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Environmental Impact Assessment Process: Draft Impact Assessment Report

Proposed Cecilia Park Mixed-Use Development, Bloemfontein, Free State Province

DETEA Reference: EMS/11(i)(ii)(vi)(xi),18(i),24,15/14/23

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Prepared for:

Mangaung Metropolitan Municipality
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PURPOSE OF THIS REPORT

The proponent, Mangaung Metropolitan Municipality, proposes to develop a new mixed-use development (hereafter referred to as "the proposed project") in Bloemfontein, Free State Province.

In order to obtain Environmental Authorisation to undertake the construction, Mangaung Metropolitan Municipality is required, in terms of the National Environmental Management Act (Act No. 107 of 1998) (NEMA) Environmental Impact Assessment (EIA) Regulations, to undertake an EIA by conducting a Scoping and Environmental Impact Report (S&EIR) process, together with an Environmental Management Programme (EMPr). The application and Reports must be submitted to the Department of Economic Development, Tourism and Environmental Affairs (DETEA) for authorisation. Mangaung Metropolitan Municipality has appointed Mzansi Africa Civils as the project leader for the proposed project. Mzansi Africa Civils appointed Enviroworks, as the independent consultant to undertake the EIA for the proposed project.

This report constitutes the Draft Environmental Impact Report which is now being made available for public comment. All comments received will be collated in a Comments and Responses Report which will be attached to the Final Environmental Impact Report to be submitted to DETEA.

Interested and Affected Parties (I&APs) are invited to submit written comments on this **Draft EIA Report and its Appendices** to **Johan Botes** at the contact details provided below. Written comments can be submitted by means of email and fax.

The comment period on this report will be from **07/08/2015** to **16/09/2015** (40 calendar days).

An electronic version of this report is available on the following website: **www.enviroworks.co.za.**

I&APs are requested to please include the following information in all written submissions:

- Departmental Reference Number **(DETEA Ref.: EMS/11(i)(ii)(vi)(xi),18(i),24,15/14/23)**
- Your name, contact details (postal address, fax number and e-mail address); and
- An indication of any direct business, financial, personal or other interest which they may have in the application.

ENVIROWORKS ENVIRONMENTAL CONSULTANTS

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Report Review and Quality Management:

	Issue 1	Revision 1	Revision 2	Revision 3
Issue/Revision Name	**Draft EIA Report**	**Draft EIA Report**		
Report prepared/revised by:	**Johan Botes**	**Johan Botes**		
Date:	**22 March 2015**	**3 July 2015**		
Signature:				
Report reviewed by:	**Adel Groenewald**	**Adel Groenewald**		
Date:	**23 March 2015**	**5 July 2015**		
Signature:				

EXECUTIVE SUMMARY

Background and Introduction

Mangaung Metropolitan Municipality is proposing to establish a new mixed use development called Cecilia Park. This newly proposed mixed use development will consist of GAP housing, low -, medium -, and high residential developments, light industrial areas and commercial properties. The term GAP housing refers to income earners who earn too much to get a free house from the government and earn too little to get a bank bond. The main purpose of GAP housing is to provide households, earning between R 3 000 and R 15 000, the opportunity to also partake in the housing market by means of purchasing a house. Although the internal / central part of the development will consist of GAP residential development, the outer part of the development will include light industrial areas, commercial properties as well as residential areas for low -, medium -, and high income residents. For this reason, the development can be seen as a mixed use development. The proposed development is proposed to be constructed on the following properties South of Langenhovenpark;

- Remainder of the Farm Cecilia no. 2352;
- Remaining Extent of the Farm Bloemfontein no. 645;
- Portion of the Farm Kwaggafontein no. 2300.

The development will also be designed to include approximately 37Ha open space. The role of these open spaces inside urban edges include, but is not limited to the following; to preserve ecological integrity, to serve as areas for recreational and sport activities, sacred spaces, etc.

Manguang Metropolitan Municipality will construct and provide all infrastructure for the above mentioned mixed use development. This include:

- The construction of roads;
- The provision of electricity;
- The provision of water;
- The provision of sewage pipelines;
- Zoning of properties, and
- Waste management.

The proposed activity triggers a full Environmental Impact Assessment (EIA) which is being undertaken in terms of the National Environmental Management Act (NEMA) (Act No. 107 of 1998) EIA Regulations. The Department of Economic Development, Tourism and Environmental Affairs is the competent decision making authority for this EIA application.

Enviroworks Environmental Consultants was appointed to conduct this EIA process in line with the requirements of NEMA, as amended.

Brief Project Description

As mentioned above, the proposed project entails the development of residential and light industrial facilities. In other words, mixed use development with the aim of providing GAP housing to people earning an income between R3000 and R15000 per month.

This mixed use development will cover an area of approximately 170 Ha (hectares) and will consist of the following:

Usage:	Number of Erven:	Area (Ha)	Land Occupation (%)
Public Open Space	2 Stands	36,3467 Ha	21,3 %
Single Residential 2	950 Stands	69,4580 Ha	40,7 %
General Residential 2	38 Stands	14,4262 Ha	8,5 %
Business	4 Stands	5,7168 Ha	3,4 %
EDUCATION Primary School	2 Stands	4,3610 Ha	2,6%
EDUCATION Crèche	3 Stands	0,9528 Ha	0,6 %
Public Buildings	4 Stands	1,5979 Ha	0,9 %
Municipal Purposes			
Workshops	4 Stands	1,2979 Ha	0,8 %
Garage 2	1 Stand	0,4882 Ha	0,4 %
Streets		36,3467 Ha	20,8 %

Total Mixed use development:	1000	170,6016 Ha Ha	100 %

Erven / Stand will then be sold to interested developers in order to develop stands to meet the set out zoning requirements.

Need and Desirability Summary

The Mangaung Metropolitan municipality, especially Bloemfontein, has a major backlog, with regards to housing, in comparison with other municipalities in the Free State. This is particularly due to the fact that most of the residents reside in Bloemfontein and is driven by the fact that Bloemfontein is seen as the economic hub with better working opportunities. According to Stats SA (Statistics South Africa), the 2011 census indicated that 84,4% of residents reside within formal settlements in the urban context. The 1996 census indicated that 71.3% of residents reside within formal settlements in the urban context. This shows a growth of 0.6% between 1996 and 2001 and a growth of 12.5% between 2001 and 2011 (MMM`s IDP, 2013).

According to the Mangaung Metropolitan Municipality`s Integrated Development plan (IDP) of 2013, the municipalities primary task is to provide basic services to its clients, being households and businesses. Part of the Cecilia Park mixed use development, the MMM will develop the following basic services and infrastructure the service the Cecilia Park suburb:

- The provision of electricity;
- The provision of water;
- The provision of sewage pipelines;
- Zoning of properties, and
- Waste management.

The MMM`s IDP (2013) set target is to provide 20 000 housing opportunities within the next five years. The Cecilia park development forms part of this target and will contribute to housing shortages.

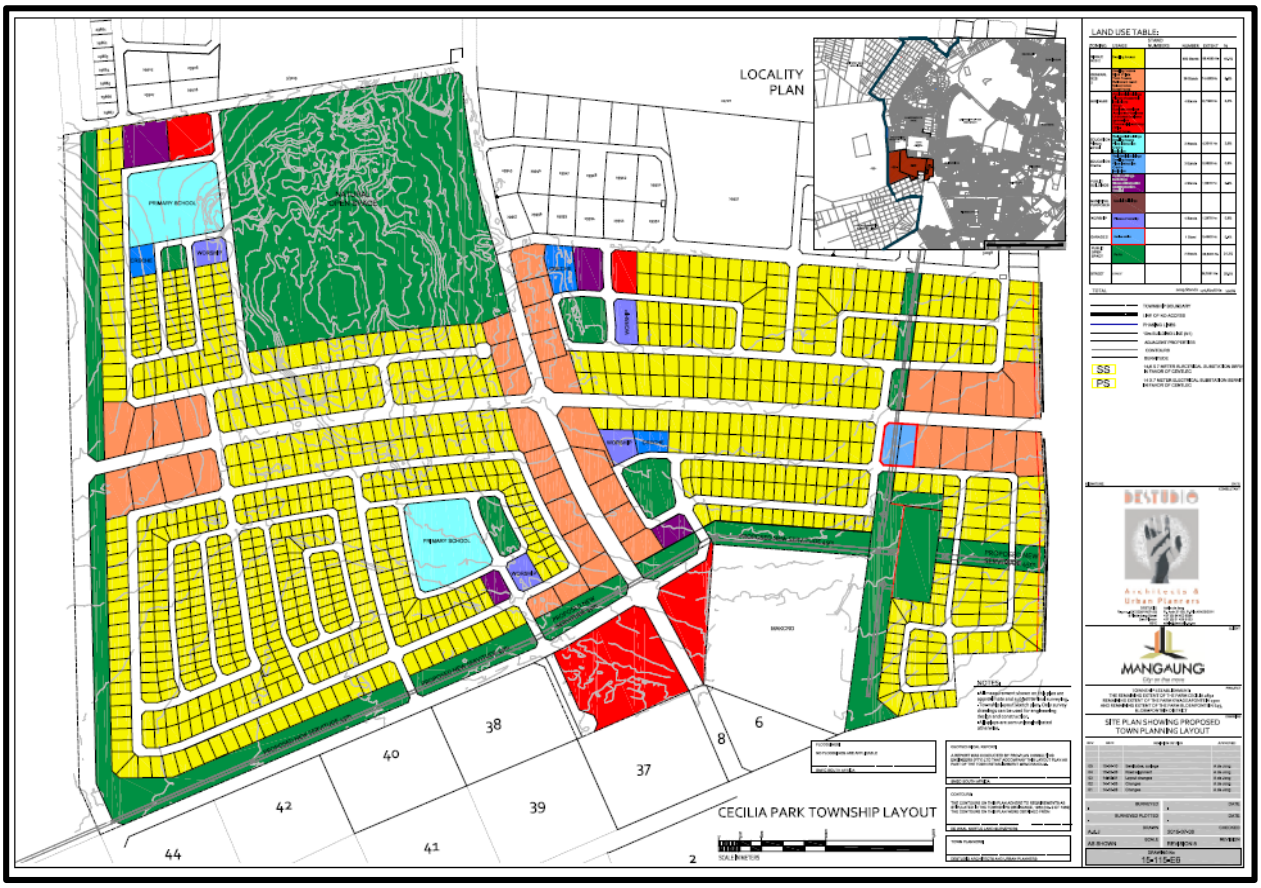
Alternatives Considered

In terms of Environmental Impact Assessment (EIA) regulation, the Environmental Assessment Practitioner (EAP) should investigate feasible and reasonable alternatives for the proposed project. In other words, different means of meeting the requirements for the activity. For this reason, the EAP identified the following Layout Alternatives.

Layout Alternatives

Alternative 1 (Preferred Alternative) - A1

The proposed Layout alternative 1, as indicated in the image below, is regarded as the preferred layout, mainly due to the incorporation of single residential zoning stands as prescribed in the Mangaung Metropolitan Municipalities' (MMM) Spatial Development Framework (SDF). This will provide for higher density accommodation opportunities which will contribute to the housing shortages in the Mangaung Metropolitan Municipality area. According to the MMM SDF at least 30% of the new development must include single residential zonings.



Advantages (A1):

- The property includes more open / green spaces for sport and recreational activities;
- Traffic flow will be enhanced due to better linkages of internal and external roads;
- 30% of the development will include single residential zonings;
- Higher density provides more efficient infrastructure, public transport and lower development cost per unit.

Disadvantages (A1):

- The area will be highly dense.

Alternative 2 - A2

The proposed Layout alternative 2, as indicated in the picture below, differs from alternative one. Alternative 2 does not include any single single residential zonings which is in contrast with the SDF, stating that at least 30% must be single residential zoning units. Alternative 2 does not have as much open / green spaces as Alternative 1. Public transport will not be as sufficient as alternative 1 due to the fact that alternative two is not as highly dense as alternative 1

Advantages (A2):

- The density of the area will be less than that of alternative 1.

Disadvantages (A2):

- This alternative, does not include as much open / green spaces as the preferred alternative;
- The rectangular design will lead to a slightly higher traffic impacts in the area;
- The layout has no single residential zonings which is in contrast with the SDF, stating that at least 30% must be single residential zoning units.

No-Go Alternative

Should the proposed Cecilia Park mixed use development not take place, a shortage in housing will remain a matter of concern for the Mangaung Metropolitan Municipality. Informal housing will

continue to arise which will have an impact on the economic growth of the area. The development of housing opportunities in the Magaung Metropolitan Municipality is of high priority, and is also indicated in the IDP and SDF.

The alternatives as described above will be assessed in the below Impact Assessment Report to determine the best suitable option.

Summary of Baseline Environment

The newly proposed Cecilia Park development is located on the Remainder of the Farm Cecilia no. 2352; Remaining Extent of the Farm Bloemfontein no. 645; and a Portion of the Farm Kwaggafontein no. 2300 to the West of Bloemfontein, Free State Province.

These properties fall within the Grassland Biome which is classified as the endangered Bloemfontein Dry Grassland vegetation type.

The Eastern part of the remainders of the farms Cecilia and Bloemfontein have been disturbed by means of previous farming, borrow pits, vehicle tracks, exotic trees and the dumping of solid waste. However, the western part of the farm Cecilia and the majority of the portion of the Farm Kwaggafontein are in pristine condition and sets a good example of the Bloemfontein Dry Grassland Vegetation type.

Specialist Studies

A Specialist studies was commissioned to feed into the EIA process. Below is a summary of the specialist studies conducted and the main findings thereof.

Specialist Study	Specialist and Company Name	Main findings
Heritage Impact Assessment	Dr. Lloyd Rossouw - Paleo Field Services	"The natural terrain has been altered by previous agricultural activities (quarry and gum tree grove) and subsequent human impact resulting from various recreational activities (drive – in, quad-biking and 4x4 trails)" "The paleontological significance of the sedimentary bedrock in the region is considered high. However, the northern and north-western part of the Kwaggafontein 8 and Cecilia portions as well as the southern part of the Bloemfontein portion is underlain by intrusive igneous dolerites which are considered to be of low paleontological significance". "It is unlikely that the proposed development will affect paleontological heritage resources within the overlying Quaternary soils due to the disturbed condition of the substrate and the absence of suitable Quaternary-aged alluvial contexts at the site. The paleontological significance of the unconsolidated Quaternary soils is therefore considered as low".
Ecological and Wetland Impact Assessment	Prof. Johann Du Preez - Enviro-Niche Consulting	"No protected species occur on the site and there are no sensitive drainage lines at the Cecilia Park or in its direct vicinity. It is recommended that measures to control erosion must always be applied. No dumping of building waste or spoil material from the development should take place on the site. Weed control measures must be applied to eradicate the noxious weeds especially Satansbos (Solanum elaegnifolium). A search & rescue operation must be done to translocate protected species before construction phase starts".
Geohydrological Impact Assessment	Mr. Christiaan Vermaak - Tucana Solutions	The study area is situated on a minor aquifer system which is associated with boreholes with a yield between 0.6 and 1.5 l/s. More than 9 boreholes were observed in the immediate vicinity of the study area. Groundwater are utilized on small scale and it is mainly used for garden and agricultural purposes. On average the groundwater level is relatively deep (16.03 mbgl) which imply a relatively thick buffer between surface and groundwater. From a geohydrological point of view the proposed area is suitable for the proposed township establishment, with the following recommendations in mind: The greater part of the area will be suitable for the proposed development with the challenge of shallow dolerite in some of the indicated areas.

Geo-technical survey	Mr. Richard Roberts - SMEC	For the "shallow dolerite" area, earthworks are required to create building platforms and to remove any waste material from the site. Levelling of this area and compaction of the granular soils to 93% MOD AASHTO density at -1 to +2% of o.m.c are recommended, such that normal foundations at nominal depths may be deployed. Such site preparations would constitute NHBRC Soil Class S in accordance with the NHBRC manual. Areas covered by clayey sand or sandy clay, recommendations for foundations based on the NHBRC manual for the assumed NHBRC Soil Class C2 and H2 are Stiffened strip footings, stiffened or cellular raft and Soil raft.
Traffic Impact Assessment	Mr. Koot Marais – KMA Consulting Engineers	"The development could generate 3423 trips during the morning peak and 4669 trips during the afternoon peak hours. To ensure acceptable levels of service at the analysed intersections significant improvements will be required at most analysed intersections. The township layout (Preferred alternative) is in principle acceptable, although some aspects might be slightly less standard due to the specific urban design. Based on the conclusions it is recommended that the development (Preferred Alternative) in principle be approved from a traffic point of view".

Impact Assessment Summary

The tables below provide a summarised comparative assessment of the potential positive and negative impacts of the proposed project, with and without the implementation of mitigation measures.

Comparative Assessment of Construction and Operational Phase Project Implications (Potential Impacts):

Summary of Construction Phase Impacts:

Potential Impacts on Ground and Surface Water Quality			
Potential impacts on Ground and Surface Water:	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (52)	Medium (52)	-
Cumulative impact post mitigation:	Low	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (26)	Low (26)	-

Potential Flora Impacts			
Potential impacts on terrestrial flora:	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium High (80)	Medium High (80)	-
Cumulative impact post mitigation:	Low	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (36)	Low (36)	-
Potential Fauna Impacts			
Potential impacts on Fauna species:	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (18)	Low (18)	-
Cumulative impact post mitigation:	Low	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (9)	Low (9)	-
Waste Management Impacts			
Potential impacts on local resources due to inadequate waste management:	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (70)	Medium (70)	-
Cumulative impact post mitigation:	Low	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (36)	Low (36)	-
Potential Traffic Impacts			
Potential impacts on Traffic:	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (64)	Medium (64)	-

Cumulative impact post mitigation:	Low (L)	Low (L)	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (36)	Low (36)	-
Potential Cultural, Historical and Archaeological Impacts			
Potential impacts on Cultural, Historical and Archaeological aspects	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (10)	Low (10)	-
Cumulative impact post mitigation:	Low	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (8)	Low (8)	-
Potential Air Quality Impacts			
Potential impacts on Local Air Quality Standards:	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (45)	Medium (45)	-
Cumulative impact post mitigation:	Low	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (34)	Low (34)	-
Potential Geological Impacts			
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (30)	Low (30)	-
Cumulative impact post mitigation:	Low	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (18)	Medium (18)	-
Potential Topography Impacts			

Potential impacts on Topographical conditions:	Layout Alternatives 1 (A1)	Layout Alternatives 2 (A2)	No-Go Alternative
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (18)	Low (18)	-
Cumulative impact post mitigation:	Low	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (9)	Medium (9)	-
Potential Topsoil and Land use Impacts			
Potential impacts on Topsoil and Land use conditions:	Layout Alternatives 1 (A1)	Layout Alternatives 2 (A2)	No-Go Alternative
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (56)	Medium (56)	-
Cumulative impact post mitigation:	Low	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (40)	Medium (40)	-
Potential Noise Impacts			
Potential impacts on Noise conditions:	Layout Alternatives 1 (A1)	Layout Alternatives 2 (A2)	No-Go Alternative
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (56)	Medium (56)	-
Cumulative impact post mitigation:	Medium	Medium	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (42)	Medium (42)	-
Potential Visual Impacts			
Potential impacts on Visual conditions:	Layout Alternatives 1 (A1)	Layout Alternatives 2 (A2)	No-Go Alternative
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (64)	Medium (64)	-
Cumulative impact post mitigation:	Medium	Medium	-

Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (52)	Medium (52)	-
Potential Positive Socio Economic Impacts			
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)`	High + (100)	High + (100)	Medium (70)
Cumulative impact post mitigation:	High (+)	High (+)	
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	High (+) (112)	High (+) (112)	
Potential Negative Socio Economic Impacts			
Potential impacts on Socio Economy conditions:	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (48)	Medium (48)	-
Cumulative impact post mitigation:	Low	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (39)	Medium (39)	-

Summary of Operational Phase Impacts:

Potential Visual Impacts			
Potential impacts Visual Standards:	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium High (84)	High (115)	-
Cumulative impact post mitigation:	High	High	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium High (76)	High (102)	-
Waste Management Impacts			

Potential impacts on waste management:	Layout Alternatives 1 (A1)	Layout Alternatives 2 (A2)	No-Go Alternative
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium High (80)	Medium High (90)	-
Cumulative impact post mitigation:	Medium High	Medium High	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (69)	Medium High (76)	-
Potential Traffic Impacts			
Potential impacts on Traffic:	Layout Alternatives 1 (A1)	Layout Alternatives 2 (A2)	No-Go Alternative
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (68)	Medium-high (80)	-
Cumulative impact post mitigation:	Low	Medium	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (46)	Medium (53)	-
Potential Positive Socio Economic Impacts			
Potential impacts on Socio Economic conditions	Layout Alternatives 1 (A1)	Layout Alternatives 2 (A2)	No-Go Alternative
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)`	Very High + (125)	High + (115)	Medium (68)
Cumulative impact post mitigation:	Very High +	Very High +	
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Very High + (136)	Very High + (126)	
Potential Negative Socio Economic Impacts			
Potential impacts on Socio Economy conditions:	Layout Alternatives 1 (A1)	Layout Alternatives 2 (A2)	No-Go Alternative
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (60)	Medium (60)	-
Cumulative impact post mitigation:	Medium	Medium	-

Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (52)	Medium (52)	-

Public Consultation Process

A comprehensive public participation process was conducted to ensure that all interested and affected parties were informed of the proposed development and given the opportunity to raise their concerns and/or comments. The following Interested and Affected Parties (I&APs) were afforded the opportunity to raise their comments during the previous phases of the EIA, which included the Draft Scoping Report and Final Scoping Report.

Interested and Affected Parties

A list of I&APs identified is provided below:

- **Government Authorities & Parastatals:**

Company / Organization / Ward	Contact Person
ESKOM	Xolisa Songcaka
Department of Water Affairs	Vernon Blair (Deputy Director)
Department of Water Affairs	Pius Lerotholi
Free State Department of Health	Dr. David Motau
SANRAL	Ms. Victoria Bota
Free State Department: Police, Roads and Transport	Mr. S. Msibi (HOD)
Department of Economic Development, Tourism and Environmental Affairs	Ms. Nthabeleng Mahase
Free State Department: Human Settlements	Mr Nthimotse Mokhesi (HOD)
Free State Department: Public Works	Mr. Maditse Wessels Seoke (HOD)
Free State Department: Social Development	Ms Matilda Gasela (HOD)
Free State Department: Sport, Arts, Culture and Recreation	Adv Tsoarelo Malakoane (HOD)
Centlec	Mamello Mpholo

Landowner (MMM)	Mr. Kaba Kabagambe

- **Local Authorities:**

Company / Organization / Ward	Contact Person
Mangaug Metropolitan Municipal Manager	Sibongile Mazibuko
Mangaung Metropolitan Municipal Environmental	Mpolokeng Kolobe
Ward councillor (Ward 26)	Hendrik van Niekerk
Central University of Technology	Ric Pengilly
Zoo Manager	Darrel Barnes
Heritage Free State	Ntando PZ Mbatha (Heritage Coordinator)

- **Companies / Associations**

Company / Organization / Ward:	Name and Surname:	Contact number:	Email:
Makro	J. le Roux	051 1011012	jleroux@makro.co.za
iTau	Karin Bezuidenhoud	051 8752786	karin@itau.co.za
MAN	Karel van Heerden	051 5032503	
Resident	Stefan Hatting	051 444 6365	
Cori Draft	Sarel Diederiks	082 689 5269	sareld@live.com
Mafunyane	George Barkhuizen	083 454 945	gbark@aimonline.co.za
Freight	Wouter Theron	076 302 0045	wouter@fastfrieght.co.za
KN Grain	Pieter Greyvenstein	082 7744382	pieterg@lantic.net
Desleys	D. Robertson	082 9997032	
	J. Viljoen	051 813 0100	rainier@pinnicle.co.za
BP Garage	M. MacKenzie	051 523 3970	bpcpm@vodamail.co.za

Stuck in the Mud	IB Oosthuizen	073 514 4567	bfn@sawall.co.za

- **General Public and Registered Interested and Affected Parties**

Organisation	Name	Tel/Cell	Email:
Langenhovenpark Residents Association	Leon Ehlers	084 6666 002	leon@udi.co.za / munette@gmail.com
Private	Kagisho Mokae	083 4289 612	kmokae@gmail.com
Private	Jacques le Roux	-	boskindjlr@vodamail.co.za
Qwaha Trust & Itau Milling Pty. Ltd	Fanti Hatting	082 573 1515	fanti@itau.co.za
BP Filling Station	Cecilia Park Motors	084 404 0466	bpcpm@vodamail.co.za
Langenhovenpark Bewarea	M. Maritz	082 744 4074	lhpbewarea@gmail.com
Telkom	Willem Voigt	081 428 2656	VoigtW@telkom.co.za
Langenhovenpark Residents Association	Annele Rudma	079 503 5531	rudmana@edu.fs.gov.za
Central University of Technology	Rick Pengilly	083 459 9055	rpengilly@cut.ac.za
Sthinya Pty. Ltd.	Thulani Maphalala	072 994 3693	emaphalala@gmail.com
Langenhovenpark Residents Association	Maronel Saaiman	083 793 8422	msaaiman@solar-om.co.za
Mangaung Metropolitan Municipality	M. Ramongalo	051 405 8577	Mpolokeng.kolobe@mangaung.co.za
Ward Councilor	H.J. van Niekerk	082 416 9623	hvn1@vodamail.co.za
Stuck In The Mud	Izak Oosthuizen	086 652 2940	bfn@sawall.co.za
K.S. Msothu Trading Pty Ltd	Kabelo Samuel Msothu	072 959 2620	-
KN Grain Transport Logistics	Pieter Greyvenstein	082 7744382	Pieterg@lantic.net

Public Participation Process to date

The following PPP activities were undertaken as part of the Scoping Phase:

- **Written notification** was sent to:
  - All land owners and occupiers of land adjacent to the location of the proposed development;
  - The relevant ward councillor of Ward 26
  - Relevant authorities.

- **Advertisements** were place in the local newspaper, The Volksblad and Express on Wednesday 19 November 2014;
- A **Background Information Document (BID)** was compiled and sent to all landowners and relevant authorities;
- Registered I&APs were notified of the Draft and Final Scoping Report for public review.

Scoping Phase Public Participation

Public participation undertaken during the scoping phase was characterised by two comment periods, coupled with the dissemination of reports, namely:

- Announcement of the project and opportunity to register as an Interested and Affected Party – 21 Days;
- Draft Scoping Report – 40 Days; and
- Final Scoping Report – 21 Days.

In terms of Regulation 56(8) of GN R. 543 of the EIA Regulations of 18 June 2010, as amended, state departments are to be provided with a comment period of 21 days on draft reports. As such, all parties were given the opportunity to participate during the scoping process.

Draft Scoping Report

Public participation on the Draft Scoping Report (DSR) followed an initial registration period which ran from 19 November 2014 to 10 December 2014. On 13 February 2015, the DSR was circulated for a 40 day comment period which closed on 25 March 2015. The report provided I&APs with a succinct description of the proposed development, description of features of the broad environment and consideration of alternatives and identified potential and anticipated impacts.

During the Public Participation Period on Draft Scoping Report, the EAP held a Public Meeting on 26 February 2015 at 18:00, in the Bunga A auditorium, Braam Fischer Building and gave all Organs of State, Parastatal Entities, Organisations, the General Public and all Registered Interested and Affected parties the opportunity to part take in the meeting by raising their comments and concerns.

The meeting provided all attendants with sufficient background information in order to raise any comments and concerns.

Final Scoping Report

Public participation on the Final Scoping Report (FSR) followed the pubic commenting period on the Draft Scoping Report which ran from 13 February 2015 to 23 March 2015. On 7 April 2015, the Final Scoping Report was circulated for a 21 day comment period which closed on 28 April 2015. The report provided I&APs with a succinct description of the proposed development, description of features of the broad environment and consideration of alternatives and identified potential and anticipated impacts.

Impact Assessment Phase Public Participation

Draft EIA Report

On availability of this Draft Environmental Impact Assessment (EIA) Report, all registered I&APs, Organs of State and stakeholders were notified. All parties are provided 40 calendar days during which to comment on this report.

Copies of the draft and final EIA reports will be made available for review on the Enviroworks website for download at: http://www.enviroworks.co.za/projectdownloads.php under the project name “Cecilia Park Residential Development”.

All public comments will be assimilated into the Comments and Response Report (CRR), which shall provide a summary of issues raised and response given by the Environmental Assessment Practitioner (EAP) and project team. Should comments reflect the need for revisions in the draft report, these shall be addressed. The draft report will be finalised for a final comment period.

Final EIA Report

Once the Final EIA Report is ready for circulation, all registered I&APs will have 21 calendar days in which to comment on the Final EIA Report. On completion of the 21 day period, all comments received will be assembled and sent to the DETEA for consideration in their decision making process.

Notification of Environmental Authorisation

The Department of Economic development, Tourism and Environmental Affairs (DETEA) is mandated as the competent authority.

On receipt and review of the Final EIA Report, the DETEA must grant or refuse authorisation in terms of Regulation 35 of GN R 543 of the EIA Regulations of 18 June 2010, as amended.

The EAP must then inform all I&APs in writing of this decision within 12 days of the date of this notice. Once informed, all parties will be afforded an opportunity to appeal the decision.

Conclusion and Recommendation

This EIA process has assessed impacts associated with the proposed Cecilia Park Mixed Use Development and determined, based on the outcomes of a multitude of contributing information that the proposed development would not result in any impacts that cannot be acceptably mitigated, or fatal flaws and as such may be authorised. The EAP therefore recommends that Alternative 1 (the preferred alternative) be approved for the proposed project.

Way Forward

The project phase within which this report falls is the Draft Environmental Impact Assessment, which couples with it a 40 day I&AP comment period.

This Draft Report will be available on the following website link: **http://www.enviroworks.co.za/projectdownloads.php.**

All comments received during this period will be responded on and addressed in the Final EIA Report, and where appropriate the report will be updated.

On completion of the Final EIA Report, this will be submitted to the DETEA for review. On receipt, the DETEA must review the report and appendices, and do one of the following:

- Accept the report;
- Inform the applicant that the report is being sent for specialist review;
- Request for amendments to be made to the report; or
- Reject the report, should it not materially comply with regulations.

On the issuing of the decision by the DETEA, all I&APs must be notified thereof and be afforded the opportunity to appeal against the decision. The EAP will communicate the decision and appeals process with I&AP's.

Table of Contents

List of Figures

List of Tables

List of Appendices

- **Appendix A** – Locality Maps
    - Appendix A1: Locality Map indicating both properties
    - Appendix A2: Property Alternative 1 (Preferred Alternative (A1)
    - Appendix A3: Property Alternative 2 (A2)
- **Appendix B** – Photo Report
- **Appendix C** – Specialist Report
    - Appendix C1: Ecological and Wetland Report
    - Appendix C2: Heritage Report
    - Appendix C3: Geohydrological Report
    - Appendix C4: Geotechnical Report
    - Appendix C5: Traffic Report
- **Appendix D** – Facility Illustration
    - Appendix D1: Site Layout
        - D1.1: Property Alternative 1 (Preferred Alternative (A1)
        - D1.2 Property Alternative 2 (A2)
    - Appendix D2: Engineering Work
        - D2.1: Electrical Drawings
        - D2.2 Sewer Layout Drawings
        - D2.3 Water Layout Drawings
        - D2.4 Typical Road Cross Section Drawings
- **Appendix E** – Public Participation Report
- **Appendix F** – Environmental Management Programme
- **Appendix G** – CV of the EAP

List of Acronyms and Abbreviations

BID Background Information Document

DEA Department of Environmental Affairs

DETEA Department of Economic Development, Tourism and Environmental Affairs

DWA Department of Water Affairs

EIA Environmental Impact Assessment

EIR Environmental Impact Report

EMPr Environmental Management Program

SR Scoping Report

GIS Geographic Information System

I&APs Interested and Affected Parties

IDP Integrated Development Plan

MMM Mangaung Metropolitan Municipality

NEMA National Environmental Management Act, 1998 (Act No. 107 of 1998)

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

SDF Spatial Development Framework

GLOSSARY OF TERMS

Applicant: Any person who applies for an authorisation to undertake an activity or undertake an Environmental Process in terms of the Environmental Impact Assessment Regulations – National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) as contemplated in the scheduled activities listed in Government Notice (GN) No R. 543, 544 and 545.

Biodiversity: The variety of life in an area, including the number of different species, the genetic wealth within each species, and the natural areas where they are found.

Cultural significance: This means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance

Cumulative Impact: In relation to an activity, cumulative impact means the impact of an activity that in itself may not be significant, but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

Ecology: The study of the interrelationships between organisms and their environments.

Environment: All physical, chemical and biological factors and conditions that influence an object.

Environmental Impact Assessment: In relation to an application, to which Scoping must be applied, means the process of collecting, organising, analysing, interpreting and communicating information that is relevant to the consideration of the application.

Environmental Impact Report: In-depth assessment of impacts associated with a proposed development. This forms the second phase of an Environmental Impact Assessment and follows on from the Scoping Report.

Environmental Management Programme: A legally binding working document, which stipulates environmental and socio-economic mitigation measures that must be implemented by several responsible parties throughout the duration of the proposed project.

Heritage resources: This means any place or object of cultural significance. See also archaeological resources above

Local relief: The difference between the highest and lowest points in a landscape. For this study, it is based on 1:50 000 scale.

Macro-geomorphological: Related to / on the scale of geomorphic provinces. A geomorphic province is a spatial entity with common geomorphic attributes.

Red Data species: All those species included in the categories of endangered, vulnerable or rare, as defined by the International Union for the Conservation of Nature and Natural Resources.

Scoping Report: An “issues-based” report which forms the first phase of an Environmental Impact Assessment process.

1 INTRODUCTION

This section gives a brief background to the proposed project, as well as compliance in terms of Regulation 31 of the EIA Regulations of 2010, and a layout of the report structure.

1.1 Brief Project Introduction and Background

Mangaung Metropolitan Municipality is proposing to establish a new mixed use development called Cecilia Park. This newly proposed mixed use development will consist of GAP housing, low -, medium -, and high residential developments, light industrial areas and commercial properties. The term GAP housing refers to income earners who earn too much to get a free house from the government and earn too little to get a bank bond. The main purpose of GAP housing is to provide households, earning between R 3 000 and R 15 000, the opportunity to also partake in the housing market by means of purchasing a house. Although the internal / central part of the development will consist of GAP residential development, the outer part of the development will include light industrial areas, commercial properties as well as residential areas for low -, medium -, and high income residents. For this reason, the development can be seen as a mixed use development. The proposed development is proposed to be constructed on the following properties South of Langenhovenpark;

- Remainder of the Farm Cecilia no. 2352;
- Remaining Extent of the Farm Bloemfontein no. 645;
- Portion of the Farm Kwaggafontein no. 2300.

The development will also be designed to include approximately 36Ha open space. The role of these open spaces inside urban edges include, but is not limited to the following; to preserve ecological integrity, to serve as areas for recreational and sport activities, sacred spaces, etc.

Manguang Metropolitan Municipality will construct and provide all infrastructure for the above mentioned mixed use development. This include:

- The construction of roads;
- The provision of electricity;
- The provision of water;
- The provision of sewage pipelines;
- Zoning of properties, and
- Waste management.

The proposed activity triggers a full Environmental Impact Assessment (EIA) which is being undertaken in terms of the National Environmental Management Act (NEMA) (Act No. 107 of 1998)

EIA Regulations. The Department of Economic Development, Tourism and Environmental Affairs is the competent decision making authority for this EIA application.

Enviroworks Environmental Consultants was appointed to conduct this EIA process in line with the requirements of NEMA, as amended.

1.2 NEMA Regulation 31 Report Compliance

Regulation 31 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) Environmental Impact Assessment (EIA) Regulations of 2010 provides the content requirements for EIA Reports. The table below lists the relevant requirements, indicates whether the relevant information is included in this report or not, and provides cross-references to where the relevant information can be found in this report and/or its Appendices.

Table 1: Environmental Impact Assessment Report requirements in terms of Regulation 31 of the EIA Regulations of 2010.

Reg.	EIA Report Content	Included (Yes, No or N/A)	Report Section Reference
2(a)	details of: (i) the EAP who compiled the report; and	**Yes**	**Section 2.1**
	(ii) the expertise of the EAP to carry out an environmental impact assessment;	**Yes**	**Section 2.2**
2(b)	a detailed description of the proposed activity;	**Yes**	**Section 4**
2(c)	a description of the property on which the activity is to be undertaken and the location of the activity on the property, or if it is -	**Yes**	**Section 4.1**
	(i) a linear activity, a description of the route of the activity;	**Yes**	**Section 4.2**
	(ii) an ocean-based activity, the coordinates where the activity is to be undertaken;	**N/A**	**N/A**
2(d)	a description of the environment that may be affected by the activity and the manner in which the physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity;	**Yes**	**Section 7**
2(e)	details of the public participation process conducted in terms of subregulation (1). Including - (i) steps undertaken in accordance with the plan of study;	**Yes**	**Section 8**
	(ii) a list of persons, organisations and organs of state that were registered as interested and affected parties;	**Yes**	**Section 8**

Reg.	EIA Report Content	Included (Yes, No or N/A)	Report Section Reference
	(iii) a summary of comments received from, and a summary of issues raised by registered interested and affected parties, the date of receipt of these comments and the response of the EAP to those comments; and	**Yes**	**Section 8**
	(iv) copies of any representations and comments received from registered interested and affected parties;	**Yes**	**Appendix E**
2(f)	a description of the need and desirability of the proposed activity;	**Yes**	**Section 5**
2(g)	a description of identified potential alternatives to the proposed activity, including advantages and disadvantages that the proposed activity or alternatives may have on the environment and the community that may be affected by the activity;	**Yes**	**Section 6**
2(h)	an indication of the methodology used in determining the significance of potential environmental impacts;	**Yes**	**Section 10**
2(i)	a description and comparative assessment of all alternatives identified during the environmental impact assessment process;	**Yes**	**Section 6**
2(j)	a summary of the findings and recommendations of any specialist report or report on a specialised process;	**Yes**	**Section 10.3**
2(k)	a description of all environmental issues that were identified during the environmental impact assessment process, an assessment of the significance of each issue and an indication of the extent to which the issue could be addressed by the adoption of mitigation measures;	**Yes**	**Section 10.5**
2(l)	an assessment of each identified potentially significant impact including - (i) cumulative impacts;	**Yes**	**Section 10.5**
	(ii) the nature of the impact;	**Yes**	**Section 10.5**
	(iii) the extent and duration of the impact;	**Yes**	**Section 10.5**
	(iv) the probability of the impact occurring;	**Yes**	**Section 10.5**
	(v) the degree to which the impact can be reversed;	**Yes**	**Section 10.5**
	(vi) the degree to which the impact may cause irreplaceable loss of resources; and	**Yes**	**Section 10.5**

Reg.	EIA Report Content	Included (Yes, No or N/A)	Report Section Reference
	(vii) the degree to which the impact can be mitigated;	**Yes**	**Section 10.5**
2(m)	a description of any assumptions, uncertainties and gaps in knowledge;	**Yes**	**Section 9**
2(n)	a reasoned opinion as to whether the activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	**Yes**	**Section 11**
2(o)	an environmental impact statement which contain (i) a summary of the key findings of the environmental impact assessment; and	**Yes**	**Section 11.2**
	(ii) a comparative assessment of the positive and negative implications of the proposed activity and identified alternatives;	**Yes**	**Section 11.2**
2(p)	a draft environmental management programme containing the aspects contemplated in regulation 33;	**Yes**	**Appendix F**
2(q)	copies of any specialist reports and reports on specialised processes complying with regulation 32;	**Yes**	**Appendix C**
2(s)	any other matters required in terms of sections 24(4)(a) and (b) of the Act.	**N/A**	
(3)	The EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in sub-regulation 31(2)(g), exist.	**N/A**	

1.3 Report Layout

The table below summarises the content layout of this report.

Table 2: Summary of report content layout.

Chapter	Chapter Heading	Content Summary
1	Introduction	Provides a brief background to the proposed project, and explains the compliance of this report with regards to Regulation 31 of the EIA Regulations of 2010.
2	The Environmental Assessment Practitioner	Provides details of the EAP undertaking this EIA process, and provides information on the expertise of the EAP.
3	Relevant Environmental Legislation and Guidelines	Briefly explains the environmental legislation and listed activities that will most likely be applicable to this proposed project. Also provides a list of the guidelines that are relevant to this EIA process. Possible restrictive Title Deed conditions are also provided, if relevant.
4	Description of the Project and Proposed Activities	Describes the project location, a detailed description of the proposed project, as well as the relevant site infrastructure and services.
5	Need and Desirability of the Project	Explains the need (“timing”) and desirability (“placing”) of the project in line with the applicable Guideline on Need and Desirability.
6	Consideration of Alternatives	Describes those alternatives that have been considered (i.e. identified and investigated), and indicates which alternatives are deemed to be “feasible” and “reasonable”. Also provide a comparative assessment of the potential impacts (i.e. advantages and disadvantages).
7	Description of the Environment	Describes the biophysical, social, economic and cultural aspects of the existing environment.
8	Public Participation Process	Explains the public participation process that is being undertaken as part of this EIA process.
9	Assumptions, Uncertainties and Gaps in Knowledge	Provides the assumptions, uncertainties and gaps in knowledge associated with this EIA process.
10	Environmental Impact Assessment	Provides a summary of the environmental impacts identified during scoping, describes the project phases considered as part of this impact assessment, describes similar activities in the area (for cumulative assessment purposes), describes the impact assessment methodology applied, and assesses the potential impacts associated with the proposed project, without and with mitigation (including alternatives and cumulative impacts).

11	EAP's Professional Opinion and Impact Assessment Statement	Provides the EAP's professional opinion on this proposed project, an Environmental Impact Statement, as well as a conclusion.
12	Declarations	Provides declarations by the Applicant and the EAP.
13	References	Lists all references referred to in this EIA Report

2 ENVIRONMENTAL ASSESSMENT PRACTITIONER

2.1 Details of the EAP

Business name of EAP:	**Enviroworks**
Physical address:	54 Kenneth Kaunda, Bayswater
Postal address:	Suite 116, Private Bag X01
Postal code:	9324
Telephone:	051 436 0793
E-mail:	johan@enviroworks.co.za
Fax:	051 436 0791
EAP Qualifications	BA Honours Environmental Management
EAP Registrations/Associations	IAIA Registration - Membership Number: 4043

2.2 Expertise of the EAP

Johan Botes, is a Senior Environmental Specialist Consultant. His qualifications include an Honours degree in Geography from the University of the Free State and is currently in progress of obtaining his Master's degree with specialisation in Environmental Management. Johan Botes has 3 years of environmental management experience.

Johan Botes also brings with him a strong background in environmental law and monitoring. Johan Botes was previous employment at Savannah Environmental Consultants as an Environmental Control Officer

2.3 Public Participation Officer

The Public Participation Process will be conducted by Johan Botes.

2.4 Details of the Internal Reviewer

Adel Groenewald holds a BSc Geography degree from the University of the Free State. Projects on which Adél acted as the Environmental Assessment Practitioner include:

- the conducting of full EIA's for the proposed construction of two Photovoltaic facilities in the Free State Province;
- the conducting of a Basic Assessment for the proposed construction of a 132kV substation and associated power line in the Free State Province;

- the conducting of a Basic Assessment for a proposed retail and commercial development in the Northern Cape Province.

- The conducting of Basic Assessments for proposed communication towers in the Western Cape Province.

3 RELEVANT ENVIRONMENTAL LEGISLATION AND GUIDELINES

3.1 Constitution of the Republic of South Africa (Act 1808 of 1996)

Section 24 of the Constitution of South Africa provides an "environmental guarantee" clause, which forms the foundation for sustainable development and sound environmental management in South Africa.

Section 24 states that "*every person shall have the right -*

(a) to an environment that is not harmful to their health nor well-being; and

(b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures, that -

(i) prevent pollution and ecological degradation;

(ii) promote conservation; and

(iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."

The following sections provide a brief description of environmental legislation and guideline documents that are applicable to this proposed project.

3.2 Relevant Environmental Legislation

The environmental legislation that are applicable to this proposed development, and that have been considered in the preparation of this Draft EIA Report, are summarised in the table below.

Table 3: Summary of relevant environmental legislation.

Act (and Main Objective)	Relevant Application Process	Responsible Authority	Project Relevance
National Environmental Management Act, Act No. 107 of 1998 (NEMA) **Main Objective:** To provide for co-operative environ-mental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance,	The NEMA EIA Regulations Listing Notices 1, 2 and 3 of 2010 (Government Notices (GN) R 544, 545 and 546, dated 18 June 2010) list several activities for which Basic Assessment or Scoping and EIA processes are required, as are prescribed in the EIA Regulations 2010. A full Scoping and EIA process has to be	The Department of Economic Development, Tourism and Environmental Affairs (DETEA)	The regulations determine what process be required depending on the triggered listed activities of Listing Notice 1 to 3. They also detail the necessary EIA procedures and required information for consideration See **Section 3.2** below for the Listed Activities that are triggered by this proposed project.

Act (and Main Objective)	Relevant Application Process	Responsible Authority	Project Relevance
and procedures for coordinating environmental functions exercised by organs of state; and to provide for matters connected therewith.	undertaken and subsequent environmental authorisation has to be obtained from the decision-making authority before the proposed project may be developed. This Draft EIA Report forms part of the required full Scoping and EIA process.		**Enviroworks Environmental Consultants** is the EAP responsible for the above application process.
National Heritage Recourses Act, Act 1999 (Act. 25 of 1999) **Main Objective:** To preserve and protect the counties cultural heritage.	Section 38(1) of the National Heritage recourses Act, Act 1999 (Act 25 of 1999) sets out activities that may not commence without inputs from the relevant Heritage Authority.	Heritage Free State	The proposed project will trigger Section 38 (1) (a);(b);(c)(i)(ii); and (d) that is listed under section 38 of the National Heritage Resources Act, 1999 (Act. 25 of 1999); inputs from Heritage Free State is therefore required.
National Water Act, Act 1998 (Act. 36 of 1998) **Main Objective:** The main purposes of the National Water Act, Act 1998 (Act. 36 of 1998) are to conserve and protect all water bodies and to regulate the use of water in the country.	Section 21 of the National Water Act, Act 1998 (Act. 36 of 1998) sets out different water uses which may not commence without a Water Use License Application and / or General Authorisation from the Department of Water Affairs.	Free State Department of Water and Sanitation.	The proposed project will trigger a water use under Section 21 (c) and (i) that is listed in the National Water Act, Act 1998 (Act. 36 of 1998); a Water Use License is therefore required for this proposed project.

3.3 NEMA Listed Activities Triggered

The NEMA EIA Listed Activities (as per the NEMA EIA Regulations Listing Notices 1, 2 and 3 of 2010) that will most likely be triggered by the proposed project are listed in the table below.

Table 4: Listed Activities applicable to this application.

Listed Activity	Project Activity / Component
GN No. 544 of 2010 (Listing Notice 1)	
Activity 11(i)(ii)(vi)(xi)	*The construction of:* (i) canals; (ii) channels; (vi) bulk storm water outlet structures; (xi) infrastructure or structures covering 50 square meters or more where such construction occurs within a watercourse or within 32 meters of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.
Activity 18(i)	The infilling or depositing of: any material of more than 5 cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 m^3 from: (i) a watercourse
Activity 24	The transformation of: land bigger than 1000 square meters in size, to residential, retail, commercial, industrial or institutional use, where, at the time of the coming into effect of this Schedule such land was zoned open space, conservation or had an equivalent zoning.
GN No. 545 of 2010 (Listing Notice 2)	
Activity 15:	Physical alteration of undeveloped, vacant or derelict land for residential, retail, commercial, recreational, industrial or institutional use where the total area to be transformed is 20 hectares or more.

GN No. 546 of 2010 (Listing Notice 3)
N/A

3.4 Relevant Guidelines

The table below lists the Guideline Documents that are applicable to this project, and which are considered as part of this EIA process, as are required in terms of Regulations 28(1) (f) and 28(2) of the NEMA EIA Regulations of 2010.

Table 5: Applicable guideline documents

1	**DETEA EIA Guideline and Information Document Series**
1.1	*Draft Guideline on the **Need and Desirability** in terms of the EIA Regulations of 2010*. Integrated Environmental Management Guideline Series 9, Government Notice 792 of 2012.
2	**DEA&DP EIA Guideline and Information Document Series**
2.1	*Guideline on **Generic Terms of Reference for EAPs and Project Schedules***, EIA Guideline and Information Document Series. Western Cape Department of Environmental Affairs & Development Planning, March 2013.
2.2	*Guideline on **Need and Desirability**, EIA Guideline and Information Document Series*. Western Cape Department of Environmental Affairs & Development Planning, March 2013.
2.3	*Guideline on **Alternatives**, EIA Guideline and Information Document Series.* Western Cape Department of Environmental Affairs & Development Planning, March 2013.
2.4	*Guideline on **Public Participation**, EIA Guideline and Information Document Series*. Western Cape Department of Environmental Affairs & Development Planning, March 2013.
3	**DEA&DP Guideline Document Series for Involving Specialists in the EIA Process, and others**
3.1	*Guideline for **Environmental Management Plans***. CSIR Report No ENV-S-C2005-053 H. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs & Development Planning, Cape Town (Lochner, P. 2005).

3.5 Other Applicable Legislation

In addition to the above mentioned National Environmental Management Act, the proposed project also constitutes the following legislation:

Table 6: Other applicable Legislation

National Heritage Resources Act, 1999 (Act 25 of 1999)	
Section 38(1)	(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length; (b) the construction of a bridge or similar structure exceeding 50 meters in length; (c) any development or other activity which will change the character of a site— (i) exceeding 5 000 m2 in extent; or (ii) involving three or more existing erven or subdivisions thereof; (d) the re-zoning of a site exceeding 10 000 m2 in extent.
National Water Act, Act 1998 (Act. 36 of 1998)	
Section 21(c & i)	(c) Impeding or diverting the flow of water in a watercourse (i) Altering the bed, banks, course or characteristics of a watercourse.

In Addition to the above, the construction team should also take into consideration the following legislation:

Table 7: Legislation to be consulted by the construction team

Legislation to be consulted by the Construction team:
National Building Regulations and Building Standards Act (Act 103 of 1997)
National Environmental Management Protected Areas Act (Act 57 of 2003)
Conservation of Agricultural Resources Act (Act 43 of 1993)
Occupational Health and Safety Act (Act 85 of 1993).

4 DESCRIPTION OF THE PROJECT AND PROPOSED ACTIVITIES

The following sections describe the project location, and provide a detailed description of the proposed project.

4.1 Project Location

During the planning phase of the project, one site (consisting of three properties) was identified for the proposed project in the Free State Province (Figure 1), as listed below:

The properties to be affected by the newly proposed mixed use development will include the Remainder of the Farm Cecilia no. 2352; Remaining Extent of the Farm Bloemfontein no. 645; and Portion of the Farm Kwaggafontein No. 2300. These properties are located South of Langenhovenpark suburb and to the North of the N8 and west of the N1. The figure below indicates the proposed development area.

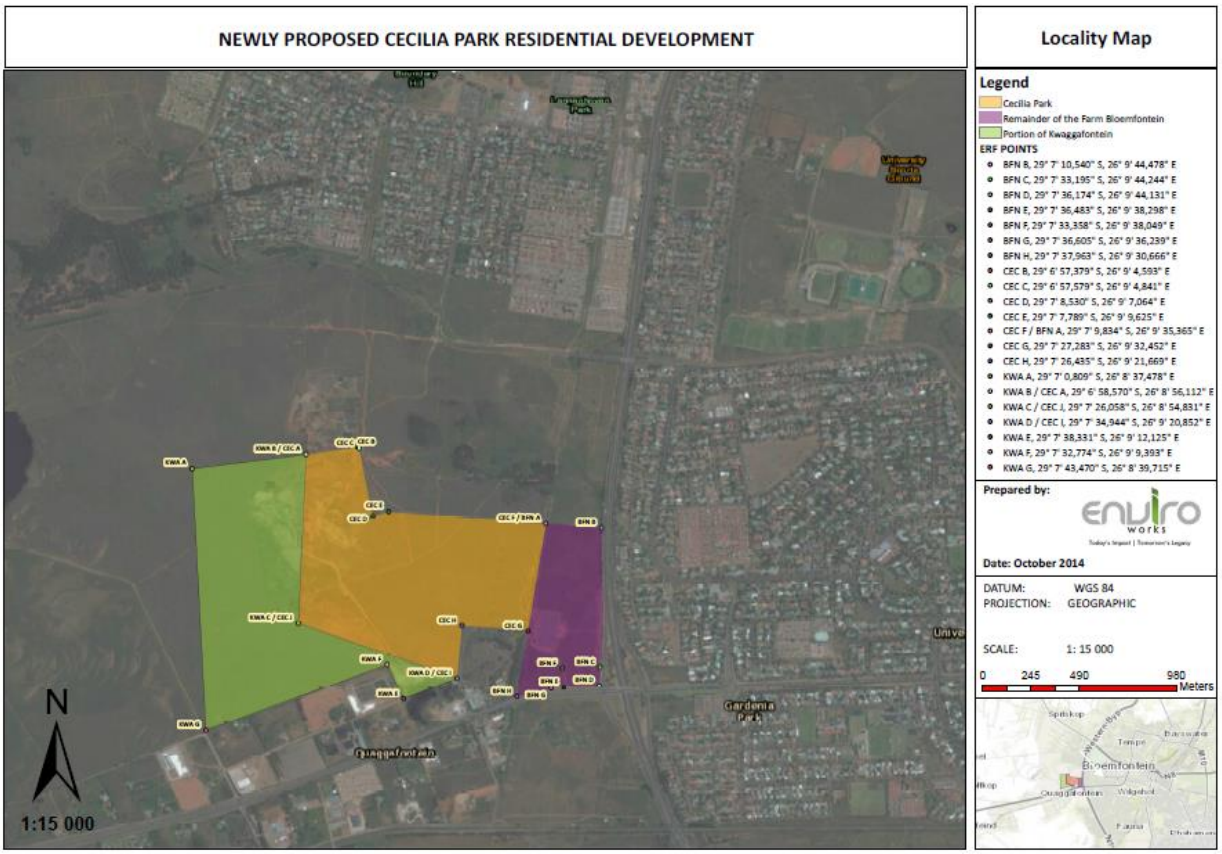


Figure 1: Locality Map indicating the Remainder of the Farm Cecilia no. 2352; Remaining Extent of the Farm Bloemfontein no. 645; and Portion of the Farm Kwaggafontein no. 2300.

Table 8: Property coordinates

Remaining Extent of the Farm Bloemfontein no. 645						
Corner:	**Latitude (S):**			**Longitude (E):**		
BFN A	29º	7’	9.834”	26º	9’	35.365”
BFN B	29º	7’	10.540”	26º	9’	44.478”
BFN C	29º	7’	33.195”	26º	9’	44.244”
BFN D	29º	7’	36.174”	26º	9’	44.131”
BFN E	29º	7’	36.483”	26º	9’	38.298”
BFN F	29º	7’	33.358”	26º	9’	38.049”
BFN G	29º	7’	36.605”	26º	9’	36.239”
BFN H	29º	7’	37.963”	26º	9’	30.666”
Remainder of the Farm Cecilia no. 2352						
Corner:	**Latitude (S):**			**Longitude (E):**		
CEC A	29º	6’	58.570”	26º	8’	56.112”
CEC B	29º	6’	57.379”	26º	9’	4.593”
CEC C	29º	6’	57.579”	26º	9’	4.841”
CEC D	29º	7’	8.530”	26º	9’	7.064”
CEC E	29º	7’	7.789”	26º	9’	9.625”
CEC F	29º	7’	9.834”	26º	9’	35.365”
CEC G	29º	7’	27.283”	26º	9’	32.452”
CEC H	29º	7’	26.435”	26º	9’	21.669”
CEC I	29º	7’	34.944”	26º	9’	20.852”
CEC J	29º	7’	26.058”	26º	8’	54.831
Portion of the Farm Kwaggafontein no. 2300						
Corner:	**Latitude (S):**			**Longitude (E):**		
KWA A	29º	7’	0.809”	26º	8’	37.478”
KWA B	29º	6’	58.570”	26º	8’	56.112”
KWA C	29º	7’	26.058”	26º	8’	54.831”

KWA D	29º	7’	34.944”	26º	9’	20.852”
KWA E	29º	7’	38.331”	26º	9’	12.125”
KWA F	29º	7’	32.774”	26º	9’	9.393”
KWA G	29º	7’	43.470”	26º	8’	39715”

4.2 Project Description

Mangaung Metropolitan Municipality is proposing to establish a new mixed use development called Cecilia Park. This newly proposed mixed use development will consist of GAP housing, low -, medium -, and high residential developments, light industrial areas and commercial properties. The term GAP housing refers to income earners who earn too much to get a free house from the government and earn too little to get a bank bond. The main purpose of GAP housing is to provide households, earning between R 3 000 and R 15 000, the opportunity to also partake in the housing market by means of purchasing a house. Although the internal / central part of the development will consist of GAP residential development, the outer part of the development will include light industrial areas, commercial properties as well as residential areas for low -, medium -, and high income residents. For this reason, the development can be seen as a mixed use development. The proposed development is proposed to be constructed on the following properties South of Langenhovenpark; suburb in Bloemfontein, North of the N8 road and west of the N1;

- Remainder of the Farm Cecilia no. 2352;
- Remaining Extent of the Farm Bloemfontein no. 645;
- Portion of the Farm Kwaggafontein no. 2300.

The development will also be designed to include approximately 36 Ha open space. The role of these open spaces inside urban edges include, but is not limited to the following; to preserve ecological integrity, to serve as areas for recreational and sport activities, sacred spaces, etc.

The following roads will serves as access roads to the development:

- Du Plessis road connecting the Western Part of Langenhovenpark suburb to the R64, will be extended to serves as a bypass road connecting to the N8. This road will also serve as the boundary for the development;
- A road from the M14 (Totius Road) will be constructed to the centre of the development;
- Eland street, adjacent to the N8 will serve as the southern entrance to the proposed development; and

- A new bridge is proposed to be constructed, crossing the N1 and connecting to De Bruin Street in Universitas.

Manguang Metropolitan Municipality will construct and provide all infrastructure for the above mentioned mixed use development after which Erven / Stands will be sold to interested developers in order to develop stands to meet the set out zoning requirements. The infrastructure to be developed by the Municipality will include:

- The construction of roads;
- The provision of electricity;
- The provision of water;
- The provision of sewage pipelines;
- Zoning of properties, and
- Waste management.

This mixed use development will cover an area of approximately 170 Ha (hectares) and will consist of the following:

Table 9: Proposed Project Land Uses

Usage:	Number of Erven:	Area (Ha)	Land Occupation (%)
Public Open Space	2 Stands	36,3467 Ha	21,3 %
Single Residential 2	950 Stands	69,4580 Ha	40,7 %
General Residential 2	38 Stands	14,4262 Ha	8,5 %
Business	4 Stands	5,7168 Ha	3,4 %
EDUCATION Primary School	2 Stands	4,3610 Ha	2,6%
EDUCATION Crèche	3 Stands	0,9528 Ha	0,6 %
Public Buildings	4 Stands	1,5979 Ha	0,9 %

Municipal Purposes			
Workshops	4 Stands	1,2979 Ha	0,8 %
Garage 2	1 Stand	0,4882 Ha	0,4 %
Streets		36,3467 Ha	20,8 %
Total Mixed use development:	1000	170,6016 Ha Ha	100 %

A detailed layout of the above mentioned infrastructure is attached in Appendix D: “Facility Illustration”:

- Water Pipeline Layout Drawings;
- Electrical Layout Drawings;
- Sewer Pipeline Layout Drawings; and
- Typical Road cross section drawings.

4.3 Site selection

During the investigation for the preferred property, several factors were considered when selecting property alternatives.

The properties to be affected by the newly proposed mixed use development will include the Remainder of the Farm Cecilia no. 2352; Remaining Extent of the Farm Bloemfontein no. 645; and Portion of the Farm Kwaggafontein No. 2300. These properties are located South of Langenhovenpark suburb and to the North of the N8 and west of the N1.

The following roads will serves as access roads to the development and will result in the upgrading of the current traffic impact in the Langenhovenpark area which currently only have two access roads towards the central part of Bloemfontein:

- Du Plessis road connecting the Western Part of Langenhovenpark suburb to the R64, will be extended to serves as a bypass road connecting to the N8. This road will also serve as the boundary for the development;
- A road from the M14 (Totius Road) will be constructed to the centre of the development;

- Eland street, adjacent to the N8 will serve as the southern entrance to the proposed development; and
- A new bridge is proposed to be constructed, crossing the N1 and connecting to De Bruin Street in Universitas.

In terms of environmentally related issues, specialist findings indicated that no fatal flaws exist in term of Fauna, Flora, Water, Sewage, and Heritage.

During the Public Participation, several comments and concerns were raised from the affected adjacent land owners, Interested and Affected Parties, Stakeholders and Organs of state. The comments and concerns raised are attached in Appendix E.

These three properties were chosen to best benefit the environment and surrounding areas, as well as affected landowners. The figures below provide the best indication of the tree properties involved.

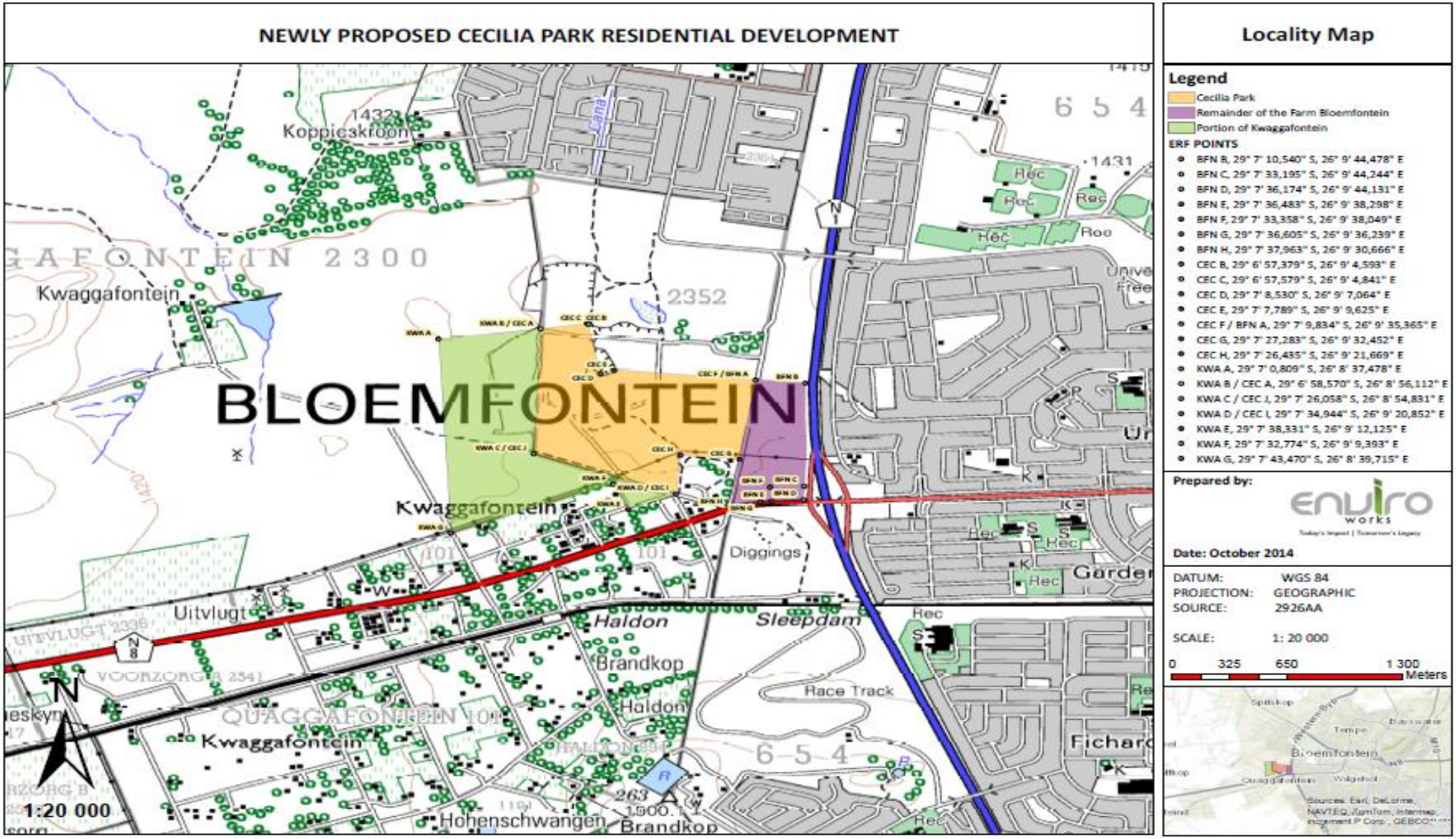


Figure 2: Locality Map of the proposed Cecilia Park Mixed-Use Development

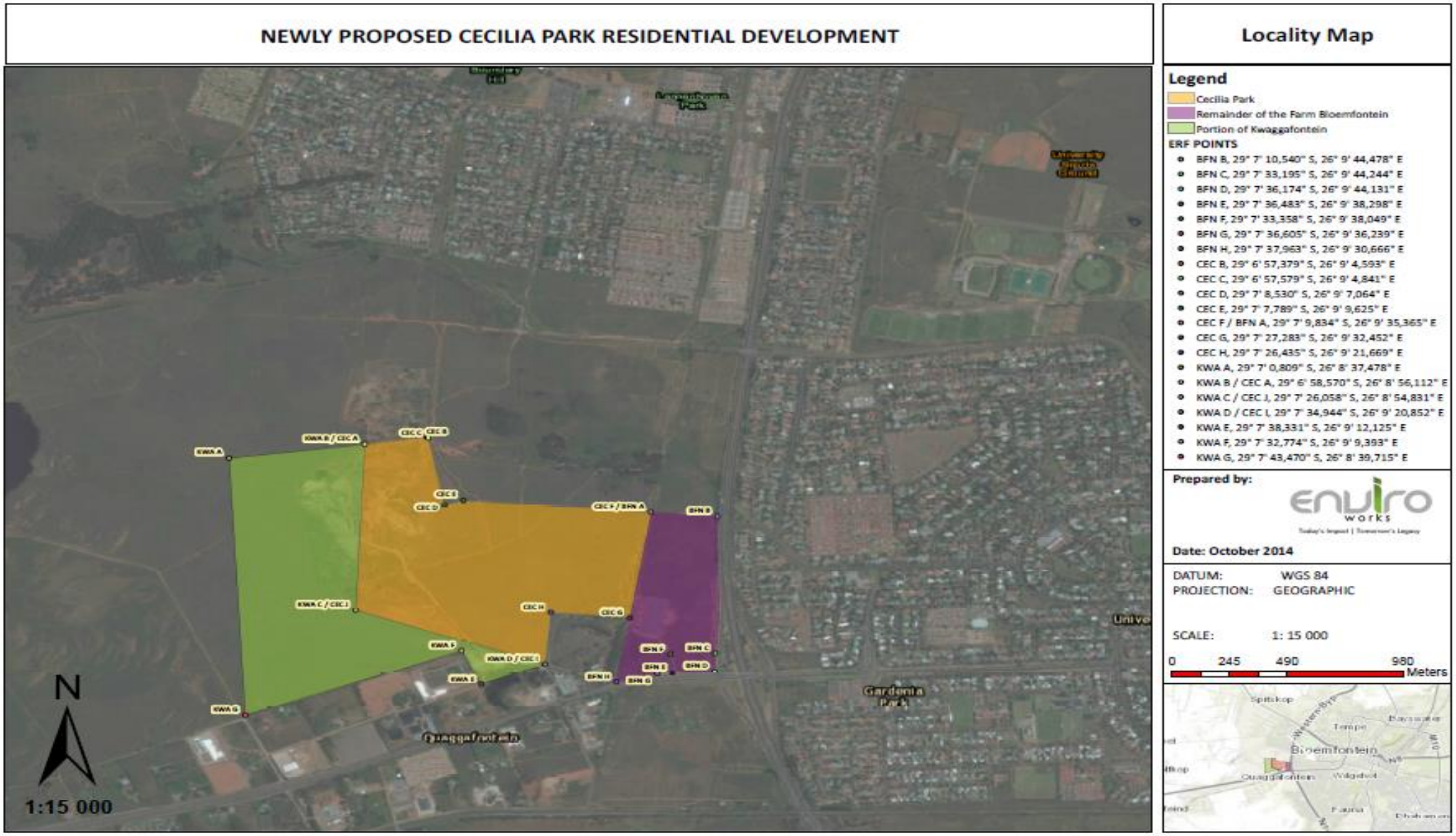


Figure 3: Arial Image of the proposed Cecilia Park Mixed-Use Development

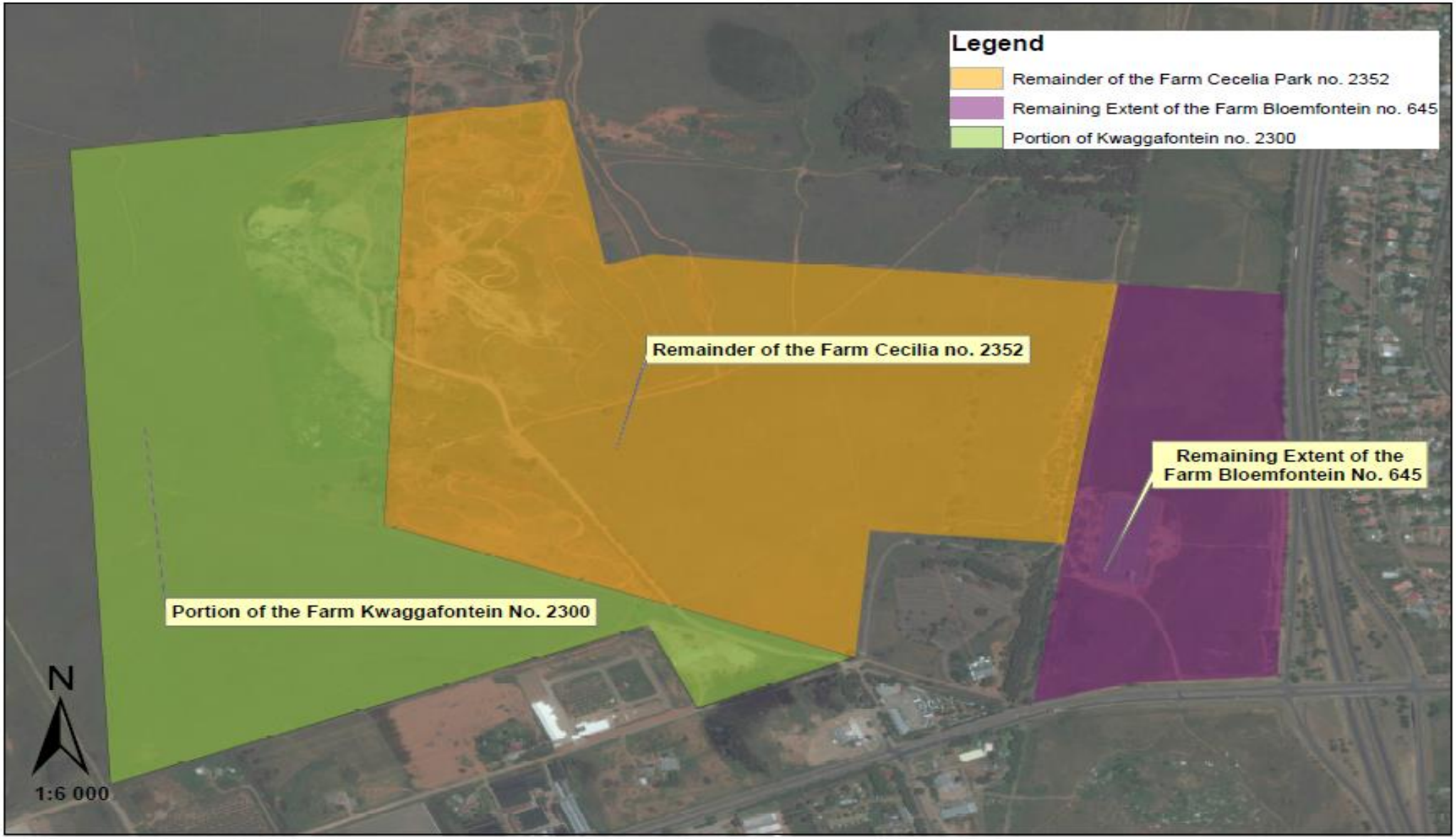


Figure 4: Figure indicating the properties to be affected by the proposed Cecilia Park Mixed-Use Development

4.4 Site Infrastructure and Services

4.4.1 *Services*

No services are in place for the proposed development, and therefore the Mangaung Metropolitan Municipality will provide for all infrastructure and services as set out below. Erven / Properties will then be sold to be developed as per the set out zoning requirements.

4.4.1.1 Sanitation

A new sewage system will be constructed to serve the entirely newly proposed mixed-use development. An existing main sewage line runs in a northern direction on the Western Side of the proposed development. The entire suburb sewage system will be constructed to feed into the existing main sewage system. (A more detailed drawing is attached as Appendix D2.)

Figure 5: Cecilia Park Sewage system

4.4.1.2 Electricity Supply

Electricity will be obtained through the existing electrical sub-station next to Makro. Another newly proposed and approved Cecilia Park substation to the North East of the proposed development may also serve the proposed Cecilia Park with electricity. (A more detailed drawing is attached as Appendix D2.)

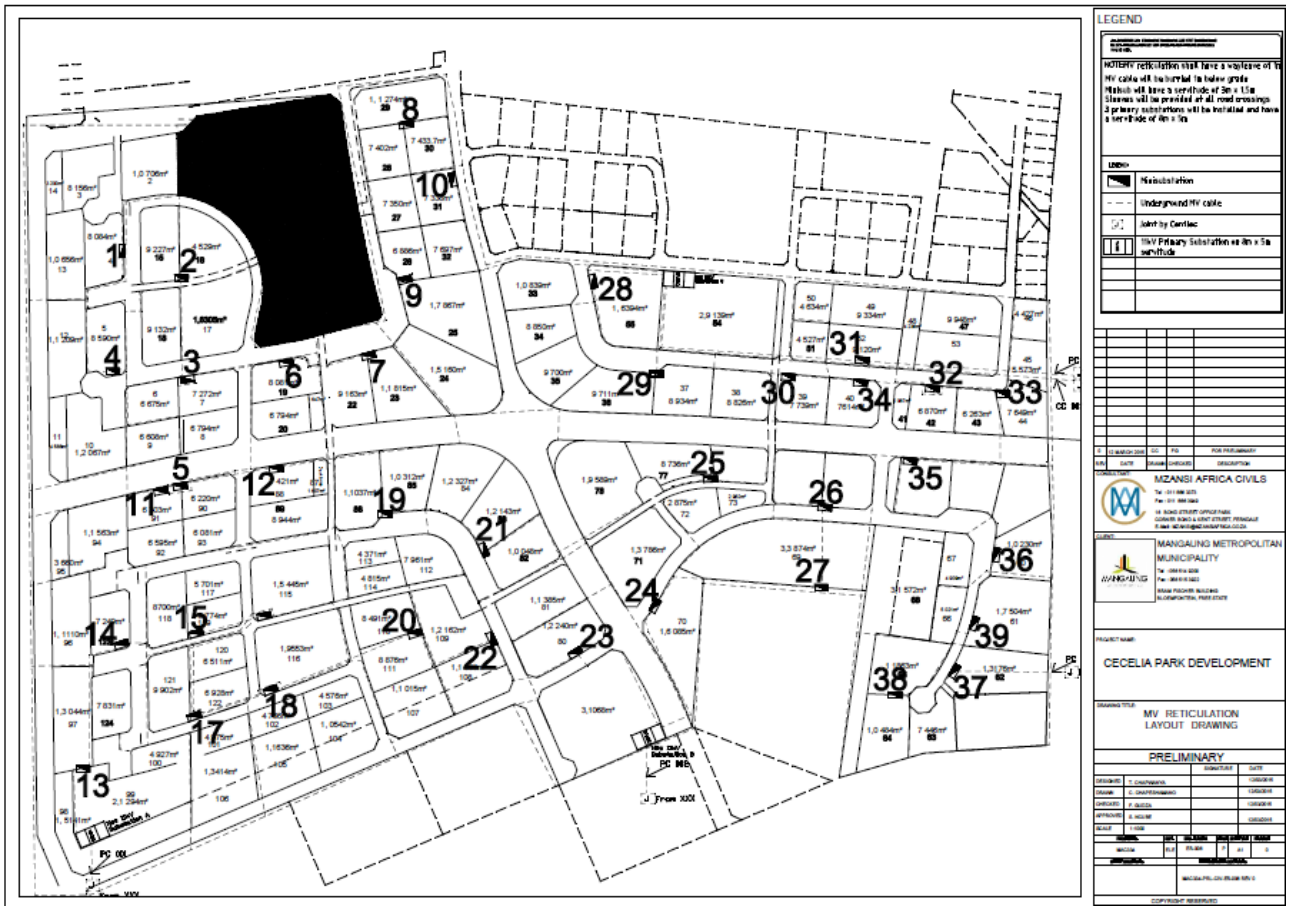


Figure 6: Cecilia Park Electricity plan

4.4.1.3 Waste Management

During the construction phase, constructors will be required to dispose their waste at a registered landfill site. During the operational phase of the project, the Mangaung Metropolitan Municipality will be responsible for waste removal of all forms of waste. They may either do the waste removal themselves or appoint an in depended company to do the waste removal on their behalf. General Waste and domestic waste must be removed to a registered general waste landfill site and hazardous waste must be removed to a registered hazardous waste landfill site.

4.4.1.4 Water Supply

Water will be obtained from the existing municipal water system running to the East of the proposed development. The below water pipeline layout has been designed to feed from the existing water network line and to serve the entire Cecilia Park development. (A more detailed drawing is attached as Appendix D2.)

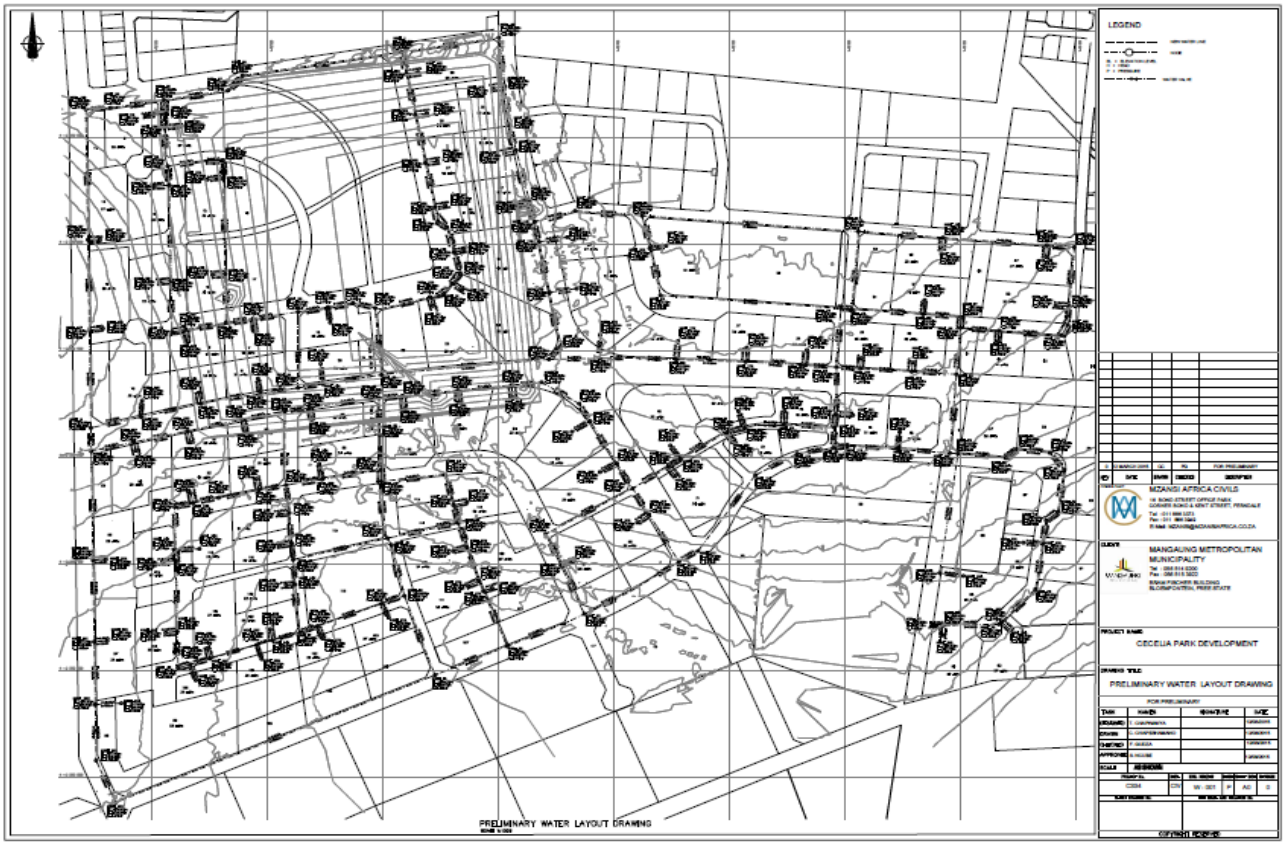


Figure 7: Cecilia Park Water Layout Plan

4.4.1.5 Access Roads

The following roads will serves as access roads to the development and will result in the upgrading of the current traffic impact in the Langenhovenpark area which currently only have two access roads towards the central part of Bloemfontein:

- Du Plessis road connecting the Western Part of Langenhovenpark suburb to the R64, will be extended to serves as a bypass road connecting to the N8. This road will also serve as the boundary for the development;
- A road from the M14 (Totius Road) will be constructed to the centre of the development;
- Eland street, adjacent to the N8 will serve as the southern entrance to the proposed development; and

A new bridge is proposed to be constructed, crossing the N1 and connecting to De Bruin Street in Universitas. (A more detailed drawing is attached as Appendix D2.)

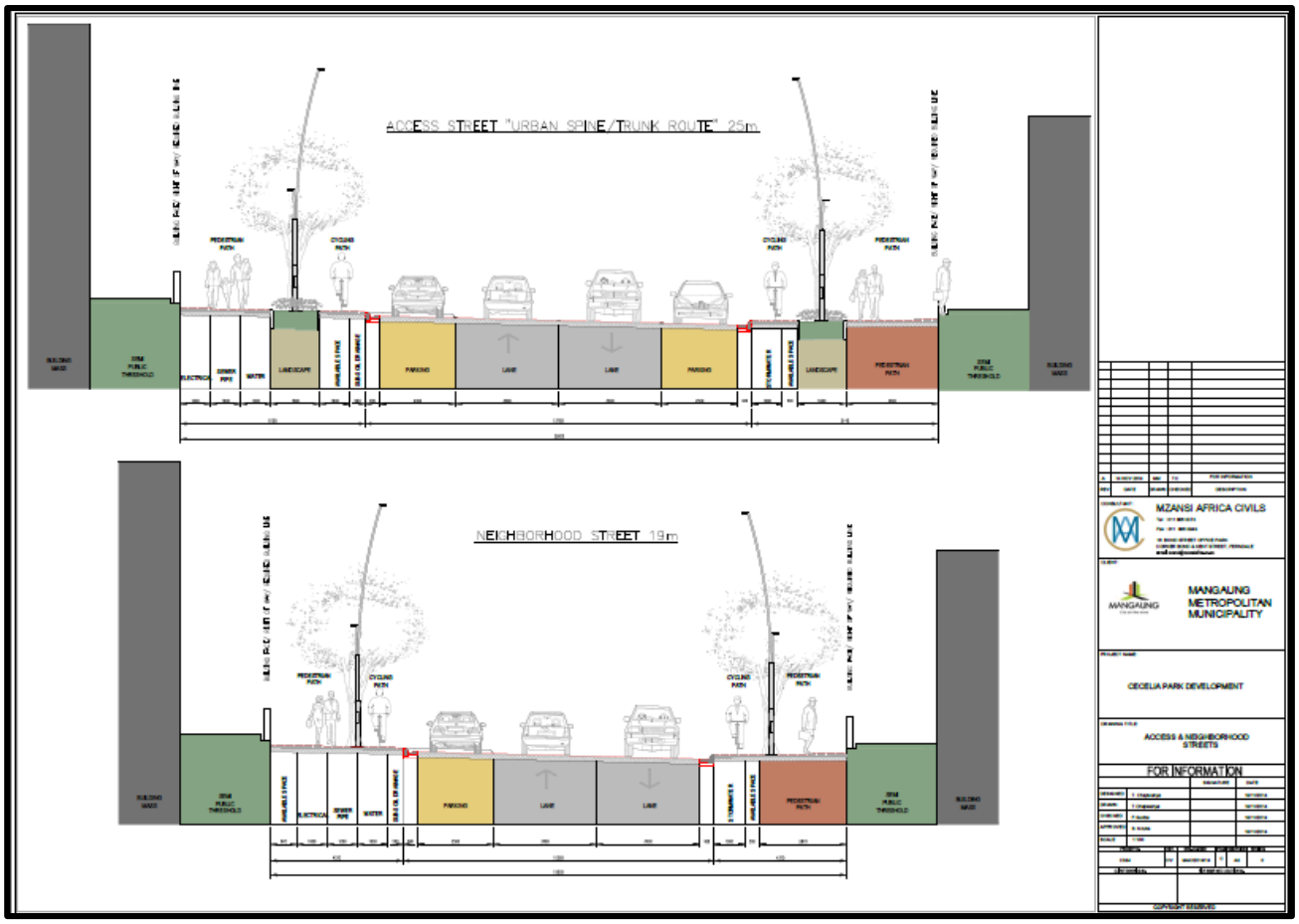


Figure 8: Typical Road cross sections

5 NEED AND DESIRABILITY OF THE PROJECT

The Mangaung Metropolitan municipality, especially Bloemfontein, has a major backlog, with regards to housing, in comparison with other municipalities in the Free State. This is particularly due to the fact that most of the residents reside in Bloemfontein and is driven by the fact that Bloemfontein is seen as the economic hub with better working opportunities. According to Stats SA (Statistics South Africa), the 2011 census indicated that 84,4% of residents reside within formal settlements in the urban context. The 1996 census indicated that 71.3% of residents reside within formal settlements in the urban context. This shows a growth of 0.6% between 1996 and 2001 and a growth of 12.5% between 2001 and 2011 (MMM`s IDP, 2013).

According to the Mangaung Metropolitan Municipalitie`s Integrated Development Plan (MMM`s IDP) of 2013, the Western parts of Bloemfontein and the Langenhovenpark surroundings are over developed, mainly due to a lack in access roads to these areas and the increase in travel time from and to Mangaung's CBD (MMM`s IDP, 2013). More developments are planned within these areas and the population increase will lead to negative traffic impacts in the region. The Cecelia Park mixed use residential development will include the upgrading and the construction of new access roads, as described in Section 1.2.3, in the surroundings, improving travel experiences.

Also part of the Cecelia Park mixed use development, internal roads will allocate one lane per road for buss services. This will increase the flow of traffic and will enhance travel time and experiences.

One of the targets set out in the MMM`s IDP (2013) is to address the housing backlog in the area. For this reason old internal houses are being upgraded and the Cecelia Park mixed use development is therefore planned. The Cecelia Park mixed use development will include residential areas for low-, medium- and high income groups, which will effectively address housing backlogs on all levels.

The MMM`s IDP (2013) set target is to provide 20 000 housing opportunities within the next five years. The Cecelia park development forms part of this target and will contribute to housing shortages.

The MMM` Spatial Development Framework (SDF) of 2014, indicates that affordable housing development, such as the Cecelia Park development, should be implemented. Part of this, the MMM`s SDF stipulates that urban integration should be enhanced by rectifying past spatial imbalances. To achieve the above, the Cecelia Park development will include the upgrading, extension and building of new roads, linking the surrounding areas with the development which will enhance traffic flow and in such away overcoming spatial imbalances.

According to the Mangaung Metropolitan Municipality`s Integrated Development plan (IDP) of 2013, the municipalities primary task is to provide basic services to its clients, being households and businesses. Part of the Cecelia Park mixed use development, the MMM will develop the following basic services and infrastructure the service the Cecelia Park suburb:

- The provision of electricity;
- The provision of water;
- The provision of sewage pipelines;
- Zoning of properties, and
- Waste management.

The MMM`s IDP (2013) set target is to provide 20 000 housing opportunities within the next five years. The Cecelia park development forms part of this target and will contribute to housing shortages.

6 CONSIDERATION OF ALTERNATIVES

"*Alternatives*" are defined in the NEMA EIA Regulations of 2010, as "*different means of meeting the general purpose and requirements of the activity*" (DEA&DP, 2013b).

The consideration of alternatives is a key component of an EIA process. While an EIA process should investigate and comparatively ***consider*** all alternatives that have been identified, only those found to be "feasible" and "reasonable" must be comparatively ***assessed***, in terms of the advantages and disadvantages that the proposed activity and alternatives will have on the environment and on the community that may be affected by the activity (DEA&DP, 2013b).

The "feasibility" and "reasonability" of an alternative are measured by:

- the general purpose and requirements of the activity;
- the need and desirability of the activity;
- opportunity costs;
- the need to avoid and/or minimise negative impacts;
- the need to maximise benefits; and
- how it impacts on the community that may be affected by the activity (DEA&DP, 2013b).

The different types of alternatives that can be considered as part of an EIA process include the following:

a) the **property** on which or **location** where it is proposed to undertake the activity;
b) the **type of activity** to be undertaken;
c) the **design or layout** of the activity;
d) the **technology** to be used in the activity;
e) the **operational aspects** of the activity, such as demand, input, routing, scheduling and timing alternatives, and scale and magnitude alternatives; and the
f) "**no-go** option".

The following sections describe those alternatives that have been considered (i.e. identified and investigated) to date, and indicate which alternatives are deemed to be "feasible" and "reasonable". The sections below also provide a **comparative assessment** of the potential impacts (i.e. advantages and disadvantages).

In the planning process of the proposed project, Mangaung Metropolitan Municipality conceptualised different scenarios to make use of the available land. Alternatives assessed for this project include the Preferred Alternative (A1) and Alternative 2 (A2) as detailed below.

6.1 Design / Layout Alternatives

Layout Alternative 1 (A1) – Preferred Alternative

The proposed Layout alternative 1, as indicated in the image below, is regarded as the preferred layout, mainly due to the incorporation of single residential zoning stands as prescribed in the Mangaung Metropolitan Municipalities' (MMM) Spatial Development Framework (SDF). This will provide for higher density accommodation opportunities which will contribute to the housing shortages in the Mangaung Metropolitan Municipality area. According to the MMM SDF at least 30% of the new development must include single residential zonings.

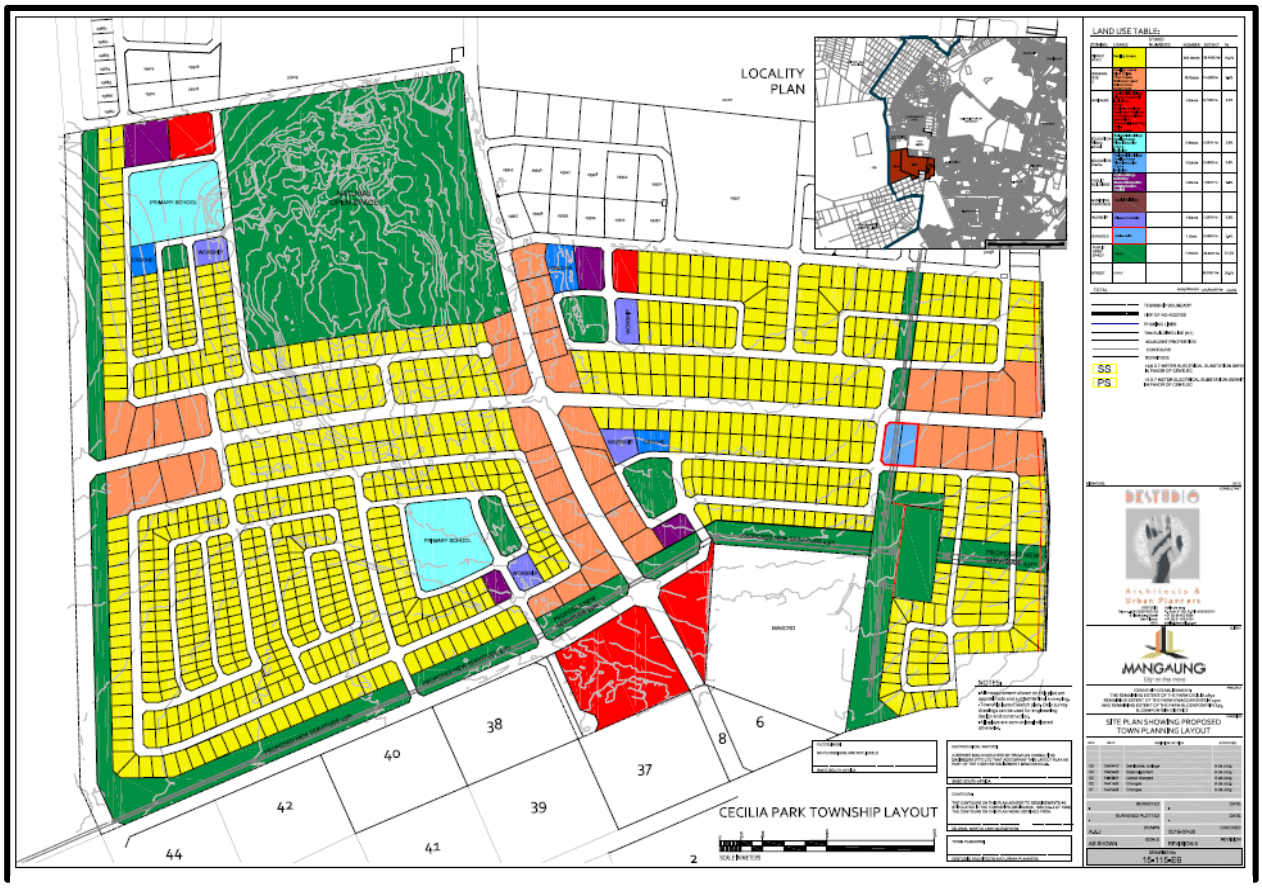


Figure 9: Layout Alternative 1 (A1) – Preferred Alternative

Advantages (A1):

- The property includes more open / green spaces for sport and recreational activities;
- Traffic flow will be enhanced due to better linkages of internal and external roads;
- 30% of the development will include single residential zonings;
- Higher density provides more efficient infrastructure, public transport and lower development cost per unit.

Disadvantages (A1):

- The area will be highly dense.

Layout Alternative 2 (A2)

The proposed Layout alternative 2, as indicated in the picture below, differs from alternative one. Alternative 2 does not include any single single residential zonings which is in contrast with the SDF, stating that at least 30% must be single residential zoning units. Alternative 2 does not have as much open / green spaces as Alternative 1. Public transport will not be as sufficient as alternative 1 due to the fact that alternative two is not as highly dense as alternative 1.

Figure 10: Layout Alternative 2 (A2)

Advantages (A2):

- The density of the area will be less than that of alternative 1.

Disadvantages (A2):

- This alternative, does not include as much open / green spaces as the preferred alternative;
- The rectangular design will lead to a slightly higher traffic impacts in the area;

- The layout has no single residential zonings which is in contrast with the SDF, stating that at least 30% must be single residential zoning units.

6.2 “No-go Option”

Should the proposed Cecelia Park mixed use development not take place, a shortage in housing will remain a matter of concern for the Mangaung Metropolitan Municipality. Informal housing will continue to arise which will have an impact on the economic growth of the area. The development of housing opportunities in the Magaung Metropolitan Municipality is of high priority, and is also indicated in the IDP and SDF.

The alternatives as described above will be assessed in the Impact Assessment Report to motivate the preferred alternative.

7 DESCRIPTION OF THE ENVIRONMENT

The following sub-sections describe the biological and physical characteristics of the application site and its surrounding environment.

7.1 Description of the Biophysical Aspects of the Environment

7.1.1 *Climate*

The area falls within the summer rainfall region. The mean annual precipitation of the region is approximately 407mm. Most of the precipitation is in the form of convectional rain fall between December and January. Frost also occurs frequently in the area with an average of 43 days per year. The average temperature for Bloemfontein range from 16ºC in June and 29ºC in January with the average minimum temperature of 0ºC during July (Mucina & Rutherford, 2006).

7.1.2 *Geology and Soils*

Bloemfontein is situated on the Adelaide Subgroup of the Beaufort Group. The Beaufort Group falls within the Karoo Super Group and consist of Blue-grey and purple mudstone interbedded with yellow sandstone and siltstone (Vermaak, 2013).

In the southeastern part of the basin, the late Permian Adelaide Subgroup comprises the Koonap, Middleton and Balfour Formations. In the west, the Abrahamskraal and Teekloof Formations are the approximate equivalents of the Koonap and Middleton Formations, respectively as indicated in Figure 3. The Middleton and Teekloof Formations are characterized by a greater relative abundance of red mudstone compared to the underlying and overlying units, in practice the boundaries are linked to specific sandstone-rich marker units, thus the arenaceous Poortjie and Oudeberg Members constitute the base of the Teekloof and Balfour Formations, respectively. In the northeastern region, the Normandien Formation is present (Vermaak, 2013).

The Adelaide Subgroup attains a maximum thickness of approximately 5000m in the southeast, which decreases rapidly to approximately 800m in the centre of the Basin and thereafter more gradually to 100-200m in the extreme north. The Koonap Formation attains a maximum thickness of approximately 1300m, the Middleton 1600m and the Balfour 2000m. In the west, the Abrahamskraal and Teekloof Formations are up to 2500m and 1400m thick, respectively (Vermaak, 2013)

Towards the end of the Cape Orogeny thermal dome uplift developed beneath almost the entire South African continent. Dolerite represents the roots of the volcanic system and is presumed to be of the same age as the extrusive lavas. Extensive magnetic activity lead to dolerite dykes, inclined sheets and sills to intrude the sedimentary rocks of the Karoo Super group during the Jurassic period to the north of the compressional sphere of the Cape Fold Belt. The level of erosion that affected the

Main Karoo basin has revealed the deep portions of the intrusive system, which displays a high degree of tectonic complexity. The Karoo intrusive can either occur as dykes, sills, or ring-complexes. The Karoo dolerite, which includes a wide range of petrological facies, consists of an interconnected network of dykes and sills and it is nearly impossible to single out any particular intrusive or tectonic event. It would appear that a very large number of fractures were intruded simultaneously by magma and that the dolerite intrusive network acted as a shallow stockwork-like reservoir (Vermaak, 2013).

7.1.3 *Topography*

The proposed site can be described as a plain landform, with a gradient between 1:50 to 1:20. The site is overlain with natural veld vegetation, scattered alien species, and a wetland just north of the proposed development and an unlicensed existing gravel quarry n the Northwestern corner of the development area. The property is located 1422 meters above mean sea level with a natural drainage pattern in a southwestern direction. The N8 is situated approximately 500 meters to the south of the site and the N1 approximately 500 meters east of the site, with open flat fields to the west of the proposed property (Vermaak, 2013).

7.1.4 *Surface and Ground Water*

A wetland is located to the north of the proposed development. The wetland is mostly artificial as it is fed by an existing storm water drainage running next to the proposed development in a North Western direction. The Department of Water Affairs will be consulted as development will occur within 500 meters from the wetland and the applicant will require a General. No sensitive drainage lines were detected on or in the vicinity of the proposed development.

7.1.5 *Flora (Vegetation)*

The following section will provide a brief description of flora species in the Central Free State as well as site specific flora for the proposed property.

7.1.5.1 General flora description

The property is located in the Bloemfontein Dry Grassland Vegetation type. Typical vegetation types associated with the Bloemfontein Dry Grassland vegetation type include *Themeda triandra, Digitaria eriantha, D. argyrograpta, Eragrostis curvula, E. chloromelas, E. lehmanniana, Pogonarthria squarrosa, Anthephora pubescens, Aristida stipitata and Cymbopogon pospischilli.*

7.1.5.2 Site specific flora description

The following site specific flora species were observed during the initial site investigation (*indicates exotics): (du Preez, 2014)

Table 10: Site specific flora species

Scientific name	Growth form
Aristida congesta	Grass
Aristida stipitata	Grass
Chloris virgata	Grass
Cymbopgon pospischillii	Grass
Cynodon dactylon	Grass
Digitaria argyrograpta	Grass
Digitaria eriantha	Grass
Eragrostis lehmanniana	Grass
Pogonarthria squarrosa	Grass
Themeda triandra	Grass
Tragus koeleroides	Grass
Felicia muricata	Karroid shrub
**Solanum elaegnifolium*	Dwarf shrub
Chrysocoma cilata	Dwarf shrub
Hertia pallens	Dwarf shrub
Lycium pillifolium	Dwarf shrub
**Salvia verbenaca*	Weed
**Schkuhria pinnata*	Weed
**Tagetes minuta*	Weed
Blepharis macrostegia	Forb
Gazania krebsiana	Forb
Nidorella resedifolia	Forb

7.1.6 *Fauna and Avifauna*

The following section will provide a brief description of fauna and avifauna species in the Central Free State as well as site specific fauna and avifauna for the proposed property.

7.1.6.1 General terrestrial fauna description

The following fauna species are typically found in the Free State:

Table 11: Typically fauna species

Rabbits		
Family	***Common Name***	***Scientific Name***
Leporidae	Capehare	*Lepus capensis*
Pedetidae	Springhare	*Pedetes capensis*
Snakes		
Family	***Common Name***	***Scientific Name***

Viperidae	Puff adder	*Bitis arietans*
Colubridae	Mole Snake	*Pseudaspis cana*
Elapidae	Rinkhals	*Hemachatus haemachatus*
Mice		
Family	***Common Name***	***Scientific Name***
Cricetidae	Field Mouse	*Microtus arvalis*

7.1.6.2 General terrestrial avifauna description

The following avifauna species are typically found in the Free State:

Table 12: Typically avifauna species

Avifauna Species		
Family	***Common Name***	***Scientific Name***
Passeridae	House sparrow	*Passer domesticus*
Bostrychia	Hadeda	*Bostrychia hagedash*
Hirundo	Barn swallow	Hirundo rustica
Vanellus	Crowned lapwing	*Vanellus coronatus*
Falcon	Lanner falcon	*Falco biarmicus*
Numidia	Helmeted guineafowl	*Numida meleagris*
Sagittarius	Secretarybird	*Sagittarius serpentarius*
Burhinus	Spotted thick-knee	*Burhinus capensis*

7.1.6.3 Site specific terrestrial fauna description

During the initial site inspection, no fauna species were observed. The majority of the area is transformed by vehicle tracks whereby off-roading and 4X4 is taking place. A mining activity, is also taking place at the existing unauthorised gravel quarry. Due to this, it is expected that the majority of the fauna species migrated to nearby undisturbed areas.

7.1.6.4 Site specific terrestrial avifauna description

The following terrestrial avifauna species were observed during the initial site investigation:

Table 13: Site Specific avifauna species

Avifauna Species		
Family	***Common Name***	***Scientific Name***
Passeridae	House sparrow	*Passer domesticus*
Bostrychia	Hadeda	*Bostrychia hagedash*
Numidia	Helmeted guineafowl	*Numida meleagris*

7.2 Description of the Social and Economic Aspects of the Environment

The following sub-sections describe the social and economic characteristics of the application site and its surrounding environment.

7.2.1 *Land use*

“There has been a lot of recent building activity in Bloemfontein, mainly new residential township establishments in the Grasslands, Woodland Hills and Vista Park areas, offices and retail developments primarily in the suburbs to the western side of town, mixed land use development in the Estoire area and extensive retail development at the Loch Logan Waterfront as well as the expansion of high density walled townhouse complexes to the west of the N1. However there has been very limited investment in Thaba Nchu, Botshabelo, former Mangaung Township, and the CBD’s. This has led to the deterioration of these areas and an under-utilisation of existing infrastructure in some areas. There are however improvement with new buildings being erected in the CBD eg newly completed public works building in President Brand Street, intermodal facility, department health building, and improvement to various buildings along Maitland and West-Burger Street” (extracted from the MMM`s IDP, 2013).

7.2.2 *Social Economic characteristics of the area*

The newly proposed Cecelia Park mixed use development falls within, Bloemfontein, Free State Province under the Mangaung Metropolitan Municipality. The population as provided by statistics South Africa for the greater Mangaung area, is approximately 747 431 (Statistics South Africa, 2011). The population had dramatically increased in the past 14 years with a growth rate of 16%. The region for the proposed extension forms part of the Central Free State.

Bloemfontein has developed around the Central Business District (CBD) in a sectorial form, with the majority of the poor and previously disadvantage communities living to the south-eastern region of the town. Except for the industrial area which flanks these settlements, the previous disadvantage areas offer very few job opportunities to these individuals and people need to travel up to 15 kilometres to get to the centre of town. Unemployment figures in the region is alarming, with 27.7% unemployment rate in Mangaung (Stats SA, 2011).

According to the Mangaung Local Municipality's 2013 Integrated Development Plan (IDP), the main issues affecting communities within the study area are the housing back lock and transportation. The Cecelia Park development will contribute to housing in the region and will therefore contribute to the municipalities aim in providing 20 000 housing opportunities within the next 5 years. Cecelia Park will also contribute to efficient traffic flow in the Western Regions of the town, by means of the newly proposed roads.

7.2.3 *Cultural, historical and archaeological aspects*

7.2.3.1 Paleontological Significance

The paleontological significance of the sedimentary bedrock in the region is considered high. However, the study area is in large part underlain by intrusive igneous dolerites which are considered to be of low paleontological significance. Potentially fossil-bearing bedrock within the study area is capped by a relatively thick mantle of geologically recent and paleontologically sterile, superficial deposits. The sedimentary bedrock component at Cecilia 2352 and Bloemfontein 654 is rated Generally Protected A (GP.A) (Russouw, 2014).

7.2.3.2 Archaeological Significance

A foot survey of the terrain revealed no evidence for the accumulation of in situ Stone Age archaeological material, capped or distributed as surface scatters on the landscape. There are also no indications of rock art, prehistoric structures or buildings older than 60 years within the boundaries of the study area. The archaeological component of the remainder of farms Cecilia 2352, Bloemfontein 654, and a portion of the farm Kwaggafontein 2300 is rated Generally Protected C (GP.C) (Russouw, 2014).

8 PUBLIC PARTICIPATION PROCESS

A comprehensive public participation process (PPP) was conducted to ensure that all interested and affected parties were informed of the proposed development and to ensure that everyone had the opportunity to raise their concerns and/or comments. PPP was undertaken in the Scoping Phase, and in this Assessment Phase.

8.1 Public Participation to date

A summary of public participation undertaken during the **Scoping Phase** is as follows:

- **Notice boards** were erected in accordance with Regulation 54(2)(a) and Regulation 54(3) of GN R.543 on 18 November 2014, at the following locations:
    - Langenhovenpark Library (29° 5'50.85"S; 26° 9'20.72"E)
    - Langenhovenpark Post Office (29° 5'47.88"S; 26° 9'37.83"E)
    - Site Notice 1 (29° 7'19.56"S; 26° 9'44.32"E)
    - Site Notice 2 (29° 7'33.43"S; 26° 9'44.02"E)
    - Site Notice 3 (29° 7'35.34"S; 26° 9'19.94"E)
    - Site Notice 4 (29° 7'43.37"S; 26° 8'40.09"E)

Written notice was given, in accordance with Regulation 54(2)(b) of GN R.543, to:

- **Government Authorities & Parastatals:**

Table 14: Government Authorities and Parastatals

Company / Organization / Ward	Contact Person
ESKOM	Xolisa Songcaka
Department of Water Affairs	Vernon Blair (Deputy Director)
Department of Water Affairs	Pius Lerotholi
Free State Department of Health	Dr. David Motau
SANRAL	Ms. Victoria Bota
Free State Department: Police, Roads and Transport	Mr. S. Msibi (HOD)
Department of Economic Development, Tourism and Environmental Affairs	Ms. Nthabeleng Mahase
Free State Department: Human Settlements	Mr Nthimotse Mokhesi (HOD)
Free State Department: Public Works	Mr. Maditse Wessels Seoke (HOD)
Free State Department: Social Development	Ms Matilda Gasela (HOD)
Free State Department: Sport, Arts, Culture and Recreation	Adv Tsoarelo Malakoane (HOD)
Heritage Free State	Ntando PZ Mbatha (Heritage Coordinator)
Centlec	Mamello Mpholo
Landowner (MMM)	Mr. Kaba Kabagambe

- **Local Authorities:**

Table 15: Local Authorities

Company / Organization / Ward	Contact Person
Mangaung Metropolitan Municipal Manager	Sibongile Mazibuko
Mangaung Metropolitan Municipal Environmental	Mpolokeng Kolobe
Ward councillor (Ward 26)	Hendrik van Niekerk
Central University of Technology	Ric Pengilly
Zoo Manager	Darrel Barnes

- **Associations / Companies / Surrounding Landowners**

Table 16: Associations / Companies / Surrounding Landowners

Company / Organization / Ward:	Name and Surname:	Contact number:	Email:
Makro	J. le Roux	051 1011012	jleroux@makro.co.za
iTau	Karin Bezuidenhoud	051 8752786	karin@itau.co.za
MAN	Karel van Heerden	051 5032503	
Resident	Stefan Hatting	051 444 6365	
Cori Draft	Sarel Diederiks	082 689 5269	sareld@live.com
Mafunyane	George Barkhuizen	083 454 945	gbark@aimonline.co.za
Freight	Wouter Theron	076 302 0045	wouter@fastfrieght.co.za
KN Grain	Pieter Greyvenstein	082 7744382	pieterg@lantic.net
Desleys	D. Robertson	082 9997032	
	J. Viljoen	051 813 0100	rainier@pinnicle.co.za
BP Garage	M. MacKenzie	051 523 3970	bpcpm@vodamail.co.za
Stuck in the Mud	IB Oosthuizen	073 514 4567	bfn@sawall.co.za

- **List of Registered Interested and Affected Parties**

Table 17: List of Registered Interested and Affected Parties

List of Interested and Affected Parties			
Organisation	**Name**	**Tel/Cell**	**Email:**
Langenhovenpark Residents Association	Leon Ehlers	084 6666 002	leon@udi.co.za / munette@gmail.com
Private	Kagisho Mokae	083 4289 612	kmokae@gmail.com
Private	Jacques le Roux	-	boskindjlr@vodamail.co.za
Qwaha Trust & Itau Milling Pty. Ltd	Fanti Hatting	082 573 1515	fanti@itau.co.za
BP Filling Station	Cecelia Park Motors	084 404 0466	bpcpm@vodamail.co.za

Langenhovenpark Bewarea	M. Maritz	082 744 4074	lhpbewarea@gmail.com
Telkom	Willem Voigt	081 428 2656	VoigtW@telkom.co.za
Langenhovenpark Residents Association	Annele Rudma	079 503 5531	rudmana@edu.fs.gov.za
Central University of Technology	Rick Pengilly	083 459 9055	rpengilly@cut.ac.za
Sthinya Pty. Ltd.	Thulani Maphalala	072 994 3693	emaphalala@gmail.com
Langenhovenpark Residents Association	Maronel Saaiman	083 793 8422	msaaiman@solar-om.co.za
Mangaung Metropolitan Municipality	M. Ramongalo	051 405 8577	Mpolokeng.kolobe@mangaung.co.za
Ward Councilor	H.J. van Niekerk	082 416 9623	hvn1@vodamail.co.za
Stuck In The Mud	Izak Oosthuizen	086 652 2940	bfn@sawall.co.za
K.S. Msothu Trading Pty Ltd	Kabelo Samuel Msothu	072 959 2620	msothu@yahoo.com
KN Grain Transport Logistics	Pieter Greyvenstein	082 7744382	Pieterg@lantic.net

Advertisements were placed in The Volksblad and the Express on Wednesday, 19 November 2014, in accordance with Regulation 54(2)(c) of GN R.543.

During the Public Participation Period on Draft Scoping Report, the EAP held a Public Meeting on 26 February 2015 at 18:00, in the Bunga A auditorium, Braam Fischer Building and gave all Organs of State, Parastatal Entities, Organisations, the General Public and all Registered Interested and Affected parties the opportunity to part take in the meeting by raising their comments and concerns. The meeting provided all attendants with sufficient background information in order to raise any comments and concerns. Please see **Appendix E** for attendance register and meeting minutes.

8.1.1 *Project Announcement and Invitation to Participate*

To ensure that adequate and appropriate opportunities for public participation are given, a range of organs of state, stakeholders, as well as interested and affected parties (I&APs) have been consulted. This is to enable parties to identify their issues associated with the development proposal for inclusion and consideration in the EIA process.

These parties were identified by means of desktop screening of the affected area, review of strategic documents applicable to the regional area, as well as site investigations and communication with landowners. I&APs were also invited to register on the PPP database during project announcement and during the comment period on the Scoping Report.

Public participation commenced on the 19 November 2014 with the publishing of a press advert in the Volksblad and Express Newspaper, placement of site notices on site boundaries and notification

of organs of state, stakeholders and I&APs. Some of the I&APs were contacted telephonically, and I&APs also received invitation to participate by hand and email.

Parties received a notice informing them of the project proposal, on which property the development site falls, a brief description of what the project entails, the name of the applicant, contact details of the EAP and timeframes during which they can comment. It was decided to adopt a proactive approach for parties from whom written response was obtained. In such instances, parties have been continued to be notified in the anticipation that comments may be submitted in forthcoming participation process comment periods.

8.1.2 *Draft and Final Scoping Reports*

Public participation undertaken during the scoping phase was characterised by two comment periods, coupled with the dissemination of reports of associated comment periods, namely:

- Draft Scoping Report – 40 Days; and
- Final Scoping Report – 21 Days.

In terms of Regulation 56(8) of GN R. 543 of the EIA Regulations of 18 June 2010, as amended, state departments are to be provided with a comment period of 40 days on draft reports. As such, all parties were given the opportunity to participate during the scoping process.

Public participation on the Draft Scoping Report (DSR) followed an initial registration period which ran from 19 November 2014 to 10 December 2014. On 13 February 2015, the DSR was circulated for a 40 day comment period which closed on the 25 March 2015. The report provided I&APs with a succinct description of the proposed development, description of features of the broad environment and consideration of alternatives and identified potential and anticipated impacts.

Following completion of the DSR comment period, the report was updated with new information derived from investigations, as well as information gathered from issues and concerns raised by I&APs. The FSR was then made available for a 21 day comment period which commenced on 07 April 2015 and closed on 28 April 2015. The report and comments received and submitted to the DETEA for review and decision. A record of the comments received is provided in Appendix E.

8.2 Impact Assessment Phase Public Participation

8.2.1 *Draft EIA Report*

On availability of this Draft EIA Report, all registered I&APs, Organs of State and stakeholders were notified. All parties are provided 40 calendar days during which to comment on this report.

Copies of the draft and final EIA reports are being made available for review on the Enviroworks website (www.enviroworks.co.za) and can be downloaded at: http://www.enviroworks.co.za/projectdownloads.php under the project name “Cecilia Park Residential Development”.

All public comments will be worked into the CRR, which shall provide a summary of issues raised and response given by the EAP and project team. Should comments reflect the need for revisions in the draft report, these shall be addressed. The draft report will be finalised for a final comment period.

8.2.2 *Final EIA Report*

Once the Final EIA Report is ready for circulation, all registered I&Aps, Stakeholders and Organs of State will have 21 calendar days in which to comment on the Final EIA Report. On completion of the 21 day commenting period, all comments received will be assembled and send to the DETEA for consideration in their decision making process.

8.3 Notification of Environmental Authorisation

The DETEA is mandated as the competent authority for all applications for Environmental Authorisation pertaining to the proposed Cecilia Park Mixed-Use Development.

On receipt and review of the Final EIA Report, the DETEA must grant or refuse authorisation in terms of Regulation 35 of GN R 543 of the EIA Regulations of 18 June 2010, as amended.

The EAP must then inform all I&APs in writing of this decision within 12 days of the date of this notice. Once informed, all parties will be afforded an opportunity to appeal the decision.

8.4 Comments and Responses Report

The following table provides a register of the comments and response received during various public participation stages of the EIA process. Comments have been grouped according to the period in which they were received.

Please see Appendix E5 for Comments and Responses Report

9 ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE

Regulation 31(2)(m) of the EIA Regulations of 2010, as amended, requires that an EIA Report describe any assumptions, uncertainties and gaps in knowledge as relevant to the relevant EIA process. In recognition of this need, there are two distinct aspects of the process which would necessitate clarification in this regard, namely the EIA process itself and contributing specialist studies.

9.1 Assumptions, Uncertainties and Gaps in Knowledge Relevant to the EIA Process

The processes of investigation which have led to the production of this report, harbours several **assumptions**, which include the following:

- All information provided by the applicant and engineer to the Environmental team was correct and valid at the time that it was provided;
- Strategic level investigations undertaken by engineer prior to the commencement of the EIA process, determined that the development site represents a potentially suitable and technically acceptable location;
- The public received a fair and reoccurring opportunity to participate in the EIA process, through the provision of public participation timeframes stipulated in the Regulations;
- The need and desirability was based on strategic national, provincial and local plans and policies which reflect the interests of both statutory and public viewpoints;
- The information provided by specialists is accurate and unbiased;
- The EIA process is a project-level framework and is limited to assessing the environmental impacts associated with the construction and operation phases of the proposed Cecilia Park Mixed-Use Development;
- Strategic level decision making is achieved through cooperative governance with sustainable development principles underpinning all decision-making.

Given that an EIA involves prediction, **uncertainty** forms an integral part of the process (FAO 2010). Two types of uncertainty are associated with the EIA process, namely process-related and prediction-related. The FAO (2010) cites types of uncertainty as discussed by de Jongh in Wathern. These are summarised as follows:

- Uncertainty of prediction is critical at the data collection phase as final certainty will only be resolved on implementation of the proposed development. Research may minimise this uncertainty;

- Uncertainty of values depicts the approach assumed during the EIA process, while final certainty will be determined at the time decisions are made. Enhanced communications and widespread coordination can lower uncertainty; and
- Uncertainty of related decision relates to the decision-making aspect of the EIA process, which shall be appeased once monitoring of the project phases is undertaken.

The FAO (2010) further stresses the significance of widespread consultation towards minimising the risk of omitting significant impacts. The use of quantitative impact significance rating formulas can further limit the occurrence and scale of uncertainty.

Gaps in knowledge can be attributed to:

The EIA process is being undertaken prior to the availing of certain information which would be derived from the project design and feasibility studies. As such, technical aspects included herein derive from a range of sources including pre-feasibility engineering and through personal communication with the design team. Given that the EIA process is one of several investigations being done, milestones and key outputs for each of these may not always be available for integration into the EIA process. As such, the DETEA and other commenting and decision-making authorities are required to generate their decisions based on the information available to the study at the time, whilst measures can be adopted to manage any changes as conditions within decisions made.

Enviroworks is an independent environmental consulting firm and as such, all processes and attributes of the EIA are addressed in a fair and unbiased fashion. It is believed that through the running of a transparent and participatory process, risks associated with assumptions, uncertainties and gaps in knowledge can be, and were, minimised.

10 ENVIRONMENTAL IMPACT ASSESSMENT

The sections below summarise the issues and potential impacts that were identified during the scoping phase of this project, and describe the two project phases for which the impact assessment was undertaken. It also describes the impact assessment methodology used, and provides an assessment of the potential impacts of the proposed project. The EIA specialists' main findings and recommendations are also summarised below.

10.1 Summary of Potential Environmental Impacts Identified during Scoping and which will be assessed n this impact assessment report

The following sections summarise the potential biological, physical, social, economic and cultural impacts that were identified during the scoping phase of this EIA process and the impacts that will be assessed in this impact assessment report.

10.1.1 *Construction Phase Impacts:*

The following section identifies potential construction impacts that will be further assessed in this impact assessment report:

- **Surface Water and Groundwater**

  Contamination of surface water may occur as a result of improper management of contaminants. Improper management of sanitation may result in the contamination of groundwater

- **Flora**

  A loss in vegetation may occur during vegetation removal prior to construction activities taking place.

- **Fauna**

  Impact on Fauna may occur as a result of the distraction of habitats during the construction phase and clearing phase of the project.

- **Waste Management**

  In terms of the construction phase of the project, construction activities will generate relative low amount of general waste, which comes in the form of construction and general domestic waste. General waste will be removed from site to an appropriate registered landfill site. This impact will be investigated further in the impact assessment report.

- **Traffic**

  The development will include the construction, expansion and lengthening of roads as mentioned in the report above. This will have an impact on traffic in the area.

- **Archaeology and Palaeontology**

  The possibility occur that the construction activity my lead to an impact on Archaeology and Palaeontology aspects.

- **Air quality**

  CO^2 Emissions from construction vehicles and machinery, as well as dust during the construction phase will have an impact on air quality.

- **Geology**

  Due to construction, disturbance in surface geology may occur as result of foundations.

- **Topography**

  Erosion during the clearing and construction phases of the project may lead to an impact on the topography. Building material may also alter the topography of the area.

- **Topsoil and Land use**

  During the construction phase of the project, soil recourses including essential top soil may be impacted on. Erosion of topsoil may occur as well as the compaction of soil.

- **Noise**

  During the construction phase of the project, noise will be generated by construction vehicles, construction machinery and contractors.

- **Visual Impacts**

  The visual perspective of the property will be changed.

- **Socio Economic**

  Socio Economic can be divide into the following two categories:

  Positive Socio Economic Impacts:

  - The proposed development will result in job creation during the construction phase of the project.

  Negative Socio Economic Impacts:

  - Safety impacts may occur as a result of improper safety management on site.

10.1.2 *Operational Phase Impacts:*

The following section identifies potential operational impacts that will be assessed further in this impact assessment report:

- **Visual Impacts**

  The visual perspective of the property will be changed.

- **Waste Management**

  In terms of the operational phase of the project, the mixed-use development will generate general and domestic waste. General waste will be removed by the Mangaung Metropolitan Municipality to an appropriate registered landfill site. This impact will be investigated further in the impact assessment report.

- **Traffic**

  The development will include the construction, expansion and lengthening of roads as mentioned in the report above. This will have an impact on traffic in the area.

- **Socio Economic**

  Socio Economic can be divide into the following two categories:

  Positive Socio Economic Impacts:

  - The proposed development will provide housing to residents during the operational phase and will contribute to MMM`s plan in providing 20 000 housing opportunities within 5 years.

Negative Socio Economic Impacts:

- An increase in criminal activities in the local regions of the proposed activity.

Cumulative Impacts

Cumulative Impacts include a potential change in surface and ground water source quality. This impact will be investigated further in the Impact Assessment Report.

10.2 Environmental Components Considered in this Impact Assessment

The potential impacts of the proposed development during construction and operational phase, on the following components of the environment, were considered during this impact assessment:

Construction Phase Impacts

- Surface Water and Groundwater
- Flora
- Fauna
- Waste Management
- Traffic
- Archaeology and Palaeontology
- Air quality
- Geology
- Topography
- Topsoil and Land use
- Noise
- Visual Impacts
- Socio Economic

Operational Phase Impacts

- Visual Impacts
- Waste Management
- Traffic
- Socio Economic

10.3 Impact Assessment Methodology

The significance of each identified potential impact was assessed by using the following criteria:

- **Duration** of the impact (time scale);

- **Extent** of the impact (spatial scale);
- Degree to which the impact may cause **irreplaceable loss of resources**;
- Degree to which the impact can be **reversed**;
- **Magnitude (or Nature)** of negative or positive impacts;
- **Probability** of the impact occurring;
- **Cumulative impacts**; and the
- Degree to which the impact can be **mitigated.**

The scales to be used to assess these variables and to define the rating categories are provided in the tables below.

Table 18: Evaluation components, ranking scales and descriptions (criteria).

Evaluation component	Ranking scale and description (criteria)
MAGNITUDE of NEGATIVE IMPACT (at the indicated spatial scale)	**10 - Very high**: Bio-physical and/or social functions and/or processes might be *severely* altered. **8 - High**: Bio-physical and/or social functions and/or processes might be *considerably* altered. **6 - Medium**: Bio-physical and/or social functions and/or processes might be *notably* altered. **4 - Low** : Bio-physical and/or social functions and/or processes might be *slightly* altered. **2 - Very Low**: Bio-physical and/or social functions and/or processes might be *negligibly* altered. **0 - Zero**: Bio-physical and/or social functions and/or processes will remain *unaltered.*
MAGNITUDE of POSITIVE IMPACT (at the indicated spatial scale)	**10 - Very high (positive)**: Bio-physical and/or social functions and/or processes might be *substantially* enhanced. **8 - High (positive)**: Bio-physical and/or social functions and/or processes might be *considerably* enhanced. **6 - Medium (positive)**: Bio-physical and/or social functions and/or processes might be *notably* enhanced. **4 - Low (positive)**: Bio-physical and/or social functions and/or processes might be *slightly* enhanced. **2 - Very Low (positive)**: Bio-physical and/or social functions and/or processes might be *negligibly* enhanced. **0 - Zero (positive)**: Bio-physical and/or social functions and/or processes will remain *unaltered.*
DURATION	**5 - Permanent** **4 - Long term**: Impact ceases after operational phase/life of the activity > 60 years. **3 - Medium term**: Impact might occur during the operational phase/life of the activity – 60 years. **2 - Short term**: Impact might occur during the construction phase - < 3 years. **1 - Immediate**
EXTENT (or spatial scale/influence of impact)	**5 - International**: Beyond National boundaries. **4 - National**: Beyond Provincial boundaries and within National boundaries. **3 - Regional**: Beyond 5 km of the proposed development and within Provincial boundaries. **2 - Local**: Within 5 km of the proposed development. **1 - Site-specific**: On site or within 100 m of the site boundary. **0 -** None
IRREPLACEABLE loss of resources	**5 – Definite** loss of irreplaceable resources. **4 – High** potential for loss of irreplaceable resources. **3 – Moderate** potential for loss of irreplaceable resources.

	2 – Low potential for loss of irreplaceable resources. **1 – Very low** potential for loss of irreplaceable resources. **0 - None**
REVERSIBILITY of impact	**5 –** Impact **cannot** be reversed. **4 – Low** potential that impact might be reversed. **3 – Moderate** potential that impact might be reversed. **2 – High** potential that impact might be reversed. **1 –** Impact **will be** reversible. **0 –** No impact.
PROBABILITY (of occurrence)	**5 - Definite**: >95% chance of the potential impact occurring. **4 - High probability**: 75% - 95% chance of the potential impact occurring. **3 - Medium probability**: 25% - 75% chance of the potential impact occurring **2 - Low probability**: 5% - 25% chance of the potential impact occurring. **1 - Improbable**: <5% chance of the potential impact occurring.

Evaluation component	Ranking scale and description (criteria)
CUMULATIVE impacts	**High**: The activity is one of several similar past, present or future activities in the same geographical area, and might contribute to a very significant combined impact on the natural, cultural, and/or socio-economic resources of local, regional or national concern. **Medium**: The activity is one of a few similar past, present or future activities in the same geographical area, and might have a combined impact of moderate significance on the natural, cultural, and/or socio-economic resources of local, regional or national concern. **Low**: The activity is localised and might have a negligible cumulative impact. **None**: No cumulative impact on the environment.

Once the evaluation components have been ranked for each potential impact, the significance of each potential impact will be assessed (or calculated) using the following formula:

SP (significance points) = (magnitude + duration + extent + irreplaceable + reversibility) x probability

The maximum value is 150 SP (significance points). The unmitigated and mitigated scenarios for each potential environmental impact should be rated as per **Error! Reference source not found.** below.

Table 19: Definition of significance ratings (positive and negative)

Significance Points	Environmental Significance	Description
125 – 150	**Very high (VH)**	An impact of very high significance will mean that the project cannot proceed, and that impacts are irreversible, regardless of available mitigation options.

100 – 124	**High (H)**	An impact of high significance which could influence a decision about whether or not to proceed with the proposed project, regardless of available mitigation options.
75 – 99	**Medium-high (MH)**	If left unmanaged, an impact of medium-high significance could influence a decision about whether or not to proceed with a proposed project. Mitigation options should be relooked.
40 – 74	**Medium (M)**	If left unmanaged, an impact of moderate significance could influence a decision about whether or not to proceed with a proposed project.
<40	**Low (L)**	An impact of low is likely to contribute to positive decisions about whether or not to proceed with the project. It will have little real effect and is unlikely to have an influence on project design or alternative motivation.
+	**Positive impact (+)**	A positive impact is likely to result in a positive consequence/effect, and is likely to contribute to positive decisions about whether or not to proceed with the project.

10.4 Impact Assessment Summary Tables

The tables below summarise the potential impacts as identified, and provide the significance ratings for these impacts, without and with the implementation of the prescribed mitigation measures. Refer to **Section 10.5** above for more information and detailed descriptions of the potential impacts, as well as summaries of the specialist studies undertaken.

10.4.1 *Construction Phase Impact Assessment*

The construction phase impacts of the proposed project (with and without mitigation) are summarised and assessed (rated) in the table below.

Table 20: Planning and construction phase impact assessment summary table.

Potential Impacts on Ground and Surface Water Quality			
Potential impacts on Ground and Surface Water:	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**
Nature of impact: Construction activities may impact on ground and surface water.	During the construction phase of the project; spills, stormwater runoff, leakages and soil erosion my impact in ground and surface water.	During the construction phase of the project; spills, stormwater runoff, leakages and soil erosion my impact in ground and surface water.	The proposed development will not take place and as such this impact will not occur.
Magnitude of Impact	Low (4)	Low (4)	-
Duration of impact:	Short term (2)	Short term (2)	-
Extent of the impact	Site-Specific (1)	Site-Specific (1)	-
Degree to which local resources are irreplaceable	Low (2)	Low (2)	-
Degree to which the impact can be reversed:	Low (4)	Low (4)	-
Probability of occurrence:	High Probability (4)	High Probability (4)	-

Cumulative impact prior to mitigation:	Medium	Medium	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (52)	Medium (52)	-
Proposed mitigation:	• Ensure off site maintenance of all construction vehicles and construction machinery; • Ensure that spillages and leakages of chemicals (oil, diesels, petrol, etc.) are prevented and if it cannot be prevented, ensure effective detection and dimidiation thereof; • Restrict access to any possible surface water areas; • Ensure sufficient management of surface water runoff; • Ensure that all forms of waste are disposed of in a sufficient manner in order to avoid the pollution and contamination of surface and ground water; and • Provide for environmental awareness training through an environmental induction meeting to explain the consequences of such pollution and indicate measures to prevent and to mitigate these impacts (Please refer to the EMP)		-
Cumulative impact post mitigation:	Low	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (26)	Low (26)	-
Potential Flora Impacts			
Potential impacts on terrestrial flora:	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**
Nature of impact: Construction activities may impact on terrestrial flora.	During the construction phase of the project the removal of vegetation will occur. Construction vehicles can also impact on terrestrial vegetation if access to these areas are not controlled.	During the construction phase of the project the removal of vegetation may occur. Construction vehicles can also impact on terrestrial vegetation if access to these areas are not controlled.	The proposed development will not take place and as such this impact will not occur.
Magnitude of Impact	High (8)	High (8)	-
Duration of impact:	Permanente (5)	Permanente (5)	-

Extent of the impact	Site specific(1)	Site specific (1)	-
Degree to which local resources are irreplaceable	Moderate (3)	Moderate (3)	-
Degree to which the impact can be reversed:	Moderate (3)	Moderate (3)	-
Probability of occurrence:	High Probability (4)	High Probability (4)	-
Cumulative impact prior to mitigation:	Medium High (MH)	Medium High (MH)	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium High (80)	Medium High (80)	-
Proposed mitigation:	• The use of topsoil for rehabilitation contaminated by the seed of alien vegetation shall not be permitted unless a program to germinate the seed and eradicate the seedlings is drawn up and approved by the ECO; ***Clearing and Guiding Principles*** • Alien control programs are long-term management projects and should include a clearing plan which includes follow up actions for rehabilitation of the cleared area; • The lighter infested areas should be cleared first to prevent seed build-up; • Pre-existing dense areas should be left for last, as they probably will not increase in density or pose a greater threat than they are currently; • All clearing actions should be monitored and documented to keep track of which are due for follow-up clearing. ***Clearing Methods*** • Different species require different control methods such as manual, chemical or biological methods or a combination of the two; • Care should be taken to ensure that the clearing methods used do not encourage further invasion. As such, regardless of the methods used, soil disturbance should be kept to a minimum. The vegetative stage of the plants should also be considered before clearing; ***Use of Herbicides for Alien Control*** Although it is usually preferable to use manual clearing methods where possible, such methods may create additional mechanical disturbance which may stimulate alien invasion and may also be		-

	ineffective for many woody species which re-sprout. Where herbicides are to be used , the impact of the eradication program on the natural environment should be minimised be observing the following: • Area contamination must be minimised by careful, accurate application with a minimum amount of herbicide to achieve good control; • Care must be taken to prevent contamination of water bodies. This includes special care in storage, application, cleaning equipment and disposal of containers, product and spray mixtures; • Equipment should be washed where there is no danger of contaminating water sources and washings carefully disposed of in a suitable place; • To avoid damage to indigenous or other desirable vegetation, herbicides that would have the least effect on the indigenous vegetation should be used; • Droplet nozzles with a course spray pattern should be fitted to avoid drift of herbicides onto neighbouring vegetation; and • The appropriate health and safety precautions should be followed regarding the storage, handling and disposal of herbicides. • Conduct a Search and Rescue to relocate protected species in order to avoid clearance thereof.		
Cumulative impact post mitigation:	Low	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (36)	Low (36)	-
Potential Fauna Impacts			
Potential impacts on Fauna species:	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**
Nature of impact: Construction activities may impact on Fauna species.	During the construction phase of the project construction activities may lead to an impact on terrestrial fauna species. However, due to the fact that the site is transformed, very little terrestrial fauna species were identified on the property.	During the construction phase of the project construction activities may lead to an impact on terrestrial fauna species. However, due to the fact that the site is transformed, very little terrestrial fauna species were identified on the property.	The proposed development will not take place and as such this impact will not occur.
Magnitude of Impact	Very Low (2)	Very Low (2)	-
Duration of impact:	Immediate (1)	Immediate (1)	-
Extent of the impact	Site specific(1)	Site specific(1)	-

Degree to which local resources are irreplaceable	Very Low (1)	Very Low (1)	-
Degree to which the impact can be reversed:	High (2)	High (2)	-
Probability of occurrence:	High (2)	High (2)	-
Cumulative impact prior to mitigation:	Low	Low	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (18)	Low (18)	-
Proposed mitigation:	• No hunting, snaring, shooting, nest raiding or egg collection by the construction staff should be allowed; • Holes and trenches should not be left open for extended periods of time and should only be dug when needed for immediate construction. Trenches that may stand open for some days should have places where the loose material has been returned to the trench to form an escape ramp present at regular intervals to allow any fauna that fall in to escape; • Ensure that the construction area is fenced off from adjacent areas which may harbour wild animals; • Do not store building materials and excess stockpiled soils within riparian zones or within areas where natural vegetation will remain following completion of the construction phase of the development; • Avoid indiscriminate destruction of habitat through demarcation of the footprint area any fauna threatened by construction activities should be removed to safety by the ECO or other suitably qualified person.		-
Cumulative impact post mitigation:	Low	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (9)	Low (9)	-
Waste Management Impacts			
Potential impacts on local resources due to inadequate waste management:	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**

Nature of impact: Construction activities will result in the generation of waste.	During the construction phase of the project the generation of waste will occur and may cause pollution to the local area.	During the construction phase of the project the generation of waste will occur and may cause pollution to the local area.	The proposed development will not take place and as such this impact will not occur.
Magnitude of Impact	Low (4)	Low (4)	-
Duration of impact:	Short term (2)	Short term (2)	-
Extent of the impact	Local (2)	Local (2)	-
Degree to which local resources are irreplaceable	Low (2)	Low (2)	-
Degree to which the impact can be reversed:	Low (4)	Low (4)	-
Probability of occurrence:	High Probability (5)	High Probability (5)	-
Cumulative impact prior to mitigation:	Medium	Medium	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (70)	Medium (70)	-
Proposed mitigation:	• An adequate number of scavenger proof litter bins are to be placed throughout the site. • Dumping of waste on site is prohibited; • Waste sorting and separation should form part of the environmental induction and awareness programme, to encourage personnel to collect waste paper, glass and metal waste separately; • Keep all work sites including storage areas, offices and workshops neat and tidy; • Dedicate a demarcated and signposted storage area on site for the collection of construction waste; • All domestic waste is to be removed from site and disposed of at a registered solid waste landfill site; • Care should be taken to ensure that no waste fall off disposal vehicles en-route to the landfill. If needed, a tarpaulin can be utilised; • The burning or burying of solid waste on site is prohibited. Do not burn PVC pipes or other plastic materials, as this is regarded as hazardous waste • Littering by construction workers shall not be permitted; • Workers from the immediate area need to be encouraged to take their waste with them at the end of each day, • General refuse/rubbish shall be removed from site on a weekly basis to an approved landfill site,		-

	• Minimise waste by sorting wastes into recyclable and non-recyclable waste, • Rubble and upgrading refuse shall be collected and removed weekly; and • A weekly litter patrol of the entire site shall be conducted by the ECO.		
Cumulative impact post mitigation:	Low	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (36)	Low (36)	-
Potential Traffic Impacts			
Potential impacts on Traffic:	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**
Nature of impact: Construction activities may lead to increased traffic impact.	During the construction phase of the project construction vehicles will transport construction equipment and construction material to and from the site.	During the construction phase of the project construction vehicles will transport construction equipment and construction material to and from the site.	The proposed development will not take place and as such this impact will not occur.
Magnitude of Impact	Medium (6)	Medium (6)	-
Duration of impact:	Short term (2)	Short term (2)	-
Extent of the impact	Regional (3)	Regional (3)	-
Degree to which local resources are irreplaceable	Low (2)	Low (2)	-
Degree to which the impact can be reversed:	Moderate (3)	Moderate (3)	-
Probability of occurrence:	High Probability (4)	High Probability (4)	-
Cumulative impact prior to mitigation:	Medium	Medium	
Significance rating of impact prior to mitigation	Medium (64)	Medium (64)	-

(Low, Medium, Medium-High, High, or Very-High)			
Proposed mitigation:	• Abnormal loads should be timed to avoid times of year when traffic volumes are likely to be higher, as would be expected over national holidays, weekends and school holiday periods; • Abnormal loads should not be transported after dark when visibility is poor; • The contractor must ensure that all damage caused to roads by the construction related activities, including the movement of heavy vehicles, is remediated prior to the completion of the construction phase. The costs associated with the repair must be borne by the contractor; • Dust suppression on exposed soil surfaces must be undertaken by watering on a regular basis, particularly during dry periods • Vehicles used for the transport of materials and sand must be fitted with tarpaulins to prevent the release of such material or items onto road surfaces; • All vehicles must be road-worthy, be maintained to prevent fuel or oil leaks and drivers are to the licensed appropriately for the driving of their assigned vehicle. Drivers responsible for the transportation of personnel must be specifically licensed to do so; • Construction vehicles may not leave the designated roads and tracks, whilst U-Turns are prohibited on all roads; • The contractor must ensure that all damage caused to local roads by the construction related activities, including heavy vehicles, is repaired before the completion of the construction phase. The costs associated with the repair must be borne by the contractor; • Any damage to public roads is to be reported to the management authority and repaired to its original condition; • Signage is to be placed on vehicles at all times; • Transport of materials should be limited to the least amount of trips possible; • Construction-related vehicles and machinery may not operate without reflective safety signage, car-top lights and reflective personnel gear; • Stopping in narrow road shoulders or on bends without the presence of traffic calming or diversion measures should not be allowed.		-
Cumulative impact post mitigation:	Low (L)	Low (L)	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (36)	Low (36)	-
Potential Cultural, Historical and Archaeological Impacts			
Potential impacts on Cultural, Historical and Archaeological aspects	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**

Nature of impact: Construction activities may lead to the discovery of Cultural, Historical and Archaeological aspects	During the construction phase of the project, construction activities may lead to the discovery of Cultural, Historical and Archaeological aspects.	During the construction phase of the project, construction activities may lead to the discovery of Cultural, Historical and Archaeological aspects.	The proposed development will not take place and as such this impact will not occur.
Magnitude of Impact	Medium (4)	Medium (4)	-
Duration of impact:	Immediate (1)	Immediate (1)	-
Extent of the impact	Site Specific (2)	Site Specific (2)	-
Degree to which local resources are irreplaceable	Very Low (1)	Very Low (1)	-
Degree to which the impact can be reversed:	High (2)	High (2)	-
Probability of occurrence:	Improbable (1)	Improbable (1)	-
Cumulative impact prior to mitigation:	Low	Low	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (10)	Low (10)	-
Proposed mitigation:	• If archaeological deposits or remains are uncovered, works need to be halted and an archaeologist brought to site to assess the discovery; • If human remains are uncovered during construction works, work must stop immediately in that area and SAHRA must be contacted; • Excavations must be limited to the footprint area and be maintained in a narrow corridor.		-
Cumulative impact post mitigation:	Low	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (8)	Low (8)	-

Potential Air Quality Impacts			
Potential impacts on Local Air Quality Standards:	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**
Nature of impact: Construction activities, by means of dust debris, may impact on air quality.	During the construction phase of the project dust debris, open and un vegetated areas, vehicle emissions, and transport of building material (sand, etc.) may cause an impact on air quality in the region.	During the construction phase of the project dust debris, open and un vegetated areas, vehicle emissions, and transport of building material (sand, etc.) may cause an impact on air quality in the region.	The proposed development will not take place and as such this impact will not occur.
Magnitude of Impact	Medium (6)	Medium (6)	-
Duration of impact:	Short Term (2)	Short Term (2)	-
Extent of the impact	Regional (3)	Regional (3)	-
Degree to which local resources are irreplaceable	Low (2)	Low (2)	-
Degree to which the impact can be reversed:	High (2)	High (2)	-
Probability of occurrence:	Medium Probability (3)	Medium Probability (3)	-
Cumulative impact prior to mitigation:	Medium	Medium	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (45)	Medium (45)	-
Proposed mitigation:	• Ensure that all vehicles and construction machinery are serviced regularly and maintained in a good working condition; • Ensure that construction material in the form of sand, crusher dust, cement etc. are only transport to and from site by means of a vehicle with tarpaulins. • Ensure that vegetation clearance are kept to a minimum, in order to avoid sand to be windblown. • Stockpiles and the storage of sand etc. Should be covered to avoid direct wind to these particles.		-

Cumulative impact post mitigation:	Low	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (34)	Low (34)	-
Potential Geological Impacts			
Potential impacts on Geological Conditions:	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**
Nature of Impact: Excavation for foundations may lead to geological disturbance	During the construction phase of the project Excavation for foundations may lead to geological disturbance.	During the construction phase of the project Excavation for foundations may lead to geological disturbance.	The proposed development will not take place and as such this impact will not occur.
Magnitude of Impact	Low (4)	Low (4)	-
Duration of impact:	Short term (2)	Short term (2)	-
Extent of the impact	Site-specific (1)	Site-specific (1)	-
Degree to which local resources are irreplaceable	Very low (1)	Very low (1)	-
Degree to which the impact can be reversed:	High (2)	High (2)	-
Probability of occurrence:	Medium Probability (3)	Medium Probability (3)	-
Cumulative impact prior to mitigation:	Low	Low	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (30)	Low (30)	-

Proposed mitigation:	• Before casting may commence, the engineer or geologist must check the foundation to ensure sufficiency; • Water ingress in and around the foundations must be prevented; • Excavations which will be excavated deeper than 1.5 meter must be cut back not more than 75º; • The engineer must ensure that all fills are strong enough and mixed accordingly to carry the required weight.		-
Cumulative impact post mitigation:	Low	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (18)	Medium (18)	-
Potential Topography Impacts			
Potential impacts on Topographical conditions:	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**
Nature of impact: Building material, waste material, stockpiling of soil and debris may alter the topography.	During the construction phase of the project Building material, waste material, stockpiling of soil and debris may alter the topography.	During the construction phase of the project Building material, waste material, stockpiling of soil and debris may alter the topography.	The proposed development will not take place and as such this impact will not occur.
Magnitude of Impact	Low (4)	Low (4)	-
Duration of impact:	Short term (2)	Short term (2)	-
Extent of the impact	Site-specific (1)	Site-specific (1)	-
Degree to which local resources are irreplaceable	Very low (1)	Very low (1)	-
Degree to which the impact can be reversed:	Very High (1)	Very High (1)	-
Probability of occurrence:	High Probability (2)	High Probability (2)	-

Cumulative impact prior to mitigation:	Low	Low	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (18)	Low (18)	-
Proposed mitigation:	• All stockpiling may not exceed a height of more than two (2) meters and must be covered to avoid wind and/or water erosion; • Stockpiling must be limited to dedicated areas; • Movement on site must be limited to restricted working and traveling areas.		-
Cumulative impact post mitigation:	Low	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (9)	Medium (9)	-
Potential Topsoil and Land use Impacts			
Potential impacts on Topsoil and Land use conditions:	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**
Nature of impact: Degradation of soil and land use.	During the construction phase of the project exposed surfaces and the compaction of construction material may lead to the degradation of soil and land use.	During the construction phase of the project exposed surfaces and the compaction of construction material may lead to the degradation of soil and land use.	The proposed development will not take place and as such this impact will not occur.
Magnitude of Impact	Low (4)	Low (4)	-
Duration of impact:	Permanent (5)	Permanent (5)	-
Extent of the impact	Site-specific (1)	Site-specific (1)	-
Degree to which local resources are irreplaceable	Low (2)	Low (2)	-

Degree to which the impact can be reversed:	High (2)	High (2)	-
Probability of occurrence:	High Probability (4)	High Probability (4))	-
Cumulative impact prior to mitigation:	Medium	Medium	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (56)	Medium (56)	-
Proposed mitigation:	• Traveling to and from work areas may only take place on designated access roads; • Protect vegetated areas to erosion; • Minimize the clearance of vegetation; • Material which may disturb regrowth of vegetation must be removed; • Reuse topsoil to rehabilitate un vegetated areas;		-
Cumulative impact post mitigation:	Low	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (40)	Medium (40)	-
Potential Noise Impacts			
Potential impacts on Noise conditions:	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**
Nature of impact: Construction activities may lead to the increase in noise.	During the construction phase of the project construction activities by means of heavy machinery and vehicles may lead to the increase in noise.	During the construction phase of the project construction activities by means of heavy machinery and vehicles may lead to the increase in noise.	The proposed development will not take place and as such this impact will not occur.
Magnitude of Impact	Low (4)	Low (4)	-
Duration of impact:	Short term (2)	Short term (2)	-

Extent of the impact	Local (2)	Local (2)	-
Degree to which local resources are irreplaceable	Moderate(3)	Moderate (3)	-
Degree to which the impact can be reversed:	Moderate (3)	Moderate (3)	-
Probability of occurrence:	High Probability (4)	High Probability (4)	-
Cumulative impact prior to mitigation:	Medium	Medium	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (56)	Medium (56)	-
Proposed mitigation:	• Construction working hours must be limited to 07:00 – 18:00 on working days; • No construct may take place on Sundays; • All construction machineries must be fitted with silencers; • All construction machineries must be maintained and regularly services;		-
Cumulative impact post mitigation:	Medium	Medium	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (42)	Medium (42)	-
Potential Visual Impacts			
Potential impacts on Visual conditions:	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**
Nature of impact: Clearance of vegetation, stockpiling and construction machinery may alter the visual quality of the area.	During the construction phase of the project Clearance of vegetation, stockpiling and construction machinery may alter the visual quality of the area.	During the construction phase of the project Clearance of vegetation, stockpiling and construction machinery may alter the visual quality of the area	The proposed development will not take place and as such this impact will not occur.

Magnitude of Impact	Medium (6)	Medium (6)	-
Duration of impact:	Short term (2)	Short term (2)	-
Extent of the impact	Local (2)	Local (2)	-
Degree to which local resources are irreplaceable	Moderate (3)	Moderate (3)	-
Degree to which the impact can be reversed:	Moderate (3)	Moderate (3)	-
Probability of occurrence:	High Probability (4)	High Probability (4)	-
Cumulative impact prior to mitigation:	Medium	Medium	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (64)	Medium (64)	-
Proposed mitigation:	• Construction machinery must be stored at designated storage areas; • Removal of vegetation must be limited; • Top soil stockpiling may not exceed 2 meters in height and must be covered to avoid wind and water erosion, • Un Vegetated areas must be rehabilitated after construction in the area is completed by using top soil.		-
Cumulative impact post mitigation:	Medium	Medium	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (52)	Medium (52)	-
Potential Positive Socio Economic Impacts			

Potential impacts on Socio Economic conditions	Layout Alternatives 1 (A1)	Layout Alternatives 2 (A2)	No-Go Alternative
Nature of impact: Construction activities may have a positive impact on the local and regional socio economic conditions	During the construction phase of the project the construction process may have a positive impact on the local and regional socio economic conditions by means of job creation.	During the construction phase of the project the construction process may have a positive impact on the local and regional socio economic conditions by means of job creation.	The proposed development will not take place and as such no socio-economic benefits will be derived from this construction period. The impact will thus be a negative one.
Magnitude of Impact	Medium (8)	Medium (8)	Zero (0)
Duration of impact:	Short term (2)	Short term (2)	Medium Term (2)
Extent of the impact	Regional (3)	Regional (3)	Regional (3)
Degree to which local resources are irreplaceable	Moderate (3)	Moderate (3)	Definite (5)
Degree to which the impact can be reversed:	Low (4)	Low (4)	Low (4)
Probability of occurrence:	Definite (5)	Definite (5)	High Probability (5)
Cumulative impact prior to mitigation:	High (+)	High (+)	Medium
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)`	High + (100)	High + (100)	Medium (70)
Proposed mitigation:	• Where reasonable and practical the contractors appointed by the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. • Where feasible, efforts should be made to employ local contactors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria; • Trench bedding material (sand) should be sought locally. • Before the construction phase commences the proponent and its contractors should meet with representatives from the Mangaung Metropolitan Municipality to establish the existence of a skills database for the area. If such as database exists it should be made available to the contractors appointed for the construction phase;		• If this project does not take place, the high levels of unemployment in the local regions will not change and people will still be without any working opportunities.

	• The recruitment selection process should seek to promote gender equality and the employment of women wherever possible, particularly for less labour-intensive work such as supervision;		
Cumulative impact post mitigation:	High (+)	High (+)	
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	High (+) (112)	High (+) (112)	
Potential Negative Socio Economic Impacts			
Potential impacts on Socio Economy conditions:	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**
Nature of impact: Construction activities may lead to noise and air emissions which will affect the socio economic conditions of the area.	During the construction phase of the project noise and air emissions (dust) will be generated, which may negatively impact on nearby residents.	During the construction phase of the project noise and air emissions (dust) will be generated, which may negatively impact on nearby residents.	The proposed development will not take place and as such this impact will not occur.
Magnitude of Impact	Low (4)	Low (4)	-
Duration of impact:	Short term (2)	Short term (2)	-
Extent of the impact	Local (2)	Local (2)	-
Degree to which local resources are irreplaceable	Low (2)	Low (2)	-
Degree to which the impact can be reversed:	High (2)	High (2)	-
Probability of occurrence:	High Probability (4)	High Probability (4)	-
Cumulative impact prior to mitigation:	Medium	Medium	
Significance rating of impact prior to mitigation	Medium (48)	Medium (48)	-

(Low, Medium, Medium-High, High, or Very-High)			
Proposed mitigation:	• Ensure that all vehicles and construction machinery are serviced regularly and maintained in a good working condition; • Ensure that construction material in the form of sand, crusher dust, cement etc. are only transport to and from site by means of a vehicle with tarpaulins. • Ensure that vegetation clearance are kept to a minimum, in order to avoid sand to be windblown. • Stockpiles and the storage of sand etc. Should be covered to avoid direct wind to these particles. • Ensure that construction activities are within normal working hours (07:00 to 18:00). • No construction activities may take place during evenings.		-
Cumulative impact post mitigation:	Low	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (39)	Medium (39)	-

10.4.2 *Operational Phase Impact Assessment*

The operational phase impacts of the proposed project (with and without mitigation) are summarised and assessed (rated) in the table below.

Table 21: Operational phase impact assessment summary table.

Potential Visual Impacts			
Potential impacts Visual Standards:	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**
Nature of impact: Operational activities, by means of buildings may alter the visual quality of the area.	During the operational phase phase of the project buildings may alter the visual quality of the area.	During the operational phase phase of the project buildings may alter the visual quality of the area.	The proposed development will not take place and as such this impact will not occur.
Magnitude of Impact	Medium (6)	Medium (6)	-
Duration of impact:	Permanente (5)	Permanente (5)	-
Extent of the impact	Local (2)	Local (2)	-
Degree to which local resources are irreplaceable	High (4)	Definite (5)	-
Degree to which the impact can be reversed:	Low (4)	Very Low (5)	-
Probability of occurrence:	High Probability (4)	Definite (5)	-
Cumulative impact prior to mitigation:	High	High	
Significance rating of impact prior to mitigation	Medium High (84)	High (115)	-

(Low, Medium, Medium-High, High, or Very-High)			
Proposed mitigation:	• Building guidelines to be implemented to reduce triple story buildings and higher close to the N1 and the N8; • Building regulations must try to implement a specific design for building in the area in order to get all to be build according to the samr building style. • Building must be painted a natural colour to try and fit to the surrounding areas.		-
Cumulative impact post mitigation:	High	High	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium High (76)	High (102)	-
Waste Management Impacts			
Potential impacts on waste management:	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**
Nature of impact: Operational activities produces, general waste, domestic waste and hazardous waste.	During the operational phase of the project, general waste, domestic waste and hazardous waste.	During the operational phase of the project, general waste, domestic waste and hazardous waste.	The proposed development will not take place and as such this impact will not occur.
Magnitude of Impact	Medium (6)	Medium (6)	-
Duration of impact:	Permanent (5)	Permanent (5)	-
Extent of the impact	Site specific (1)	Site specific (1)	-
Degree to which local resources are irreplaceable	Low (2)	Moderate (3)	-
Degree to which the impact can be reversed:	High (2)	Moderate (3)	-
Probability of occurrence:	Definite(5)	Definite(5)	-

Cumulative impact prior to mitigation:	Medium High	Medium High	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium High (80)	Medium High (90)	-
Proposed mitigation:	• General waste and domestic waste will be collected by the Mangaung Metropolitan Municipality on a weekly basis; • Reuse and recycling of waste must be brought under property occupiers attention and must be promoted; and • Hazardous waste must be removed by an approved hazardous waste removing company.		-
Cumulative impact post mitigation:	Medium High	Medium High	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (69)	Medium High (76)	-
Potential Traffic Impacts			
Potential impacts on Traffic:	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**
Nature of impact: Operational activities may lead to increased traffic impact.	During the operational phase of the project resident and occupiers of the erven in the area will lead to higher traffic impacts.	During the operational phase of the project resident and occupiers of the erven in the area will lead to higher traffic impacts.	The proposed development will not take place and as such this impact will not occur.
Magnitude of Impact	Low (4)	Medium (6)	-
Duration of impact:	Permanent (5)	Permanent (5)	-
Extent of the impact	Regional (3)	Regional (3)	-
Degree to which local resources are irreplaceable	Low (2)	Moderate (3)	-

Degree to which the impact can be reversed:	Moderate (3)	Moderate (3)	-
Probability of occurrence:	High Probability (4)	High Probability (4)	-
Cumulative impact prior to mitigation:	Medium	Medium-high	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (68)	Medium-high (80)	-
Proposed mitigation:	• Abnormal loads should be timed to avoid times of year when traffic volumes are likely to be higher, as would be expected over national holidays, weekends and school holiday periods; • Abnormal loads should not be transported after dark when visibility is poor; • Vehicles used for the transport of materials must be licensed and must comply with national road legislation. • All vehicles must be road-worthy, be maintained to prevent fuel or oil leaks and drivers are to the licensed appropriately for the driving of their assigned vehicle. Drivers responsible for the transportation of personnel must be specifically licensed to do so; • Transport of materials should be limited to the least amount of trips possible; • Stopping in narrow road shoulders or on bends without the presence of traffic calming or diversion measures should not be allowed. • Public Transport opportunities must be implemented. • Walking lanes and sidewalks must be implemented.		-
Cumulative impact post mitigation:	Low	Medium	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (46)	Medium (53)	-
Potential Positive Socio Economic Impacts			
Potential impacts on Socio Economic conditions	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**
Nature of impact: Operation activities may have a positive	During the operational phase of the project the operational process may have a positive impact	During the operational phase of the project the operational process may have a positive impact on	The proposed development will not take place and as such no socio-

impact on the local and regional socio economic conditions	on the local and regional socio economic conditions by means of housing opportunities.	the local and regional socio economic conditions by means of housing opportunities.	economic benefits will be derived from this operational period. The impact will thus be a negative one.
Magnitude of Impact	High (8)	High (8)	Zero (0)
Duration of impact:	Permanent (5)	Permanent (5)	Long Term (4)
Extent of the impact	National (4)	National (4)	National (4)
Degree to which local resources are irreplaceable	Moderate (4)	Moderate (3)	Definite (5)
Degree to which the impact can be reversed:	Low (4)	Moderate (3)	Low (4)
Probability of occurrence:	Definite (5)	Definite (5)	High Probability (4)
Cumulative impact prior to mitigation:	Very High +	High +	Medium
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)`	Very High + (125)	High + (115)	Medium (68)
Proposed mitigation:	• The proposed development will be provide for housing opportunities as well as light industrial opportunities will will also contribute to job creation.		• If this project does not take place, the high levels of unemployment in the local regions will not change and people will still be without any working opportunities.
Cumulative impact post mitigation:	Very High +	Very High +	
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Very High + (136)	Very High + (126)	

Potential Negative Socio Economic Impacts			
Potential impacts on Socio Economy conditions:	**Layout Alternatives 1 (A1)**	**Layout Alternatives 2 (A2)**	**No-Go Alternative**
Nature of impact: Operational activities may lead higher criminal activities in the area.	During the operational phase of the project higher criminal activities may take place in the area.	During the operational phase of the project higher criminal activities may take place in the area.	The proposed development will not take place and as such this impact will not occur.
Magnitude of Impact	Low (4)	Low (4)	-
Duration of impact:	Permanent (5)	Permanent (5)	-
Extent of the impact	Local (2)	Local (2)	-
Degree to which local resources are irreplaceable	Low (2)	Low (2)	-
Degree to which the impact can be reversed:	High (2)	High (2)	-
Probability of occurrence:	High Probability (4)	High Probability (4)	-
Cumulative impact prior to mitigation:	Medium	Medium	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (60)	Medium (60)	-
Proposed mitigation:	• Local communities in the area should start a neighbourhood watch; and • The Department of Police Roads and Transport have been notified of the project and the neighbourhood watch should liaise with the Department of Police Roads and Transport if any criminal activities take place in the area.		-
Cumulative impact post mitigation:	Medium	Medium	-

Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (52)	Medium (52)	-

11 EAP'S PROFESSIONAL OPINION AND IMPACT ASSESSMENT STATEMENT

11.1 EAP's Professional Opinion

After careful consideration of the findings and outcomes, **Enviroworks is of the opinion that the construction of the proposed Cecilia Park Mixed-Use Development can be undertaken without any significant negative impact on the environment,** should the prescribed mitigation measures be implemented. The anticipated impacts can be addressed through the various mitigation measures to an acceptable level. **Enviroworks also recommend that the preferred alternative (A1) be approved due to its lower Traffic impact and due to its incorporation of more than 30% single residential zonings as per the requirements stipulated in the SDF of the Mangaung Metropolitan Municipality.**

To this extent, based on all information that was captured in this report, the proposed development will not lead to unacceptable impacts or fatal flaws and should be considered plausible in the framework of NEMA.

11.1.1 *Recommended Conditions of Authorisation*

Various recommended mitigation measures are contained in the EMPr (**Appendix F**) and should form part of the "conditions of approval" of this application. An Environmental Control Officer (ECO) must be appointed by the developer to undertake environmental compliance audits at least twice per month to ensure that the construction phase of the development is implemented according to the recommendations of the EMP, and that construction of the development complies with the conditions of approval to be issued by the DETEA.

The results of the appointed ECO's audits should be used to inform an Environmental Close-out Audit Report, which should be submitted to the DETEA at the end of the construction period, once all site rehabilitation has been completed.

11.2 Environmental Impact Statement

The key findings of impact assessment can be summarised as follows:

11.2.1 *The Receiving Environment*

The surrounding area is characterised by industrial activities and residential developments and the proposed activity will have no effect on changing the character of the area.

11.2.2 *Public Participation*

To support public interest and inform the EIA process, a public consultation process proceeded throughout the lifetime of the assessment. A diverse mix of authorities, stakeholders and interested and affected parties were consulted during this time, representing the environment, social, economic and political realms of local and regional and national bodies.

Comments were responded to during various stages of the public participation process in scoping and Impact Assessment and were addressed in project reports as relevant. It is considered that through the public participation conducted by the EAP, parties have had adequate opportunity to partake in this process and all concerns were addressed to ensure that all parties are in agreement with the proposed steel galvanizing facility.

11.2.3 *Summary of Specialist Investigations*

Heritage Impact Assessment - Dr. Lloyd Rossouw - Paleo Field Services

"The natural terrain has been altered by previous agricultural activities (quarry and gum tree grove) and subsequent human impact resulting from various recreational activities (drive – in, quad-biking and 4x4 trails)"

"The paleontological significance of the sedimentary bedrock in the region is considered high. However, the northern and north-western part of the Kwaggafontein 8 and Cecilia portions as well as the southern part of the Bloemfontein portion is underlain by intrusive igneous dolerites which are considered to be of low paleontological significance".

"It is unlikely that the proposed development will affect paleontological heritage resources within the overlying Quaternary soils due to the disturbed condition of the substrate and the absence of suitable Quaternary-aged alluvial contexts at the site. The paleontological significance of the unconsolidated Quaternary soils is therefore considered as low".

Ecological and Wetland Impact Assessment - Prof. Johann Du Preez - Enviro-Niche Consulting

"No protected species occur on the site and there are no sensitive drainage lines at the Cecilia Park or in its direct vicinity. It is recommended that measures to control erosion must always be applied. No dumping of building waste or spoil material from the development should take place on the site. Weed control measures must be applied to eradicate the noxious weeds especially Satansbos (Solanum elaegnifolium). A search & rescue operation must be done to translocate protected species before construction phase starts".

Geohydrological Impact Assessment - Mr. Christiaan Vermaak - Tucana Solutions

“The study area is situated on a minor aquifer system which is associated with boreholes with a yield between 0.6 and 1.5 l/s. More than 9 boreholes were observed in the immediate vicinity of the study area. Groundwater are utilized on small scale and it is mainly used for garden and agricultural purposes. On average the groundwater level is relatively deep (16.03 mbgl) which imply a relatively thick buffer between surface and groundwater.”

“From a geohydrological point of view the proposed area is suitable for the proposed township establishment, with the following recommendations in mind: The greater part of the area will be suitable for the proposed development with the challenge of shallow dolerite in some of the indicated areas.”

Geo-technical survey - Mr. Richard Roberts – SMEC

“For the “shallow dolerite” area, earthworks are required to create building platforms and to remove any waste material from the site. Levelling of this area and compaction of the granular soils to 93% MOD AASHTO density at -1 to +2% of o.m.c are recommended, such that normal foundations at nominal depths may be deployed. Such site preparations would constitute NHBRC Soil Class S in accordance with the NHBRC manual.”

“Areas covered by clayey sand or sandy clay, recommendations for foundations based on the NHBRC manual for the assumed NHBRC Soil Class C2 and H2 are Stiffened strip footings, stiffened or cellular raft and Soil raft.”

Traffic Impact Assessment - Mr. Koot Marais – KMA Consulting Engineers

“The development could generate 3423 trips during the morning peak and 4669 trips during the afternoon peak hours. To ensure acceptable levels of service at the analysed intersections significant improvements will be required at most analysed intersections. The township layout (Preferred alternative) is in principle acceptable, although some aspects might be slightly less standard due to the specific urban design.

Based on the conclusions it is recommended that the development (Preferred Alternative) in principle be approved from a traffic point of view”.

11.3 Conclusion

This EIA process has assessed impacts associated with the proposed Cecilia Park Mixed-Use Development and determined, based on the outcomes of a multitude of contributing information that the proposed development would not result in any unacceptable impacts or fatal flaws and as such may be authorised.

The project phase within which this report falls is the Draft Environmental Impact Assessment, which couples with it a 40 day I&AP comment period from **07 August 2015 to 16 September 2015.**

This Draft Report will be available on the following website link: **http://www.enviroworks.co.za/projectdownloads.php.**

All comments received during this period will be responded on and addressed in the Final EIA Report, and where appropriate the report will be updated.

On completion of the Final EIA Report, this will be submitted to the DETEA for review. On receipt, the DETEA must review the report and appendices, and do one of the following:

- Accept the report;
- Inform the applicant that the report is being sent for specialist review;
- Request for amendments to be made to the report; or
- Reject the report, should it not materially comply with regulations.

On the issuing of the decision by the DETEA, all I&APs must be notified thereof and be afforded the opportunity to appeal against the decision. The EAP will communicate the decision and appeals process with I&AP’s within 12 days after the receipt of the decision from DETEA.

12 References

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