

# BASIC ASSESSMENT REPORT

*In terms of Section 24 and 24(D) of NEMA (Act No. 107 of 1998)*

**for:**

**ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED CLEARANCE OF 14.79HA OF INDIGENOUS VEGETATION (OF WHICH 7.8HA IS LOCATED WITHIN A CBA 2 AND 3.29 HA IS LOCATED WITHIN 100 METRES FROM THE EDGE OF THE WATERKLOOF SPRUIT) IN ORDER TO ESTABLISH A MIXED LAND USE DEVELOPMENT, LOCATED ON PORTION 214 (A PORTION OF PORTION 195), THE REMAINING EXTENT OF PORTION 269 (A PORTION OF PORTION 34) AND THE REMAINING EXTENT OF PORTION 60 (A PORTION OF PORTION 32) OF THE FARM WATERKLOOF 305-JO, (TO BE KNOWN AS WATERKLOOF EAST EXT. 74); RUSTENBURG, NORTH WEST PROVINCE.**

**Report Date: January 2023**



**Compiled by:**

**AB ENVIRO-CONSULT CC**

7 Louis Leipoldt Street

Potchefstroom

2531

Tel: + 27 (83) 5488 105

Fax: + 27 (18) 293 0671

E-mail: [JP@abenviro.co.za](mailto:JP@abenviro.co.za)

**Compiled for:**

**Zelske Ontwikkeling cc and Intawiz (Pty) Ltd**



## CONDITIONS OF USE

Although **AB Enviro Consult CC** exercises due care and diligence in rendering services and preparing documents, **AB Enviro Consult CC** accepts no liability, and the client, by receiving this document, indemnifies **AB Enviro Consult CC** and its directors, managers, agents and employees against all actions, claims, demands, losses, liabilities, costs, damages, and expenses rising from or in connection with services rendered, directly or indirectly by **AB Enviro Consult CC** and by the use of the information contained in this document.


\*\*\*\*

This document contains confidential and proprietary information of **AB Enviro Consult CC** and is protected by copyright in favour of **AB Enviro Consult CC** and may not be reproduced, or used without the written consent of **AB Enviro Consult CC**, which has been obtained beforehand. This document is prepared exclusively for **Zelske Ontwikkeling cc and Intawiz (Pty) Ltd** and is subjected to all confidentiality, copyright and trade secrets, rules, intellectual property law and practices of South Africa.

\*\*\*\*

This document is provided for sole use by the Client and is confidential to it and its professional advisers. No responsibility whatsoever for the contents of this Document will be accepted to any person other than the Clients. Any use which a third party makes of this Document, or any reliance on or decisions to be made based on it, is the responsibility of such third parties. **AB Enviro Consult CC** accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this Document. Without prejudice.

Report Status	Draft Basic Assessment Report		
Project Title	<i>Environmental Impact Assessment for the proposed clearance of 14.79ha of indigenous vegetation (of which 7.8ha is located within a CBA2 and 3.29ha is located within 100 metres from the edge of the Waterkloof Spruit) in order to establish a mixed land use development, located on Portion 214 (a Portion of Portion 195), the remaining extent of portion 269 (a Portion of Portion 34) and the remaining extent of Portion 60 (a Portion of Portion 32) of the farm Waterkloof 305-JO, (To be known as Waterkloof east ext. 74); Rustenburg, North West Province.</i>		
Competent Authority:	North West Department of Economic Development, Environment, Conservation and Tourism		
Reference Number:	Not Available yet		
Assigned Officer	Not Available yet		
Project applicant:	Zelske Ontwikkeling cc and Intawiz (Pty) Ltd		
Contact person:			
Postal address:			
Postal code:		Cell:	
Telephone:		Fax:	
E-mail:			
Environmental Assessment Practitioner (EAP):	Mr. Jean Pierre de Villiers and Mrs. Hannie du Plooy of AB Enviro consult cc		
Contact person:	Mr. JP de Villiers		
Postal address:	7 Louis Leipoldt Street		
Postal code:	2531	Cell:	083 5488 105
Telephone:	071 202 4027	Fax:	018 293 0671
E-mail:	<a href="mailto:jp@abenviro.co.za">jp@abenviro.co.za</a> <a href="mailto:hannieduplooy@abenviro.co.za">hannieduplooy@abenviro.co.za</a>		
Professional affiliation(s) (if any)	EAP-EAPASA (2019-808)		

Report compiled by: Mrs Hannie du Plooy
Signature: <i>JE du Plooy</i>
Report reviewed by: Mr J. P. de Villiers
Signature: 

## EXECUTIVE SUMMARY

Zelske Ontwikkeling cc and Intawiz (Pty) Ltd has appointed **AB Enviro Consult CC**, an independent environmental consultancy, to undertake an Environmental Impact Assessment for the proposed clearance of 14.79ha of indigenous vegetation (of which 7.8ha is located within a CBA2 and 3.29ha is located within 100 metres from the edge of the Waterkloof Spruit) in order to establish a mixed land use development, located on Portion 214 (a Portion of Portion 195), the remaining extent of portion 269 (a Portion of Portion 34) and the remaining extent of Portion 60 (a Portion of Portion 32) of the farm Waterkloof 305-JO, (To be known as Waterkloof east ext. 74); Rustenburg, North West Province.

The activity is listed in terms of the Regulations (in force since 4 December 2014) in terms of Section 24(M) and 44 made under section 24(5) of the National Environmental Management Act (NEMA) 1998 (Act 107 of 1998) as amended. The proposed development triggers the following regulations and listed activities:

Indicate the number and date of the relevant notice:	Activity No (s) and Activity Description (in terms of the relevant notice)	Describe each listed activity as per project description	Anticipated years to complete construction (From date of commencement)
GN.R. 983, 4 December 2014 (As amended)	27	The proposed clearance of 14.79 hectares of indigenous vegetation for the establishment of a mixed land use development, located on Portion 214 (a Portion of Portion 195), the remaining extent of portion 269 (a Portion of Portion 34) and the remaining extent of Portion 60 (a Portion of Portion 32) of the farm Waterkloof 305-JO, (To be known as Waterkloof east ext. 74); Rustenburg, North West Province.	10 years
GN.R. 983, 4 December 2014 (As amended)	28	The development of a mixed land use township on 4.3 hectares of land that was used for Agricultural purposes within the urban edge of the Rustenburg Local Municipality.	10 years
GN.R. 985, 4 December 2014 (As amended)	4 (h)(iv)	The development of 1 093 meters and 2 183 meters (total 3 276 meters) of roads with a reserve of 10 meters and 13 meters respectively located within a critical biodiversity area located on Portion 214 (a Portion of Portion 195), the remaining extent of portion 269 (a Portion of Portion 34) and the remaining extent of Portion 60 (a Portion of Portion 32) of the farm Waterkloof 305-JO, (To be known as Waterkloof east ext. 74); Rustenburg, North West Province.	10 years

GN.R. 985,  4 December 2014 (As amended)	12 (h)(iv)(vi)	The proposed clearance of 7.8 hectares of indigenous vegetation located within a Critical Biodiversity Area and the proposed clearance of 3.29 hectares of indigenous vegetation located within 100 meters from the Waterkloof Spruit in order to establish a mixed land use development located on Portion 214 (a Portion of Portion 195), the remaining extent of portion 269 (a Portion of Portion 34) and the remaining extent of Portion 60 (a Portion of Portion 32) of the farm Waterkloof 305-JO, (To be known as Waterkloof east ext. 74); Rustenburg, North West Province.	10 years
--	----------------	--	----------

The detailed environmental assessment for the proposed development, has not found any environmental impacts that *cannot* be mitigated to acceptable and manageable levels.

The planning practices of the past have resulted in sprawling urban areas that are un-economical. Today, planning policies are transformed to mainly encourage infill development on vacant land within the urban environment, in order to combat urban sprawl. The proposed development falls in line with these principals, as it is located within the urban area and is surrounded by urban development.

In terms of current policy directives, the main development strategy for residential development should be based on the objectives of the Breaking New Ground Principles (BNG) for sustainable human settlements which can be summarised as follows:

- To ensure that sustainable housing development takes place.
- To integrate housing with other municipal services in order to establish sustainable human settlements, in support of spatial restructuring.
- To coordinate municipal departments in order to work together in planning and implementing.
- To promote middle and high income housing which will in turn generate resources to improve low income areas.
- To promote environmental and energy efficient housing

The new "Human Settlements Plan" promotes the achievement of a non-racial, integrated society through the development of sustainable human settlements and quality housing. Housing is to be utilized for the development of sustainable human settlements in support of spatial restructuring.

The aim is to move beyond the provision of basic shelter towards achieving the broader vision of sustainable human settlements and more efficient towns, cities and regions. The following factors will be taken into consideration in order to achieve this vision:

- Progressive Informal Settlement Eradication: These settlements must be integrated into the broader urban setup so as to overcome spatial, social and economic exclusion. The plan encourages the eradication of informal settlements through in-situ upgrading in desired locations coupled with the relocation of households where development is not possible or desirable.

- Promoting Densification and Integration: The aim is to integrate previously excluded groups into the city so as to enable them to enjoy the benefits it offers and to create more integrated, functional and environmentally sustainable human settlements, towns and cities.
- Enhancing Spatial Planning: Greater co-ordination and alignment of various planning instruments and economic policies lies at the heart of sustainable human settlements. This requires more than mere co-ordination between departments but there needs to be a single overarching planning authority and/or instrument to provide macro-level guidance to support the development of sustainable human settlements.
- Enhancing the location of New Housing Projects: The location of past housing projects was said to reinforce apartheid spatial settlement patterns. Spatial restructuring aims to achieve a more decisive intervention in land markets. The following interventions are envisaged viz. accessing well located state-owned and parastatal land: acquisition of well-located private land for housing development, funding for land acquisition and fiscal incentives.
- Supporting Urban Renewal and Inner City Regeneration: Urban renewal and inner city regeneration often result in the current inhabitants being excluded as a result of the construction of dwelling units they cannot afford. Some municipalities are trying to avoid this by promoting affordable inner city housing. The "Human Settlements Plan" will support this by encouraging social housing.
- Developing Social and Economic Infrastructure: The need to move away from a housing-only approach towards a more holistic development of human settlements which includes the provision of social and economic infrastructure is emphasized.
- Enhancing the Housing Product: The aim is to develop more appropriate settlement layouts and housing products and to ensure appropriate housing quality

Consistent with national priorities, environmental authorities must support *"increased economic growth and promote social inclusion"*, whilst ensuring that such growth is *"ecologically sustainable"*. In the National Spatial Development Perspective (NSDP) it is highlighted that, to achieve the goal of stimulating sustainable economic activities and to create long-term employment opportunities, it is required that spending on economic infrastructure is focused in priority areas with potential for economic development, with development to serve the broader societies' needs equitably

The Developer has identified the need for the establishment of a proper integrated human settlement that will not only address the short-term need for residential erven to address the immediate housing backlog, but to also provide erven for the development over the short-medium term in order to eradicate informal occupation of land. This project will also allow for the development of various housing typologies to accommodate the housing needs experienced within the Rustenburg urban area. The proposed township will also be linked to the economic activities offered within the Rustenburg urban area.

During the construction phase, temporary employment will be created. The increased employment in the area during the construction phase will also result in increased expenditure, which, in addition, will mean that more than just the proposed jobs required for the construction on the site will be created due to economic spin-offs that will result. Due to the nature of the proposed development it will lead to an increase in employment opportunities in the operational phase and will contribute to the broadening of the income base and alleviation of poverty within the Local Municipality

The identification, description, evaluation and comparison of alternatives are important for ensuring a sound environmental scoping process.

The alternatives considered for the proposed development includes "Mixed land use township" (Alternative 1), "Single land use: Housing only" (Alternative 2) and the "No-go option" (Alternative 3).

People want easy access to job opportunities, shops, schools, banking facilities, clinics, etc. and want their living environment to be placed at strategic positions with good access routes in close proximity to these amenities.

A mixed land use development is *socially responsible* based on the following:

- It covers the mixed and lower income bracket by providing a higher density housing option;
- The development will inevitably support the use of public transport;
- The development will include supporting social infrastructure as well as retail and commercial activities;
- The layout of the development must respond to the future road planning for the area, to facilitate and maximise pedestrianisation and public transport.
- Commercial erven can accommodate a shopping centre, to service the existing formalised settlements in the area. The commercial node will:
  - Promote entrepreneurial services and products;
  - Be within walking distance to places of refreshment and trade for residents;
  - Provide Job opportunities; and
  - Improve neighbourhood quality.

By providing only one land use type (i.e., housing), mixed income development and social integration across race and income levels, *cannot be achieved*. By restricting a township to one land use only, the above benefits to the local community, and subsequent council area, cannot be realised, and hence, is not a preferred land use option.

The only other alternative that exists for the proposed development is the “no-go” option which will imply that the status quo will prevail. This is unacceptable, as other land parcels will have to be sourced to provide for this need within the community. This will imply that infill development will not take place and will result in urban sprawl.

It is therefore proposed that Alternative 1 be the preferred alternative.

Specialist studies were conducted and a full Public Participation Process is being followed. This information was used to generate a sensitivity map that was used to assess the sustainability of the design and layout plan for the proposed development.

The **Geo-Technical Engineer** has found the site can be developed taking cognizance of the recommendations in relation to excavations. The **Civil Engineer** found that sufficient capacity for water and sewer Municipal services is available in the area.

The **Heritage Impact Assessment** revealed that it is evident that there is a low likelihood (besides the water furrow remains) of any significant cultural heritage (archaeological and/or historical) sites or features being present in the area. If any did exist here in the past it would have been extensively disturbed or destroyed as a result of recent developments.

The **Fauna and Flora Habitat** study conducted also revealed that the site consists of a large part that has been developed in the past and a remaining ecologically disturbed terrestrial zone as well as an ecologically disturbed riparian zone. Large parts of the site have buildings, associated roads, associated gardens and conspicuous cover of exotic plant species.

The **Wetland Specialist** concluded that the non-perennial river, including its riparian zone and buffer zone, which is north of the site, should be viewed as an important conservation corridor in the larger area. Given the likely absence of sensitive species as well as the location, setting and current ecological status of the site a 10 m buffer zone from the edge of the riparian zone is recommended as a practical buffer zone for the conservation of the Non-perennial River and riparian zone at the site.

Finally the **Agricultural Specialist** stated that there is no highly sensitive land on the site, no irrigation takes place and there is no irrigation water available. There is no cultivated land on the site and considering that the property can only sustain 3 head of cattle, retaining the land for farming is not sustainable, therefore it cannot be considered as a viable farming unit.

A full Public Participation Process is being conducted and any objections or comments that will be received in relation to the proposed development will be incorporated into the Final BAR.



## Table of Contents

CONDITIONS OF USE.....	1
EXECUTIVE SUMMARY .....	3
1. INTRODUCTION .....	10
1.1 THE BASIC ASSESSMENT PROCESS.....	10
1.2 DESCRIPTION OF THE PROCESS FOLLOWED .....	10
1.3 ASSESSMENT PHASE.....	13
2. DETAILS AND EXPERTISE OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER.....	17
3. DESCRIPTION OF THE ACTIVITY .....	21
4. DESCRIPTION OF THE PROPERTY.....	32
5. LEGAL AND OTHER REQUIREMENTS.....	40
6. NEED AND DESIRIBILITY.....	49
7. ALTERNATIVES .....	51
<b>7.1 Land Use Alternatives</b> .....	52
<b>7.1.1 Mixed land Use Township (Alternative 1)</b> .....	52
<b>7.1.2 Single land use: Housing only (Alternative 2)</b> .....	53
<b>7.1.3 No-go Alternative</b> .....	53
8. DESCRIPTION OF THE ENVIRONMENT THAT MAY BE AFFECTED BY THE PROJECT .....	54
8.1 BIO-PHYSICAL ASPECTS.....	54
8.1.1 GEOLOGY & SOILS .....	54
8.1.2 TOPOGRAPHY.....	55
8.1.3 CLIMATE .....	55
8.1.4 SURFACE DRAINAGE, WETLANDS AND RIPARIAN ZONES.....	57
8.1.5 GROUND WATER.....	59
8.1.6 FLORA AND FAUNA .....	59
<b>8.2 SOCIAL AMENITIES</b> .....	65
<b>8.2.2. AIR QUALITY</b> .....	67
<b>8.2.3 NOISE</b> .....	68
<b>8.2.4 ARCHAEOLOGY AND CULTURAL SITES</b> .....	68
<b>8.2.5 AESTHETICS</b> .....	69
9. ENVIRONMENTAL IMPACT ASSESSMENT .....	73
9.1 ASSESSMENT CRITERIA .....	73
10. PUBLIC PARTICIPATION.....	86
10.1 ADVERTISEMENT AND NOTICE.....	86
10.2. DETERMINATION OF APPROPRIATE MEASURES .....	88
10.3 AUTHORITY PARTICIPATION .....	90
10.4 ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES.....	100

10.5 COMMENTS AND RESPONSE REPORT .....	100
11. SUMMARY OF THE FINDINGS AND RECOMMENDATIONS OF SPECIALISTS .....	101
11.1 GEOTECHNICAL REPORT (See Appendix A for a copy of the Report.) .....	101
11.2 ECOLOGICAL IMPACT ASSESSMENT (See Appendix B for a copy of this report) .....	103
11.3 HERITAGE IMPACT ASSESSMENT (HIA) (See Appendix C for a copy of this report) .....	104
11.4 Civil Services report (See Appendix D for a copy of this report) .....	106
11.5 WETLAND ASSESSMENT REPORT (See Appendix E for a copy of this report) .....	108
<b>11.6 AGRICULTURAL IMPACT ASSESSMENT REPORT (See Appendix F for a copy of this report) .....</b>	<b>110</b>
12. CONCLUSIONS AND RECOMMENDATIONS .....	111
12.1 ENVIRONMENTAL IMPACT STATEMENT .....	111
12.2 ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR).....	114
12.3 EAP OPINION .....	114
12.4 CONDITIONS RECOMMENDED TO BE INCLUDED IN ANY AUTHORISATION THAT MAY BE GRANTED BY THE COMPETENT AUTHORITY IN RESPECT OF THE APPLICATION .....	114
13. AFFIRMATION BY EAP .....	116
14. LIST OF REFERENCES.....	117

# 1. INTRODUCTION

Zelske Ontwikkeling cc and Intawiz (Pty) Ltd has appointed **AB Enviro Consult CC**, an independent environmental consultancy, to undertake an Environmental Impact Assessment for the proposed clearance of 14.79ha of indigenous vegetation (of which 7.8ha is located within a CBA 2 and 3.29ha is located within 100 meters from the edge of the Waterkloof Spruit) in order to establish a mixed land use development, located on Portion 214 (a Portion of Portion 195), the remaining extent of portion 269 (a Portion of Portion 34) and the remaining extent of Portion 60 (a Portion of Portion 32) of the farm Waterkloof 305-JO, (To be known as Waterkloof east ext. 74); Rustenburg, North West Province.

The proposed township area is located directly adjacent and to the east of Road R24 (Rustenburg – Johannesburg road), approximately 3,5 km south of the Waterfall Mall and 500m south of the intersection of the Arnoldstad Road with Road R24. A part of the township area currently comprises The Deck Restaurant, the Port of Call Motel, Port of Call Liquor Store and Mini Mart and U Tow Trailer Rentals and Sales.

## 1.1 THE BASIC ASSESSMENT PROCESS

The purpose of this document is to adhere to the requirements for compilation of Basic Assessment Reports as amended and published in Government Notice R. 326 of 7 April 2017, Appendix 1, and the National Environmental Management Act (Act 107 of 1998) (NEMA).

## 1.2 DESCRIPTION OF THE PROCESS FOLLOWED

In order to assess a proposed development it is important to take into consideration the principles of NEMA. These principles are outlined in Chapter 1 and read as follows:

- 1) *“The principles set out in this section apply throughout the Republic to the actions of all organs of state that may significantly affect the environment and—*
  - a. *shall apply alongside all other appropriate and relevant considerations, including the State’s responsibility to respect, protect, promote and fulfil the social and economic rights in Chapter 2 of the Constitution and in particular the basic needs of categories of persons disadvantaged by unfair discrimination;*
  - b. *serve as the general framework within which environmental management and implementation plans must be formulated;*
  - c. *serve as guidelines by reference to which any organ of state must exercise any function when taking any decision in terms of this Act or any statutory provision concerning the protection of the environment;*
  - d. *serve as principles by reference to which a conciliator appointed under this Act must make recommendations; and*
  - e. *guide the interpretation administration and implementation of this Act, and any other law concerned with the protection or management of the environment.*
- 2) *Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.*
- 3) *Development must be socially, environmentally and economically sustainable.*
- 4) (a) *Sustainable development requires the consideration of all relevant factors including the following:*
  - (i) *That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied:*
  - (ii) *that pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;*

- (iii) that the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;*
  - (iv) that waste is avoided. or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner;*
  - (v) that the use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource;*
  - (vi) that the development use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised;*
  - (vii) that a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions; and*
  - (viii) that negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.*
- (b) Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.*
  - (c) Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons.*
  - (d) Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human well-being must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination.*
  - (e) Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.*
  - (f) The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation and participation by vulnerable and disadvantaged persons must be ensured.*
  - (g) Decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognizing all forms of knowledge, including traditional and ordinary knowledge.*
  - (h) Community wellbeing and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.*
  - (i) The social, economic and environmental impacts of activities, including disadvantages and benefits must be considered, assessed and evaluated and decisions must be appropriate in the light of such consideration and assessment.*
  - (j) The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected.*

- (k) *Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law.*
- (l) *There must be intergovernmental co-ordination and harmonisation of policies, legislation and actions relating to the environment.*
- (m) *Actual or potential conflicts of interest between organs of state should be resolved through conflict resolution procedures.*
- (n) *Global and international responsibilities relating to the environment must be discharged in the national interest.*
- (o) *The environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage.*
- (p) *The costs of remedying pollution, environmental degradation consequent adverse health effects and of preventing, controlling or minimizing further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.*
- (q) *The vital role of women and youth in environmental management and development must be recognised and their full participation therein must be promoted.*
- (r) *Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure."*

The above mentioned principals and the applicable legislation, Policies and Guidelines as described in Paragraph 5 of this Report were taken into account in the assessment of the Environmental Impacts for the proposed development. The process followed can be described as follows:

- 1) The EAP was contracted by Zelske Ontwikkeling cc and Intawiz (Pty) Ltd as his Independent Environmental Assessment Practitioner.
- 2) A Geotechnical Engineer was appointed to determine whether the Geology and Soils of the site is suitable for the proposed development.
- 3) A Civil Engineer was appointed to determine the availability of services in the area and to design the services for the proposed development.
- 4) A Traffic Engineer was appointed to perform a Traffic Impact Assessment.
- 5) A Town and Regional Planner designed the proposed development in such a way that the layout of the proposed development satisfies the needs of future occupiers of the site, taking cognisance of all the specialist's inputs.
- 6) A SAHRA Specialist has been appointed to determine the possible impact of the development on Archaeological and Cultural features.
- 7) A Fauna and Flora Habitat specialist has been appointed to determine the impact of the proposed development on the Fauna and Flora of the area.
- 8) A Wetland Specialist was appointed to determine the extent of the Watercourse and to determine buffer zones and propose mitigation measures.
- 9) An Agricultural Specialist was appointed to do an agricultural impact assessment in terms of Notice No. 320 Government Gazette 43110 20 March 2020.
- 10) An Environmental Screening Process was conducted by the EAP to ensure that all the relevant Environmental Legislation is taken into consideration.

- 11) Desk top studies were conducted and alternatives assessed.
- 12) Site inspections were carried out to verify the outcomes of the desktop studies, and the preferred alternative defined.
- 13) A full Public Participation Process is being followed to obtain inputs from interested and affected parties.
- 14) All the information obtained from the above mentioned processes is being used to assess the Environmental Impact that the proposed development may have on the Environment and vice versa.
- 15) The inputs from Specialists, interested and affected parties, together with the knowledge of the EAP is being used to determine measures to avoid, mitigate and manage potential impacts. These measures are described in the Environmental Management Programme.

### **1.3 ASSESSMENT PHASE**

The assessment phase included the necessary investigations to assess the suitability of the identified site and its surrounding environment, for the development proposal. The assessment phase described the “status quo” of the bio-physical, social, economic and cultural environment, and identifies the anticipated environmental aspects associated with the proposed development. The assessment phase included the identification of *key interest groups*, (both government and non-government), and strived to establish efficient and effective communication. Identifying and informing Interested and affected parties of the proposed development may have an impact on the focus of the EIA. (S. Cliff, 2015).

This phase also determines the *significance of the impact* of the proposed activity on the surrounding Environment. During this phase, a Basic assessment Report (BAR) is compiled, and, following public review, is submitted to the approving authority – the DEDECT.

*The purpose of the Basic Assessment Report is to document the outcome of the Assessment Phase of the project.* The report fulfilled the requirements of the EIA Regulations (2014) for the documentation of the Basic Assessment Process. The Report was compiled in accordance with Section 21(3) of NEMA's 2014 EIA Regulation (GN R. 982) as amended and published in Government Notice R. 326 of 7 April 2017.

#### **1.3.1 Objective of the basic assessment process**

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 of impact of the proposed activity and technology alternatives on 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;

- (cc) can be avoided, managed or mitigated; and
- (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 alternative;
  - (ii) identify suitable measures to avoid, manage or mitigate identified impacts; and
  - (iii) identify residual risks that need to be managed and monitored.

### 1.3.2 Scope of assessment and content of basic assessment reports

The BAR assesses those identified potential environmental impacts and benefits (direct, indirect and cumulative impacts) associated with the project design, construction, and operation phases, and recommends appropriate mitigation measures for potentially significant environmental impacts. The Environmental impacts are assessed both before and after mitigation to determine:

- The significance of the impact despite mitigation; and
- The effectiveness of the proposed mitigation measures.

The BAR addresses potential environmental impacts and benefits associated with all phases of the project, including design, construction and operation, and aims to provide the environmental authorities with sufficient information to make an informed decision regarding the proposed project.

Table 1 below provides a summary of the legislative requirements in terms of a Basic Assessment Report as stipulated in Section 23 of the 2014 EIA Regulation (GN R. 982) as amended. Cross-references are provided in terms of the relevant section within this BA Report where the NEMA and BA Report requirements have been addressed.

**Table 1: Basic Assessment Report content as per Section 23 of NEMA’s 2014 EIA Regulation (GN R. 982) as amended Appendix 1.**

3. (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:

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for Basic Assessment Reports	Location in this report
Appendix 1, section 3 (a)	Details of the EAP who prepared the report; and the expertise of the EAP;	Paragraph 2
Appendix 1, section 3 (b)	The location of the development footprint of the activity on the approved site as contemplated in the accepted scoping report, including – <ul style="list-style-type: none"> <li>(i) The 21 digit Surveyor General code of each cadastral land parcel;</li> <li>(ii) Where available, the physical address and farm name;</li> <li>(iii) Where the required information in items (i) and (ii) is not available, coordinates of the boundary of the property or properties</li> </ul>	Paragraph 4 Paragraph 4 Paragraph 4
Appendix 1, section 3 (c)	A plan which locates the proposed activity or activities applied for, at an appropriate scale, or, if it is – <ul style="list-style-type: none"> <li>(i) A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or</li> <li>(ii) On land where the property has not been defined, the coordinates within which the activity is to be undertaken;</li> </ul>	Appendix A1 and Appendix A2 Paragraph 4
Appendix 1, section 3 (d)	A description of the scope of the proposed activity, including – <ul style="list-style-type: none"> <li>(i) all listed and specified activities triggered and being applied for; and</li> <li>(ii) a description of the activities to be undertaken including associated structures and infrastructure;</li> </ul>	Paragraph 3 Paragraph 3
Appendix 1, section 3 (e)	A description of the policy and legislative context within which the development is proposed including	Paragraph 5.1

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for Basic Assessment Reports	Location in this report
	<p>(i) an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and</p> <p>(ii) how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments explanation of how the proposed development complies with and responds to the legislation and policy context</p>	<p>Paragraph 5.2</p> <p>Paragraph 5.2</p>
Appendix 1, section 3 (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.	Paragraph 6
Appendix 1, section 3 (g)	a motivation for the preferred site, activity and technology alternative	Paragraph 4
Appendix 1, section 3 (h)	<p>A full description of the process followed to reach the proposed preferred alternative within the site, including-</p> <p>(i) Details of all alternatives considered;</p> <p>(ii) Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;</p> <p>(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;</p> <p>(iv) The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;</p> <p>(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 the impacts-</p> <p>(aa) can be reversed;</p> <p>(bb) may cause irreplaceable loss of resources; and</p> <p>(cc) can be avoided, managed, or mitigated.</p> <p>(vi) The methodology used in deterring and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;</p> <p>(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 geographic, physical, biological, social, economic, heritage and cultural aspects;</p> <p>(viii) The possible mitigation measures that could be applied and level of residual risk;</p> <p>(ix) the outcome of the site selection matrix</p> <p>(x) If no alternatives, including alternative footprints for the activity were investigated, the motivation for not considering such and;</p> <p>(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity.</p>	<p>Paragraph 8</p> <p>Paragraph 10</p> <p>Paragraph 10</p> <p>Paragraph 8</p> <p>Paragraph 9</p> <p>Paragraph 9</p> <p>Paragraph 9</p> <p>Paragraph 9</p> <p>Paragraph 9</p> <p>Paragraph 9</p> <p>Paragraph 9</p> <p>Paragraph 9</p> <p>Paragraph 9</p> <p>Not Applicable</p> <p>Paragraph 12</p>
Appendix 1, section 3 (i)	<p>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-</p> <p>(i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and</p>	<p>Paragraph 9</p> <p>Paragraph 8</p> <p>Paragraph 9</p>



Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for Basic Assessment Reports	Location in this report
	(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;	
Appendix 1, section 3 (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;  (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and  (vii) the degree to which the impact and risk can be mitigated;	Paragraph 9  Paragraph 9  Paragraph 9  Paragraph 9  Paragraph 9  Paragraph 9
Appendix 1, section 3 (k)	Where applicable, a summary of the findings and recommendations of 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 assessment report;	Paragraph 11
Appendix 1, section 3 (l)	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 superimposes 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;	Paragraph 12.2 and 12.2 Figure 2  Paragraph 12
Appendix 1, section 3 (m)	Based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management outcomes for the development for inclusion in the EMPr	Paragraph 11 and 12
Appendix 1, section 3 (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	Paragraph 3.1.2.1
Appendix 1, section 3 (o)	A description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed	Paragraph 1.4.3
Appendix 1, section 3 (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	Paragraph 12.4
Appendix 1, section 3 (q)	Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised	Not Applicable
Appendix 1, section 3 (r)	An undertaking under oath or affirmation by the EAP in relation to- (i) The correctness of the information provided in the report;  (ii) The inclusion of the comments and inputs from stakeholders and interested and affected parties; and  (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 and any responses by the EAP to comments or inputs made by interested and affected parties.	Paragraph 13  Paragraph 13  Paragraph 13  Paragraph 13
Appendix 1, section 3 (s)	Where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts.	Not Applicable
Appendix 1, section 3 (t)	Any specific information that may be required by the competent authority.	Not Applicable
Appendix 1, section 3 (u)	Any other matters required in terms of section 24(4)(a) and (b) of the Act	Not Applicable

### 1.3.3 Assumptions, uncertainties, limitations and gaps in knowledge:

This report is based on current available information and, as a result, the following limitations and assumptions are implicit –

The report is based on the *project description* provided by the Applicant as a result of reports that was compiled by the following Specialists:

- A Geotechnical Engineer has been appointed to assess the geology and soils.
- A Civil Engineer was appointed to determine the availability of services in the area and to design the services for the proposed development
- A Traffic Engineer was appointed to perform a Traffic Impact Assessment.
- A Town and Regional Planner designed the proposed development in such a way that the layout of the proposed development satisfies the needs of future occupiers of the site, taking cognisance of all the specialist's inputs.
- A Fauna and Flora Habitat specialist has been appointed to determine the impact of the proposed development on the Fauna and Flora of the area.
- A Wetland Specialist was appointed to determine the extent of the Watercourse and to determine buffer zones and propose mitigation measures.
- An Agricultural Specialist was appointed to do an agricultural impact assessment in terms of Notice No. 320 Government Gazette 43110 20 March 2020
- A SAHRA Specialist has been appointed to determine the possible impact of the development on Archaeological and Cultural features.
- An Environmental Screening Process was conducted by the EAP to ensure that all the relevant Environmental Legislation is taken into consideration.
- Desktop studies were conducted and alternatives assessed.

Descriptions of the biophysical and social environments are based on specialist fieldwork, investigations, and the Public Participation Process.

## 2. DETAILS AND EXPERTISE OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

AB Enviro Consult (CC) is a registered consultancy, owned and operated as an independent unit by the registered owner and consultant: **Prof. A.B. de Villiers**. **Mr J.P. De Villiers** joined the consultancy during 2004 and **Mrs J.E. du Plooy** is a consultant since 2001.

Over a period of 27 years (1996-2023) this consultancy has successfully applied for, and obtained positive ROD's and EA's for more than 380 projects. Environmental Control Officer's duties are also performed on various projects.

### ACADEMIC AND PROFESSIONAL QUALIFICATIONS OF PROF DE VILLIERS

Post–Matric Qualifications

YEAR	Qualification	Institution	Field of Study
1968	B.Sc.	PU FOR CHE	Geography, Geology
1970	HONNS. B.Sc.	PU FOR CHE	Soil Science
1974	M.Sc.	PU FOR CHE	Geography
1981	Ph.D.	UOFS	Geography

## ACADEMIC AND PROFESSIONAL QUALIFICATIONS MR J.P. DE VILLIERS

YEAR	Qualification	Institution	Field of Study
1993	BA	PU FOR CHE	Geography, Economics
1994	HED	PU FOR CHE	Geography Economics
2006	B.Sc.(Honns) Cum Laude	North-West University	Environmental Management
2007	M.Sc.	North-West University	Geography

## PROFESSIONAL QUALIFICATIONS AND REGISTRATIONS

YEAR	Qualification/ Registration	Institution	Field of Study
2008	Basic Principles of Ecological Rehabilitation and Mine Closure	Centre for Environmental Management (North West University)	Ecological Rehabilitation
2019	Registered Environmental Assessment Practitioner 2019/808	Environmental Assessment Practitioners of South Africa	

### CV: Mr JP de Villiers

JP de Villiers holds a M.Sc. in Geography from the North West University's Department of Geography and Environmental Management. He started as a junior EAP in 2004 with AB Enviro Consult and was promoted in 2007 to senior EAP. During 2011 he was appointed as the Manager of the North West University, EIA Pro-Bono Office. This office is an initiative of, and funded by, the DEA. (This was a three year contract between DEA and NWU that was extended by one year) As Manager of this office, Mr. de Villiers had the following responsibilities:

- Conduct Environmental Impact Assessments for municipalities on a pro-bono basis.
- Provide environmental management training to North West Municipalities.
- Provide environmental assistance to North West Municipalities.
- Undertake research related to Environmental Impact Management within the North West Municipal Context.
- Marketing for stakeholder 'pro-bono' expert donations.
- Marketing for corporate 'pro-bono' funding.

As EAP, Mr. de Villiers has been directly involved in obtaining **309 Environmental Authorizations** and has performed the duties of **Environmental Control Officer (ECO) for 42 developments**. His responsibilities as Senior EAP includes the following:

### **Duties pertaining to Basic Assessments, EIA and Scoping and Section 24 G Applications:**

- Marketing and communication with clients
- Communication with authorities, source and analyse relevant baseline information and undertake site inspections
- Compile Environmental Application Form for the project and submit to the authorities

- Compile an *information requirements list* that is distributed to the project team. The Information required would assist with completion of the Report.
- Identify key interested and affected parties (I&APs)
- Compilation of terms of reference for specialist studies
- Commission specialist studies
- Compile and publish media notices in relevant newspapers
- Compile and place poster/s along the boundary of the site
- Hold a public meeting / Open House / focus meeting with I&APs
- Receive and address comments from public
- Undertake assessment phase by assessing and evaluating potential impacts identified.
- Review and manage specialist studies.
- Compile and distribute Draft Reports (Including Environmental Management Programmes)
- Should the Reports require substantial changes, these changes are incorporated into the final reports and distributed
- Address comments received on the final Report, finalise Report and submit to authorities
- Once the decision is issued, all I&Ps are formally informed of the decision

#### **Duties pertaining to Environmental Control Officer**

- Preparation (Compilation) and submission of Environmental Control Document.
- Training of and leasing with the Engineers Representative.
- Communicate with the Contractor.
- A monthly visit to the site during the construction period. Should any Environmental incident occur, an immediate site visit is undertaken.
- Monitoring and auditing according to the approved EMP and EA.
- Compilation of a written audit report for each site visits during the construction phase
- Liaising with the Compliance section of the Competent Authority

#### **ACADEMIC AND PROFESSIONAL QUALIFICATIONS MRS J.E. DU PLOOY**

<u>YEAR</u>	<u>Qualification</u>	<u>Institution</u>	<u>Field of Study</u>
1999	BA	PU FOR CHE	Geography, Tourism
2000	BA (Honns) Cum Laude	PU FOR CHE	Geography
2003	Masters degree in Environmental Management	PU FOR CHE	Environmental Management
2001	Aquabase Intro	AQUABASE	Hydrology

2001	Geomedia Professional	INTERTECH	GIS
2001	Map Info	SPATIAL TECHNOLOGY	GIS

## PROFESSIONAL QUALIFICATIONS AND REGISTRATIONS

<u>YEAR</u>	<u>Qualification/ Registration</u>	<u>Institution</u>
2020	Registered Environmental Assessment Practitioner 2019/1573	Environmental Assessment Practitioners of South Africa

### 3. DESCRIPTION OF THE ACTIVITY

The proposed development will be for the establishment of a mixed land use development. Please see Figure 1 for a copy of the Layout Plan. The development consist of the following:

Proposed Zoning	Proposed Land use	No. of Erven	Area in hectares
<b>Residential 1</b>	Residential Stands (Average 450m <sup>2</sup> – 500m <sup>2</sup> )	122	6.1242 ha
	Residential Stands (Average 800m <sup>2</sup> )	46	3.9967 ha
<b>Residential 2</b>	40 Dwelling Units / hectare Height 4 storeys. Dwelling Units / Retirement village	8	10.7619ha
<b>Business 1 Proposed</b>	Business (proposed)	3	2.6765 ha
<b>Business 1 Existing structures on Erf 2</b>	Business (existing erf) (Erf 2)	1	0.3634 ha
<b>Special</b>	Private road, access and access control	2	2.4638 ha
<b>Special</b>	Private Open space	3	0.9780 ha
<b>Special</b>	Municipal Use	1	0.0674 ha
<b>Public Open Space</b>	Park	2	0.2755 ha
<b>Existing public roads</b>			4.4110 ha
<b>TOTAL</b>			32.1184 ha

**17.3284 Hectare** of the development site has already been transformed by previous activities. Buildings, associated gardens and paving occur at large parts of the site. Roads and tracks are numerous at the site. Conspicuous cover of exotic plant species such as *Eucalyptus* species, *Melia azedarach* (Syringa), *Solanum mauritianum* (Bugweed) and *Pinus* species are found at various parts of the site. Fields that historically had orchards are present at the site. Alien invasive herbaceous weeds are widespread in disturbed areas. Informal dumping occurs in some places. Disturbances includes:

- The Deck Restaurant (See Photograph 1)
- Port of Call Motel (See Photograph 2)
- Port of Call Liquor Store and Mini Mart (See Photograph 3)
- U Tow Trailer Rentals and Sales (See Photograph 4)
- Vacant Business Building (See Photograph 5)
- Dwelling Houses (See Photograph 6)

- Areas previously disturbed that does not constitute “*indigenous vegetation that occurs naturally in the area.*” (As per definition) See Photograph 7.

The **Fauna and Flora Habitat Specialist** has determined the extent of *indigenous vegetation that occurs naturally in the area*. The proposed development will involve the clearance of **14.79 hectares** of indigenous vegetation in order to establish the mixed land use development. Please see Figure 2 for a map indicating the extent of the area constituting “*indigenous vegetation that occurs naturally in the area*” to be cleared. **3.29 Ha** is located within 100 meters from the edge of the Waterkloof Spruit. Please see Figure 3 for a map indicating the extent of vegetation clearance within 100 meters from the Waterkloof Spruit. **7.8 Ha** is located within a CBA 2. An area of **4.3 ha** used as agricultural land is proposed to be transformed. The development will also include the construction of 1 093 meters and 2 183 meters (total 3 276 meters) of roads with a reserve of 10 meters and 13 meters respectively located within the critical biodiversity area.



**Photograph 1: View of the Deck Restaurant**



**Photograph 2: View of Port of Call Motel**



**Photograph 3: Port of Call Liquor Store and Mini Mart**



**Photograph 4: U Tow Trailer Rentals and Sales**



**Photograph 5: Vacant Business Building**





Photograph 6: Various Dwelling Houses



Photograph 7: Areas previously disturbed that does not constitute *“indigenous vegetation that occurs naturally in the area.”* (As per definition)

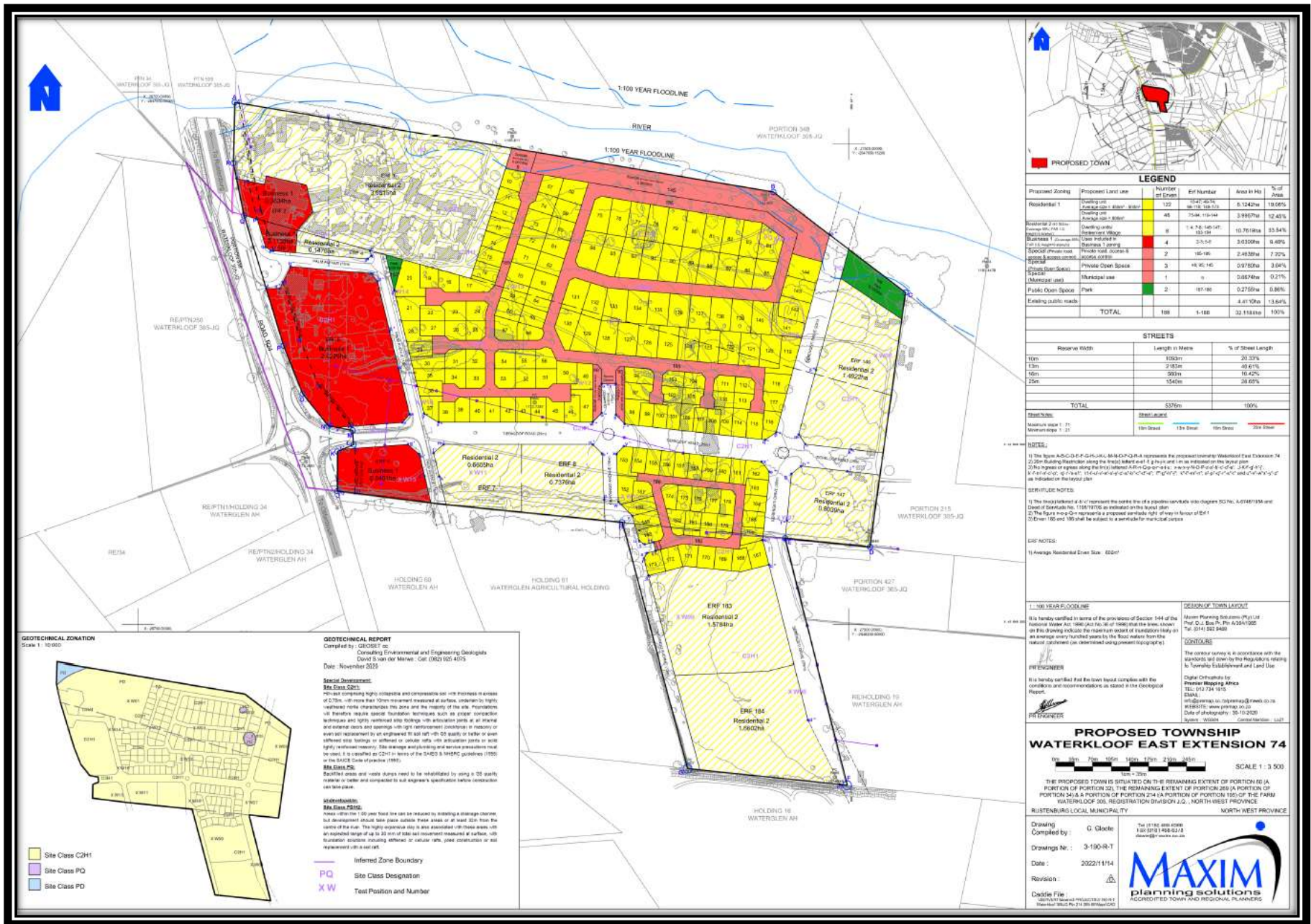


FIGURE 1: LAYOUT PLAN





**FIGURE 2: MAP INDICATING THE EXTENT OF THE AREA TO BE CLEARED**  
**AB ENVIRO-CONSULT**



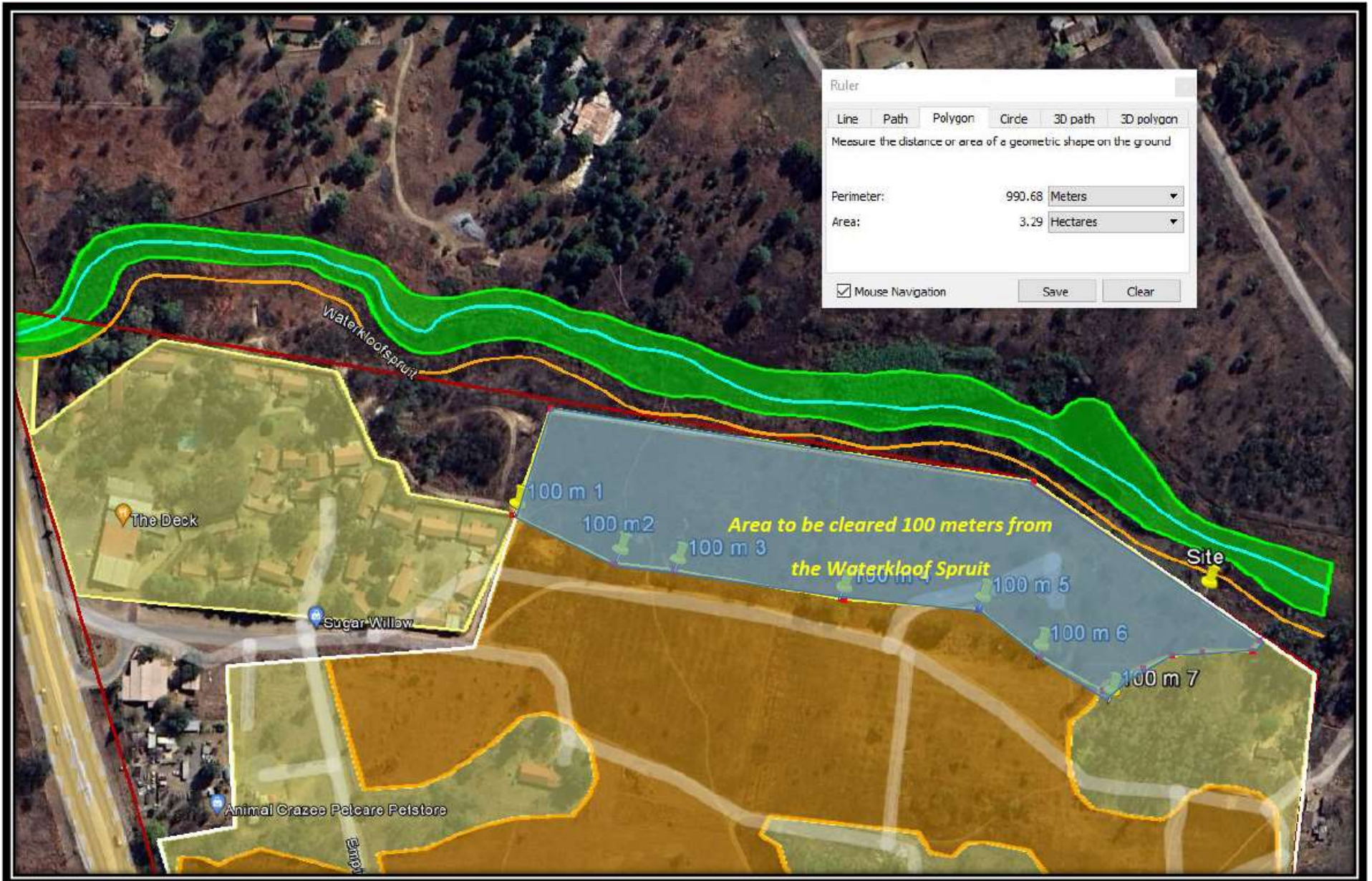


FIGURE 3: MAP INDICATING THE EXTENT OF VEGETATION CLEARANCE WITHIN 100 METERS FROM THE WATERKLOOF SPRUIT

## Bulk Services

### Water

There is an existing 400mm uPVC bulk water pipeline, owned and operated by the Rustenburg Local Municipality, situated parallel to, and on the eastern side of the P16-1 (R24) provincial road. The townships' internal water network will connect directly to this pipeline.

### Water Demand

The table below reflects the estimated water consumption to be applied:

Estimated water consumption:

Land Use	Gross Building Area / Units	Annual Average Daily Demand (AADD)	Water Demand (kl/d)
Residential 1	168 units	1000ℓ/day/unit	168.0
Residential 2	430 units	800ℓ/day/unit	344.0
Business 1	15 205m <sup>2</sup>	400ℓ/day/100m <sup>2</sup>	60.8
Municipal	1 unit	1000ℓ/day/unit	1.0
Total			573.8

### Bulk Sewer:

There is no existing sewerage reticulation in the immediate vicinity of the proposed development.

#### Alternative 1

A new sewerage treatment plant, owned and operated by the Home-Owners Association, will be constructed. Effluent from the sewerage treatment plant can be used as irrigation water, thus alleviating demand on the potable water supply. The treatment works will be situated in the north-western corner of the development.

#### Alternative 2

A new pumpstation, owned and operated by the Home-Owners Association, will be constructed. From the pump station a rising main of at least 110mm diameter will have to be constructed up to an existing connection point.

There are 2 connection points, one directly to the west of the P16-1 road (R24). The most obvious route for the rising main is to duplicate the route of the existing 400mm water pipe, directly west and parallel to the P16-1 (R24).

The other connection point will be the new pumpstation situated in the proposed Waterkloof East X63 development situated across the Waterkloof Spruit to the north.

## Sewerage run-off

Estimated Sewer Flow:

Land Use	Units	Annual Average Daily Flow (AADF)	Sewerage Outflow (kℓ/d)
Residential 1	168 units	800ℓ/day/unit	134.4
Residential 2	430 units	640ℓ/day/unit	275.2
Business 1	15 205m <sup>2</sup>	320ℓ/day/100m <sup>2</sup>	48.7
Municipal	1 unit	320ℓ/day/100m <sup>2</sup>	0.8
Total			459.1

## Internal Sewer Layout

The internal sewerage system will be designed to accommodate the average annual daily flow (AADF) and to service every unit and development structure within the development.

The topography found at the proposed development is of such a nature that all sewerage will be adequately transported via a gravity line to the south-eastern corner of the development. From there the sewerage will be pumped to the rising main or to the sewerage treatment plant as mentioned above.

## Design Criteria and Materials

uPVC Class34 Free-flow pipe material as well as pre-cast concrete manholes to SABS standards will be used in the construction of the sewer network with the following minimum requirements:

- Annual average daily flow l/day (AADF)
  - Commercial and other - refer to Section 3.2 above
  - Peak Factor - 2.5
  - Infiltration Allowance - 15%
- Network and Main Sewer:
  - Minimum diameter pipe 160mm;
  - Minimum depth of cover 1m

DIAMETER	MINIMUM GRADIENT	MAXIMUM DEPTH OF FLOW	MINIMUM VELOCITY
160mm	1/200	0.85D	0,7m/s

- Materials:
  - Pre-cast concrete manholes from 1000mm diameter;
  - Manhole frames and covers – Polymer Concrete (Lockable)
  - Maximum spacing of manholes - 75 meters;
  - Building connections (110mm) will be supplied (1 meter from erf boundary);
  - Bedding and Backfill – SANS 1200

## **Electrical**

### **Bulk Electricity supply and link services**

The area surrounding the proposed development is supplied by the Boschdal 2 x 20MVA 33/11kV Substation which is supplied from the Industries 33/11kV Substation. The substation is in Safarituine – A suburb of the south-eastern part of Rustenburg. Boschdal Substation currently has a recorded maximum demand of just over 20MVA which implies that limited spare capacity exist at the source substation to cater for the additional load as a result of the development.

A new substation – Hills 3 x 20MVA 33/11kV substation was constructed and completed in 2018. This substation is in Waterkloof Hill – approximately 1.4 km northeast of the proposed development. The substation is currently operated below 10% of its rated capacity and has adequate capacity to cater for the development.

It is proposed that a new 11kV link service be installed from Hills Substation to the proposed development by utilizing the bulk services contributions payable with the development of Waterkloof Ext 74.

### **Internal Electrical infrastructure**

Medium voltage reticulation will be by means of underground 11kV supplies linked to the existing and or upgraded 11kV network in the area. The new 11kV network will be installed in servitudes or in the street reserves. Medium voltage cable will be of type 6.35/11kV XLPE Type B AI.

The network will be supplied with miniature substations with 11kV protective devices. The 11kV protection device will be the compact SF6 ring main units of approved manufacture.

Metering for the business and commercial zoning will be done either on the low voltage side of the miniature substation or on the 11kV breakers pending final agreement.

Low voltage infrastructure system on the residential component will be underground aluminium low voltage cables to metering kiosks and distributions stubbies. Low voltage service connection cables will terminate onto pre-paid energy meters located within the houses

The above works will be undertaken by the Developer on behalf of the Rustenburg Local Municipality.

Provision will further be made for a street lighting system that will be designed and installed to be in accordance with the SANS 048. Street lighting to public roads is handed over to the local authority for the operation and maintenance thereof.

It should be noted that the complete electrical infrastructure system up to the metering points will comply with the requirements of Rustenburg Local Municipality. The system will further be handed over to the Rustenburg Local Municipality after the completion for the operation and maintenance thereof.

## **Storm Water**

### **Bulk Storm water**

The storm water runoff captured in the internal storm water network as well as the surface flow from the development will be directed towards the existing watercourse (Waterkloof Spruit) bordering the property to the north.

### **Internal Stormwater layout**

The natural drainage pattern of the terrain is towards the north. The area drains via sheet flow.

The storm water design will be done in accordance with the “Guidelines for Human Settlement Planning and Design” compiled under the patronage of the Department of Housing by the CSIR, DWAF and design specifications of the Local Authority.

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

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

The drainage system will be designed to minimize the impact of the development on the storm water characteristics of the property and adjacent properties by utilizing:

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

The flood line and riparian zones has been determined and taken into consideration as part of the layout of the development.

### **Solid Waste**

The solid waste that will be generated by the proposed development will be in the region of 5 950 kg of solid waste per week. The Rustenburg Local Municipality can collect the waste on a weekly basis, alternatively the “homeowners’ association” of the development can make private arrangements to transport the waste to a landfill site as required.

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

### **Roads and Access**

The development will gain access from the P16-1 road as described in the separate traffic impact study

### **Internal Roads**

Access to the individual areas within the development will be obtained from an internal road system. The road system will be constructed by the developer.

The internal road layout will be submitted to the Local Municipality for approval. The roads will be constructed in varying widths depending on the layout of the development. All geometry will be designed according to applicable standards



## Design Criteria

The proposed pavement design will be based on anticipated traffic volumes and ground conditions. The anticipated design life of the proposed pavement will be 15 to 20 years on provision that repairs to the surface will be made where necessary to maintain the impermeability and integrity during the design life of the road.

Roads are to be constructed to the standards specified in SANS 1200. Road materials conforming to the requirements of TRH 14 will be specified.

## 4. DESCRIPTION OF THE PROPERTY

The site is located on Portion 214 (a Portion of Portion 195), the remaining extent of portion 269 (a Portion of Portion 34) and the remaining extent of Portion 60 (a Portion of Portion 32) of the farm Waterkloof 305-JO, (To be known as Waterkloof east ext. 74); Rustenburg, North West Province. The proposed development site is located within the area of jurisdiction of the Rustenburg Local Municipality (NW 373) which in turn falls within the area of jurisdiction of the Bojanala District Municipality. Rustenburg local municipality is located in the North West Province of South Africa. The city is situated at the foot of the Magalies mountain range and is referred to as “town of rest” or “resting place”.

Rustenburg is the most populous municipality in the North West province and also the fastest growing municipality in South Africa. The municipality’s economy is mainly based on the surrounding mining and agricultural activities. The city of Rustenburg is situated some 112 km northwest, from both Johannesburg and Pretoria. Rustenburg, is situated on the N4 highway, forming part of the main route between Gauteng and Botswana.

The proposed development site is located directly adjacent and to the east of Road R24 (Rustenburg - Johannesburg road), approximately 3,5 km south of the Waterfall Mall and 500m south of the intersection of the Arnoldstad Road with Road R24. A part of the township area currently comprises The Deck Restaurant, the Port of Call Motel and Port of Call Liquor Store and Mini Mart and U Tow Trailer Rentals and Sales. See Figure 4 for a Locality Map and Figure 5 for a current Land Use Map.

### Site Co-ordinates

	Latitude (S):			Longitude (E):		
<b>Alternative S1 (preferred or only site alternative)</b>	25°	44’	19.12’’	27°	16’	17.11’’

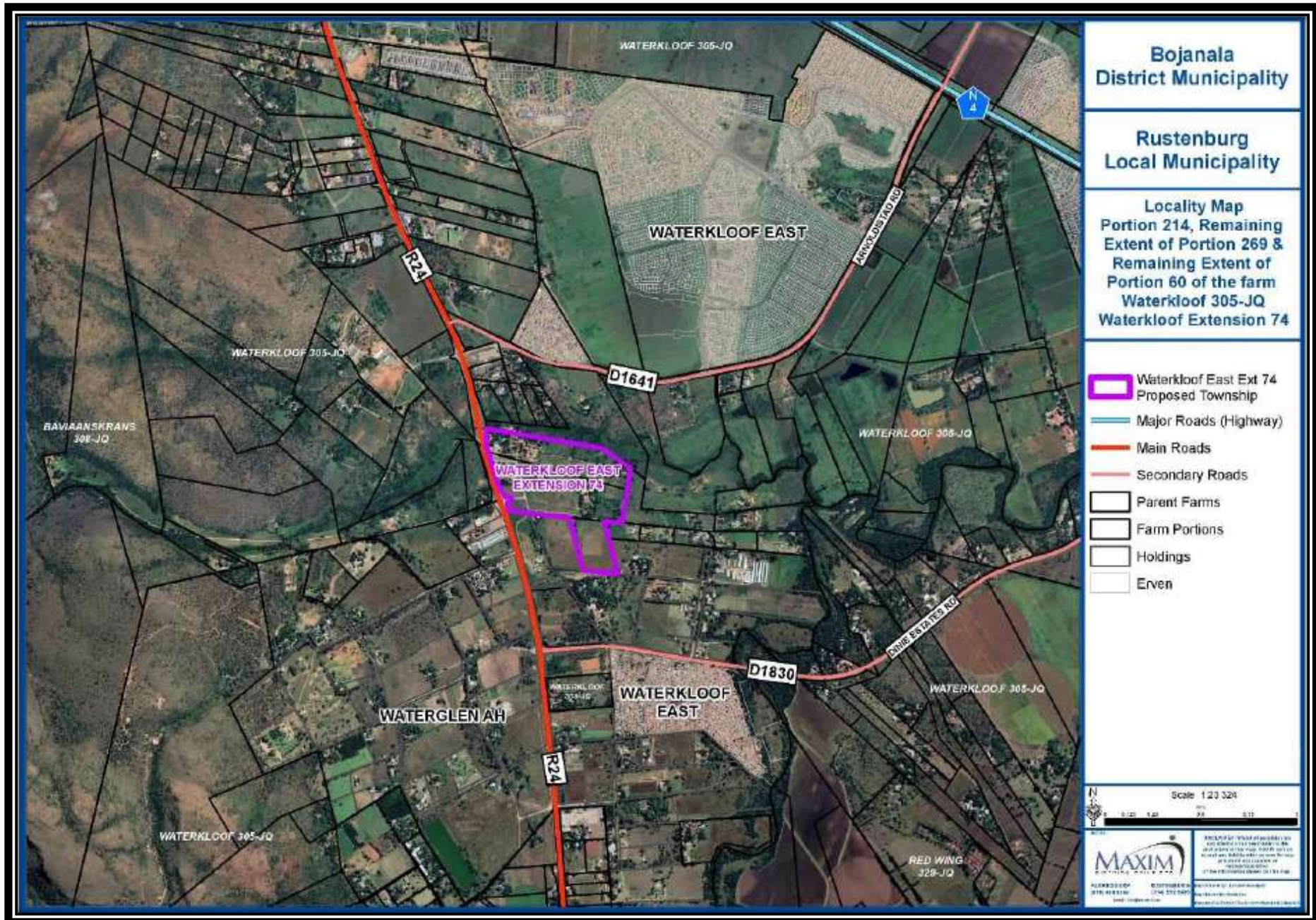


FIGURE 4: LOCALITY MAP



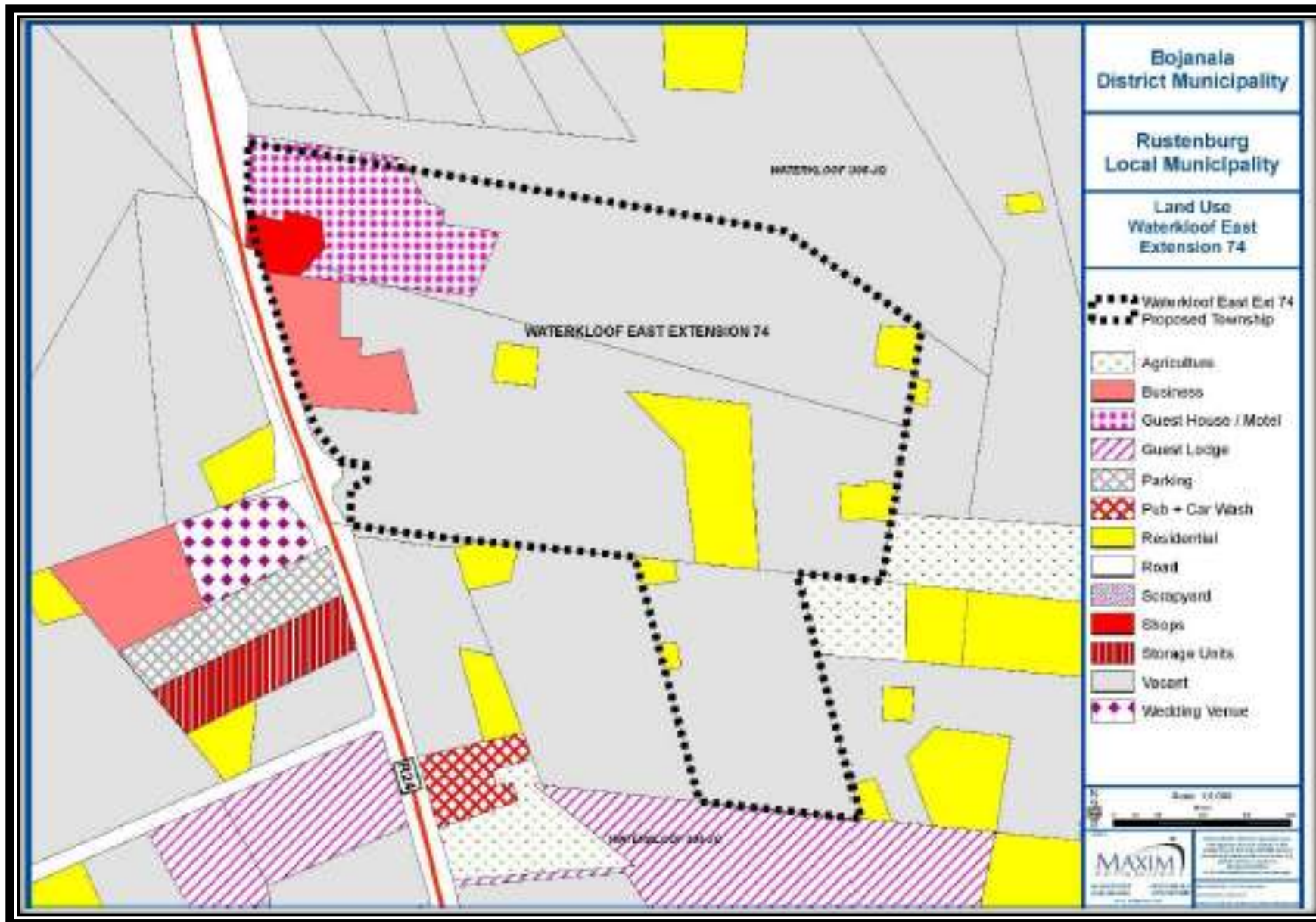


FIGURE 5: CURRENT LAND USE MAP

Although the site falls within a CBA 2, buildings, associated gardens and paving occur at large parts of the site. Roads and tracks are numerous at the site. Conspicuous cover of exotic plant species such as *Eucalyptus* species, *Melia azedarach* (Syringa), *Solanum mauritianum* (Bugweed) and *Pinus* species are found at various parts of the site. Fields that historically had orchards are present at the site. Alien invasive herbaceous weeds are widespread in disturbed areas. Informal dumping occurs in some.

Terrestrial vegetation at most of the site is a disturbed savanna with hitherto cleared areas, disturbed areas and clumps of alien invasive trees. Extensive covers of *Eucalyptus camaldulensis* are in particular conspicuous at the site. Alien invasive tree species such as *Melia azedarach* are widespread at the site. Some indigenous tree species such as *Vachellia karroo*, *Ziziphus mucronata* and *Searsia lancea* are conserved at the site. Conspicuous exotic weeds at the site are *Flaveria bidentis*, *Tagetes minuta* (Khaki Weed), *Bidens bipinnata* (Black Jack), *Conyza bonariensis* (Flea Bane) and *Datura* (Thorn-apples) as well as shrubs such as *Solanum mauritianum* (Bugweed).

A non-perennial river, including its narrow active channel and riparian zone, is present at the site. Riparian vegetation at the site is ecologically disturbed but contains a number of indigenous plant species. Indigenous graminoid species at the riparian zone include the rush *Juncus oxycarpus*, the reed *Phragmites mauritianus* and the grass species *Imperata cylindrica*. Conspicuous indigenous tree species at the riparian zone are *Ziziphus mucronata* and *Combretum erythrophyllum*. Some bush encroachment by *Asparagus laricinus* occur along the riparian zone. Alien invasive trees *Melia azedarach* and *Morus alba* are present at the riparian zone. Various alien invasive heraceous plant species such as listed for the terrestrial zone are also present at the riparian zone. The alien invasive shrub *Cestrum laevigatum* is also visible at some parts of the riparian zone.

See Figure 6 for a copy of the Terrestrial Sensitivity Map, Figure 7 for a copy of the Aquatic Sensitivity Map and Figure 8 for a copy of the Fauna and Flora Habitat Specialist's sensitivity map.



**Photograph 8: Disturbed area at and near riparian zone north of the site in the study area**



**Photograph 9: Disturbed terrestrial vegetation at the site.**



**Photograph 10: Large clump of alien invasive tree species *Eucalyptus camaldulensis* at the terrestrial zone at the site. Alien invasive *Jacaranda mimosifolia* in flower is also visible in the picture**



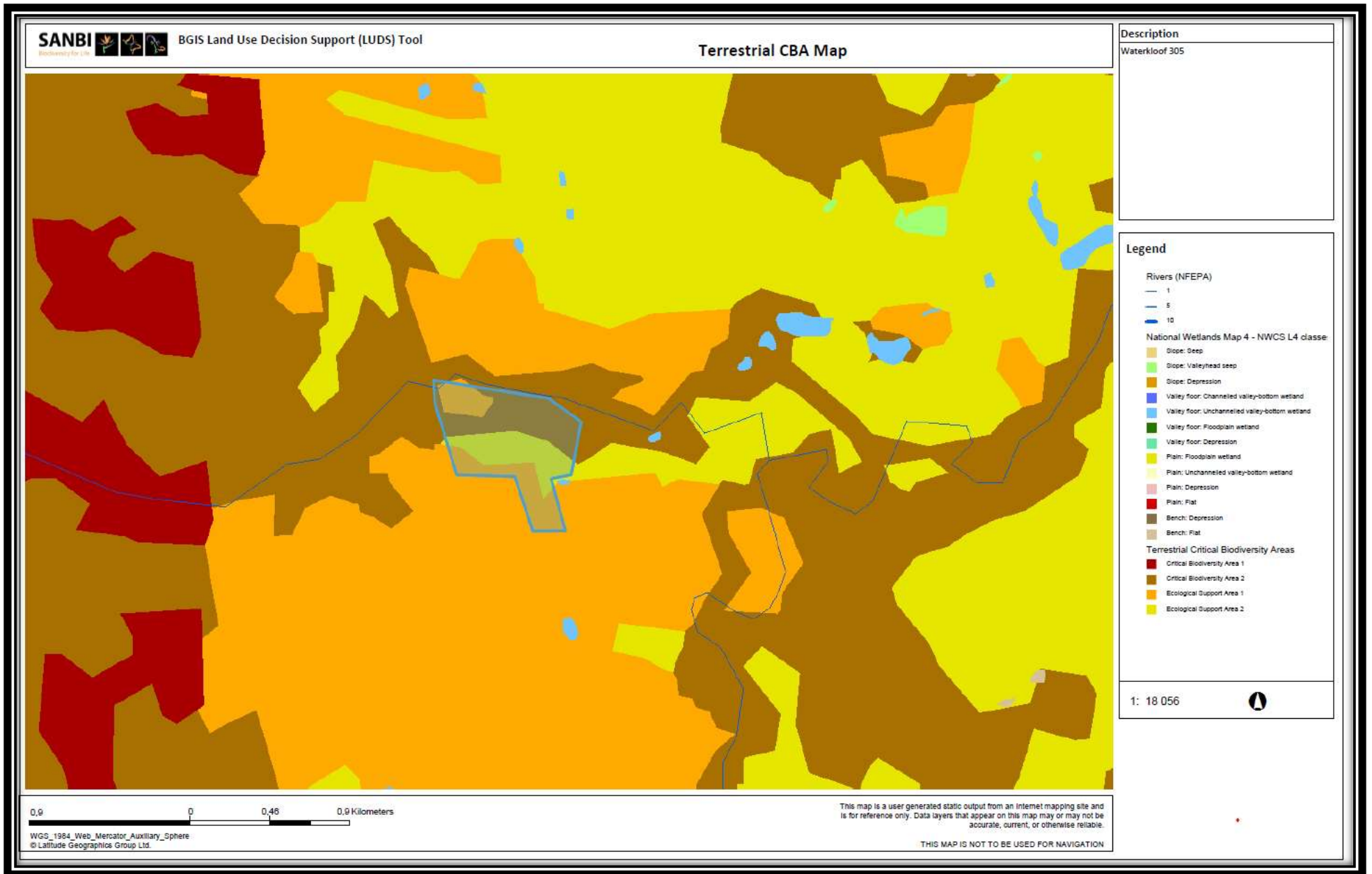


FIGURE 6: TERRESTRIAL SENSITIVITY MAP,

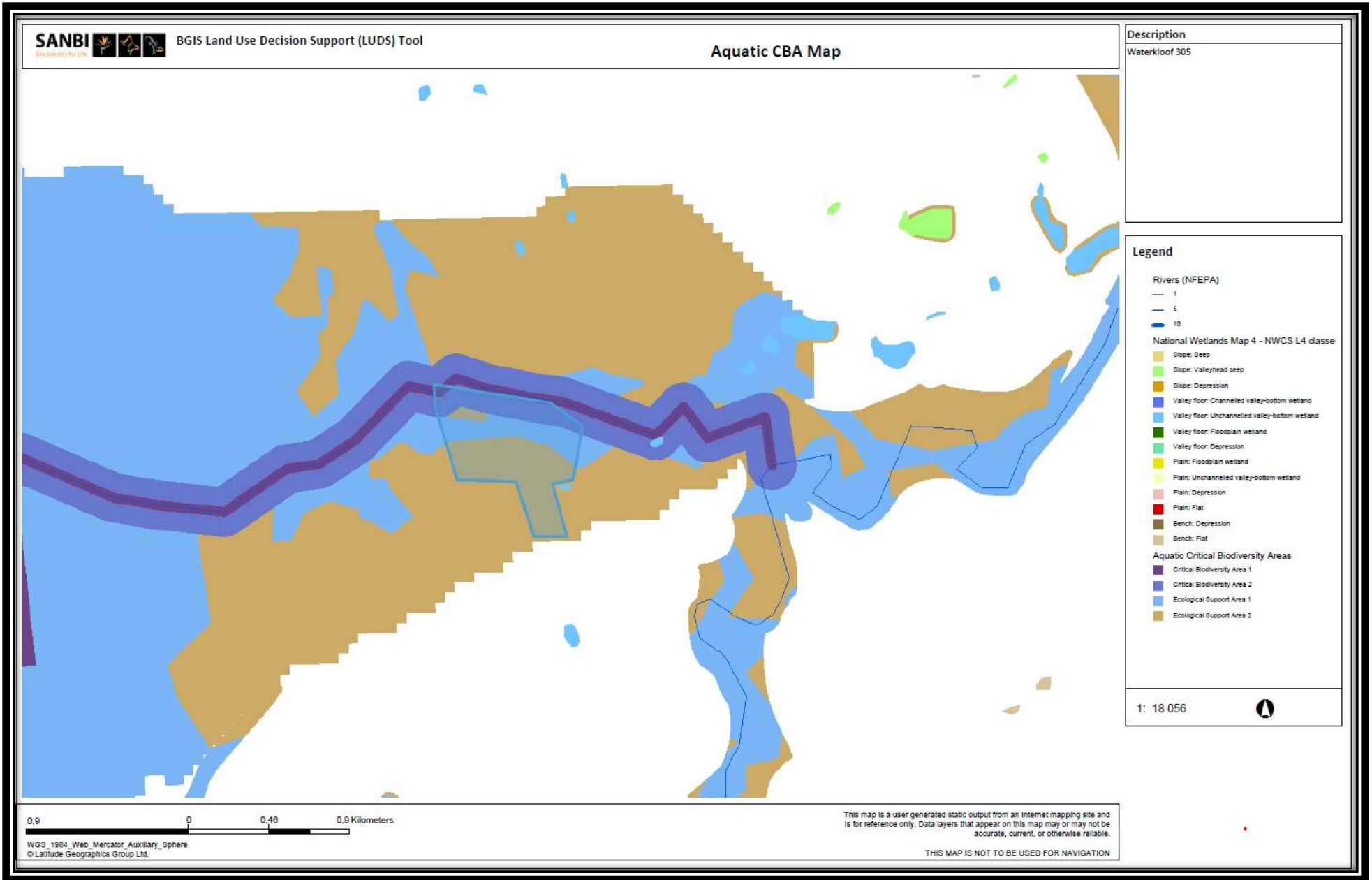





FIGURE 7 AQUATIC SENSITIVITY MAP



**FIGURE 8 FAUNA AND FLORA HABITAT SPECIALIST'S SENSITIVITY MAP**

- |   |                                  |                        |
|---|----------------------------------|------------------------|
|  | Red outline                      | Boundaries of the site |
|  | Light yellow outline and shading | Low Sensitivity        |
|  | Orange outline and shading       | Medium Sensitivity     |



## 5. LEGAL AND OTHER REQUIREMENTS

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Environmental Management Act No. 107 of 1998 as amended.	NEMA is the guiding legislation that has been considered during the Environmental Impact Assessment process and the compilation of this Scoping Report.	NW:DEDECT	27 November 1998
The Bill of Rights, Constitution of South Africa, Section 27 (1)(b)	<p>The Constitution of the Republic of South Africa is the legal source of all law, including environmental law, in South Africa. The Bill of Rights is fundamental to the Constitution of South Africa and in, section 24 of the Act, it is stated that:</p> <p>Everyone has the right (a) to an environment that is not harmful to their health or well-being; and (b) to have the environment protected, for the benefit of present and future generations through reasonable legislative and other measures that (i) prevent pollution and ecological degradation; (ii) promote conservation; and (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.</p> <p>Given that environmental management is founded partly on the principles of public participation, Section 195 of the Constitution is of primary relevance:</p> <p>(1) Public administration must be governed by the democratic values and principles enshrined in the constitution, including the following principles: (a) (b) (c) (d) (e) Peoples needs must be responded to, and the public must be encouraged to participate in policymaking. (f) Public administration must be accountable. (g) Transparency must be fostered by providing the public with timely, accessible and accurate information (Government Gazette, 1996).</p>	National Government	1994
New Regulations 2014 in terms of NEMA	Legislation consulted during the environmental impact assessment process to determine whether any listed activities would be triggered. The Regulations were also consulted to determine inter alia the requirements regarding the contents of Scoping reports and the public participation process that should be followed.	NW: DEDECT	7 April 2017
National Water Act (36 OF 1998)	<p>National Water Act (NWA), 1998 (Act 36 of 1998) is the primary statute providing the legal basis for water management in South Africa and has to ensure ecological integrity, economic growth and social equity when managing and using water.</p> <p>The major objectives of the National Water Act are to:</p>	Department of water and sanitation	1998

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	<ul style="list-style-type: none"> <li>•Aid in providing basic human needs;</li> <li>•Meet the growing demand of water in a sustainable manner;</li> <li>•Ensure equal access to water and use of water resources;</li> <li>•Protect the quality of water of natural resources;</li> <li>•Ensure integrated management of water resources;</li> <li>•Foster social and economic development; and</li> <li>•Conserve aquatic and related ecosystems.</li> </ul> <p>Section 19 of the National Water Act states that the person responsible for land upon which any activity is or was performed which causes, has caused or is likely to cause, pollution of a water resource, must take all reasonable measures to prevent any such pollution from occurring, continuing or recurring.</p>		
National Environmental Management: Biodiversity Act (NEMBA) (ACT NO. 10 OF 2004)	<p>The National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004), provides for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998; the protection of species and ecosystems that warrant national protection; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources; the establishment and functions of a South African National Biodiversity Institute; and for matters connected therewith.</p> <p>In terms of Chapter 4 of the Above Act:</p> <p>52. (1) (a) The Minister may, by notice in the Gazette, publish a national list of ecosystems that are threatened and in need of protection.</p> <p>(b) An MEC for environmental affairs in a province may, by notice in the Gazette, publish a provincial list of ecosystems in the province that are threatened and in need of protection.</p> <p>(2) The following categories of ecosystems may be listed in terms of subsection:</p> <p>(a) critically endangered ecosystems, being ecosystems that have undergone severe degradation of ecological structure, function or composition as a result of human intervention and are subject to an extremely high risk of irreversible transformation;</p> <p>(b) endangered ecosystems, being ecosystems that have undergone</p>	NW: DEDECT	2004

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	<p>degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems;</p> <p>(c) vulnerable ecosystems, being ecosystems that have a high risk of undergoing significant degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems or endangered ecosystems; and</p> <p>(d) protected ecosystems, being ecosystems that are of high conservation value or of high national or provincial importance, although they are not listed in terms of paragraphs (a), (b) or (c).</p> <p>(3) A list referred to in subsection (1) must describe in sufficient detail the location of each ecosystem on the list.</p> <p>53 (1) The Minister may, by notice in the Gazette, identify any process or activity in a listed ecosystem as a threatening process.</p> <p>(2) A threatening process, identified in terms of subsection (1) must be regarded as a specified activity contemplated in section 24(2)(b) of the National Environmental Management Act (1998) and a listed ecosystem must be regarded as an area identified for the purpose of that section.</p>		
National Environmental Management: Protected Areas Act (ACT NO. 57 OF 2003)	<p>This Act aims to provide for a national system of protected areas in South Africa as part of a strategy to manage and conserve its biodiversity. The Protected Areas Act tries to ensure the protection of the entire range of biodiversity, referring to natural landscapes and seascapes. The Act makes express reference to the need to move towards Community Based natural Resource Management (CBNRM) as its objectives include promoting the participation of local communities in the management of protected areas. The purpose of the Act is:</p> <ul style="list-style-type: none"> <li>•To protect ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes and their ecological integrity.</li> <li>•To conserve biodiversity in those areas;</li> <li>•To protect South Africa's rare species;</li> <li>•To protect vulnerable or ecologically sensitive areas;</li> <li>•To assist in ensuring the sustained supply of environmental goods and services;</li> <li>•To provide for the sustainable use of natural and biological resources;</li> </ul>	National Department of Environmental Affairs	2003

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	<ul style="list-style-type: none"> <li>•To create or augment destinations for nature-based tourism;</li> <li>•To manage the interrelationship between natural environmental biodiversity, human settlement and economic development;</li> <li>•To contribute to human, social, cultural, spiritual and economic development;</li> <li>•To rehabilitate and restore degraded ecosystems and promote the recovery of endangered and vulnerable species.</li> </ul> <p>This Act further stipulates various criteria which must be met before an area can be declared as a special nature reserve, national park, nature reserve and protected environment. It also prescribes a range of procedures, including consultation and public participation procedures which must be followed before any of the kinds of protected areas are declared.</p>		
National Heritage Resources Act, Act No. 25 of 1999	Legislation consulted during the impact assessment process, to determine the legal requirements relating to the management of heritage resources that are present in and around the site.	SAHRA	1999
National Environmental Management: Waste Act, Act No. 59 of 2008, DEDECT together with the List of Waste Activities that Have, or are Likely to Have, a Detrimental Effect on the Environment, GN No. 921 of 29 November 2013	Legislation consulted to determine whether a waste licence will have to be obtained for the development.	NW:DEDECT Waste Section	2008
<i>National Environmental Management: Air Quality Act (Act 39 of 2004)</i>	To protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social Development. Construction activities may cause some air pollution.	Department of Environmental Affairs: Directorate Air quality management	2004
<i>The Conservation of Agricultural Resources Act (Act 43 of 1983)</i>	This Act regulates the flow pattern of runoff water, control of weeds and invader plants.	NW: Department of Agriculture	1983
<i>National Veldt and Forest Fire Act (Act 101 of 1998)</i>	Chapter 4 places a duty on owners to prepare and maintain firebreaks.	Department of Agriculture, Forestry and Fisheries	1998
<i>National Forests Act, Act 84 of 1998 (NFA) DEDECT with GN1602 of December 2016.</i>	During the construction phase of the development certain protected trees may be affected. Licences will have to be obtained from the Minister before the affected trees may be cut, disturbed, damaged or destroyed. GN1602 of December 2016 contains the list of protected trees.	Department of Agriculture, Forestry and Fisheries	1998
<i>Occupational Health and Safety Act (Act 85 of 1993)</i>	To provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery and the protection of persons other than persons at work against hazards to health.	Department of Employment and labour	1993

5.2 (i) an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are 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 explanation of how the proposed development complies with and responds to the legislation and policy context

**5.2.1 Existing Land use Rights:**

The current zoning in terms of the Rustenburg Land Use Scheme is as follows:

Property Description	Current Zoning
Portion 214 (a portion of Portion 195) of the farm Waterkloof 305, Registration Division J.Q., North West Province	Agricultural
Remaining Extent of Portion 269 (a portion of Portion 34) of the farm Waterkloof 305, Registration Division J.Q., North West Province	Agricultural
Remaining Extent of Portion 60 (a portion of Portion 32) of the farm Waterkloof 305, Registration Division J.Q., North West Province	Agricultural

A Town and Regional Planner has been appointed to apply for Rezoning.

**5.2.2 Provincial Spatial Development Framework (PSDF)**

In terms of the Provincial Growth and Development Strategy (PGDS) the following key programmes of the Economic enhancement initiative were identified:

- The provincial economy needs to become more productive, more competitive and more diversified.
- Promote labour absorbing activities through Small Enterprises to support and promote private stimulation of rural economies.
- To promote skills development and training in economic practices to enhance economic growth.

**5.2.3 Urban Edge/ Edge of built environment**

The site is located within the urban edge of the Rustenburg Local Municipality

**5.2.4 Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality.**

The Integrated Development Plan consists mainly of broad strategies and projects guiding and integrating capital investment, focussed development in the areas of inter alia planning, environmental programmes, economic development, transport, waste management, and services, etc. The purpose of an Integrated Development Plan is to increase the municipal performance in terms of the pre-determined vision.

The Rustenburg Integrated Development Plan (2012 - 2017) sets the stage for sectoral planning within various administrative units. The main purpose of the Rustenburg Integrated Development Plan is to enable the Rustenburg Local Municipality to become more competitive, understand regional strengths and weaknesses and to propose arrangements for better corporate governance. It attempts to integrate job creation, physical development and environmental concerns and to strengthen Local Economic Development as well as land uses that comply with the requirements for sustained Local Economic Development.

Rustenburg’s Housing Sector Plan forms a chapter of the IDP. According to the Housing Sector Plan (2012), housing alone does not provide an integrated solution for longer term sustainability and it is Government policy to transform the country’s residential areas and build communities with closer access to work and social amenities, including sports and recreational

facilities. There have been fundamental shifts in the approach to housing in South Africa in the past 20 years. A redirection of policy was brought about through the Comprehensive Plan for the Development of Sustainable Human Settlements in 2004 – commonly known as “Breaking New Ground” (BNG).

The key objectives of this BNG are promotion of densification and the provision of social and community services in combination with residential developments. The entire residential property market is promoted through this plan, including the development of low-cost housing, medium-density accommodation, rental housing, stronger partnerships with the private sector and social infrastructure and amenities. The plan aims to change spatial settlement patterns by building spatially, economically and socially sustainable communities. The RLM’s Housing Strategy will therefore comply with Government direction and will promote a human settlement policy which will become a series of Sustainable Integrated Human Settlement initiatives, of which densification is a central attribute.

The overall housing vision is defined as:

***“To facilitate accelerated housing development and promote integrated human settlement through spatial restructuring and integrated land-use management with special emphasis on curbing urban sprawl and promotion of densification”***

The above vision resulted in the identification of five (5) primary components that the RLM need to focus on in moving towards the implementation of their vision and are as follows:

- Eradicate housing backlog and provide a range of housing types;
- Promote a greater mix of housing typologies by supporting the development of alternative housing typologies;
- Locate new housing development within a rational urban structure and urban development boundary to ensure sustainable development;
- Housing developments must include the full range of community facilities to ensure viable and sustainable living environments;
- identify sufficient land for future housing development; and
- Promote transparency, accountability and fair administration.

The RLM should according to the Housing Sector Plan achieve the following key strategic objectives when implementing their housing strategy. They are as follows:

### **Strategic Objective 1. The constitutional imperative**

South Africa has a constitutional imperative that obliges government to ensure that all its citizens are provided with shelter and housing in accordance with the Bill of Rights. RLM therefore strives to deliver 13 000 housing units towards eradicating the current backlog of 37 855 housing units.

### **Strategic Objective 2. Partnerships**

RLM strives to foster the broadest range of partnerships with the private and non-profit sectors in the provision of housing by designing new programs and structuring incentives to attract the involvement of businesses and communities in the funding and implementation of its integrated housing strategy. Participation requires time and resources, and allowance should be made for these. Full participation from job creation, sweat equity and skills development must be built into execution plans emanating from this strategy.

### **Strategic Objective 3. Integration and Intelligent Spatial Restructuring**

RLM strives to proactively promote the establishment of socially mixed integrated sustainable neighbourhoods. This necessitates a holistic understanding of development needs, and making sufficient resources available to provide a wide range of social and economic programs, together with the delivery of housing, infrastructure and facilities, in order to address these needs in a sustainable and integrated way, and enable equitable access regardless of ethnic identity and/or income category.

#### **Strategic Objective 4. Sustainable living**

RLM strives to design and build sustainable neighbourhoods that provide an affordable quality of life for all in ways that ensure sustainable use of resources and the environment for the benefit of both current and future generations. This would include neighbourhood development that is energy efficient in design and make use of renewable energy, productive re-use of all sewage, highly efficient use of water, recycling of solid waste, sustainable building materials, high densities, open green spaces (in particular for children) and that promotes easy access to public transport. To meet this objective it is important to

establish and adopt a strong policy position within RLM so that its citizens can effectively participate and use natural resources in an efficient and responsible manner.

#### **Strategic Objective 5. Facilitating intra-community economic growth:**

RLM strives to select and establish new sustainable neighbourhoods that stimulate the creation of opportunities for economic growth, employment, access to basic facilities, amenities (such as schools and clinics), green spaces and play areas for children and prevent urban sprawl.

#### **Strategic Objective 6. Preserving a “sense of place”**

RLM strives to ensure that development is done in a way that promotes densification by offering a greater mix of housing typologies and tenure options. By increasing population thresholds and so providing adequate numbers of consumers, promoting pedestrian activity and producing a stronger sense of 'place', densification offers all the right elements for the spontaneous and sustainable occurrence of profitable economic activity.

Various housing programs are in place that can assist in addressing the housing need and the delivery of housing units.

#### **RUSTENBURG SPATIAL DEVELOPMENT FRAMEWORK, 2005**

The Rustenburg Spatial Development Framework (2010 Review) (hereafter referred to as the Spatial Development Framework) also forms part of the Integrated Development Plan (2013 - 2014) for Rustenburg. The compilation of Spatial Development Frameworks to form part of the IDP is mandatory in terms of the Municipal Systems Act (Act 32 of 2000) and SPLUMA (2013).

The “Vision” of the Rustenburg Local Municipality, as described in the 2009/2010 IDP, is defined as “A successful Rustenburg for the benefit of all”.

It is envisaged that the proposed township development will advance the priorities set out in the Rustenburg Spatial Development Framework. It will also be in line with the principle to enhance corridor development and to enhance a compact city as the proposed development falls within the urban edge as mentioned.

The proposed areas are earmarked for Multiple Residential and Agricultural according to the SDF and is therefore in line with the aforementioned document

#### **5.2.5 Spatial Planning and Land Use Management Act, Act 16 of 2013, (SPLUMA).**

The Spatial Planning and Land Use Management Act, Act 16 of 2013, (SPLUMA) came into operation on the 1<sup>st</sup> of July 2015 and has changed the Planning profession to such an extent that Planning can no longer be used as a tool to separate people and communities. The objectives are:

- *provide for a uniform, effective and comprehensive system of spatial planning and land use management for the Republic;*
- *ensure that the system of spatial planning and land use management **promotes social and economic inclusion;***
- *provide for **development principles and norms and standards;***



- provide for the **sustainable and efficient use of land**;
- provide for cooperative government and intergovernmental relations amongst the national, provincial and local spheres of government; and
- Redress the imbalances of the past and to ensure that there is equity in the application of spatial development planning and land use management systems.

#### **SPLUMA's desired outcomes:**

- Coherent regulatory framework;
- Constitutional synergy (clear delineation, distribution & allocation of powers among spheres);
- Predictable and transparent regulatory system; and
- Clear, rational and efficient inter-linkages of sectoral and intersphere planning tools and policies.

#### **The following guidelines are given for Land Use Management:**

- **Land resources are used for a variety of purposes which interact** and may compete with one another; therefore, it is desirable to plan and manage all uses in an integrated manner.
- Land use management examines all uses of land in an integrated manner, it makes it possible to minimize conflicts, to make the most efficient trade-offs and to link social and economic development with environmental protection and enhancement, thus helping to achieve the objectives of sustainable development.
- The essence of the integrated approach finds expression in the coordination of the sectoral planning and management activities concerned with the various aspects of land use and land resources.
- Integration should consider all environmental, social and economic factors.
- Integrated consideration facilitates appropriate choices and trade-offs, thus maximizing sustainable productivity and use.

The broad objective is to facilitate allocation of land to the uses that provide the greatest sustainable benefits and to promote the transition to a sustainable and integrated management of land resources.

#### **Provincial Priority 4 states the following:**

- Address the apartheid geography and create the conditions for more humane – and environmentally sustainable – living and working environments.
- It is important to address the entrenched spatial patterns that exacerbate social inequality and economic inefficiency, cognisant of the unique needs and potentials of different rural and urban areas in line with emerging development corridors.
- Active citizenship in spatial development should be supported through properly funded interventions that encompass citizen-led neighbourhood vision and planning processes; and the introduction of social compacts.
- Settlement planning should ensure the creation of spaces that are liveable, equitable, sustainable, resilient and efficient, and that support economic opportunities and social cohesion.

The proposed development complies with the principles as set out above in the sense that the proposed development will contribute to economic growth in the area

The study is conducted in such a way as to comply with the instructions regarding such studies and reports (as contained within the above-mentioned documents).

## 5.2.6 Integrated Environmental Management as set out in Section 23 of NEMA as amended.

The IEM guidelines encourage a pro-active approach to sourcing, collating and presenting information in a manner that can be interpreted at all levels. The basic principles underpinning IEM are that there be: informed decision-making;

- accountability for information on which decisions are taken;
- accountability for decisions taken;
- a broad meaning given to the term environment (i.e. one that includes physical, biological, social, economic, cultural, historical and political components);
- an open, participatory approach in the planning of proposals;
- consultation with interested and affected parties;
- due consideration of alternative options;
- an attempt to mitigate negative impacts and enhance positive aspects of proposals;
- an attempt to ensure that the 'social costs' of development proposals (those borne by society, rather than the developers) be outweighed by the 'social benefits' (benefits to society as a results of the actions of the developers);
- democratic regard for individual rights and obligations;
- compliance with these principles during all stages of the planning, implementation and decommissioning of the proposals (i.e. from 'cradle to grave'); and
- the opportunity for public and specialist input in the decision-making process.

The general objectives of Integrated Environmental Management have been taken into account in this Basic Assessment report by means of identifying, predicting and evaluating the actual and potential impacts on the environment, socio-economic conditions and cultural considerations and cultural heritage component. The risks, consequences, alternatives as well as options for mitigation of activities have also been considered with a view to minimise negative impacts, enhance benefits and promote compliance within the principles of environmental management.

Additionally the Basic Assessment process will be undertaken to ensure I&APs have been afforded the opportunity to comment on the proposed activity and that their comments/inputs/concerns will be taken into consideration during the assessment process.

## 5.2.7 The principles of environmental management as set out in Section 2 of NEMA

The principles of NEMA have been considered in this assessment through compliance with the requirements of the relevant legislation in undertaking the assessment of potential impacts, as well as through the implementation of the principle of sustainable development.

This process will be undertaken in a transparent manner and all efforts will be made to involve interested and affected parties, stakeholders and relevant Organs of State such that an informed decision can be made by the Regulating Authority.

**The following aspects have been dealt with:**

### SCHEDULE

Actions	Timeframe
1 Communication with authorities and source and analyse relevant baseline information and undertake site inspections	3 days
2 Compile Environmental Application Form for the project	2 days
3 Compile an <i>information requirements list</i> to be distributed to the project team. The Information required would assist with completion of the BAR.	2 days
4 Identify key interested and affected parties (I&APs)	1 day
5 Compilation of terms of reference for specialist studies	2 days
6 Commission specialist studies	1 day

7 Compile draft BAR and make available to the public for a 30 day commenting period and submit the application form to the competent authority.  <b>NB: According to the new Regulations a BAR must be submitted 90 days after the application has been submitted. The implication is that all information must be available within 80 days after submitting the Application.</b>	3 days for compilation and 30 days for commenting period (The competent authority has 90 days to request additional information or to refuse the application, from the date of submission)
8 Prepare an Information Sheet (summary of the draft BAR) and distribute to I&APs	1 day
9 Compile and publish media notices (for the BAR) in relevant newspapers	7 – 10 days depending on the day the newspaper is published
10 Compile and place poster/s along the boundary of the site	1 day
11 Hold a public meeting / Open House / focus meeting with I&APs	1 day
12 Receive and address first round of comments from public	3 days
13 Should the draft BAR require substantial changes, these changes will be incorporated into the draft BAR and distributed	Included above (allow an additional 50 days to include #14 below)
14 Allow the identified public to provide comment within a 30 day period on above report.	3 days for compilation and 30 days for commenting period (Competent authority has an additional 50 days)
15 Address comments received on the draft BAR, Finalise BAR and update comments and response table; finalise Basic Assessment Report and submit to authorities	5 days
16 Submit final BAR to authorities for a final decision	1 day, The department has 107 days from the date of receipt to review and come to a final decision.
17 Once the decision is issued, all I&Ps must be formally informed of the decision	20 days
<b>TOTAL AMOUNT OF DAYS:</b>	<b>197 days</b>

## 6. NEED AND DESIRIBILITY

With 597 000 people, the Rustenburg Local Municipality housed 1.1% of South Africa's total population in 2014. Between 2004 and 2014 the population growth averaged 3.11% per annum which is more than double than the growth rate of South Africa as a whole (1.34%). Compared to Bojanala's average annual growth rate (2.26%), the growth rate in Rustenburg's population at 3.11% was slightly higher than that of the district municipality.

The population pyramid reflects a projected change in the structure of the population from 2014 and 2019. The differences can be explained as follows:

- In 2014, there is a significantly larger share of young working age people between 20 and 34 (32.1%), compared to what is estimated in 2019 (30.4%). This age category of young working age population will decrease over time.
- The fertility rate in 2019 is estimated to be slightly higher compared to that experienced in 2014.
- The share of children between the ages of 0 to 14 years is projected to be slightly larger (25.1%) in 2019 when compared to 2014 (24.5%).

In 2014, there were a total number of 50 200 people unemployed in Rustenburg, which is an increase of 7 350 from 42 900 in 2004. The total number of unemployed people within Rustenburg constitutes 35.14% of the total number of unemployed people in Bojanala District Municipality. The Rustenburg Local Municipality experienced an average annual increase of 1.59% in the number of unemployed people, which is worse than that of the Bojanala District Municipality which had an average annual increase in unemployment of 0.67%.

Rustenburg Local Municipality had a total number of 61 500 (29.07% of total households) very formal dwelling units, a total of 83 800 (39.60% of total households) formal dwelling units and a total number of 64 200 (30.35% of total households) informal dwelling units.

The planning practices of the past have resulted in sprawling urban areas that are un-economical. Today, planning policies are transformed to mainly encourage infill development on vacant land within the urban environment, in order to combat urban sprawl. The proposed development falls in line with these principals, as it is located within the urban area and is surrounded by urban development.

In terms of current policy directives, the main development strategy for residential development should be based on the objectives of the Breaking New Ground Principles (BNG) for sustainable human settlements which can be summarised as follows:

- To ensure that sustainable housing development takes place.
- To integrate housing with other municipal services in order to establish sustainable human settlements, in support of spatial restructuring.
- To coordinate municipal departments in order to work together in planning and implementing.
- To promote middle and high income housing which will in turn generate resources to improve low income areas.
- To promote environmental and energy efficient housing

The new "Human Settlements Plan" promotes the achievement of a non-racial, integrated society through the development of sustainable human settlements and quality housing. Housing is to be utilized for the development of sustainable human settlements in support of spatial restructuring.

The aim is to move beyond the provision of basic shelter towards achieving the broader vision of sustainable human settlements and more efficient towns, cities and regions. The following factors will be taken into consideration in order to achieve this vision:

- Progressive Informal Settlement Eradication: These settlements must be integrated into the broader urban setup so as to overcome spatial, social and economic exclusion. The plan encourages the eradication of informal settlements through in-situ upgrading in desired locations coupled with the relocation of households where development is not possible or desirable.
- Promoting Densification and Integration: The aim is to integrate previously excluded groups into the city so as to enable them to enjoy the benefits it offers and to create more integrated, functional and environmentally sustainable human settlements, towns and cities.
- Enhancing Spatial Planning: Greater co-ordination and alignment of various planning instruments and economic policies lies at the heart of sustainable human settlements. This requires more than mere co-ordination between departments but there needs to be a single overarching planning authority and/or instrument to provide macro-level guidance to support the development of sustainable human settlements.

- Enhancing the location of New Housing Projects: The location of past housing projects was said to reinforce apartheid spatial settlement patterns. Spatial restructuring aims to achieve a more decisive intervention in land markets. The following interventions are envisaged viz. accessing well located state-owned and parastatal land: acquisition of well-located private land for housing development, funding for land acquisition and fiscal incentives.
- Supporting Urban Renewal and Inner City Regeneration: Urban renewal and inner city regeneration often result in the current inhabitants being excluded as a result of the construction of dwelling units they cannot afford. Some municipalities are trying to avoid this by promoting affordable inner city housing. The "Human Settlements Plan" will support this by encouraging social housing.
- Developing Social and Economic Infrastructure: The need to move away from a housing-only approach towards a more holistic development of human settlements which includes the provision of social and economic infrastructure is emphasized.
- Enhancing the Housing Product: The aim is to develop more appropriate settlement layouts and housing products and to ensure appropriate housing quality

Consistent with national priorities, environmental authorities must support *"increased economic growth and promote social inclusion"*, whilst ensuring that such growth is *"ecologically sustainable"*. In the National Spatial Development Perspective (NSDP) it is highlighted that, to achieve the goal of stimulating sustainable economic activities and to create long-term employment opportunities, it is required that spending on economic infrastructure is focused in priority areas with potential for economic development, with development to serve the broader societies' needs equitably

The Developer has identified the need for the establishment of a proper integrated human settlement that will not only address the short-term need for residential erven to address the immediate housing backlog, but to also provide erven for the development over the short-medium term in order to eradicate informal occupation of land. This project will also allow for the development of various housing typologies to accommodate the housing needs experienced within the Rustenburg urban area. The proposed township will also be linked to the economic activities offered within the Rustenburg urban area.

During the construction phase, temporary employment will be created. The increased employment in the area during the construction phase will also result in increased expenditure, which, in addition, will mean that more than just the proposed jobs required for the construction on the site will be created due to economic spin-offs that will result. Due to the nature of the proposed development it will lead to an increase in employment opportunities in the operational phase and will contribute to the broadening of the income base and alleviation of poverty within the Local Municipality.

## 7. ALTERNATIVES

One of the objectives of the Basic Assessment process is to investigate alternatives to the proposed project. The IEM procedure stipulates that the environmental investigation needs to consider feasible alternatives for any proposed development. Therefore, a number of possible proposals or alternatives for accomplishing the same objectives should be identified and investigated. In order to ensure that the proposed development enables sustainable development, feasible alternatives must be explored (S. Cliff, 2015).

The identification, description, evaluation and comparison of alternatives are important for ensuring a sound environmental scoping process. Alternatives should be considered as a norm within the Environmental Process (S. Cliff, 2015).

The alternatives considered for the proposed development includes land use alternatives (including the No-go option). The various alternatives that will be assessed is in terms of environmental, social and technical feasibility.

## 7.1 Land Use Alternatives

### 7.1.1 Mixed land Use Township (Alternative 1)

Alternative Site layout have been developed for the proposed development.

The appointed Town and Regional planner have produced the proposed layout plan.

The proposed township will comprise the following:

Proposed Zoning	Proposed Land use	No. of Erven	Area in hectares
<b>Residential 1</b>	Residential Stands (Average 450m <sup>2</sup> – 500m <sup>2</sup> )	122	6.1242 ha
	Residential Stands (Average 800m <sup>2</sup> )	46	3.9967 ha
<b>Residential 2</b>	40 Dwelling Units / hectare Height 4 storeys. Dwelling Units / Retirement village	8	10.7619ha
<b>Business 1 Proposed</b>	Business (proposed)	3	2.6765 ha
<b>Business 1 Existing structures on Erf 2</b>	Business (existing erf) (Erf 2)	1	0.3634 ha
<b>Special</b>	Private road, access and access control	2	2.4638 ha
<b>Special</b>	Private Open space	3	0.9780 ha
<b>Special</b>	Municipal Use	1	0.0674 ha
<b>Public Open Space</b>	Park	2	0.2755 ha
<b>Existing public roads</b>			4.4110 ha
<b>TOTAL</b>			32.1184 ha

Although the emphasis is on housing, complimentary land uses have been included in the township. People want easy access to job opportunities, shops, schools, banking facilities, clinics, etc. and want their living environment to be placed at strategic positions with good access routes in close proximity to these amenities.

A mixed land use development is *socially responsible* based on the following:

- It covers the mixed and lower income bracket by providing a higher density housing option;
- The development will inevitably support the use of public transport;
- The development will include supporting social infrastructure as well as retail and commercial activities;
- The layout of the development must respond to the future road planning for the area, to facilitate and maximise pedestrianisation and public transport.

- Commercial erven can accommodate a shopping centre, to service the existing formalised settlements in the area. The commercial node will:
  - Promote entrepreneurial services and products;
  - Be within walking distance to places of refreshment and trade for residents;
  - Provide Job opportunities; and
  - Improve neighbourhood quality.

### **7.1.2 Single land use: Housing only (Alternative 2)**

By providing only one land use type (i.e., housing), mixed income development and social integration across race and income levels, cannot be achieved.

The business on site serves as a range of essential services that can be obtained by people living in its vicinity. In turn, the business nodes act as a pool of human and physical resources from which the inputs necessary for development can be distributed efficiently, and from which a community can draw to promote their development.

By restricting a township to one land use only, the above benefits to the local community, and subsequent council area, cannot be realised, and hence, is not a preferred land use option.

### **7.1.3 No-go Alternative**

The only other alternative that exists for the proposed development is the “no-go” option which will imply that the status quo will prevail. This is unacceptable, as other land parcels will have to be sourced to provide for this need within the community. This will imply that the development will not take place and will result in urban sprawl.



## 8. DESCRIPTION OF THE ENVIRONMENT THAT MAY BE AFFECTED BY THE PROJECT

### 8.1 BIO-PHYSICAL ASPECTS

#### 8.1.1 GEOLOGY & SOILS

The site is underlain by Kroondal Norite of the Rustenburg Layered Suite, Bushveld Complex, which is covered by recent sandy soil. Surficial recent soil cover or deposits include the colluvium and alluvium covering the lithology.

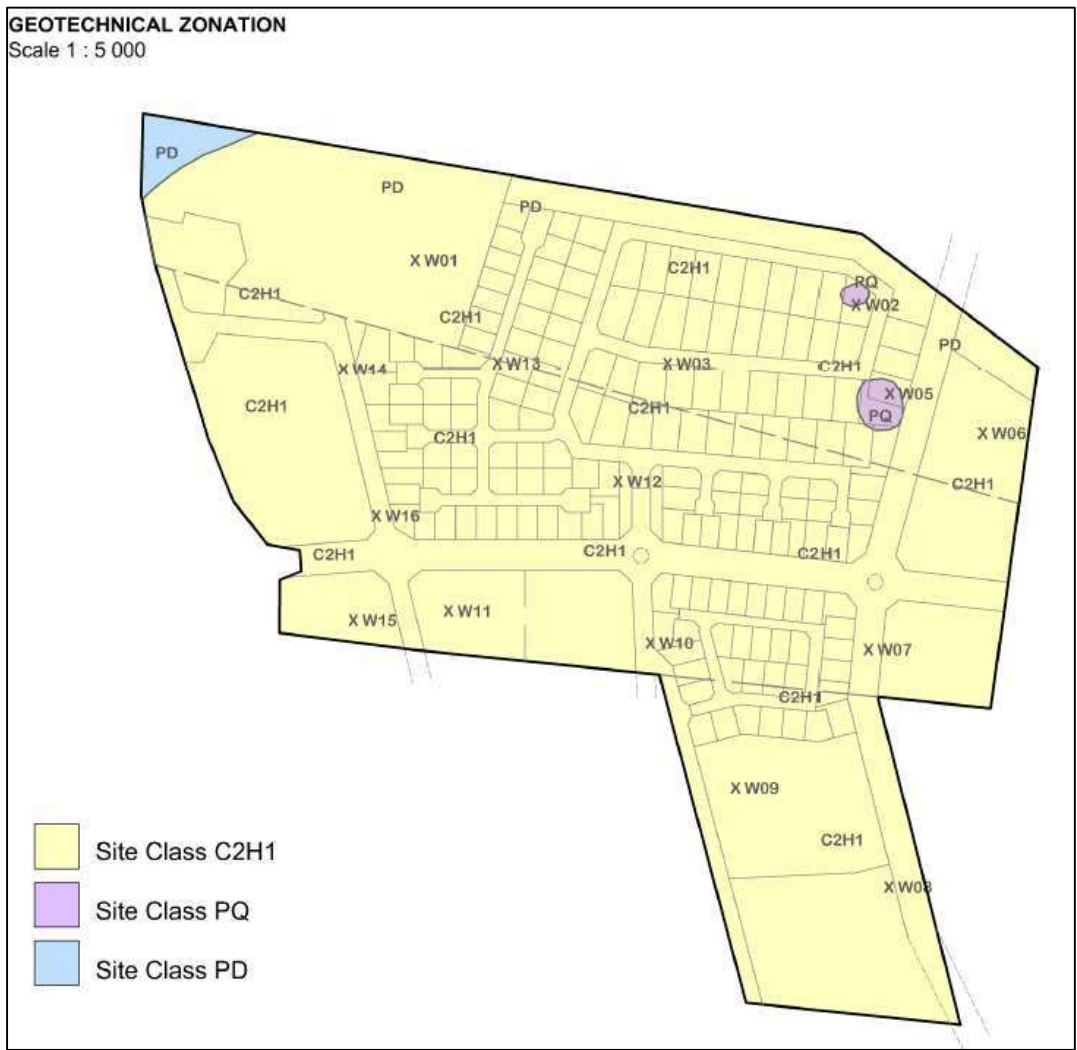
No dolomite occurs in the area and no stability investigation is required (the necessity is usually determined by the Council for Geoscience).

Based on the results of the Geotechnical Investigation, the development area was divided into the following Geotechnical Zones:

#### Geotechnical Zonation with Site Class Designation

	Site Class	Description
Special Development	Site Class C2H1	Hillwash comprising highly collapsible and compressible soil with thickness in excess of 0,75m, with more than 10mm movement measured at surface, underlain by highly weathered norite characterizes this zone and the majority of the site. Foundations will therefore require special foundation techniques such as proper compaction techniques and lightly reinforced strip footings with articulation joints at all internal and external doors and openings with light reinforcement (brickforce) in masonry or even soil replacement by an engineered fill soil raft with G5 quality or better or even stiffened strip footings or stiffened or cellular rafts with articulation joints or solid lightly reinforced masonry. Site drainage and plumbing and service precautions must be used. It is classified as C2H1 in terms of the SAIEG & NHBRC guidelines (1995) or the SAICE Code of practice (1995).
	Site Class PQ	Backfilled areas and waste dumps need to be rehabilitated by using a G5 quality material or better and compacted to suit engineer's specification before construction can take place.
Undevelopable	Site Class PD/H2	Areas within the 1:50 year flood line can be reduced by installing a drainage channel, but development should take place outside these areas or at least 32m from the centre of the river. The highly expansive clay is also associated with these areas with an expected range of up to 30 mm of total soil movement measured at surface, with foundation solutions including stiffened or cellular rafts, piled construction or soil replacement with a soil raft.

The geotechnical problems encountered will require modified normal to special foundation techniques and construction, and proper standard compaction techniques and drainage is required.



**Figure 9: Geotechnical Zoning**

**8.1.2 TOPOGRAPHY**

The site is located on a shallow slope towards the east towards the Hex River. It is situated at between 1163 and 1175 metres above mean sea level. No rocky ridges are present at the site. A detailed site survey has been carried out to establish levels. The Layout plan will address issues regarding storm water. As the proposed development will be in close proximity to residential areas, safety of children and people need to be taken into consideration.

**8.1.3 CLIMATE**

The Rustenburg region is characterized by summer rainfall with thunderstorms, with annual rainfall figures of 685 mm (Agriculture) and 703 mm (Buffelspoort) recorded at the closest weather stations to the site. Winters are dry with frost common. The warmest months are normally December and January and the coldest months are June and July. Extreme climatic events may have an influence on the project during the construction and operation phase and will have to be considered.

Month	Rainfall (mm)	Min temp (°C)	Max temp (°C)	Average frost dates
Jan	109.9	16.6	29.8	Start date: 24/05 End date: 38/8 Days with frost: 32
Feb	89.7	16.3	29.2	
Mar	76.6	14.5	28.2	
Apr	40.2	10.7	25.7	<b>Heat units (hrs &gt; 10°C)</b> Summer (Oct-Mar): 2213  Winter (Apr-Sept): 796
May	18.0	5.6	23.0	
Jun	6.5	2.0	20.4	
Jul	6.2	1.8	20.8	
Aug	6.5	4.0	23.6	
Sep	14.2	8.6	27.0	
Oct	51.9	12.7	28.8	
Nov	97.1	14.6	28.7	
Dec	102.2	15.8	29.4	
<b>Year</b>	<b>619.0 mm</b>	<b>18.2°C (Average)</b>		

### Climate Data

The variability of rainfall as well as high intensity events can influence the project. Prolonged wet spells may affect the proposed development as excess water may accumulate on uneven portions. During extremely dry spells, the possibility of dust generation, as well as the detrimental effects on vegetation, will have to be taken into consideration. Droughts occur as part of the long-term climatic cycles throughout the country.

The influence of temperature on the project is considered as very low and of very little significance, whilst the project cannot influence this variable. This variable will only play a minor role during the different phases of the project. Because extremely high temperatures may occur, (mostly during dry spells) the adverse effects due to temperature will be negative in relation to the project; however, the general nature of the average conditions will on the other hand be positive. The impacts should therefore be considered as “variable”. It is important to ensure proper management steps are taken in the different phases of the project. The influence of the environment on the project during these phases is considered positive, as extreme events are

### Wind

The average wind direction for the area during the summer months is from the north-to-north-easterly quadrant, while during the early spring the direction is more north-westerly. Southerly winds may occur during the winter, but are not frequent. Normally very little wind is experienced during the winter due to the presence of the high-pressure cell situated over the central part of the country during that time of the year.

The wind speeds are normally fairly low, but high wind speeds may occur during early spring and during the passing of thundershowers.

### Climate Change

According to: WIREs Climate Change 2014, 5605-620. Doi:10.1002/wcc.295: “Climate change is a key concern within South Africa. Mean annual temperatures have increased by at least 1.5 times the observed global average of 0.65°C over the past five decades and extreme rainfall events have increased in frequency. These changes are likely to continue. Climate change poses a significant threat to South Africa’s water resources, food security, health, infrastructure, as well as its ecosystem services and biodiversity. Considering South Africa’s high levels of poverty and inequality, these impacts pose critical challenges for national development. In relation to water, impact studies for the water resources sector have begun to look beyond changes in streamflow to changes in the timing of flows and the partitioning of streamflow into base flows and

stormflows, reservoir yields, and extreme hydrological events. Spatially the eastern seaboard and central interior of the country are likely to experience increases in water runoff. Higher frequencies of flooding and drought events are projected for the future. Complexities of the hydrological cycle, influences of land use and management and the linkages to society, health, and the economy indicate far higher levels of complexity in the water resources sector than in other sectors. What has emerged is that land uses that currently have significant impacts on catchment water resources will place proportionally greater demands on the catchment's water resources if the climate were to become drier. The influence of climate change on water quality is an emerging research field in South Africa, with assessments limited to water temperature and non-point source nitrogen and phosphorus movement. A critical interaction that has not been explored is between changes in water quality and quantity and the combined impacts, such changes might have impact on various types of water use, e.g., irrigation, domestic consumption, or aquatic ecosystems support”.

#### 8.1.4 SURFACE DRAINAGE, WETLANDS AND RIPARIAN ZONES

Plate flow is the dominant drainage pattern on site, and no drainage channel intersects the site. Drainage occurs in an easterly direction towards the Hex River, then northwards towards the Bospoort Dam and eventually into the Crocodile River.

Wetlands are defined by the National Water Act (Act 36 of 1998) as: “land which is transitional between terrestrial and aquatic ecosystems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil”. Wetlands such as floodplain wetlands, channelled valley-bottom wetlands, unchannelled valley-bottom wetlands, depressions, seeps and wetland flats appear to be absent at the site. No wetlands are found at the site. A non-perennial river, including its narrow active channel and riparian zone, is present at the site.

Riparian vegetation at the site is ecologically disturbed but contains a number of indigenous plant species. Indigenous graminoid species at the riparian zone include the rush *Juncus oxycarpus*, the reed *Phragmites mauritianus* and the grass species *Imperata cylindrica*. Conspicuous indigenous tree species at the riparian zone are *Ziziphus mucronata* and *Combretum erythrophyllum*. Some bush encroachment by *Asparagus laricinus* occur along the riparian zone. Alien invasive trees *Melia azedarach* and *Morus alba* are present at the riparian zone. Various alien invasive heraceous plant species such as listed for the terrestrial zone are also present at the riparian zone. The alien invasive shrub *Cestrum laevigatum* is also visible at some parts of the riparian zone.

Conspicuous current disturbances at the active channel and riparian zone at the site are

- 1) infestation by alien invasive plant species in particular *Melia azedarach* (Syringa Berrytree) and
- 2) possible sedimentation from the roadside.

Present ecological status (PES) of the Non-perennial River at the site is CATEGORY C which means the watercourse is moderately modified but with some loss of natural habitats. Ecological Importance and Sensitivity (EIS) at the site is Category B which is High and refers to watercourses that are considered to be ecologically important and sensitive. The biodiversity of these floodplains may be sensitive to flow and habitat modifications. They play a role in moderating the quantity and quality of water of the major rivers.

Site is part of the Crocodile (West) and Marico Water Management Area (WMA 3). The site is part of a River Freshwater Ecosystem Priority Area (River FEPA) (Nel *et al.*, 2011a, 2011b). The stream network in the catchment therefore need to be managed in a way that maintains a good condition of the river reach (Nel *et al.*, 2011). The River FEPA status also means that it is important to apply clearing of invasive alien plants and/or rehabilitation of river banks.




No Threatened or Near Threatened wetland plant or wetland animal species or any other wetland plant or wetland animal species of particular conservation concern appear to be resident at the site.

The non-perennial river, including its riparian zone and buffer zone, should be viewed as an important conservation corridor in the larger area.

Given the likely absence of sensitive species as well as the location, setting and current ecological status of the site a 10 m buffer zone from the edge of the riparian zone is strongly recommended as a practical buffer zone for the conservation of the non-perennial river and riparian zone at the site



**Figure 10: Indication of Non-perennial River (active channel, riparian zone, buffer zone) that enters the north-western corner of the site as well as running outside the northern boundary of the site.**

- |   |                           |                                     |
|---|---------------------------|-------------------------------------|
|  | Light blue outline        | Route of active channel at the site |
|  | Green outline and shading | Riparian zone                       |
|  | Orange outline            | Outer edge of buffer zone           |

### 8.1.5 GROUND WATER

The permanent water table on site is deeper than 1,5m below ground surface. Evidence in the form of nodular ferricrete indicates that a seasonal perched water table may occur within the hillwash. Although no seepage towards the Hex River was encountered, the presence of ferricrete and perennial fluctuations of ground water are expected on site, indicating that a seasonal perched water table may exist.

Storm water diversion measures such as ponding pools are recommended to control peak flows during thunderstorms. All embankments must be adequately compacted and planted with grass to stop any excessive erosion and scouring of the landscape. Special care must be taken to ensure adequate surface drainage to prevent the accumulation of water next to structures.

Possible infiltration into the groundwater must be taken into account. During the construction phase, no spills of lubricants or construction worker sewage should be allowed to pollute the ground water. These aspects are addressed in the EMPr.

### 8.1.6 FLORA AND FAUNA

The site is situated at the Savanna Biome. The Savanna Biome at the site is represented by Moot Plains Bushveld (Mucina & Rutherford, 2006). A brief overview of the vegetation type, which serves as an outline of the ecological context of the site, follows.

#### SVcb 8 Moot Plains Bushveld

In South Africa Moot Plains Bushveld is found in North-West and Gauteng Provinces. Main belt of this vegetation type occurs immediately south of the Magaliesberg from the Selons River Valley in the West through Maanhaarrand, filling the valley bottom of the Magalies River, proceeding east of the Hartebeestpoort Dam between the Magaliesberg and Daspoort mountain ranges to Pretoria. It also occurs as a narrow belt immediately north of the Magaliesberg from Rustenburg in the west to just east of the Crocodile River in the east; also south of the Swartruggens-Zeerust line. Altitude at this vegetation type is typically about 1050-1450 m.

Vegetation and landscape features comprise open to closed, low, often thorny savanna dominated by various species of *Acacia* in the bottomlands and plains as well as woodlands of varying height and density on the lower hillsides. Herbaceous layer is dominated by grasses (Mucina & Rutherford, 2009).

Geology and soils at the Moot Plains Vegetation type are clastic sediments and minor carbonates and volcanics of the Pretoria Group (including the Silverton Formation) and some Malmani dolomites in the west, all of the Transvaal Supergroup (Vaalian). There is also some contribution from mafic Bushveld intrusives. Soils often stony with colluvial clay-loam but varied, including red-yellow apedal freely drained, dystrophic and eutrophic catenas, vertic and melanic clays, and some less typical Glenrosa and Mispah forms. Land types Ae, Ba, Ea, Bc, Ac and less typically Fb (Mucina & Rutherford, 2006).

Climate: Summer rainfall with very dry winters. Mean annual precipitation (MAP) from about 550 mm in the west to about 700 mm in the east. Frost frequent in winter. Mean monthly maximum and minimum temperatures for Pretoria-Pur 33.6°C and -3.6°C for January and June respectively (Mucina & Rutherford, 2006).

Important taxa: Small trees: *Acacia nilotica*, *Acacia tortilis* subsp. *heteracantha*, *Searsia lancea*. Tall shrubs: *Buddleja saligna*, *Euclea undulata*, *Olea europaea* subsp. *africana*, *Grewia occidentalis*, *Gymnosporia polyacantha*, *Mystroxydon aethiopicum* subsp. *burkeanum*. Low shrubs: *Aptosimum elongatum*, *Felicia fascicularis*, *Lantana rugosa*, *Teucrium trifidum*. Succulent shrub: *Kalanchoe paniculata*. Woody Climber: *Jasminum breviflorum*. Herbaceous



climber: *Lotononis bainesii*. Graminoids: *Heteropogon contortus*, *Setaria sphacelata*, *Themeda triandra*, *Aristida congesta*, *Chloris virgata*, *Cynodon dactylon*, *Sporobolus nitens*, *Tragus racemosus*. Herbs: *Achyroasis avicularis*, *Corchorus asplenifolius*, *Evolvulus alsinoides*, *Helichrysum nudifolium*, *Helichrysum undulatum*, *Hermannia depressa*, *Osteospermum muricatum*, *Phyllanthus maderaspatensis* (Mucina & Rutherford, 2006).

**Note:** Not all of the above listed plant species for the vegetation types occur at the site in the study area.

Buildings, associated gardens and pavings occur at large parts of the site. Roads and tracks are numerous at the site. Conspicuous cover of exotic plant species such as *Eucalyptus* species, *Melia azedarach* (Syringa), *Solanum mauritianum* (Bugweed) and *Pinus* species are found at various parts of the site. Areas that were historically cultivated as orchards, are present at the site. Alien invasive herbaceous weeds are widespread in disturbed areas. Informal dumping occurs in some places.

Terrestrial vegetation at the site is a disturbed savanna with hitherto cleared areas, disturbed areas and clumps of alien invasive trees. Extensive covers of *Eucalyptus camaldulensis* are in particular conspicuous at the site. Alien invasive tree species such as *Melia azedarach* are widespread at the site. Some indigenous tree species such as *Vachellia karroo*, *Ziziphus mucronata* and *Searsia lancea* are conserved at the site. Conspicuous exotic weeds at the site are *Flaveria bidentis*, *Tagetes minuta* (Khaki Weed), *Bidens bipinnata* (Black Jack), *Conyza bonariensis* (Flea Bane) and *Datura* (Thorn-apples) as well as shrubs such as *Solanum mauritianum* (Bugweed).

No rocky ridges appear to be present at the site. Wetlands are absent at the site.

No Threatened or Near Threatened plant or animal species or any other plant or animal species of particular conservation concern appear to be resident at the site. There is little scope for the site to be part of a corridor of particular conservation importance. The non-perennial river, including its riparian zone and buffer zone, which is north of the site, should be viewed as an important conservation corridor in the larger area. Given the likely absence of sensitive species as well as the location, setting and current ecological status of the site a 10 m buffer zone from the edge of the riparian zone is recommended as a practical buffer zone for the conservation of the non-perennial river and riparian zone at the site.




Ecological sensitivity at the site is low at some more developed parts and medium at the remainder. Following the mitigations which will be upheld and planned footprint for development all the impact risks are moderate or low. An opportunity presents itself to cultivate indigenous plant species at the site

Please see Figure 11 for a sensitivity map generated by the Specialist.





**FIGURE 10: INDICATIONS OF ECOLOGICAL SENSITIVITY AT THE SITE.**

- |   |                                  |                        |
|---|----------------------------------|------------------------|
|  | Red outline                      | Boundaries of the site |
|  | Light yellow outline and shading | Low Sensitivity        |
|  | Orange outline and shading       | Medium Sensitivity     |

**Habitat and vegetation characteristics (Reference to Tables listed in this section refers to the Fauna and Flora Habitat Report. Appendix B of this Report.)**

**Plants**

Extinct, threatened, near threatened and other plant species of high conservation priority in North West Province are listed in Tables 4.2 – 4.8. Protected tree species are listed in Table 4.9. The presence or not of all the species listed in the tables were investigated during the survey. None of the Threatened, Near Threatened plant species or any other plant species of particular conservation concern appear to be present at the site.

## **Vertebrates**

### **Mammals**

Table 4.10, Table 4.11 and Table 4.12 list the possible presence or absence of threatened mammal species, near threatened mammal species and mammal species of which the status is uncertain, respectively, at the site. Literature sources that were used are Friedman & Daly (2004), Skinner & Chimimba (2005) and Child *et al.* (2017). Since the site falls outside reserves, threatened species such as the black rhinoceros (*Diceros bicornis*) and the African wild dog (*Lycaon pictus*) are obviously not present. No smaller mammals of particular high conservation significance are likely to be found on the site as well.

### **Birds**

Table 4.13 and Table 4.14 list the possible presence or absence of threatened bird species and near threatened bird species at the site. With bird species which often have a large distributional range, their presence does not imply that they are particularly dependent on a site as breeding location. Therefore, the emphasis in the right-hand columns of Table 4.12 and Table 4.13 are on the particular likely dependence or not of bird species on the site. Literature sources that were mainly consulted are Barnes (2000), Hockey, Dean & Ryan (2005) and Chittenden *et al.* (2016). No threat to any threatened bird species or any bird species of particular conservation importance are foreseen.

### **Reptiles**

Table 4.15 and Table 4.16 list the possible presence or absence of Threatened and Near Threatened reptile species on the site. Main Source used for the conservation status and identification of reptiles are Bates, Branch, Bauer, Burger, Marais, Alexander & de Villiers (2014). Alexander & Marais (2007) as well as Tolley & Burger (2007) give useful indications of distributions, habitats and identification of the reptile species. There appears to be no threat to any reptile species of particular high conservation importance if the site is developed.

### **Amphibians**

No frog species that occur in the North West are listed as Threatened species (Vulnerable, Endangered or Critically Endangered) or Near Threatened species according to IUCN Amphibian Specialist Group (2013). Table 4.17 lists *Pyxicephalus adspersus* (Giant Bullfrog) as Least Concern globally. According to the Biodiversity Management Directorate of GDARD (Gauteng Department of Agriculture and Rural Development) (2014) there are no amphibians in Gauteng that qualify for red listed status (red listed here indicates a category of special conservation concern such as threatened or near threatened). Suitable habitat for Giant Bullfrog at site appears to be absent.

## **Invertebrates**

### **Butterflies**

Studies about the vegetation and habitat of threatened butterfly species in South Africa showed that ecosystems with a unique combination of features are selected by these often localised threatened butterfly species (Deutschländer and Bredenkamp 1999; Edge 2002, 2005; Terblanche, Morgenthal & Cilliers 2003; Lubke, Hoare, Victor & Ketelaar 2003; Edge, Cilliers & Terblanche, 2008). Threatened butterfly species in South Africa can then be regarded as bio-indicators of rare ecosystems.

Four species of butterfly in Gauteng Province and North West Province combined are listed as threatened in the recent butterfly conservation assessment of South Africa (Mecenero *et al.*, 2013). The expected presence or not of these threatened butterfly species as well as species of high conservation priority that are not threatened, at the site (Table 4.18 and Table 4.19) follows.

## **Assessment of threatened butterfly species**

### ***Aloeides dentatis dentatis* (Roodepoort Copper)**

The proposed global red list status for *Aloeides dentatis dentatis* according to the most recent IUCN criteria and categories is Endangered (Mecenero *et al.*, 2013). *Aloeides dentatis dentatis* colonies are found where one of its host plants *Hermannia depressa* or *Lotononis eriantha* is present. Larval ant association is with *Lepisiota capensis* (S.F. Henning 1983; S.F. Henning & G.A. Henning 1989). The habitat requirements of *Aloeides dentatis dentatis* are complex and not fully understood yet. See Deutschländer and Bredenkamp (1999) for the description of the vegetation and habitat characteristics of one locality of *Aloeides dentatis* subsp. *dentatis* at Ruimsig, Roodepoort, Gauteng Province. There is not an ideal habitat of *Aloeides dentatis* subsp. *dentatis* on the site and it is unlikely that the butterfly is present at the site.

### ***Chrysoritis aureus* (Golden Opal/ Heidelberg Copper)**

The proposed global red list status for *Chrysoritis aureus* according to the most recent IUCN criteria and categories is Endangered (Mecenero *et al.*, 2013) *Chrysoritis aureus* (Golden Opal/ Heidelberg Copper) is a resident where the larval host plant, *Clusia pulchella* is present. However, the distribution of the butterfly is much more restricted than that of the larval host plant (S.F. Henning 1983; Terblanche, Morgenthal & Cilliers 2003). One of the reasons for the localised distribution of *Chrysoritis aureus* is that a specific host ant *Crematogaster liengmei* must also be present at the habitat. Fire appears to be an essential factor for the maintenance of suitable habitat (Terblanche, Morgenthal & Cilliers 2003). Research revealed that *Chrysoritis aureus* (Golden Opal/ Heidelberg Copper) has very specific habitat requirements, which include rocky ridges with a steep slope and a southern aspect (Terblanche, Morgenthal & Cilliers 2003). Owing to a lack of habitat requirements and ideal habitat the presence of the taxon is highly unlikely.

### ***Lepidochrysops praeterita* (Highveld Blue)**

The proposed global red list status for *Lepidochrysops praeterita* according to the most recent IUCN criteria and categories is Endangered (G.A. Henning, Terblanche & Ball, 2009; Mecenero *et al.*, 2013). *Lepidochrysops praeterita* is a butterfly that occurs where the larval host plant *Ocimum obovatum* (= *Becium obovatum*) is present (Pringle, G.A. Henning & Ball, 1994), but the distribution of the butterfly is much more restricted than the distribution of the host plant. *Lepidochrysops praeterita* is found on selected rocky ridges and rocky hillsides in parts of Gauteng, the extreme northern Free State and the south-eastern Gauteng Province. No ideal habitat appears to be present for the butterfly on the site. It is unlikely that *Lepidochrysops praeterita* would be present on the site and at the footprint proposed for the development.

### ***Orachrysops mijburghi* (Mijburgh's Blue)**

The proposed global red status for *Orachrysops mijburghi* according to the most recent IUCN criteria and categories is Endangered (Mecenero *et al.*, 2013). *Orachrysops mijburghi* favours grassland depressions where specific *Indigofera* plant species occur (Terblanche & Edge 2007). The Heilbron population of *Orachrysops mijburghi* in the Free State uses *Indigofera evansiana* as a larval host plant (Edge, 2005) while the Suikerbosrand population in Gauteng uses *Indigofera dimidiata* as a larval host plant (Terblanche & Edge 2007). There is no suitable habitat for *Orachrysops mijburghi* on the site and it is unlikely that *Orachrysops mijburghi* would be present on the site.

## **Conclusion on threatened butterfly species**

There appears to be no threat to any threatened butterfly species if the site is developed.

## **Assessment of butterfly species that are not threatened but also of high conservation priority**

### ***Colotis celimene amina* (Lilac tip)**

*Colotis celimene amina* is listed as Rare (Low density) by Mecenero *et al.* (2013). In South Africa *Colotis celimene amina* is present from Pietermaritzburg in the south and northwards into parts of Kwa-Zulu Natal,

Gauteng, Limpopo, Mpumalanga and the North West Provinces (Mecenero *et al.* In press.). Reasons for its rarity are poorly understood. It is highly unlikely that *Colotis celimene amina* would be resident at the site.

#### ***Lepidochrysops procera* (Savanna Blue)**

*Lepidochrysops procera* is listed as Rare (Habitat specialist) by Mecenero *et al.* (2013). *Lepidochrysops procera* is endemic to South Africa and found in Gauteng, KwaZulu-Natal, Mpumalanga and North West (Mecenero *et al.*, 2013). Owing to a lack of habitat requirements and ideal habitat the presence of the taxon at the site is highly unlikely.

#### ***Metisella meninx* (Marsh Sylph)**

Henning and Henning (1989) in the first South African Red Data Book of Butterflies, listed *Metisella meninx* as threatened under the former IUCN category Indeterminate. Even earlier in the 20<sup>th</sup> century Swanepoel (1953) raised concern about vanishing wetlands leading to habitat loss and loss of populations of *Metisella meninx*. According to the second South African Red Data Book of butterflies (Henning, Terblanche & Ball, 2009) the proposed global red list status of *Metisella meninx* has been Vulnerable. During a recent large scale atlassing project the *Conservation Assessment of Butterflies of South Africa, Lesotho and Swaziland: Red List and Atlas* (Mecenero *et al.*, 2013) it was found that more *Metisella meninx* populations are present than thought before. Based on this valid new information, the conservation status of *Metisella meninx* is now regarded as Rare (Habitat specialist) (Mecenero *et al.*, 2013). Though *Metisella meninx* is more widespread and less threatened than perceived before, it should be regarded as a localised rare habitat specialist of conservation priority, which is dependent on wetlands with suitable patches of grass at wetlands (Terblanche In prep.). Another important factor to keep in mind for the conservation of *Metisella meninx* is that based on very recent discoveries of new taxa in the group the present *Metisella meninx* is species complex consisting of at least three taxa (Terblanche In prep., Terblanche & Henning In prep.). The ideal habitat of *Metisella meninx* is treeless marshy areas where *Leersia hexandra* (rice grass) is abundant (Terblanche In prep.). The larval host plant of *Metisella meninx* is wild rice grass, *Leersia hexandra* (G.A. Henning & Roos, 2001). Owing to a lack of habitat requirements and ideal habitat the presence of the taxon at the site is highly unlikely.

#### ***Platylesches dolomitica* (Hilltop Hopper)**

*Platylesches dolomitica* is listed as Rare (Low density) by Mecenero *et al.* (2013). Historically the conservation status of *Platylesches dolomitica* was proposed to be Vulnerable (Henning, Terblanche & Ball 2009). However this butterfly which is easily overlooked and has a wider distribution than perceived before. *Platylesches dolomitica* has a patchy distribution and is found on rocky ledges where *Parinari capensis* occurs, between 1300 m and 1800m (Mecenero *et al.* 2013, Dobson Pers comm.). Owing to a lack of habitat requirements and ideal habitat the presence of the taxon at the site is highly unlikely

#### **Fruit chafer beetles**

Table 4.20 lists the fruit chafer beetle species (Coleoptera: Scarabaeidae: Cetoninae) that are of known high conservation priority in the North West Province. No *Ichneostoma stobbiai* or *Trichocephala brincki* were found during the surveys. There appears to be no suitable habitat for *Ichneostoma stobbiai* or *Trichocephala brincki* at the site. There appears to be no threat to any of the fruit chafer beetles of particular high conservation priority if the site were developed.

#### **Scorpions**

Table 4.21 lists the rock scorpion species (Scorpiones: Ischnuridae) that are of known high conservation priority in the North West Province. None of these rock scorpions have been found at the site and the habitat does not appear to be optimal.

## 8.2 SOCIO ECONOMIC FACTORS

### 8.2.1 SOCIAL AMENITIES

With 597 000 people, the Rustenburg Local Municipality housed 1.1% of South Africa's total population in 2014. Between 2004 and 2014 the population growth averaged 3.11% per annum which is more than double than the growth rate of South Africa as a whole (1.34%). Compared to Bojanala's average annual growth rate (2.26%), the growth rate in Rustenburg's population at 3.11% was slightly higher than that of the district municipality.

The population pyramid reflects a projected change in the structure of the population from 2014 and 2019. The differences can be explained as follows:

- In 2014, there is a significantly larger share of young working age people between 20 and 34 (32.1%), compared to what is estimated in 2019 (30.4%). This age category of young working age population will decrease over time.
- The fertility rate in 2019 is estimated to be slightly higher compared to that experienced in 2014.
- The share of children between the ages of 0 to 14 years is projected to be slightly larger (25.1%) in 2019 when compared to 2014 (24.5%).

In 2014, there were a total number of 50 200 people unemployed in Rustenburg, which is an increase of 7 350 from 42 900 in 2004. The total number of unemployed people within Rustenburg constitutes 35.14% of the total number of unemployed people in Bojanala District Municipality. The Rustenburg Local Municipality experienced an average annual increase of 1.59% in the number of unemployed people, which is worse than that of the Bojanala District Municipality which had an average annual increase in unemployment of 0.67%.

Rustenburg Local Municipality had a total number of 61 500 (29.07% of total households) very formal dwelling units, a total of 83 800 (39.60% of total households) formal dwelling units and a total number of 64 200 (30.35% of total households) informal dwelling units.

The planning practices of the past have resulted in sprawling urban areas that are un-economical. Today, planning policies are transformed to mainly encourage infill development on vacant land within the urban environment, in order to combat urban sprawl. The proposed development falls in line with these principals, as it is located within the urban area and is surrounded by urban development.

In terms of current policy directives, the main development strategy for residential development should be based on the objectives of the Breaking New Ground Principles (BNG) for sustainable human settlements which can be summarised as follows:

- To ensure that sustainable housing development takes place.
- To integrate housing with other municipal services in order to establish sustainable human settlements, in support of spatial restructuring.
- To coordinate municipal departments in order to work together in planning and implementing.
- To promote middle and high income housing which will in turn generate resources to improve low income areas.
- To promote environmental and energy efficient housing

The new "Human Settlements Plan" promotes the achievement of a non-racial, integrated society through the development of sustainable human settlements and quality housing. Housing is to be utilized for the development of sustainable human settlements in support of spatial restructuring.

The aim is to move beyond the provision of basic shelter towards achieving the broader vision of sustainable human settlements and more efficient towns, cities and regions. The following factors will be taken into consideration in order to achieve this vision:

- **Progressive Informal Settlement Eradication:** These settlements must be integrated into the broader urban setup so as to overcome spatial, social and economic exclusion. The plan encourages the eradication of informal settlements through in-situ upgrading in desired locations coupled with the relocation of households where development is not possible or desirable.
- **Promoting Densification and Integration:** The aim is to integrate previously excluded groups into the city so as to enable them to enjoy the benefits it offers and to create more integrated, functional and environmentally sustainable human settlements, towns and cities.
- **Enhancing Spatial Planning:** Greater co-ordination and alignment of various planning instruments and economic policies lies at the heart of sustainable human settlements. This requires more than mere co-ordination between departments but there needs to be a single overarching planning authority and/or instrument to provide macro-level guidance to support the development of sustainable human settlements.
- **Enhancing the location of New Housing Projects:** The location of past housing projects was said to reinforce apartheid spatial settlement patterns. Spatial restructuring aims to achieve a more decisive intervention in land markets. The following interventions are envisaged viz. accessing well located state-owned and parastatal land: acquisition of well-located private land for housing development, funding for land acquisition and fiscal incentives.
- **Supporting Urban Renewal and Inner City Regeneration:** Urban renewal and inner city regeneration often result in the current inhabitants being excluded as a result of the construction of dwelling units they cannot afford. Some municipalities are trying to avoid this by promoting affordable inner city housing. The "Human Settlements Plan" will support this by encouraging social housing.
- **Developing Social and Economic Infrastructure:** The need to move away from a housing-only approach towards a more holistic development of human settlements which includes the provision of social and economic infrastructure is emphasized.
- **Enhancing the Housing Product:** The aim is to develop more appropriate settlement layouts and housing products and to ensure appropriate housing quality

Consistent with national priorities, environmental authorities must support "*increased economic growth and promote social inclusion*", whilst ensuring that such growth is "*ecologically sustainable*". In the National Spatial Development Perspective (NSDP) it is highlighted that, to achieve the goal of stimulating sustainable economic activities and to create long-term employment opportunities, it is required that spending on economic infrastructure is focused in priority areas with potential for economic development, with development to serve the broader societies' needs equitably

The Developer has identified the need for the establishment of a proper integrated human settlement that will not only address the short-term need for residential erven to address the immediate housing backlog, but to also provide erven for the development over the short-medium term in order to eradicate informal occupation of land. This project will also allow for the development of various housing typologies to accommodate the housing needs experienced within the Rustenburg urban area. The proposed township will also be linked to the economic activities offered within the Rustenburg urban area.



During the construction phase, temporary employment will be created. The increased employment in the area during the construction phase will also result in increased expenditure, which, in addition, will mean that more than just the proposed jobs required for the construction on the site will be created due to economic spin-offs that will result. Due to the nature of the proposed development it will lead to an increase in employment opportunities in the operational phase and will contribute to the broadening of the income base and alleviation of poverty within the Local Municipality.

## **8.2.2. AIR QUALITY**

*“The extent and toxicity of emissions is not necessarily a concise indicator of contributions to ground-level air pollution concentrations or of risks to health and the environment. Such contributions are also a function of the height of emission, temporal variations in the release of pollutants, and the proximity of the source to the people or the environment affected by exposure to the pollutant (such as, for instance, children, or the elderly, or people who are ill, or others who may be particularly sensitive receptors to a specific pollutant above a certain concentration). If an industry is operating close to a school or hospital or centre for the elderly, the potential exposure (in combination with the other contributing factors) is high.*

*Three factors govern the significance of household fuel-burning emissions:*

- (i) the low level of emissions (that is, their height above the ground is generally about 3 m, within people’s breathing zone);*
- (ii) the simultaneous occurrence of peak emissions (during the coldest months of winter and in the early mornings and throughout the evenings) and poor atmospheric dispersion (stable atmosphere with low wind speeds, with the possible development of temperature inversions); and*
- (iii) the release of such emissions within high human exposure areas, given that such emissions generally occur in dense, low-income settlements where population density is high (in addition, the pollution is not only outdoors, but frequently indoors as well, due to poor ventilation, so it affects the whole family).*

*The significance of vehicle emissions as contributors to air-pollutant concentrations and health risks is similarly increased by the low level (close to the ground) of the emissions, and their proximity to highly populated areas – on highways, for example, with emissions being particularly high when traffic is congested. Vehicle emissions tend to peak early in the morning and in the evenings, when the potential for atmospheric dispersion is reduced (for example, wind speeds are generally low in the early mornings and evenings, reducing their potential for dispersing pollution).*

*Given the high volumes of pollutants emitted from fuel-burning within the industrial and power-generation sectors, their contribution to ambient concentrations and public health risks is often lower than might be expected. This is because these sources are generally characterized by constant releases, relatively high above ground level, and further away from residential settlements than are household fuel-burning and vehicle emissions.*

*Ranking the significance of different sources of pollution on the basis of the total emissions for which each source is responsible would, for example, place industrial emissions above household fuel-burning. If the aim is to reduce impacts on human health, however, then household fuel-burning would need to be targeted as a top priority (Scorgie et al., 2004d).*

*Historically, air pollution control in South Africa has primarily emphasized the implementation of ‘command and control’ measures in the industrial sector. The shift from source-based control, to the management of the air that people breathe, emphasizes the importance of targeting a wider range of sources and using more flexible and varied approaches. It means paying greater attention to ambient air quality, as it is more important (and more cost-effective, in many cases) to make sure that the ambient air complies with air quality standards. This approach ensures that human and environmental health is protected and that the cumulative impact of pollution from a number of sources is addressed.*

*Approaches adopted or considered for future implementation have included: regulation (for example, the use of Atmospheric Emission Licences for Listed Activities); market instruments (such as atmospheric user-charges and pollution taxes); the potential for voluntary agreements, education and awareness raising; and emissions trading. International experience shows*

*that adopting a mix of instruments and interventions is more effective than using a single instrument to improve air quality across various types of source. Although direct regulation remains important in controlling industrial sources, there is evidence that specifying emission limits is more effective than specifying the use of particular technologies, so as to give companies flexibility in selecting the method of achieving success that suits them best. This approach is advocated as being more cost-effective and more likely to stimulate technological advances in pollution control methods and production processes.*

*For large point sources (that is, sources of pollution that are concentrated on one site, but that have large, constant volumes of many types of pollution) that are few in number, instruments such as emissions trading have been advocated as an effective way to manage pollutant emissions and reduce the costs of compliance.*

*Implementing an efficient social protection system to alleviate poverty is central to maintaining conditions that facilitate not only economic growth but also environmental sustainability. Many South African households – including those with access to electricity – use coal, wood, and paraffin, due to the relative cost-effectiveness of such fuels for heating (that is, space heating) and cooking purposes.*

*Many low-cost housing developments and informal settlements are located close to industrial and mining operations, as such land is both available and inexpensive. Poorer communities are more likely to suffer from poor service delivery, including inadequate waste removal that sometimes results in refuse being set alight illegally. These examples show that poverty alleviation could help to improve air quality by enabling people to choose practices that are friendlier to the environment.”*

[https://www.environment.gov.za/sites/default/files/docs/stateofair\\_airqualityand\\_sustainable\\_development.pdf](https://www.environment.gov.za/sites/default/files/docs/stateofair_airqualityand_sustainable_development.pdf) Date visited: 17/03/2020.

The proposed development is planned and will eventually be developed with the above mentioned in mind. The alleviation of poverty (Jobs that will be created).

In addition to the above, it should be noted that the project will however create a certain amount of dust during the construction phase. If proper dust suppression measures are implemented this variable will have very little impact (low in intensity and significance during the construction phase).

### **8.2.3 NOISE**

It is a fact that a certain amount of noise will be generated during the construction phase of the project. Noise levels should however rarely exceed the allowable limits. It is unlikely that the project will create any more noise during the operational phase than that already experienced on site.

### **8.2.4 ARCHAEOLOGY AND CULTURAL SITES**

Background research indicated that there are some cultural heritage sites and features in the larger geographical area within which the study area falls. The assessment of the specific study area did not identify any sites, features or material of cultural heritage (archaeological and/or historical) origin or significance. If any sites did exist here in the past it would have been largely disturbed or destroyed by recent historical agricultural and urban development activities in the study and larger area around it.

Earlier aerial images of the study area (dated to between 2003 & 2022) shows that the study area was used for agricultural activities in the recent past, but that by 2003 already there had been some residential and business developments in it. These developments had expanded slightly between 2003 and 2015, achieving basically the levels of 2022. There is some evidence on these images of the water furrow indicated on the 1912 & 1952 maps of Portions 60 & 269, but by 2015 and 2022 this is all but gone.

It should be noted that although all efforts are made to locate, identify and record all possible cultural heritage sites and features (including archaeological remains) there is always a possibility that some might have been missed as a result of

grass cover and other factors. The subterranean nature of these resources (including low stone-packed or unmarked graves) should also be taken into consideration. Should any previously unknown or invisible sites, features or material be uncovered during any development actions then an expert should be contacted to investigate and provide recommendations on the way forward.

**Finally, from a Cultural Heritage point of view the proposed development on Portions 60, 214 & 269 of the farm Waterkloof 305JQ should be allowed to continue taking the above into consideration.**

### **8.2.5 AESTHETICS**

Visual Intrusion is defined as the level of compatibility or congruence of the project with the particular qualities of the area, or its 'sense of place'. This is related to the idea of context and maintaining the integrity of the landscape or townscape.

**High visual intrusion** – results in a noticeable change or is discordant with the surroundings;

**Moderate visual intrusion** – partially fits into the surroundings, but clearly noticeable;

**Low visual intrusion** – minimal change or blends in well with the surroundings.

More than 50% of the site is already developed and there is not much left of the original rural character of the site. Views from the R24 Road will not change much as the Deck Restaurant, the Port of Call Motel and Port of Call Liquor Store and Mini Mart and U Tow Trailer Rentals and Sales are well established landmarks of the area and are part and parcel of the “sense of place” of the area. Although the proposed new development for which this assessment was undertaken will not directly impact on the Waterkloof Spruit, it is recommended that the new development should take the close proximity of the area into consideration during the related development actions. The visual intrusion is considered to be moderate as the proposed development would fit in well with the nearby residential developments, it is acknowledged that it will be noticeable, however due to the scale of the proposal, it is unlikely to have a detrimental visual impact.

The proposed development will require additional lighting on and in buildings and possibly along roads. This will change the night landscape from unlit to lit.

### **8.2.6 AGRICULTURAL POTENTIAL**

In 2002 the *Directorate of Land Use and Soil Management* (DLUSM) within DALRRD through the Agricultural Research Councils' (ARC), Institute of Soil, Climate and Water (ISCW) developed a national spatial land capability data set to depict the spatial delineation of the then defined eight land capability classes. The approach followed was based on the approach of Klingebiel and Montgomery (1961) but adapted for South Africa by the Multilateral Technical Committee for Agriculture and Environmental Affairs' Task team, to develop a system for soil and land capability classification, but it further aimed to incorporate the parameters within a Geographic Information System (GIS). The resulted spatial data set was derived at a

scale of 1:250 000 with the land type data set being the main input data set for the derived land capability classes together with climatic and terrain parameters.

This dataset is used within the screening tool. While the new dataset is more complex than that of Klingebiel *et al*, the latter has clear guidelines and is generally still followed when assigning capability to land. A comparison between the two systems is provided below.

DALRRD (2016)	Klingebiel	Capability	Arability
1-2	viii	Very low	Not arable
3-4	vii	Very low to low	
5-6	vi	Low	
7	v	Low to moderate	
8	iv	Moderate	Arable
9-10	iii	Moderate to high	
11-12	ii	High	
13-14	i	High to very high	
15	i	Very high	

**Relationship between grading of the Screening tool and that of Klingebiel *et al*.**

According to the agricultural potential map of NDA, the land is arable (*Department of Agriculture, 2019*).

The soil on the property was found to be arable but there is no water is available for irrigation, making the soil medium potential.

Land capability classes are interpretive groupings of land with similar potential and limitations or similar hazards. Land capability involves consideration of difficulties in land use owing to physical land characteristics, climate and the risks of land damage from erosion and other causes.

The classic eight-class land capability system (Klingebiel & Montgomery, 1961) was adapted for use by the South African Department of Agriculture in their Agriculture Geographic Information System (AGIS).

Land capability is classified according to guidelines published by the National Department of Agriculture in AGIS.

Land Capability is determined by the collective effects of soil, terrain and climate features and shows the most intensive long-term use of land. At the same time, it indicates the permanent limitations associated with the different land-use classes.

- Order A: Arable land – high potential land with few limitations (Classes i and ii);
- Order B: Arable land – moderate to severe limitations (Classes iii and iv);
- Order C: Grazing and forestry land (Classes v, vi and vii);
- Order D: Land not suitable for agriculture (Class viii).

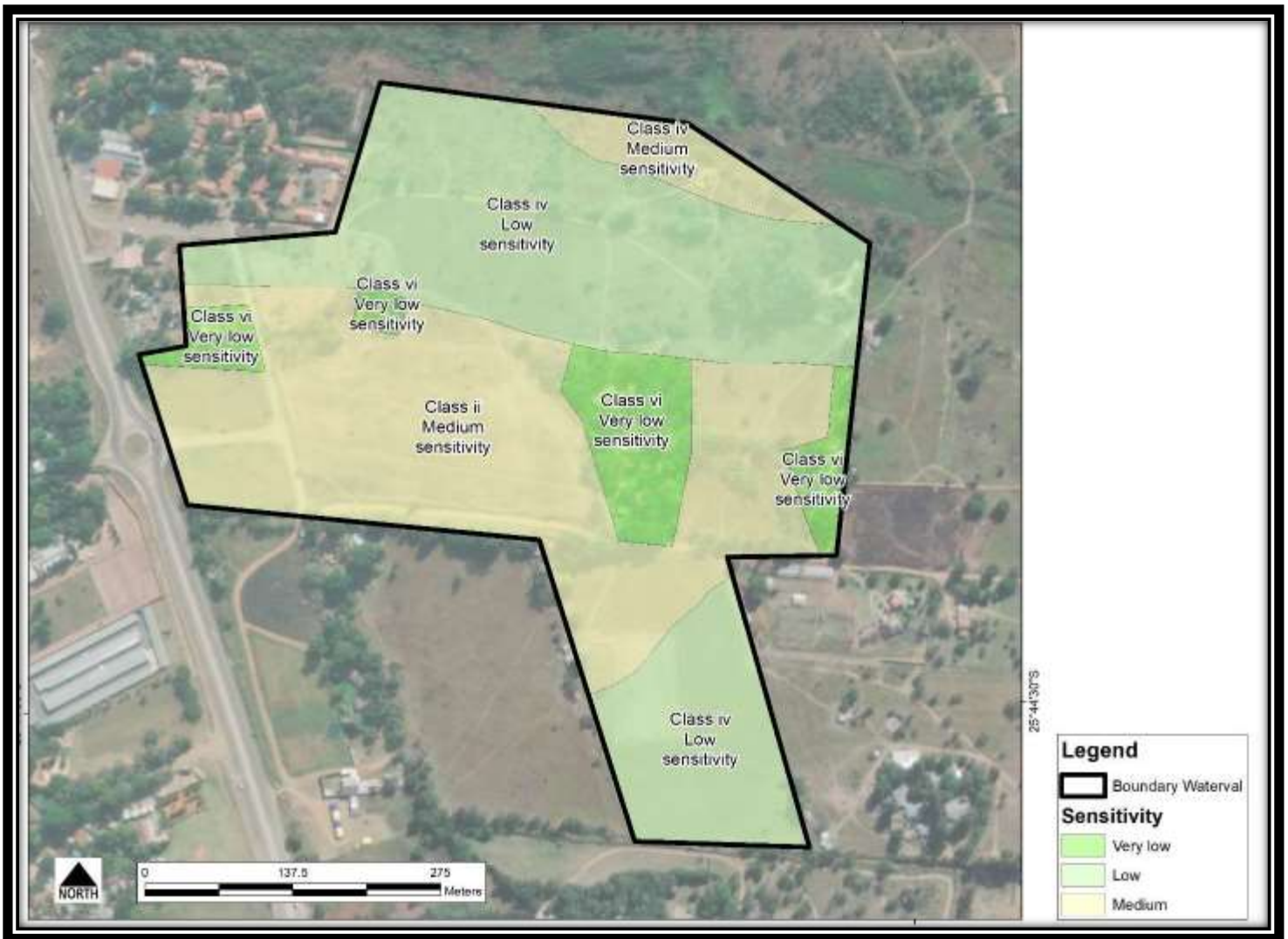
LAND CAPABILITY			Wildlife	Grazing and Forestry			Crop production			
Order		Class		Forestry	Veld	Pastures	Limited	Moderate	Intensive	Very intensive
Arable	A	i								
		ii								
	B	iii								
iv										
Non arable	C	v								
		vi								
	D	vii								
		viii								

Note: the shaded area indicates the suitable land use.

### Land capability classes – intensity of land uses

The following were found:

- *Medium* capability land for crop production (Class ii) occurs in the central part of the property. The balance is *low* capability (Classes iv and lower).
- The land capability was then used as input to determine agricultural sensitivity (refer to the previous section where the two classification systems are compared).
- There is no *highly sensitive* land on the site, no irrigation takes place and there is no irrigation water available.
- There is no cultivated land on the site. With the low animal grazing capacity of the veld, the entire property can only carry three head of cattle. This is not sustainable as the basis for a viable farming unit



### Land capability description

The property is not used for any farming activities. There are a number of homesteads that are occupied.

### Results of the site verification

Most of the site was incorrectly classified as *high* or *moderately sensitive*. There is no cultivated land on the site that would have the land classified as *highly sensitive*.

The screening tool indicates that more than half of the site is cultivated.

This is disputed – there is no cultivated land on the site, and there is also no evidence that it was for more than a decade.

### Specialist site analyses

According to the screening tool, the site has *high sensitivity*. This is incorrect because most of the potentially arable land is sandy with a low water holding capacity or has a hard plinthite layer that inhibit root development; even the deeper soil is only *moderately sensitive*.

There is no highly sensitive land on the site, no irrigation takes place and there is no irrigation water available.

There is no cultivated land on the site and considering that the property can only sustain 3 head of cattle, retaining the land for farming is sustainable – is cannot be considered as a viable farming unit

### Recommendation

No reason can be found not to allow the development. It is our recommendation that the project be approved for implementation.



# 9. ENVIRONMENTAL IMPACT ASSESSMENT

## 1. 9.1 ASSESSMENT CRITERIA

Impacts were rated using the following methodology:

Nature of the potential impact		Description of the effect, and the affected aspect of the environment
<b>Duration (time scale)</b>	Short term	Up to 5 years
	Medium term	6 – 15 years
	Long term	More than 15 years
<b>Extent (area)</b>	Local	Confined to study area and its immediate surroundings
	Regional	Region (cadastral, catchment, topographic)
	National	Nationally (The country)
	International	Neighboring countries and the rest of the world.
<b>Magnitude (Intensity)</b>	Low	Site-specific and wider natural and/or social functions and processes are negligibly altered. ((A low intensity impact will not affect the natural, cultural, or social functions of the environment).
	Medium	Site-specific and wider natural and/or social functions and processes continue albeit in a modified way. (Medium scale impact will alter the different functions slightly).
	High	Site-specific and wider natural and/or social functions and processes are severely altered. (A High intensity impact will influence these functions to such an extent that it will temporarily or permanently cease to exist).
<b>Probability</b>	Improbable	Possibility of occurrence is very low. (Such an impact will have a very slight possibility to materialise, because of design or experience).
	Possible	There is a possibility that the impact will occur
	Probable	It is most likely that the impact will occur
	Definite	The impact will definitely occur
<b>Significance</b>	Insignificant	Impact is negligible and will not have an influence on the decision regarding the proposed activity (No mitigation is necessary)
	Very Low	Impact is very small and should not have any meaningful influence on the decision regarding the proposed activity (No mitigation is necessary)
	Low	The impact may not have a meaningful influence on the decision regarding the proposed activity (No mitigation is necessary)
	Medium	The impact should influence the decision regarding the proposed activity (The project can only be carried through if certain mitigatory steps are taken)
	High	The impact will influence the decision regarding the proposed activity
	Very High	The proposed activity should only be approved under special circumstances
<b>Reversibility</b>	Low	There is little chance of correcting the adverse impact
	Medium	There is a moderate chance of correcting the adverse impact

Nature of the potential impact		Description of the effect, and the affected aspect of the environment
	High	There is a high chance in correcting the adverse impact
<b>Risk</b>	Low	Assessing a risk involves an analysis of the consequences and likelihood of a hazard being realized. In decision-making, low-consequence / low-probability risks (green) are typically perceived as acceptable and therefore only require monitoring.
	Medium	Other risks (amber) may require structured risk assessment to better understand the features that contribute most to the risk. These features may be candidates for management
	High	High-consequence / high-probability risks (red) are perceived as unacceptable and a strategy is required to manage the risk.

Attributes associated with the alternatives were assessed and is outlined below:

### **Geographical attributes**

The Geographical attributes of an area relates to the characteristics of a particular region, area or place. It influences the determination of site alternatives as it relates to the location of a site in relation to relevant features in the area.

### **Physical attributes**

Physical attributes of an area relates to the processes and patterns in the natural environment. For the purpose of this assessment, the following processes and patterns have been investigated. Geology, soil, topography and landforms, climate and meteorology, surface water and ground water.

### **Biological attributes**

Biological attributes for the purpose of this study includes the distribution of species and ecosystems in geographic space and through geological time. Organisms and biological communities often vary in a regular fashion along geographic gradients of latitude, elevation, isolation and habitat area. The two main branches assessed will be:

Phytogeography is the branch of biogeography that studies the distribution of plants.

Zoogeography is the branch that studies distribution of animals.

### **Social attributes**

Social attributes is closely related to social theory in general and sociology in particular, dealing with the relation of social phenomena and its spatial components.

### **Economic attributes**

Economic attributes includes the location, distribution and spatial organization of economic activities and also takes into account social, cultural, and institutional factors in the spatial economy of the development.

### **Heritage attributes**

The broad generic term Cultural Heritage Resources refers to any physical and spiritual property associated with past and present human use or occupation of the environment, cultural activities and history. The term includes sites, structures, places, natural features and material of paleontological, archaeological, historical, aesthetic, scientific, architectural, religious, symbolic or traditional importance to specific individuals or groups, traditional systems of cultural practice, belief or social interaction.

### **Cultural attributes**

Cultural attributes relates to the specific characteristics such as language, religion, ethnic and racial identity, and cultural history & traditions of people. These attributes influences family life, education, economic and political structures, and, of course, business practices.

It should be noted that the above mentioned attributes do not occur in isolation and it is not uncommon for an identified impact to overlap with two or more of these attributes. Also note, not all risks require comprehensive and detailed assessment. Solid problem formulation should allow decision-makers to evaluate the extent of subsequent analysis required. The level of effort put into assessing each risk should be proportionate to its significance and priority in relation to other risks, as well as its

complexity, by reference to the likely impacts. Consideration should be given to stakeholders' perceptions of the nature of the risk.

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 1: "Mixed Land Use" development (Preferred Alternative)					
Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
<b>DIRECT IMPACTS:</b>					
Geographical Physical Social Economic	14.79 hectares of indigenous vegetation will be eradicated in order to establish the development.  3.29 ha of the development is located within 100 meters of the Waterkloof spruit  7.8 Ha of the site is located within a Critical Biodiversity Area	Duration	Long term	Obtain the necessary environmental authorization for the development. Implement the mitigation measures as described in the Environmental Management Programme.  Appoint a Fauna and Flora Habitat Specialist to determine the sensitivity of the site and to propose mitigation measures.  Appoint a Wetland Specialist to determine buffer zones for the Waterkloof Spruit.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Low		Low
		Risk	Medium		Medium
	3 276 meters of streets will be developed. Unsurfaced roads may lead to erosion and sedimentation.	Duration	Long term	Ensure that the roads are surfaced to ensure the erosion and sedimentation does not occur.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Low		High
		Probability	Definite		Definite
		Significance	Low		Medium
		Reversibility	High		Low
		Risk	Low		Medium
	Plan for the provision of services for the development.	Duration	Long term	Determine the availability of services to ensure a sustainable development.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Low		Low
		Risk	Medium		Medium
Plan to rehabilitate disturbed surfaces which can lead to erosion and dust pollution. Prepare method statements to this effect.	Duration	Short term	Start the rehabilitation of disturbed surfaces as soon as possible. Spray bare surfaces with water to prevent dust pollution.	Medium term	
	Extent	Local		Local	
	Magnitude (Intensity)	Low		Medium	
	Probability	Definite		Definite	
	Significance	Medium		Medium	
	Reversibility	High		High	
	Risk	Low		Medium	
Plan for the eradication of foreign and invader plant species which are likely to invade disturbed areas.	Duration	Short term	Start the extermination of any invasive species as soon as possible and maintain the eradication programme.	Medium term	
	Extent	Local		Local	
	Magnitude (Intensity)	Low		Low	
	Probability	Definite		Definite	
	Significance	Medium		Medium	
	Reversibility	High		High	
	Risk	Low		Medium	
Plan for the provision and maintenance of ablation facilities for construction workers to prevent pollution of surface and underground water.	Duration	Short term	Provide portable ablation facilities that will not cause pollution during the construction phase.	Short term	
	Extent	Local		Local	
	Magnitude (Intensity)	Medium		Medium	
	Probability	Definite		Definite	
	Significance	Medium		Medium	

**ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)**

**ALTERNATIVE 1: "Mixed Land Use" development (Preferred Alternative)**

Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
		Reversibility	High		High
		Risk	Low		Medium
	Plan to manage possible impacts that the project can have on the soil and geology.	Duration	Long term	Properly plan the construction phase in such a manner that impacts on the soil and geology of the area can be minimised.  The findings of a Geotechnical Engineer must be incorporated into the design of the project.  Plan to prevent spills of lubricants/oils that can take place on bare soil. This will include the use of drip trays for vehicles that are standing for more than 24 hours.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Plan for the removal of vegetation (which will lead to the destruction of faunal and floral habitats) during the construction phase.	Duration	Short term	Start with the rehabilitation of vegetation to minimize the negative effects of the removal of plants.  The rule must be to minimize the disturbance of animal life by keeping the footprint as small as possible.  No snares may be set.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Plan to safeguard open trenches in order to alleviate the danger of collapse on people or on equipment and people- especially small children who may fall into it.	Duration	Short term	Ensure that the trenches stay open for as short a time as possible.  Ensure that open trenches are demarcated as required by the Occupational Health and Safety Act.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	<b>Indirect impacts:</b>				
Geographical Physical Social Economic	Plan to control dust generation from the proposed project which could impact on the surrounding area.	Duration	Short term	Spray water on open surfaces to ensure that dust does not cause air pollution during construction.  Start the rehabilitation of disturbed surfaces as soon as possible	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Plan and compile method statements to implement measures for the prevention and or handling of spills of lubricants / oils that can take place on bare soil.	Extent	Local	Prevent spills of lubricants/oils that can take place on bare soil. This will include the use of drip trays for vehicles that are standing for more than 24 hours.  Ensure that all construction vehicles are in good working order and not leaking oil and or fuel. No vehicles may be serviced on site.	Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Plan to provide method statements on the handling of waste materials such as glass, plastic, metal or paper which may present a possible pollution hazard	Extent	Local	Implement the management plan to ensure that: All construction rubble is disposed of in a safe and environmentally acceptable manner.	Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 1: "Mixed Land Use" development (Preferred Alternative)					
Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
		Risk	Low	NO concrete, gravel or other rubbish will be allowed to remain on site after the construction phase.  All cement is housed as to prevent spills (due to rain and or handling errors).  NO glass, plastic, metal, or paper shall be allowed to pollute the area.	Medium
	Plan to ensure all involved is aware of the possible social and environmental problems that may be experienced as a result of non-compliance to the relevant legislation.	Extent	Local	Ensure that contractors (construction phase) abide by all the requirements of the Occupational Health and Safety Act.  Ensure that all contractors are aware of the consequences of non-compliance to the relevant legislation regarding the above-mentioned act as well as with regard to the environment (acts, regulations, and special guidelines).	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Plan to create new employment opportunities. Plan to use local labour to ensure local skills development will take place.	Extent	Local	No mitigation measures needed apart from the fact that contractors will have to ensure that they abide to the requirements of the Occupational Health and Safety Act and the Employment Equity Act.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Medium		Medium
		Risk	Low		Medium
<b>Cumulative impacts:</b>					
	Plan to ensure that the services (Solid waste, bulk water supply water, sewage, electricity and storm water) are designed and constructed in such a manner that it will not cause Environmental degradation.	Extent	Local	Appoint a Civil Engineer to assess the availability and design of services to ensure a sustainable development.  Ensure that the development is constructed as planned.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	High		High
		Risk	Low		Medium
	Plan for the increase in traffic volumes that will result from the proposed development	Extent	Local	The Town and Regional Planner will have to design the layout of the development in such a way that accessibility will not become a problem.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		High
		Reversibility	Low		Low
		Risk	Medium		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 2: "Single Land Use" Residential only					
Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
<b>DIRECT IMPACTS:</b>					
Geographical Physical Social Economic	14.79 hectares of indigenous vegetation will be eradicated in order to establish the development.	Duration	Long term	Obtain the necessary environmental authorization for the development. Implement the mitigation measures as described in the Environmental Management Programme.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		Probability	Definite		Definite
		Significance	Medium		Medium

**ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)**

**ALTERNATIVE 2: "Single Land Use" Residential only**

Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)	
	3.29 ha of the development is located within 100 meters of the Waterkloof spruit  7.8 Ha of the site is located within a Critical Biodiversity Area	Reversibility	Low	Appoint a Fauna and Flora Habitat Specialist to determine the sensitivity of the site and to propose mitigation measures.  Appoint a Wetland Specialist to determine buffer zones for the Waterkloof Spruit.	Low	
		Risk	Medium		Medium	
Plan for the provision of services for the development.		Duration	Long term	Determine the availability of services to ensure a sustainable development.	Long term	
		Extent	Local		Local	
		Magnitude (Intensity)	High		High	
		Probability	Definite		Definite	
		Significance	Medium		Medium	
		Reversibility	Low		Low	
		Risk	Medium		Medium	
Plan to rehabilitate disturbed surfaces which can lead to erosion and dust pollution. Prepare method statements to this effect.		Duration	Short term	Start the rehabilitation of disturbed surfaces as soon as possible. Spray bare surfaces with water to prevent dust pollution.	Medium term	
		Extent	Local		Local	
		Magnitude (Intensity)	Low		Medium	
		Probability	Definite		Definite	
		Significance	Medium		Medium	
		Reversibility	High		High	
		Risk	Low		Medium	
Plan for the eradication of foreign and invader plant species which are likely to invade disturbed areas.		Duration	Short term	Start the extermination of any invasive species as soon as possible and maintain the eradication programme.	Medium term	
		Extent	Local		Local	
		Magnitude (Intensity)	Low		Low	
		Probability	Definite		Definite	
		Significance	Medium		Medium	
		Reversibility	High		High	
		Risk	Low		Medium	
Plan for the provision and maintenance of ablution facilities for construction workers to prevent pollution of surface and underground water.		Duration	Short term	Provide portable ablution facilities that will not cause pollution during the construction phase.	Short term	
		Extent	Local		Local	
		Magnitude (Intensity)	Medium		Medium	
		Probability	Definite		Definite	
		Significance	Medium		Medium	
		Reversibility	High		High	
		Risk	Low		Medium	
Plan to manage possible impacts that the project can have on the soil and geology.		Duration	Long term	Properly plan the construction phase in such a manner that impacts on the soil and geology of the area can be minimised.	Long term	
		Extent	Local		Local	
		Magnitude (Intensity)	Low		Medium	
		Probability	Definite		Definite	
		Significance	Medium		Medium	
		Reversibility	High		High	
	Risk	Low	Medium			
			Duration	Short term	The findings of a Geotechnical Engineer must be incorporated into the design of the project.  Plan to prevent spills of lubricants/oils that can take place on bare soil. This will include the use of drip trays for vehicles that are standing for more than 24 hours.	Short term
			Extent	Local		Local
			Magnitude (Intensity)	Low		Medium
			Probability	Definite		Definite
			Significance	Medium		Medium
			Reversibility	High		High
Risk			Low	Medium		
Plan for the removal of vegetation (which will lead to		Duration	Short term		Short term	
		Extent	Local		Local	



**ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)**

**ALTERNATIVE 2: "Single Land Use" Residential only**

Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)	
	the destruction of faunal and floral habitats) during the construction phase.	Magnitude (Intensity)	Medium	Start with the rehabilitation of vegetation to minimize the negative effects of the removal of plants.  Plan to relocate this plant species to the Heritage Site adjacent to the site.  The rule must be to minimize the disturbance of animal life by keeping the footprint as small as possible.  No snares may be set.	Medium	
		Probability	Definite		Definite	
		Significance	Medium		Medium	
		Reversibility	High		High	
		Risk	Low		Medium	
	Plan to safeguard open trenches in order to alleviate the danger of collapse on people or on equipment and people- especially small children who may fall into it.	Duration	Short term	Ensure that the trenches stay open for as short a time as possible.  Ensure that open trenches are demarcated as required by the Occupational Health and Safety Act.	Short term	
		Extent	Local		Local	
		Magnitude (Intensity)	Medium		Medium	
		Probability	Definite		Definite	
		Significance	Medium		Medium	
		Reversibility	High		High	
		Risk	Low		Medium	
	<b>Indirect impacts:</b>					
	Geographical Physical Social Economic	Plan to control dust generation from the proposed project which could impact on the surrounding area.	Duration	Short term	Spray water on open surfaces to ensure that dust does not cause air pollution during construction.  Start the rehabilitation of disturbed surfaces as soon as possible	Short term
Extent			Local	Local		
Magnitude (Intensity)			Low	Low		
Probability			Probable	Probable		
Significance			Medium	Medium		
Reversibility			High	High		
Risk		Low	Medium			
Plan and compile method statements to implement measures for the prevention and or handling of spills of lubricants / oils that can take place on bare soil.		Extent	Local	Prevent spills of lubricants/oils that can take place on bare soil. This will include the use of drip trays for vehicles that are standing for more than 24 hours.  Ensure that all construction vehicles are in good working order and not leaking oil and or fuel. No vehicles may be serviced on site.	Local	
		Magnitude (Intensity)	Low		Low	
		Probability	Probable		Probable	
		Significance	Medium		Medium	
		Reversibility	High		High	
		Risk	Low		Medium	
Plan to provide method statements on the handling of waste materials such as glass, plastic, metal or paper which may present a possible pollution hazard		Extent	Local	Implement the management plan to ensure that: All construction rubble is disposed of in a safe and environmentally acceptable manner. NO concrete, gravel or other rubbish will be allowed to remain on site after the construction phase.  All cement is housed as to prevent spills (due to rain and or handling errors).  NO glass, plastic, metal, or paper shall be allowed to pollute the area.	Local	
		Magnitude (Intensity)	Low		Low	
		Probability	Probable		Probable	
		Significance	Medium		Medium	
		Reversibility	High		High	
		Risk	Low		Medium	
Plan to ensure all involved is aware of the possible social and environmental problems that may be experienced as a		Extent	Local	Ensure that contractors (construction phase) abide by all the requirements of the Occupational Health and Safety Act.	Local	
		Magnitude (Intensity)	Medium		Medium	
	Probability	Probable	Probable			

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 2: "Single Land Use" Residential only					
Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
	result of non-compliance to the relevant legislation.	Significance	Medium	Ensure that all contractors are aware of the consequences of non-compliance to the relevant legislation regarding the above-mentioned act as well as with regard to the environment (acts, regulations, and special guidelines).	Medium
		Reversibility	High		High
		Risk	Low		Medium
	Plan to create new employment opportunities. Plan to use local labour to ensure local skills development will take place.	Extent	Local	No mitigation measures needed apart from the fact that contractors will have to ensure that they abide to the requirements of the Occupational Health and Safety Act and the Employment Equity Act.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Medium		Medium
	Risk	Low	Medium		
	<b>Cumulative impacts:</b>				
Geographical Physical Social Economic	Plan the development to ensure the social well-being of the community for which the development is intended	Extent	Local	Ensure that the development is constructed as planned.  The demand for housing will be partially addressed in the area.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Medium		Medium
		Risk	Low		Medium
	Plan to ensure that the services (Solid waste, bulk water supply water, sewage, electricity and storm water) are designed and constructed in such a manner that it will not cause Environmental degradation.	Extent	Local	Appoint a Civil Engineer to assess the availability and design of services to ensure a sustainable development.  Ensure that the development is constructed as planned.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	High		High
		Risk	Low		Medium
	Plan for the increase in traffic volumes that will result from the proposed development	Extent	Local	The Town and Regional Planner will have to design the layout of the development in such a way that accessibility will not become a problem.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		High
		Reversibility	Low		Low
		Risk	Medium		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 3: (No-Go Option)					
Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
<b>DIRECT IMPACTS:</b>					
Geographical Physical Social Economic Cultural	No indigenous vegetation will be removed.	Duration	Long term	No mitigation measures required.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	Low		Low
		Risk	Medium		Medium
<b>Indirect impacts:</b>					
Geographical		Extent	Local		Local

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 3: (No-Go Option)					
Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
Physical Social Economic Cultural	No new employment opportunities will be created during the planning and design phase.  No skills enhancement will take place  If this option is implemented, the projected boost to the local and regional economy will not take place.	Magnitude (Intensity)	Medium	Ensure that the development is constructed and operated as planned.	Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Medium		Medium
		Risk	High		High
<b>Cumulative impacts:</b>					
Geographical Physical Social Economic Cultural	If this option is implemented, the projected boost to the local and regional economy will not take place.  No new employment opportunities will be created. No improvement to local skills development will take place. No broadened Tax base for the Local Municipality.	Extent	Local	Ensure that the development is constructed and operated as planned.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	High		High
		Risk	Medium		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)					
ALTERNATIVE 1: "Mixed Land Use" development (Preferred Alternative)					
Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
<b>DIRECT IMPACTS:</b>					
Geographical Physical Social Economic	14.79 hectares of indigenous vegetation will be eradicated in order to establish the development.  3.29 ha of the development is located within 100 meters of the Waterkloof spruit  7.8 Ha of the site is located within a Critical Biodiversity Area	Duration	Long term	Ensure that no development takes place before the necessary environmental authorization has been obtained.  Ensure that the development is constructed with the mitigation measures as described by the Fauna and Flora Habitat and the Wetland Specialist in mind. No development to take place in the buffer zones identified..	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Low		Low
		Risk	Medium		Medium
	Un-rehabilitated, disturbed surfaces can lead to erosion and dust pollution.	Duration	Short term	Start the rehabilitation of disturbed surfaces as soon as possible.  Spray bare surfaces with water to prevent dust pollution.	Medium term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Foreign plant species are likely to invade disturbed areas.	Duration	Short term	Start the extermination of any invasive species as soon as possible and maintain the eradication programme.	Medium term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low

**ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)**

**ALTERNATIVE 1: "Mixed Land Use" development (Preferred Alternative)**

Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Poorly planned ablation facilities for construction workers may cause pollution of surface and underground water.	Duration	Short term	Provide portable ablation facilities that will not cause pollution during the construction phase.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	The proposed project can impact on the soil and geology.	Duration	Long term	The findings of a Geo-Technical Engineer must be incorporated into the design of the project.  Prevent spills of lubricants/oils that can take place on bare soil. This will include the use of drip trays for vehicles that are standing for more than 24 hours.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	The vegetation of the area will be removed during the construction phase, which will destroy floral and faunal habitats.	Duration	Short term	Start with the rehabilitation of vegetation to minimize the negative effects of the removal of plants.  The rule must be to minimize the disturbance of animal life by keeping the footprint as small as possible.  No snares may be set.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Open trenches can be dangerous as they can either collapse on people or on equipment and people- especially small children, can fall into it.	Duration	Short term	Ensure that the trenches are dug according to specifications.  Ensure that the trenches stay open for as short a time as possible.  Ensure that open trenches are demarcated as required by the Occupational Health and Safety Act.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
Probability		Definite	Definite		
Significance		Medium	Medium		
Reversibility		High	High		
Risk		Low	Medium		
<b>Indirect impacts:</b>					
Geographical Physical Social Economic	Dust generation from the proposed project could impact on the surrounding area.	Duration	Short term	Spray water on open surfaces to ensure that dust does not cause air pollution during construction.  Start the rehabilitation of disturbed surfaces as soon as possible	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Spills of lubricants / oils can take place on bare soil.	Extent	Local	Prevent spills of lubricants/oils that can take place on bare soil. This will include the use of drip trays for vehicles that are standing for more than 24 hours.  Ensure that all construction vehicles are in good working order and not leaking oil and or fuel.	Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium

**ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)**

**ALTERNATIVE 1: "Mixed Land Use" development (Preferred Alternative)**

Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
				No vehicles may be serviced on site.	
	Waste materials such as glass, plastic, metal or paper present a possible pollution hazard	Extent	Local	Implement the management plan to ensure that: All construction rubble is disposed of in a safe and environmentally acceptable manner. NO concrete, gravel or other rubbish will be allowed to remain on site after the construction phase.  All cement is housed as to prevent spills (due to rain and or handling errors).  NO glass, plastic, metal, or paper shall be allowed to pollute the area.	Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Non-compliance to the relevant legislation may cause social and environmental problems.	Extent	Local	Ensure that contractors (construction phase) abide by all the requirements of the Occupational Health and Safety Act.  Ensure that all contractors are aware of the consequences of non-compliance to the relevant legislation regarding the above-mentioned act as well as with regard to the environment (acts, regulations, and special guidelines).	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	New employment opportunities will be created. Local skills development will take place.	Extent	Local	No mitigation measures needed apart from the fact that contractors will have to ensure that they abide to the requirements of the Occupational Health and Safety Act and the Employment Equity Act.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Medium		Medium
		Risk	Low		Medium
<b>Cumulative impacts:</b>					
Geographical Physical Social Economic	Enhancement of the social well-being of the local communities as new employment opportunities will be provided by the development	Extent	Local	Ensure that the development is constructed as planned.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Medium		Medium
		Risk	Low		Medium
	Solid waste: The proposed development will add additional solid waste into the existing waste stream of the Local Municipality.  Sewage: The proposed development will add additional sewage into the existing sewage stream of the Local Municipality.  Water supply: The proposed development will add pressure	Extent	Local	Ensure that the development is constructed as planned.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	High		High
		Risk	Low		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)					
ALTERNATIVE 1: "Mixed Land Use" development (Preferred Alternative)					
Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
	to the water supply of Local Municipality's Water.				
	Traffic: The proposed development will result in an increase in traffic in the immediate surroundings of the proposed development.	Extent	Local	Ensure that the development is constructed as planned by the Town and Regional Planner	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		High
		Reversibility	Low		Low
		Risk	Medium		Medium
	Development will be in close proximity to the Waterkloofspruit.	Extent	Local	Ensure that the buffer zones are demarcated as no-go zones. All involved must be informed of this aspect.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	Low		Low
		Risk	Medium		Medium
		Extent	Local		Local

ENVIRONMENTAL IMPACT ASSESSMENT (Operational Phase)					
ALTERNATIVE 1: "Agricultural Small Holdings" and "Recreational" erf" development (Preferred Alternative)					
Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
<b>DIRECT IMPACTS:</b>					
Geographical Physical Social Economic Cultural	Poorly maintained and serviced infrastructure may cause environmental problems.	Extent	Local	It will be the responsibility of the developer to maintain the infrastructure on site.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium- high		High
		Reversibility	High		Medium
		Risk	High		High
<b>Indirect impacts:</b>					
Geographical Physical Social Economic Cultural	Lack of rehabilitation may cause problems	Extent	Local	It will be the responsibility of the developer to ensure that the rehabilitation plan is implemented	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium- high		High
		Reversibility	High		Medium
		Risk	High		High
<b>Cumulative impacts:</b>					
Geographical Physical Social Economic Cultural	Enhancement of the social well-being of the local communities as new employment opportunities will be available	Extent	Local	No mitigation measures required.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	High		High
		Risk	Medium		Medium
Geographical Physical Social Economic Cultural	The proposed development will generate additional income for the Local Municipality.	Extent	Local	No mitigation measures required.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High



**ENVIRONMENTAL IMPACT ASSESSMENT (Operational Phase)**

**ALTERNATIVE 1: “Agricultural Small Holdings” and “Recreational” erf” development (Preferred Alternative)**

Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
		Reversibility	High		High
		Risk	Medium		Medium

## 10. PUBLIC PARTICIPATION.

### 10.1 ADVERTISEMENT AND NOTICE

<b>Publication name</b>	Rustenburg Herald	
<b>Date published</b>	20/01/2023	
<b>Site notice 1 position</b>	Latitude	Longitude
	25°44'22.08"S	27°16'5.77"E
<b>Date placed</b>	20/01/2023	

**PROOF OF SITE NOTICE (To Follow)**

**PROOF OF NEWSPAPER ADVERTISEMENT (TO FOLLOW)**

## 10.2. DETERMINATION OF APPROPRIATE MEASURES

Details of the measures taken to include all potential I&APs as required by Regulation 41(2)(e) and 41(6) of GN R.982.

Key stakeholders (other than organs of state) identified in terms of Regulation 40(2)(d) of GN R.982:

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
NA	Neighbour	Letter Drop see photo evidence



### 10.3 AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders. Key stakeholders identified in terms of Regulation 7(1) and (2) and Regulation 40(2) (a)-(c) of GN R.982:

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
Department of Water and Sanitation	Mr TP Ntili	(018) 387 9547	NA		Chief Director: North West Dept. of Water and Sanitation Private Bag X5 MMABATHO 2735
Head of Department: North-West Department of Agriculture and Rural Development	Dr. P. Mokaila	018-3895723	018-389 5090	<a href="mailto:pmokaila@nwpg.gov.za">pmokaila@nwpg.gov.za</a>	Private Bag X2039 Mmabatho 2735
North West Department of Biodiversity	MJ Denga	018 389 5719/ 5431/ 5688	018 392 4377	<a href="mailto:dseshabela@nwpg.gov.za">dseshabela@nwpg.gov.za</a>	Private Bag X2039 Mmabatho 2735
Bojanala District Municipality	The District Municipal Manager	014 590 4500	014 592 6085		PO Box 1993, Rustenburg, 0300
Adv V. Makona Rustenburg LM	The Municipal Manager	014 590 3551	014 592 0181		PO Box 16, RUSTENBURG, 0300
The councilor ward 35 Rustenburg LM	Cllr Simphiwe Patrick Mkholwa	014 590 3551	014 592 0181		PO Box 16, RUSTENBURG, 0300
NW: Department Public Works and Roads	Mr Sydney Ntlatleng	018 388 1378	018 388 1395		Private Bag X 2080, Mmabatho, 2735
SANRAL	Mr. P. Hlala	012 844 8000	012 844 8200		PO Box 415 Pretoria 0001
SAHRA				SAHRIS	
Eskom	Mr M. Dala			dalaME@eskom.co.za	

PLEASE SEE PROOF BELOW





## AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

7 Louis Leipoldt Street,  
Potchefstroom, 2531  
Tel: + 27 (83) 5488 105  
E-mail: [jp@abenviro.co.za](mailto:jp@abenviro.co.za)

**Mr TP Ntuli**  
Chief Director: North West Dept. of Water and Sanitation  
Cnr Dr. James Moroka Drive and Sekame Road  
Megacity Shopping Centre  
Unit no. 99, Ground Floor  
MMABATHO  
2735  
Tel: (018) 387 9547

20/01/2023

Dear Sir/Madam

**PROJECT NAME:**

Environmental Impact Assessment for the proposed clearance of 14.79ha of indigenous vegetation (of which 7.8ha is located within a CBA 2 and 3.29 ha is located within 100 metres from the edge of the Waterkloof Spruit) in order to establish a mixed land use development, located on Portion 214 (a Portion of Portion 195), the remaining extent of portion 269 (a Portion of Portion 34) and the remaining extent of Portion 60 (a Portion of Portion 32) of the farm Waterkloof 305-JO. (To be known as Waterkloof east ext. 74); Rustenburg, North West Province.

**AB ENVIRO CONSULT** was appointed by Zelske Ontwikkeling cc and Intawiz (Pty) Ltd to submit an application to the Department of Economic Development, Environment, Conservation and Tourism, North West Province for the above mentioned proposed development. Attached please find a notification of the proposed development and an electronic copy of the Basic Assessment report for your comments. You are requested to comment within 30 days of the date of this notice.

In the event of your organisation/department not wishing to comment on this matter, it would be appreciated if we could receive written confirmation thereof to enable us to continue with the finalisation of the application. If no response is however received from your Department/organisation within the said time, it will be assumed that your department/organisation does not wish to comment on this matter and the application will be processed further. Please be advised, in accordance with POPIA and NEMA, personal data is collected and processed by the applicant/EAP and shared with the Competent Authority to enable informed decision-making.

Please do not hesitate to contact us should any further information or clarification be required.

Yours sincerely,

Mr JP de Villiers  
EAP-EAPASA: 2019/808

PROF A B DE VILLIERS (M Sc, Ph D, SACNASP)  
MR.J.P. DE VILLIERS (M Sc, EAP-EAPASA, IAIA); MRS.J.E. DU PLOOY (M.E.M; EAP-EAPASA, IAIA)



## AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

7 Louis Leipoldt Street,  
Potchefstroom, 2531  
Tel: + 27 (83) 5488 105  
E-mail: [jp@abenviro.co.za](mailto:jp@abenviro.co.za)

Dr P. Mokaila  
Department: Agriculture and Rural Development  
Private Bag X2039  
Mmabatho  
2735

20/01/2023

Dear Sir/Madam

PROJECT NAME:

Environmental Impact Assessment for the proposed clearance of 14.79ha of indigenous vegetation (of which 7.8ha is located within a CBA 2 and 3.29 ha is located within 100 metres from the edge of the Waterkloof Spruit) in order to establish a mixed land use development, located on Portion 214 (a Portion of Portion 195), the remaining extent of portion 269 (a Portion of Portion 34) and the remaining extent of Portion 60 (a Portion of Portion 32) of the farm Waterkloof 305-JO, (To be known as Waterkloof east ext. 74); Rustenburg, North West Province.

*AB ENVIRO CONSULT* was appointed by Zelske Ontwikkeling cc and Intawiz (Pty) Ltd to submit an application to the Department of Economic Development, Environment, Conservation and Tourism, North West Province for the above mentioned proposed development. Attached please find a notification of the proposed development and an electronic copy of the Basic Assessment report for your comments. You are requested to comment within 30 days of the date of this notice.

In the event of your organisation/department not wishing to comment on this matter, it would be appreciated if we could receive written confirmation thereof to enable us to continue with the finalisation of the application. If no response is however received from your Department/organisation within the said time, it will be assumed that your department/organisation does not wish to comment on this matter and the application will be processed further. Please be advised, in accordance with POPIA and NEMA, personal data is collected and processed by the applicant/EAP and shared with the Competent Authority to enable informed decision-making.

Please do not hesitate to contact us should any further information or clarification be required.

Yours sincerely,

Mr JP de Villiers  
EAP-EAPASA: 2019/808

PROF A B DE VILLIERS (M Sc, Ph D, SACNASP)  
MR.J.P. DE VILLIERS (M Sc, EAP-EAPASA, IAIA); MRS.J.E. DU PLOOY (M.E.M; EAP-EAPASA, IAIA)





## AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

7 Louis Leipoldt Street,  
Potchefstroom, 2531  
Tel: + 27 (83) 5488 105  
E-mail: [jp@abenviro.co.za](mailto:jp@abenviro.co.za)

**Mr M. J. Denga**  
Directorate: Biodiversity Management and Conservation  
Private Bag X2039  
Mmabatho  
2735

20/01/2023

Dear Sir/Madam

PROJECT NAME:

Environmental Impact Assessment for the proposed clearance of 14.79ha of indigenous vegetation (of which 7.8ha is located within a CBA 2 and 3.29 ha is located within 100 metres from the edge of the Waterkloof Spruit) in order to establish a mixed land use development, located on Portion 214 (a Portion of Portion 195), the remaining extent of portion 269 (a Portion of Portion 34) and the remaining extent of Portion 60 (a Portion of Portion 32) of the farm Waterkloof 305-JO, (To be known as Waterkloof east ext. 74); Rustenburg, North West Province.

**AB ENVIRO CONSULT** was appointed by Zelske Ontwikkeling cc and Intawiz (Pty) Ltd to submit an application to the Department of Economic Development, Environment, Conservation and Tourism, North West Province for the above mentioned proposed development. Attached please find a notification of the proposed development and an electronic copy of the Basic Assessment report for your comments. You are requested to comment within 30 days of the date of this notice.

In the event of your organisation/department not wishing to comment on this matter, it would be appreciated if we could receive written confirmation thereof to enable us to continue with the finalisation of the application. If no response is however received from your Department/organisation within the said time, it will be assumed that your department/organisation does not wish to comment on this matter and the application will be processed further. Please be advised, in accordance with POPIA and NEMA, personal data is collected and processed by the applicant/EAP and shared with the Competent Authority to enable informed decision-making.

Please do not hesitate to contact us should any further information or clarification be required.

Yours sincerely,

Mr JP de Villiers  
EAP-EAPASA: 2019/808

PROF A B DE VILLIERS (M Sc, Ph D, SACNASP)  
MR.J.P. DE VILLIERS (M Sc, EAP-EAPASA, IAIA); MRS.J.E. DU PLOOY (M.E.M; EAP-EAPASA, IAIA)



## AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

7 Louis Leipoldt Street,  
Potchefstroom, 2531  
Tel: + 27 (83) 5488 105  
E-mail: [jp@abenviro.co.za](mailto:jp@abenviro.co.za)

**SANRAL**  
**Mr. P Hlala**  
**PO Box 415**  
**Pretoria**  
**0001**

20/01/2023

Dear Sir/Madam

**PROJECT NAME:**

Environmental Impact Assessment for the proposed clearance of 14.79ha of indigenous vegetation (of which 7.8ha is located within a CBA 2 and 3.29 ha is located within 100 metres from the edge of the Waterkloof Spruit) in order to establish a mixed land use development, located on Portion 214 (a Portion of Portion 195), the remaining extent of portion 269 (a Portion of Portion 34) and the remaining extent of Portion 60 (a Portion of Portion 32) of the farm Waterkloof 305-JO, (To be known as Waterkloof east ext. 74); Rustenburg, North West Province.

**AB ENVIRO CONSULT** was appointed by Zelske Ontwikkeling cc and Intawiz (Pty) Ltd to submit an application to the Department of Economic Development, Environment, Conservation and Tourism, North West Province for the above mentioned proposed development. Attached please find a notification of the proposed development and an electronic copy of the Basic Assessment report for your comments. You are requested to comment within 30 days of the date of this notice.

In the event of your organisation/department not wishing to comment on this matter, it would be appreciated if we could receive written confirmation thereof to enable us to continue with the finalisation of the application. If no response is however received from your Department/organisation within the said time, it will be assumed that your department/organisation does not wish to comment on this matter and the application will be processed further. Please be advised, in accordance with POPIA and NEMA, personal data is collected and processed by the applicant/EAP and shared with the Competent Authority to enable informed decision-making.

Please do not hesitate to contact us should any further information or clarification be required.

Yours sincerely,

Mr JP de Villiers  
EAP-EAPASA: 2019/808

PROF A B DE VILLIERS (M Sc, Ph D, SACNASP)  
MR.J.P. DE VILLIERS (M Sc, EAP-EAPASA, IAIA); MRS.J.E. DU PLOOY (M.E.M: EAP-EAPASA, IAIA)





## AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

7 Louis Leipoldt Street,  
Potchefstroom, 2531  
Tel: + 27 (0) 5488 105  
E-mail: [jp@abenviro.co.za](mailto:jp@abenviro.co.za)

NW: Department Public Works and Roads  
Mr Sydney Ntlatleng  
Private Bag X 2080  
Mmabatho  
2735

20/01/2023

Dear Sir/Madam

### PROJECT NAME:

Environmental Impact Assessment for the proposed clearance of 14.79ha of indigenous vegetation (of which 7.8ha is located within a CBA 2 and 3.29 ha is located within 100 metres from the edge of the Waterkloof Spruit) in order to establish a mixed land use development, located on Portion 214 (a Portion of Portion 195), the remaining extent of portion 269 (a Portion of Portion 34) and the remaining extent of Portion 60 (a Portion of Portion 32) of the farm Waterkloof 305-JO, (To be known as Waterkloof east ext. 74); Rustenburg, North West Province.

**AB ENVIRO CONSULT** was appointed by Zelske Ontwikkeling cc and Intawiz (Pty) Ltd to submit an application to the Department of Economic Development, Environment, Conservation and Tourism, North West Province for the above mentioned proposed development. Attached please find a notification of the proposed development and an electronic copy of the Basic Assessment report for your comments. You are requested to comment within 30 days of the date of this notice.

In the event of your organisation/department not wishing to comment on this matter, it would be appreciated if we could receive written confirmation thereof to enable us to continue with the finalisation of the application. If no response is however received from your Department/organisation within the said time, it will be assumed that your department/organisation does not wish to comment on this matter and the application will be processed further. Please be advised, in accordance with POPIA and NEMA, personal data is collected and processed by the applicant/EAP and shared with the Competent Authority to enable informed decision-making.

Please do not hesitate to contact us should any further information or clarification be required.

Yours sincerely,

Mr JP de Villiers  
EAP-EAPASA: 2019/808

PROF A B DE VILLIERS (M Sc, Ph D, SACNASP)  
MR.J.P. DE VILLIERS (M Sc, EAP-EAPASA, IAIA); MRS.J.E. DU PLOOY (M.E.M; EAP-EAPASA, IAIA)



## AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

7 Louis Leipoldt Street,  
Potchefstroom, 2531  
Tel: + 27 (0) 5488 105  
E-mail: [jp@abenviro.co.za](mailto:jp@abenviro.co.za)

The District Municipal Manager  
Bojanala District Municipality  
PO Box 1993  
Rustenburg  
0300

20/01/2023

Dear Sir/Madam

PROJECT NAME:

Environmental Impact Assessment for the proposed clearance of 14.79ha of indigenous vegetation (of which 7.8ha is located within a CBA 2 and 3.29 ha is located within 100 metres from the edge of the Waterkloof Spruit) in order to establish a mixed land use development, located on Portion 214 (a Portion of Portion 195), the remaining extent of portion 269 (a Portion of Portion 34) and the remaining extent of Portion 60 (a Portion of Portion 32) of the farm Waterkloof 305-JO, (To be known as Waterkloof east ext. 74); Rustenburg, North West Province.

**AB ENVIRO CONSULT** was appointed by Zelske Ontwikkeling cc and Intawiz (Pty) Ltd to submit an application to the Department of Economic Development, Environment, Conservation and Tourism, North West Province for the above mentioned proposed development. Attached please find a notification of the proposed development and an electronic copy of the Basic Assessment report for your comments. You are requested to comment within 30 days of the date of this notice.

In the event of your organisation/department not wishing to comment on this matter, it would be appreciated if we could receive written confirmation thereof to enable us to continue with the finalisation of the application. If no response is however received from your Department/organisation within the said time, it will be assumed that your department/organisation does not wish to comment on this matter and the application will be processed further. Please be advised, in accordance with POPIA and NEMA, personal data is collected and processed by the applicant/EAP and shared with the Competent Authority to enable informed decision-making.

Please do not hesitate to contact us should any further information or clarification be required.

Yours sincerely,

Mr JP de Villiers  
EAP-EAPASA: 2019/808

PROF A B DE VILLIERS (M Sc, Ph D, SACNASP)  
MR.J.P. DE VILLIERS (M Sc, EAP-EAPASA, IAIA); MRS.J.E. DU PLOOY (M.E.M; EAP-EAPASA, IAIA)





## AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

7 Louis Leipoldt Street,  
Potchefstroom, 2531  
Tel: + 27 (83) 5488 105  
E-mail: [jp@abenviro.co.za](mailto:jp@abenviro.co.za)

The Municipal Manager  
Adv. V. Moakona  
Rustenburg Local Municipality  
P O Box 16  
Rustenburg  
0300

20/01/2023

Dear Sir/Madam

**PROJECT NAME:**

Environmental Impact Assessment for the proposed clearance of 14.79ha of indigenous vegetation (of which 7.8ha is located within a CBA 2 and 3.29 ha is located within 100 metres from the edge of the Waterkloof Spruit) in order to establish a mixed land use development, located on Portion 214 (a Portion of Portion 195), the remaining extent of portion 269 (a Portion of Portion 34) and the remaining extent of Portion 60 (a Portion of Portion 32) of the farm Waterkloof 305-JO. (To be known as Waterkloof east ext. 74); Rustenburg, North West Province.

**AB ENVIRO CONSULT** was appointed by Zelske Ontwikkeling cc and Intawiz (Pty) Ltd to submit an application to the Department of Economic Development, Environment, Conservation and Tourism, North West Province for the above mentioned proposed development. Attached please find a notification of the proposed development and an electronic copy of the Basic Assessment report for your comments. You are requested to comment within 30 days of the date of this notice.

In the event of your organisation/department not wishing to comment on this matter, it would be appreciated if we could receive written confirmation thereof to enable us to continue with the finalisation of the application. If no response is however received from your Department/organisation within the said time, it will be assumed that your department/organisation does not wish to comment on this matter and the application will be processed further. Please be advised, in accordance with POPIA and NEMA, personal data is collected and processed by the applicant/EAP and shared with the Competent Authority to enable informed decision-making.

Please do not hesitate to contact us should any further information or clarification be required.

Yours sincerely,

Mr JP de Villiers  
EAP-EAPASA: 2019/808

**PROF A B DE VILLIERS (M Sc, Ph D, SACNASP)**  
**MR.J.P. DE VILLIERS (M Sc, EAP-EAPASA, IAIA); MRS.J.E. DU PLOOY (M.E.M; EAP-EAPASA, IAIA)**



## AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

7 Louis Leipoldt Street,  
Potchefstroom, 2531  
Tel: + 27 (83) 5486 105  
E-mail: [jp@abenviro.co.za](mailto:jp@abenviro.co.za)

The councilor ward 35  
Cllr Simphiwe Patrick Mkholwa  
Rustenburg Local Municipality  
P O Box 16  
Rustenburg  
0300

20/01/2023

Dear Sir/Madam

**PROJECT NAME:**

Environmental Impact Assessment for the proposed clearance of 14.79ha of indigenous vegetation (of which 7.8ha is located within a CBA 2 and 3.29 ha is located within 100 metres from the edge of the Waterkloof Spruit) in order to establish a mixed land use development, located on Portion 214 (a Portion of Portion 195), the remaining extent of portion 269 (a Portion of Portion 34) and the remaining extent of Portion 60 (a Portion of Portion 32) of the farm Waterkloof 305-JO. (To be known as Waterkloof east ext. 74); Rustenburg, North West Province.

**AB ENVIRO CONSULT** was appointed by Zelske Ontwikkeling cc and Intawiz (Pty) Ltd to submit an application to the Department of Economic Development, Environment, Conservation and Tourism, North West Province for the above mentioned proposed development. Attached please find a notification of the proposed development and an electronic copy of the Basic Assessment report for your comments. You are requested to comment within 30 days of the date of this notice.

In the event of your organisation/department not wishing to comment on this matter, it would be appreciated if we could receive written confirmation thereof to enable us to continue with the finalisation of the application. If no response is however received from your Department/organisation within the said time, it will be assumed that your department/organisation does not wish to comment on this matter and the application will be processed further. Please be advised, in accordance with POPIA and NEMA, personal data is collected and processed by the applicant/EAP and shared with the Competent Authority to enable informed decision-making.

Please do not hesitate to contact us should any further information or clarification be required.

Yours sincerely,

Mr JP de Villiers  
EAP-EAPASA: 2019/808

PROF A B DE VILLIERS (M Sc, Ph D, SACNASP)  
MR.J.P. DE VILLIERS (M Sc, EAP-EAPASA, IAIA); MRS.J.E. DU PLOOY (M.E.M; EAP-EAPASA, IAIA)





## AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

7 Louis Leipoldt Street,  
Potchefstroom, 2531  
Tel: + 27 (83) 5488 105  
E-mail: [jp@abenviro.co.za](mailto:jp@abenviro.co.za)

Eskom  
Mr. M Dala  
[dalaME@eskom.co.za](mailto:dalaME@eskom.co.za)

20/01/2023

Dear Sir/Madam

**PROJECT NAME:**

Environmental Impact Assessment for the proposed clearance of 14.79ha of indigenous vegetation (of which 7.8ha is located within a CBA 2 and 3.29 ha is located within 100 metres from the edge of the Waterkloof Spruit) in order to establish a mixed land use development, located on Portion 214 (a Portion of Portion 195), the remaining extent of portion 269 (a Portion of Portion 34) and the remaining extent of Portion 60 (a Portion of Portion 32) of the farm Waterkloof 305-JO, (To be known as Waterkloof east ext. 74); Rustenburg, North West Province.

**AB ENVIRO CONSULT** was appointed by Zelske Ontwikkeling cc and Intawiz (Pty) Ltd to submit an application to the Department of Economic Development, Environment, Conservation and Tourism, North West Province for the above mentioned proposed development. Attached please find a notification of the proposed development and an electronic copy of the Basic Assessment report for your comments. You are requested to comment within 30 days of the date of this notice.

In the event of your organisation/department not wishing to comment on this matter, it would be appreciated if we could receive written confirmation thereof to enable us to continue with the finalisation of the application. If no response is however received from your Department/organisation within the said time, it will be assumed that your department/organisation does not wish to comment on this matter and the application will be processed further. Please be advised, in accordance with POPIA and NEMA, personal data is collected and processed by the applicant/EAP and shared with the Competent Authority to enable informed decision-making.

Please do not hesitate to contact us should any further information or clarification be required.

Yours sincerely,

Mr JP de Villiers  
EAP-EAPASA: 2019/808

PROF A B DE VILLIERS (M Sc, Ph D, SACNASP)  
MR.J.P. DE VILLIERS (M Sc, EAP-EAPASA, IAIA); MRS.J.E. DU PLOOY (M.E.M; EAP-EAPASA, IAIA)

## 10.4 ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Summary of response from EAP
To follow as part of Final BAR	NA

## 2. 10.5 COMMENTS AND RESPONSE REPORT

I&AP registered:	Comment received:	Response by the EAP:
To follow as part of Final BAR		

# 11. SUMMARY OF THE FINDINGS AND RECOMMENDATIONS OF SPECIALISTS

## 11.1 GEOTECHNICAL REPORT (See Appendix A for a copy of the Report.)

### 11.1.1 Terms of Reference

The aim of this investigation was to identify any possible engineering geological problems before commencement of proper township proclamation.

### 11.1.2 Methodology

The following was consulted during the investigation:

- The geological map 2526 Rustenburg. Scale 1:250 000. The Geological Survey of South Africa.
- The topography map 2528 CA Rustenburg East, with a scale of 1:50 000. The Chief Directorate: Surveys and Land Information, Mowbray.
- A Google Areal Map with contours from Maxim Planning used as base map for the investigation.

## SITE INVESTIGATION

All available information was studied before and during the site visit.

The investigation commenced with a desk study, where all relevant information is collected and compiled on a base map. The site was divided into land forms, after which the accuracy of the information was verified by means of a field visit.

Test pits were dug and representative disturbed samples collected and tested. The position of the test pits are represented in Figure 2 (Appendix A) of the Geotechnical Report. The soil profiles were described according to the methods described by Jennings *et al* (Jennings 1973). This method describes each horizon in terms of moisture content, colour, consistency, structure, type of soil and origin of the soil.

Disturbed samples of the soil materials were taken for laboratory analysis. The grading of the soils was determined by sieve and hydrometer analysis, resulting in cumulative grading curves.

The mechanical properties of the soil material are described in terms of the liquid limit and plasticity index (determined by means of the Atterberg Limit tests) and the linear shrinkage. These values can be used to calculate the potential expansiveness of the soils, and to evaluate the materials for use as construction material. The consistency of a soil is described by means of its Atterberg limits, where the effect of a change in the moisture content on the consistency of a cohesive soil is measured. According to Cernica (1982) these tests are useful "mostly for soil identification and classification". It can also be used to determine the mechanical properties of cohesive soil material<sup>1</sup>.

The linear shrinkage test to determine the percentage shrinkage that can be expected, is performed by wetting a soil to approximately its liquid limit and drying the resultant paste in a linear shrinkage mould.

The potential expansiveness of a soil depends upon its clay content, the type of clay mineral, its chemical composition and mechanical character. A material is potentially expansive if it exhibits the following properties (Kantey and Brink, 1952):

- clay content greater than 12 percent,
- plasticity index of more than 12,
- liquid limit of more than 30 percent, and
- linear shrinkage of more than 8 percent.

The potential expansiveness (low, medium, high, very high) is calculated by means of Van der Merwe's method (Van der Merwe, 1964), where the equivalent plasticity index versus the clay content of the material is plotted on a graph divided into heave categories.

If any sample in the study area classifies as potentially expansive, the amount of heave or mobilization in mm measured on the surface will be calculated

## **LABORATORY TESTS**

Samples for foundation indicator tests (GFSH-2) were reduced according to the limited variability of the geotechnical character and simplicity of the site.

No free swell tests were done as all these areas usually falls within the drainage features and outside the proposed development area. No consolidometer tests were done as it was impossible to secure any undisturbed soil samples required for these tests. No soil chemistry samples were tested as all new developments use synthetic pipes not reactive to soil aggressiveness

### **11.1.3 Conclusions and recommendations:**

- No problems are foreseen regarding the excavatability to 1,5m depth.
- Zoning of the site revealed a zone with constraints regarding the highly collapse and consolidation as well as the expansive potential of the soil, and special construction and foundation techniques will be required. All open excavations exceeding 1,5m in depth must be supported and inspected by a competent person to verify the stability of possible bedding planes
- The mitigation measures proposed in the report (attached in Annexure S of the comprehensive Land Development Application) will be sufficient to successfully address the anticipated geotechnical problems and to ensure the sustainable development as planned.
- This investigation was done to reveal the geotechnical properties on site with the techniques as described to form our opinion. Although every possible factor during the investigation was dealt with, it is possible to encounter variable local conditions. This will require the inspection of foundations by a competent person to verify expected problems.

## 11.2 ECOLOGICAL IMPACT ASSESSMENT (See Appendix B for a copy of this report)

### 11.2.1 Objectives of the habitat study

- Surveys to investigate key elements of habitats on the site, relevant to the conservation of fauna and flora.
- Recording of any sightings and/or evidence of existing fauna and flora.
- The selective and careful collecting of voucher specimens of invertebrates where deemed necessary.
- An evaluation of the conservation importance and significance of the site with special emphasis on the current status of threatened species.
- Recording of possible host plants or foodplants of fauna such as butterflies.
- Literature investigation of possible species that might occur on site.
- Integration of the literature investigation and field observations to identify potential ecological impacts that could occur as a result of the development.
- Integration of literature investigation and field observations to make recommendations to reduce or minimise impacts, should the development be approved

### 11.2.2 Methods:

A desktop study comprised not only an initial phase, but also it was used throughout the study to accommodate and integrate all the data that become available during the field observations.

Surveys by R.F. Terblanche during October 2020 were conducted to note key elements of habitats on the site, relevant to the conservation of fauna and flora. The main purpose of the site visits was ultimately to serve as a habitat survey that concentrated on the possible presence or not of threatened species and other species of high conservation priority.

### 11.2.3 Conclusion:

- Buildings, associated gardens and pavings occur at large parts of the site. Roads and tracks are numerous at the site. Conspicuous cover of exotic plant species such as *Eucalyptus* species, *Melia azedarach* (Syringa), *Solanum mauritianum* (Bugweed) and *Pinus* species are found at various parts of the site. Areas that were historically cultivated as orchards, are present at the site. Alien invasive herbaceous weeds are widespread in disturbed areas. Informal dumping occurs in some places.
- Terrestrial vegetation at the site is a disturbed savanna with hitherto cleared areas, disturbed areas and clumps of alien invasive trees. Extensive covers of *Eucalyptus camaldulensis* are in particular conspicuous at the site. Alien invasive tree species such as *Melia azedarach* are widespread at the site. Some indigenous tree species such as *Vachellia karroo*, *Ziziphus mucronata* and *Searsia lancea* are conserved at the site. Conspicuous exotic weeds at the site are *Flaveria bidentis*, *Tagetes minuta* (Khaki Weed), *Bidens bipinnata* (Black Jack), *Conyza bonariensis* (Flea Bane) and *Datura* (Thorn-apples) as well as shrubs such as *Solanum mauritianum* (Bugweed).
- No rocky ridges appear to be present at the site.
- Wetlands are absent at the site.
- A non-perennial river, its active channel and a narrow riparian zone are present outside the northern boundary of the site.
- Site is part of the Crocodile (West) and Marico Water Management Area (WMA 3). The site is part of a River Freshwater Ecosystem Priority Area (River FEPA) (Nel *et al.*, 2011a, 2011b). The stream network in the catchment therefore need to be managed in a way that maintains a good condition of the river reach (Nel *et al.*, 2011). The River FEPA status also means that it is important to apply clearing of invasive alien plants and/or rehabilitation of river banks. The watercourse is outside the site.
- Savanna at the site is represented by the Moot Plains Bushveld vegetation type which is not listed as a threatened ecosystem (National List of Threatened Ecosystems, 2011).
- No Threatened or Near Threatened plant or animal species or any other plant or animal species of particular conservation concern appear to be resident at the site.
- There is little scope for the site to be part of a corridor of particular conservation importance.
- The non-perennial river, including its riparian zone and buffer zone, which is north of the site, should be viewed as an important conservation corridor in the larger area. Given the likely absence of sensitive species as well as the



location, setting and current ecological status of the site a 10 m buffer zone from the edge of the riparian zone is recommended as a practical buffer zone for the conservation of the non-perennial river and riparian zone at the site.

- Ecological sensitivity at the site is low at some more developed parts and medium at the remainder.
- Following the mitigations which will be upheld and planned footprint for development all the impact risks are moderate or low.
- An opportunity presents itself to cultivate indigenous plant species at the site

### **11.3 HERITAGE IMPACT ASSESSMENT (HIA) (See Appendix C for a copy of this report)**

#### **11.3.1 Terms of Reference for Heritage Impact Assessment**

The Terms of Reference for the study was to:

1. Identify all objects, sites, occurrences and structures of an archaeological or historical nature (cultural heritage sites) located on the portion of land that will be impacted upon by the proposed development;
2. Assess the significance of the cultural resources in terms of their archaeological, historical, scientific, social, religious, aesthetic and tourism value;
3. Describe the possible impact of the proposed development on these cultural remains, according to a standard set of conventions;
4. Propose suitable mitigation measures to minimize possible negative impacts on the cultural resources;
5. Review applicable legislative requirements;
6. Provide Motivation for Exemption from a Full Phase 1 HIA;

#### **Legislative requirements of National Heritage Resources Act (NHRA), Act 25 of 1999**

Aspects concerning the conservation of cultural resources are dealt with mainly in two acts. These are the National Heritage Resources Act (Act 25 of 1999) and the National Environmental Management Act (Act 107 of 1998).

#### **The National Heritage Resources Act**

According to the above-mentioned act the following is protected as cultural heritage resources:

- a. Archaeological artifacts, structures and sites older than 100 years
- b. Ethnographic art objects (e.g. prehistoric rock art) and ethnography
- c. Objects of decorative and visual arts
- d. Military objects, structures and sites older than 75 years
- e. Historical objects, structures and sites older than 60 years
- f. Proclaimed heritage sites
- g. *Grave yards and graves older than 60 years*
- h. Meteorites and fossils
- i. Objects, structures and sites of scientific or technological value.

The National Estate includes the following:

- a. Places, buildings, structures and equipment of cultural significance
- b. Places to which oral traditions are attached or which are associated with living heritage
- c. Historical settlements and townscapes

- d. Landscapes and features of cultural significance
- e. Geological sites of scientific or cultural importance
- f. Sites of Archaeological and palaeontological importance
- g. *Graves and burial grounds*
- h. Sites of significance relating to the history of slavery
- i. Movable objects (e.g. archaeological, palaeontological, meteorites, geological specimens, military, ethnographic, books etc.)

A Heritage Impact Assessment (HIA) is the process to be followed in order to determine whether any heritage resources are located within the area to be developed as well as the possible impact of the proposed development thereon. An Archaeological Impact Assessment (AIA) only looks at archaeological resources. An HIA must be done under the following circumstances:

- a. The construction of a linear development (road, wall, power line, canal etc.) exceeding 300m in length
- b. The construction of a bridge or similar structure exceeding 50m in length
- c. *Any development or other activity that will change the character of a site and exceed 5 000m<sup>2</sup> or involve three or more existing erven or subdivisions thereof*
- d. Re-zoning of a site exceeding 10 000 m<sup>2</sup>
- e. Any other category provided for in the regulations of SAHRA or a provincial heritage authority

### **11.3.2 Methodology**

#### **Survey of literature**

A survey of available literature was undertaken in order to place the development area in an archaeological and historical context. The sources utilized in this regard are indicated in the bibliography.

#### **Field survey**

The field assessment section of the study was conducted according to generally accepted HIA practices and aimed at locating all possible objects, sites and features of heritage significance in the area of the proposed development. The location/position of all sites, features and objects is determined by means of a Global Positioning System (GPS) where possible, while detail photographs are also taken where needed.

#### **Oral histories**

People from local communities are sometimes interviewed in order to obtain information relating to the surveyed area. It needs to be stated that this is not applicable under all circumstances. When applicable, the information is included in the text and referred to in the bibliography.

#### **Documentation**

All sites, objects, features and structures identified are documented according to a general set of minimum standards. Coordinates of individual localities are determined by means of the Global Positioning System (GPS). The information is added to the description in order to facilitate the identification of each locality

### **11.3.3 Recommendations and Conclusions**

Background research indicated that there are some cultural heritage sites and features in the larger geographical area within which the study area falls. The assessment of the specific study area did not identify any sites, features or material of cultural heritage (archaeological and/or historical) origin or significance. If any sites did exist here in the past it would have been largely disturbed or destroyed by recent historical agricultural and urban development activities in the study and larger area around it.

Earlier aerial images of the study area (dated to between 2003 & 2022) shows that the study area was used for agricultural activities in the recent past, but that by 2003 already there had been some residential and business developments in it. These developments had expanded slightly between 2003 and 2015, achieving basically the levels of 2022. There is some evidence on these images of the water furrow indicated on the 1912 & 1952 maps of Portions 60 & 269, but by 2015 and 2022 this is all but gone.

It should be noted that although all efforts are made to locate, identify and record all possible cultural heritage sites and features (including archaeological remains) there is always a possibility that some might have been missed as a result of grass cover and other factors. The subterranean nature of these resources (including low stone-packed or unmarked graves) should also be taken into consideration. Should any previously unknown or invisible sites, features or material be uncovered during any development actions then an expert should be contacted to investigate and provide recommendations on the way forward.

**Finally, from a Cultural Heritage point of view the proposed development on Portions 60, 214 & 269 of the farm Waterkloof 305JQ should be allowed to continue taking the above into consideration.**

## 11.4 Civil Services report (See Appendix D for a copy of this report)

### 11.4.1 Terms of reference

EPS Consulting Engineers (Pty) Ltd was approach by Dr Dawie Bos of Maxim Town Planning Consultants, on behalf of the developer, for the compilation of the technical services report for the establishment of the proposed township Waterkloof Extension 74. The proposed development is situated portions 241, 269 and 60 of the farm Waterkloof 305 JQ This report was compiled to provide technical information regarding the external and internal civil engineering services required for the proposed development

### 11.4.2 Methodology

All calculations in this report were done according to the Guidelines for Human Settlement Planning and Design, compiled under the patronage of the Department of Housing, commonly referred to as the "Red Book".

### 11.4.2 Summery and findings

#### Bulk Services

##### Water

There is an existing 400mm uPVC bulk water pipeline, owned and operated by the Rustenburg Local Municipality, situated parallel to, and on the eastern side of the P16-1 (R24) provincial road. The townships' internal water network will connect directly to this pipeline.

#### Water Demand

The table below reflects the estimated water consumption to be applied:

Estimated water consumption:

Land Use	Gross Building Area / Units	Annual Average Daily Demand (AADD)	Water Demand (kℓ/d)
Residential 1	168 units	1000ℓ/day/unit	168.0
Residential 2	430 units	800ℓ/day/unit	344.0
Business 1	15 205m <sup>2</sup>	400ℓ/day/100m <sup>2</sup>	60.8
Municipal	1 unit	1000ℓ/day/unit	1.0

Total	573.8
-------	-------

### Bulk Sewer:

There is no existing sewerage reticulation in the immediate vicinity of the proposed development.

#### Alternative 1

A new sewerage treatment plant, owned and operated by the Home-Owners Association, will be constructed. Effluent from the sewerage treatment plant can be used as irrigation water, thus alleviating demand on the potable water supply. The treatment works will be situated in the north-western corner of the development.

#### Alternative 2

A new pumpstation, owned and operated by the Home-Owners Association, will be constructed. From the pump station a rising main of at least 110mm diameter will have to be constructed up to an existing connection point.

There are 2 connection points, one directly to the west of the P16-1 road (R24). The most obvious route for the rising main is to duplicate the route of the existing 400mm water pipe, directly west and parallel to the P16-1 (R24).

The other connection point will be the new pumpstation situated in the proposed Waterkloof East X63 development situated across the Waterkloof Spruit to the north.

### Sewerage run-off

Estimated Sewer Flow:

Land Use	Units	Annual Average Daily Flow (AADF)	Sewerage Outflow (kℓ/d)
Residential 1	168 units	800ℓ/day/unit	134.4
Residential 2	430 units	640ℓ/day/unit	275.2
Business 1	15 205m <sup>2</sup>	320ℓ/day/100m <sup>2</sup>	48.7
Municipal	1 unit	320ℓ/day/100m <sup>2</sup>	0.8
Total			459.1

### Internal Sewer Layout

The internal sewerage system will be designed to accommodate the average annual daily flow (AADF) and to service every unit and development structure within the development.

The topography found at the proposed development is of such a nature that all sewerage will be adequately transported via a gravity line to the south-eastern corner of the development. From there the sewerage will be pumped to the rising main or to the sewerage treatment plant as mentioned above.

### Design Criteria and Materials

uPVC Class34 Free-flow pipe material as well as pre-cast concrete manholes to SABS standards will be used in the construction of the sewer network with the following minimum requirements:

- Annual average daily flow l/day (AADF)
  - Commercial and other - refer to Section 3.2 above
  - Peak Factor - 2.5
  - Infiltration Allowance - 15%

- Network and Main Sewer:
  - Minimum diameter pipe 160mm;
  - Minimum depth of cover 1m

DIAMETER	MINIMUM GRADIENT	MAXIMUM DEPTH OF FLOW	MINIMUM VELOCITY
160mm	1/200	0.85D	0,7m/s

- Materials:
  - Pre-cast concrete manholes from 1000mm diameter;
  - Manhole frames and covers – Polymer Concrete (Lockable)
  - Maximum spacing of manholes - 75 meters;
  - Building connections (110mm) will be supplied (1 meter from erf boundary);
  - Bedding and Backfill – SANS 1200

## 11.5 WETLAND ASSESSMENT REPORT (See Appendix E for a copy of this report)

### 11.5.1 Terms of Reference for Wetland Assessment Report

A wetland assessment is required for a Waterkloof 214 and 269 approximately 9 km south of the centre of Rustenburg in the North West Province, South Africa (elsewhere referred to as the site). If wetlands would be present at the site the assessment further focuses on the hydro-geomorphic setting, an estimate of the properties of the wetlands, an assessment of the functional aspects of wetlands and an impact assessment to wetlands, should the development be approved. If riparian zones would be present an indication of the active channel and riparian zone is given

The objectives of the wetland habitat assessment are to provide:

- An indication of the existence of wetlands at the site and if so:
- An identification of major aspects of the hydro-geomorphic setting and terrain unit at which the wetland occur;
- An estimate of the size and roughness of the wetland
- An indication of the hydric soils at the site;
- An indication of erodability;
- An indication of the presence or absence of peat at the site;
- An outline of hydrological drivers that support the existence and character of the wetland;
- An assessment of the possible presence or absence of threatened or localised plant species, vertebrates and invertebrates of the region, at the site;
- A description of the functions provided by the wetland at the site;
- An interpretation of the priority of the wetland for local communities in the area;
- An interpretation of the priority of the wetland to biodiversity at the site;

### 11.5.2 Methodology

A desktop study comprised not only an initial phase, but also it was used throughout the study to accommodate and integrate all the data that become available during the field observations.

A survey consisted of visits by R.F. Terblanche during October 2020 to note key elements of habitats on the site, relevant to the conservation of wetlands and riparian zones.

Classification of any inland wetland systems that could be present at the site is according to the Classification System for Wetlands and other Aquatic Ecosystems in South Africa (Ollis *et al.*, 2013). One of the major advantages of the Classification System for South Africa (Ollis *et al.*, 2013) is that the functional aspects of wetlands are the focal point of the classification. Wetlands are very dynamic systems and their functionality weighs high against the often rapid changes in their appearance, as could be seen from wetland butterfly studies (Terblanche *In prep*). In this document the main guideline for the delineation and identification of wetlands where present is the practical field procedure for identification and delineation of wetlands by DWAF (2005).

### 11.5.3 Recommendations and Conclusions

- Wetlands such as floodplain wetlands, channelled valley-bottom wetlands, unchannelled valley-bottom wetlands, depressions, seeps and wetland flats appear to be absent at the site. In conclusion no wetlands are found at the site.
- A non-perennial river, including its narrow active channel and riparian zone, is present at the site. Riparian vegetation at the site is ecologically disturbed but contains a number of indigenous plant species. Indigenous graminoid species at the riparian zone include the rush *Juncus oxycarpus*, the reed *Phragmites mauritianus* and the grass species *Imperata cylindrica*. Conspicuous indigenous tree species at the riparian zone are *Ziziphus mucronata* and *Combretum erythrophyllum*. Some bush encroachment by *Asparagus larycinus* occur along the riparian zone. Alien invasive trees *Melia azedarach* and *Morus alba* are present at the riparian zone. Various alien invasive heraceous plant species such as listed for the terrestrial zone are also present at the riparian zone. The alien invasive shrub *Cestrum laevigatum* is also visible at some parts of the riparian zone.
- Conspicuous current disturbances at the active channel and riparian zone at the site are 1) infestation by alien invasive plant species in particular *Melia azedarach* (Syringa Berrytree) and 2) possible sedimentation from the roadside.
- Present ecological status (PES) of the Non-perennial River at the site is CATEGORY C which means the watercourse is moderately modified but with some loss of natural habitats (Table 4.2 and Table 4.3). Ecological Importance and Sensitivity (EIS) at the site is Category B which is High and refers to watercourses that are considered to be ecologically important and sensitive. The biodiversity of these floodplains may be sensitive to flow and habitat modifications. They play a role in moderating the quantity and quality of water of the major rivers (Table 4.4 and Table 4.5).
- Site is part of the Crocodile (West) and Marico Water Management Area (WMA 3). The site is part of a River Freshwater Ecosystem Priority Area (River FEPA) (Nel *et al.*, 2011a, 2011b). The stream network in the catchment therefore need to be managed in a way that maintains a good condition of the river reach (Nel *et al.*, 2011). The River FEPA status also means that it is important to apply clearing of invasive alien plants and/or rehabilitation of river banks.
- No Threatened or Near Threatened wetland plant or wetland animal species or any other wetland plant or wetland animal species of particular conservation concern appear to be resident at the site.
- The non-perennial river, including its riparian zone and buffer zone, should be viewed as an important conservation corridor in the larger area.
- Given the likely absence of sensitive species as well as the location, setting and current ecological status of the site a 10 m buffer zone from the edge of the riparian zone is strongly recommended as a practical buffer zone for the conservation of the non-perennial river and riparian zone at the site.
- No waste or rubble whatsoever should be dumped at the watercourse and buffer zone
- The non-perennial river at the site, with its riparian zone and buffer zone, is unlikely to be significantly impacted by the proposed developments when the watercourse and bufferzone are set aside as a no-go zone for developments. If the development is approved the construction should be planned in such a manner that surface flow function well while erosion is limited. There is no distinct indication that interflow plays an important role in the maintenance of the non-perennial river. The geomorphological setting and flow regime would be similar post development as to prior the development, if the development is approved.
- The Negative Risk Rating in accordance with a risk matrix based on Section 21 c and (i) water use Risk Assessment Protocol and Notice 509 of 2016 (Government Gazette No. 40229: 105-133; Republic of South Africa) at the site is Low

## 11.6 AGRICULTURAL IMPACT ASSESSMENT REPORT (See Appendix F for a copy of this report)

### 11.6.1 Terms of Reference

Index was appointed by AB ENVIRO CONSULT to do an agricultural impact assessment in terms of Notice No. 320 Government Gazette 43110 20 March 2020.

The assessment and reporting requirements of the protocol in Notice 320 are according to a level of environmental sensitivity as identified by the national web based environmental screening tool for agricultural resources. It is based on the land capability evaluation values provided by the Department of Agriculture, Land Reform and Rural Development (DALRRD)

### 11.6.2 Methodology

#### Site sensitivity verification

The current use of the land and the environmental sensitivity of the site are available in the screening tool<sup>1</sup>, and were used in assessing the site.

- The site sensitivity verification was done through use of satellite imagery and a site inspection;
- The outcome of the site sensitivity verification is described in this report.

The report will compare the current situation with the environmental sensitivity as indicated by the screening tool. It will include information on new developments or infrastructure, the change in vegetation cover or status etc.; It will further indicate, according to the requirements of the Environmental Impact Assessment Regulations, the differences between the screening tool and the actual status as found by the site visit.

#### Site evaluation process

The results in this study followed a site visit on 25 November 2022. A satellite image of Bing was used as backdrop to digitised the present land uses. A number of soil profiles were assessed by using a soil augur or probe as well as profiles described in the geotechnical study. The dominant soil types were identified from which a generalised soil map was prepared.

Vegetation was simultaneously logged to determine veld condition. Grazing capacity is according to the DALRRD and then adapted to present veld conditions.

Capability classification is according to the guidelines published on the AGIS website of the DALRRD was used to determine the capability of soils and the agricultural potential (Department of Agriculture, 2019).

Climate data was obtained from SA Weather and other on-line sources available on the internet

### 11.6.3 Recommendations and Conclusions

The property is not used for any farming activities. There are a number of homesteads that are occupied.

#### Results of the site verification

Most of the site was incorrectly classified as *high* or *moderately sensitive*. There is no cultivated land on the site that would have the land classified as *highly sensitive*.

The screening tool indicates that more than half of the site is cultivated.

This is disputed – there is no cultivated land on the site, and there is also no evidence that it was for more than a decade.

#### Specialist site analyses

According to the screening tool, the site has *high sensitivity*. This is incorrect because most of the potentially arable land is sandy with a low water holding capacity or has a hard plinthite layer that inhibit root development; even the deeper soil is only *moderately sensitive*.



There is no highly sensitive land on the site, no irrigation takes place and there is no irrigation water available. There is no cultivated land on the site and considering that the property can only sustain 3 head of cattle, retaining the land for farming is sustainable – it cannot be considered as a viable farming unit

### **Recommendation**

No reason can be found not to allow the development. It is our recommendation that the project be approved for implementation

## **12. CONCLUSIONS AND RECOMMENDATIONS**

Zelske Ontwikkeling cc and Intawiz (Pty) Ltd has appointed **AB Enviro Consult CC**, an independent environmental consultancy, to undertake an Environmental Impact Assessment for the proposed clearance of 14.79ha of indigenous vegetation (of which 7.8ha is located within a CBA2 and 3.29ha is located within 100 metres from the edge of the Waterkloof Spruit) in order to establish a mixed land use development, located on Portion 214 (a Portion of Portion 195), the remaining extent of portion 269 (a Portion of Portion 34) and the remaining extent of Portion 60 (a Portion of Portion 32) of the farm Waterkloof 305-JO, (To be known as Waterkloof east ext. 74); Rustenburg, North West Province.

This Chapter of the BAR provides a summary of the findings of the impact assessment process, including the EAP's opinion as to whether the activity should or should not be authorised.

### **12.1 ENVIRONMENTAL IMPACT STATEMENT**

The detailed environmental assessment for the proposed development, has not found any environmental impacts that *cannot* be mitigated to acceptable and manageable levels.

The planning practices of the past have resulted in sprawling urban areas that are un-economical. Today, planning policies are transformed to mainly encourage infill development on vacant land within the urban environment, in order to combat urban sprawl. The proposed development falls in line with these principals, as it is located within the urban area and is surrounded by urban development.

In terms of current policy directives, the main development strategy for residential development should be based on the objectives of the Breaking New Ground Principles (BNG) for sustainable human settlements which can be summarised as follows:

- To ensure that sustainable housing development takes place.
- To integrate housing with other municipal services in order to establish sustainable human settlements, in support of spatial restructuring.
- To coordinate municipal departments in order to work together in planning and implementing.
- To promote middle and high income housing which will in turn generate resources to improve low income areas.
- To promote environmental and energy efficient housing

The new "Human Settlements Plan" promotes the achievement of a non-racial, integrated society through the development of sustainable human settlements and quality housing. Housing is to be utilized for the development of sustainable human settlements in support of spatial restructuring.

The aim is to move beyond the provision of basic shelter towards achieving the broader vision of sustainable human settlements and more efficient towns, cities and regions. The following factors will be taken into consideration in order to achieve this vision:

- Progressive Informal Settlement Eradication: These settlements must be integrated into the broader urban setup so as to overcome spatial, social and economic exclusion. The plan encourages the eradication of

informal settlements through in-situ upgrading in desired locations coupled with the relocation of households where development is not possible or desirable.

- Promoting Densification and Integration: The aim is to integrate previously excluded groups into the city so as to enable them to enjoy the benefits it offers and to create more integrated, functional and environmentally sustainable human settlements, towns and cities.
- Enhancing Spatial Planning: Greater co-ordination and alignment of various planning instruments and economic policies lies at the heart of sustainable human settlements. This requires more than mere co-ordination between departments but there needs to be a single overarching planning authority and/or instrument to provide macro-level guidance to support the development of sustainable human settlements.
- Enhancing the location of New Housing Projects: The location of past housing projects was said to reinforce apartheid spatial settlement patterns. Spatial restructuring aims to achieve a more decisive intervention in land markets. The following interventions are envisaged viz. accessing well located state-owned and parastatal land: acquisition of well-located private land for housing development, funding for land acquisition and fiscal incentives.
- Supporting Urban Renewal and Inner City Regeneration: Urban renewal and inner city regeneration often result in the current inhabitants being excluded as a result of the construction of dwelling units they cannot afford. Some municipalities are trying to avoid this by promoting affordable inner city housing. The "Human Settlements Plan" will support this by encouraging social housing.
- Developing Social and Economic Infrastructure: The need to move away from a housing-only approach towards a more holistic development of human settlements which includes the provision of social and economic infrastructure is emphasized.
- Enhancing the Housing Product: The aim is to develop more appropriate settlement layouts and housing products and to ensure appropriate housing quality

Consistent with national priorities, environmental authorities must support "*increased economic growth and promote social inclusion*", whilst ensuring that such growth is "*ecologically sustainable*". In the National Spatial Development Perspective (NSDP) it is highlighted that, to achieve the goal of stimulating sustainable economic activities and to create long-term employment opportunities, it is required that spending on economic infrastructure is focused in priority areas with potential for economic development, with development to serve the broader societies' needs equitably

The Developer has identified the need for the establishment of a proper integrated human settlement that will not only address the short-term need for residential erven to address the immediate housing backlog, but to also provide erven for the development over the short-medium term in order to eradicate informal occupation of land. This project will also allow for the development of various housing typologies to accommodate the housing needs experienced within the Rustenburg urban area. The proposed township will also be linked to the economic activities offered within the Rustenburg urban area.

During the construction phase, temporary employment will be created. The increased employment in the area during the construction phase will also result in increased expenditure, which, in addition, will mean that more than just the proposed jobs required for the construction on the site will be created due to economic spin-offs that will result. Due to the nature of the proposed development it will lead to an increase in employment opportunities in the operational phase and will contribute to the broadening of the income base and alleviation of poverty within the Local Municipality

The identification, description, evaluation and comparison of alternatives are important for ensuring a sound environmental scoping process.

The alternatives considered for the proposed development includes "Mixed land use township" (Alternative 1), "Single land use: Housing only" (Alternative 2) and the "No-go option" (Alternative 3).

People want easy access to job opportunities, shops, schools, banking facilities, clinics, etc. and want their living environment to be placed at strategic positions with good access routes in close proximity to these amenities.

A mixed land use development is *socially responsible* based on the following:

- It covers the mixed and lower income bracket by providing a higher density housing option;
- The development will inevitably support the use of public transport;
- The development will include supporting social infrastructure as well as retail and commercial activities;
- The layout of the development must respond to the future road planning for the area, to facilitate and maximise pedestrianisation and public transport.
- Commercial erven can accommodate a shopping centre, to service the existing formalised settlements in the area. The commercial node will:
  - Promote entrepreneurial services and products;
  - Be within walking distance to places of refreshment and trade for residents;
  - Provide Job opportunities; and
  - Improve neighbourhood quality.

By providing only one land use type (i.e., housing), mixed income development and social integration across race and income levels, *cannot be achieved*. By restricting a township to one land use only, the above benefits to the local community, and subsequent council area, cannot be realised, and hence, is not a preferred land use option.

The only other alternative that exists for the proposed development is the “no-go” option which will imply that the status quo will prevail. This is unacceptable, as other land parcels will have to be sourced to provide for this need within the community. This will imply that infill development will not take place and will result in urban sprawl.

It is therefore proposed that Alternative 1 be the preferred alternative.

Specialist studies were conducted and a full Public Participation Process is being followed. This information was used to generate a sensitivity map that was used to assess the sustainability of the design and layout plan for the proposed development.

The **Geo-Technical Engineer** has found the site can be developed taking cognizance of the recommendations in relation to excavations.

The **Civil Engineer** found that sufficient capacity for water and sewer Municipal services is available in the area.

The **Heritage Impact Assessment** revealed that it is evident that there is a low likelihood (besides the water furrow remains) of any significant cultural heritage (archaeological and/or historical) sites or features being present in the area. If any did exist here in the past it would have been extensively disturbed or destroyed as a result of recent developments.

The **Fauna and Flora Habitat** study conducted also revealed that the site consists of a large part that has been developed in the past and a remaining ecologically disturbed terrestrial zone as well as an ecologically disturbed riparian zone. Large parts of the site have buildings, associated roads, associated gardens and conspicuous cover of exotic plant species.

The **Wetland Specialist** concluded that the non-perennial river, including its riparian zone and buffer zone, which is north of the site, should be viewed as an important conservation corridor in the larger area. Given the likely absence of sensitive species as well as the location, setting and current ecological status of the site a 10 m buffer zone from the edge of the riparian zone is recommended as a practical buffer zone for the conservation of the Non-perennial River and riparian zone at the site.

Finally the **Agricultural Specialist** stated that there is no highly sensitive land on the site, no irrigation takes place and there is no irrigation water available. There is no cultivated land on the site and considering that the property can only

sustain 3 head of cattle, retaining the land for farming is not sustainable, therefore it cannot be considered as a viable farming unit.

A full Public Participation Process is being conducted and any objections or comments that will be received in relation to the proposed development will be incorporated into the Final BAR.

## **12.2 ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)**

EMPR's aim to identify and minimise the potential impacts that the proposed construction and operational phases of the project may have on the receiving environment. An EMPR has been developed which is contained in Appendix D and includes detailed mitigatory measures for the construction phase.

As a general guideline, the EMPR should be based on a comprehensive set of environmental aspects (elements of the facility that can interact with the environment), and hence, the EMPR compiled for this application includes the following key components:

- Mechanisms for the on-going identification and assessment of environmental aspects and impacts;
- Environmental management programmes; objectives and targets;
- Environmental monitoring and reporting framework;
- Environmental management procedures; and,
- Mechanisms for the recording of environmental incidents and implementing corrective and preventative actions.

## **12.3 EAP OPINION**

The information contained in this BAR and Specialist Studies, provides a detailed and comprehensive description of the proposed project, baseline environment and potential environmental impacts associated with the proposed development. As no significant impacts that cannot be mitigated were identified, AB Enviro Consult is of the opinion that the project should proceed, provided that the necessary mitigation and management measures are implemented.

Under South African environmental legislation, the Applicant is accountable for the potential impacts of the activities that are undertaken and is responsible for managing these impacts. The Applicant therefore has overall and total environmental responsibility to ensure that the implementation of the construction phase of the EMPR complies with the relevant legislation and the conditions of the environmental authorisation. The applicant will thus be responsible for the implementation of the EMPR.

The environmental management programme (EMPR) should form part of the contract between the construction company and the applicant. This will help ensure that the EMPR is adhered to. It is suggested that a suitably qualified Environmental Control Officer (ECO) be appointed for the construction phase.

## **12.4 CONDITIONS RECOMMENDED TO BE INCLUDED IN ANY AUTHORISATION THAT MAY BE GRANTED BY THE COMPETENT AUTHORITY IN RESPECT OF THE APPLICATION**

**The following recommendations has been identified for the pre-construction and construction phases of the proposed development**

1. A full copy of the signed EA from DEDECT in terms of NEMA, granting approval for the development must be available on site
2. A copy of the EMPr as well as any amendments thereof must be available on site
3. A suitably qualified ECO must be appointed.
4. Impacts on the environment must be minimised during site establishment and the development footprint must be kept to the approved development area.

5. Vegetation clearing may not commence until such time as the development footprint has been clearly defined.
6. No clearance of vegetation outside of the development footprint may occur.
7. No construction workers or machinery will be allowed within the no-go area that is defined as the non-perennial river, including its riparian and buffer zone.
8. At the end of the construction phase the site and its surrounding area must be free from any pollution that originated as a result of the construction activities.
9. No disturbance of topsoil & subsoil may commence until such time as the development footprint has been clearly defined.
10. No disturbance of topsoil & subsoil outside of the development footprint may occur.
11. At the end of the construction phase the site and its surrounding area (Including the non-perennial stream) must be free from any chemical, fuel, oil and cement spills that originated as a result of the construction activities.
12. At the end of the construction phase the site and its surrounding area (Including the non-perennial stream) must be free from any sewage that originated as a result of the construction activities.
13. At the end of the construction phase the site and its surrounding area (Including the non-perennial stream) must be free from any hazardous or general waste pollution that originated as a result of the construction activities.
14. Dust prevention measures must be applied to minimise the generation of dust.
15. Noise prevention measures must be applied to minimise the generation of unnecessary noise pollution as a result of construction activities on site.
16. Absolutely no burning of waste is permitted.
17. Fires will only be allowed in facilities especially constructed for this purpose.
18. No hunting of animals will be allowed.
19. No intentional destruction of any sites, features or material of cultural heritage (archaeological and/or historical) origin or significance may occur.
20. All Contractors and sub-contractors must abide to the rules and regulations of the Occupational Health and Safety Act, 85 of 1993.

### 13. AFFIRMATION BY EAP

Mr. Jean Pierre De Villiers

declare under oath 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;
- 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;
- 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 competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- h. will keep a register of all interested and affected parties that participated in a public participation process; and
- i. will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not.

---

Signature of the Environmental Assessment Practitioner:

Name of company: AB Enviro Consult CC

Date:

---

Signature of the Commissioner of Oaths:

Date

Designation

Official stamp:

## 14. LIST OF REFERENCES

- Department of Environmental Affairs and Tourism. 1992.** Integrated Environmental Management. Pretoria, DEAT.
- Department of Environmental Affairs and Tourism. 1998.** *Guideline Document - EIA Regulations*. Pretoria, DEAT.
- Department of Environmental Affairs. 1988.** *Climate of South Africa, climate statistics up to 1984*. Weather Bureau (WB40). Pretoria, Government Printer.
- Department of Transport, 19--.** *Climate of South Africa Part 1 Climate statistics*. Weather Bureau (WB20). Pretoria Government Printer.
- S. Cliff. 2015.** Environmental Scoping report for the proposed high density residential township "Tanganani extension 7", to be located on a part of Portion 119 of the farm Diepsloot 388 JR, City of Johannesburg Municipality, Gauteng



**APPENDIX A:  
GEOTECHNICAL SPECIALIST REPORT**

**APPENDIX B:  
ECOLOGICAL SPECIALIST REPORT**

**APPENDIX C:  
SAHRA SPECIALIST REPORT**



**APPENDIX E:  
WETLAND ASSESSMENT REPORT**

**APPENDIX F:  
AGRICULTURAL IMPACT ASSESSMENT REPORT**



**APPENDIX G  
ENVIRONMENTAL MAANGEMENT PROGRAMME**

**APPENDIX H  
SPECIALIST DECLARATION OF INTEREST (TO FOLLOW)**

**APPENDIX I  
PROOF THAT THE DRAFT BAR HAS BEEN SENT TO DWS**