051 447 1583
Postal Address	P.O. Box 100982 Brandhof Bloemfontein 9324
Email addresses	neil@mdagroup.co.za leeanne@mdagroup.co.za

2.3 EAP Declaration

Please refer to **Annexure E** for the EAP declaration.

3. PROJECT DESCRIPTION

3.1 Baseline information

MDA has been appointed by the applicant (i.e. Hennie Lambrechts Argitekto) to undertake the Environmental Impact Assessment (EIA) process for the proposed township development. The proposed development is situated on The Farm Kloof 2921, Bloemfontein, Free State. The area proposed for the township development is approximately 49 hectares in extent.

The applicant of the abovementioned property identified a need to develop the property for residential purposes given the location of the property as well as current development trends in the surrounding areas. Therefore the applicant applied for an Environmental Authorization to the Free State Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA) in order to establish a township development on the property. This EIA Report focuses on the possible environmental impacts and mitigation of the proposed township development on the receiving environment.

3.2 Project Locality

The proposed residential development will occur on the Farm Kloof 2921, Bloemfontein, Free State Province (please refer to the locality plan in **Annexure A**). The site is bordered on the east by the R700 tarred road and residential developments to the north (Somerton), the north west (Tredenham Valley) and the south (Wild Olive) and situated approximately 1 km north of the Northridge Mall shopping centre on the R700. The extent of the site is approximately 49.1106 hectares.

3.3 Land use

The majority of the site is currently vacant, some fences are found on site that divided the farm into sections where the

previous owner housed some livestock. The surrounding developments include Somerton (Residential Development) to the north, Tredenham Valley (Residential Development) to the north west and Wild Olive (Residential Development) to the south. Local economic conditions and the existing residential, business, office and commercial developments surrounding the proposed development property, make the proposed development suitable to the area. Also, the existing main arterial route in close proximity to the properties as well as already existing business / residential type land uses throughout the area (especially along the main arterial), plays a deciding role as to the character of the area and therefore land uses. The application property is included in the "Urban Edge" of the Spatial Development Framework (SDF) of the Mangaung Metropolitan Municipality (MMM), but is not included in the jurisdiction area of a Town Planning Scheme / Land Use Scheme. The application property is earmarked in the said SDF for future residential development and therefore no longer falls under the jurisdiction of the Department of Agriculture, Forestry and Fisheries. The application property falls under the jurisdiction of the controlling authority, namely the MMM.

The surrounding areas, on opposite sides of the R700 (Kenneth Kaunda Road), are currently being developed as residential areas (directly adjacent to and in close proximity of the application property). The proposed township establishment is therefore an extension of already existing land uses in the area and is reconcilable with the character and densities of the area. Following the EIA process of the project a Town Planning Application will be submitted to MMM for Township Establishment, which entails the amendment of the Bloemfontein Town Planning Scheme by the inclusion of the township establishment area as well as to create and include the relevant land use zonings in the said Town Planning Scheme, township establishment with the land uses indicated on the Layout Plan and rezoning.

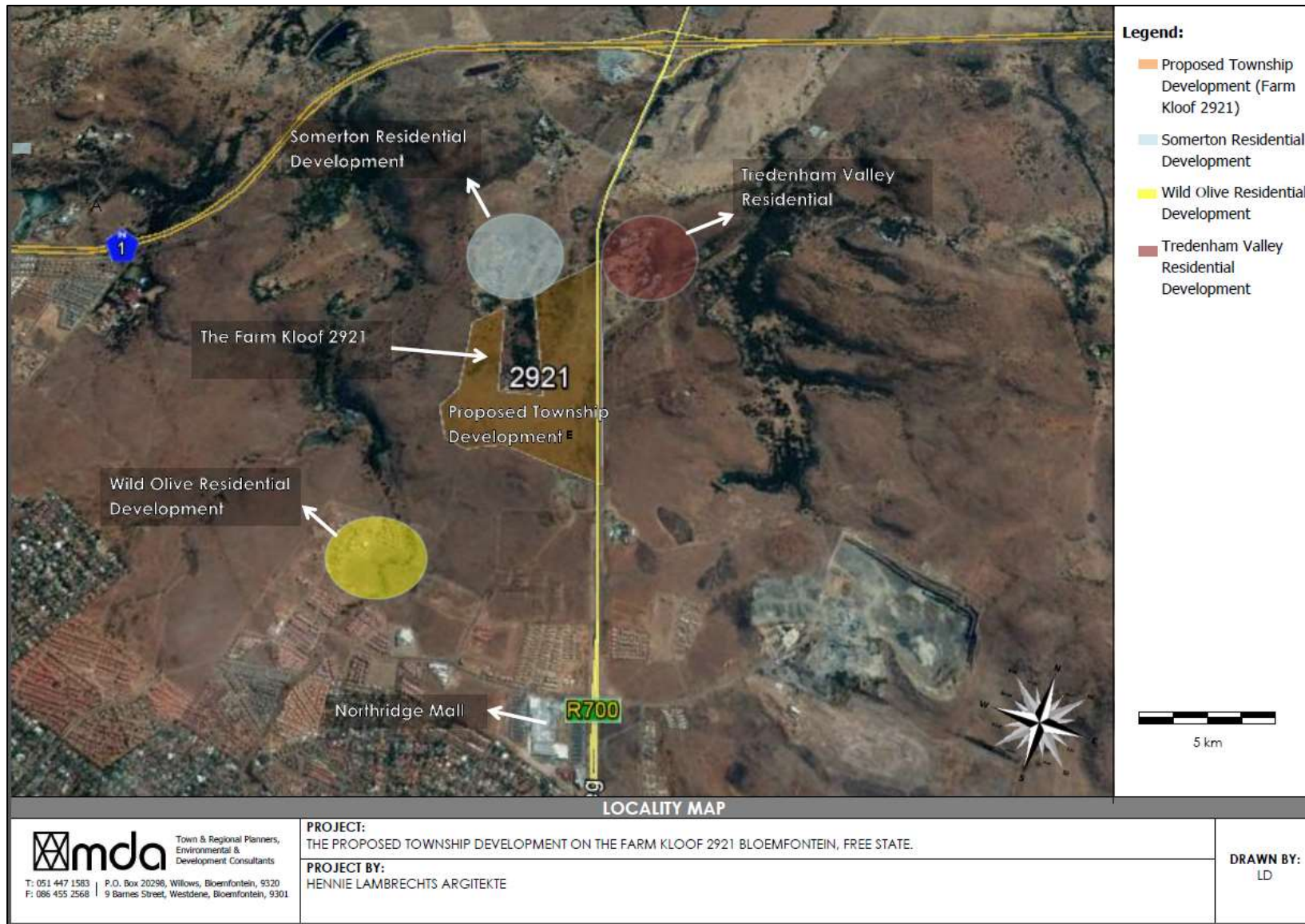


Figure 1. Locality Map of the proposed Development

3.4 Project Layout

The layout of the proposed residential development makes provision for 116 erven in total. The uses of the erven related to the development are summarised in **Table 6** below. Access to the development will be obtained from the T185, which turns from the R700 (Kenneth Kaunda Road Extension). Please refer to the layout plan attached in **Annexure B**.

The layout of erven can be summarised as follows:

Table 6. Erven and land use description			
Erven number	No of erven	Land Use	Area (ha)
1-39 44-61 88-102	72	Single Residential Units	5.9234
62-64 66-68 109-110	8	Block of Flats	4.6364
72-79 80, 81 83-86 104-107 112-113	20	Town Houses	5.4270
42	1	Health Care Centre	1, 1570
43	1	Private Hospital	2.0638
41	1	Retirement Resort	5.4898
70, 71, 82	3	Business	4.2291
40, 65, 69, 103, 108, 111	6	Private Open Space	7.7517
87	1	Municipal Open Space	1.1144
114, 115, 116	3	Streets	11.3180
Total:	116	Total:	49.1106 hectares

3.5 Existing Infrastructure and property conditions

The Farm Kloof 2921 is currently registered as a farm and has an extent of 49 hectares. The proposed site is situated on an area with relatively flat plains, hills and valleys with slopes. Some fences are found on site that divided the farm into sections where the previous owner housed some livestock. A 132 / 11kV

Centlec Noordstad distribution centre is located in the north eastern corner of the proposed development within an existing servitude.

3.5.1 Bulk Civil Services

A Bulk Civil Services Report was conducted by Ivoyo Development Consultants in order to investigate the effect that the proposed Township Establishment will have on the existing infrastructure. The Investigation was conducted in October 2016. The proposed site was visited by Ivoyo and all built information was obtained from MMM as well as neighboring developments in order to review the capacity of the existing infrastructure in relation to the proposed development. Please refer to **Annexure H** for the Bulk Civil Services Report with all calculations, capacities, predictions, assessments and recommendations.

3.5.2 Electrical Services

The proposed property will have a calculated expected maximum electrical load of 6132kVA. Currently the existing Centlec services on the property include the following:

- Existing 132kV Bayswater Switching Station – Noordstad Distribution Centre overhead electrical line across the land next to the R700.
- The 132 / 11 kV Noordstad Distribution Centre located on the north eastern corner of the property.
- 3 x 11 kV Primary cables, installed in the 132 kV line servitude at a depth of 1 m.

The 132 / 11kV Noordstad Distribution centre is ideally placed to supply the proposed development required electrical load. Centlec has installed (in the 132 kV line servitude) 3 x 11 kV primary cables to the Wild Olive development. One of these primary cables is earmarked for the future primary substation planned to be provided in Olea drive. Centlec has another primary substation available to the north of the proposed development on Somerton Estate. It is Centlec's policy to connect these

primary substations via a so-called secondary cable which will feed all the required mini-substations. It is thus the intention that the Olea Drive (future) primary substation and the Somerton primary substation be connected via a secondary 11 kV cable traversing the proposed development and picking up a load of 3.5 MVA. To provide for the proposed development with an excess of 3.5 MVA the developer will have to provide a (third) primary substation. Please refer to **Annexure I** for the special requirements and proposed distribution systems.

3.5.3 Roads and Access

The proposed development will be accessed from the R700 (an existing utilised access road to the Somerton Development). Additional access is also possible from the Wild Olive Estate on the South Eastern boundary of the development.

A Traffic Impact Study was conducted by KMA Consulting Engineers. It should also be noted that this assessment study has been submitted to the MMM Transport Planning Division for comments and evaluation.

The proposed development will not be approved or continue without compliance with the strict Regulations of the Transport Planning Division in terms of capacity and other transport related aspects. However the current direct existing access (via the R700) is deemed sufficient in order to accommodate the additional expected traffic volumes associated with the proposed development.

3.5.4 Water

The availability of sufficient water supply to the proposed development was deemed currently insufficient. It was concluded that in order to ensure sufficient water supply to the proposed development alternative supply possibilities must be investigated. Furthermore Ivoyo concluded that there are currently two alternative options in order to provide the proposed development with

adequate water supply. Firstly to construct a new water pipeline from Naval Hill Reservoir or secondly to create additional storage capacity in the area (a proposal was made to construct a reservoir on the boundary of Tredenham Hill Development). The best solution for providing water to the area will however needs to be discussed with MMM in order to decide on the best possible solution that will not have a negative impact on the existing infrastructure.

3.5.5 Sanitation

Ivoyo used the design criteria based on the “Guidelines for Human Settlement Planning and Design” as well as criteria set out by MMM in order to investigate and assess the current sanitation capacity and the capacity needed in order to accommodate the proposed development. Based on their findings, the available information and their calculations the existing sewer infrastructure has insufficient capacity to accommodate the additional sewage runoff that will be generated from the proposed development. Furthermore bulk upgrades will be required in order to accommodate additional flows.

3.5.6 Storm water

According to the Ivoyo Bulk Civil Services Report the proposed development naturally drains in a north westerly direction with very steep slopes. After investigating the surrounding available storm water channels, available storm water infrastructure and calculating the expected storm water flow from the development Ivoyo concluded that in their opinion the current storm water infrastructure available will be sufficient and that by applying the pre-set design principals the risk of flooding in lower laying properties can be minimized. Please refer to the Bulk Civil Services Report as attached in **Annexure H** for all details.

3.6 Proposed Activity and Applicable Legislation

3.6.1 Applicable legislation

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

- National Environmental Management Act (Act No 107 of 1999)
- National Heritage Resources Act (Act No 25 of 1999)
- National Environmental Management Biodiversity Act, 2004 (Act 10 of 2004)
- Conservation of Agriculture Resources Act (Act 43 of 1983)
- Occupational Health and Safety Act (Act 85 of 1993)
- Section 30 of the Township Ordinance 1969

3.6.2 NEMA and Applicable Legislation

The identified applicable National Environmental Management Act (NEMA) Regulations for the proposed Kloof township development are depicted in **Table 7**.

Table 7. Description of identified listed activities	
Regulation 983 of 2014, BAR, as amended on 7 April 2017 (Regulation no. 327)	
Listed Activity	Project Activity Description
<p>Activity No 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:</p> <p>(i) Will occur inside an urban area, where the total land to be developed is bigger than 5 hectares;</p>	<p>The project entails the development of approximately 49 hectares on the farm Kloof No. 2921, in order to establish a township consisting of 116 erven to accommodate residential, mixed, retail and institutional use developments.</p>

Table 7. Description of identified listed activities	
Regulation 984 of 2014, EIA, as amended on 7 April 2017 (Regulation no. 325)	
Listed Activity	Project Activity Description
<p>Activity No 15: The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for –</p> <p>(i) The undertaking of a linear activity;</p>	<p>The project entails the development of approximately 49 hectares on the farm Kloof No. 2921, in order to establish a township consisting of 116 erven to accommodate residential, mixed, retail and institutional use developments. In order to develop the mentioned property more than 20 hectares of indigenous vegetation will have to be cleared.</p>

An Environmental Impact Assessment (EIA) process is followed for activities listed in GN325 Listing Notice 2 of 2014 (as amended April 2017) and will therefore be prepared in accordance with the Environmental Impact Assessment Regulations, 2014 (Government Notice No. 326 as amended 7 April 2017) promulgated in terms of Sections 24(5) and 44 of the National Environmental Management Act (Act No. 107 of 1998). Application for Scoping and EIA has therefore been made to the Free State Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA).

3.7 Specialist Studies

A need was identified to assess various aspects related to the proposed development with the use of specialists in the various fields. The identified applicable specialist studies conducted in order to facilitate the EIA process, is as follows:.

- Ecological Assessment
- Bulk Civil Services Report
- Electrical Services Report

- Geotechnical Investigation
- Traffic Impact Study
- Archaeological Assessment

4. TASKS CONDUCTED FOR THE EIA PROCESS

4.1 Proceeding with the Public Participation Process

Following the acceptance of the Draft and Final Scoping Report by the DESTEA, the PPP for the EIA proceeded according to Section 41 of the NEMA 2014 Regulations.

A copy of the Environmental Impact Assessment (EIA), Environmental Management Programme Report (EMPr) together with all specialist reports was made available at a public space in Bloemfontein for public comment. All registered I&APs were notified of the availability of the report and provided with a time period of 30 days to comment.

4.2 Steps in Accordance with the Plan of Study for EIA

All activities and processes have been undertaken in accordance with the submitted Plan of Study for EIA for the proposed project. This process is subject to acceptance of the Final EIA (i.e. the current document) by the DESTEA.

4.3 Register I&APs

4.3.1 List of I&APs

All departments and organisations having jurisdiction in respect of any aspect of the proposed development was included in the list of I&APs. Also all persons giving written comments (positive or negative) or persons directly influenced by the proposed development have be registered.

The initial list of I&APs is as follows:

- Stakeholders
- Public registered
- Surrounding landowners

4.3.2 Issues, Comments and Concerns Raised by I&APs

A summary of all issues raised by the I&APs, as well as the responses from the Environmental Assessment Practitioner (EAP) or relevant specialists have been included in the current (Final EIA) report. The compilation of a Comments and Response Report have been included which states all comments received during the process (including comments received on all previous notifications and reports) as well as the response taken and feedback given by the EAP to address these comments where possible.

4.4 Development Alternatives

Site and activity alternatives are not applicable for this project.

4.5 Assessment of Identified Potentially Significant Impacts

The potential impacts identified during the scoping process, comments and issues raised by I&APs as well as findings in the specialist reports will be discussed in terms of their:

- Cumulative impact
- Nature of the impact
- Extent and duration of the impact
- The probability of the impact occurring
- Degree to which the impact can be reversed
- Degree to which the impact can cause irreplaceable loss of resources and
- Degree to which the impact can be mitigated.

4.5.1 Summary of Findings

A summary of all the significant findings in the previous section will be drawn up. Overall, this will include the following:

- Summary of the key findings of the EIA
- An indication of the extent to which the issues could be addressed by the adoption of listed mitigation measures
- Recommendations from the environmental practitioner and specialists

- Any specialist reports or reports on specialized processes
- Description of any assumptions, uncertainties and gaps in knowledge
- Option to whether the activity should be authorized and any conditions that should be made in respect of the authorization.

4.5.2 Specialist Reports and Specialised Processes

The required process regarding specialist reports and specialized processes for the relevant development is as follows:

- Specialists have been appointed by the EAP and the developer
- The reports and processes have been performed and obtained from the relevant specialists
- Obtained reports and processes have been incorporated in the Final EIA Report (i.e. current document)
- Project plans will be reviewed according to recommendations of specialists to ensure minimum environmental impact
- The relevant specialist input includes the following:
 - Ecological Assessment
 - Bulk Civil Services Report
 - Electrical Services Report
 - Geotechnical Investigation
 - Traffic Impact Study
 - Archaeological Assessment.

4.5.3 Stages of Authority Consultation

DESTEA was consulted at stages when guidance was required in terms of clarification of listed activities, as well as correct processes to follow in the case of unusual projects or requests. Currently the DESTEA has confirmed the receipt of and accepted the Scoping Reports, the Draft EIA and Plan of Study for the EIA submitted to them.

4.6 Methodology of Assessing Environmental Issues

The EIA Report addresses the biophysical, as well as the socio-economic environments for all alternative site locations and activities. The information was captured in the following manner:

- Site visits to determine the setting, visual character and land-uses in the area were undertaken
- Site surveys to address the identified impacts of the development on any plant and animal populations were undertaken
- The project plans was superimposed onto the gathered baseline environmental information of identified impacts
- The project plans was revised according to the identified environmental sensitive areas to ensure the least environmental impact possible
- Detailed discussions were held with the client to address specific aspects of the development which could affect environment
- I&APs were consulted by phone, letters and / or meetings to capture additional issues of importance
- Made recommendations and presented guidelines for the mitigation of impacts addressed during this exercise
- The option of not proceeding with the development was considered and evaluated.

4.7 Specific information Required from the Competent Authority

Additional relevant information will be provided on request of the Competent Authority.

4.8 Consideration of the Final EIA Report

The Competent Authority should consider the Final EIA Report within 30 days of receipt by either:

- Accepting the Final EIA Report
- Requesting EAP to amend the EIA Report
- Rejecting the EIA Report or EIA if it
 - Does not contain material / information required;
 - Has not taken the relevant guidelines into account.

5. ENVIRONMENTAL DESCRIPTION

5.1 Topography

The proposed site is situated on an area with relatively flat plains, hills and valleys with slopes. Some fences are found on site that divided the farm into sections where the previous owner housed some livestock. Typical grasses are found on site, with a few trees and rock outcrops.

5.2 Geology and Soil Characteristics

The geology of the Bloemfontein area is underlain by the Lower Stage of the Beaufort Group which is part of the Karoo Super Group. The sedimentary rocks that are present in this group consist of fine-grained grey sandstone and coarse arkose alternating with green and maroon coloured mudstone beds. The typical materials / rock type found in the area of Bloemfontein are Mudstone and Dolerite. Furthermore it is known that the soils to the northern parts of Bloemfontein consist of higher clay volumes therefore, the soil forms associated with these soils is the Arcadia and Rensburg soil forms. The above-mentioned soil forms are mainly characterised by sandy top layers, (Le Roux et al. 2013).

A Geotechnical Report was compiled by Simlab (PTY) Limited Geotechnical Services and addresses the physical characteristics and the geotechnical capacity of the area to be developed in detail. Based on the results of the investigation, the area is suitable for land development (township establishment). The Geotechnical Report has been submitted to the MMM Department Water and Sanitation and the Department Roads and Storm water to be read in conjunction with the Bulk Civil Services Report. Please refer to **Annexure J** for the Geotechnical Report.

5.3 Ground and Surface Water

The proposed development site falls within the C52G Quaternary Drainage Region. A small drainage line / area occurs along the western portion of the site. It does not contain a clear channel but it is evident that it conveys some storm water after heavy rainfall.

It does however still function in storm water transport to some extent. As a result it was recommended by the ecologist that it be incorporated into the development however that the development must still provide additional structures for storm water transport.

Water provision services for the proposed development will be installed by a contractor and furthermore actual water supply will be fulfilled by Mangaung Metropolitan Municipality (MMM). Engineers involved will implement the necessary storm water management systems in and around the development as stipulated and according to MMM Municipal Building Regulations.

5.4 Climate

The Bloemfontein area is a moderate region with primarily summer rainfall. The rainfall is between 250mm and 500mm per year. The monthly distribution of average daily maximum temperatures shows that the average midday temperatures for Bloemfontein ranges from 16°C in June to 29.2°C in January. The region is the coldest during July when the mercury drops to 0°C on average during the night.

Figure 2 and **Figure 3** illustrates the average monthly and total annual rainfall for Bloemfontein according to Weather Station C5E009 Uitvlugt – West at Krugersdrift Dam situated at 28°53'4.37"S and 25°56'56.87"E. This weather station was chosen according to its distance to Bloemfontein and most recent available rainfall data.

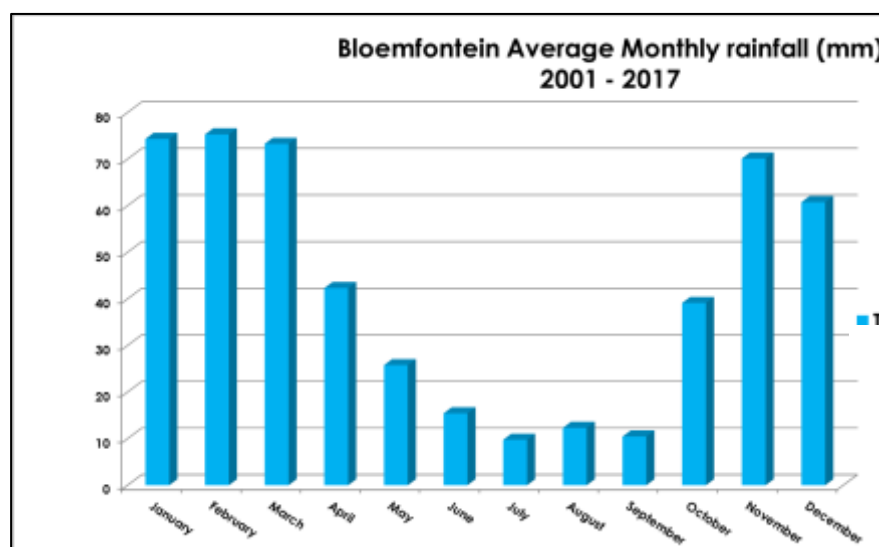


Figure 2. Bloemfontein average monthly rainfall (mm)

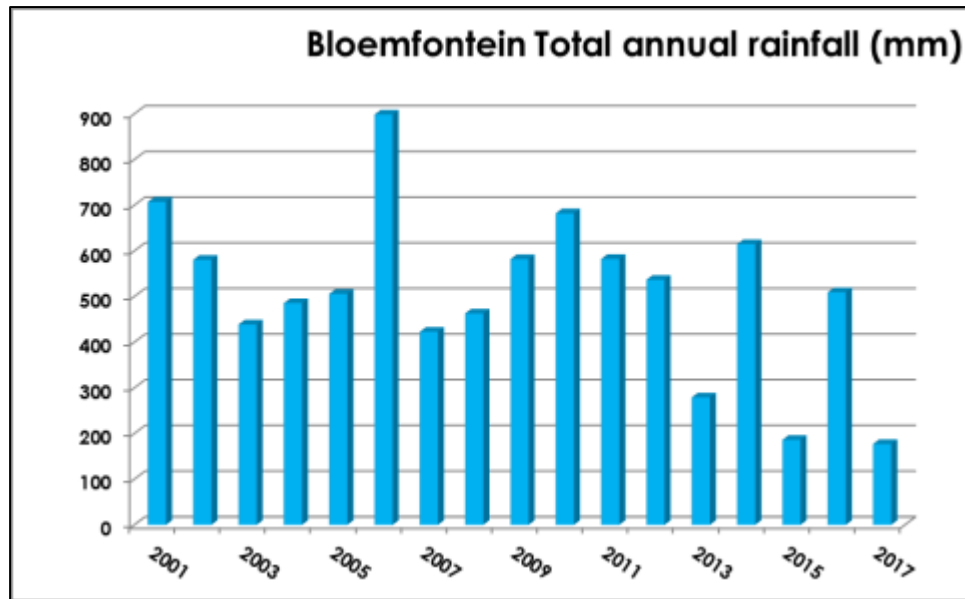


Figure 3. Bloemfontein total annual rainfall (mm)

5.5 Air Quality

In general the Bloemfontein area has exceptionally good air quality. This is especially factual for the northern suburbs are known for clean air because of a lack of major industrial facilities in this area. The Bloemfontein industrial area is located approximately 8km to the south of the proposed site. It should also be noted that there are no major contributors to atmospheric emissions in the Bloemfontein area due to the absence of Power stations. It should however be noted that the site lies in close proximity to die northern landfill site as well as an operational quarry.

5.6 Vegetation

The site consists almost entirely of natural vegetation with little disturbance or modification. Limited disturbance is evident along the eastern border of the site where it is situated adjacent to the R700 tarred road. Here an old borrow pit causes modification and transformation although at a local scale. An electrical distribution station and a few tarred roadways also contribute to local transformation of the vegetation.

The dominant vegetation structure on the site consists of a dense grass layer although this structure varies considerably over the site. Where exposed dolerite rock occurs the vegetation structure

consists of a shorter, sparser grass layer with prominent succulent, bulb and dwarf shrub component. In lower lying areas, especially in the north-eastern corner, a more prominent thicket / tree layer becomes dominant. The vegetation structure over the site is largely natural and influenced by the soil depth, rock exposure and moisture regime.

5.7 Animal Life

The site contains several mammal species which, although they will present a significant population, will be somewhat altered as a result of the proximity of urban areas. Steenbok (*Raphicerus campestris*) were noted on the site. It is a common and widespread species but indicates that larger herbivores are still present on the site. The Leopard Tortoise (*Stigmochelys pardalis*) was also noted on the site. This is a widespread but protected species and as such does have some conservation value. It is also highly likely that Smith's Red Rock Rabbits (*Pronolagus rupestris*) will occur in the rocky areas of the site. The species is not considered rare or endangered but is nonetheless a protected species and as such have a degree of conservation value. The species inhabits rocky terrain and is confined to these areas.

It is considered likely that the site will also contain several other mammal species but these were not observed on the site and it is considered unlikely that other rare or endangered / protected animal species would occur on the site. In order to ensure no direct impact on the mammals on the site the hunting, capturing or trapping of mammals on the site should be strictly prohibited during construction as well as during the operational phase.

The proposed development will transform a portion of the vegetation on the site thus decreasing the available habitat for fauna. The site will therefore not be able to sustain the same population size of mammals as is currently the case. It is therefore likely that the development will have some impact on the mammal population.

5.8 Surrounding Land Uses

The proposed farm and surrounding areas have been earmarked for future development. The proposed development is surrounded by residential developments to the north (Somerton) and the south (Wild Olive). Existing residential, business, office and commercial developments surrounding the proposed development property, make the proposed development suitable to the area. Also, the existing main arterial route in close proximity to the properties as well as already existing business / residential type land uses throughout the area (especially along the main arterial), plays a deciding role as to the character of the area and therefore land uses.

5.9 Noise

Given the associated activities in close proximity to the proposed development (residential, small business and occasional lodging) there are no industrial facilities associated with the area which elevates the ambient noise levels excluding housing construction and quarry blasting.

5.10 Socio-Economic Character of the Area

Mangaung Metropolitan Municipality has an unemployment rate of 27.7% (Stats SA, 2011). 292 971 are economically active (employed or unemployed but looking for work). 37,2% of the 150 128 economically active youth (15 – 34 years) in the area are unemployed. Below are some statistics relating to the level of education in the MMM area.

- No Schooling 3,3%
- Some Primary 37,7%
- Completed Primary 5,4%
- Some Secondary 30,6%
- Completed Secondary 16,5%
- Higher Education 3,7% (data derived from: Stats SA, 2011).

5.11 Historical or Cultural Importance

During the site visit, no graves or items of archaeological or palaeontological significance were observed. According to the

Archaeological assessment the Dolerite, in the form of dykes, sills or inclined sheets found are not considered palaeontologically significant. The site is also regarded as of low palaeontological significance with regards to the superficial residual soils capping the dolerite in places (Quaternary overburden). This is mainly due to a lack of suitable alluvial / fluvial deposits at the site. As far as the palaeontological heritage is concerned, the proposed development may proceed with no additional heritage assessments necessary, provided that all excavation activities are restricted to within the boundaries of the development footprint. As far as the archaeological heritage is concerned the footprint is assigned site rating of Generally Protected C (GP.C) (please refer to **Annexure G** for the Archaeological Assessment). Should any items of archaeological or palaeontological significance be unearthed or found on the site during construction all activities will cease and a specialist will be appointed to investigate the finds. SAHRA will also be notified thereof.

6. PUBLIC PARTICIPATION

6.1 Background

The objectives of the Public Participation Process (PPP) is to provide the local community, all applicable departments, the competent authority and potential / identified interested and affected parties (I&APs) with adequate information and give them an opportunity to raise their issues and concerns. Methods used to inform the various I&APs of the project included direct contact, an on-site notice, registered mail, and an advertisement in the local newspaper. All potential I&APs were included as required by Regulation 41(2)(e) and 41(6) of GN 326. Furthermore, key stakeholders (other than organs of state) were identified in terms of Regulation 41(2)(b) of GN 326.

6.2 Identification of possible I&APs

The identified possible I&APs included the following:

- MMM City Manager
- MMM Planning Division
- MMM Environmental Division
- MMM Ward Councillor: Ward 48

- Department of Agriculture, Forestry and Fisheries
- Department of Water and Sanitation
- Department Police, Roads and Transport
- South African Heritage Resources Agency (SAHRA)
- Free State Heritage Resources Agency (FSAHRA)
- Adjacent Landowners

6.3 Adjacent Land Owners

Due to the residential / small business nature of the surrounding environment related to this project all adjacent landowners are also included as identified I&APs. All identified adjacent landowners have been provided with a notification letter as well as a copy of the Draft - and Final Scoping Reports as well as the Draft EIA Report. Furthermore all I&APs will be given an opportunity to comment on the current (Final EIA) Report. Please note that all comments and responses received up to date have been noted and included in the current document.

6.4 Public Participation methods used

A site notice was put up onsite at the proposed development entrance on the 16th of February 2018. Furthermore a legal notice was published in Die Volksblad on the 16th of February 2018. Hereafter no I&APs came forward within the 30 Day notice period. Notification letters were sent to all organs of state and applicable departments. Furthermore all I&APs were supplied with the Draft and Final Scoping Reports as well as the Draft EIA and current (Final EIA) Report. Please refer to **Annexure C** for more information on the Public Participation Process undertaken to date.

6.5 List of all I&APs, as well as a summary of the Comments received during the Public Participation Process

Table 8. Summary of Comments Received & Response to the Comments				
Name of IAP / Description	Organisation / Interest	Contact details	Summary of Comments	Summary of Response
Mangaung Metropolitan Municipality: The City Manager	Mangaung Metropolitan Municipality	P.O. Box 3704 Bloemfontein 9300	None to date	Copies of the following reports were provided to the IAPs: <ul style="list-style-type: none"> • Draft Scoping • Final Scoping • Draft EIA • Final EIA (current document)
The Ward Councillor Ward:48	Mangaung Metropolitan Municipality	Clr Pretorius Tel: 072 226 0222 Email:xgrafies@gmail.com 7 Dias Crescent Dan Pienaar Bloemfontein 9300	None to date	Copies of the following reports were provided to the IAPs: <ul style="list-style-type: none"> • Draft Scoping • Final Scoping • Draft EIA • Final EIA (current document)
Mr. M. Mgwambani (The Director: Water Regulation, Free State) Mr. W Grobler	Department of Water and Sanitation (Free State)	Mr. M. Mgwambani (The Director: Water Regulation, Free State) Mr. W Grobler (groblerw@dwa.gov.za)	Comments received on 2018/06/21. This office has no objection to the approval of the project provided the following conditions are met and strictly adhered to through	MDA responded to the comments via email on 2018/06/25. 1. Please note that MDA has received your comments as set out in your letter dated: 18/06/2018, Ref: 16/2/7/C522/D1 –

Table 8. Summary of Comments Received & Response to the Comments				
Name of IAP / Description	Organisation / Interest	Contact details	Summary of Comments	Summary of Response
		P.O. Box 528 Bloemfontein 9300	<p>all stages of the project:</p> <ol style="list-style-type: none"> 1. The applicant should indicate the quantity of the sewage that will be produced regarding the proposed development and it should be documented on Final Scoping report. 2. The applicant should ensure that the Municipality has got adequate capacity for all the required services including the solid waste removal, water supply and waste water treatment works. DWS is advising the applicant to submit a written letter of agreement from the Mangaung Metropolitan Municipality. 	<p>received on the 21st of June 2018 via email.</p> <ol style="list-style-type: none"> 2. Please note that the period for comments closed on the 4th of June 2018 as indicated on a letter which accompanied the copy of the Draft Scoping Report, that was hand delivered to the Department of Water and Sanitation, on the 2nd of May 2018. 3. We are including your comments in the Final Scoping Report to DESTEA. 4. Please note that points 1-5 as set out in your letter will be addressed in the Draft EIA and a copy will be sent to your office for further viewing (including all specialist reports,

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			<p>3. Page 22 of the Draft Scoping report states that no ground or surface water has been noted on site. However, small drainage line along the western portion of the site was identified. The applicant is advised to consider storm water management system which will be diverted in a manner that will flow easily in order to avoid water flooding on the surface during rainy seasons.</p> <p>4. The applicant should ensure that during construction all hazardous Chemical substances are kept and stored on a concrete lined surface with bund walls and in such a manner that any spillages can be</p>	<p>relevant documents, all management plans and the EMPr).</p> <p>MDA responded on the comments received on the 9th of October 2018 as follows:</p> <p>1. Sewage Flow:</p> <p>Table 1: Sewage Flow</p> <table border="1"> <thead> <tr> <th>Development</th> <th>Waste Water</th> <th>Domestic</th> <th>Commercial</th> <th>Industrial</th> <th>Other</th> <th>Total</th> <th>Flow Rate</th> </tr> </thead> <tbody> <tr> <td colspan="8" style="text-align: center;">South West Drainage Area</td> </tr> <tr> <td>Single Residential</td> <td>17</td> <td>12000</td> <td>1000</td> <td>1000</td> <td>1000</td> <td>17000</td> <td>0.79</td> </tr> <tr> <td colspan="6"></td> <td>Total PWWP</td> <td>0.79</td> </tr> <tr> <td colspan="8" style="text-align: center;">North West Drainage Area</td> </tr> <tr> <td>Single Residential</td> <td>22</td> <td>18000</td> <td>1000</td> <td>1000</td> <td>1000</td> <td>22000</td> <td>0.88</td> </tr> <tr> <td>Commercial</td> <td>170</td> <td>14000</td> <td>1000</td> <td>1000</td> <td>1000</td> <td>17000</td> <td>4.71</td> </tr> <tr> <td>Industrial</td> <td>88</td> <td>84000</td> <td>700</td> <td>1000</td> <td>1000</td> <td>86000</td> <td>1.80</td> </tr> <tr> <td>High rise residential</td> <td>1180</td> <td>88000</td> <td>300</td> <td>1000</td> <td>1000</td> <td>90000</td> <td>17.87</td> </tr> <tr> <td>College</td> <td>100</td> <td>10000</td> <td>200</td> <td>1000</td> <td>1000</td> <td>12000</td> <td>3.75</td> </tr> <tr> <td>Hotel</td> <td>300</td> <td>41000</td> <td>200</td> <td>1000</td> <td>1000</td> <td>43000</td> <td>1.81</td> </tr> <tr> <td>Light Industrial</td> <td>200</td> <td>24000</td> <td>1000</td> <td>1000</td> <td>1000</td> <td>24000</td> <td>0.88</td> </tr> <tr> <td colspan="6"></td> <td>Total PWWP</td> <td>28.54</td> </tr> </tbody> </table> <p>2. Based on calculations by the specialists, the existing sewer infrastructure has insufficient capacity to accommodate the additional sewage runoff generated from the proposed new development, and bulk</p>	Development	Waste Water	Domestic	Commercial	Industrial	Other	Total	Flow Rate	South West Drainage Area								Single Residential	17	12000	1000	1000	1000	17000	0.79							Total PWWP	0.79	North West Drainage Area								Single Residential	22	18000	1000	1000	1000	22000	0.88	Commercial	170	14000	1000	1000	1000	17000	4.71	Industrial	88	84000	700	1000	1000	86000	1.80	High rise residential	1180	88000	300	1000	1000	90000	17.87	College	100	10000	200	1000	1000	12000	3.75	Hotel	300	41000	200	1000	1000	43000	1.81	Light Industrial	200	24000	1000	1000	1000	24000	0.88							Total PWWP	28.54
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Table 8. Summary of Comments Received & Response to the Comments				
Name of IAP / Description	Organisation / Interest	Contact details	Summary of Comments	Summary of Response
			<p>contained or reclaimed without causing any impact to the environment, ground and surface water resource that will lead to water quality degrade. The designs and materials that will be used during construction should not result in water leaks or sewerage overflows.</p> <p>5. All related specialist studies like Geotechnical report should be conducted and submitted to this Department before the project commence..."</p> <p>Comments received on 2018/10/09:</p> <p>Comments on the Draft</p>	<p>upgrades will be required to accommodate the additional flows.</p> <p>Take note that the bulk services contribution that is payable by the developer to the Municipality will be allocated for the upgrading of all necessary bulk services as per the Bulk Services Agreement that will be reached between the parties once the application is approved.</p> <p>3. According to the ecological specialist:</p> <ul style="list-style-type: none"> • A small drainage line / area occurs along the western portion of the site. • It does not contain a clear channel but it is evident that it conveys

Table 8. Summary of Comments Received & Response to the Comments				
Name of IAP / Description	Organisation / Interest	Contact details	Summary of Comments	Summary of Response
			Scoping have not been addressed in the Final Scoping Report. The conditions should be adhered to before the commencement of the project.	<p>some storm water after heavy rainfall.</p> <ul style="list-style-type: none"> • It is considered of limited conservation value. • It lacks a defined channel and as such is not considered a watercourse. As a result it can be incorporated into the development and does not warrant exclusion. • However, it still acts in transport of storm water and it is therefore recommended that the development still make provision for storm water management in this area. • In addition to the above discussed drainage area another small drainage line occurs along the

Table 8. Summary of Comments Received & Response to the Comments				
Name of IAP / Description	Organisation / Interest	Contact details	Summary of Comments	Summary of Response
				<p>eastern border of the site.</p> <p>Please note that storm water management will be undertaken in order to divert storm water in a manner that will ensure that storm water flow easily in order to avoid water flooding during rainy seasons.</p> <p>4. Please refer to Page 35 - 39 of the EMPr for more information on the proposed management measures associated with the handling of hazardous substances.</p> <p>5. Please see Annexures F, G, H, I, J & K of the current document for copies of the specialist reports.</p>

Table 8. Summary of Comments Received & Response to the Comments				
Name of IAP / Description	Organisation / Interest	Contact details	Summary of Comments	Summary of Response
				<p>Copies of the following reports were provided to the IAPs:</p> <ul style="list-style-type: none"> • Draft Scoping • Final Scoping • Draft EIA • Final EIA (current document)
Me. Mpolokeng Kolobe	Mangaung Metro Municipality: Environmental Division	Me. Mpolokeng Kolobe Tel: 051 405 8871 Fax: 051 405 8310 Email: mpolokeng.kolobe@mangaung.co.za P.O. Box 3704 Bloemfontein 9300	<p>Comments received from Mangaung Metro Municipality: Environmental Division on the 17th of May 2018 per letter:</p> <p>Reference is made to your Draft Scoping report received by this office regarding the above mentioned application. This office has reviewed the report and does not have any objections to the proposed development on conditions that;</p> <p>1. A detailed and complete environmental</p>	<p>MDA Responded via email on the 23rd of May 2018;</p> <p>1. MDA confirms the receipt of you letter regarding the Kloof township development - Draft Scoping Report.</p> <p>2. Please note that all conditions as set out in points 1 – 5 in your letter will be addressed and provided for in the Final Scoping Report to DESTEA.</p> <p>3. MDA will also supply you with a copy of the abovementioned report."</p>

Table 8. Summary of Comments Received & Response to the Comments				
Name of IAP / Description	Organisation / Interest	Contact details	Summary of Comments	Summary of Response
			<p>Management Programme (EMPr) must be compiled and be submitted with the EIA reports. This EMPr must ensure that the construction and operational phases of the project continues within the principles of Integrated Environmental Management and Environmental Management System (EMS) ISO 14001 Principles are adhered to. EMPr must also include a management plan for the anticipated open spaces in order for it not to lose its environmental functionality and the loss of biodiversity.</p> <p>2. Separate waste skip or bins for the different waste streams must be</p>	<p>Information provided in the Final EIA:</p> <ol style="list-style-type: none"> 1. See to Annexure L for a copy of the EMPr. Please refer to Pages 26 and 27 as well as Pages 46 and 47 of the EMPr for mitigation measures to be implemented to conserve the environmental functionality and limit the loss of biodiversity of the anticipated Private Open Space areas. 2. See Pages 27 - 29 for mitigation measures to be implemented regarding waste storage and waste removal during the construction phase. 3. An application for Township Establishment is

Table 8. Summary of Comments Received & Response to the Comments				
Name of IAP / Description	Organisation / Interest	Contact details	Summary of Comments	Summary of Response
			<p>available on site. The waste must be appropriate to the waste type contained therein and where possible should be lined and covered. This will be managed through the site specific EMPr and monitored by the ECO.</p> <p>3. In terms of the Municipality Spatial Development Framework the proposed land is earmarked for future residential use, however the proposed land must still be properly zoned as in terms of the appropriate Town Planning Scheme before any construction can commence on site.</p> <p>4. An alien control and monitoring programme</p>	<p>in process.</p> <p>4. See Page 14 – 20 for mitigation measures to be implemented regarding soil, erosion and vegetation management</p> <p>5. An application for Township Establishment will be submitted to MMM in due course. The current document as well as the EA (when received by MDA) will be provided to MMM.</p> <p>Copies of the following reports were provided to the IAPs:</p> <ul style="list-style-type: none"> • Draft Scoping • Final Scoping • Draft EIA • Final EIA (current document)

Table 8. Summary of Comments Received & Response to the Comments				
Name of IAP / Description	Organisation / Interest	Contact details	Summary of Comments	Summary of Response
			<p>must be developed, starting during the construction phase and to be carried over into the operational phase.</p> <p>5. In light of the above, all documents illustrating compliance to the conditions should be forwarded to this office for record keeping and compliance.....”</p>	
Mrs. Grace Mkhosana / Hlazo Victor	Free State Department of Economic Development, Tourism and Environmental Affairs	Tel: 051 400 4843 Fax: 051 400 4842 Private Bag X20801 Bloemfontein 9300 Mkhosana@deta.a.fs.gov.za	Acknowledgement letter was received 14/05/2018. Approval of the Plan of Study for the EIA was received on 25/05/2018 Please refer to Annexure C.	Copies of the following reports were provided to the IAPs: <ul style="list-style-type: none"> • Draft Scoping • Final Scoping • Draft EIA • Final EIA (current document)
Collin Dihemo	Mangaung Metro Municipality: Planning Division	Collin Dihemo Tel: 051 405 8212 Fax: 051 405 8707 Email: Collin.dihemo@m	None to date	Copies of the following reports were provided to the IAPs: <ul style="list-style-type: none"> • Draft Scoping • Final Scoping

Table 8. Summary of Comments Received & Response to the Comments				
Name of IAP / Description	Organisation / Interest	Contact details	Summary of Comments	Summary of Response
		angaung.co.za P.O. Box 3704 Bloemfontein 9300		<ul style="list-style-type: none"> • Draft EIA • Final EIA (current document)
The Assistant Director: Jack Morton	Department of Agriculture, Forestry and Fisheries	The Assistant Director: Jack Morton Tel: 051 861 8369 Fax: 086 234 6758 Email: jack@fs.agric.za Private Bag x01 Glen Bloemfontein 9360	Additional documents / an additional application was requested from Land Use and Soil Management Department of Agriculture, Forestry and Fisheries head office in Pretoria on the 9th of May 2018.	<p>The additional documents as requested were sent via email on the 23rd of May 2018 – thereafter MDA was advised that the information supplied was sufficient for the Department at this stage.</p> <p>Please refer to Annexure C for further information.</p> <p>Copies of the following reports were provided to the IAPs:</p> <ul style="list-style-type: none"> • Draft Scoping • Final Scoping • Draft EIA <p>Final EIA (current document)</p>
Mr. W. Naude	Department of Police, Roads and Transport	Mr. W. Naude P.O. Box 119 Bloemfontein 9300	None to date	<p>Copies of the following reports were provided to the IAPs:</p> <ul style="list-style-type: none"> • Draft Scoping

Table 8. Summary of Comments Received & Response to the Comments				
Name of IAP / Description	Organisation / Interest	Contact details	Summary of Comments	Summary of Response
		Email: naudew@freetrans.gov.za		<ul style="list-style-type: none"> • Final Scoping • Draft EIA • Final EIA (current document)
Mr A. Salomon	SAHRA	Mr A. Salomon Tel: 021 462 4509 South African Heritage Resources Agency (SAHRA) Head Office 111 Harrington Street Cape Town 8001	<ol style="list-style-type: none"> 1. The Heritage Impact Assessment (HIA) is accepted. 2. Should any objects of archaeological or palaeontological remains be found during the construction activities, work must immediately stop in that area and the ECO be informed. 3. The ECO must inform SAHRA and contact an archaeologist and/or palaeontologist, depending on the nature of the find, to assess the importance and rescue them if necessary (with the relevant SAHRA permit). No work may be 	<ol style="list-style-type: none"> 1. Noted. 2. Noted. Also refer to information provided in EMPr. 3. Noted. Also refer to information provided in EMPr. 4. Noted. Also refer to information provided in EMPr. 5. Noted. 6. The documents were uploaded on the SAHRIS website. A copy of the EA will be uploaded on the SAHRIS website.

Table 8. Summary of Comments Received & Response to the Comments				
Name of IAP / Description	Organisation / Interest	Contact details	Summary of Comments	Summary of Response
			<p>resumed in this area without the permission from the ECO and SAHRA.</p> <p>4. If newly discovered heritage resources are considered significant, a Phase 2 assessment may be required. A permit from the responsible heritage authority will be needed.</p> <p>5. The Chance Finds Procedures in the EMPr and Environmental Awareness Plan must be adhered to, to ensure that standard protocols and steps are followed should any heritage and / or fossil resources be uncovered during all phases of the project.</p> <p>6. The Scoping Reports and</p>	<p>7. A KML file was uploaded on the SAHRIS website.</p> <p>Copies of the following reports were provided to the IAPs:</p> <ul style="list-style-type: none"> • Draft Scoping • Final Scoping • Draft EIA • Final EIA (current document)

Table 8. Summary of Comments Received & Response to the Comments				
Name of IAP / Description	Organisation / Interest	Contact details	Summary of Comments	Summary of Response
			<p>EIA (with EMPr) should be submitted to SAHRA. Should the project be granted EA, SAHRA must be notified and all relevant documents submitted to the case file.</p> <p>7. The development footprint area must be mapped in the PalaeoSensitivity Map on SAHRIS.</p>	
SAHRA (Free State) Ntando Mbatha	SAHRA (Free State)	FSAHRA Cell: 074 945 3255 Email: mbatha.npz@sac r.fs.gov.za C/O Henry & East Burger Street Business Partner Building Office 307 Bloemfontein 9301	None to date	Copies of the following reports were provided to the IAPs: <ul style="list-style-type: none"> • Draft Scoping • Final Scoping • Draft EIA • Final EIA (current document)
Landowner of Portion 1, Farm	Berghof Trust	P.O. Box 32198 Fichardt Park	None to date	Copies of the following reports were provided to the

Table 8. Summary of Comments Received & Response to the Comments				
Name of IAP / Description	Organisation / Interest	Contact details	Summary of Comments	Summary of Response
Kloof 2165		Bloemfontein 9317		IAPs: <ul style="list-style-type: none"> • Draft Scoping • Final Scoping • Draft EIA • Final EIA (current document)
Landowner of Erf 30547, Somerton Estate	TP Hentiq 6313 PTY LTD	P.O. Box 3018 Johannesburg 2000	None to date	Copies of the following reports were provided to the IAPs: <ul style="list-style-type: none"> • Draft Scoping • Final Scoping • Draft EIA • Final EIA (current document)
Landowner of Erf 30549, Somerton Estate	J R B Trust	P.O. Box 37600 Langenhovenpark 9330	None to date	Copies of the following reports were provided to the IAPs: <ul style="list-style-type: none"> • Draft Scoping • Final Scoping • Draft EIA • Final EIA (current document)
Landowner of Erf 30555, Somerton Estate	Joha Trust	16 Marquard Crescent Dan Pienaar Bloemfontein	None to date	Copies of the following reports were provided to the IAPs: <ul style="list-style-type: none"> • Draft Scoping

Table 8. Summary of Comments Received & Response to the Comments				
Name of IAP / Description	Organisation / Interest	Contact details	Summary of Comments	Summary of Response
		9301		<ul style="list-style-type: none"> • Final Scoping • Draft EIA • Final EIA (current document)
Landowner of Erf 30575, Somerton Estate	Mangaung Metropolitan Municipality	The City Manager P.O. Box 3704 Bloemfontein 9300	None to date	<p>Copies of the following reports were provided to the IAPs:</p> <ul style="list-style-type: none"> • Draft Scoping • Final Scoping • Draft EIA • Final EIA (current document)
Landowner of Penrose 2378	P G De Bruyn	P.O. Box 27991 Danhof 9310	None to date	<p>Copies of the following reports were provided to the IAPs:</p> <ul style="list-style-type: none"> • Draft Scoping • Final Scoping • Draft EIA • Final EIA (current document)
Landowner of Erf 30043	African Spirit Trading 406 PTY	P.O. Box 28966 Danhof 9310	None to date	<p>Copies of the following reports were provided to the IAPs:</p> <ul style="list-style-type: none"> • Draft Scoping • Final Scoping • Draft EIA

Table 8. Summary of Comments Received & Response to the Comments				
Name of IAP / Description	Organisation / Interest	Contact details	Summary of Comments	Summary of Response
				<ul style="list-style-type: none"> Final EIA (current document)
Landowner of Erf 40145, 40144, 40143 on Portion 1 of the Farm Tredenham 2153	Diamond Trust	P.O. Box 42380 Heuwelsig 9332	None to date	Copies of the following reports were provided to the IAPs: <ul style="list-style-type: none"> Draft Scoping Final Scoping Draft EIA Final EIA (current document)
Landowner of Erf 30045	Cherangani Trade & Invest 65	5 Short St Bloemfontein Central 9301	None to date	Copies of the following reports were provided to the IAPs: <ul style="list-style-type: none"> Draft Scoping Final Scoping Draft EIA Final EIA (current document)
Landowner of Edendale 2147	A Goodrick Tel: 051 433 2238	P.O. Box 13005 Noordstad 9302	<p>Letter received 28/05/20185 from Horn & Van Rensburg Attorneys REF: BJ VIVIERS/AS/GH0460</p> <p>We refer to the above mentioned and our instruction from our client,</p>	MDA Responded with a letter sent via email to Horn & Van Rensburg Attorneys in this regard on the 30 th of May 2018. <ol style="list-style-type: none"> MDA hereby acknowledges the receipt

Table 8. Summary of Comments Received & Response to the Comments				
Name of IAP / Description	Organisation / Interest	Contact details	Summary of Comments	Summary of Response
			<p>Miss Anne Goodrick, Adjacent Landowner of the Farm Edendale 2147, Bloemfontein, are as follows:</p> <ol style="list-style-type: none"> 1. Our client takes note that with reference to the flats and town houses planned that the planning on the proposed Township Development is high density. 2. Our client also further takes note that in your proposal you refer to the R700 most of the time as easy access to the proposed Township Development. 3. The harsh reality is that the traffic on the R700 is already in total havoc and will even become more so as soon as you 	<p>of your letter ref: BJ VIVIERS/AS/GH0460 dated 28 of May 2018 pertaining to comments and concerns raised by Miss Anne Goodrick, adjacent Landowner of the Farm Edendale 2147, Bloemfontein.</p> <ol style="list-style-type: none"> 2. Furthermore MDA has taken note of points 1 – 6 as set out in the above mentioned letter. We will include Miss. Goodrick's comments and concerns in our final Scoping Report. 3. Please note that a Traffic Impact Study has been conducted by KMA Consulting Engineers. This study has been submitted to the Mangaung Metropolitan Municipality's Transport

Table 8. Summary of Comments Received & Response to the Comments				
Name of IAP / Description	Organisation / Interest	Contact details	Summary of Comments	Summary of Response
			<p>start with your development. Only last week there was a serious accident claiming at least one person's life.</p> <p>4. The problem can be rectified by broadening the R700 and the erecting of a further Robot will be of utmost importance.</p> <p>5. Law Enforcement with reference to motorist's speed limits will also have to be adhered to.</p> <p>6. Except for the traffic impact and that solutions must be found for that, Miss Goodrick have no further objections against the proposed Township Development....."</p>	<p>Planning Division for comments and evaluation.</p> <p>4. The proposed development will not be approved or continue without compliance with the strict Regulations of the Transport Planning Division in terms of capacity and other transport related aspects.</p> <p>5. In conclusion Miss. A Goodrick will be supplied with a copy of the Traffic Impact Study for comments following the submission of the Draft Environmental Impact Assessment to the Free State Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA).</p>

Table 8. Summary of Comments Received & Response to the Comments				
Name of IAP / Description	Organisation / Interest	Contact details	Summary of Comments	Summary of Response
			<p>On the 21st of August 2018 Miss. A Goodrick contacted MDA and informed us that she was too late to collect her parcel that contained the Final Scoping Report. She then requested that we include the Final Scoping Report with the Draft EIA. Furthermore she also requested that the parcel be sent via normal mail to her given postal address.</p>	<p>Copies of the following reports were provided to the IAPs:</p> <ul style="list-style-type: none"> • Draft Scoping • Final Scoping • Draft EIA • Final EIA (current document)
Landowner of Erf 30473	Basfour 2994 PTY LTD	96 Raymond Mhlabastreet Navalsig Bloemfontein 9301	None to date	<p>Copies of the following reports were provided to the IAPs:</p> <ul style="list-style-type: none"> • Draft Scoping • Final Scoping • Draft EIA • Final EIA (current document)
Landowner of Erf 30217				
Landowner of Erf 30247				
Landowner of Erf 29504				
Landowner of Erf 30483				
Landowner of Portion 2, Farm Bayswater 2865	Orcom Trading 285 PTY LTD	PO Box 28461 Danhof 9310	None to date	<p>Copies of the following reports were provided to the IAPs:</p>

Table 8. Summary of Comments Received & Response to the Comments				
Name of IAP / Description	Organisation / Interest	Contact details	Summary of Comments	Summary of Response
				<ul style="list-style-type: none"> • Draft Scoping • Final Scoping • Draft EIA • Final EIA (current document)
Landowner of Portion 4, Farm Bayswater 2865	Mojalefa Trust	P.O. Box 27 Bloemfontein 9300	None to date	<p>Copies of the following reports were provided to the IAPs:</p> <ul style="list-style-type: none"> • Draft Scoping • Final Scoping • Draft EIA • Final EIA (current document)
Landowner of Erf 30485, Somerton Estate	Somerton Estates PTY LTD	P.O. Box 13147 Northridge 9301	None to date	<p>Copies of the following reports were provided to the IAPs:</p> <ul style="list-style-type: none"> • Draft Scoping • Final Scoping • Draft EIA • Final EIA (current document)
Landowner of Erf 30548, Somerton Estate				
Landowner of Erf 30559, Somerton Estate				
Landowner of Erf 30560, Somerton Estate				
Landowner of Erf				

Table 8. Summary of Comments Received & Response to the Comments				
Name of IAP / Description	Organisation / Interest	Contact details	Summary of Comments	Summary of Response
30550, Somerton Estate				
Landowner of Erf 30551, Somerton Estate				
Landowner of Erf 30558, Somerton Estate				
Landowner of Erf 30557, Somerton Estate				
Landowner of Erf 30556, Somerton Estate				

6.6 Summary of Comments and Responses

6.6.1 Comments and concerns received

- The quantity of sewage expected to be produced by the proposed development.
- The availability of adequate capacity of the Municipal services and provision thereof to the proposed development.
- Storm water system provision, and flood prevention.
- Environmental hazards related to the construction and operational phase of the project.
- Management plans in order to manage and plan for the upkeep and protection of anticipated open spaces in terms of environmental functionality and biodiversity loss.
- Proper Town Planning channels to be followed prior to construction.
- Waste should be classified in different waste streams. Bins for different waste streams should be available during the construction phase.
- An application for Township Establishment should be submitted to MMM.
- Should any objects of archaeological or palaeontological remains be found during the construction activities, work must immediately stop in that area and the ECO be informed.
- The ECO must inform SAHRA and contact an archaeologist and/or palaeontologist, depending on the nature of the find, to assess the importance and rescue them if necessary (with the relevant SAHRA permit). No work may be resumed in this area without the permission from the ECO and SAHRA.
- If newly discovered heritage resources are considered significant, a Phase 2 assessment may be required. A permit from the responsible heritage authority will be needed.
- The Chance Finds Procedures in the EMPr and Environmental Awareness Plan must be adhered to, to ensure that standard protocols and steps are followed should any heritage and / or fossil resources be uncovered during all phases of the project.

- The Scoping Reports and EIA (with EMPr) should be submitted to SAHRA. Should the project be granted EA, SAHRA must be notified and all relevant documents submitted to the case file.
- Traffic impacts related to the proposed project especially on the R700.

6.6.2 Feedback on comments and concerns

- IAPs were advised that their comments and concerns have been noted and documented in the Scoping and EIA Reports.
- All comments and concerns from the I&APs were sent to the applicant.
- The comments and concerns are covered and included in the current document (Final EIA Report) as more information, specialist studies and required specialist report and programmes are available at this stage.
- The EMPr outlines the proper management procedures and mitigation measures to be must be implemented at each stage of the proposed project.
- All specialist studies and report recommendations will be considered and adhered to.
- No construction will commence without the proper authorisations and approvals from both the EIA application (DESTEAs) as well as the Town Planning Application (MMM).
- In the case where valid environmentally related comments, concerns and recommendations are not addressed by / or / during either of the application processes mentioned above it will be included in the EAP recommendation.

7. NEED AND DESIRABILITY

South Africa has been experiencing rapid urbanisation for quite some time. It can be assumed that this occurrence will continue especially in Metropolitan areas and major towns and cities. Due to the high levels of urbanisation adequate housing remains high on the demand list. Development in Bloemfontein has been taking place at a high rate in the northern suburbs. This trend is easily observable due to a number of new developments and upgrading projects in these areas. The area is

characterised by constant upgrading and numerous developments consisting of retail centres, cluster and medium density housing estates. The application property is included in the “Urban Edge” of the Spatial Development Framework (SDF) of the MMM and the application property is earmarked in the said SDF for future residential development.

It can be concluded from the current land uses surrounding the site that there is in fact a need / demand for housing options in this area. The site is extremely well located for this type of development given numerous favourable locality aspects such as:

- **Access**

Easy access from the R700 (Kenneth Kaunda Road) and access to the development will be obtained from the T185, which turns from the R700 (Kenneth Kaunda Road Extension).

- **Surrounding land uses**

The proposed development is surrounded by residential developments to the north (Somerton) and the south (Wild Olive). Existing residential, business, office and commercial developments surrounding the proposed development property, make the proposed development suitable to the area. Also, the existing main arterial route in close proximity to the properties as well as already existing business / residential type land uses throughout the area (especially along the main arterial), plays a deciding role as to the character of the area and therefore land uses.

- **Accessibility of site to amenities**

Easy access is gained from the R700 (Kenneth Kaunda Road) to retail outlets, shopping centres and the CBD gives the site a favourable location.

8. MOTIVATION FOR NO ALTERNATIVES

8.1 Preferred Alternative

Initially the applicant wanted to develop the entire area. However this was not viable following the ecologists initial site visit. It was then concluded that the layout planning process for the proposed

development be conducted in conjunction with the ecologist. The proposed layout plan was designed according to the ecological assessment conducted on the 9th of April 2015 and a follow-up survey was conducted on the 21st of September 2017 in order to ensure that a comprehensive assessment was conducted.

The planning of the residential development has been undertaken in conjunction with the ecological assessment and as a result sensitive areas have been excluded from development and will be retained as private open space. This layout will result in the lowest impact as long as other mitigation measures such as transplanting of protected species are also adhered to.

Due to the fact that this layout is the only environmentally viable option in terms of environmental protection no other alternatives will be discussed or considered for this report.

8.2 No-go Alternative

The proposed Kloof residential development will have a positive contribution on the housing and infrastructure on the urban edge and northern parts of Bloemfontein as well as status of the MMM. Should the no-go alternative be decided on, and the non-commencement of the proposed project occur, there will be a negative impact on the public and the infrastructure of the MMM area.

9. POSSIBLE ENVIRONMENTAL IMPACTS, ISSUES AND CUMULATIVE IMPACTS

The possible environmental impacts and issues were identified by evaluating different aspects of the receiving environment from both an urban and environmental point of view relating to the proposed residential development. Other tools allocated in order to identify possible environmental impacts that were used includes comments received from stakeholders and other I&APs during the Scoping process, and recommendations and issues identified during specialist studies.

9.1 Impacts, issues identified by I&APs

I&AP	Summary of Comments & Concerns
Department of Water and Sanitation	<ul style="list-style-type: none"> • Quantity of sewage to be produced by proposed development. • Availability of adequate Bulk Civil Services capacities by MMM and including general service delivery. • Storm Water Management / possible flooding. • Construction phase related pollution due to hazardous chemicals / substances.
MMM: Environmental Division	<ul style="list-style-type: none"> • Impacts related to the construction phase of the project. • Management plan for open spaces. • Waste management during construction phase. • Control of alien invader plant species management during the construction and operational phase.
Adjacent Land owner Farm Edendale 2147 – Mrs. A. Goodrick	<ul style="list-style-type: none"> • Traffic impacts related to the proposed development. • Proposals were made in terms of rectifying the problems – these included the broadening of the R700, additional traffic lights and stricter speed limit enforcement strategies.

9.2 Findings and Recommendations by Specialists

A summary of the findings and recommendations by the specialists is provided in **Table 10**.

Specialist Studies	Findings	Recommendations
Ecological Assessment	<ul style="list-style-type: none"> • The planning phase of the proposed development was undertaken in conjunction with the ecological assessment and the most sensitive areas have been excluded 	<ul style="list-style-type: none"> • Areas identified as sensitive should be adhered to and these areas should be kept free from development (open spaces). • Excluded areas

Table 10. Summary of Specialist Findings & Recommendations		
Specialist Studies	Findings	Recommendations
	<p>from the development as private open space.</p> <ul style="list-style-type: none"> • The site contains a few protected tree species, (<i>Olea europaea</i> subsp. <i>africana</i>, <i>Celtis africana</i> and <i>Cussonia paniculata</i>), which do not transplant easily and will have to be removed where they occur outside private open space. • The site contains numerous bulb and succulent species which are easily transplanted • The initial site proposed for the residential development has been rated as being not preferred. However, when taking into consideration that the development will exclude large portions of the site with high species diversity it is considered as acceptable for the development. • The site consists 	<p>mentioned above should be treated as no-go areas during the construction phase and kept as natural areas (this includes not utilizing the areas for stockpiling, laydown areas, parking or any other activity associated with construction).</p> <ul style="list-style-type: none"> • Furthermore no game or domestic animals such as horses should be introduces to these areas in order to protect the vegetation of these areas. • These areas of private open space should however be incorporated into the development to increase the aesthetic value of it and walkways should also be considered through these areas for the benefit of the inhabitants. • Permits must be obtained to remove any of the protected tree

Table 10. Summary of Specialist Findings & Recommendations		
Specialist Studies	Findings	Recommendations
	<p>almost entirely of natural vegetation with little disturbance or modification. Limited disturbance is evident along the eastern border of the site where it is situated adjacent to the R700 tarred road. Here an old borrow pit causes modification and transformation although at a local scale. An electrical distribution station and a few tarred roadways also contribute to local transformation of the vegetation.</p> <ul style="list-style-type: none"> The dominant vegetation structure on the site consists of a dense grass layer although this structure varies considerably over the site. Where exposed dolerite rock occurs the vegetation structure consists of a shorter, sparser grass layer with prominent succulent, bulb and dwarf shrub component. In lower lying areas, especially in the north-eastern corner, a more prominent 	<p>specimens and can be offset by using saplings of them in landscaping of the development.</p> <ul style="list-style-type: none"> Permits must be obtained for the transplantation of protected species before they are transplanted to areas of private open space where they will remain unaffected. The process of transplanting protected species should be undertaken and overseen by a suitably qualified person. This should be undertaken during the rainy season when deciduous bulbs will be visible. In addition, during construction these plants will require a temporary storage or nursery area where they can be kept intact until construction is completed and they can be transplanted into landscaping or planted areas. This area should be

Table 10. Summary of Specialist Findings & Recommendations		
Specialist Studies	Findings	Recommendations
	<p>thicket / tree layer becomes dominant. The vegetation structure over the site is largely natural and influenced by the soil depth, rock exposure and moisture regime.</p> <ul style="list-style-type: none"> The grassland habitat portion of the site is largely natural with few impacts but do not contain a significantly high diversity of species. It is also not considered to be diagnostic of the Bloemfontein Karroid Shrubland plant community which is considered to be of significant conservation value. As a result this portion of the site is not considered to be of high conservation value and does not warrant exclusion from development. However, it does contain a few protected bulb species which will have to be transplanted to remaining open spaces where they will not be affected by the development. The portions of the site dominated by 	<p>constructed, overseen and maintained by a suitably qualified person.</p> <ul style="list-style-type: none"> It is recommended that the drainage lines on the site be incorporated in the development but they should still be accommodated in terms of an adequate storm water system to allow for storm water transport in much the same manner is the downstream development. 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. The hunting,

Table 10. Summary of Specialist Findings & Recommendations		
Specialist Studies	Findings	Recommendations
	<p>exposed dolerite rock is most characteristic of the Bloemfontein Karroid Shrubland and is therefore of significant conservation value.</p> <ul style="list-style-type: none"> • A small drainage line / area occurs along the western portion of the site. It does not contain a clear channel but it is evident that it conveys some storm water after heavy rainfall. It is considered of limited conservation value. It lacks a defined channel and as such is not considered a watercourse. As a result it can be incorporated into the development and does not warrant exclusion. However, it still acts in transport of storm water and it is therefore recommended that the development still make provision for storm water management in this area. In addition to the above discussed drainage area another small drainage line occurs along the eastern 	<p>capturing and trapping of fauna should be prevented by making this a punishable offense during the construction phase and inhabitation of the development (only to be undertaken by a suitable, qualified person).</p> <ul style="list-style-type: none"> • After construction has ceased all construction materials should be removed from the area. • Exclusion of several portions of the site as indicated by development plans will aid in retaining ecological corridors, decreasing habitat fragmentation and allowing for the exchange of genetic material. • The small drainage line / area occurs along the western portion of the site still acts in transport of storm water and it is therefore recommended that the development

Table 10. Summary of Specialist Findings & Recommendations		
Specialist Studies	Findings	Recommendations
	border of the site.	still make provision for storm water management in this area.
Bulk Civil Services Report	<ul style="list-style-type: none"> Based on investigations and calculations using the available information on the existing sewer infrastructure there is not sufficient capacity in order to accommodate the additional sewage runoff that will be generated due to the proposed development. During the desktop study it was concluded that the available network pipes leading to the proposed development will not be sufficient in order to supply water to the proposed development. The current storm water infrastructure available should be sufficient and along with the implementation of careful design principals in this regard the risk of flooding can be minimized. 	<ul style="list-style-type: none"> Bulk sewer upgrades will be required in order to accommodate the proposed development. In order to provide sufficient water supply to the proposed development alternative supply methods will have to be investigated. Please refer to p. 7 of the Bulk Civil Services Report for more information regarding the proposed alternative measures. The current direct access to the development is in our opinion sufficient to accommodate the additional traffic volumes. However the external impact will have to be investigated with a in depth Traffic Impact Study.

Table 10. Summary of Specialist Findings & Recommendations		
Specialist Studies	Findings	Recommendations
	<ul style="list-style-type: none"> The current direct access to the development is in our opinion sufficient to accommodate the additional traffic volumes. 	
Electrical Services Report	<ul style="list-style-type: none"> According to the findings of the electrical services report a new electrical connection as well as an additional substation will be required in order to supply the proposed development with adequate power. 	<ul style="list-style-type: none"> Please refer to Annexure I for the Electrical Services Report.
Geotechnical Investigation	<ul style="list-style-type: none"> The Geotechnical investigation findings can be seen in Annexure J. Furthermore the main findings can be summarized as follows; Modified Normal construction (strip footings or slab-on-the-ground) foundation or Soil Raft. Site drainage and service / plumbing precautions recommended. Stiffened or cellular raft foundation (Stiffened or cellular 	<ul style="list-style-type: none"> Please refer to Annexure J Geotechnical investigation recommendations.

Specialist Studies	Findings	Recommendations
	<p>raft of articulated lightly reinforced masonry) or Soil Raft.</p> <ul style="list-style-type: none"> • No unstable slope was noticed in the area. 	
Traffic Impact Study	<ul style="list-style-type: none"> • The following conclusions can be made from the study: • The development is expected to generate 1539 and 2606 new trips during the morning and afternoon peak hours respectively. • Most of the intersections in the study area will have to be significantly upgraded and / or signalise due to latent rights and / or the development under consideration. • Implementation of the identified improvements will require some widening of road reserves. • The layout plan is in principle acceptable. • Based on the findings of the study the development can 	<ul style="list-style-type: none"> • Implementation of the identified improvements will require some widening of road reserves. • Most of the intersections in the study area will have to be significantly upgraded and / or signalise due to latent rights and / or the development under consideration.

Specialist Studies	Findings	Recommendations
	be approved from a traffic point of view.	
Archaeological Assessment	<ul style="list-style-type: none"> • Dolerite, in the form of dykes, sills or inclined sheets is not considered palaeontologically significant. • The site is also regarded as of low palaeontological significance with regards to the superficial residual soils capping the dolerite in places (Quaternary overburden). This is mainly due to a lack of suitable alluvial / fluvial deposits at the site. • As far as the palaeontological heritage is concerned, the proposed development may proceed with no additional heritage assessments necessary, provided that all excavation activities are restricted to within the boundaries of the development footprint. As far as the archaeological heritage is concerned the footprint is assigned 	<ul style="list-style-type: none"> • Construction activities should be restricted within the boundaries of the development footprint. • All archaeological findings (if any) should be recorded and reported to SAHRA. No construction activities in the area may proceed without the authorisation from SAHRA.

Specialist Studies	Findings	Recommendations
	site rating of Generally Protected C (GP.C).	

Table 11 is a summary of the preliminary possible environmental impacts identified at this stage of the project.

Possible Environmental Impacts		
Type	Impact	Preliminary significance of impact
Geology		
Potential	<ul style="list-style-type: none"> • Soil characteristics of the northern parts of Bloemfontein are known for their sandy top layers. • This characteristic makes the area prone to loss of topsoil. The correct management tools for the storage thereof will needed during the construction phase. • Characteristics of the soil make the area prone to possible surface flooding should the necessary precautionary measures not be taken. • The characteristics of the soil can be altered due to possible spillage / disturbance during construction activities. 	<ul style="list-style-type: none"> • Proper management along with implementation of best practices will ensure that the possible impacts on soil characteristics will be low. • With the implementation of proper site drainage measures before, during and after construction along with the installation of drainage channels will ensure that the possible surface flooding and related impacts remain low.
Cumulative	<ul style="list-style-type: none"> • There will be a negligible cumulative impact. 	<ul style="list-style-type: none"> • Negligible significance.

Table 11. Potential identified impacts		
Possible Environmental Impacts		
Type	Impact	Preliminary significance of impact
Climate		
Potential	<ul style="list-style-type: none"> It is not expected that the proposed establishment of the residential area will have any impact on the climate in the area. 	<ul style="list-style-type: none"> N/A
Cumulative	<ul style="list-style-type: none"> It is not expected that the proposed establishment of the residential area will have any impact on the climate in the area. 	<ul style="list-style-type: none"> N/A
Air Quality		
Potential	<ul style="list-style-type: none"> The air quality may be negatively impacted by vehicle emissions and dust, especially during the construction phase. 	<ul style="list-style-type: none"> The impact can be low if the proper management measures are implemented during this phase.
Cumulative	<ul style="list-style-type: none"> No impacts 	<ul style="list-style-type: none"> No impacts
Ground & Surface Water		
Potential	<ul style="list-style-type: none"> Ground and surface water could be contaminated during the construction phase due to spillages of hazardous chemicals and storm water runoff from stockpiles. 	<ul style="list-style-type: none"> Impacts will be low should proper housekeeping and storm water management principles be implemented during the construction phase.
Cumulative	<ul style="list-style-type: none"> There will be a negligible cumulative impact. 	<ul style="list-style-type: none"> Negligible significance.
Land Use		
Potential	<ul style="list-style-type: none"> Loss of land for purposes other than township development. 	<ul style="list-style-type: none"> Impact will be low as the proposed site has been earmarked for residential development.

Table 11. Potential identified impacts		
Possible Environmental Impacts		
Type	Impact	Preliminary significance of impact
Cumulative	<ul style="list-style-type: none"> The expansion of the town and residents may require an expansion of the residential areas in and around Bloemfontein. 	<ul style="list-style-type: none"> The loss of open land as a result of town development will be low-medium. However, it is not avoidable as the population grows and urbanisation increases.
Vegetation		
Potential	<ul style="list-style-type: none"> Approximately 39ha of indigenous vegetation will be removed from site when construction occurs. Vegetation growth and habitats of certain species will be disturbed. 	<ul style="list-style-type: none"> High – Indigenous vegetation will not re-establish on the site when construction commenced due to the buildings etc. Only if the site is rehabilitated (which is not foreseen) will the indigenous vegetation re-establish.
Cumulative	<ul style="list-style-type: none"> The population in and around Bloemfontein is expanding and therefore will result in the removal of vegetation for the development of residential spaces and future expansion. 	<ul style="list-style-type: none"> High.
Animal Life		
Potential	<ul style="list-style-type: none"> There will be a potential impact on animal life as the activities will occur on undisturbed land. 	<ul style="list-style-type: none"> Medium- Some animal habitats will be disturbed.
Cumulative	<ul style="list-style-type: none"> The growth of the population, increasing urbanisation and expansion of cities will result of the relocation of many animals and the loss of habitats in these areas on the outer boundaries of towns and cities as 	<ul style="list-style-type: none"> Medium.

Table 11. Potential identified impacts		
Possible Environmental Impacts		
Type	Impact	Preliminary significance of impact
	they expand.	
Cultural Heritage		
Potential	<ul style="list-style-type: none"> The proposed site and surrounding area is not known for elements of archaeological or palaeontological value. 	<ul style="list-style-type: none"> Low.
Cumulative	<ul style="list-style-type: none"> No cumulative impacts on paleontological and archaeological assets are foreseen. 	<ul style="list-style-type: none"> Negligible significance.
Noise		
Potential	<ul style="list-style-type: none"> The construction activities and specific activities that will be associated with the Construction Phase, e.g. equipment used to build and excavate, will result in elevated noise levels. 	<ul style="list-style-type: none"> The impact is expected to be medium however with the implementation of management tools such as the limiting of construction activities where possible to normal working hours, the significance of noise can be made bearable to surrounding land owners.
Cumulative	<ul style="list-style-type: none"> There are no other developments or activities in the area responsible for elevated noise levels, except for the operational activities at the quarry and the waste landfill site. The population in and around Bloemfontein is expanding and 	<ul style="list-style-type: none"> Medium significance.

Table 11. Potential identified impacts		
Possible Environmental Impacts		
Type	Impact	Preliminary significance of impact
	therefore it is necessary for the development as the town and residents may require such an expansion for residential living spaces.	
Aesthetics		
Potential	<ul style="list-style-type: none"> The proposed development site is already earmarked for future residential development. Possible impacts on the areas aesthetics during the construction phase. 	<ul style="list-style-type: none"> The impact is expected to be low as it is only temporary and can be managed by proper housekeeping on site during the construction phase.
Cumulative	<ul style="list-style-type: none"> The area's aesthetics will be affected for the construction phase but population in and around Bloemfontein is expanding and therefore residential expansion is necessary. 	<ul style="list-style-type: none"> Low significance.
Traffic Impacts		
Potential	<ul style="list-style-type: none"> An increase of housing and associated infrastructure in the area will increase traffic in the area. 	<ul style="list-style-type: none"> The impact is expected to be low as additional traffic restrictions can be implemented depending on the findings of the Traffic Impact Assessment to be conducted.

Table 11. Potential identified impacts		
Possible Environmental Impacts		
Type	Impact	Preliminary significance of impact
Cumulative	<ul style="list-style-type: none">Traffic volumes in the area will be affected, however it must be noted that the population in and around Bloemfontein is expanding and therefore residential expansion is necessary.	<ul style="list-style-type: none">Low significance.

10. ASSESSMENT OF IDENTIFIED ENVIRONMENTAL ISSUES

10.1 Assessment

The main objective of the EIA process is to assess and quantify the potential impacts that were identified by the project team, specialists and I&APs during the Scoping Phase.

All specialist studies have been included in the final EIA Report (i.e. current document). Through the results and outcomes of the specialist studies, an accurate and comprehensive Impact Assessment was compiled through the concept of significance.

The concept of significance is at the core of impact identification, evaluation and decision-making during the EIA process and can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. intensity, duration and likelihood), while impact significance is the value placed on the change by different affected parties (i.e. level of acceptability) (DEAT, 2002).

The significance is rated from Low to High as indicated in the tables below with an explanation of the impact magnitude and a guide that reflects the extent of the proposed mitigatory measures deemed necessary.

10.1.1 Concluding Consequence

Consequence analysis is a mixture of quantitative and qualitative information and the outcome can be positive or negative. Several factors can be used to determine consequence. For the purpose of determining the environmental significance in terms of consequence, the following factors were chosen: Severity / Intensity, Duration and Extent / Spatial Scale. Each factor is assigned a rating of 1 to 5, as described below.

10.1.2 Determination of Severity

Severity relates to the nature of the event, aspect or impact to the environment and describes how severe the

aspects impact on the biophysical and socio-economic environment. **Table 12** indicates the severity rating on a quantitative and qualitative level.

Table 12. Severity Rating					
Type of Criteria	Rating Score				
	1	2	3	4	5
Quantitative	0-20%	21-40%	41-60%	61-80%	81-100%
Qualitative	Insignificant / Non-harmful	Small / Potentially Harmful	Significant / Harmful	Great / Very harmful	Disastrous Extremely harmful
Social/ Community response	Acceptable / I&AP satisfied	Slightly tolerable / Possible objections	Intolerable/ Sporadic complaints	Unacceptable / Widespread complaints	Totally unacceptable / Possible legal action
Irreversibility	Very low cost to mitigate / High potential to mitigate impacts to level of insignificance / Easily reversible	Low cost to mitigate	Substantial cost to mitigate / Potential to mitigate impacts / Potential to reverse impact	High cost to mitigate	Prohibitive cost to mitigate / Little or no mechanism to mitigate impact Irreversible
Biophysical (Air quality, water quantity and quality, waste production, fauna and flora)	Insignificant change / deterioration or disturbance	Moderate change / deterioration or disturbance	Significant change / deterioration or disturbance	Very significant change / deterioration or disturbance	Disastrous change / deterioration or disturbance

10.1.3 Determination of Duration

Duration refers to the amount of time that the environment will be affected by the event, risk or impact, if no intervention (e.g. remedial action) takes place. **Table 13** indicates the rating of duration according to a measure of the life span of the possible impact.

Rating	Description
1: Low	One month
2: Low-Medium	Between 1 and three months
3: Medium	3 months to 1 year
4: Medium-High	1 to 10 years
5: High	More than 10 years

10.1.4 Determination of Extent / Geographical Extent

Extent refers to the spatial influence related to an impact (thus immediate area / surrounding area / regional/ national / international).

Rating	Exposure	Description
1: Low	Very limited	Immediate site / limited to site and immediate areas
2: Low-Medium	Limited	Surrounding areas
3: Medium	Municipal area	Municipal area
4: Medium-High	Province / Region	Province
5: High	National / international	National / International

10.1.5 Determination of Overall Consequence

Overall consequence is determined by adding the factors determined above (severity, duration and extent) as summarised in the example below, and then dividing the sum by 3 (3 factors; severity, duration and extent).

Consequence	Rating
Severity	3

Consequence	Rating
Duration	2
Extent	4
Subtotal: 9	
Total Consequence : 3	

10.1.6 Likelihood

The determination of likelihood is a combination of Frequency and Probability. Each factor is assigned a rating of 1 to 5, as described below and in **Table 16** and **Table 17**.

10.1.7 Determination of Frequency

Frequency refers to how often the specific activity, related to the event, aspect or impact, is undertaken.

Rating	Description
1: Low	Once / twice a year
2: Low-Medium	Once or more every 6 months
3: Medium	Once or more on a monthly basis
4: Medium-High	Once or more on a weekly basis
5: High	On a daily basis

10.1.8 Determination of probability

Probability refers to how often the activity/event or aspect has an impact on the environment.

Rating	Description
1: Low	Almost never / almost impossible
2: Low-Medium	Very seldom / highly unlikely
3: Medium	Infrequent / unlikely / seldom
4: Medium-High	Often / regularly / likely / possible
5: High	Daily / highly likely / definitely

10.1.9 Overall likelihood

Overall likelihood is calculated by adding the factors determined above and summarised below, and then dividing the sum by 2.

Table 18. Example Calculating overall likelihood	
Overall Likelihood	Rating
Frequency	3
Probability	2
Subtotal: 5	
Total Likelihood: 2.5	

10.1.10 Determination of Overall Environmental Significance

The multiplication of overall consequence with overall likelihood will provide the environmental significance, which is a number that will then fall into a range of LOW, LOW-MEDIUM, MEDIUM, MEDIUM, MEDIUM-HIGH or HIGH, as shown in **Table 19**.

Table 19. Determination of overall Environmental Significance					
Significance / risk	Low	Low-Medium	Medium	Medium-High	High
Overall Consequence Multiplied (x) by Overall Likelihood	1 – 4.9	5 – 9.9	10 – 14.9	15 – 19.9	20 – 25

10.1.11 Qualitative Description of Environmental Significance

The qualitative description relating to environmental significance is used to supply us with an indication of the nature of the significance of a risk or potential impact.

This can be used as a valuable tool to guide the decision making process relating to a particular event, impact or aspect.

Table 20. Qualitative description & rating of significance					
Significance	Low	Low-Medium	Medium	Medium-High	High
Impact Magnitude	<ul style="list-style-type: none"> • Impact is of very low order and therefore likely to have very little real effect. 	<ul style="list-style-type: none"> • Impact is of very low order and therefore likely to have very little real effect. • Acceptable 	<ul style="list-style-type: none"> • Impact is real, and potentially substantial in relation to other impacts. • Can pose a risk 	<ul style="list-style-type: none"> • Impact is real and substantial in relation to other impacts. • Pose a risk to the company. 	<ul style="list-style-type: none"> • Impact is of the highest order possible. • Unacceptable. Fatal flaw.
Action Required	<ul style="list-style-type: none"> • Maintain current management measures. • Where possible improve. 	<ul style="list-style-type: none"> • Maintain current management measures. • Implement monitoring and evaluate to determine potential increase in risk. Where possible improve. 	<ul style="list-style-type: none"> • Implement monitoring. Investigate mitigation measures and improve management measures to reduce risk, where possible. 	<ul style="list-style-type: none"> • Improve management measures to reduce risk. 	<ul style="list-style-type: none"> • Implement significant mitigation measures or implement alternatives

Should any fatal flaws be identified during the EIA process which will be indicated by a “high” significance rating, the activity related with the potential impact will undergo the “no-go” alternative (i.e. be excluded from the proposed project) if the impact cannot not be managed and / or mitigated to acceptable levels.

11. ENVIRONMENTAL IMPACT ASSESSMENT

11.1 Geology and Soil

The following geology and soil related impacts have been identified and may occur as a result of the construction and operation phase of the proposed development;

- Potential loss of topsoil.
- Alteration of soil characteristics due to possible spillages / disturbances.
- Contamination of soil as a result of chemical / hazardous substances / pollution / sewage leaks.

Proposed Development	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Significance
Preferred Alternative	3	5	1	3	4	4	4	12
Mitigated	2	2	1	1	4	3	3.5	3.5

As depicted in **Table 21** the environmental significance of the geology and soil impacts related to the proposed development can qualitatively be described as Medium. The possible impact is real and potentially extensive; furthermore it can pose a risk. The implementation of monitoring, mitigation and management measures are necessary in order to reduce risk where possible. This can be motivated by the mitigated environmental significance depicted – Low.

11.1.1 Proposed Mitigation measures

- Remove topsoil prior to construction.
- Topsoil stockpiling in such a manner as to avoid / prevent the loss thereof.
- No topsoil should be used for construction purposes.
- Topsoil should only be used post construction for rehabilitation, landscaping, storm water system construction and levelling purposes.

- All sewage pipes should be sealed during the construction phase.
- The upgrading / installation of an adequate sewage system in order to prevent leakages / spillage during the operation phase. This must also include a maintenance and monitoring plan for the sewer system.
- Sewer lines and pipes must be equipped with all necessary access chambers in order to prevent / facilitate repairs of blockages in the lines which may lead to overflowing.
- During the construction phase all equipment must be maintained. The necessary precautionary measures must be taken for example; drip trays must be used to protect soil against spillages of hazardous chemicals. Furthermore all hazardous substances must be stored in a demarcated area lined with an impermeable floor and walls with sufficient capacity in terms of storage.
- Any leakage / spillage events must be reported immediately and the contaminated / affected soil must be removed and disposed of as hazardous waste.

11.2 Climate

It is not expected that the proposed development will have any impact on the climate of the area.

11.3 Air Quality and noise

The following air quality and noise related impacts have been identified and may occur as a result of the construction and operation phase of the proposed development;

- The majority of air quality and noise impacts will occur during the construction phase of the proposed development.
- Air quality impacts will be due to the operation of construction vehicles, the clearance of vegetation and other related construction activities.
- Noise impacts will be elevated during the construction phase due to construction activities.

- Noise impacts during the operational phase of the proposed development may be slightly elevated due to increase housing activities and additional vehicles and traffic in the area.

Table 22. Air Quality and Noise Assessment								
Proposed Development	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Significance
Preferred Alternative	1	3	2	2	4	4	4	8
Mitigated	1	2	1	1.3	3	3	3	3.9

As depicted in **Table 22** the environmental significance of the air quality and noise impacts related to the proposed development can qualitatively be described as Low-Medium. The possible impact is of a very low order without mitigation and therefore likely to have very little real effect. Mitigation measures should be investigated and management measures should be implemented in order to reduce risk where possible.

11.3.1 Proposed Mitigation Measures

- In order to reduce dust emissions on the site during the construction phase of the proposed development dust suppression should be implemented.
- Strict adherence to speed limits on site can ensure minimum travel speeds of vehicles as well as minimum noise and dust levels.
- Construction activities should be avoided during very windy conditions.
- Vehicles and construction equipment should be serviced on a regular basis in order to reduce emissions during operation.
- No open fires or waste burning should be allowed on site.
- Noise levels can be kept to an acceptable minimum by restricting the use of construction vehicles and noisy activities to normal working hours.

11.4 Ground and Surface Water

The following ground and surface water related impacts have been identified and may occur as a result of the construction and operation phase of the proposed development;

- Contamination due to spillages of hazardous chemicals or substances during the construction phase.
- Surface water resources downstream of the proposed development could be contaminated / silted due to surface water runoff during rain events.
- Contamination of ground and surface water during the construction phase by waste as a result of incorrect or inappropriate storage practices.
- Contamination of ground and surface water due to sewage leaks during construction and operation.

Table 23. Ground and Surface water Assessment								
Proposed Development	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Significance
Preferred Alternative	3	4	2	3	3	3	3	9
Mitigated	2	2	1	1.6	2	2	2	3.2

As depicted in **Table 23** the environmental significance of the ground and surface water impacts related to the proposed development can qualitatively be described as Low-Medium. The possible impact is of a very low order without mitigation and therefore likely to have very little real effect. Mitigation measures should be investigated and management measures should be implemented in order to reduce risk where possible. A monitoring system can also be implemented to further reduce risk.

11.4.1 Proposed Mitigation Measures

- Potentially hazardous substances must be stored on an impermeable surface inside a bunded area to prevent seepage of the substance and pollution of the groundwater.
- In the event of spillages of any potentially hazardous substances the area should be cleaned immediately by removing the spill and the contaminated soil and disposing thereof as hazardous waste.

- Proper engineering and maintenance and management of the sewage systems must be conducted / implemented. Sewer systems should be inspected and cleaned regularly.
- Adequate storm water management measures and systems must be implemented and maintained before and during construction as well as the operational phase of the proposed development.
- Good housekeeping measures should be implemented to prevent general waste and littering from occurring in the surrounding surface water resources.

11.5 Land Use

The following land use impacts have been identified and may occur as a result of the construction and operation phase of the proposed development;

- The land use will be changed due to the proposed development from vacant to residential.

Table 24. Land Use								
Proposed Development	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Significance
Preferred Alternative	3	3	3	3	5	5	5	15
Mitigated	2	2	1	1.6	5	4	4.5	7.2

As depicted in **Table 24** the environmental significance of the Land Use impacts related to the proposed development can qualitatively be described as Medium - High. The possible impact is real and substantial in relation to other impacts and can pose a possible risk. Management measures must be improved in order to reduce risk. With the correct mitigation measures the impact can be reduced to Low – Medium.

11.5.1 Proposed Mitigation Measures

- The sense of place should be protected during all phases of the proposed development by not disturbing sensitive areas on the site.

- Good housekeeping should be ensured during the construction phase in order to keep the area clean – refuse removal should be conducted on a regular basis.

11.6 Vegetation and Animal Life

The following impacts on the vegetation and animal life of the proposed site have been identified and may occur as a result of the construction and operation phase of the proposed development;

- During the construction phase approximately 39ha of indigenous vegetation will be removed.
- Transformation of the land will occur.
- Vegetation growth as well as the habitats of certain species will be disturbed.
- Destruction of habitat and loss of animal life.
- The growth and distribution of alien plant species.
- Loss of vegetation due to fires made on-site during the construction phase.
- The degradation of excluded areas within the proposed development during construction as well as during the operational phase.

Table 25. Vegetation								
Proposed Development	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Significance
Preferred Alternative	3	3	3	3	4	5	4.5	13.5
Mitigated	2	2	1	1.6	3	4	3.5	5.6

As depicted in **Table 25** the environmental significance of impacts on the vegetation related to the proposed development can qualitatively be described as Medium. The possible impact is real and substantial in relation to other impacts furthermore the impact may pose a risk. Management measures must be improved in order to reduce risk. With the correct

mitigation measures the impact can be reduced to Low – Medium.

11.6.1 Proposed Mitigation Measures

- Excluded areas should be treated as no-go areas during the construction phase and kept as natural areas (this includes not utilizing the areas for stockpiling, laydown areas, parking or any other activity associated with construction).
- No endangered or protected plant species are to be harmed / removed from the site. In the event that such plants are encountered they should be transplanted from the site (a permit should be obtained in order to remove / transplant).
- Alien plant species will be removed before seeding to prevent the spread of these plants to the surrounding environment. Alien vegetation should be controlled throughout the lifetime of the project.
- No open fires will be allowed on the site.
- The hunting, capturing and trapping of fauna should be prevented by making this a punishable offense during the construction phase and inhabitation of the development (capturing and removal is only to be undertaken by a suitable, qualified person).

11.7 Cultural Heritage

The proposed site and surrounding areas are not known for elements of archeological or paleontological value. As far as the palaeontological heritage is concerned, the proposed development may proceed with no additional heritage assessments necessary; however it is strongly recommended that all excavation activities are restricted within the boundaries of the development footprint. Furthermore in the event of archaeological findings (if any), these findings should be recorded and reported to SAHRA. No construction activities in the area may proceed without the authorisation from SAHRA.

11.8 Aesthetics

The following impacts on the aesthetics of the proposed site have been identified and may occur as a result of the construction and operation phase of the proposed development;

- The natural environment will be changed in to a residential development.
- During the construction phase of the proposed development there will be a negative impact on the aesthetics of the surrounding land owners.
- During the construction phase there may also be a negative visual impact on surround land and road users.

Proposed Development	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Significance
Preferred Alternative	2	3	2	2.3	5	4	4.5	10.35
Mitigated	1	3	1	1.6	3	2	2.5	4

As depicted in **Table 26** the environmental significance of impacts on the aesthetics related to the proposed development can qualitatively be described as Medium. The possible impact is real and substantial in relation to other impacts. Management measures and monitoring must be implemented in order to reduce risk. With the correct mitigation measures the impact can be reduced to Low.

11.8.1 Proposed Mitigation Measures

- During the construction phase of the proposed development the site should be kept clean at all times and solid and building waste must be removed on a regular basis.
- A Landscape and maintenance monitoring and rehabilitation plan can be incorporated during and after the construction phase.

- Contractors should strictly adhere to the EMP and also make sure that they implement best practices throughout the construction phase.

11.9 Traffic

The following traffic impacts have been identified and may occur as a result of the construction and operation phase of the proposed development;

- During the operational phase of the proposed development traffic volumes may increase substantially due to an increase in road users and service delivery related traffic.
- The inability of the existing access road to handle additional traffic volumes during the operational phase.
- Traffic disruption for residents during the construction phase by construction vehicles.

Proposed Development	Severity	Duration	Extent	Consequence	Frequency	Probability	Likelihood	Significance
Preferred Alternative	3	4	2	3	5	4	4.5	13.5
Mitigated	1	3	1	1.6	3	2	2.5	6.4

As depicted in **Table 27** the environmental significance of impacts on the aesthetics related to the proposed development can qualitatively be described as Medium. The possible impact is real and substantial in relation to other impacts. Management measures and monitoring must be implemented in order to reduce risk. With the correct mitigation measures the impact can be reduced to Low - Medium.

11.9.1 Proposed Mitigation Measures

- During the construction phase construction vehicles should limit / schedule their transport activities outside of peak traffic hours.
- The implementation and construction of additional traffic lights as well as the broadening of the R700

along with stricter speed limit enforcement strategies can help to manage and alleviate the traffic impacts during the operational phase of the proposed development.

12. ASSUMPTIONS, UNCERTAINTIES OR GAPS IN KNOWLEDGE

Assumptions:

- The scope is limited to assessing the potential impacts associated with the proposed development; therefore the effect on the surrounding environment is based on the current land use.
- All information provided by MDA and specialists involved is deemed valid and correct at the time it was provided.
- During the public participation process, no indigenous local information surfaced, it is assumed that there are no sensitive cultural sites on the proposed site.
- The EAP does not accept any responsibility in the event that additional information comes to light at a later stage of the process.

Limitations / Uncertainties:

- None at this stage.

13. ENVIRONMENTAL MANAGEMENT PROGRAMME

The EMPr (**Annexure L**) has been included in the EIA phase of the proposed development.

13.1 Objectives of the EMPr

The EMPr aims to fulfil the requirements in terms of the National Environmental Management Act (Act 107 of 1998), with the following objectives:

- To identify, predict and evaluate actual and potential impacts on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimizing negative impacts, maximizing benefits and promoting compliance with the principles of environmental management;
- To identify and employ the modes of environmental management best suited to ensuring that the activity is pursued

in accordance with best environmental management practices;

- To be able to respond to unforeseen events; and
- To provide feedback on compliance.

13.2 Implementation of the EMPr

The applicant, namely Hennie Lambrechts Argitekthe is responsible for the implementation of the EMPr. All contractors should be supplied with a copy of the EMPr and should ensure that construction staff adheres to the mitigation measures.

14. ENVIRONMENTAL AWARENESS PLAN

14.1 Objectives of the Environmental Awareness Plan

It is important that the employees understand how each action of the project may influence the environment. It is just as important that each person understand the management strategies as it ensures that the impact on the environment is kept to a minimum.

The Environmental Awareness Plan should be sufficient to make all those involved in the proposed project aware of the risks that may occur as well as the necessary mitigation required to minimise the risks involved. Please refer to **Annexure M** for the Environmental Awareness plan.

15. ENVIRONMENTAL IMPACT STATEMENT

Unfortunately during any development it is impossible to entirely avoid negative environmental impacts. Therefore it is of utmost importance that these negative environmental impacts should be minimised and limited by using appropriate mitigation and management measures.

Following the scoping phase of the EIA process a number of environmental impacts, concerns and issues were identified. These impacts, issues and concerns were found to most certainly occur during the construction and operational phases of the proposed development.

The identified impacts, concerns and issues are shortly listed below;

- Loss of Topsoil,
- Possible changes in soil characteristics,
- Surface flooding,
- Air Quality impacts,
- Elevated noise impacts,
- Ground and Surface water contamination,
- Flooding and erosion,
- Habitat disturbances affecting fauna and flora species,
- Aesthetic impacts,
- Traffic impacts,
- Possible damage / destruction to unfound heritage sites.

Following the assessment process of the identified impacts it was found that the majority of the identified impacts can be reduced in terms of environmental significance ratings to Low or Low-Medium. This can be done by using certain mitigation and management tools along with very strict adherence to the final EMP. Thus impact occurrence due to the proposed development can be minimised to a great extent and furthermore also be limited to site specific and local extents.

Other issues and concerns that were raised also related to the MMM's ability to accommodate and supply Bulk Civil Services to the proposed development. In order to determine if the MMM has efficient capacity to effectively accommodate the proposed development the following specialist inputs were included;

- **Bulk Civil Services**

The availability of sufficient water supply to the proposed development was deemed currently insufficient. It was thus concluded that in order to ensure sufficient water supply to the proposed development alternative supply possibilities must be investigated. Based on findings, the available information and their calculations the existing sewer infrastructure has insufficient capacity to accommodate the additional sewage runoff that will be generated from the proposed development. Furthermore bulk upgrades will be required in order to accommodate additional flows. After investigating the surrounding available storm water channels, available storm water infrastructure and calculating the expected storm water flow from the development Ivoyo concluded

that in their opinion the current storm water infrastructure available will be sufficient and that by applying the pre-set design principals the risk of flooding in lower laying properties can be minimized.

- **Electrical Services Report**

It is the intention that the Olea drive (future) primary substation and the Somerton primary substation be connected via a secondary 11 kV cable traversing the proposed development and picking up a load of 3.5 MVA. To provide for the De Kloof load in excess of 3.5 MVA the developer will have to provide a (third) primary substation.

- **Traffic**

Impacts Study: The proposed development will not be approved or continue without compliance with the strict Regulations of the Transport Planning Division in terms of capacity and other transport related aspects. However the current direct existing access (via the R700) is deemed sufficient in order to accommodate the additional expected traffic volumes associated with the proposed development.

The full reports with technical information and recommendations are available in **Annexures H to Annexure K**. It should be noted that during the Town Planning Application process these issues will be resolved and a consensus will be reached before the application will be approved. Prior to this phase the development will not proceed.

Other Specialist studies undertaken as part of the EIA process included the following;

- Ecological Assessment
- Geotechnical Investigation
- Archaeological Assessment.

The main purpose of the project is to provide more housing to Bloemfontein to ensure a continuous expansion of available housing for the community. The planning of the residential development has been undertaken in conjunction with the ecological assessment and as a result the most sensitive areas have been excluded from development and will be retained as private open space. The proposed layout will thus result in the lowest impact as long as other mitigation measures such as transplanting of protected species are also adhered to.

Furthermore the site is also regarded as of low palaeontological significance with regards to the superficial residual soils capping the dolerite in places (Quaternary overburden). This is mainly due to a lack of suitable alluvial / fluvial deposits at the site. As far as the palaeontological heritage is concerned, the proposed development may proceed with no additional heritage assessments necessary, provided that all excavation activities are restricted to within the boundaries of the development footprint.

The proposed site in light of all the above is suitable for the proposed development. This can mainly be attributed to the compatibility of the proposed development with the surrounding area.

Development in Bloemfontein has been taking place at a high rate in the northern suburbs. This trend is easily observable due to a number of new developments and upgrading in these areas. The area is characterised by constant upgrading and numerous developments consisting of retail centres, cluster and medium density housing estates. The application property is included in the "Urban Edge" of the Spatial Development Framework (SDF) of the (MMM) and the application property is earmarked in the said SDF for future residential development.

It can be concluded from the current land uses surrounding the site that there is in fact a need / demand for housing options in this area. The site is extremely well located for this type of development given numerous favourable locality aspects such as;

- **Access**

Easy access from the R700 (Kenneth Kaunda Road) and access to the development will be obtained from the T185, which turns from the R700 (Kenneth Kaunda Road Extension).

- **Surrounding land uses**

The proposed development is surrounded by residential developments to the north (Somerton) and the south (Wild Olive). Existing residential, business, office and commercial developments surrounding the proposed development property, make the proposed development suitable to the area. Also, the existing main arterial route in close proximity to the properties as well as already existing business / residential type land uses throughout the area

(especially along the main arterial), plays a deciding role as to the character of the area and therefore land uses.

- **Accessibility of site to amenities**

Easy access is gained from the R700 (Kenneth Kaunda Road) to retail outlets, shopping centres and the CBD gives the site a favourable location.

During the PPP no objections against the proposed development were received. The issues and concerns raised by I&APs have been included in this report as well as the Environmental Impact Assessment.


The proposed development will have a positive contribution on the housing and infrastructure on the urban edge and northern parts of Bloemfontein as well as status of the MMM. Should the no-go alternative be decided on, and the non-commencement of the proposed project occur, there will be a negative impact on the public and the infrastructure of the MMM area.

16. EAP RECOMMENDATION

In our opinion the development is environmentally feasible due to the fact that the majority of environmental impacts can be mitigated to a satisfactory level. However it should be noted that the following recommendations along with the recommendations raised by the various appointed specialists should be deemed important and considered;

- The loss of topsoil during the construction phase should be avoided as far as possible by implementing the mitigation measures as set out in the EMPr.
- Dust suppression and noise management measures must be implemented as per the EMPr.
- No open fires or waste burning should take place on site.
- Potentially hazardous substances should be stored on an impermeable surface and inside a bunded area. In the event of hazardous substance spillage the area must be cleaned immediately and authorities should be notified.
- Adequate storm water management measures and systems must be implemented and maintained before during and after construction activities.

- Good housekeeping measures should be implemented at all times during the construction phase.
- Excluded areas should be treated as no-go areas during the construction phase and kept as natural areas (this includes not utilizing the areas for stockpiling, laydown areas, parking or any other activity associated with construction).
- No endangered or protected plant species are to be harmed / removed from the site. In the event that such plants are encountered they should be transplanted from the site.
- Alien plant species will be removed before seeding to prevent the spread of these plants to the surrounding environment. Alien vegetation should be controlled throughout the lifetime of the project.
- The hunting, capturing and trapping of fauna should be prevented by making this a punishable offense during the construction phase and the operational phase of the development (capturing and removal is only to be undertaken by a suitable qualified person).
- In the event that during the construction phase of the proposed development any archaeological discoveries are made construction works should stop, the findings must be recorded and reported to SAHRA immediately. No construction activities may proceed without authorization from SAHRA.
- During the construction phase construction vehicles should limit / schedule their transport activities outside of peak traffic hours where / if possible.
- The implementation and construction of additional traffic lights as well as the broadening of the R700 along with stricter speed limit enforcement strategies can help to manage and alleviate the traffic impacts during the operational phase of the proposed development.



N. DEVENISH Pr. Pln (A/1133/1999)

MANAGER: TOWN PLANNING / ENVIRONMENTAL

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