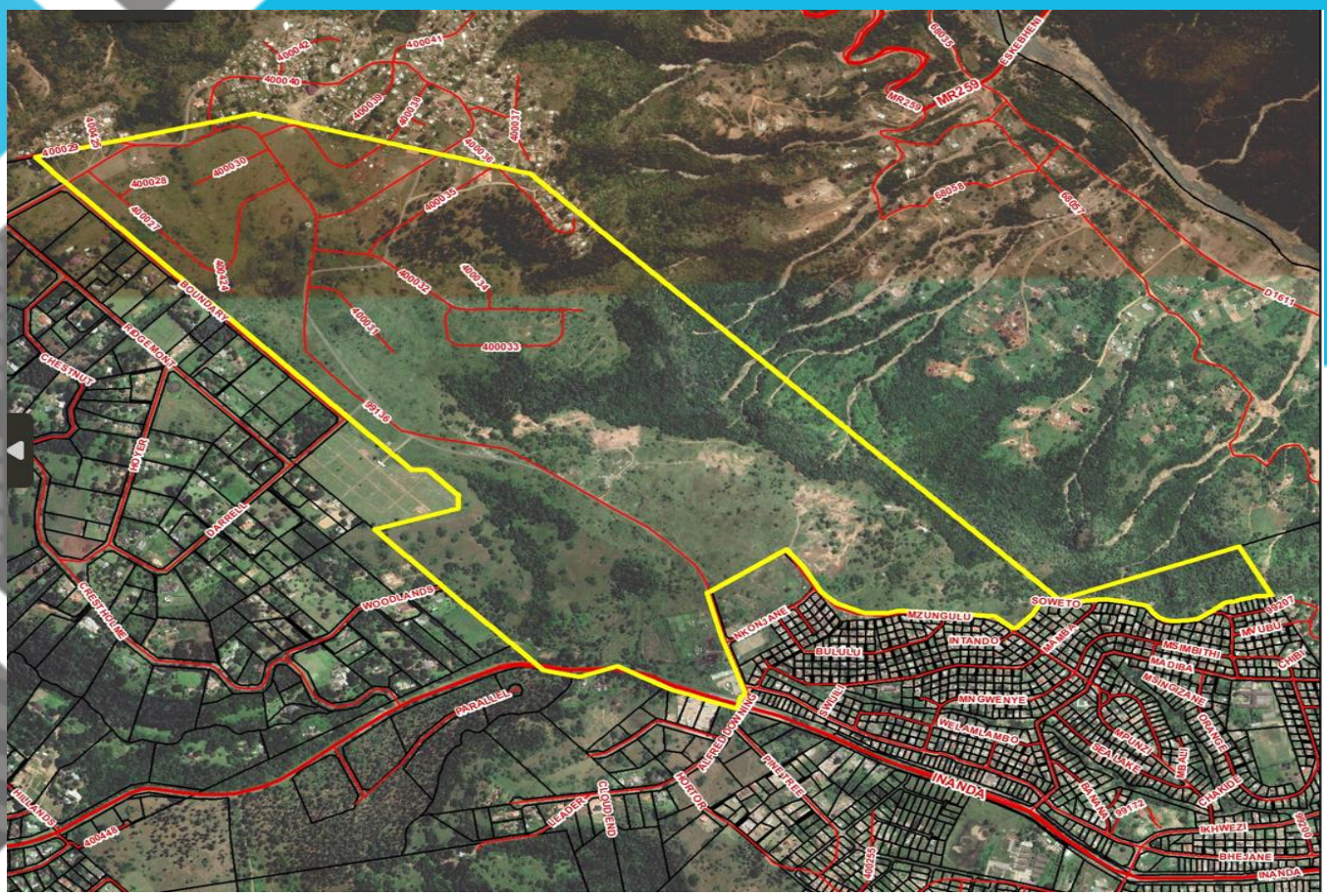
eThekwini Municipality

Environmental Impact Assessment for Housing Development on

PTN 63 Langefontein

EIA: NEAS:

EIA Full Scoping Report



isibuko DEVELOPMENT PLANNERS cc

BIZYCON PTY LTD

Environmental Impact Assessment for the Emergency Flood Victims Housing Development on

PTN 63 Langefontein

Doc Version:

Scoping Report (Draft for public participation)

Prepared for:

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Pietermaritzburg, 3201

Prepared by:

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REPORT CONTTROL				
Project Tittle	Environmental Impact Assessment for Housing Development on PTN 63 Langefontein			
EDTEA REF	**DC**			
NEAS REF	**KZN/EIA/**			
Date	June 2, 2023	**Report Version**	Scoping Report Draft	
Quality Control Aspects	**Name**		**Capacity /Designation**	**Signature**
Authors	Mr MacCarthy Honu-Siabi		Environmental Assessment Practitioner	
	Sedzani Nemulodi		Environmental Scientist Candidate EAP	
Reviewed by	Brenda Makanza (EAPSA No. 2019/…..)		Environmental Assessment Practitioner	

DETAILS OF THE EAP

Name of representative of the EAP	Education qualifications	Professional affiliations	Experience at environmental assessments (yrs)
Brenda Makanza	***PGC Professional Diploma in Geo-Informatics, UNIGIS, 2016 Environmental Sciences and Health (with Honours) , NUST, Zim, 2004***	**EPASA (2019) 1542**	**More than 10 years' experience (Please See Attached CV)**
Mr MacCarthy Honu-Siabi	**MSSc (Policy & Development Studies) UKZN** **Certs. Environmental Impact Assessments Management & - NWU** **Environmental Management & Envl. Control (Enforcement and Audit) -NWU**	**IAIAsa SAMEA**	**12 years (in the field of Environmental Impact Assessment) and Environmental management in General**
Ms Nwabisa Mkhize	Bsc Environmental Science	EAPSA (Candidate)	3 Years of work in the Environmental Field and impact assessments
Sedzani Nemulodi	Bsc Environmental Science		2 Years of work in the Environmental Field and impact assessments

SECTION G: DECLARATION BY THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

I, Brenda Makanza declare that I –

(a) act as the independent environmental practitioner in this application;

(b) do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014;

(c) do not have and will not have a vested interest in the proposed activity proceeding.

(d) have no, and will not engage in, conflicting interests in the undertaking of the activity,

(e) undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the Environmental Impact Assessment Regulations, 2006;

(f) will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;

(g) will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the Department in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the Department may be attached to the report without further amendment to the report;

(h) will keep a register of all interested and affected parties that participated in a public participation process; and

(i) will provide the Department with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not.

Signature of the Environmental Assessment Practitioner:

Bizycon PTY LTD

Name of company:

Date

Environmental Assessment Practitioners Association of South Africa

Registration No. 2019/1542

Herewith certifies that

Shorai Brenda Makanza

is registered as an

Environmental Assessment Practitioner

Registered in accordance with the prescribed criteria of Regulation 15. (1) of the Section 24H Registration Authority Regulations (Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended).

Effective: 01 March 2023

Expires: 29 February 2024

Chairperson

Registrar

SAQA

NAMES AND EXPERTISE OF SPECIALISTS

Names and details of the expertise of each specialist that has contributed to this report:

	Name of specialist	**Education qualifications**	**Field of expertise**	**Section/ s contributed to in this EIA assessment report**
1.				**Wetland Assessment and Delineation**
2.				**Ecological Studies**
3.				**Heritage Studies**
4.				**Geotechnical Studies**
5.				**Bolk Services Engineering Services**

Summary of where requirements of Section 22 of the 2014 /2017 NEMA EIA Regulations (GN R 983, as amended) are provided in this Basic Assessment Report

Section Requirements	YES/NO	SECTION IN BAR
Objective of the basic assessment process 1) The objective of the basic assessment process is to, through a consultative process- (a) Determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context; (b) Identify the alternatives considered, including the activity, location, and technology alternatives; (c) Describe the need and desirability of the proposed alternatives, (d) Through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic , heritage and cultural sensitivity of the sites and locations within sites and the risk impact of the proposed activity and technology alternatives on the these aspects to determine- (i) The nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and (ii) The degree to which these impacts- (aa) Can be reversed (bb) May cause irreplaceable loss of resources; and (cc) Can be avoided, managed or mitigated; (e) Through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to- i. Identify and motivate a preferred site, activity and technology alternatives; ii. Identify suitable measures to avoid, manage or mitigate identified impacts; and	YES	**Section 2** **Section 4.2** **Section 7** **Sections 9** **Section 10**

iii. Identify residual risks that need to be managed and monitored.		
Scope of assessment and content of basic assessment reports 2) (1) A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application , and must include : (a) Details of: i. The EAP who prepared the report ii. The expertise of the EAP, including a curriculum vitae:	YES	**Pg 3 -4** **CV on Last Page of report**
(b) The location of the activity , including: i. The 21 digit surveyor general code of ach cadastral land parcel; ii. Where available, the physical address and farm name; iii. Where the required information items i and ii is not available , the coordinates of the boundary of the property or properties;	YES	**Section 3**
(c) A plan which locates the proposed activity or activities applied for as well as associated structures and infrastructure at an appropriate scale; or if it is- i. A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or on land where the property has not been defined , the coordinates within which the activity is to be undertaken;	YES	**Section 4**
(d) A description of the scope of the proposed activity, including all listed and specified activities triggered and being applied for; and a description of the activities to be undertaken associated structures and infrastructure;	YES	**Section 4.1**
(e) A description of the policy and legislative context within which the development is proposed including- I. An identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are	YES	**Section 4.2**

applicable to this activity and have been considered in the preparation of the report ; and II. How the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments;		
(f) A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	YES	**Section 6**
(g) A motivation for the preferred site, activity and technology alternative;	YES	**Section 7**
(h) A full description of the process followed to reach the proposed preferred alternative within the site, including: i. Details of all the alternatives considered;	YES	**Section 7**
ii. Details of the public participation process undertaken in terms of regulation 41 of the regulations, including copies of the supporting documents and inputs	YES	**Section 8** **(Full report Moved to appendixes)**
iii. A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	YES	**Public Participation report**
iv. The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	YES	**Section 9**
v. The impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts (aa) and (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated	YES	**Section 10**
vi. The methodology used in determining and ranking the nature, significance, consequences, extent, duration, and probability of potential environmental impacts and risks associated with the alternatives;	YES	**Section 10.1**

vii. Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	YES	**Section 10**
viii. The possible mitigation measures that could be applied and level of residual risk	YES	**Section 10**
ix. The outcomes of the site selection matrix;	YES	**Section 10, 11**
x. If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and	YES	**N/A**
xi. A concluding statement indicating the preferred alternatives, including preferred location of the activity.	YES	**Section 11**
(i) A full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including- i. A description of all environmental issues and risks that were identified during the environmental impacts assessment process; and ii. An assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;	YES	**Section 10 – 12** **Section 10.5-9**
(J) An assessment of each identified potentially significant impact and risk, including- (i) Cumulative impacts; (ii) The nature, significance and consequences of the impact and risk; (iii)The extent and duration of the impact and risk; (iv)The probability of the impact and risk occurring; (v) The degree to which the impact and risk can be reversed;	YES	**Section 10**

(vi) The degree to which impact and risk may cause irreplaceable loss of resources; and (vii) The degree to which the impact and risk can be avoided, managed or mitigated;		
(k) Where applicable, a summary of the findings and impacts managements measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report;	YES	
(I) An environmental impact statement which contains- (i) A summary of the key findings of the environmental impact assessment; (ii) A map at an appropriate scale which superimpose the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and (iii) A summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	YES	**Section 11**
(m) based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr;	YES	**Section 10**
(n) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;	YES	**Section 13**

(o) a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	YES	**Related to Section 13**
(p) a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	YES	**Section 12 & 13**
(q) where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised;	×	**N/A Includes Operation**
(r) an undertaking under oath or affirmation by the EAP in relation to: (i) the correctness of the information provided in the reports; (ii) the inclusion of comments and inputs from stakeholders and I&APs; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) any information provided by the EAP to interested and affected parties any responses by the EAP to comments or inputs made by interested and affected parties; and	YES	**Page 4**
(s) where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts	×	**EMP Attached but not costed**
(t) any specific information that may be required by the competent authority; and	×	
(u) any other matters required in terms of section 24(4)(a) and (b) of the act.	×	

CONTENTS

TABLE OF FIGURES

1. BACKGROUND

1.1 INTRODUCTION

The April 2022 flooding that occurred in Durban Metro and other parts of KwaZulu-Natal left many people homeless as their homes have been washed away in the flood. Most of these people are being housed in community halls and churches. To find a permanent solution to their housing needs, Department of Human Settlement intend to undertake a housing development to cater for these flood victims. The proposed development is being packaged in line with the Integrated Residential Development Programme where all necessary township establishment infrastructure will be added, such as interna roads, water and sanitation services.

As part of the feasibility assessment and planning of the proposed development, Bizycon Pty Ltd has been appointed by Isibuko Development planners to conduct an environmental assessment for the proposed development and obtain the necessary environmental approvals for the proposed development.

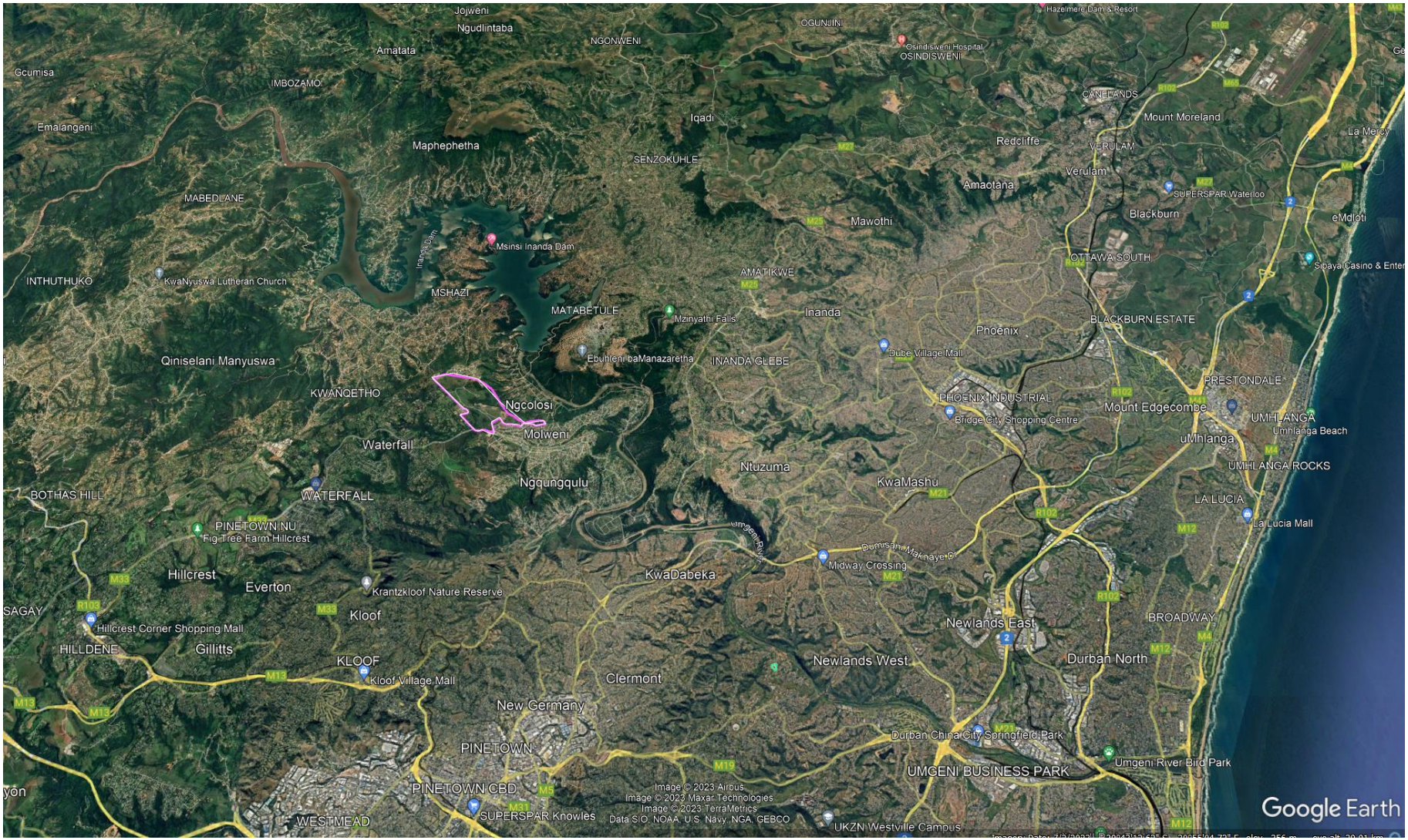
In terms of the provisions of the National Environmental Management Act- NEMA (Act 107 of 1998 and the Environmental Impact Assessment (EIA) Regulations 2014 and 2017 as amended, environmental impact assessment is required for proposed developments that cross the listed activity threshold, prior to commencing any physical activities. The EIA will identify the potential impacts of such activities on the biophysical and social environment (and *vice versa*) and obtain authorisation if the EIA provided adequate measures to address such impacts. In terms of Chapter 4 of Regulation 324, a full scoping and Impact Assessment process is required to be followed for the type of development proposed, given the land is more than 20 ha.

1.2 Project Location

The Langefontein site is a vacant piece of land situated near Molweni, and northeast of Hill Crest and Waterfall. Inanda River and dam is located on the northeastern outskirts. The GPS Coordinates of the site are 29°43'36.75"S 30°51'17.79"E. Additional location information of the proposed site is also presented in table 1 and also depicted in Figure 1.

PROPERTY DESCRIPTION	Rem of Portion 63 of the No. 4675	
SG 21-DIGIT NO	N O F T 0 0 0 0 0 0 0 0 5 9 8 1 0 0 0 0 0	
ZONING	Residential	
GPS POINTS		
	29°43'36.75"S	30°51'17.79"E

Figure 1 Site Location – Aerial photograph



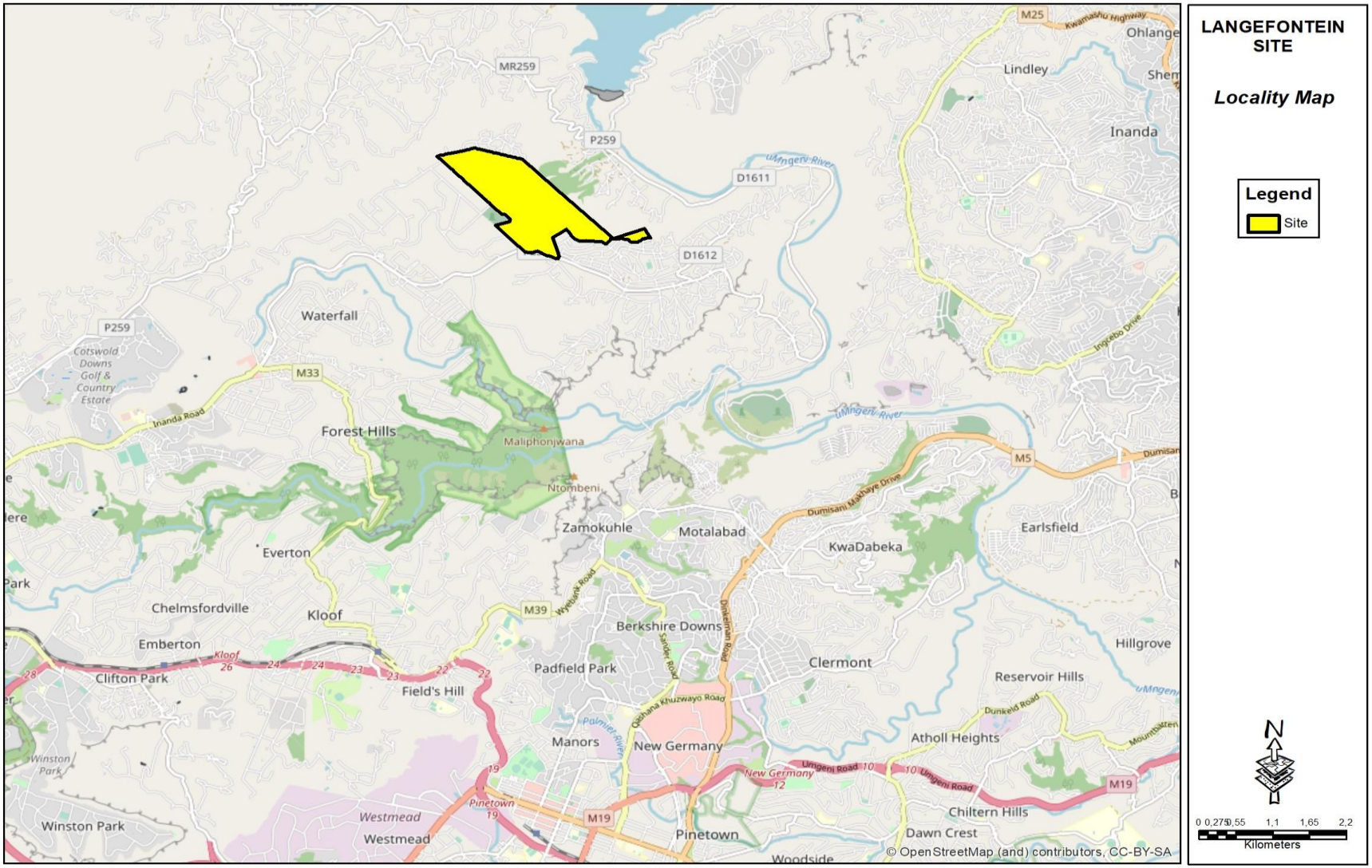
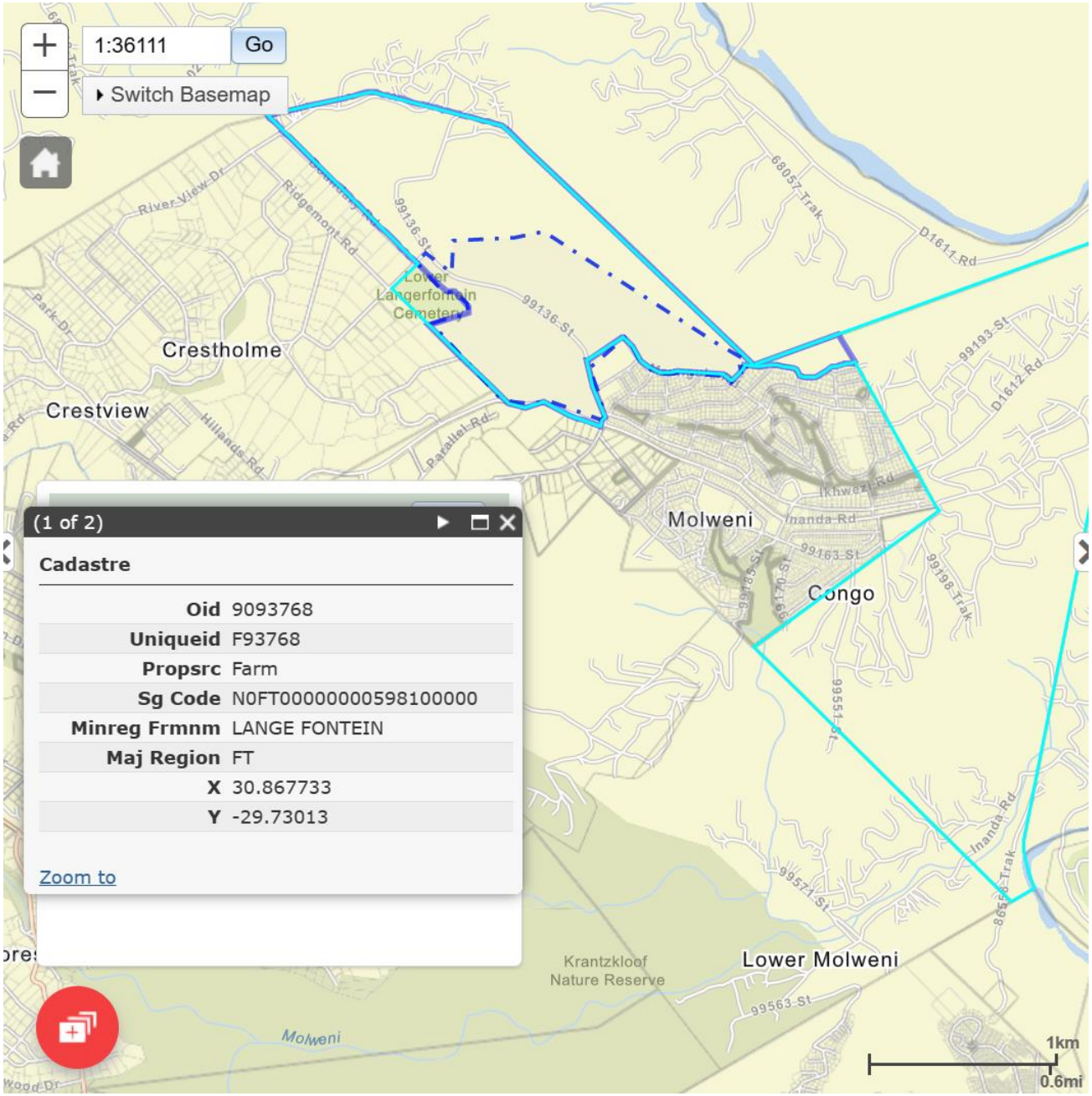


Figure 2 Broader Locality

Figure 3 Site Locality Map



1.3 PROJECT DESCRIPTION

The proposed development entails the entails formalised housing townships in close proximity to each other within the Upper Molweni area in the Outer West Local Municipality, which is in turn located within the greater eThekwini District Municipality. The three housing projects are the insitu upgrade of Madimeni of about 1200ha, and establishment of housing Low income housing in Lower Langefontein 5 and Molweni Phase 1 housing projects.

The low income housing development in Langefontein is to will be approximately total of about 1 540 Low income sites and 58 Bonded houses sites proposed on Rem of Portion 63 of the No. 4675 of the Farm Langefontein No. 5981. The site covers approximately 98 hectares. This triggers Listing Notice 2 and requires a Scoping and EIA process with the threshold of 20ha being crossed.

The proposed development entails establishment of the low-income housing units and associated settlement infrastructure to accommodate as many families as possible that the piece of land can handle. The proposed development is being packaged in line with the Integrated Residential Development Programme. Site currently is bordered by a stream in the valley, and partially by DMOSS area. Snatiation infrastructure is still being decided on, in terms of capacity of nearby infrastructure to accommodate the proposed development.

Given there are no WWTW in the area, onsite treatment plant is proposed.

The engineers recommend Two (2x) 750 Kℓ/day package plants or small sewer waste water treatment plants (WWTP). One with phase 1 and the second with phase 2. Process will either be Trickling Filter Process vs. Activated Sludge.

- Average Dry Weather Flow: 750 Kℓ/day , Flow: 8.68 ℓ/s , Peak Flow: 21.70 ℓ/s

Madimeni	Rem of Inanda Location no. 4675
Lower Langefontein 5	Rem of Portion 63 of Farm Langefontein No. 5981
Molweni Phase 1	Rem of Farm Langefontein No. 5981, Portion of the Remainder of Waterfall No. 978 and Portion 911 of Waterfall No. 978

Figure 4 Proposed project layout.

1.4 NEED AND DESIRABILITY OF THE PROOSED DEVELOPMENT

Since the flooding that occurred in KwaZulu Natal in April 2022, many people have been dislodged from their homes. It is reported that many who are rendered homeless by the folding are being sheltered in Community Halls and Church premises. It is for this reason the proposed development is being initiated to provide decent housing for the flood victims.

The provision of services to local communities is part of government's initiative to improve service delivery and improve the livelihoods of such communities. This is being done through many means, from improving residential infrastructure, improving of roads infrastructure and extension of other vital services such as water, electricity, sanitation, and accessibility by emergency services.

In addition, the above the fowling benefits also abound shout the proposed development be implemented:

- Provision of temporal employment opportunities for local community
- Opportunity for a sense of satisfaction by those who will be able to own their own homes through this process.
- Opportunity to close the housing gap within the municipality.
- Wealth creation opportunity and those within the middle bracket will now be able to have collateral and gain access to financial facilities for economic development and empowerment.

6. SOCIO ECONOMIC OVERVIEW

Socio-Economic Assessment of eThekwini Municipality.

eThekwini is the only Category A metropolitan municipality found in the KwaZulu–Natal province. It is one of four coastal metropolitan municipalities in South Africa together with Cape Town, Nelson Mandela, and Buffalo City. eThekwini Municipality is located on the east coast of South Africa in the Province of KwaZulu-Natal (KZN). The Municipality spans an area of approximately 2 297km² and is home to some 3,5 million people. According to the 2020/21 Metropolitan SDF, the eThekwini Municipal area has been divided into five functional municipal planning regions (MPRs), namely, the North, Central, South, and Outer West MPRs. The functional boundaries of these regions Pare defined by the Umgeni River, Umlazi River and the Kloof Ridge and are catchment based. The population of eThekwini in 2019 was 3 987 648 having grown from 3 468 415 in 2009 with the annual growth rate steadily declining from 1.6% in 2011 to 1.2% in 2019. The annual population growth rate is like that of KZN but lower than the national growth of 1.5%. It consists

of a diverse society, which faces various social, economic, environmental, and governance challenges. As a result, it strives to address these challenges, which means meeting the needs of an ever-increasing population.

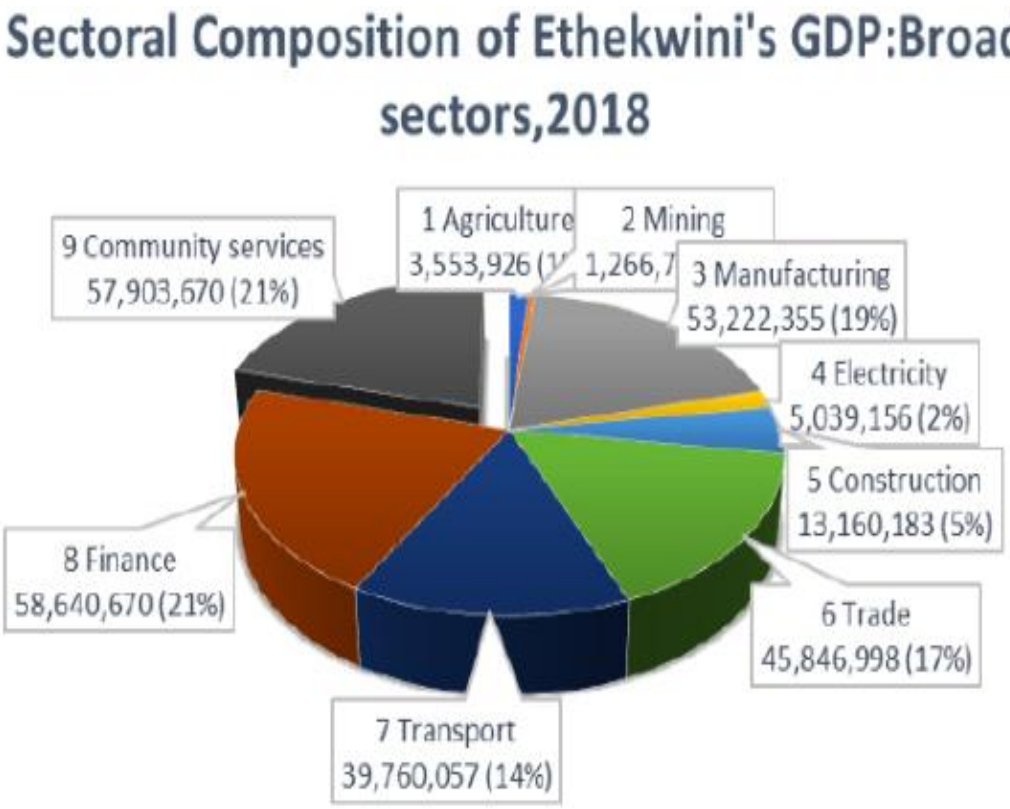
The population of the metro, with reference to Census 2011 is 3 442 361. The population has grown by 1,08 % from 2001 to 2011 as against 2,34% from 1996 to 2001. The metro is predominantly black African (74%) with coloured in the minority at 3%. The dominant home language is IsiZulu spoken by around 62 % of the population followed by English at 26%. In 2001, 29,2% of the population had matric; that has increased to 36,7% in 2011. Whilst the percentage of matriculants are increasing, students in the Higher Education have dropped from 9,6% to 6,7% within the last decade. 61,3% of people have access to flush toilets and only 2% have no access to toilets at all. Within the metro, almost two thirds of the people have water in their homes. 11% only have taps in their yards and 17% obtain water from the street taps. A little over 86 % of households use electricity for cooking, 11% use paraffin and only 2% still use wood, mainly those households in informal and traditional dwellings. The unemployment rate in the metro was approximately 43% in 2001 and it has dropped by 12,8 % according to Census 2011. The table below indicates stats from 2001, 2011 ad 2016 which shows data comparison of the municipality.

Characteristics	**2001**	**2011**	**2016**
Total population	3,090,122	3,442,361	-
Young population (0-14)	27,7%	25,2%	-
Working age (15-64)	70%	70%	55%
Elderly (65+)	4,2%	4,8%	8%
Dependency ratio	46,7%	42,8%	-
Sex ratio	92,5	95,6%	-
Growth Rate	2,34%	1,08%	-
Unemployment rate	43%	30,2%	-
Youth unemployment rate	53,1%	39%	236,407
No schooling aged 20+	10,11%	4,2%	-
Higher education aged 20+	9,7%	12,3%	53,6%
Matric aged 20+	27,1%	37,19%	46%
Number of households	786,746	956,713	1,125,765
Average household size	3,7%	3,4%	3,3%

Female headed households	38,2%	40%	42,1%
Formal dwellings	72,8%	79%	-
Housing owned/paying off	60,4%	54,5%	-
Flush toilet connected to sewerage	61,3%	63,4%	82,6%
Weekly refuse removal	85,7%	86,1%	81%
Piped water inside dwelling	51,2%	60,3%	60%
Electricity for lighting	80,3%	89,9%	-

Structure of the Economy

eThekwini Municipality had a GDP of R468 billion in 2018 (up from R 233 billion in 2008), contributing 59.88% to the KwaZulu-Natal Province GDP of R 781 billion in 2018. eThekwini contributes 9.59% to the national GDP. It achieved an annual growth rate of 0.94% in 2018. This is the same as the provincial growth rate and is higher than the national rate of 0.79%.



1.5 EIA APROACH

The EIA process as a whole is intended to provide information on the affected area, to determine whether there are any fatal flaws that may militate against the proposed development, or positive factors that the development may take advantage of, identify alternatives at an early stage, facilitate consultation with all Interested and Affected Parties (I&APs) and key stakeholders, including specialists, and to address the concerns of I&APs that may arise regarding the proposed development, thereby ensuring full public participation.

This report, thus, aims to collect or identify the potential issues regarding the proposed development (through this scoping process) that may need to be assessed during the EIA stage, and to provide sufficient information for competent authority (the Kwazulu-Natal Department of Economic Development, Tourism and Environmental Affairs (EDTEA) to assess the soundness of how issues are proposed to be addressed. Based on the review of the scoping report, EDTA will make a decision as to whether further environmental investigations are required (specialist studies). The project will then proceed to the Environmental Impact Assessment Phase, where all issues identified during the scoping stage will be systematically evaluated, in terms of the format laid down by the National Environmental Management Act (Act 107 of 1998).

2 SCOPING PROCEDURE AND METHODOLOGY

2.1 THE SCOPING PROCESS UNDERTAKEN

Scoping is defined as an exercise involving the preliminary identification of potential environmental issues surrounding a development intervention that require assessment. It identifies the potential impacts that are to be addressed in detail at the EIA stage. Public participation is essential at the scoping phase because it assists the Environmental Assessment Practitioner (EAP) to identify, categorize, and make recommendations on both site specific and also broader socio-economic issues that are significant for further consideration at the EIA phase.

Procedure for this scoping process involved undertaking activities in accordance with the guidelines for scoping contained in Regulation 982 and 984 of the National Environmental

Management Act 107 of 1998. The process for this scoping involved consultations, meetings, and field investigations.

2.2 PUBLIC PARTICIPATION REQUIREMENTS

The public participation process involves consultations with community leaders, private landowners, neighbouring businesses, and government stakeholders such as, South African National Biodiversity Institute (SANBI), NZN Wildlife, AMAFA KwaZulu-Natali and Research Institute, Department of Water and Sanitation (DWS) and all regional and local stakeholders. Further information gathering and interaction is also planned for the later stages of the project. Community is engaged with the help of the local councillors and ward committee members.

Field visits were conducted for two broad purposes namely collection of data for public participation and environmental assessment. The first step of the scoping study was to identify the main issues surrounding the project. Issues were identified using professional judgment, experience from similar projects, and previous knowledge of the study area, a review of available literature, public consultation, specialist input and consultation with relevant decision-making authorities.

A full public participation report and attachments are included in appendix of this report.

3 CONSIDERATION OF LEGAL AND REGULATORY REQUIREMENTS

The following are some of the key legislations relevant to this development:

3.1 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NEMA) ACT 107 OF 1998

The National Environmental Management Act 107 of 1998 has in terms of section 24 and 24D of the Act established regulations regarding the conduct of EIA processes made under section 24 (5) of the Act and published in 2017 as amended. These regulations published lists of activities that require various levels of applications of EIA process. The section of the regulation that bears relevance to this project is GNR324, NGR 325 NGR326 GNR 327.

Under this regulation a scoping and/or EIA is required the elements of which are stipulated in relevant sections of the National Environmental Management Act 107 of 1998. This scoping was undertaken in accordance with the provisions of the Act.

GNR 325 Listing Notice 2 Activity 15 States:

"the clearance of an area of 20ha or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for i) linear activity or ii) maintenance purposes undertaken in accordance with a maintenance management plan".

The proposed development site is noted to be about 62 ha.

3.2 OCCUPATIONAL HEALTH AND SAFETY ACT (ACT 85 OF 1993)

The specific requirements under this Act that are relevant to the proposed project are the regulations on Major Hazardous Installations (MHI) and their potential health and safety impacts. Section 9 of the MHI regulation, which came into force in 1999, requires that where practicable the developer shall prevent the establishment of developments adjacent to sites or areas that the MHI would potentially pose a hazard.

This Act also bears relevance to the National Environmental Management Act, which requires proponents of development to ensure a 'risk averse' approach where there is adequate information that a given development is associated with potential for health and safety risks to beneficiary and neighbouring communities. Where a given development affects settlements, the requirement of this Act needs to be carefully and adequately integrated in the planning process.

3.3 DEVELOPMENT FACILITATION ACT (ACT 67 OF 1995)

The Development Facilitation Act was established to facilitate the speedy delivery of services and facilities to previously disadvantaged groups. However, enshrined in this Act is the provision that developers are to ensure that adequate provision is made for the assessment of the potential impacts that the development project is likely to have on the receiving environment, and provision made for the management of these impacts. The EIA process is therefore being undertaken in fulfillment of the requirements of this Act.

3.4 CONSERVATION OF AGRICULTURAL REOURCES ACT (ACT 43 OF 1983)

The objective of this Act is to provide for the conservation of natural resources by maintaining the production potential of land, combating and preventing erosion, preventing the weakening or destruction of water resources, protecting natural vegetation, and preventing and/or combating invader plants and weeds. The planning and implementation processes of the proposed project therefore will take cognizance of relevant provisions of this Act.

3.5 NATIONAL WATER ACT (ACT 36 OF 1998)

Current regulations regarding discharge of surface water requires that surface water is handled with care both in terms of quality and quantity before being discharged into any natural water course, so that the quality and flow rate of natural systems are not significantly disrupted.

The development under investigation is expected to generate large quantities of stormwater, consequently an accelerated run off at the discharge points. This Act requires that stormwater control measures are satisfactorily addressed, and a maintenance programme developed to ensure that stormwater discharge points and downstream impacts are effectively mitigated.

In addition, Section 21 the act National Water Act (Act 36 of 1998) also requires that a water-use license be obtained from the competent authority prior to undertaking certain activities for developments that are within 500m of a watercourse. In this case the project site accommodates a wetland and hence a Water Use License Application may need to be made with the Department of Water and Sanitation.

3.6 NACTIONAL FOREST ACT (ACT 84 OF 1998)

The National Forest Act dictates the procedures and processes required for the protection of natural forests and forest trees. The relevance of this Act to the development under investigation is that the impact of the development on trees in the riparian vegetation on the site should be minimized as much as possible. Any removal of indigenous trees has to be authorized by the Department of Forestry.

3.7 NATIONAL HERITAGE RESOURCES ACT (ACT 25 OF 1999)

The National Heritage Resources Act (NHRA), Act No. 25 of 1999) defines a heritage resource as any place or object of cultural significance i.e. of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance.

Reports in fulfilment of Section 38(3) of the NHRA must include the following information:

- the identification and mapping of all heritage resources in the area affected;
- an assessment of the significance of such resources in terms of the heritage assessment criteria set out in regulations;
- an assessment of the impact of the development on such heritage resources;
- an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;
- the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;

- if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
- plans for mitigation of any adverse effects during and after completion of the proposed development.

The Heritage Impact Assessment (HIA) is limited to the actions described above, i.e. identification of heritage resources and recommendations for their management, and does not include mitigation costs. The final report will be submitted to the relevant authorities responsible for heritage for assessment and approval.

4 DESCRIPTION OF THE RECEIVING ENVIRONMENT

4.1 PHYSICAL CHARACTERISTICS

4.1.1 TOPOGRAPHY

The Langefontein site consists of generally undulating terrian. The site spread across two main hills interspersed by the few incised valley systems. The topographical nature of the site is shown in the aerial photograph o in Figure 5. The northern segment of the site slopes towards the valley that extends from north-western corner down towards the mid portions. The next significant valley extends from the middle towards the south eastern corner into the natural thicket areas where several tributaries emanate towards the Umgeni River.

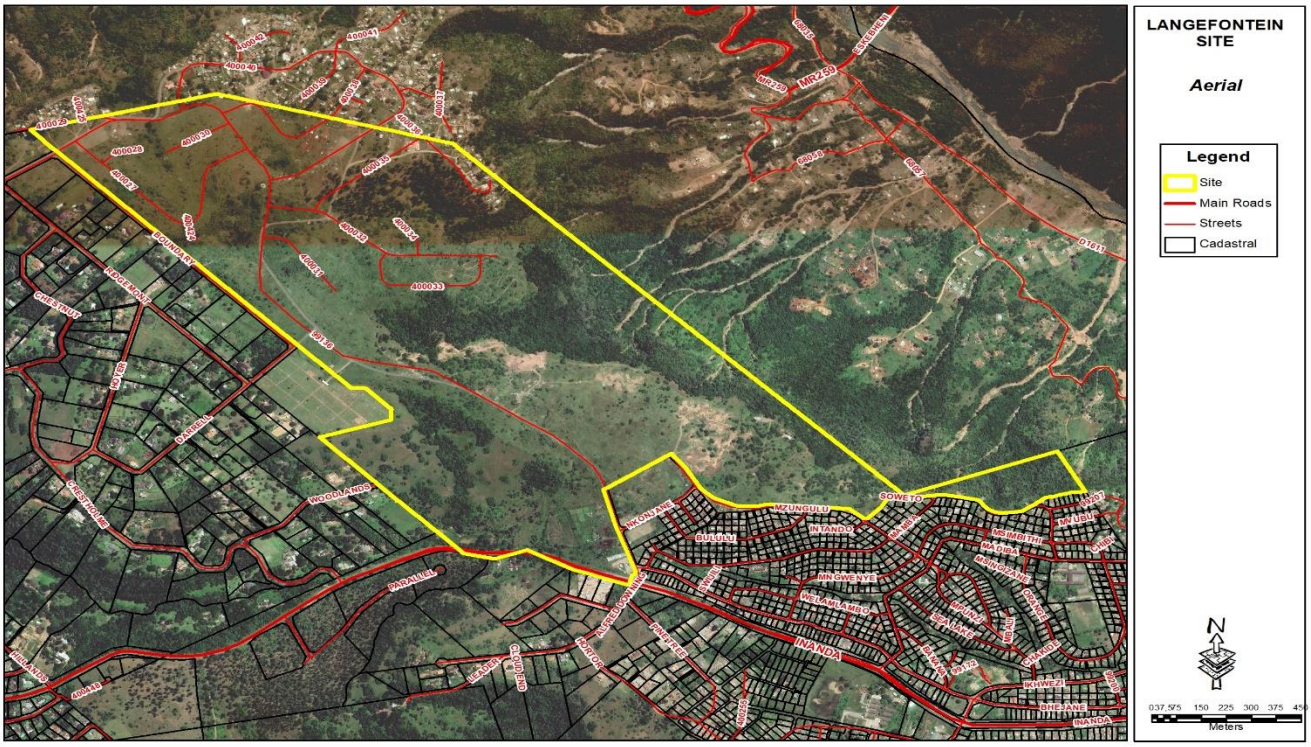


Figure 5 Topographical Character of the site

The slope analysis shows that larger parts of the site slopes 1:10 or flatter which is mostly at the top parts of the hill. The gentle sloping portions range between 1:3 to 1:8. Areas with steep slopes more than 1:3 are generally restricted to the mid north eastern to western segment, towards the speed valleys towards the Umgeni river and dam.

Implications for the proposed development

From a development point of view, the general topography appears to be conducive for infrastructure development on larger parts of the site. as most of these areas are not likely to fall within the land development limits of 1:3 or steeper. These areas applied to the areas within the valley bottom on the mid- north-eastern portions. Generally, slopes that are steeper than 1:3 are not suitable for residential developments. Stormwater management strategy may need to be put in place, to mitigate localised flooding on the flatter areas and acceleration of stormwater runoff on the gentle sloping areas should vegetation be removed. Slope level mapping is shown in Figure 6.

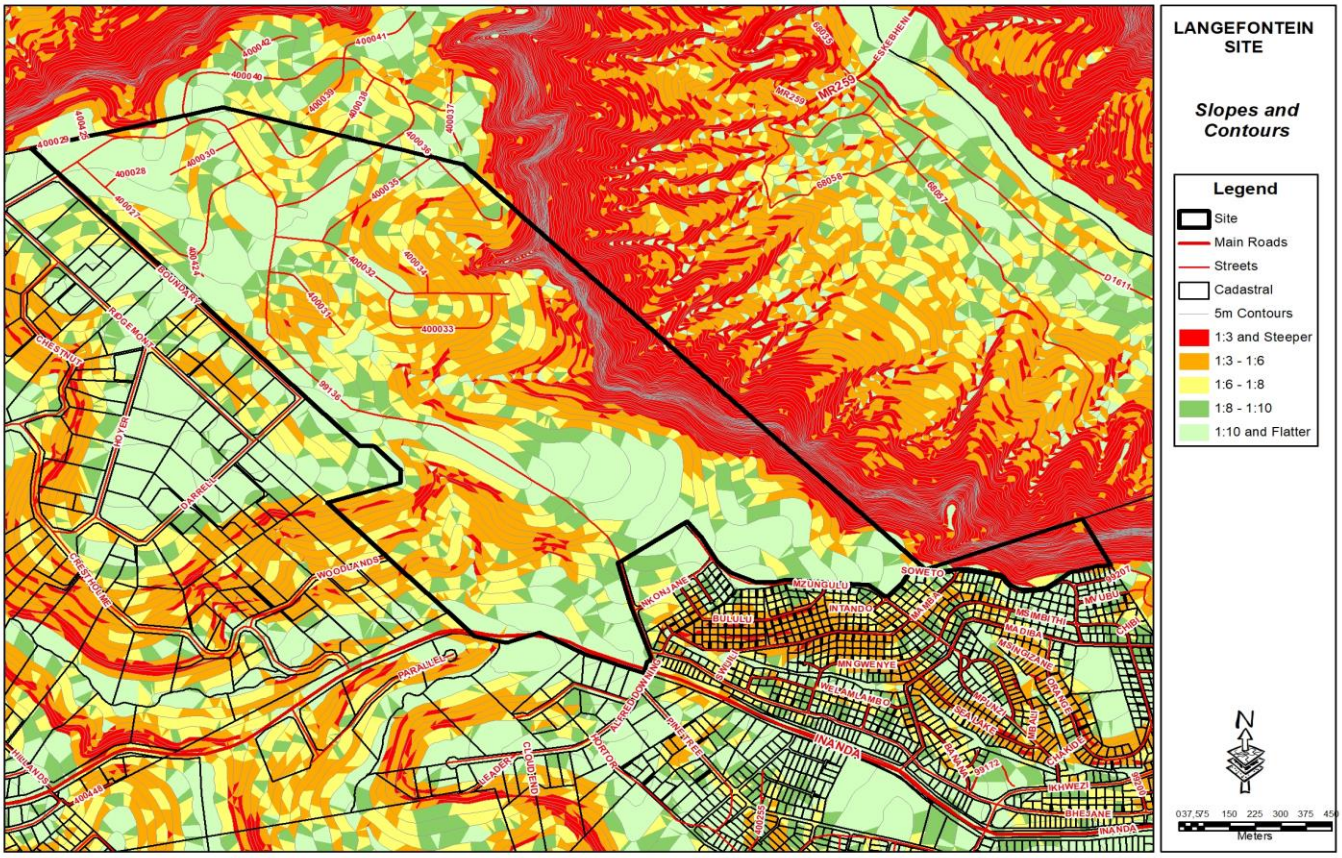


Figure 6 Slope Analysis

4.1.2 Geology and Soils

The general Geological mapping of the site area shows that the site is underlain by ARENITE geological formation (Figure 7). According to the Geotechnical Study, the study area is

characterised by sandy colluvial and residual soils and sandstone bedrock of the Natal Group. Bedrock occurs at depths typically in the range 0.5 to 2.0 metres below EGL, and as surface rock outcrop in localized areas. Further details on this are available in the Geotechnical Report attached in the specialist studies section of this report.

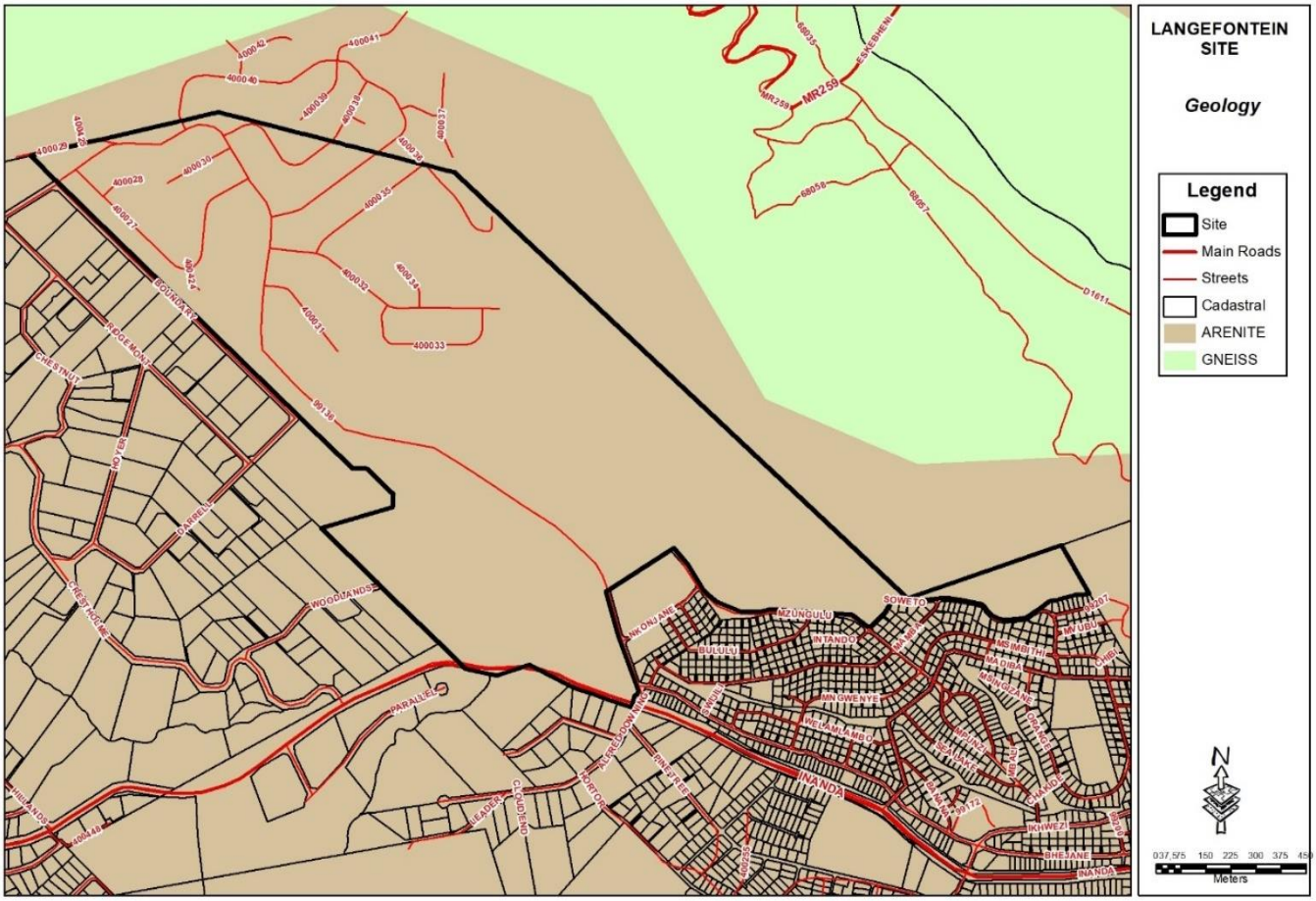


Figure 7 Site Geology

The geotechnical report also noted that The permanent groundwater table is inferred to occur at a depth more than 10.0 metres below EGL. However, a perched groundwater table can be expected at depths typically less than 1.5 metres below EGL (at the interface of the residual soils-bedrock contact). Considering the above, it is imperative that subsoil drains be catered for where shallow groundwater seepage is encountered. The need for subsoil drains will depend on the proposed development and will have to be assessed on site during the construction phase. The sensitive areas within the development area as per the Geotechnical assessment is mapped on Figure 8. These need to be taken into account in the development oof the project layout plan.

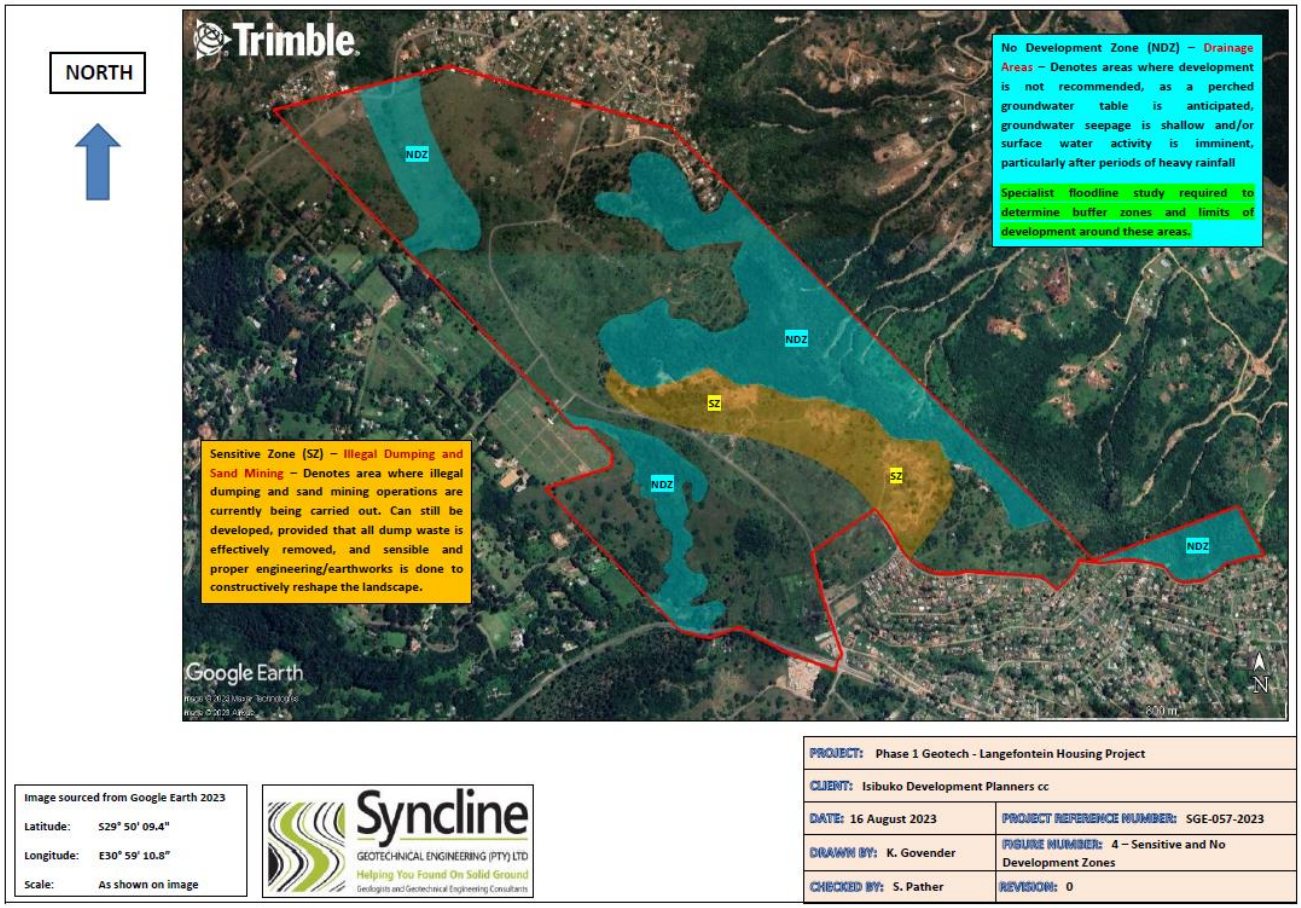


Figure 8 Development and no-development zones as per the geothechnical investigation

4.2. CLIMATE

The proposed sites are located within coastal sandstone plateaus at altitudes ranging from 200 to 1100m. The area has a mean annual temperature of 17.2ºC, mean annual rainfall of approximately 934mm and mean annual potential evaporation of 1620mm. The area is a summer rainfall region with most precipitation occurring between October and March. The area is noted to have strong winds and occasionally prone to storms.

4.3 HYDROLOGICAL CHARACTERISTICS

The eastern and south-eastern boundary of the site is situated on the edge of an escarpment that forms part of the western slopes of the Mgeni River valley, and these boundaries are located approximately 1.5km to the west of the Mgeni River. Due to moderate gradients and the sandy nature of the soils on site, most of the water falling on the site is expected to infiltrate into the

soil profile and gravitate towards the low-lying valley head basin and valley bottom areas hosting valley bottom wetlands via subsurface flow. Water flowing within the wetlands on site drains into incised valleys below the plateau hosting steep ephemeral/intermittent stream courses that ultimately drain into the Mgeni River below Inanda Dam referred to as the Lower Mgeni River or into a seasonal stream that flows directly into Inanda Dam. The hydrological character of the area is depicted on the map presented in figure 9.

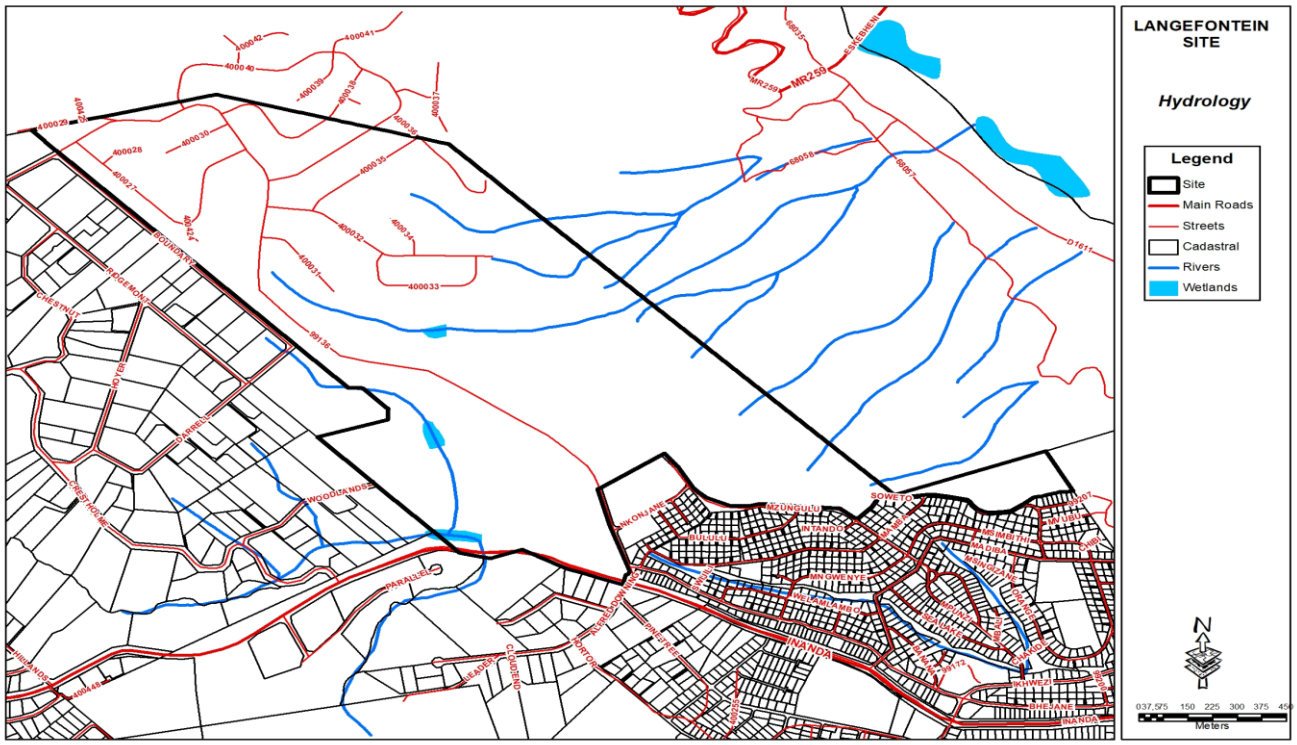


Figure 9 Hydrological characteristics and a Portion of the Dam on the Southern segments.

Wetlands and riparian areas

As indicated earlier, the undulating nature of the area give rise to several drainage systems and channels. Few of these house wetlands. According to the wetland delineation undertaken By Afzelia Wetland Specialist, three main types of wetlands traverse the site starting from the valley on the northern mid area, portion of the mid and to the south western segment of the site has what is referred to as the Channelled VB Wetlands with associated riparian zoned.

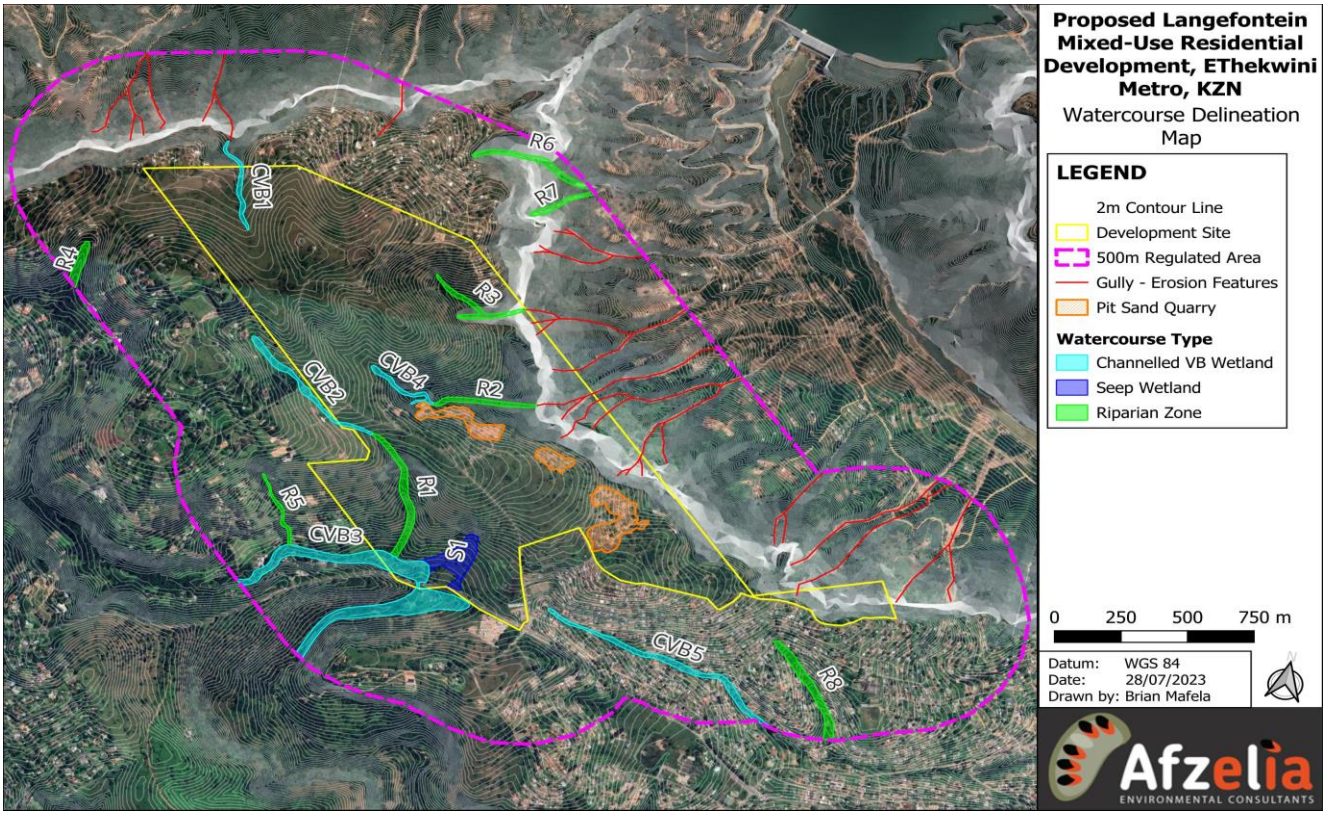


Figure 10 Wetlands within the project vicinity

Wetlands are important ecological habitats for many aquatic organisms. In addition, the wetlands in particular are important in attenuating, or breaking the velocity of water which otherwise would result in exacerbation of erosion and flooding in the area. It is important to conserve the wetland areas so that erosion and, in some cases, flooding can be controlled in the area. Thus, development planning for the area needs to ensure that wetlands areas on the site are excluded from all developments. The wetlands in the project site have been delineated and mapped out and incorporated into the updated development layout.

Implications for the proposed development

The Ezemvelo KZN Wildlife's guidelines (2017), on freshwater spatial planning implications laid down the following useful principles to be followed:

- There should be no clearance of indigenous riparian vegetation. These should be maintained as erosion and sedimentation control mechanisms which will also provide river movement corridor for wild species.

- A minimum of 20-30m buffer of undisturbed vegetation soil should be maintained between hard surfaces and the riverine system or at the bank of the watercourse.
- Stormwater management should not be discharged directly into the river system without setting and polishing of the runoff water occurring either through soft or engineering structures.
- Alien invasive vegetation should be removed or cleared from the riparian zones, preferably by chemical means, or if chemicals are used, such chemicals must have been determined to be non- toxic to aquatic species.

4.4 ECOLOGICAL ANALSYSIS AND GENERAL BIODIVERSITY

4.3.1 FLORA

Vegetation classification on the site according to the KZN Wildlife database four main vegetation types characterise the project area. More than 90% of the site is covered by the KwaZulu-Natal Sandstone Sourveld. This covers almost the entire site from the with an intrusion of the KwaZulu-Natal Coastal Forest along mid portion of the Eastern boundary. Some patches of the Eastern Scarp Forest is located within the valley bottoms on the mid southern-western portions. The vegetation classification map is presented in Figure 11.

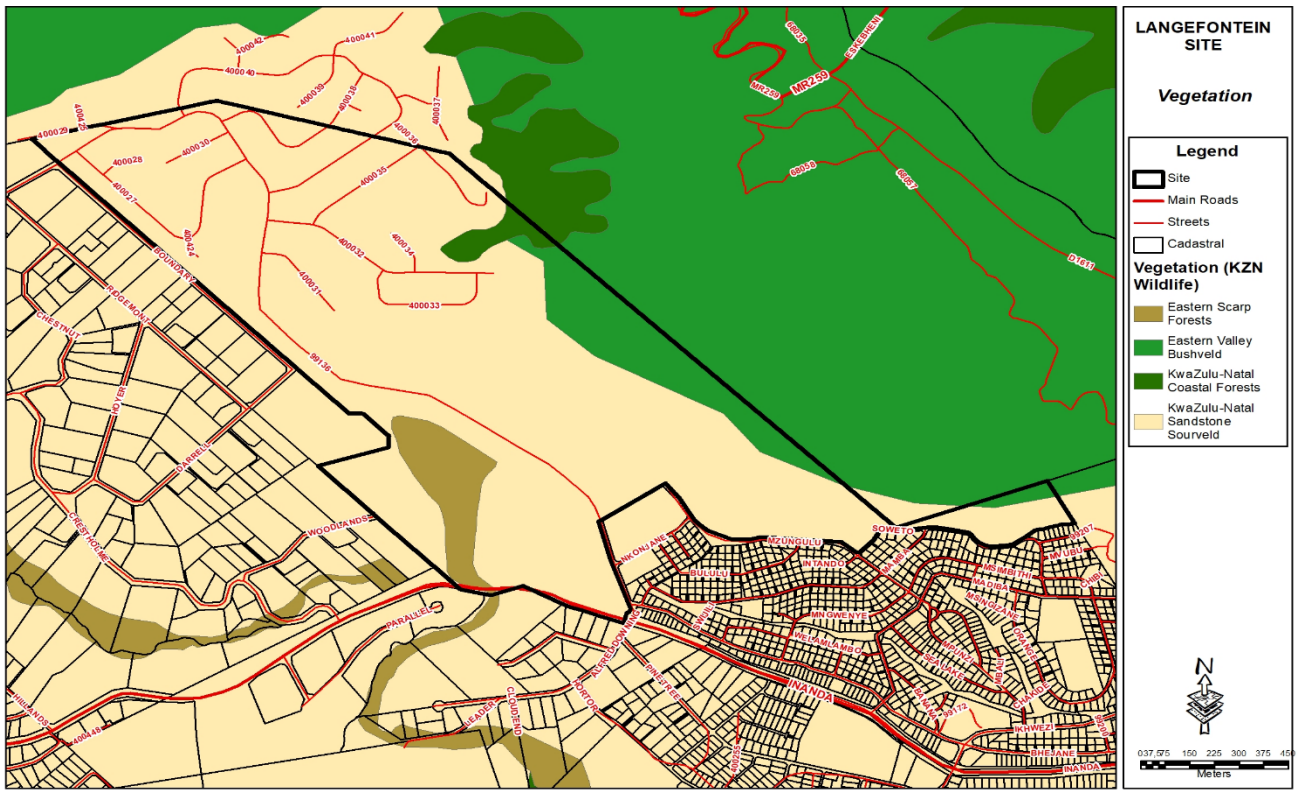


Figure 11 Vegetation classification

In terms of the vegetation conservation status, the threatened ecosystem status is classified into critically endangered, endangered, and vulnerable and least threaten ecosystems. Endangered vegetation is vegetation type that has undergone immense transformation that its very existence in an indigenous form is significantly threatened. Vegetation classified as endangered is thus of high conservation significance. Vulnerable vegetation falls within the category that if its transformation is not checked, could move into an endangered category.

Figure 12 nature of the grassland on the site

According to the conservation database, the Northern KZN Moist Grassland is classified as Vulnerable in terms of conservation status. This requires that care be taken in order to not cause any unnecessary disturbance to the vegetation in indigenous forms.

Code	KZN vegetation-type name	KZN biome	Conservation target (%)	Original extent (ha)	Remaining natural (ha)	Remaining natural less fragments (ha)	Ecosystem status	Total PA (ha)	Level of protection
35	Eastern Valley Bushveld	Savanna	25§	313 748	211 707	210 176	LT	906	NP
60.4	Eastern Scarp Forests: Southern Coastal Scarp Forest	Forest	61.6%	11 378	8804	8804	LT	570	PP
13	KwaZulu-Natal Sandstone Sourveld	Grassland	25%	179 668	19 954	17 978	CE	194	NP

The vegetation on the site is characterised mainly by grasslands and woody shrubs especially on the top parts of the hails, and forest of mixed species on within the valley systems mostly. Figures 13 and 14 show the transformation and degradation status of the site respectively.

It should be noted however that development of indigenous vegetation of more than 1ha of indigenous vegetation and 300m2 of endangered vegetation is s to be subject to an environmental impact assessment in terms of the indigenous vegetation types as stated above, if the

transformation or the size of the development is more than the 1ha threshold or 300m^2 threshold in terms of the red data biodiversity areas in terms of the National biodiversity Act.

The vegetation analysis mapping shows that the vegetation on more than half of the site is transformed. Areas of untransformed vegetation character are mostly found mainly within the southern segment of the site, and also within the deep valley areas along the eastern boundary.

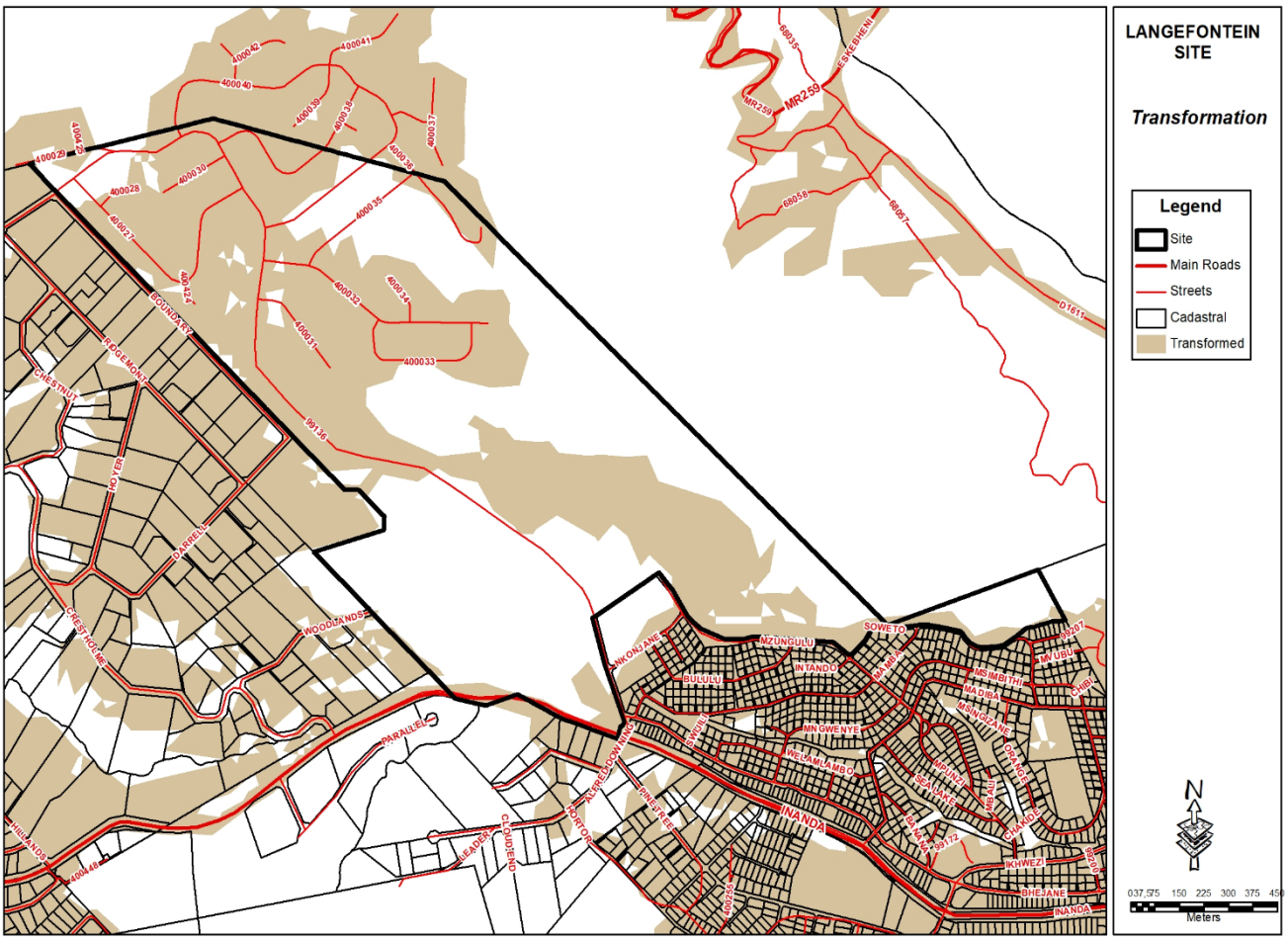


Figure 13 Vegetation transformation status

A visit to the site reveals that several illegal activities such as sand winning and refuse damping were occurring on the site. Several areas of illegal dumping of waste, including construction waste were observed.

Figure 14 Illegal dumping activities on portions of the site

4.3.3 FAUNA

Attempts were made during this assessment to identify animal species in the project area, especially within the vicinity of the site. Identification methods such as animal droppings, footprints, nesting areas, sound, and trails were employed. However, no traces of the presence of wildlife were found. A contributing factor could be that the site borders the existing community and is surrounded by many other human activities. The presence of birdlife however could not be ruled out within the trees on the north-western segment of the site along the valley lines and few trees on the site. These areas, however, are just outside the development footprint.

4.3.4 GENERAL BIODIVERSITY

Biodiversity refers to the diversity of plants and animals (living things) that occur in a given area. These plants and animals interact with the physical elements of the area such as the soils, water, and atmospheric conditions (non-living things) in such a manner that the various living and non-living components of that area maintain a suitable living environment for all the components of that environment. The resulting suitable environment provides various benefits for people and communities that live in the area.

The Ezemvelo KZN Critical Biodiversity Areas (CBAs) protected areas are the core biodiversity sensitive areas that should be considered in planning developments. Additionally, the Ecological Support Areas (ESAs) provide for linkages or corridors between the core areas, as well as environments buffering the core areas. The Ezemvelo Provincial and District CBA plans (as per District Biodiversity Sector plans) provide this bigger picture and need to be utilised to give the framework for this required incorporation of regional, provincial and national biodiversity networks.

- Critical Biodiversity Areas (CBA) areas considered critical for meeting biodiversity targets and thresholds, and which are required to ensure the persistence of viable populations of species and functionality of ecosystems (EKZN Wildlife, 2016)
- Ecological Support Areas (ESA) are areas required for the persistence of specific species. Although these areas are frequently modified, a change in current land use, to anything other than rehabilitated land, would most likely result in the loss of that feature from the area identified (EKZN Wildlife, 2016). ESAs are required to support and sustain the ecological functioning of CBAs

These include in addition to officially protected areas, *Irreplaceable Areas*, *Highly Significant Areas*, *Important and Necessary Areas*, *Ecological Corridors*, *Areas of Least Concern* and lastly areas with no *Natural Habitats Remaining*.

Protected Areas are areas that are formally marked and conserved as mandatory reserves. These are usually under institutional management usually in the form of game reserves. The most important of the six categories is the ***Irreplaceable Areas.*** These are those areas where there are no other alternatives available to achieving the conservation targets. This makes their conservation very crucial. Areas marked as ***Highly Significant Areas*** are those that have extremely limited alternatives or options available elsewhere for meeting the conservation targets. These areas also require conservation or protection from further degradation. ***Important and Necessary Areas*** are those areas that require protection, but have greater choices available in other areas for meeting the biodiversity targets. The ***Ecological Corridors*** have a mixture of both natural and transformed areas which are noted for long term connectivity and biological movements. ***Areas of Least Concern*** are also natural areas but with most choices available for meeting biodiversity targets hence can be used for other activities including developments. And then there are those areas that have ***No Natural Habitats Remaining***. These areas are the transformed lands that do not contribute anything to achieving the biodiversity targets of the province. From the current analysis the site does not fall within critical biodiversity classification.

CBA status of the Langafontein Site:

For this site, the Critical Biodiversity Plan from the KZN Wildlife mapping shows that areas of critical biodiversity are found mainly within the valley bottoms. These stretch the thickets and forests within the valleys from the eastern boundaries to the mid southern boundary. The CBA irreplaceability map of the site and surroundings is shown in Figure 6. More on the vegetation significance is discussed in the ecological report attached. This requires care during site clearance to save and release these reptiles if found.

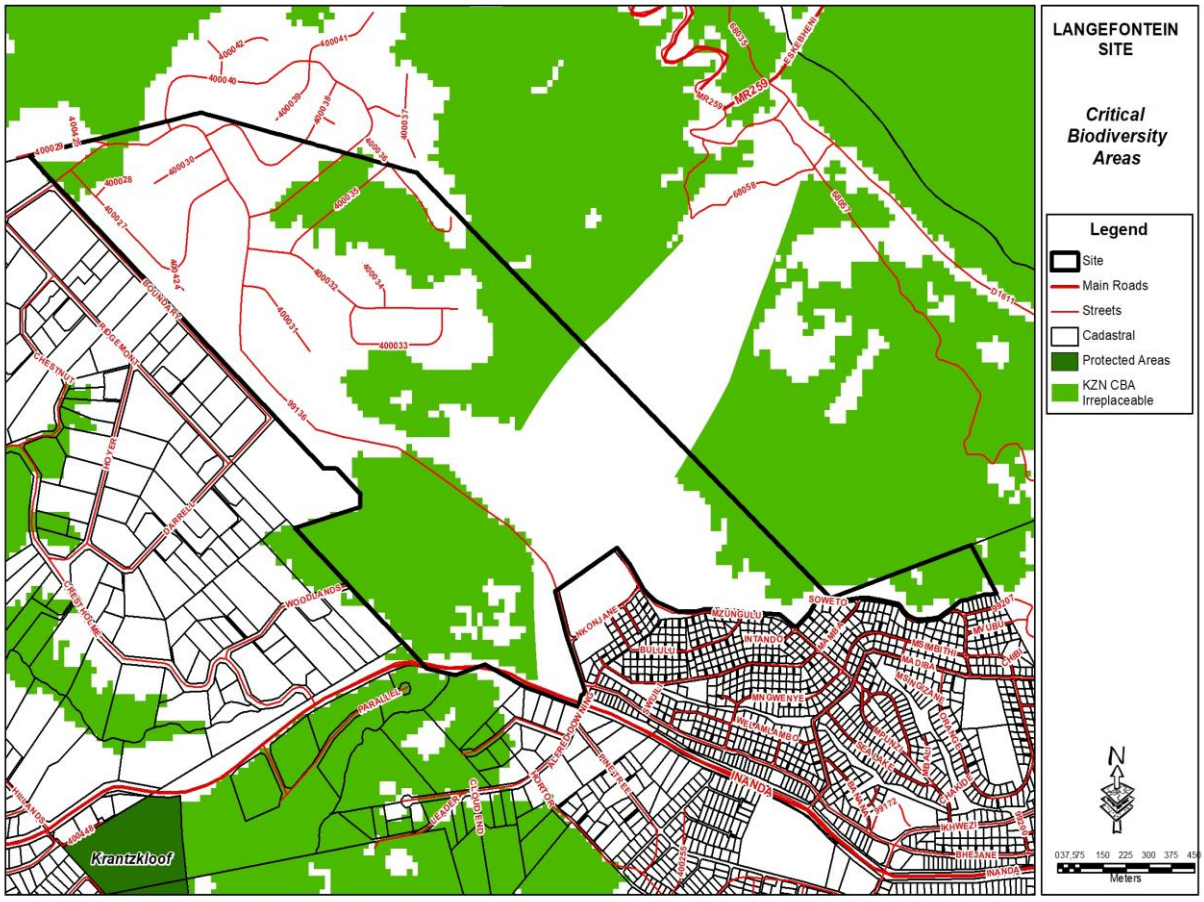


Figure 15 Critical Biodiversity Mapping of the site

Implication for the proposed development

Areas of high biodiversity priotiy are generally no-go areas, or if at all to be developed, the impact need to be weighed to determine the opportunity cost associated. Also, all areas of irripleaceable vegetation should ideally be escluded from active development an dincluded in the conservation

areas. Where any of such areas be developed, then environemtnal authorisation need to ne applied for nad granted if the threshold is 300m2 or more. For this site, it is noted also that the areas of issiplaceability are mainly the forest thickets within the valleys which may need to be conserved and excluded from activie deevelopment anyways. This optimises the changes of the these areas being protected, while ensuring that the land panned for the development does noot necessarily reduce.

4.4 AGRICULTURAL POTENTIAL

Agricultural potential referred here mainly to the arability of a land which deals with ability of the land or soil to support the cultivation of crops. High arable lands are noted to be of high agricultural potential. This implies that the piece of land possesses the right nutrients and pH or acidity as well as permeability levels to support the growth of basic arable crops and hence could be cultivated. The categories classification is to help in the determination of which land parcels should be restricted to agricultural activities and which ones can be subjected to other uses. Agricultural land is classified by The Department of Agriculture into three categories to guide the use of agriculture land. These include the following categories:

A. **Irreplaceable:** where land use is limited to only agriculture production only. This may include cropping, keeping of farm infrastructure such as storage facilities and sheds.
B. Threatened: This category, requires that all effort be made in restricting the land parcels with this classification for mostly agricultural uses. These should be protected from degradation by other uses.
C. **Primary Agriculture land use**: Category C land is one that has moderate agricultural potential and may require further efforts in order to a desirable agricultural use. The use of this may include uses in category A and B, such as storage and production infrastructure, with limited agriculture tourism, and research facilities.
D. **Secondary Agricultural land use**: these areas mostly those with low agricultural potential and are used primarily for other uses, with agriculture being a secondary land use.
E. **Mixed Use:** Category E lands are mostly with limited arability potential. These are used for other activities such as grazing of animals, conservation, tourism or development, depending on the demand within h surrounding area.

Information obtained regarding the farm indicates that the site is of Good Agricultural Potential (See Figure 16. The agricultural potential mapping shows that the entire site is mapped as high potential land. This implies that the site is primarily conducive for agricultural activities.

Figure 16 Agricultural Potential

4.5 CULTURAL/ HERTITAGE

A visual scan through the site did not reveal any sites, of structures of historical importance, especially on the areas where the proposed infrastructure is to be constructed. Even though the proposed site does not appear to have any significant heritage, or cultural issues, the South Africa Heritage Resources Agency (SAHRA) should be made a stakeholder in the EIA process as per the EIA Regulations, requires a Heritage Impact Assessment (HIA) to be conducted for the transformation of undeveloped sites that are more than 500m2 in extent. This is to ensure that a complete profiling of heritage resources be undertaken, and necessary development related recommendations and mitigations put forth where necessary.

4.6 CURRENT AND COMPETING LAND USES

The site is currently vacant but is being grazed by cattle and goats. Potions are being used for some mining activities and also illegal dumping.

4.7 EXISTING INFRASTRUCTURE AND SERVICES

The site currently is vacant but is located within the existing urban node of the area. Electricity and Water infrastructure are located within the community. However, state of bulk services may still need to be confirmed to determine capacity to service the proposed development. For instance, activities such as bulk transportation of water and sewage, may require application in terms of the pipe sizes and length, as well as carrying capacity (throughput) specifications. Issues such as wastewater and refuse disposal, water demand and availability of connection points needs to be specifically confirmed in the bulk services assessment. Sewer reticulation and treatment are also issues that may require consideration during planning stage. Suitable sewage disposal mechanisms and alternatives may need to be investigated. For this project it is noted that on-site sewer treatment proposals are put forward, given there is not reliable WWTW in close proximity to the site.

4.7.1 ROADS ENERGY AND WATER

The site itself is currently vacant with no services. However, the neighbouring communities are formal settlement where basic infrastructure and services, such as roads, water and electricity, schools and health facilities are already provided. The proximity of these services to the proposed development asserts the possibility of the proposed development being serviced by extending from the existing community.

4.7.1.1 Access roads

Site is surrounded by several existing settlements and has a network of roads in proximity. Few roads also pass through the site. Notably, the Inanda Road pass along the southern boundary. The site is also accessible through several streets on the surrounding settlements. Given the

proposed development will be a formalised settlement, internal roads will be provided, as shown in the example of in Figure 17.

Figure 17 Nature of road networks within the site and surroundings

4.7.1.2 WATER SUPPLY

The estimated annual average water demand for the proposed development is calculated to be about 604kl/day in terms of the human Settlement Planning and Design Guidelines. Internal Water reticulation will accompany the proposed development and connected to the bulk water system and reservoir that services the area. Metered connection will be to each site unit. A minimum of 75m mPVC Pipes are recommended, for internal reticulation, but bulk pipes joining to the main reticulation lines may be up to 600mm or more internal diameter.

4.7.1.3 ELECTRICITY AND ALTERNATIVE ENERGY

Eskom is to be the service provider of electricity. Electricity infrastructure is close to the site, to which the proposed development will be connected.

4.7.1.4 SANITATION FACILITIES

The site shall be serviced for a full waterborne sanitation. The engineering report indicated that the effluent for the development is estimated to the about 1121.25kl/day. The household reticulation is to be connected to the Municipal Wastewater Treatment Works.

As highlighted by the engineer, Ethekwini Water and Sanitation (EWS) GIS department has provided sewer data showing that there is no existing outfall sewer pipelines and no sewer waste water treatment plants (WWTP) near the proposed development. Therefore the housing development can't gravitate to an existing sewer network or waste water treatment plant (WWTP). Please refer to the attached sewer infrastructure map, using the received GIS sewer data mapping (figure 16).

To summarise the urban and built up areas of Waterfall and Crestholme found west of the Langefontein development are using Septic Tanks. The semi-urban area of Molweni found south-east of the Langefontein development are using Ventilated Improved Pit (VIP) toilets and the rural areas of KwaNgcolosi and Mademeni found north-west and north-east of the Langefontein development are using Urinal Diversion. There is no sewer outfall pipelines or no sewer waste water treatment plant (WWTP) close to the Langefontein development.

Implications for the development

It is indicated (by the engineers and the planners) that the team and the applicant are in the process of investigating alternative solutions like sewer package plants or small sewer waste water treatment plants (WWTP). It is suggested that Multiple small Package Plants will be very difficult if not impossible to get accepted, and will be very costly and have high maintenance for high flows. The development is also in relatively close proximity of existing developments. A centralised WWTP will probably be more conducive.

Therefore it is recommended to provide Two (2x) **750 Kℓ/day** package plants or small sewer waste water treatment plants (WWTP). One with phase 1 and the second with phase 2. We are busy investigating between two types of process, namely Trickling Filter Process vs. Activated Sludge. The following estimates are envisaged.

- Average Dry Weather Flow: **750 Kℓ/day**
- Flow: **8.68 ℓ/s**
- Peak Flow: **21.70 ℓ/s**

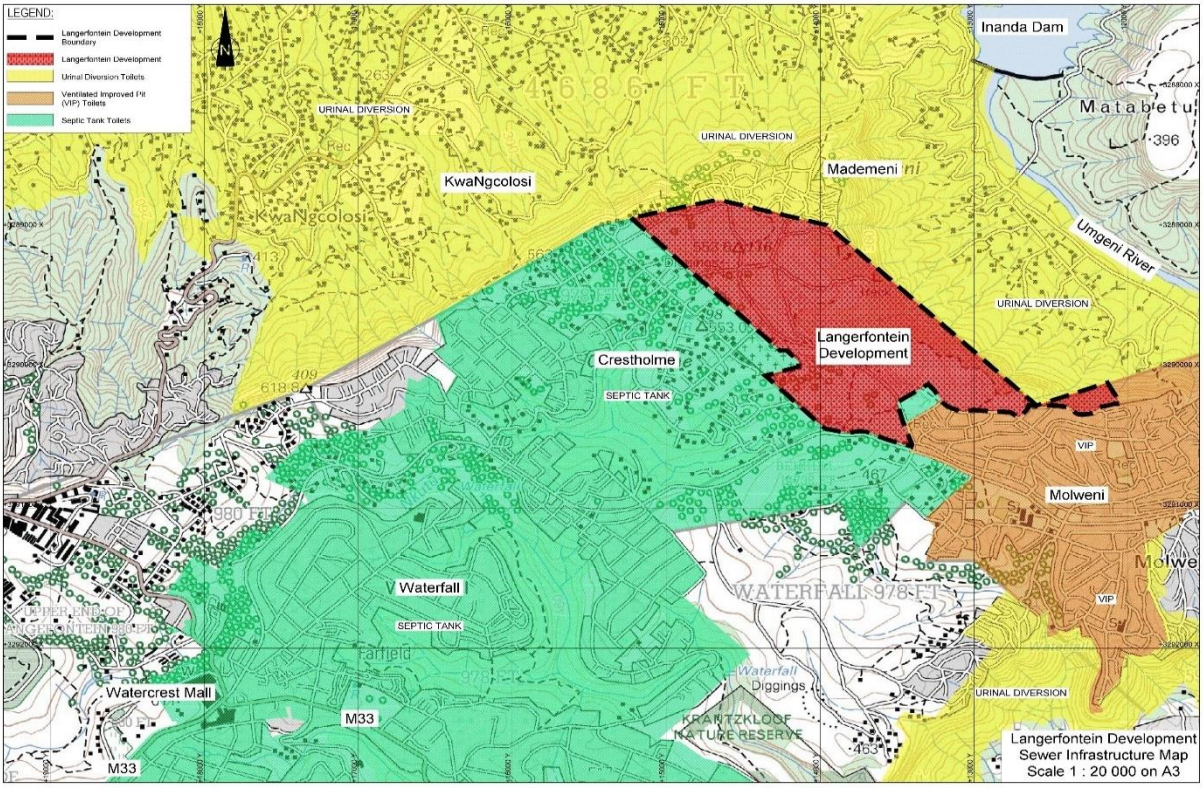


Figure 18 Sanitation infrastructure mapping of the narea

4.8 THE SOCIO-ECONOMIC ENVIRONMENT

4.8.1 EDUCATION, HEALTH, AND EMPLOYMENT

The proposed site is located near the existing Crestholm , the Lower Langefontein and Molweni community. The schools and social facilities in the area are expected to service the proposed development. There are a few primary schools within close proximity of the site. Given that the proposed development involve relocation of flood victim settlers which may add to the population of the area entirely, the capacity of available social facilities need to be established.

4.8.2 WASTE MANAGEMENT AND DISPOSAL

Solid waste collection is undertaken within the urban areas of the municipality, and surrounding areas to the development. This is expected to be extended to the new development once established. The municipality is responsible for solid waste removal and is to provide this service

to the incoming residents. As noted earlier, some illegal dumping was occurring on the site, which is an indication of improper or inadequate waste management or coverage in the area.

5. DESCRIPTION OF POTENTIAL ENVIRONMENTAL ISSUES AND IMPLECATIONS IMPACTS

As per the stipulations of the EIA Regulations, the scoping reports must contain a description of the potential environmental issues identified, and the potential impacts and implications in the proposed development. These must then be contemplated for assessment during the impact assessment phase of the process. This section contains a description of the potential issues identified for further assessment during the EIA phase, and the nature of assessment that may require then. This will also identify the impacts that may require specialist input in order to make a sound assessment thereof.

5.1.1 LANDSCAPE ISSUES

The proposed site consists of 1:10 and gentle sloping grounds. It should be noted that there are restrictions on development of areas that slope sharply. For instance, residential development on areas that are steeper than 1:3 is discouraged.

5.1.1.1 ASSESSMENT OF POTENTIAL IMPACTS

- *Nature of Impact*

The key issues in relation to landscape regards the slope and geological stability of the site for development. The site slopes gently in most parts but steeping along the valley lines. The sloping nature, and removal of land cover may result in increased surface runoff leading to erosion hazards, though these are expected to be limited, if proper caution and mitigation measures are put in place. The particularly occurs when the topsoil's is removed. Erosion may be a major source of surface water pollution and eventual pollution of nearby river systems within the catchment.

In terms of the geology, the issue regards how stable and suitable the site and underground conditions are -for the proposed infrastructure that is being proposed on it. The geotechnical study conducted identified the site to be stable for the proposed development. The study however advised the adequate and abundance removal of surface boulders /colluvial builders.

- *Duration of impact*

The potential for erosion occurring in the area is likely to stem from removal of ground cover, and an increased hardened and compacted soil surface. Should erosion occur within or along the drainage lines, local degradation of the land could occur. This could have medium to long term consequences both for the land in the project area and the drainage systems as a whole. Geological issues influence the planning process and eventually issues of stability may be relevant during the operational stages of the site.

- *Intensity of impact*

The significance of this impact is considered to be low to moderate as the expected degradation could be significantly reduced if appropriate mitigation is implemented.

- *Mitigation of impact*

The potential impact on land degradation through erosion could be mitigated by adopting the following:

- Implementing a storm water management plan during implementation to prevent any erosion potential.
- Installation of stormwater infrastructure along the roads infrastructure
- Implementing a landscape plan where vulnerable areas are re-vegetated during post construction rehabilitation and operation.
- Rehabilitation of areas left bare during construction and during and after construction.
- Adhere to the recommendations of the geotechnical studies and engineering report on stormwater management.
- Regular monitoring during constructure and operational stages for detection and implementation of any corrective measures.
- *Intensity of impact after mitigation*

The significance of the impacts relating to landscape issues would be low in the short, medium, and long term should the mitigation proposed be implemented.

- *Cumulative impacts*

Unrehabilitated areas may lead to long term degradation due to erosion potential in the long run. It is therefore necessary to rehabilitate areas striped of vegetation once construction is completed.

Further work

Further work is not anticipated as far as landscape issues are concerned. Landscape issues can be adequately mitigated and may not require any further work during the EIA phase. Recommendations in the Geotechnical report need to be incorporated into the planning process.

5.1.2 ISSUES RELATING TO LAND USE AND ALTERNATIVE LAND

Alternatives relating to land use and alternative land have been considered during the scoping phase of this EIA process. The proposed land is currently observed to be an open space. The alternatives may relate also to the housing typology and layout alternatives. These may need to be identified and assessed during the EIA Phase, especially after the drawing of the conceptual development plan.

Activity alternatives include, the residential development proposed, Farming Crop production and the no-go alternative. These would be critically assessed during the impact assessment stages.

5.1.3 ECOLOGICAL ISSUES

The site according to the ecological analysis, most parts of the site do not fall within critical biodiversity classification status. However, at least a third of the site is noted to be mapped as irreplaceable biodiversity. Fortunately, these are restricted to the valley bottoms and the associated wetland areas. Additionally, the dominant vegetation type on the site is noted to be critically endangered. This implies that area that the vegetation exist in natural form require extreme care to be taken in its development so that unnecessary disturbance may not occur. Despite the level of transformation of the vegetation type, the vegetation still provides a good land cover for the topsoil.

5.1.3 ASSESSMENT OF IMPACTS ON VEGETATION

- *Nature of Impact*

The proposed development is to result in removal of ground cover in the areas where the layout may cover. Given the presence of endangered vegetation species, the potential impact is likely to be loss of natural habitats, if any of the untransformed areas are further transformed and also the inevitable loss of landcover on the site.

- *Duration of impact*

The vegetation within the development footprint will be permanently and irreversibly lost. Though some portions of the land where solid strictures may be situated may be permanently devoid of vegetation, some small areas may be re-vegetated during landscaping after construction.

- *Intensity of impact before mitigation:*

The site will be irreversibly deprived of vegetation in its natural form. This makes the impact in the areas that are currently pristine moderately high.

- *Mitigation:*

There is need for mitigation. Because of the endangered and vulnerable nature of the vegetation types, the following migratory actions must be undertaken:

  - Further removal of vegetation should be limited to just as needed for the development. All areas which may be left bare should be revegetated. More vegetation should be done rather than pavements, which may increase hardened surfaces.
  - Any areas of erosion which may appear should be repaired as soon as they are noted.

- *Intensity of impact after mitigation*

The loss of the possibility of the area within the development footprint reverting to natural vegetation is irreversible and thus impact after mitigation is till moderate to high. Generally, the impact on the ecological character of the area is low to moderate, given the proximity of the site to the existing community.

- *Cumulative impacts*

Should there be areas left bare without vegetation, this is likely to eventually lead to erosion and siltation of drainage systems. It is therefore paramount that the areas left bare be rehabilitated and vegetated during landscaping of the site during construction.

Further work

Vegetation analysis undertaken revealed that the vegetation listed among endangered vegetation species. With this, it is full-scale vegetation studies is required to critically assess the significance of the remaining vegetation given the level of transformation noted and the vegetation status.

5.1.3.2 ASSESSMENT OF IMPACTS ON FAUNA

- *Nature of Impact*:

Although there are no significant animal species in the project area, the wetland areas, and the cluster of trees on the northern section the site could be habitat for some aquatic and bird species respectively. No other animal species were observed within the area.

- *Extent of Impact*

The proposed development is not likely to significantly impact on fauna within the project area.

- *Duration of impact*

The potential impact on fauna is low as very limited animal species occur in the area.

- *Intensity of Impact before mitigation*

The intensity of the impact before mitigation is low as very limited faunal species occur in the area.

- *Mitigation*

There is low. However, the following actions should be undertaken:

- Impact on riparian areas is likely to be low to moderate during construction. Post settlement impacts on the riparian area could be moderate if effective control measures are not put in place, such as fencing of the riparian areas, and zoning as no development zones and open spaces.
- No tillage of any form should be permitted within the passive open spaces along the wetland areas on the western and eastern outskirts of the farm surrounding the development footprint.

- *Intensity of impact after mitigation*

The potential impact after mitigation is low.

- *Cumulative impacts*

No cumulative impacts are expected from this development as far as impact on fauna is concerned.

Further study

Given the limited impacts anticipated on fauna, no further study is envisaged.

5.1.4 HYDROLOGICAL ISSUES

The site is traversed in a few areas by valley systems and associated wetlands. These wetlands function as ecological infrastructure and perform very important hydrological functions such as flood attenuation and the maintenance of water quantity and quality of river systems. It is likely that the settlement would significantly impact on the wetland and hydrological systems in the area in terms of surface runoff, and possible disturbance. The wetland areas and the associated

buffer zone are likely to be heavily impacted on by the proposed development. This may include degradation and draining should there be activities such as vegetation removal, turning of vehicles, and dumping of materials during construction.

- *Nature of the Impact*:

The development is likely to impact the wetland systems in the area if care is not taken. Reduction of the wetland size has the potential to reduce the effectiveness of the wetlands as important water purification and flood attenuation systems. Pollution of water in the river system may also impact negatively on aquatic organisms within these habitats. Ongoing impact of post settlement is likely to occur and could further impact on the effective functioning of this important hydrological system. Also the stream and wetland area may also see more volume of surface runoff if vegetation is removed on the nearby areas.

- *Extent of the Impact*

The acceleration of surface runoff resulting has the potential of localized flooding, and which may affect surrounding areas as well. Uncontrolled surface runoff is likely to increase pollution changes as well, and this effects may also be felt downstream within surrounding areas of the stream within the catchment.

- *Duration of Impact*

Impacts on the hydrological systems of the area are likely to be localized. However, poor land use could result in impacts occurring over a longer period and into operational stages.

- *Intensity of impact before mitigation*

Given the importance of wetlands as important ecological systems, the significance of the impact on this system from the proposed development is likely to be moderately high.

- *Mitigation of impact*

There is high need for mitigation. The necessary precautions are as follows:

- The wetland areas are delineated and the entire wetland area and its buffer zones will have to be excluded from the proposed development footprint.
- The recommendations given by the wetland report needs to be adhered to in order to reduce any negative impacts on the wetland areas during the proposed development.
- The wetland areas and the buffer zones will need to be fenced of as no development areas during the implementation stage.

- Additionally, areas noted to be of high water table should also be considered for exclusion from the proposed development, given safety issues raised, or investigated further if intended for any use.
- Stormwater management strategies will need to be put in place to deal with any potential surface run off issues.

Intensity of impact after mitigation

Implementation of the above mitigation measures is likely to significantly reduce the impacts of the proposed development on the hydrology of the area. Thus impact of the development on the hydrology of the area after mitigation is likely to be low and insignificant after mitigation.

Though the concerns raised will be significantly reduced after mitigation, the land available for development will also be significantly reduced.

- *Cumulative impacts*

Impacts from inappropriate land use in and around the wetland areas during operation coupled with possible erosion impacts could result in a long term higher impact on the wetland.

Further work

A stormwater management plan (SMP) may be required to deal with implementation stage and operational stage surface runoff issues.

5.1.5 POLLUTION ISSUES

Pollution is likely to extend from several sources. The construction stage pollution issues will include pollution in terms of littering, dust and noise and pollution of surface runoff. Any pollution of underground water may extend from surface pollution as well as use of inappropriate sanitation systems. Operational stage pollution may result from improper waste management activities, and possible reticulation issues such as burst toilets and pipes etc.

Construction state issues are likely to be localised and seize after construction. Issues of dust may only continue but at minimal levels should there be some areas left unrehabilitated. The implementation or operational stage pollution impacts such as waste management issues are likely to also be localised and also be a continual issue as long as the settlement remains.

These can however be mitigated. Construction stage mitigation measures may include dust and noise control as well as stormwater and waste management. Proper waste management during

operational stage is a way of managing and preventing possible pollution. Reporting by the community to the municipality will also see to it that burst pipes are promptly repaired and issues of possible pollution prevented.

5.1.5.1 ISSUES RELATING TO PROVISION OF SEWAGE SERVICES

As noted, earlier the site is located within an area that depends on Ceptic thanks and VIP toilets among the various surrounding communities. The absence of a reliable WWTW implies a suitable solution is required. The proposal is to have an on site portable or centralized WWTW to serve the development and surrounding areas.

5.1.5.2 ASSESSMENT OF POTENTIAL IMPACTS

- *Nature of Impact*

Improper sanitation services is likely to result in health hazards and inconvenience to the incoming community and existing ones. Improper sanitation facility may also result in residents engaging in lest hygienic practices which may lead to health risks. Water requirement for the project is therefore likely to exert significant pressure on the water demand in the area as a whole. This is likely to have a direct impact on sanitation in the area.

- *Duration of impact*

Impacts resulting from inappropriate sanitation have long-term local and regional consequences. Health risks resulting from contaminated water could have regional consequences. However, a water borne sanitation system is likely to reduce the risks sanitation related impacts associated with this project.

- *Intensity of impact before mitigation*

Given that water borne sanitation will be used, the intensity of sanitation impacts moderately high.

- *Mitigation of impact*

There is a moderately high need for mitigation in this regard.

- Sanitation options have already been considered at this stage of the planning process. Water borne sanitation has the lowest potential impact on the environment. However, the absence of bulk infrastructure and capacity is a critical issue for the development that may need to be adequately addressed. It is therefore important that the Local Municipality Liaise with the District to ensure most suitable solution is incorporated into the proposed development.

- All wetland areas identified may need to be excluded from installation of any reticulation systems.
- **A rehabilitation plan of the reticulation may assist in preventing any residual impacts of the trenches made during installation of pipes, for instance.**

- *Intensity of impact after mitigation*

The improvement of water supply to the site is likely to ensure a proper functioning of the water borne sanitation system. The intensity of the impact after mitigation is therefore likely to be low.

- *Cumulative impacts*

Should any impacts on sanitation be left unattended to there is the likelihood that this may degenerate into unpleasant environments. This may also lead to health risks to the community.

Further work

Suitable sanitation alternatives need to be agreed on and incorporated into the planning of the development.

5.1.6 WATER SUPPLY

As discussed earlier, there are water services or infrastructure in close proximity to the site. Although water infrastructure is available, the sufficiency of this infrastructure to support the water requirements of the incoming project needs to be assessed if water borne sanitation is to be inculcated into the planning development.

5.1.6.1 ASSESSMENT OF IMPACTS

- *Nature of Impact*

There is municipal water supply to the surrounding community. The proposed development can be connected to this water service. The water demand for the proposed development has been estimated by the engineering study. This need to be inculcated into the upgrade plans for the water reservoir and bulk water system in the area.

- *Duration of impact*

Impacts resulting from the possible sourcing of water and use of inappropriate sanitation have local and regional consequences. Underground and surface water pollution could have a long term impact on the health of the residents and the hydrology of the area.

- *Intensity of impact before mitigation*

Inappropriate sanitation has severe health implications for both the beneficiary and the receiving communities. Furthermore, underground and surface water pollution potentials are high. Thus the potential impact of this development before mitigation is considered to be high given the hydrological features in close proximity to the site alternative.

- *Mitigation of impact*

There is a moderate to high need for mitigation in this regard. The proposed mitigation measures include:

- Water supply infrastructure needs to be improved in the area as proposed by the district.
- Regular inspection and assessment of sanitary condition of the area need to be undertaken so that problems are identified and addressed early
- Pipe borne water need to be reticulated to the proposed site.

- *Intensity of impact after mitigation*

The water supply for the development will be made available by the district municipality, given there is already supply to the area. This action coupled with the environmentally friendly sanitation proposed by the sanitation assessment is likely to significantly reduce the health risk that may be posed by inappropriate water sourcing and sanitation. A waterborne sanitation system proposed is also likely to reduce the potential to pollute ground water resources. Thus the anticipated impact after mitigation is likely to be low.

- *Cumulative impacts*

No cumulative impacts are anticipated from this development as far as water supply is concerned.

Further work

Engineering investigation into the water supply potential of the area is undertaken. This needs to be considered by the district municipality. No further work is expected from this study.

5.1.7 STORM-WATER MANAGEMENT

Stormwater runoff is likely to be high given the size of the development envisaged. Care need to be taken to ensure that volume discharges do not significantly alter the usual flow of water in the nearby watercourses within the catchment. Current catchment management principles prohibit

direct discharges of storm water into natural watercourses without appropriate attenuation measures put in place.

5.1.7.1 ASSESSMENT OF IMPACTS

- *Nature of the impact*

The removal of vegetation coupled with hardened surface in the settlement area would cause accelerated stormwater runoff and possible erosion. The net result of improper stormwater management would be land degradation and possible siltation of the wetlands, and intermittent ponding in various areas of the site.

- *Duration of impact*

The increase in the volume and surface flow of stormwater from the settlement area is likely to be permanent. Development of gullies is possible and could be extended to the riparian areas with severe impacts on the water courses in the area.

- *Intensity impact before mitigation*

Increased stormwater volumes and accelerated flow of surface water have the potential to result in severe erosion and land degradation as well as possible localized flooding or ponding. The resultant water pollution and loss of soil have high environmental consequences in the area.

- *Mitigation of impacts*

There is moderate to high need for impact mitigation in the area. The following mitigation is proposed:

- Stormwater discharge points need to be dispersed to prevent large scale discharges to any one particular point.
- Stormwater discharge points need to be protected against erosion.
- Rain harvesting by individual households need to be encouraged.
- Landscaping needs to be encouraged in order to establish and maintain vegetation cover as much as possible in the areas around the sensitive areas.
- Stormwater management plan is prepared this should be followed assiduously to minimize and manage any potential impacts.

- *Intensity of impact after mitigation*

If the volume of surface water flow is reduced then the effect of erosion will be reduced. Thus the impact of stormwater if the mitigation measures are implemented will be low.

- *Cumulative impacts*

Impacts from inappropriate land use in and around the wetland areas during operation coupled with possible erosion impacts could result in a long term higher impact on the wetland.

Further work

Engineering investigation into the stormwater management infrastructure supply potential of the area needs to be investigated and planned into the development.

5.1.8 LITTER AND WASTE MANAGEMENT

Settlement developments are often associated with the generation of litter. Pollution due to litter is likely to have a significant visual impact on the environment. There is the need for provision for waste management if the development is to have a positive impact on the environment in terms of waste or litter management. It was noted that waste collection is undertaken as least weekly within the area. This service can be extended to the proposed development.

5.1.8.1 ASSESSMENT OF IMPACT

- *Nature of the Impact*

Even though the proposed development is not likely to significantly increase the liter generated, the level of liter generated to be generated if left unmanaged, could be a major environmental pollutant and a health risk in the area. Also, current illegal dumping and waste disposal practices are not deemed conducive for a healthy environment as these might be a source of pollution.

- *Duration of impact*

Unmanaged litter is likely to have a significant impact on the local environment which could be extended to the broader surrounding area.

- *Intensity of impact before mitigation*

The generation of non-degradable litter has a significant impact on the aesthetic environment. Uncontrolled organic waste could result in health risks in the area and pollution of water systems. Thus the issue of litter and waste management is likely to be significant.

- *Mitigation of impact*

There is a moderate to high need for the development of mitigation of impacts due to litter. The following mitigation is proposed:

- Waste minimization need to be encouraged
- Waste recycling need to be encouraged

- Waste receptacles (bins, bin-bags) should be provided
- Environmental cleanliness education need to be undertaken on an ongoing basis
- Provision of municipal or organized waste collection and disposal services should be extended to the proposed development.

- *Intensity of impact after mitigation*

Waste management efforts from both the community and the municipality will result in a significant reduction of the impacts of litter in the area. Thus impact after mitigation is considered to be low. The development may also discourage illegal dumping of waste on the site.

- *Cumulative impacts*

If waste collection and management is undertaken effectively, there is less likelihood of accumulation of litter in the area from domestic and commercial activities. The associated pollution and health risks are likely to be moderately low.

Further work

Engineering investigation into waste management for the area is discussed in the bulk services report. This needs to be properly incorporated into the planning of the proposed development by the municipality.

5.1.9 ACCESS ROADS AND TRAFFIC

Even though there are road networks around the proposed development, there are no actual roads on the site itself. A development of this magnitude envisaged will also result in significant impact on the traffic condition of surrounding roads. Road network is depicted on the proposed layout. The engineering report also identified the traffic needs of the proposed development and the acceptable intersection points to the existing roads. These need to be carefully planned into the development in conjunction with the appropriate authorities.

5.1.9.1 ASSESSMENT OF IMPACT

- *Nature of the Impact*

The proposed development is likely to result in an increase in traffic on the roads in the project area with the establishment of additional households.

- *Duration of impact*

If unattended, the possible traffic impacts could impact on the traffic situation in the area over a long period of time.

- *Intensity of impact before mitigation*

The intensity of this impact is likely to be moderate given there are road networks surrounding the site, but could be high if calming mechanisms are neglected.

- *Mitigation of impact*

Mitigation of potential traffic impacts is quite significant as the proposed development is likely to increase traffic on the existing roads. The following mitigation however is proposed:

  - Improve road access within the project area as per engineering recommendations.
  - Improve pedestrian access and walkways along main road and within the roads in the project area
  - Consideration of traffic calming mechanisms (speedhumps, traffic light, traffic circle for the intersections).

- *Intensity of impact after mitigation*

The impact after mitigation is likely to be low.

- *Cumulative impacts*

The improper contemplation and planning of traffic is likely to lead to future congestions in traffic in accessing the main rods in the area. This may in the long run lead to delays in commuting to and from the new establishment. Proper access to the site may need to be thoughtfully planned.

Further work

None identified, given the traffic issues are to be inculcated into the bulk services report. Recommendations therein needs to be implemented.

5.1.10 NOISE LEVELS

Noise appears to be very low probably due to the absence of major high noise producing industrial and commercial activity in the area. There is not the likelihood that noise levels would increase significantly when the settlement is established, though there may be a slight increase in noise levels during the construction stage of the project.

5.1.10.1 ASSESSMENT OF IMPACTS

- *Nature of the Impact*

There is the likelihood of slight increase in noise level in the project area especially during construction.

- *Duration of impact*

Noise during construction although localized, is likely to be slightly high during construction periods. The higher level of noise during construction will be temporal.

- *Intensity of impact before mitigation*

Increased noise levels would be significant nuisance to the receiving communities especially during construction. However, it is unlikely that noise levels would be higher than 70 db, the noise threshold for residential areas. Thus the intensity of impact due to noise is considered to be low to moderate.

- *Mitigation of Impact*

There is a moderate need for mitigation of noise in the area. The following mitigation is proposed:

  - Tree planting need to be undertaken during site establishment
  - Construction activities should be restricted to working hours only

- *Intensity of impact after mitigation*

The impact of noise cannot be completely mitigated. However, noise levels will significantly reduce in the short term after construction and further when trees are established.

- *Cumulative impacts*

Cumulative impacts are likely to be low.

5.2 SOCIO-ECONOMIC ISSUES

5.2.1 EDUCATION HEALTH AND EMPLOYMENT ISSUES

Education and health issues are likely to be insignificant as majority of the beneficiaries already obtain these services in the area surrounding the proposed development site. However, the payment for services and rates may require that households engage in meaningful employment and suitable jobs in the area to enable them to meet their civic responsibilities. Lack of employment in the area may result in significant social problems such as crimes. Crime and general social vices are potential issues of concern for this development. This concern requires proactive planning by the municipality in association with law enforcement agencies. Community leadership could play a significant role in planning mitigation against any potential social vices that

may arise from the establishment of this settlement. Locals should be considered for employment generated during the various stages of the proposed development.

The development itself is likely to also positively stimulate economic development which may be a boost in reducing social issues. Currently the community is happy with the proposed development as they expect to benefit from the opportunities it will provide in addition to entitlements of owning houses.

5.2.1.1 ASSESSMENT OF IMPACTS

- *Nature of the impact*

High unemployment among the existing community and the lack of job opportunities in the receiving environment has the potential to stimulate social vices crime. However, temporal employment that may be created during construction stage may ameliorate the situation in the short term. Long term employment may be generated when the other components of the development such as the Mall is established.

- *Duration of impact*

Crime that is stimulated by primary factors such as unemployment is difficult to curb unless the causative factors are addressed. The creation of jobs in the area coupled with augmented policing could limit the extent of criminal incidence in the area.

- *Intensity of impact before mitigation*

The area is currently a low density environment with low crime rate. Thus the significance of the impact is considered to be moderate. The positive impacts on social needs of the community are expected to me high.

- *Mitigation of impacts*

There is low to moderate need for impact mitigation in the area. The following mitigation is proposed:

  - The proposed development may create secondary jobs and thus limit the potential for crime in the area especially during construction.
  - Policing should be augmented
  - Investigation into the available educational and health facilities and capacities should be further investigation and inculcated into the planning of the proposed development.

- *Intensity of impact after mitigation*

The impact of crime after mitigation is likely to be low. Educational and health facilities impacts are also envisaged to be low with the availability of such services in the area.

- *Cumulative impacts*

Unemployment in the area could result in crime and inability of households to meet their civil obligations. Increased poverty could result in severe social vices to the detriment, particularly to service delivery and the general economic environment within Vryheid.

5.2.2 HERITAGE /ARCHAOLOGICAL AND CULTURAL ISSUES

The study did not readily identify any heritage or archaeological resources or infrastructure at this stage of assessment. However most significant cultural features is the issue of cemeteries. , regarding the servicing of the proposed development, there are a few cemeteries around Vryheid that could service the proposed development. Capacity of these cemeteries to serve the needs of the community needs to be investigated further. As per the heritage regulations the heritage studies to be undertaken will verify and confirm these issues.

5.2.2.1 ASSESSMENT OF IMPACTS

- *Nature of the impact*

Residential settlements that may involve settlement of new people in an area in a new community setting, may have impact on facilities such as burial places. Should there not be enough space in the nearer cemeteries, this will result in long travel to access the nearest service. Community members may also resort to burying their loved ones within the compounds of their homes.

- *Duration of impact*

The issue of cemetery is not a project specific impact but is a municipal wide issue. This impact affects all communities in the municipality as those that have cemeteries are rapidly running out of burial space. This need to be investigated further in order to determine the long term sustainability.

- *Intensity impact before mitigation*

Given the potentially significant socio-economic and cultural issues relating to the lack of cemeteries, the intensity of the impact is likely to be moderate to high.

The potential issues relating to the existing graves may be disturbance of cultural sites. Two options of relocating or leaving and fencing are possible.

- *Mitigation of impacts*

There is a high need for impact mitigation regarding the issue of cemeteries. However, this issue is beyond the scope of this project and requires intervention at municipal level. At this stage the municipality is undertaking investigations to identify suitable burial sites in the municipality including the proposed development. Local communities should be encouraged to practice cremation as an alternative to burial.

- *Intensity of impact after mitigation*

If suitable sites located within reach of the community are identified, then the socio-economic and cultural impacts could be significantly reduced. The impact after mitigation is likely to be low.

- *Cumulative impacts*

Burial space certainly tends to be progressively limited with time. With decreasing space and a likely increase in the rate of deaths due to HIV, the likelihood of the issue of cemeteries becoming a more significant issue in the future is high and may need to be addressed as part of a broader regional solution.

Further work:

The heritage impact assessment is needed to identify any potential issues of archaeological and paleontological concern, However the graves on the site call for concern for planning. The alternatives of relocating and or fencing off need to be investigated and potential impacts assessed including costs of each option. Discussions need to be held with the municipality and community leaders to arrive at the appropriate and suitable solution.

6. SUMMARY OF IMPACTS AND POSSIBLE MITIGATION

Table 3 Impacts and mitigation

Aspect of Environment	Nature of Impact	Intensity of Impact before Mitigation	Mitigation	Intensity of Impact after mitigation
Physical				
Topography	Topography is unlikely to be an issue for the proposed development, given the gently sloping terrain of the proposed site. Stromwater runoff may however potentially result in some level of erosion.	Topographical issues are likely to be minimal. Stomwater and erosion issues are likely to be moderate if proper stormwater management mechanisms are established.	Residential area is located within acceptable slope limits on fairly flat to gentle sloping terrain and thus erosion hazard due to settlement is limited.	Low
Geology /Geohydrology	The site is characterised by geological condition that is described as conducive and feasible for development. The site is	The scoping scan, did not reveal nay critical issues, other than the soils being prone to erosions, for which care need to be taken in the development..	Recommendations given in the Geotechnical report be adhered to. The wetland areas should be considered no-development-zones.	Low to Moderate

Aspect of Environment	Nature of Impact	Intensity of Impact before Mitigation	Mitigation	Intensity of Impact after mitigation
	characterised by potential perched groundwater conditions, especially during rainy seasons.	not to cause any further hardened or bare soil without mitigation. A geotechnical impact assessment would be conducted to confirm the geotechnical impacts and associated mitigation.		
Soils	Loss of soils and land degradation	Potential loss of topsoil due to removal of ground cover could result in surface water pollution. Impact is low to moderate.	Soil erosion control measures will be implemented during construction and operation. Areas left bare should be revegetation immediately after construction. It will be recommended that tree, preferable fruit based commercial trees, should be planted within the	Low

Aspect of Environment	Nature of Impact	Intensity of Impact before Mitigation	Mitigation	Intensity of Impact after mitigation
			river buffer and banks to protect the topsoil and attenuate flooding possibilities in the area. This will also result in adding organic matter to the topsoil to protect the river banks.	
Ecological				
Vegetation	Irreversible Loss of area to revert to vegetation	The settled area which are considered developable area is largely deprived of significant indigenous vegetation. Impact on wetland vegetation could be high if not properly provisioned for.	Mitigation is not possible in the settlement area for removal of vegetation within the developable area. On the alternative sites, (remainder of the sites) Wetland vegetation and riparian areas will be excluded from the	moderately high

Aspect of Environment	Nature of Impact	Intensity of Impact before Mitigation	Mitigation	Intensity of Impact after mitigation
Hydrology				
Wetland	Degradation of wetland (Only Applicable to the alternative site if the entire farm is considered)	The river systems and wetland wetland could be significantly impacted on if not protected. Impact on the wetland is considered to be moderate to high.	Wetland on the site has been identified and delineated and associated buffers afforded. These need to be strictly adhered to. Additionally these areas will need to be excluded from active development. It is recommended, as earlier specified, that trees be planted at the banks of the river within the buffer zones. These will protect from erosion, and if fruit trees are used, it will also be commercially viable for the community. Recommendations that will be provided in the study will guide the impact assessment further development and accorded passive open space status	Moderately high

Aspect of Environment	Nature of Impact	Intensity of Impact before Mitigation	Mitigation	Intensity of Impact after mitigation
Sanitation				
Sewerage	Improper sanitation could result in surface and underground water contamination in the catchment	The lack of possibility to connect the proposed development to sanitation infrastructure makes this impact high, especially if alternative is not adequately provided.	Water borne sanitation may be more appropriate for the development.	Moderately high
Litter	Increase litter in the area	This issue is likely to be insignificant given that refuse collection is likely to be undertaken by the Alfred Duma Municipality	Refuse control and removal need to be planned and implemented	medium
Storm water	Paved and hardened surface will result in higher than usual storm water volumes in the area	Storm water discharge points which normally would be located close to the watercourse could be severely eroded. Unmanaged storm water could result in land degradation at discharge point. This impact could be	Water harvesting should be undertaken or encouraged. Storm water discharge should be dispersed, and discharge points of water should be protected. Stormwater strategies put	Low to moderate

		high especially along the drainage lines.	forward by the engineering and geotechnical studies should be inculcated into planning of the proposed development	
Traffic	Traffic congestion could be created as a result of this development	Traffic congestion has the potential to result in accidents and pose risks to all road users. Impact is high.	Road and access improvement is required for the intersections to the site.	Moderate

Aspect of Environment	**Nature of Impact**	**Intensity of Impact before Mitigation**	**Mitigation**	**Intensity of Impact after mitigation**
Social				
Social services	Lack of or inadequacy of schools, health centres and employment opportunities could trigger social vices and hardship	This has the potential to translate into child delinquencies, and other social vices. Impact is moderate to high	Social services can be accessed from the neighbouring communities. Provision has been made in the proposed development for the provision of some of these services.	Low to moderate
Crime rate	Increase in crime rate	The significance of this issue cannot be determined at this	Improvement in the provision of economic activities	Low to moderately

		stage. However, this issue could become significant if many members of the incoming community are jobless.	could lead to highhanded and possibly lesser crimes. Increased policing in the area could limit possible crime.	
Cemetery	Has both geological and groundwater pollution concerns.	Current requirement for cemetery is high. Unavailability of suitable sites may further compound the impacts, unless there is enough capacity in the existing facilities for the proposed development.	Capacity of cemeteries accessible to the site needs to be further investigated. Improvement measures will need to be put in place where necessary.	Moderate to high

• CONCLUSIONS AND RECOMMENDATIONS

7.1 CONCLUSIONS

7.1.1 CONCLUSIONS RELATING TO BIOPHYSICAL ISSUES

- From the scoping process, no fatal flaws have been identified regarding the proposed development on larger parts of the site. However, steep areas are found along the eastern boundary and mid southern portions. These areas are also concurrently associated with wetlands and riparian areas and therefore may not be available for development. Geotechnical study on the site also confirms that the site is stable and is feasible for development if the necessary precautions and recommendations are carefully considered.
- The vegetation on the site is relatively pristine. The ecological analysis concludes the status of the KwaZulu Natal Sandstone Sourveld to be endangered. Additionally, portions of the area within the valleys, mostly is noted to be of critical biodiversity. These areas mostly tire in with the wetland areas and the steep incisions surrounding those valleys. The proposed housing on the site may be suitable only on the gentle sloping portions not steeper than 1:3, and provided the mitigation measures are implemented.
- The drainage lines and associated riparian zones and wetlands are key features that could be impacted on during the implementation of the development. Appropriate mitigation is necessary to ensure protection and preservation of these features. A wetland delineation is also necessary to establish the actual extent of the riparian zones.

7.1.2 CONCLUSIONS RELATING TO THE PROVISION OF SERVICES AND FACILITIES

- Given the proposed development is green development, in that it is new township establishment with its service requirements, the proposed development is likely to impose additional pressure on the facilities in the area. Further investigation into the availability and capacity of existing facilities is necessary.
- Recent power crisis in the country has taken a toll on industry especially with severe economic and social repercussions. The proposed development is one such activity that requires consideration of how electricity would be supplied to the settlement and associated activity centres. There is electricity in close proximity. The capacity to serve the proposed development needs to be confirmed.
- It appears that the proposed project would impact on the traffic situation in the area. The adequacy of the existing roads and road network to accommodate additional traffic

volumes from the project is unknown and needs to be investigated by means of a traffic impact assessment. It was noted that a traffic impact studies is being undertaken. The recommendations of which will guide the prosed development and should be taken into account.

7.1.3 CONCLUSIONS RELATING SOCIO-ECONOMIC ISSUES

- The availability (capacity) of social services, such as schools, clinics and other health facilities needs to be confirmed. Capacities to service the proposed development also needs to be confirmed.
- The development is likely to result in positive economic spinoffs in terms of employment during the development, ownership of houses be those who previously could not afford, and also possible collateral for those who will own the new houses.

7.1.4 CONCLUDING REMARKS

From this assessment, the proposed development is feasible from an environmental perspective. The scoping process has identified a few issues that need to be thoroughly considered during the EIA phase. The preliminary geotechnical study also confirmed the feasibility of the site for residential development. It is therefore concluded that the second phase of the process may proceed to critically assess the issues identified and potential impacts on the environment and vice versa. Additionally, the following recommendations are offered, to assist the next stage of the process.

7.2 RECOMMENDATIONS

The need to provide a suitable accommodation or solution to the flood victims who are currently in temporary shelters is noted to be a critical issue. This is also paramount towards to reduce the environmental risks and social hardship of such communities. The presence of informal settlements in close proximity raise the possibility of these expanding to the environmentally sensitive areas over time. Formalizing these planned developments may rather curb such occurrences and protect the sensitive environments within the project area.

The scoping report with the issues identified has been circulated to stakeholders for comments to ensure that all issues are addressed satisfactorily. No comments have yet been received from Interested and affected parties. Any comments received from the government stakeholders will

be incorporated into this scoping process for finalization and submission to the competent authority.

7.2 STUDIES TO BE UNDERTAKEN

1. Heritage Impact Assessment and Paleontological studies
2. Wetland studies for WULA
3. Ecological studies
4. Stormwater strategy
5. Engineering /bulk services report
6. WULA Application

8. PLAN OF STUDY FOR EIA STAGE

PLAN OF STUDY FOR THE ENVIRONMENTAL IMPACT ASSESSMENT

8.1TASKS TO BE UNDERTAKEN

The EIA Stage events are informed by the scoping phase findings. For this process, most of the specialist studies have been undertaken which helped in the evidenced based identification of the of issues and determination of potential impacts and implications for the development. This process paves the way for looking into the constraints and opportunities for the proposed development. the impacts identified have been looked at briefly in order to determine if they are fatal flaws for the proposed development.

The following tasks will be undertaken during the Impact Assessment (EIA) Phase of the process:

- A further assessment of the alternatives, sites, activities, and no-go-alternatives in order to properly adverse on the best alternative in achieving the desired goals for the project.
- In depth and systematic Assessment of impacts, looking at potential significance of residual impacts, mitigation measures for such impacts.
- Preparation of Environmental Impact Assessment Programme guide the construction stage and operational and decommissioning stages of the proposed development, integrating the recommendations and inputs from the specialist studies

8.2 PUBLIC PARTICIPATION AND CONSULTATION

The EIA Report, will be redistributed to all registered Interested and affected parties and government stakeholders for further comments and inputs

- A newspaper advertisement will be placed inviting I&APs to comment for 30 days.
- Community engagements (including meetings) will be undertaken to further explain the process and impacts to the community and invite any comments and inputs this will include or begin with community leaders, councillors and committee members
- Consultation with government departments (circulation of EIA Report), specifically
    - Ezomvelo KZN Wildlife
    - Amafa KwaZulu Natal and Research Institute
    - Department of Water and Sanitation
    - EDTEA
    - Department of Agriculture

8.3 ROLE OF THE EAP

The EAP will among other roles generally assess impacts, especially the direct footprint as well as indirect and potential cumulative impacts of the development:

- Consider the strategic planning and environmental context and provide framework within which the identified alternatives and impacts will be assessed.
- Provide the opportunities and facilitate the I&APs to comment and input into the process and integrate such comments into the Impact Assessment Process before submitting final report to the competent authority
- Disclose all information relevant and available in assisting in the critical assessment of Impacts and alternatives to the competent authority
- Provide a critical and comprehensive assessment of the identified impacts, mitigation measures and make recommendations on the significance of such impacts post mitigation

8.4 ROLE OF SPECIALISTS

The Specialists will perform among other roles :

- Assess impacts, especially the direct footprint as well as indirect and potential cumulative impacts of the development;
- Take into account the context and the intensity of the impact as related to their specific field of expertise;
- Highlight any impacts that could be irreversible or result in an irreplaceable loss of resource;
- Evaluate the significance of residual impacts associated with the proposed development, taking into account scientific information, local community and societal values attached to the environment as being impacted upon;
- Use accepted or formal standards, thresholds or targets for environmental quality, where available, as a key indicator of potential significance, since these measures reflect societal values. Where these benchmarks are absent, specialists should draw on a combination of criteria used to assess potential impacts, to indicate their potential significance, as well as feedback from key stakeholders; and
- Assess and respond to all comments made by Key Departments and Registered I&APs.

8.5 ROLE OF I&APS

- Declare their interests;
- Assist in the identification, investigation and assessment of alternatives, particularly where local knowledge is required;
- Within the specified timeframes, provide comment on the consideration of alternatives.

9 IMPACT ASSESSMENT AND RATING CRITERIA /FRAMEWORK

The impacts identified have been assessed and rated based on the rating criteria outlined by the Department of Environmental Affairs, as per the guideline documents to the EIA regulations (1998) as amended. This took into consideration the extent, duration, magnitude and probability of the impact occurring, in arriving at the overall significance of the identified impact. Below is a description the methodology to be used in assessment and in ranking the identified impacts.

ASPECT	SCORE/DESCRIPTION	IMPLICATION
(a) Status		Negative impact i.e. at cost to the environment)
		Positive impact i.e. at benefit to the environment
		Neutral effect
(b) Extent	1 Site	Within the boundaries of the site
	2 Local area	Within 10km of the site
	3 Municipal Area	Within the District Municipality and areas less than 100km
	4 Regional	Within the Province
	5 National	South Africa
	6 international	Southern Africa
(c) Duration	1 Immediate / temporal	- < 1 year
	2 Short Term	1 – 5 years
	3 Medium term	6 -15 years
	4 Long term	The impact will cease when the operation stops

	5 Permanent	No mitigation measure will reduce the impact after construction	
(d) Magnitude	0 None	Where the aspect will have no impact on the environment	
	2 Minor	Where the effects of the environment is in such a way that natural, cultural and social functions or processes are not affected	
	4 Low	Where the effects of the environment in such a way that natural, cultural and social functions or processes are slightly affected	
	6 Moderate	Where the effects of the environment in such a way that natural, cultural and social functions or processes continue but in a modified way	
	8 High	natural, cultural and social functions or processes are altered in such a way that they will temporarily cease or operate in a different ways from usual for the duration of the activity	
	10 Very high	natural, cultural and social functions or processes will cease or be altered permanently	
(e) Possibility of resulting in Irreplaceable	0 Very Low	Will not result in any irreversible or irreplaceable loss in resources	

loss of resources			
	1 Low	Likely to result is preventable and localized loss to resources	
	2 Moderate	Most likely to cause loss if the project is implemented but can be moderately mitigated or avoided.	
	3 High	Highly likely to cause long term loss as long as the project remains but can be reverted after decommissioning	
	4 Very High	Will result in Permanent loss to resources	
	6 Extremely High	Southern Africa and beyond (international)	
(f) Probability of occurrence	0 None	Impact will not occur	
	0.1 Improbable	Possibility of the impact materializing is very low as a result of design, historic experience or by virtue of implementation of adequate mitigation measures.	
	0.25 Possible but unlikely	The is moderate chance that the impact will occur	
	0.5 Probable	Impact may occur	

	0.75 Highly probable	Occurrence is most likely
	1 Definite / unknown	The impact will occur regardless of the implementation of preventive or corrective actions, or where the probability that the impact will occur is unknown due to lack of information

(g) Significance weighting of the impact (S)

From the above descriptions, the potential impacts are assigned a significance weighting (S). This weighting is arrived at by adding the assigned scores of the extent (E), duration (D), possibility to cause Irreplaceable Loss of Resources (I) and magnitude (M) and multiplying the sum by the probability score (P).

Thus: S = (E+D+M+I) x P

The overall significance weightings scores are categorized below:

SCORE	**Description**	**Interpretation**	**Colour Code**
≤ 2	Very Low		
2-5	Low		
5-10	Medium		
11 - ≤16	High		
	Positive		
	Negative		

	Positively High		

REFERENCES

Aucamp, P J. (2010). *Environmental Impact Assessment: a practical guide for the discerning practitioner*. Van Shaik Publishers.

Mucina, L., & Rutherford, M. C. (2006). The Vegetation of South Africa, Lsotho and Swaziland. *Strelizia, South African National Biodiversity Institute*, *19*.

SANBI. (2016). KwaZulu-Natal Systmatic Conservation Plan (KZNSCP) : KZNSCP Vegetation types. Retrieved April 30, 2016, from http://bgis.sanbi.org/Projects/Detail/39

Shaw, C. S., & Escott, B. (2011). KwaZulu–Natal Vegetation Type Description Document for Vegetation Map 2011: kznveg05v2_1_11_wll. shp. Retrieved from http://cpu.uwc.ac.za/KZN/KZN_vegetationtypes_descriptionsVer2_1.pdf

APPENDIXES

- Appendix 1 : Layouts
  - .1 Project Layout

- Appendix 2 Public Participation report
- Appendix 2 Ecological Study Report
- Appendix 3 Engineering and Bulk Services report
- Appendix 4 Geotechnical Repot
- Appendix 5 Heritage Studies Report 1

10. LAYOUTS (FACILITY LOCALITY MAPS

Locality Map

LAYOUT 1

A3 Layout

11. PUBLIC PARTICIPATION

Public Participation Report

Scoping & EIA for

Vryheid Residential Development for 500 Sites

BIZYCON PTY LTD

CONTENTS

1. INTRODUCTION

This report is a summary of the public participation process undertaken as part of the Scoping Stage of the Vryheid Site Servicing for 500 Sites. The Public participation is done with the

assistance of the Ward Councillors, Officials from the Local Municipality and also Unit committee members within the community, and the project implementing agents. This report details the activities carried out and outcomes to date.

2. PUBLIC ADVERTISEMENT

2.1 Site notices

Site notices were laced within the community in places that are mostly assessable to the community members. Photographs of some of the Site Notices are attached in Appendix 2 (i).

2.2 Newspaper advertisement

A newspaper advertisement is submitted for publication to notify I&APs and the general public of the proposed development. Any comments received will be included in the final scoping report and the EIA stages of the proposed development.

3. BACKGROUND INFORMATION DOCUMENT (BID)

Background Information was prepared and distributed within the community of Vryheid, ensuring at least all those within the 500m radius to the development footprint are engaged. This was done with the assistance of the local councillor and ward committee members. All those who received such information were encouraged to register as interested and affected parties if they so wish.

A copy of the BID and list of people to whom it was distributed are attached in Appendix 2 (iii). Few verbal responses were received during the distribution process. From the comments or interactions, received, almost all community members support the proposed development. So far, no written comments and objections were received. No such registrations requests were also received so far.. Any further comments received will be attended to or inculcated into the planning of the development.

4. PUBLIC MEETINGS

From the interactions with the public so far, it didn't appear that there were any critical issues for which public meetings would be called for. Should this become necessary, it will be planned with the municipality and community leaders. Also the public Participation process began when the Country was back on Lockdown Level 3, and hence public meetings were prohibited. Due to the immense risks of populating community members we resort to the methods stated above, guided

by local councillors and committee members. Should the need for meetings arise this will be conducted.

5. COMMENTS FROM STAKEHOLDERS

The draft Scoping report) has been distributed to key stakeholders (relevant government departments and municipalities) for comments. Any comments received are inculcated into the final report to be competent authority. These are included below in 2 (iv).

The draft report distribution table summary is presented below.

Name of Stakeholder	Draft BAR Distribution status	Comments Received (Yes/No)	Comments Attached in Final BAR (Yes/No)
KZN Wildlife	Hard Copy Delivered	Yes	
Amafa KwaZulu-Natal & Research Institute /SAHRA	Loaded unto SAHRIS	yes	
Department of Water and Sanitation	Hard Copy Delivered	Yes	
Ezemvelo KZN Wildlife	Hard Copy Delivered	yes	
Department of Economic Development Tourism and Environmental Affairs (EDTEA)	Hard Copy Delivered	Yes	
General Public/Community		None	

1. SITE NOTICE

2. NEWSPAPER ADVERTISEMENT

To be added

3. BID and Distribution List

REGISTRATION AND COMMENT FORM

Accompanying Background Information Document

Should you have any comments regarding the proposed project, please complete and send the attached comments sheet to either of the following contact person:

Mr Maccarthy Honu-Siabi

Tel: Cell: 0724641197, Fax: 086 776 33 25
Email: bizycon@live.co.za maccarthy@developmentimpact.co.za

TITLE		**FIRST NAME**	
INITIALS		**SURNAME**	
ORGANISATION/TOWN		**E MAIL**	
POSTAL ADDRESS			
TEL NO.		**POSTAL CODE**	

REGISTRATION AS AN INTERESTED OR AFFECTED PARTY (I&AP) (Please circle applicable box)

Please formally register me as an interested and affected party so that I may receive further information and notifications during the EIA process	YES	NO
I would like my notification by	Letter (mail)	
	E Mail	
	Fax	
	Telephone	
In terms of the **GNR 327 (EIA process regulations)** I disclose below any direct business, financial, personal or other interest that I may have in the approval or refusal of the application.		

COMMENTS (you may use a separate sheet if you so wish)

I have no objections to the proposed development. My reasons are

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I support the proposed development. My reasons are:

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I object to the proposed development. My reasons are:

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Other I&APs to be contacted are:

.....
.....
.....

List of recipients around the project site communities

COMMENTS FROM STATE DEPARTMENTS /AGENCIES/STAKEHOLDERS

DEVELOPMENT PLANNING ENVIRONMENT & MANAGEMENT UNIT

(Public Sector Housing)

166 K.E. Masinga
P.O. Box 680
Durban 4000

Enquires: Regina Kistan

Tel No: 031-3117441 /0313224318

E-mail: kistan r@durban.gov.za

Fax: 031-31124314

FROM : **MANAGER: PUBLIC SECTOR HOUSING**

TO : **MUZI VILAKAZI**

DATE : **19 /02/14**

REF : **PRESCREENING :LOWER LANGERFONTEIN**

1)ENVIRONMENT PLANNING & CLIMATE PROTECTION DEPARTMENT

The proposed site is bordered by Dmoss and has drainage lines which drain into uMngeni River.The south east portions of the site also support a high quality grassland ecosystem.This Department has no objection to the proposed housing project subject to EIA approval from the Department.

2) MATERIALS MANAGEMENT

While the usual concerns of gradient and slope stability may not be an issue over most of the this site ,sewage and storm water disposal for medium to high density housing will be the major limiting factors. There is no water borne system within many kilometres of site and ,we have been informed many times on other projects, the likelihood of one being constructed this distance and over this terrain is exceedingly small to non -existent. The soils are thin and sandy so will eroded easily with poorly controlled storm water run- off . Effluent disposal will be by subsoil percolation In French drains which will limit site size ton an absolute minimum in the order of 500-600m² on flatter slopes and up to maybe 1000m² on steeper slopes – and then there is the eternal problem of preventing later development of the empty half of the site so the evapo-transpiration area is not compromised.Steeper slopes

also probably have shallow,hard rock which may further limit the areas suitable for French drains.

There were studies underway by the city(for this Molweni area assess feasibility of compact sewage treatment systems (Dewats) based on septic tanks, communal clarifiers(?) and irrigating treated effluent but have never heard the outcomes of those studies and the projects for which they were done have yet to start , so the assumption is the system may not have been viable.

3) FRAMEWORK PLANNING BRANCH

While, The Outerwest SDP identifies the application area for residential development at densities of 20 du /ha, a portion of the area near the taxi rank at the intersection of Inanda Road and Street No 99136 has been identified as a mixed use node for accommodation of retail / businesses in terms of the recent Molveni Nodal Functional Area plan adopted by the Council in May 2012.

From a strategic planning perspective, this branch raises no objection to the purchase of this land by Housing Department for residential purposes. However preparation for the development plan should take cognisance of the Molveni Nodal functional area plan,particularly the mixed use node mentioned above.

Notwithstanding the above, there are environmental and sanitation issues in the area which may impact on the number of houses anticipated for the development of this area, therefore this branch recommends that these issues be brought forward and discussed with relevant department prior to the purchase of land.

4)ETHEKWINI TRAFFIC AUTHORITY

No objections to the proposed project. However a TIA will be required prior to any site development.

5)TRANSPORT PLANNING

The prescreening application is supported at this stage of the process by Transport Planning Branch and Public Transport Branch subject to further comments given in subsequent phase.

6)WATER

This Department has no objection to the above mentioned development subject to the bulk water infrastructure upgrade ie. Kwanqetho Reservoir and associated infrastructure. For this upgrade to commence funds will need to be made available from our capital budget

7)STORMWATER CATCHMENT COASTAL ENGINEERING

In order/ No objection. Provided the valley lines are kept free of development.

8)WASTE WATER

There are no water borne sewers in the area.Septic tanks will be considered but only where the sewage is solely of a domestic nature and the on-site disposal system is designed by an appropriate professional to eThekwini Municipaliy's guidelineNo6,Guideline for the Design and Approval of on –site(SubSurface) disposal of Domestic Sewage

9) AGRICULTURAL MANAGEMENT UNIT

The IMS (Infrastructure Management And Socio- Economic Development Department) does not have any plans in the development of Agriculture within this footprint.However it must be noted that a significant portion of the footprint is located on DMOSS area.

10) ELECRICITY (H V)

H V operations has no objections, however, a detailed plan must be submitted when available, due to cables and HV substation to be constructed within the boundaries of Phase 6 of Langerfontein development.

11) ELECTRICITY (M V)

No objections to the development Electricity(MV) will specify any requirements from outside eg substation required for the development when more information concerning number of units to be built.

12)Fire and Safety

No objection

REGINA KISTAN

SBU NDEBELE : MANAGER: PUBLIC SECTOR HOUSING

AWATING AMAFA COMMENTS

DWS COMMNENTS

11. SPECIALISTS STUDIES

11.1 ECOLOGICAL STUDIES REPORT

11.4 DETAILED CV OF EAP

CV of EAP

ENVIRONMENTAL SCIENTIST | CONSULTANT

CURRICULUM VITAE OF BRENDA MAKANZA

Rockery Lane, Lonehill, 2191 • Mobile: +27 [0] 82 075 6685 / +27 [0] 84 492 1665
E-mail: brenda.makanza@live.co.za

PROFESSIONAL PROFILE

A dedicated and passionate Environmentalist with valuable theoretical and experiential acumen in the areas of environmental conservation and administration; Brenda Makanza holds 16 years of experience gained through direct involvement in several conservation initiatives. Currently a Principal Environmental Consultant of the DIGES, South Africa; responsible for leading, administrating and completing assessments on Environmental Statements, as well as overseeing studies, interpreting technical reports and appendices regarding the same.

She leverages academic skills gained through an honours-level degree in Environmental Science and Post Graduate Certificates in Integral Water Management and Geo-informatics; alongside the proficient ability to actively and valuably participate in the development, design and implementation of environmental / conservation management policies and consultation initiatives; thereby supporting the highest standards of Environmental Management and Sustainable Development, in all undertakings.

Career Objectives: Environmentalist| Sustainability Consultant / Advisor | EIA / Environmental Consultant| GIS Consultant.

PROFESSIONAL STRENGTHS:

- Persistent and balanced approach to the mutually beneficial achievement of organisational objectives and stakeholder goals.
- First-class problem-solving skills and practical decision-making abilities. Dedicated to maintaining high-quality standards in all tasks.
- Able to apply analytical thinking/reach conclusions apart from and when using technical models.
- Able to develop ideas and solutions to meet diverse objectives, as required by the situation.
- Passionate interest in the fields of environmental management and conservation. Fully skilled and qualified with regards to the area of interest.
- Strong communication skills, verbal and written. Apt research, data analysis and report creation acumen.
- Hard-working and highly motivated. Able to work on own initiative and as part of a team.
- Leadership skills; guide and motivates teams towards the valuable attainment of results.
- Organised and able to complete projects on time and within budget. Ability to continually ensure that processes are moving as efficiently as possible, without sacrificing quality.
- *Computer Literacy*: ArcGIS [Documentation(Geodatabases), Analysis and Map Production] | Erdas Imagine [Analysis and Map Production] | Microsoft Office [Reporting].

VALUE-ADDED DELIVERABLES | EXPERIENCE:

- Serves in an advisory capacity to Private Clients, Government Departments, Municipalities and Parastatals.
- Conducts Site Assessments, Environmental Impact Assessments, Environmental Audits, Groundwater Quality Analysis and Waste Management Audits, to identify contamination and other areas of concern.
- Conducts site analysis and map production using different GIS software;
- Documents spatial data using different databases;
- Researches collect and analyses data/samples, and prepares reports to assist with decision making. Applies theory to the specific context to identify creative, practical approaches to overcome challenging situations.
- Makes use of relevant industry tools, including Geographic Information Systems, in support of effective and efficient environmental monitoring and auditing.
- Upholds principles regarding the sustainable management of Natural Resources, liaising with stakeholders and assisting with the development of Environmental Policies.
- Enforces relevant Laws and Occupational Health and Safety requirements as indicated within the specific context, communicating guidelines to stakeholders through regular information sessions.
- Understands continuous improvement, and keeps up-to-date with changes in methodologies, new thinking and approaches.

ENVIRONMENTAL SCIENTIST | CONSULTANT

- Promotes knowledge management and a learning environment through leadership and personal example; seeking and applying developed wisdom and best practices in all undertakings.

QUALIFICATIONS

ISO 14001: 2015: Lead Auditor, SACAS, 2022

Combined ISO 45001:2018 and ISO 14001: 2015: Implementation and Internal Audit, NOSA, 2020

Incident Investigation Level 3, NOSA, 2020

SAMTRAC, NOSA, 2020

PGC Professional Diploma Geo-Informatics; UNIGIS, 2016

PGC Introduction to Geo-informatics; University of Johannesburg, 2012

PGC Integral Water Management; Saxion University, The Netherlands, 2008

Environmental Science & Health [with Honours]; NUST, Zimbabwe, 2004

Senior Certificate / Matric; Mutare Girls High, Zimbabwe, 1999

PROFESSIONAL REGISTRATION

SACNASP : Pr. Sci. Nat (Environmental Science-400016/17)
EAPASA : Registered EAP (2019/1542)
WISA : Associate Member

PROFESSIONAL EXPERIENCE

Name of firm	DIGES Group, South Africa
Designation	**Principal Environmental Consultant**
Period of work	2009 to Date

Key Roles & Accountabilities:

- Responsible for carrying out assessments on all Environmental Statements; overseeing the interpretation of technical reports and appendices which may comprise part or all of the ES.
- Conducting / managing site surveys and utilising data gathered to forecast future ecological developments.
- Studying/assessing Environmental Impact Developments on; soil, groundwater, rivers, lakes and wildlife habitats within a variety of ecosystems.
- Ensuring that the EIA register is maintained / up-to-date, and preparing/presenting all required statements and documentation regarding; evidence for public inquiries and reports to relevant stakeholders.
- Working in strict compliance with all relevant legislation, policies and stakeholder department instructions and resolutions.
- Implementing and upholding the application of all job site safety plans; attending the weekly general safety meeting and the weekly supervisor's safety meeting to gain and provide feedback on-site safety issues.
- Compiling and making available all required safety program documentation, records and regulatory compliance documentation.
- Performing reviews and inspections of the Jobsite to ensure full compliance with Provincial OH&S regulations, codes and policy.
- Identifying workplace safety hazards, and developing and implementing all necessary corrective actions to minimise or eliminate the same.

Key Projects:

- EIA and Map production for various townships, residential complexes and office parks.
- Borrow Pit applications
- EIA and Map production for the construction of various ESKOM Electricity Power lines and substations.
- EIA, Monitoring and Map production for various roads, bridges and pipelines.
- Formulation of Municipality Policies and State of the Environment reporting.

- Licensing, monitoring and auditing of several Landfills.
- WULA and GA for powerlines, mines and roads.
- Documentation- Compilation of borehole databases.

Projects and Professional Technical Experience

Walk-downs and CEMPr

- Walk-down and CEMPr for the Ariadne-Venus 400kV powerline within various Municipalities in KZN Province
- Walk-down and compilation of CEMPr for the Medupi Witkop 400kV powerline in various Municipalities, Limpopo Province.

Basic Assessment

- EMP and Basic Assessment Report for Establishment of Seshego Cemetery within Polokwane Local Municipality.
- EMP and Basic Assessment Report for Upgrading of gravel road from Praktiseer to Taung village within Greater Tubatse Local Municipality
- Basic Assessment for the construction of Klarinet Bridge within Emalahleni Local Municipality.
- Proposed construction of a 132kV power line from PPRUST substation to the proposed Akanani substation within Mogalakwena Local Municipality.
- Basic Assessment for the establishment of Sakhelwe extension within Emakhazeni Local Municipality.
- Proposed Southgate Township Establishment within Polokwane Local Municipality.

Scoping & Environmental Impact Assessments

- Proposed construction of a 30 km 132kV power line from Amandla substation within Elias Motsoaledi Local Municipality, Greater Sekhukhune District to Kwaggafontein substation within Thembisile Hani Local Municipality, Nkangala District.
- Proposed construction of a 45 km 132kV power line from Jane Furse ss to the new Mamatsekele ss within Makhuduthamage Local Municipality, Greater Sekhukhune District.
- Proposed Koedoesdoorns township establishment within Thabazimbi Local Municipality;
- Proposed Madala township establishment within Emakhazeni Local Municipality.
- Proposed Rustenburg Strengthening Project within Rustenburg Local Municipality.
- Proposed construction for the Limpopo East Strengthening Corridor within Limpopo Province.
- Proposed construction of Hyperrama pipeline within COE.

Amendments

- First and second amendment for the 132kV Mamatsekele powerline within Limpopo Province.
- Borrow Pit Application for road upgrading from Polokwane to Matlala village within Aganang local Municipality Capricorn District, Limpopo Province.

Borrow Pits

- Borrow Pit Application for upgrade (gravel to tar road) of roads D4066 and D4100 from Lebowakgomo/Middlekop
- Borrow Pit Application for upgrading from gravel to tar of road from Matsakali to Altein, to Shangoni Gate within Colin's Chabane Local Municipality
- Borrow Pit Application for upgrading from gravel to tar of road from Giyani to Malonga within Greater Giyani Local Municipality.
- Borrow Pit Application for upgrading of the road (gravel to Tar) from Manaileng to Rafiri within Lepelle Nkumpi Local Municipality.
- Borrow Pit Application for upgrading Of 5 km Internal Road (Gravel to Tar) At Marulaneng within Lepelle Nkumpi Local Municipality.

Strategic Planning

- Review & Updating of Free State Environmental Outlook
- Review & Updating of Bushbuckridge Local Municipality Integrated Waste Management Plan
- Review & Updating of eNdumeni Local Municipality Integrated Waste Management Plan
- Compilation of the South 32, Khutala Mine Biodiversity Action Plan
- Compilation of South 32, Khutala Mine Integrated Waste Water Management Plan
- Compilation of South 32, Khutala Mine Integrated Waste Management Plan

Water Use Licence Applications

- Amendment of WUL for Tivani Mine, Greater Tzaneen.
- WULA for Klarinet Ext5 and Ext6 Bridge Construction.

- WULA for construction of 400kV Ariadne-Venus power line within KZN province.
- General Authorisation for the construction of Hyperrama pipeline within COE.
-

Monitoring

- Landfill auditing and water monitoring at the City of Ekurhuleni's operational and closed landfills.
- Landfill auditing and water monitoring at the City of Ekurhuleni's operational and closed landfills.

Name of firm	Ministry of Environment, Water & Climate, Zimbabwe
Designation	**Assistant: Southern Africa Biodiversity Support Programme**
Period of work	2007 to 2008

Key Roles & Accountabilities:

- Compiled/packaged and disseminated all required targeted biodiversity materials to relevant stakeholders; documenting specific activities undertaken by National Biodiversity Task Forces and Expert Working Groups, and recording the outcomes of the same.
- Communicated with the Programme Management Unit (PMU) in Gaborone, and host institutions, regarding the maintenance of Regional databases for up-to-date information on Programme outputs.
- Worked closely alongside the Convention Biological Diversity National Focal Point & National Programme Co-ordinator, ensuring that National Clearing House Mechanisms (CHMs) could access information on biodiversity-related documents and outputs as needed.
- Assisted the National Programme Co-ordinator in raising awareness of the Programme at different National forums and developed Biodiversity proposals for funding requirements.
- Liaised with relevant stakeholders including; clients, local authorities, professionals and contractors on several Programme related issues.
- Convened meetings of; the National Biodiversity Forum, expert working groups and other key stakeholders, on specific biodiversity topics.
- Conducted an 'inventory' of relevant biodiversity initiatives/projects underway within the country and the SADC Region.

Name of firm	IUCN ROSA [The World Conversation Union], Zimbabwe
Designation	**Intern: Ecosystems Programme**
Period of work	2002 to 2003

Key Roles & Accountabilities:

- Worked alongside Regional, National, and International environmental organisations; assisting in developing environmental management policies that took into account relevant economic, social, and environmental values.
- Generated situational analyses, summary documents and preliminary reports used in project formulation/development.
- Designed environmental project proposals for Southern Africa, and sought funding for developed proposals; preparing work plans and related key result areas regarding the same.
- Compiled implementation schedules, activity tasks, programme material requirements and itineraries for Regional workshops, as required.
- Documented and maintained records of specific activities undertaken by participants within the Ecosystems Programme.

PERSONAL DETAILS

Date of Birth, Nationality	24 March 1981,
Gender	Female
Languages	English

Curriculum Vitae

Of

Honu-Siabi MacCarthy

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PERSONAL INFORMATION

Surname	:	Honu-Siabi
First Names	:	MacCarthy
Gender	:	Male
Current residence	:	South Africa (Pietermaritzburg / Johannesburg)

Profile summary:

Having been working in the development sector for a while, I have acquired more than 7years experience in critically assessing the environmental, economic and social impacts of development interventions, in South Africa. I have worked with both the public and private sector on diverse developmental initiatives and mostly work across sectors, and in collaborate with other individuals, teams and institutions in ensuring collective efforts towards sustainable and people-centered development and growth in South Africa and in on the continent of Africa as a whole.

EDUCATION

Name of Institution	Degree/Qualification obtained	Year Obtained
University of the Witwatersrand	**PGD in Public and Development Sector Monitoring and Evaluation**	2015
University of North West -RSA	**Master of Social Sciences (MS Sc.) –** Policy and Development Studies	2014
North West University - RSA	**Environmental Impact Assessment (Cert)**	2013

North West University - RSA	**Post Decision Environmental Monitoring and Enforcement (Cert)**	2013
University of North West GSB -RSA	**Project Management (Cert)**	2012
University of Cape Coast - Ghana	**Bachelor of Management Studies – (Honors)**	2007
International School Of Aviation – Ghana	**Tourism Management (Diploma)**	2001

Skills and Competencies

- Good Programme implementation and management skills
- Ability to use MS Projects in scheduling, executing and managing complex projects
- Conversant with all Microsoft Office End User Applications (Word, Excel, PowerPoint, Access, Publisher etc.), Corel Draw, SPSS etc.
- General Knowledge in computer Hardware and Software.
- Excellent verbal and written communication skills all levels
- Research, workshop, organization, facilitation and Presentation skills
- Attention to details and strong result-oriented thinking and innovation ability
- Ability to work under pressure with less or no supervision
- Design and implementation of monitoring systems
- Data collection (multiple methods/tools), data analysis and reporting skills
- Ability to search, using search protocols, and write up high quality academic/professional output

RESEARCH ACTIVITIES / CONFERENCES /WORKSHOPS

Research Projects

1. **Design Evaluation of the National Food and Nutrition Security Hybrid model, (NDSD)- THUSO:**
   This evaluation is commissioned by the National Department of Social Development towards a redesign of the Food and Nutrition Security Programme, to include use of vouchers, and other technological advances. July 2021 – January 2022.
2. **Process and Design Evaluation: *Emerging Public Leaders Programme, Emerging Public Leaders Programme:*** Cohort 1 and 2 fellows and No-fellows 2018-2021.

Phase 1 concluded Feb 2020. This is a Follow up evaluation of implementation and impact of EPL programme on Public Sector Capacity Building in Ghana.

3. **M&E Technical Support and Monitoring: *SADC Parliamentary Forum SRHR HIV/AIDS & Governance Programme*:** Funded by the Swedish Government and being implemented in 14 Southern African Countries. Tasks include providing technical M&E advice to M&E consultant, analyzing monitoring data, preparing Annual Reports, and planning and developing to M&E capacity building programmes.

4. **Implementation Evaluation: *Emerging Public Leaders Programme, Cohort 1 and Cohort fellows and No-fellows Phase 2 concluded Feb 2021*.**
   Follow up evaluation to access the impact of the Emerging public Leaders Programme on Public Sector Capacity in Ghana. Testing the M&E system designed and its implementation.
5. **Process and Implementation Evaluation and Design of Monitoring and Evaluation System** for the Emerging Public Leaders Programme, based in Ghana and Liberia, and Headquartered in Washington DC.
   This assignment involves, process evaluation of programme implementation in Ghana for 2018-2020, and a review of the monitoring and evaluation system towards redesigning to fit the West African Context. March 2019 – Dec 2020 (70% Complete, awaiting end of programme rolling evaluation).

Theses	**An Analysis of the Implementation of a Monitoring & Evaluation System at the NGO sector: The Case of the NGO SaveAct, 2013** *(Paper on this is being edited for publication)*
Market research (Funder)	Commercialization Goat meat in the KZN Province Department of Finance & Economic Development 2011

Conferences /Presentations

Conference component in	**Presenter:** Unpacking diagnostics as a key

	public policy making process: The need for evidence in diagnosing societal problems **5th SAMEA Biennial Conference** **Sandton, Johannesburg, RSA** 12-16 October 2015
Capacity-Building Workshop training)	**Research synthesis and Systematic Reviews** (3IE **African Evidence network Colloquium on Research evidence use** University of Johannesburg November 2014
Workshop and conference Impact	**Participant** - Workshop on Systematic Reviews and Evaluations **Presenter:** *The critical role of monitoring and evaluation systems in impact evaluation: Lessons from a case study*
Impact Policies and	**3IE, Asian Development Bank *Conference:* Making Evaluations Mater; Better evidence for Effective Programmes.** Asian Development Bank Manila, Philippines 1-5 September, 2014
Conference a NGO	**Presenter-** An Analysis of the Implementation of Monitoring and Evaluation System: The Case of the

	SaveAct **SAMEA, DPME *Conference on:* Policy Research: Do findings make a difference** 16 to 20 September 2013
Capacity-Building Workshop Systems	**Participant**-Developing Monitoring and Evaluation SAMEA and DPME *workshop Series* 25-27 September, 2013, Durban

AWARDS AND RECOGNITIONS

Conference Scholarship	3IE Sponsorship to attend and present poster at workshop and conference dubbed Making Impact Evaluations Matter. Manila, Philippines, Sept 1-7, 2014
Best Poster Presentation Award	1st Position, Best poster presentation, Making Impact Evaluation Matter Conference, Manila, Philippines, 2014
Emerging Evaluator Award (Scholarship)	South African Monitoring and Evaluation Association (SAMEA) 4th Biennial Conference, Sandton, Johannesburg, Sept 2013
Runner up (2nd Position) – National	Millennium Essay Competition (Organized for all Secondary Schools Nationwide) Ghana Millennium Commission, Nov 2000

EMPLOYMENT HISTORY

Employer	**Bizycon Pty Ltd / Development Impact Group**
Position	Snr EAP – EIAs, Research & Evaluations

Duties	Managing projects and consulting -
Duration	2011 to date (own consultancy)
Employer	**Thuso Enviro and Agric Development**
Position	EAP/Consultant 2016 – 2019 Snr EAP – EIAs, Research & Evaluations 2019 – to date
Duties	Managing projects and consulting – Conducting and managing EIAs, and all environmental processes
Employer	**Quest Research Services (QRS)**
Position	Snr Consultant – Monitoring and Evaluation
Duties	Project consultancy - Part time - Part of team
Duration	2016 - 2019
Employer	**University of the Witwatersrand**
Position	MOOC Community Teaching /Facilitating (short consultancy)
Duties	Assisting with student issues, monitoring and moderating online discussion forums and helping plan and review new modules and online courses.
Duration	September 2016 – November 2016
Employer	**Anglophone Centre for learning on Evaluation and Results (CLEAR-AA), Wits School of Governance**
Position	Researcher
Duties	Rendering support to Snr M&E technical expect Managing projects and offering support on key projects of CLEAR-AA, assisting institutions develop M&E systems and capacity, Undertaking research, conducting surveys, collecting and analyzing data and report writing, in addition to conducting presentations and meetings, and also organizing workshops and other interactive events.
Duration	November 2015 – April 2016

Employer	**Nature & Development Group of Africa**
Position	Project Manager (consulting) Project Manager – Environmental Consulting and Research
Duration	2009 – 2012, 2012 to 2015

Name of employer	**Nisis Engineering Designs Co. Ltd** (Project Management/Civil Engineering/Construction)
Position held	Assist. Manager (Projects and Administration)
Duties	Management of Projects and Procurement (For Construction of Public Water and Sanitation Facilities), Managing personnel and preparing of quarterly reports, General administration
Duration	Feb, 2006—November, 2007.

Name of company	**Thembaletu Community Education Centre**
Position	Trainer/ Facilitator
Duties	Training participants in Basic Business Skills, Reviewing Training material, preparing and conducting assessments and Evaluation and reporting at meetings

2. ENVIRONMENTAL IMPACT ASSESSMENT PROJECTS:

Some Selected Projects worked on as EAP (conduct and Manage EIA component of projects) include:

Environmental Impact Assessment (EIA) for Oukasie Walk In Housing, Madibeng LM- North West
Project Implementing Agent : Malepa Planning

Project Consultant (Environmental)	:	MacCarthy Honu-Siabi
Role		Conduct Environmental Impact Assessment
Project status	:	Authorized 2022

Environmental Impact Assessment (EIA) for Regiele Ext 9 - Housing, Koster – Ketleng River LM, North West

Project Implementing Agent	:	Malepa Planning
Project Consultant (Environmental)	:	MacCarthy Honu-Siabi
Role		Conduct Environmental Impact Assessment
Project status	:	Authorized 2022

Environmental Impact Assessment (BAR) for uMzinkhulu Ext 9 and 10 Housing – North West

Project Implementing Agent	:	Isibuko Development planners
Project Consultant (Environmental)	:	MacCarthy Honu-Siabi
Role		Conduct Environmental Impact Assessment
Project status	:	Authorized 2022

Environmental Impact Assessment (EIA) for 500 Serviced Sites in Ekuvukeni, Alfred Duma LM – North West

Project Implementing Agent	:	Isibuko Development planners
Project Consultant (Environmental)	:	MacCarthy Honu-Siabi
Role		Conduct Environmental Impact Assessment
Project status	:	Authorized 2022

Environmental Impact Assessment (BAR) for Bekunthetho Low-income Housing – Amajuba DM - North West

Project Implementing Agent	:	Isibuko Development planners
Project Consultant (Environmental)	:	MacCarthy Honu-Siabi
Role		Conduct Environmental Impact Assessment
Project status	:	Authorized 2022

Environmental Impact Assessment (BAR) for Brakfontein Township Establishment – Swartruggens - North West

Project Implementing Agent	:	AkkaMaduna
Project Leader	:	Mr R Themeli
Project Consultant (Environmental)	:	MacCarthy Honu-Siabi
Role		Conduct Environmental Impact Assessment
Project status	:	In progress, 2021

Environmental Impact Assessment (EIA) for Popo Molefe Insitu Upgrade and Expansion– Rustenburg - North West

Project Implementing Agent	:	AkkaMaduna
Project Leader	:	Mr R Themeli
Project Consultant (Environmental)	:	MacCarthy Honu-Siabi
Role		Conduct Environmental Impact Assessment
Project status	:	In progress 2021

Environmental Impact Assessment (EIA) for Popo Molefe Insitu Upgrade and Expansion– Rustenburg - North West

Project Implementing Agent	:	AkkaMaduna
Project Leader	:	Mr R Themeli
Project Consultant (Environmental)	:	MacCarthy Honu-Siabi
Role		Conduct Environmental Impact Assessment
Project status	:	In progress 2021

Some Selected Projects worked on in this regard include:

Environmental Impact Assessment (BAR) for Residential development on Erf 1087 Posmasburg, Northern Cape

Project Implementing Agent	:	Thuso Enviro and Developments
Project Leader	:	Mr R Themeli
Project Consultant (Environmental)	:	MacCarthy Honu-Siabi
Project status	:	In progress 2020

Environmental Impact Assessment for Greenco Poultry Farm, Bela Bela, Limpopo

Project Implementing Agent	:	Development Impact Group (DIG) and **Thuso Enviro**
Project Leder	:	Mr R Themeli
Project Consultant (Environmental)	:	MacCarthy Honu-Siabi
Project status	:	Authorized June 2020

Environmental Impact Assessment (BAR) for Residential Devt on 15 Strathcona Drive, Clansthal, Durban - KZN

Project Implementing Agent	:	Siyamthanda Projects
Project Leader	:	Mr H P Rayes
Project Consultant (Environmental)	:	MacCarthy Honu-Siabi
Project status	:	Authorized June 2022

Environmental Impact Assessment for Drycut Housing Project, Newcastle

Project Implementing Agent	:	Isibuko Development Planners
Project Leader	:	Ms Sithokoza Cele
Project Consultant (Environmental)	:	MacCarthy Honu-Siabi
Project status	:	Authorised Aug 2020

Environmental Analysis for Town Planning Scheme: Nqutu Local Municipality

Project Implementing Agent	:	NANGA Projects
Project Leader	:	Mr Suleiman Mwajuzuu
Project Consultant (Environmental)	:	MacCarthy Honu-Siabi
Project status	:	Completed 2019

Environmental Analysis for Town Planning Scheme: Umlalazi Local Municipality

Project Implementing Agent	:	NANGA Projects
Project Leader	:	Mr Suleiman Mwajuzuu
Project Consultant (Environmental)	:	MacCarthy Honu-Siabi
Project status	:	Completed 2018

Environmental Analysis for Town Planning Scheme: Emfuleni Local Municipality, Mpumalanga

Project Implementing Agent	:	Isibuko Development Planners
Project Leader	:	Mr M Maseko
Project Consultant (Environmental)	:	MacCarthy Honu-Siabi
Project status	:	Approved 2018

Project identification and Township Establishments Nkangala District – Strategic Development Framework (SDF)

Project Implementing Agent	:	Isibuko Development Planners
Project Leader	:	Mr M Maseko
Project Consultant (Environmental)	:	MacCarthy Honu-Siabi
Project status	:	2016

Middleburg Housing Project, Delmas – Environmental Impact Assessment (Scoping)

Project Implementing Agent	:	Isibuko Development Planners
Project Leader	:	Mr M Maseko
Project Consultant (Environmental)	:	MacCarthy Honu-Siabi
Project status	:	Feasibility Scoping 2016

West Rand Poultry Value Chain – Environmental Impact Assessment

Project Implementing Agent	:	National Dept of Rural Devet & Land Reform, Nkwele Agribusiness &Investments & Thuso Enviro
Project Leader	:	Mr Thati Tladi
Project Consultant (Environmental)	:	MacCarthy Honu-Siabi
Project status	:	Completed 2016

Environmental Impact Assessment Groutiville Priority 2 Sanitation Project

Project Implementing Agent	:	Linda Masinga & Associates, Durban
Project Leader	:	Patrick Addo
Project Consultant (Environmental)	:	MacCarthy Honu-Siabi
Project status	:	Completed 2015

Environmental Impact Assessment Namani Shopping Mall Ekuvukeni – near Ladysmith

Project Implementing Agent	:	Isineke Developments
Project Leader	:	Dr Nelson Mwanyama
Project Consultant (Environmental)	:	MacCarthy Honu-Siabi
Project status	:	Completed 2015

Environmental Impact Assessment (Basic Assessment) Mkhuze Waste Water Treatment Works

Project manager	:	RCR Collaborative, Durban
Project Leader	:	Patrick Addo
Project Consultant (Environmental)	:	MacCarthy Honu-Siabi
Project status	:	Completed 2015

Environmental Impact Assessment (Environmental Scoping &EIA) for Redcliff Housing Project

Project manager	:	RCR Collaborative, Durban
Project Leader	:	Patrick Addo
Project Consultant (Environmental)	:	MacCarthy Honu-Siabi
Project status	:	Completed 2012

Environmental Impact Assessment for the Rehabilitation of Storm-Damaged Roads in Hibiscus Coast Municipality

Project manager	:	Liquid Platinum
Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi

Project status	:	Completed 2009

Environmental Impact Assessment for Kenville Housing Project (Durban)

Project manager	:	Project Preparation Trust of KZN
Project leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation
Project status	:	Successfully completed 2009

Environmental Impact Assessment for the Vulamehlo Ward 5 Housing Project

Project manager	:	TMS Properties
Project leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation
Project status	:	Successfully completed 2010

Environmental Scoping for the Emapeleni Housing Project (Emapeleni)

Project manager	:	eThekwini Municipality
Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation
Project status	:	In progress

Environmental Scoping for the Kwadinabakubo Housing Project

Project manager	:	eThekwini Municipality
Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation
Project status	:	Completed 2008

Environmental Scoping for the Cotton lands Housing Project (Cottonlands, Ndwedwe)

Project manager	:	eThekwini Municipality
Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, public participation and report preparation
Project status	:	In progress

Wetland Assessment for the Copesville Housing Project (Copesville, Pietermaritzburg)

Project manager	:	Mr. M. Marareni (Umpheme Development Services)
Project leader	:	Dr. Nelson Mwanyama/Patric Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My Duties	:	Wetland Delineation and Report preparation
Project status	:	Successfully completed 2009

Environmental Impact Assessment for the Umlasi AA and Chicago Housing Project (Umlaasi, Durban)

Project manager	:	Chris Calitz (Terraplan Associates)
Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation
Project status	:	Successfully completed 2009

Environmental Impact Assessment for the Umlasi - Isimbini Housing Project (Umlasi, Durban)

Project manager	:	Chris Calitz (Terraplan Associates)
Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation
Project status	:	Successfully completed 2009

Environmental Impact Assessment for the Zanzibari Housing Project (Bluff, Durban)

Project manager	:	Project Preparation Trust of KZN
Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation
Project status	:	Completed

Environmental Screening/Assessment for the Chartsworth Bulk and Infill Housing Project

Project manager	:	Nelson Allopi and Associates
Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	Dr. Nelson Mwanyama
		MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation
Project status	:	Successfully completed 2009

Environmental Impact Assessment for the Valley View Special Residential Housing Project (Valley-View Road, Marrianhill)

Project manager	:	eThekwini Housing

Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation
Project status	:	Successfully completed 2010

Environmental Impact Assessment for the Rehabilitation and Upgrade of Roads in Inanda Project (Inanda, Durban)

Project manager	:	Sigh Govender and Associates
Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation
Project status	:	Completed 2010

Environmental Impact Assessment for the Sandton Phase 2 Housing Project (Kwandengezi, Pine Town)

Project manager	:	Sakum Housing Cc
Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation
Project status	:	Successfully completed

Environmental Impact Assessment for a Helicopter Landing Facility in Darnell

Project manager	:	Silvermoon Investment 364 Cc
Project Leader	:	Patrick Addo
Project Manager	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation

Environmental Impact Assessment for the Frediville Phase 2 Housing Project (Fredville, Hamasdale)

Project manager	:	Chris Calitz (Terraplan Associates)
Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation
Project status	:	Successfully completed

Environmental Impact Assessment for the Bhubhubhu Housing Project (Mfolozi Municipality)

Project manager	:	Chris Calitz (Terraplan Associates)
Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation

Project status	:	Successfully completed

Environmental Impact Assessment for the Iutval Rural Housing Project (Indaka Local Municipality)

Project manager	:	Mr. Graham (Siyamthanda Development)
Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation
Project status	:	Successfully completed

Environmental Impact Assessment for the Cato Crest Housing Project

Project manager	:	Bernd Rothaug (RCR Collaborative)
Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation
Project status	:	In Progress.

Environmental Impact Assessment for the Waterfall Ext. 4 Housing Development

Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation
Project status	:	In Progress

Other Housing Development Projects

Projects worked on in this regard include:

Environmental Impact Assessment for the Zidweni Rural Housing Project (Zedweni, Ingwe Municipality)

Project manager	:	Mr. M. Marareni (Umpheme Developments)
Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation
Project status	:	Successfully completed

Environmental Impact Assessment for the Manzamnyama Rural Housing Project (Centocow, Ingwe Municipality)

Project manager	:	Mr. Ray Doherty
Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi

My duties	:	Field work, data collection and report preparation
Project status	:	Successfully completed

Environmental Impact Assessment for the Qiniselani-Manyuswa Rural Housing Project (Qiniselani near Hillcrest)

Project manager	:	Chris Calitz (Terraplan Associates)
Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation
Project status	:	Successfully completed

Environmental Impact Assessment for the Vukuzithathe Rural Housing Project (Ezinqoleni)

Project manager	:	Mr. M. Marareni (Umpheme Developments)
Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation
Project status	:	Successfully completed

Environmental Impact Assessment for the Zidweni Rural Housing Project (Zidweni, Creighton)

Project manager	:	Mr. M. Marareni (Umpheme Developments)
Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation
Project status	:	Successfully completed

Environmental Impact Assessment for the KwaMashabane Rural Housing Project (Mbazwana)

Project manager	:	Mr. M. Marareni (Umpheme Developments)
Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation
Project status	:	Successfully completed

Environmental Impact Assessment for the KwaMashabane Rural Housing Project (Mbazwana)

Project manager	:	Mr. M. Marareni (Umpheme Developments)
Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation
Project status	:	Successfully completed

Strategic Planning and Environmental Assessment (SEA) Developments

Projects worked on in this regard include:

Strategic Environmental Impact Assessment for the Groutville, Adinville, Melville and Dube Village Township
Regeneration Strategy (Groutville)

Project manager	:	S'bongiseni Maseko (Isibuko se Africa)
Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation
Project status	:	Successfully completed

Strategic Environmental Impact Assessment for the Shakaskraal, Woodmead, Shayamoya and Nkobongo Township Regeneration Strategy (Shakaskraal)

Project manager	:	S'bongiseni Maseko (Isibuko se Africa)
Project leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation
Project status	:	Successfully completed

Strategic Environmental Assessment for preparation of a Strategic Development Framework for Phelandaba Township

Project manager	:	S'bongiseni Maseko (Isibuko se Africa)
Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation
Project status	:	Successfully completed

Strategic Environmental Assessment for preparation of a Strategic Development Framework for Ndumo Township

Project manager	:	S'bongiseni Maseko (Isibuko se Africa)
Project Leader	:	Patrick Addo

Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation
Project status	:	Successfully completed

Strategic Environmental Assessment for the preparation of a Strategic Development Framework for Bhambanana Township (Jozini)

Project manager	:	S'bongiseni Maseko (Isibuko se Africa)
Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Field work, data collection and report preparation
Project status	:	Successfully completed

Other Work on EIAs and Environmental Management

Rehabilitation of Storm-Damaged Roads in Hibiscus Coast Municipality

Project manager	:	Liquid Platinum
Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
Duties	:	ECO (Monitoring and preparation of monthly reports)
Project status		Completed

Kwaxolo Low Cost Housing Project, Kwaxolo, Bushy Vales, Marburg

Project manager	:	Malusi Zwane Dept. Of Human Settlement
Project Leader	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
Duties	:	Sales Administration
Project status	:	Completed

Environmental Scoping for Ekwandeni Housing Project

Project manager	:	eThekwini Housing
Project Leader	:	Patrick Addo
My duties	:	Public Participation – Information Distribution
Project status	:	Completed

Preparation of Business Plan for the Commercialization of the Goat Industry in North West

Prepared for	:	Department of Economic development
Project manager	:	Patrick Addo

Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Market research - data collection and analysis report preparation
Project status	:	Completed

Empangweni Housing Development		
Project manager	:	Patrick Addo
Project Manager (Environmental)	:	MacCarthy Honu-Siabi
My duties	:	Beneficiary Data Collection and processing

REFERENCES

1. Name	:	Mr Mxolisi Ndlovu
Position	:	Director and Snr Planner
Organisation	:	Izunzo YeSizwe
Contact details		033 345 2529
		mxolisi@inzunzoyesizwe.co.za

2 Name	:	Mr Regginald Themeli
Position	:	Director of Projects /CEO
Organisation	:	Thuso Enviro and Agric Development
Contact Number	:	Rthemeli@yahoo.com

3. Name	:	Mr. P. K. Addo
Position	:	Managing Director
Organisation	:	Nature and Development Group of Africa CC Pietermaritzburg
Contact Number	:	+27(0)83 555 22 88