SCOPING 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 61.16 HECTARES OF INDIGENOUS VEGETATION IN ORDER TO ESTABLISH A MIXED USE DEVELOPMENT, CONSISTING OF RESIDENTIAL 2 ERVEN; BUSINESS USES AND PRIVATE OPEN SPACE. THE DEVELOPMENT WILL ALSO INCLUDE THE ESTABLISHMENT OF 4 CENTRE PIVOTS AND THE INSTALLATION OF SERVICES OF WHICH WATER AND SEWER PIPELINES ARE PROPOSED TO CROSS THE LOOP SPRUIT. 30.85 HECTARES OF THE DEVELOPMENT WILL BE ON LAND THAT WAS PREVIOUSLY USED FOR AGRICULTURAL PURPOSES. THE DEVELOPMENT IS LOCATED ON PORTION 47 AND 48 OF THE FARM ELANDSHEUVEL 436, POTCHEFSTROOM, NORTH WEST PROVINCE.

Report Date: March 2023

Compiled by:

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Compiled for:

Rumar Rentals Pty Ltd

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Report type	**Draft Scoping Report (DSR)**		
Project Title	**Environmental Impact Assessment for the proposed clearance of 61.16 hectares of indigenous vegetation in order to establish a mixed use development, consisting of residential 2 erven; business uses and private open space. The development will also include the establishment of 4 centre pivots and the installation of services of which water and sewer pipelines are proposed to cross the Loop Spruit. 30.85 hectares of the development will be on land that was previously used for Agricultural purposes. The development is located on Portion 47 and 48 of the Farm Elandsheuvel 436, Potchefstroom, North West Province.**		
Competent Authority:	**North West Department Economic Development, Environment, Conservation and Tourism (DEDEAT)**		
Reference Number:	**Not available yet**		
Assigned Officer	**Not available yet**		
Project applicant:	***Rumar Rentals (PTY) ltd***		
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Reviewed by: Mr JP de Villiers EAP-EAPASA 2019/808
Signature: 

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EXECUTIVE SUMMARY

The applicant (Rumar Rentals Pty Ltd) has appointed ***AB Enviro Consult CC***, an independent environmental consultancy, to undertake an Environmental Impact Assessment for the proposed clearance of 61.16 hectares of indigenous vegetation in order to establish a mixed use development, consisting of residential 2 erven; business uses and private open space. The development will also include the establishment of 4 centre pivots and the installation of services of which water and sewer pipelines are proposed to cross the Loop Spruit. 30.85 hectares of the development will be on land that was previously used for Agricultural purposes. The development is located on Portion 47 and 48 of the Farm Elandsheuvel 436, Potchefstroom, North West Province. .

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

The proposed development falls within JB Marks Local Municipality's area of jurisdiction and the Dr Kenneth Kaunda District Municipality. The site is located on the south–eastern outskirts (within the urban edge) of Potchefstroom. The proposed private development will be situated next to the D1646 (known as Wilgeboom Road) on the southern side travelling to Parys. Ailanto (Grimbeek Park Ext 12) is located to the South of this development. The development will consist out of 1000 Residential 2 and 2 Business stands. The access to the development will be via the Wilgeboom Road (D1646), the main access to the development will be gated and have security for controlled access. 4 New centre pivots are proposed nearer the Loop spruit (bordering the site to the west).

The Spatial vision for JB Marks Local Municipality has been formulated as follows:

"To reconstruct the urban and rural framework of JB Marks Local Municipality in order to create an integrated and sustainable city by capitalizing on its strategic location and the inherent economic potential that the area has to offer".

The proposed development will attribute to accelerate housing delivery within the context of sustainable human settlements as it aims to create viable residential stands within the urban edge of Potchefstroom.

As such, it is clear that the proposed development is aligned with the guiding principles and spatial vision of the SDF and that the application should be encouraged.

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 and published in Government Notice No. R 326 of 2017. 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**	**Time for construction to be completed applied for**

Government Notice R983 dated 4 December 2014. (As amended)	28*: "Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:* *(i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or* *(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;* *excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes."*	*The development of a mixed land use Township on land that was used for agricultural purposes on and after 01 April 1998 and:* (i) *will occur inside the urban area of Potchefstroom, where the total land previously used as agricultural to be developed measures 30.85 ha on Portion 47 and 48 of the Farm Elandsheuvel 436, Potchefstroom, North West Province,*	10 years
Government Notice R983 dated 4 December 2014. (As amended)	19: *"The infilling or depositing of any material of more than 10 cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic meters from a watercourse*	*The moving of 2 440 cubic meters of soil from the Loop Spruit to install a water and sewer pipeline*	
Government Notice R984 dated 4 December 2014. (As amended)	15: "*The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for—* *(i) the undertaking of a linear activity; or* *(ii) maintenance purposes undertaken in accordance with a maintenance management plan."*	*The clearance of an area of 61.16 ha hectares of indigenous vegetation, in order to establish a mixed land use township located on Portion 47 and 48 of the Farm Elandsheuvel 436, Potchefstroom, North West Province,*	10 years
Government Notice R985 dated 4 December 2014. (As amended)	12 (h)(vi): "*The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan."*	*The clearance of an area of 41 500* m^2 *of indigenous vegetation to establish pivots and mixed use development* *h) In Northwest province:* *(vi) within 100 metres from the edge of the Loop Spruit and wetland area*	10 years

	h. North West *vi. Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland."*		

The purpose of the study is therefore to determine the impacts that the environment may have on the proposed activity, as well as the possible impacts that the activity may have on the environment.

The study is being conducted according to normal scientific practices. A theoretical background review was compiled for the different variables by using available information from the literature. Field verification was undertaken and visits paid to the site to gather further information and/or to verify information. It also includes the identification of *key interest groups*, both governmental and non-governmental, and to establish good lines of communication. Specialist studies were undertaken to determine the impacts on sensitive areas and to determine whether the proposed project can be sustainably implemented. The specialists will also advise on mitigation measures where applicable.

Although this is only the Scoping phase of the proposed development, no "fatal flaws" has been encountered as of yet. All the issues envisaged at this stage can be mitigated.

1. INTRODUCTION

The applicant (Rumar Rentals Pty Ltd) has appointed ***AB Enviro Consult CC***, an independent environmental consultancy, to undertake an Environmental Impact Assessment for the proposed clearance of 61.16 hectares of indigenous vegetation in order to establish a mixed use development, consisting of residential 2 erven; business uses and private open space. The development will also include the establishment of 4 centre pivots and the installation of services of which water and sewer pipelines are proposed to cross the Loop Spruit. 30.85 hectares of the development will be on land that was previously used for Agricultural purposes. The development is located on Portion 47 and 48 of the Farm Elandsheuvel 436, Potchefstroom, North West Province. .

The proposed development falls within JB Marks Local Municipality's area of jurisdiction and the Dr Kenneth Kaunda District Municipality. The site is located on the south–eastern outskirts (within the urban edge) of Potchefstroom. The proposed private development will be situated next to the D1646 (known as Wilgeboom Road) on the southern side travelling to Parys. Ailanto (Grimbeek Park Ext 12) is located to the South of this development. The development will consist out of 1000 Residential 2 stands and 2 Business 2 stands. The access to the development will be via the Wilgeboom Road (D1646), the main access to the development will be gated and have security for controlled access. 4 New centre pivots are proposed nearer the Loop spruit (bordering the site to the west).

The Spatial vision for JB Marks Local Municipality has been formulated as follows:

"To reconstruct the urban and rural framework of JB Marks Local Municipality in order to create an integrated and sustainable city by capitalizing on its strategic location and the inherent economic potential that the area has to offer".
The proposed development will attribute to accelerate housing delivery within the context of sustainable human settlements as it aims to create viable residential stands within the urban edge of Potchefstroom.

As such, it is clear that the proposed development is aligned with the guiding principles and spatial vision of the SDF and that the application should be encouraged.

The site is influenced by a number of factors that were considered for the proposed layout plan to be acceptable. These factors include the slope of the site, environmental sensitivity, service provision, erf size, access, road layout and community facilities as well as the geotechnical features presented in the Geotechnical Report. To ensure that the proposed development do not infringe on any design principles and the environmental sensitive areas, development of residential units will only be allowed to take place according to the prescribed methods.

1.1 THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The purpose of this document is to adhere to the requirements for compilation of Environmental Impact Assessment Reports as amended and published in *Government Notice 517 in Government Gazette 44701 dated 11 June 2021*, Appendix 2, 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 the Rumar Rentals Pty Ltd as their 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 Town Planner has developed the layout in conjunction with the surveyor
4) The Civil Engineer was appointed to determine the capability of existing infrastructure to be linked to proposed development and readily available bulk services. He also designed the proposed infrastructure.
5) A Flood line specialist has determined the 1:100 year flood line.
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 and Wetland specialist has been appointed to determine the impact of the proposed development on the Fauna and Flora and wetlands of the area. He was also appointed to delineate the extent watercourses on site.
8) An Environmental Screening Process was conducted by the EAP to ensure that all the relevant Environmental Legislation is taken into consideration.
9) Desk top studies were conducted and alternatives assessed.
10) Site inspections were carried out to verify the outcomes of the desktop studies, and the preferred alternative defined.
11) A full Public Participation Process is being followed to obtain inputs from interested and affected parties.
12) 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.
13) 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 SCOPING PHASE

The Scoping phase includes the necessary investigations to assess the suitability of the identified site and its surrounding environment, for the development proposal. The scoping exercise describes the “status quo” of the bio-physical, social, economical and cultural environment, and identifies the anticipated environmental aspects associated with the proposed development. Scoping includes the identification of key interest groups, (both government and non-government), and 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)

The purpose of the Scoping Report is to document the outcome of the Scoping Phase of the project. This report fulfils the requirement of the EIA Regulations (2014) for the documentation of the scoping phase. The Scoping Report is compiled in accordance with Section 21(3) of NEMA’s 2014 EIA Regulation (GN R. 982) as amended and published in Government Notice 517 in Government Gazette 44701 dated 11 June 2021. Table 1 below provides a summary of the legislative requirements in terms of a Scoping Report as stipulated in Section 21(3) of the EIA Regulations of December 2014 as amended and published in *Government Notice 517 in Government Gazette 44701 dated 11 June 2021*. Cross-references are provided in terms of the relevant section within this Scoping Report where the NEMA and Scoping Report requirements have been addressed.

Table 1: Scoping Report content as per Section 21(3) of NEMA's 2014 EIA Regulations of December 2014 as amended and published in *Government Notice 517 in Government Gazette 44701 dated 11 June 2021,* Appendix 2

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for Scoping Reports	Location in this Scoping report
Appendix 2, section 2 (1)(a)	Details of - (i) the EAP who prepared the report; and (ii) the expertise of the EAP, including a curriculum vitae;	Paragraph 2
Appendix 2, section 2 (1)(b)	The location of the activity, including – (i) The 21 digit Surveyor General code of each cadastral land parcel; (ii) Where available, the physical address and farm name; (iii) Where the required information in items (i) and (ii) is not available, coordinates of the boundary of the property or properties	 Paragraph 4 Paragraph 4 Paragraph 4
Appendix 2, section 2 (1)(c)	A plan which locates the proposed activity or activities applied for, at an appropriate scale, or, if it is – (i) A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) On land where the property has not been defined, the coordinates within which the activity is to be undertaken; or (iii) On land where the property has not been defined, the coordinates	Figure 1 and Figure 2, 3 and 4
Appendix 2, section 2 (1)(d)	A description of the scope of the proposed activity, including – (i) All listed and specified activities triggered; (ii) A description of the activities to be undertaken, including associated structures and infrastructure.	 Paragraph 3 Paragraph 3
Appendix 2, section 2 (1)(e)	A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process.	Paragraph 5
Appendix 2, section 2 (1)(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 2, section 2 (1)(g)	A full description of the process followed to reach the proposed preferred activity, site and location within the site, including- (i) Details of all alternatives considered; (ii) Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; (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; (iv) The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (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- (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed, or mitigated.	 Paragraph 7 Paragraph 10 Paragraph 10 Paragraph 8 Paragraph 9 Paragraph 9 Paragraph 9 Paragraph 9

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for Scoping Reports	Location in this Scoping report
	(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;	Paragraph 9
	(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;	Paragraph 9
	(viii) The possible mitigation measures that could be applied and level of residual risk;	Not Applicable
	(ix) The outcome of the site selection matrix;	Not Applicable
	(x) If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and;	Paragraph 11
	(xi) A concluding statement indicating the preferred alternatives, including preferred location of the activity.	
Appendix 2, section 2 (1)(h)	A plan of study for undertaking the environmental impact assessment process to be undertaken including-	Paragraph 12
	(i) A description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;	Paragraph 12.1
	(ii) A description of the aspects to be assessed as part of the environmental impact assessment process;	Paragraph 12.2
	(iii) Aspects to be assessed by specialists;	Paragraph 12.3
	(iv) A description of the proposed method of assessing the environmental aspects, including aspects to be assessed by specialists;	Paragraph 12.4
	(v) A description of the proposed method of assessing duration and significance;	Paragraph 12.5
	(vi) An indication of the stages at which the competent authority will be consulted;	Paragraph 12.6
	(vii) Particulars of the public participation process that will be conducted during the environmental impact assessment process;	Paragraph 12.7
	(viii) A description of the tasks that will be undertaken as part of the environmental impact assessment process;	Paragraph 12.8
	(ix) Identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	Paragraph 12.9
Appendix 2, section 2 (1)(i)	An undertaking under oath or affirmation by the EAP in relation to-	Paragraph 13
	(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	Paragraph 13
	(iii) 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
Appendix 2, section 2 (1)(j)	An undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the environmental impact assessment.	Paragraph 13

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for Scoping Reports	Location in this Scoping report
Appendix 2, section 2 (1)(k)	Where applicable, any specific information required by the competent authority.	To be included in final Scoping Report
Appendix 2, section 2 (1)(l)	Any other matter required in terms of section 24(4) (a) and (b) of the Act.	Not Applicable

1.4.3 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 was appointed to determine whether the Geology and Soils of the site is suitable for the proposed development
- A Town Planner has developed the layout in conjunction with the surveyor
- The Civil Engineer was appointed to determine the capability of existing infrastructure to be linked to proposed development and readily available bulk services. He also designed the proposed infrastructure.
- A Flood line specialist has determined the 1:100 year flood line.
- A SAHRA Specialist has been appointed to determine the possible impact of the development on Archaeological and Cultural features.
- A Fauna and Flora and Wetland specialist has been appointed to determine the impact of the proposed development on the Fauna and Flora and wetlands of the area. He was also appointed to delineate the extent watercourses on site.
- 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
- **Mrs J.E. du Plooy** is a consultant since 2001

Over a period of 26 years (1996-2022) this consultancy has successfully applied for, and obtained positive ROD's and EA's for more than 390 projects. Environmental Control Officer's duties are also performed on various projects.

Mrs JE (Hannie) du Plooy holds a Master's degree in Environmental Management from the Potchefstroom University for Christian Higher Education; (now North West University). Starting as a junior EAP in 2000 with AB Enviro Consult on an intermittent basis, whilst working as a Development control Town Planner (later Senior Development Control Town Planner) in the United Kingdom (2002-2009).

As a consultant at AB Enviro, (2011-date), Mrs du Plooy has successfully applied for, and obtained positive Environmental Authorizations and Records Of Decisions for 130 projects and is an experienced Environmental Control Officer responsible for Auditing Environmental Performance against Environmental Management Plans and Environmental Authorizations. As Senior EAP the following duties are carried out:

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 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 MR J.P. DE VILLIERS

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 as Environmental assessment Practitioner	EAPASA Registration number: 2019/808	

ACADEMIC AND PROFESSIONAL QUALIFICATIONS MRS J.E. DU PLOOY

YEAR	Qualification	Institution	Field of Study
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
2020	Registered as Environmental assessment Practitioner	EAPASA Registration number: 2019/1573	

3. DESCRIPTION OF THE ACTIVITY

The applicant (Rumar Rentals Pty Ltd) has appointed ***AB Enviro Consult CC***, an independent environmental consultancy, to undertake an Environmental Impact Assessment for the proposed clearance of 61.16 hectares of indigenous vegetation in order to establish a mixed use development, consisting of residential 2 erven; business uses and private open space. The development will also include the establishment of 4 centre pivots and the installation of services of which water and sewer pipelines are proposed to cross the Loop Spruit. 30.85 hectares of the development will be on land that was previously used for Agricultural purposes. The development is located on Portion 47 and 48 of the Farm Elandsheuvel 436, Potchefstroom, North West Province.

The site is influenced by a number of design factors that were considered for the proposed layout plan to be acceptable. These factors include the slope of the site, flood lines, environmental sensitivity, service provision, erf size, access, road layout and community facilities as well as the geotechnical features presented in the Geotechnical Report. To ensure that the proposed development do not infringe on any design principles and the environmental sensitive areas, development of residential units will only be allowed to take place according to the prescribed methods. The Applicant intends to rezone and subdivide the site in order to utilize the concerned property for a variety of purposes. The township will consist of a mixed use, including: (See Figure 1 for a copy of the proposed Layout Plan.)

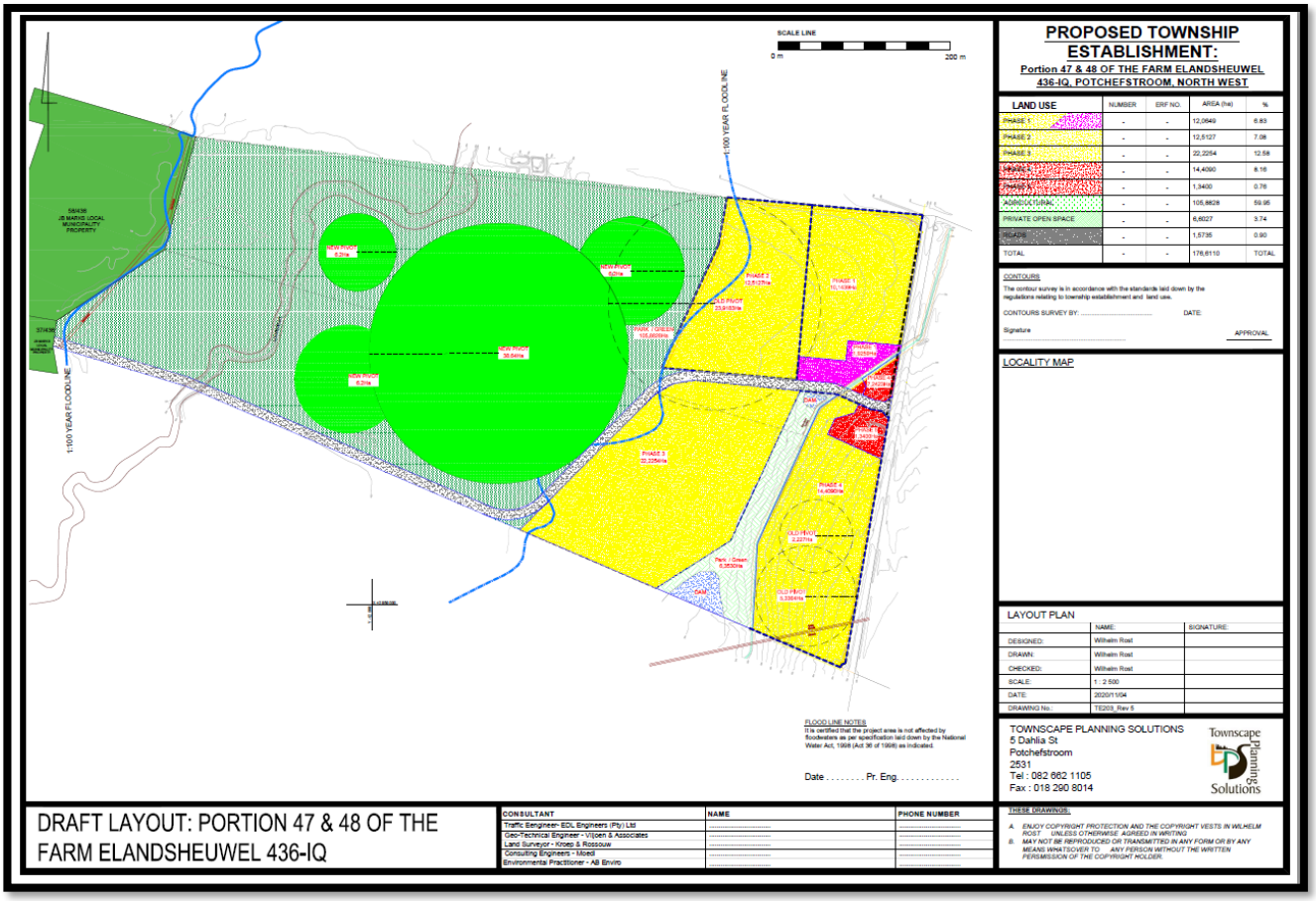


FIGURE 1: PROPOSED LAYOUT PLAN, PORTION 47 & 48 OF THE FARM ELANDSHEUVEL

Proposed private township development to be developed in 5 phases, comprising 1000 residential 2 erven and 2 business erven as well as parks. 4 New centre pivots are proposed to the west located between the new township and the Loop Spruit.

The Civil Engineer proposes the town be serviced as follows:

Bulk Services

Water

Domestic and fire water supply to the proposed development will be by means of a new 250mm diameter uPVC pipe from the 315mm Pipe in Herman Street. This development can connect to the aforementioned pipe the north western corner of the development. A metered connection will have to be provided. Because the proposed Township Development is located at a higher elevation than the 315mm pipe in Herman Street, a booster pump may have to be installed close to the lowest point (Loop Spruit crossing). The connection point is indicated above (Figure 3: Point D)

The water demand is as follows:

Daily Demand per Unit	-	1000 l/unit/day
Average daily demand	-	1000 kl/day
Peak factor	-	N/A
Fire risk	-	Low Risk – Group 1
Fire flow criteria	-	20 l/s for 1 hour
Instantaneous demand	-	24 m
Minimum pressure	-	30 m
Pipe material	-	uPVC Class 12
Pipe size minimum	-	250mm uPVC
Instantaneous Peak Flow	-	83.37 l/s

Water reticulation

The internal reticulation will consist of 25mm HDPE Class PE10 to 250mm Ø uPVC Class 12 pipes.

Ownership and Maintenance

All internal water reticulation pipes will be the responsibility of the developer to operate and maintain and the pump station from Loop Spruit. The new bulk feeder lines up to the boundary of Portion 47 & 48 for the bulk connection, will be the responsibility of JB Marks Local Municipality.

Sewer

General

An outfall sewer pipe will have to be constructed from this proposed development up to the Eastern side adjacent to Loop Spruit, whereby a new pump station will pump the sewer in a new pump line constructed from Loop Spruit up to Herman Street in Grimbeek Park Extension 18, where it will discharge into the Baillie Park Outfall Sewer (450mm Ø pipe). The connection point is indicated above (Figure 3, Point C)

Design Criteria

The design criteria for the sewerage system is as follows:

- Daily outflow per Unit 900 l/day
- Average Daily Flow 900 kl/day
- Weekly Outflow 6300 kl/week
- Minimum grades

o 160mm dia	1:150
o 250mm dia	1:200
• Min velocity	0.7m/s
• Infiltration	15%
• Max flow depth	80% of peak
• Position	Adjacent the newly planned
• Peak flow	1.8
• Total flow per day	1.863 Ml/day

Materials to be used

The proposed materials to be used for the sewage system are:

• 110mm dia pipes	UPVC class 34 solid wall Supradur
• Bedding and backfill	SABS 1200
• Minimum pipe size:	250m dia gravity

Ownership and Maintenance

After construction of the sewer outfall pipe system and pump station by the Developer, JB Marks Local Municipality will take over a portion of the pump line and the Developer will be liable operate and maintain the complete system.

FIGURE 2: BULK SERVICE LAYOUT AND ACCESS

Roads and Access

The proposed private development will be situated South of the R59 side travelling from Potchefstroom to Parys, next to the service Road (D1646) that connects the R53 to D1535 (to Rooipoort), the P89/2 (Schoemansdrif) and the R501 (Viljoenskroon) roads.

The proposed private development will be situated next to the D1646 (known as Wilgeboom Road) on a southern side travelling to Parys. Ailanto (Grimbeek Park Ext 12) is located to the South of this development. The development will consist out of 1000 Residential 2 stands and 2 Business stands. The access to the development will be via the Wilgeboom Road (D1646), the main access to the development will be gated and have security for controlled access. (Figure 3: Point A)

Storm Water

The proposed area where the development is to be located, drains naturally to the south-eastern side of the proposed development. Storm water will be designed to be accommodated on the surface until the runoff quantity become such as to necessitate the installation of a storm water pipe system to accommodate the 1 in 5-year flood. The storm water pipe system will be connected to a attenuation dam and the to an open natural channel that discharges into Loop Spruit. The management of the storm water will be in accordance with DWS, DEAT and the JB Marks Local Municipality's minimum requirements. The discharge point is indicated above (Figure 3: Point B)

Storm water Design Criteria

Storm water drainage will be by means of surface runoff draining towards the south- eastern side of the proposed development until the runoff quantity necessitate the installation of a storm water pipe system as described under the item general. The afore-mentioned will be determined during the final design.

The 1:100 year flood line does affect the property and is indicated on the layout plan: The design standards proposed are:

- Surface drainage where possible within design specifications.
- Storm water pipe system when and where necessary.
- Erosion protection and stabilization of erodible areas and associated sedimentation control.

Ownership and Maintenance

After construction of the storm water pipe system by the Developer, JB Marks Local Municipality will not take over the stem, and the Developer will operate and maintain the complete system.

4. DESCRIPTION OF THE PROPERTY

The property is located on Portion 47 & 48 of the farm Elandsheuvel, Potchefstroom, North West Province. The site is situated South of the R59 travelling from Potchefstroom to Parys, next to the service Road (D1646) that connects the R53 to D1535 (to Rooipoort), the P89/2 (Schoemansdrif) and the R501 (Viljoenskroon) roads. The site is situated next to the D1646 (known as Wilgeboom Road) on a southern side travelling to Parys. Ailanto residential estate (Grimbeek Park Ext 12) is located to the South of the site (See photo 1)

Photo 1 View of part of the site. Ailanto residential estate's houses to the South
Photo: R.F. Terblanche.

Part of the site consists of cultivated irrigated land (centre pivots) (See Photo 3), a farm house, outbuildings and stables. (See photo 2) Vegetation at the terrestrial zone of the site is a disturbed, mainly secondary grassland, owing to most of the area that has been ploughed in the past. Grassland at the site is secondary, owing to cultivation/ ploughing of most of the area in the past. Wheat (at the time of the surveys) is cultivated at an irrigated area at the site (Photo 3). Ditches or unpaved storm water canals occur in particular along the roads that borders the site. On open-on-top cement canal (Photo 4) and associated infrastructure are also present at the site. Terrestrial vegetation consists of a grass layer that contains some forbs and relatively few shrubs and trees. Many areas contain a conspicuous presence of alien invasive herbaceous weeds. The shrub *Asparagus laricinus* occurs at some areas at the site. Indigenous grass species include *Eragrostis curvula*, *Cynodon dactylon*, *Aristida congesta*, *Setaria sphacelata*, *Sporobolus africanus*, *Eragrostis superba*, *Chloris virgata* and *Themeda triandra*. Indigenous forb species include *Senecio consanguineus*, *Bulbine narcissifolia* and *Conyza podocephala*. Alien invasive herbaceous weed species are conspicuous at the site and include include *Argemone ochroleuca*, *Plantago lanceolata*, *Tagetes minuta*, *Bidens bipinnata*, *Bidens pilosa*, *Gomphrena celosioides*, *Schkuhria pinnata*, *Conyza bonariensis*, *Chenopodium album*, *Guileminea densa*, *Verbena bonariensis*, *Physalis viscosa*, *Alternanthera pungens* and *Verbena aristigera*.

Photo 2 View of part of the site towards the homestead area.
Photo: R.F. Terblanche

Photo 3: Irrigated fields at the site where wheat was cultivated at the time of the surveys.
Photo: R.F. Terblanche

Photo 4: Open-on-top cement canal on site

The Wetland specialist found an active channel and riparian zone of the Loopspruit non-perennial river (Photo 5) is present at the western boundary of the site. A modified unchannelled valley-bottom wetland (which could be artificial to a large extent) is present at the southeastern part of the site. (See Photo 6 & 7).

Photo 5 The active channel (streambed) and riparian zone of the Loopspruit non-perennial river, at the site.
Photo: R.F. Terblanche.

Photo 6: Modified unchanneled valley-bottom wetland (which could be artificial to a large extent) at the southeastern part of the site

Photo 7 Wetland at the site and groundwall on the oposite side of the boundary, outside the site.
Photo: R.F. Terblanche

Ecological sensitivity at the site is low at the terrestrial areas of which most areas have been cultivated in the past. The ecological sensitivity, at the active channel (streambed) and riparian zone of the Loopspruit non-perennial river, is high. The ecological sensitivity at the wetland, even though it is probably artificial to a large extent, is regarded as high. The active channel, riparian zone and buffer zone (32 m) of the Loopspruit non-perennial river as well as the wetland (possibly largely artificial) with its buffer zone (32 m), which are important corridors in the larger area, are excluded from the development. See Figure 3 for ecological features at the site with buffer zones indicated

FIGURE 3: ECOLOGICAL FEATURES AT THE SITE WITH BUFFER ZONES INDICATED

Red outline	Boundaries of the site
Blue outline	Route of active channel of a non-perennial river (Loopspruit)
Blue outline and shading	Wetland
Green outline	Outer edge of riparian zone
Orange outline	Outer edge of buffer zone (32 m)
Dark blue outline	Ditches or unpaved storm water canals

The Sensitivity map also indicates two areas that are classified as wetlands. See Figure 13. The wetland specialist has confirmed two small wetland depressions as identified in Figure 14 of which Pan 1 (photograph 8 & 9) and Pan 2 (photograph 10 & 11), are present at the site and have been accommodated on the layout plan

Site Co-ordinates

	Latitude (S):			**Longitude (E):**		
Alternative S1 (preferred or only site alternative)	26°	44'	9.08"	27°	7'	45.94"

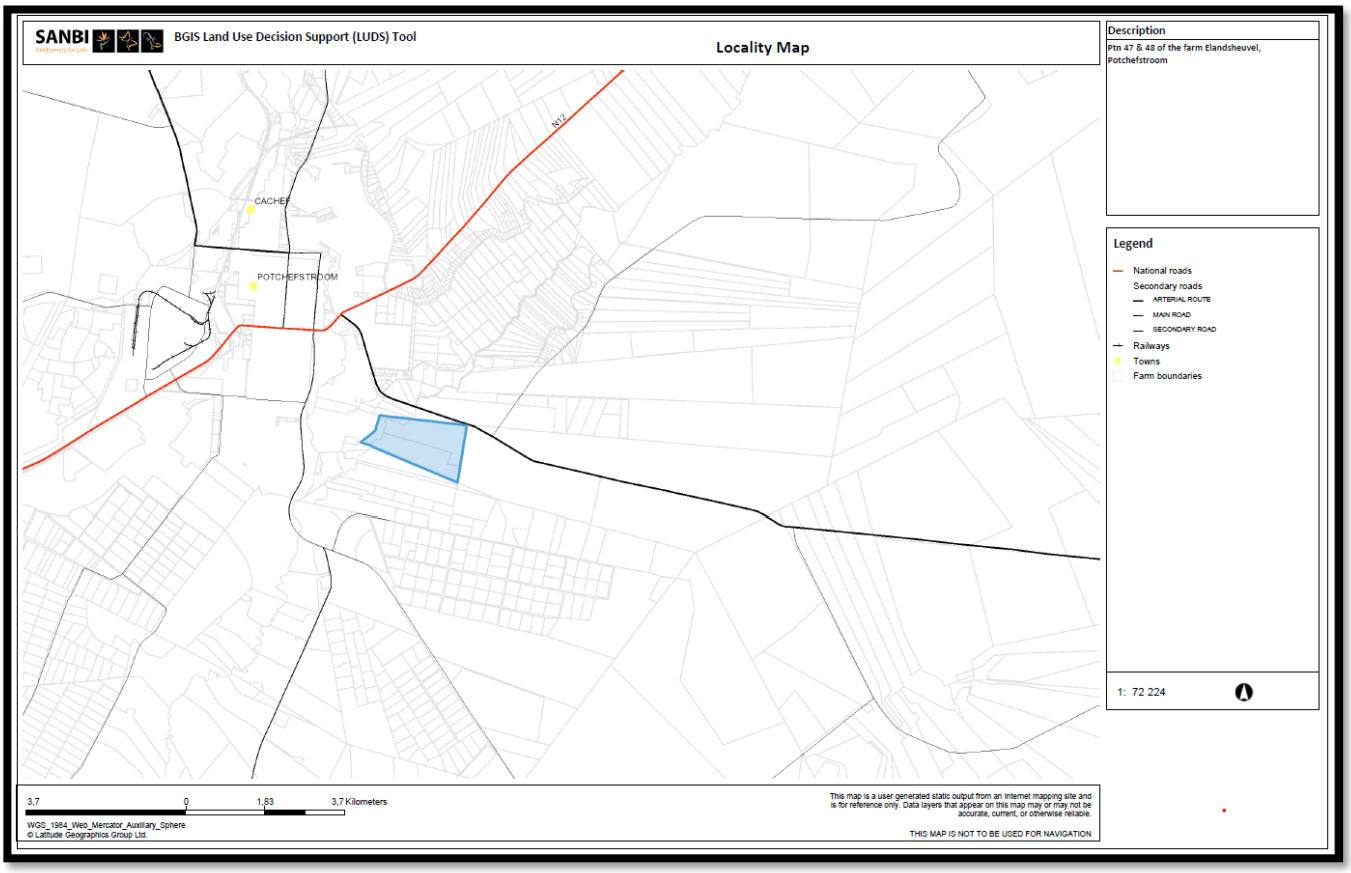


FIGURE 4: LOCALITY MAP

The North West Biodiversity Plan 2015 indicates that there are no terrestrial Critical Biodiversity areas (Figure 5) whilst the Aquatic Biodiversity areas are illustrated in Figure 6.

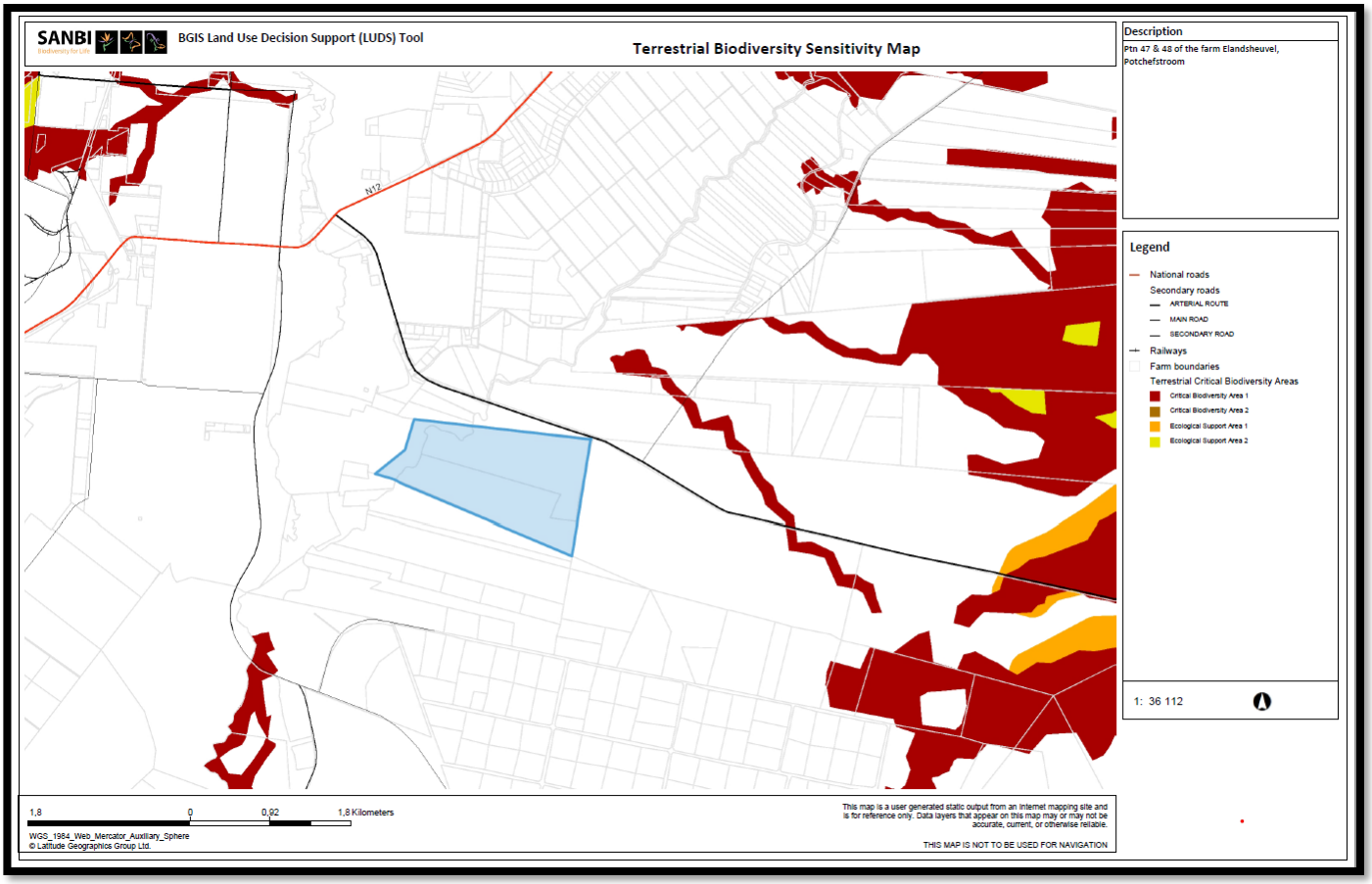


FIGURE 5: NW BGIS: TERRESTRIAL BIODIVERSITY MAP

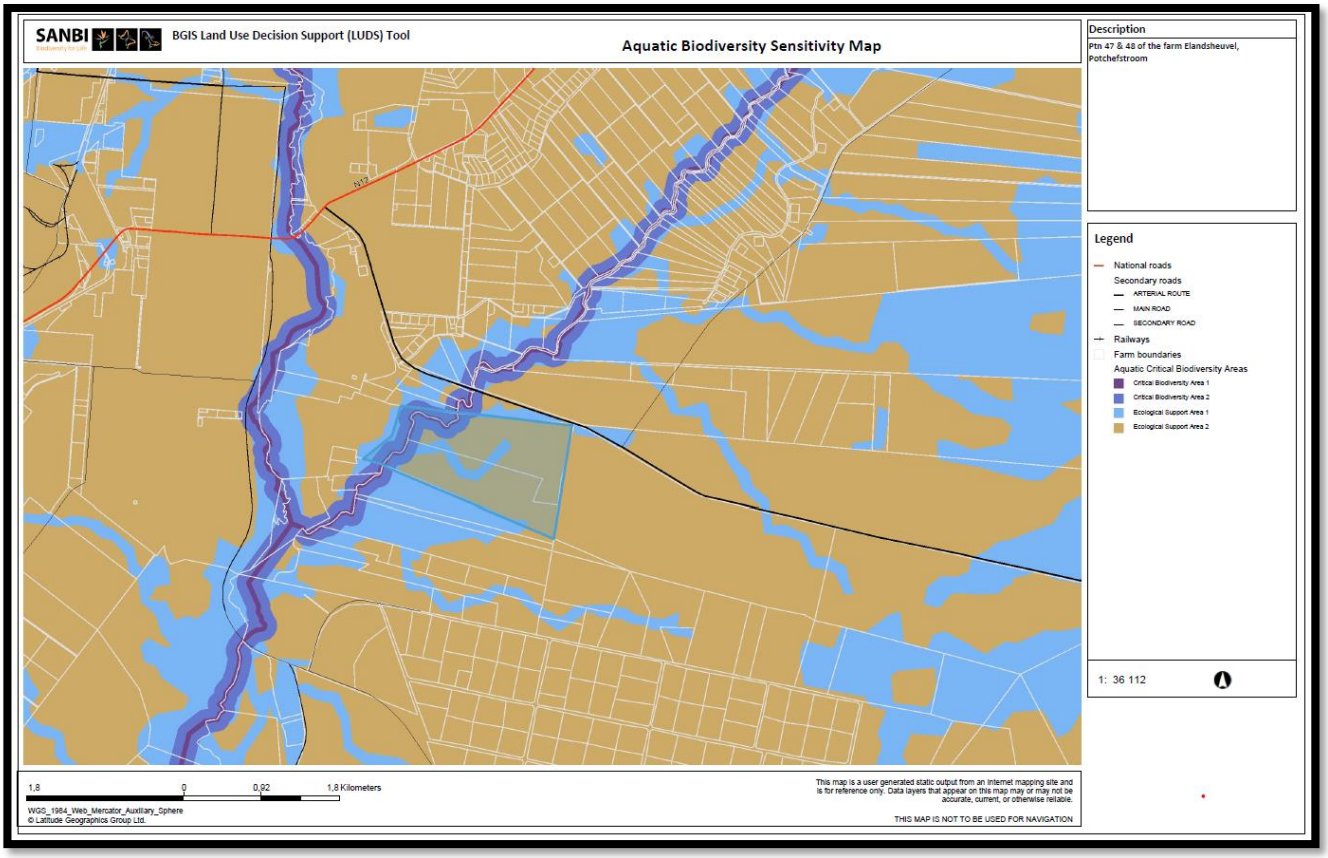


FIGURE 6: NW BGIS: AQUATIC BIODIVERSITY MAP

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.	National & Provincial (DEA And NW: DEDECT)	27 November 1998
The Bill of Rights, Constitution of South Africa, Section 27 (1)(b)	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: 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. Given that environmental management is founded partly on the principles of public participation, Section 195 of the Constitution is of primary relevance: (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).	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.	National & Provincial (DEA And NW: DEDECT)	7 April 2017
National Water Act (36 OF 1998)	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	Department of water and sanitation	1998

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	integrity, economic growth and social equity when managing and using water. The major objectives of the National Water Act are to: •Aid in providing basic human needs; •Meet the growing demand of water in a sustainable manner; •Ensure equal access to water and use of water resources; •Protect the quality of water of natural resources; •Ensure integrated management of water resources; •Foster social and economic development; and •Conserve aquatic and related ecosystems. 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.		
National Environmental Management: Biodiversity Act (NEMBA) (ACT NO. 10 OF 2004)	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. In terms of Chapter 4 of the Above Act: 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. (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. (2) The following categories of ecosystems may be listed in terms of subsection:	National & Provincial (DEA And NW: DEDECT)	2004

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	(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; (b) endangered ecosystems, being ecosystems that have undergone degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems; (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 (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). (3) A list referred to in subsection (1) must describe in sufficient detail the location of each ecosystem on the list. 53 (1) The Minister may, by notice in the Gazette, identify any process or activity in a listed ecosystem as a threatening process. (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.		
National Environmental Management: Protected Areas Act (ACT NO. 57 OF 2003)	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	National & Provincial	2003

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	management of protected areas. The purpose of the Act is: •To protect ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes and their ecological integrity. •To conserve biodiversity in those areas; •To protect South Africa's rare species; •To protect vulnerable or ecologically sensitive areas; •To assist in ensuring the sustained supply of environmental goods and services; •To provide for the sustainable use of natural and biological resources; •To create or augment destinations for nature-based tourism; •To manage the interrelationship between natural environmental biodiversity, human settlement and economic development; •To contribute to human, social, cultural, spiritual and economic development; •To rehabilitate and restore degraded ecosystems and promote the recovery of endangered and vulnerable species. 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.		
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, read 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.	National & Provincial (DEA And DEDECT)	2008
Mineral and Petroleum Resources Development Act (MPRDA), Act 28 of 2002	The Act distinguishes between mining permits and mining rights as follows: **Mining Permit**: Required where the activity will last less than two years and affects an area of less than 1.5ha in extent (valid for 3 years). In terms of the Act a mining permit requires a submission of an Environmental	Relevant Provincial Authorities.	2002

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	Management Plan (EMP to DME for approval prior to the onset of activities). **Mining Right**: Required for larger mining operations (renewable and valid for 30 years). In terms of the Act a mining right requires the submission of an Environmental Management Programme (EMProg) to DME for approval prior to the onset of activities. In light of their limited spatio-temporal extent, borrow pits (for the provision of construction material) and quarry operations would typically require a mining permit. The closure of borrow pits requires the submission of a closure application; this must be submitted within 180 days after ceasing operations. It is important to recognise that the mining right/permit holder's liability persists until such time as a Closure Certificate has been issued by DME.		
National Environmental Management: Air Quality Act (Act 39 of 2004)	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.	Relevant Provincial Authorities.	2004
The Conservation of Agricultural Resources Act (Act 43 of 1983)	This Act regulates the flow pattern of runoff water, control of weeds and invader plants.	Relevant Provincial Authorities.	1983
National Veldt and Forest Fire Act (Act 101 of 1998)	Chapter 4 places a duty on owners to prepare and maintain firebreaks.	Relevant Provincial Authorities.	1998
National Forests Act, Act 84 of 1998 (NFA) read with GN1602 of December 2016.	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.	National and Provincial authorities.	1998
Occupational Health and Safety Act (Act 85 of 1993)	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.	Relevant Provincial Authorities.	1993

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).

The following aspects will be dealt with:
SCHEDULE

Actions	Timeframe
1. Project Initiation and Scoping Phase	
1.1 Communication with authorities and source and analyse relevant baseline information and undertake site inspections	5 days
1.2 Identify key interested and affected parties (I&APs)	1 day
1.3 Compilation of terms of reference for specialist studies	2 days
1.4 Commission specialist studies	1 day
1.5 Compile Environmental Application Form for the project and submit to the authorities	Once the Environmental Application form has been submitted, the scoping report which has been subject to public participation (30 days) needs to be submitted within 44 days
1.6 Compile draft Scoping Report (SR) and make available to the public for a 30 day commenting period	5 days for compilation and 30 days for commenting period
1.7 Prepare an Information Sheet (summary of the draft SR) and distribute to I&APs	1 day
1.8 Compile and publish media notices (for the EIA) in relevant newspapers	7 days
1.9 Compile and place poster/s along the boundary of the site	1 day
1.10 Receive and address first round of comments from public	3 days
1.11 Should the draft SR require substantial changes, these changes will be incorporated into the final SR and distributed	The competent authority must within 43 days of receipt of the scoping report accept / refuse the report with our without conditions
1.12 Address comments received on the SR, finalise Scoping Report and submit to authorities	As above
1.13 Compile a Plan of Study for the assessment phase and submit to authorities for approval	As above
The total time allowed for the Scoping phase of the application	**87 days**
2. Assessment Phase	
2.1 Undertake assessment phase by assessing and evaluating potential impacts identified in the Scoping phase.	5 days
2.2 Review and manage specialist studies required.	Ongoing
2.3 Compile a draft Environmental Impact Report (EIR).	5 days
2.4 Compile a draft Environmental Management Plan for the Construction phase.	Included above
2.5 Compile an Information Sheet (summary of EIR) and distribute to identified I&APs	1 day
2.6 Distribute DEIR to I&APs	1 day
2.7 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
2.8 Address comments received and finalise EIR	3 days
2.9 Should the draft EIR require substantial changes, these changes will be incorporated into the final EIR and distributed for a 21 day commenting	3 days plus 21 day commenting period
2.10 Finalise EIR and update comments and response table for submission to authorities	5 days
2.11 Submit EIR to authorities for a final decision	1 day (The department requires the submission of the Final EIR within 106 days of the approval of the Scoping report), **therefore all information from the client's side must be provided within this timeframe to ensure the application is not withdrawn**)
2.12 Once the decision is issued, all I&Ps must be formally informed of the decision	The Competent Authority has 107 days from the date of receipt of the

	EIR and EMPr to determine the application
Total number of days allowed for the compilation and consideration of the EIR	**213 (may require additional 50 days public participation and consideration)**
TOTAL AMOUNT OF DAYS:	**300-350 days**

6. NEED AND DESIRIBILITY

The Spatial vision for JB Marks Local Municipality has been formulated as follows:

"To reconstruct the urban and rural framework of JB Marks Local Municipality in order to create an integrated and sustainable city by capitalizing on its strategic location and the inherent economic potential that the area has to offer".

The site is located within the Urban Edge of the Municipality. The proposed development will attribute to accelerate housing delivery within the context of sustainable human settlements as it aims to create viable residential stands within the urban edge of Potchefstroom.

In addition the above mentioned the proposed development will maximise the use of available land by converting the agricultural property into viable residential units within the urban edge. An additional advantage of the proposal is that the cultivated land will not be lost as pivots are proposed to the west of the development nearer the Loop Spruit.

As such, it is clear that the proposed development is aligned with the guiding principles and spatial vision of the SDF and that the application should be encouraged.

The proposed development will also ensure that:

- The housing shortage of the area will be partially addressed.
- During the construction phase of the proposed development, employment opportunities will be created and thus decrease the unemployment rate of the area.
- During the operational phase of the proposed development, additional employment opportunities will be created.
- The tax base of the Local Municipality will be broadened.

7. ALTERNATIVES

One of the objectives of an EIA 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 will be assessed in the EIAR, in terms of environmental, social and technical feasibility.

7.1 Land Use Alternatives

7.1.1 Mixed land use township and agricultural use (Alternative 1)

Alternative Site layouts have been developed for the proposed development.

The appointed Town and Regional planner have produced the proposed layout plan, to be constructed in 5 phases with the focus on housing varying between Residential 2 and proposed to include 2 business erven. 4 Centre Pivots are proposed to the west nearer the Loop Spruit.
Although the emphasis is on housing, complimentary land uses have been included in the township (business erven). People want easy access to job opportunities and want their living environment, such as residential townships to be placed at strategic positions with good access routes in close proximity to these amenities with availability of quality infrastructure and job-creation.

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.

In turn, a mixed use node acts 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. The site is located within the Urban Edge of the Municipality. The proposed development will attribute to accelerate housing delivery within the context of sustainable human settlements as it aims to create viable residential and business stands within the urban edge of Potchefstroom addressing the housing need of the town.

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

8.1 BIO-PHYSICAL ASPECTS

8.1.1 GEOLOGY

The 1:250 000 scale West Rand geological map show that the property is underlain by prominent horizons of alluvial deposits of the Quaternary Era. The map further shows that diabase of the Post Transvaal Era occurs due east of the site and may underlie some portions of the site with depth.

The site for the proposed new residential and commercial development is blanketed by three prominent soil zones, Soil ***Zone "A*** to ***"C",*** and are based on the test pit investigation and visual observations of the site conditions.

Soil ***Zone "A"*** is covered by a prominent horizon (>2,2m thick) of black becoming dark grey generally *very soft to firm*, silty CLAY alluvium overlying sandy clayey SILT alluvium. A generalized description of the typical soil profile that may be encountered across this soil zone is as follows(EL/05): -

0,0 – 1,5: Very moist, black becoming dark grey, firm becoming very soft from 0,5m, slickensided and fissured at the top, silty CLAY containing roots; alluvium.
1,5 – 2,1:Very moist, dark grey, very soft, slickensided, silty CLAY containing roots; alluvium. 2,1 – 2,5: Very moist, grey mottled yellow and off white, soft, intact, sandy clayey SILT containing minor NODULAR CALCRETE; alluvium.

Note: Marshy soil conditions may occur in this area after heavy precipitation.

Soil ***Zone "B"*** is dominated by a thin to moderate horizon of dark greyish brown, dark brown or orange/yellow sandy and silty colluvial soils overlying silty/sandy or gravelly ferruginised colluvium/alluvium or alluvium. A generalized description of the typical soil profile that may be encountered across this soil zone is as follows (EL/39): -

0,0 – 0,3:Moist, dark brown, dense, slightly voided, silty SAND containing roots; colluvium. 0,3 – 0,7: Moist, dark orange mottled black, medium dense to dense, slightly voided, silty clayey SAND containing minor NODULAR FERRICRETE and roots; ferruginised colluvium.
0,7 – 1,3: Abundant coarse medium and fine, sub-rounded NODULAR FERRICRETE clast supported in a matrix of moist, orange blotched black, sandy SILT and containing roots; ferruginised colluvium. Overall consistency is medium dense.
1,3 – 2,0: Moist, dark yellow blotched black, dense, intact, silty clayey SAND containing minor fine NODULAR FERRICRETE, roots and runnels of SILT; ferruginised reworked residual diabase?

Note: Numerous areas of this soil zone is underlain by silty colluvium/ferruginised colluvium to depths exceeding 2,0m below surface.
Soil ***Zone "C"*** is dominated by a wetland area where occasional seasonal flooding may take place, flood lines should be determined accurately and areas affected by a flood line, should be excluded from the development. Similar geotechnical conditions as for Soil Zone ***"***A***"*** applies.
A generalized description of the typical soil profile that may be encountered across Zone "C" this soil zone is as follows (EL/38): -
0,0 – 0,6:Very moist, dark greyish brown, soft, slickensided, silty CLAY containing roots; alluvium.
0,6 – 1,6:Very moist, light grey blotched orange, soft, slightly slickensided, silty CLAY containing roots; alluvium.

1,6 – 2,0:Very moist to wet, dark orange brown blotched grey, very soft, intact, sandy clayey SILT containing pockets of SAND; alluvium.
Refusal of the backactor was not encountered in any of the test pits over the property to a depth of between 1,8m and 2,5 below surface.

The ten DPL tests conducted adjacent to some of the test pits over the property, have shown that the clayey alluvium in soil Zone "A" tested as generally *soft* or *soft to firm* whilst an isolated soil horizon tested *very soft*. The upper 0,6m in EL/42 tested *medium dense.* The DPL tests generally corresponds to the soil consistencies encountered in the test pit profiles although the same material was rather described as *soft becoming very soft* in areas.

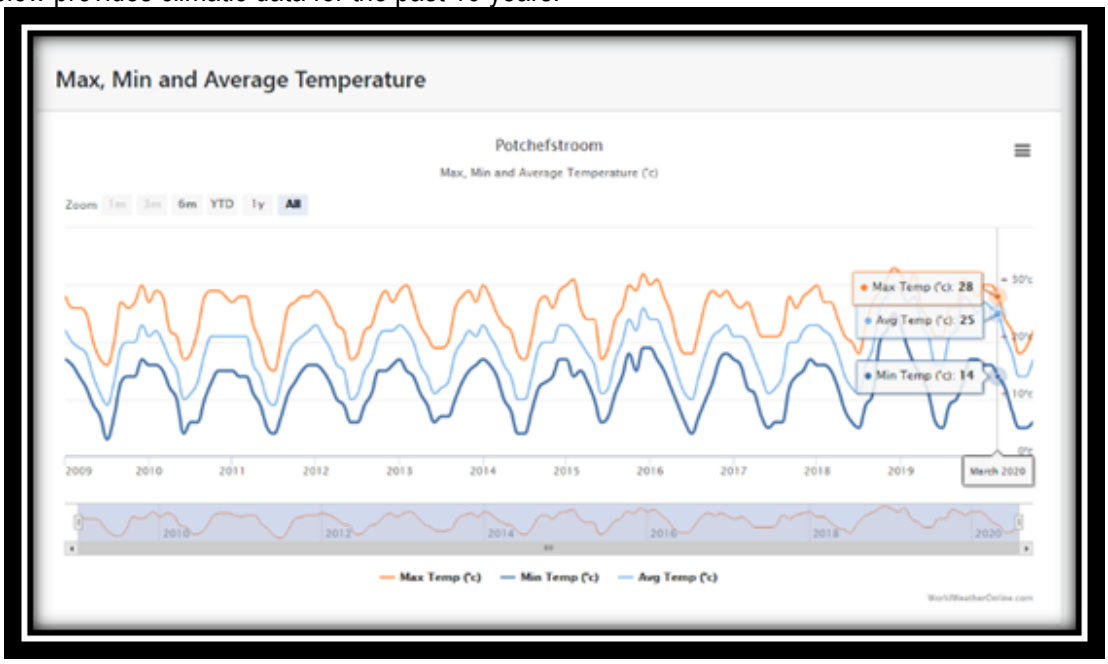
Water seepage was encountered in 61% of the test pits at depths ranging from 1,7m to 2,3m below surface which was investigated at the end of the dry season. The presence of ferricrete-rich soils mostly in ***Zone "B"*** from surficial depths of between 0,3m and 1,3m below surface are indicative of a possible seasonal perched water table during the wet season.

8.1.2 TOPOGRAPHY

The south-eastern part of the property is located on an elevated area with a slope of roughly 3%-4% towards the west. Drainage over the property takes place via sheetwash in a western direction towards the Loopspruit situated some 0,65km to 1,1km due west of the property. The Engineering report and 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 region is characterized by summer rainfall with thunderstorms. Winters are dry with frost common. The warmest months are normally December, January with February the warmest month, and the coldest months are June and July. The Table below provides climatic data for the past 10 years.



Source: https://www.worldweatheronline.com/potchefstroom-weather-averages/north-west/za.aspx

Source: https://www.worldweatheronline.com/potchefstroom-weather-averages/north-west/za.aspx

Extreme climatic events may have an influence on the project during the construction and operational phase and will have to be taken into consideration.

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 AND WETLANDS

The Wetland specialist Report concluded:

- An unchannelled valley-bottom wetland (of which the origins could be largely artificial) at the southern part of the site and a non-perennial river, the Loopspruit, which is at the western boundary of the site, have been identified.

Photo 8 The active channel (streambed) and riparian zone of the Loopspruit non-perennial river, at the site.
Photo: R.F. Terblanche.

Photo 9 Walls of the active channel, the latter which cuts steep in the flat landscape, at the site.
Photo: R.F. Terblanche

- An unchannelled valley-bottom wetland has been identified at the southern part of the site. This wetland may be largely artificial to the extent that it could partly be described as an artificial waterbody. This artificial state could be ascribed to the wall present at the opposite side of the fence directly south of the site. As a pre-caution this aquatic system is described as an unchannelled valley-bottom wetland at a very shallow valley. It does not ascribe to a wetland depression, seep or a wetland flat but has characteristics of those wetland types.

Photo 10 The wetland at the southern part of the site.
Photo: R.F. Terblanche.

- Water input at the unchannelled valley-bottom wetland is from sheet flow and it appears that some water gathers because of a groundwall. It is not clear whether there are leaks from a water canal system that contribute to the water that is apparently present from at times, at the wetland.
- Vegetation at the modified wetland (possibly artificial to a large extent) contains a visible cover of the sedge *Scirpoides dioecus* and other graminoids such as the rush *Juncus rigidus*. Megagraminoids are absent at this wetland at the site.
- Present ecological status (PES) of the Unchannelled Valley-bottom Wetland 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) of the unchannelled valley-bottom wetland at the site is Category C which is Moderate and refers to watercourses that are considered to be ecologically important and sensitive on a provincial or local scale. The biodiversity of these floodplains is not usually sensitive to flow and habitat modifications. They play a small role in moderating the quantity and quality of water of major rivers.
- Vegetation at the riparian zone consists of a well-developed tree layer at many areas which is interrupted by areas where sedge- and grass layers are more conspicuous. The naturalized *Salix babylonica* is widespread along the banks of the streambed. Of concern are visibly dense and extensive covers of the alien invasive tree *Gleditsia triacanthos* at some riparian areas at the site. Sedges at the riparian zone include the exotic *Schoenoplectus tabernaemontani* as well as the indigenous *Schoenoplectus decipiens* and *Eleocharis dregeana*. Forb species such as the alien invasive *Rumex crispus* as well as the indigenous *Falckia oblonga* and *Ranunculus multifidus* are found at the riparian zone at the site.
- 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) of the non-perennial river at the site is Category C which is Moderate and refers to watercourses that are considered to be ecologically important and sensitive on a provincial or local scale. The biodiversity of these floodplains is not usually sensitive to flow and habitat modifications. They play a small role in moderating the quantity and quality of water of major rivers.

- The site is part of the Upper Vaal Water Management Area (WMA 8). Relative aquatic biodiversity theme sensitivity at the site is very high owing to the presence of an aquatic Critical Biodiversity Area. The area, of which the site is part, is a Fish Support Area and associated sub-quaternary catchment. There is an active channel and riparian zone of the Loopspruit non-perennial river at the western part of the site. This Loopspruit non-perennial river, its riparian zone and its buffer zone of 32 m are excluded from the proposed developments. The presence of an associated sub-quaternary catchment of a Fish Support Area means that pollution of groundwater or water of the non-perennial river should be distinctly avoided. There is no distinct impact that the proposed development will have on the river of which the outer edge of the riparian zone.

Figure 8 Some ecological features at the site.

Red outline	Boundaries of the site
Blue outline	Route of active channel of a non-perennial river (Loopspruit)
Blue outline and shading	Wetland
Green outline	Outer edge of riparian zone

Dark blue outline	Ditches or unpaved storm water canals

- The unchannelled valley-bottom wetland and non-perennial river at the site, with their buffer zones (32 m) are substantially excluded from the proposed footprint.
- The Unchannelled Valley-bottom wetland and the non-perennial river (with buffer zones) at the site are substantially excluded from the development and are not part of the proposed footprint. 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 should be as similar as possible post development as to prior the development, if the development is approved (in this case there could be some positive impact on the flow regime). Loss of any wetland animal or plant species of particular conservation importance is not expected.

Figure 9 Some ecological features at the site. Buffer zones are indicated.

Red outline	Boundaries of the site
Blue outline	Route of active channel of a non-perennial river (Loopspruit)

Blue outline and shading	Wetland
Green outline	Outer edge of riparian zone
Orange outline	Outer edge of buffer zone (32 m)
Dark blue outline	Ditches or unpaved storm water canals

- Loss of wetland Threatened or Near Threatened Plants, Mammals, Reptiles, Amphibians and Invertebrates at the proposed footprint appears to be unlikely.
- Rubble or waste could lead to infiltration of unwanted pollutants into the soil. Spilling of petroleum fuels and unwanted chemicals onto the soils that infiltrate these soils could lead to pollution of soils and also impact on water quality when the stream flows. Rubble or waste that could accompany the construction effort, if the development is approved, should be removed during and after construction. Measures should be taken to avoid any spills and infiltration of petroleum fuels or any chemical pollutants into the soil during construction phase.
- A rehabilitation plan which include the combating of alien invasive plant species at the watercourse is essential. Infestation by alien invasive species could replace indigenous vegetation or potential areas where indigenous vegetation could recover. Once established combatting these alien invasive plant species may become very expensive to combat in the long term, especially if species such as *Prosopis* (Mesquite) and *Melia azedarach* (Syringa Berry-tree) is allowed to establish. Continued monitoring and eradication of alien invasive plant species are imperative.
- 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.

In terms of the National Screening Tool's Aquatic Biodiversity theme sensitivity the wetland specialist have found: *Aquatic biodiversity theme sensitivity*
Relative aquatic biodiversity theme sensitivity at the site is very high owing to the presence of an aquatic Critical Biodiversity Area. The area, of which the site is part, is a Fish Support Area and associated sub-quaternary catchment. There is an active channel and riparian zone of the Loopspruit non-perennial river at the western part of the site. This Loopspruit non-perennial river, its riparian zone and its buffer zone of 32 m are excluded from the proposed developments. The presence of an associated sub-quaternary catchment of a Fish Support Area means that pollution of groundwater or water of the non-perennial river should be distinctly avoided. There is no distinct impact that the proposed development will have on the river of which the outer edge of the riparian zone.

8.1.5. GROUND WATER

Groundwater seepage may be expected during construction from depths of between 1,7m to 2,3m below surface, especially in ***Zone "A"*** and ***"C"*** or in close proximity of these soil zones. The presence of ferricrete-rich soils, mostly in Zone ***"B"*** from surficial depths of between 0,3m and 1,3m below surface are indicative of a seasonal perched water table in the wet season.

The project could adversely affect ground water if proper steps are not implemented in order to prevent pollution from reaching the groundwater. If proper mitigation and pollution prevention steps are taken during the planning,

implementation and post-construction phases it is highly unlikely that the groundwater will be affected. The eventual influence should therefore be one of low significance, probability and intensity.

Possible infiltration into the groundwater have been taken into account. During the construction phase, no spills of lubricants or construction worker sewage should be allowed to pollute the ground water. Special care must be taken to ensure adequate surface drainage to prevent the accumulation of water next to structures, especially within these relative flat areas.

8.1.6. FLORA

The Ecologist found the following:

- Vegetation at the terrestrial zone of the site is a disturbed, mainly secondary grassland, owing to most of the area that has been ploughed in the past. Terrestrial vegetation consists of a grass layer that contains some forbs and relatively few shrubs and trees. Many areas contain a conspicuous presence of alien invasive herbaceous weeds. The shrub *Asparagus laricinus* occurs at some areas at the site. Indigenous grass species include *Eragrostis curvula*, *Cynodon dactylon*, *Aristida congesta*, *Setaria sphacelata*, *Sporobolus africanus*, *Eragrostis superba*, *Chloris virgata* and *Themeda triandra*. Indigenous forb species include *Senecio consanguineus*, *Bulbine narcissifolia* and *Conyza podocephala*. Alien invasive herbaceous weed species are conspicuous at the site and include include *Argemone ochroleuca*, *Plantago lanceolata*, *Tagetes minuta*, *Bidens bipinnata*, *Bidens pilosa*, *Gomphrena celosioides*, *Schkuhria pinnata*, *Conyza bonariensis*, *Chenopodium album*, *Guileminea densa*, *Verbena bonariensis*, *Physalis viscosa*, *Alternanthera pungens* and *Verbena aristigera*.
- Vegetation at the riparian zone consists of a well-developed tree layer at many areas which is interrupted by areas where sedge- and grass layers are more conspicuous. The naturalized *Salix babylonica* is widespread along the banks of the streambed. Of concern are visibly dense and extensive covers of the alien invasive tree *Gleditsia triacanthos* at some riparian areas at the site. Sedges at the riparian zone include the exotic *Schoenoplectus tabernaemontani* as well as the indigenous *Schoenoplectus decipiens* and *Eleocharis dregeana*. Forb species such as the alien invasive *Rumex crispus* as well as the indigenous *Falckia oblonga* and *Ranunculus multifidus* are found at the riparian zone at the site.
- Vegetation at the modified wetland (possibly artificial to a large extent) contains a visible cover of the sedge *Scirpoides dioecus* and other graminoids such as the rush *Juncus rigidus*. Megagraminoids are absent at the wetland at the site.
- Disturbance regime. Grassland at the site is secondary, owing to cultivation/ ploughing of most of the area in the past. Wheat (at the time of the surveys) is cultivated at an irrigated area at the site. Ditches or unpaved storm water canals occur in particular along the roads that borders the site. On open-on-top cement canal and associated infrastructure are also present at the site. Homestead, buildings, garden areas, fences, an artificial water pond and infrastructure in general associated with a farming area, are present at the site. Alien invasive herbaceous weeds are conspicuous at many areas at the site. The dense covers of the alien invasive tree species *Gleditsia triacanthos* at the riparian zone at the western part of the site, is of concern.
- The stormwater system at the northeastern part of the site may not function well and it appears that water overflows in the adjacent flat areas from time to time. Further evaluation of this storm water system falls beyond the scope of this report and could be addressed by a qualified enigineer.
- No Threatened or Near Threatened plant or animal species appear to be resident at the site. No other plant- or animal species of particular conservation concern appear to be present at the site apart from one plant species that is not threatened and which is listed as nationally Declining, *Crinum bulbispermum* which occurs at the riparian zone at the site. The riparian zone of the Loopspruit non-perennial river at the western part of the site is exluded

from the proposed footprint which means that the Declining plant species *Crinum bulbispermum* is safeguarded at the site.

- A Vulnerable ecosystem, the Rand Highveld Grassland vegetation type, is mapped for the site. During surveys at the site, it was found that the original vegetation type is modified to a secondary grassland and that the scope to conserve the area at the site as an important distinct unit of the vegetation type, is small.
- The riparian zone and wetland (possibly artificial to a large extent) at the site are part of a corridor of particular conservation importance. There is little scope for the terrestrial part of the site to be part of a corridor of particular conservation importance.

Figure 10 Indications of ecological sensitivity at the site.

Red outline	Boundaries of the site	
Green outline and shading	High sensitivity	
Light yellow outline and shading	Low sensitivity	

The ecologist further considered the possible ecological sensitivities at the site as indicated by a report generated from the screening tool of DFFE. These ecological sensitivies that could possibly / are present at the site, follow:

Animal species theme sensitivity

Relative animal species theme sensitivity is medium and high in some areas. The possible presence of *Hydrictus maculicollis* (Spotted-necked Otter) that should be investigated is indicated by the screening tool. During the surveys this status quo has been confirmed or could be low in stead of medium. The watercourse, the Loopspruit non-perennial river at the western boundary of the site as well as the wetland at the southern part of the site are not ideal habitats for *Hydrictus maculicollis* (Spotted-necked Otter), which favours more open permanent waters. No distinct possibility that the site could be used as specific habitat or foraging area by *Hydrictus maculicollis* could be observed. No ideal habitat is present for the invertebrate species *Clonia uvarovi* either. *Clonia uvarovi* occurs in tall, woodland savannah. No such habitat exists at the site. No ideal habitat or nesting sites or signs of *Tyto capensis* could be found at the site during the surveys. It is unlikely that the Africa Grass Owl, Tyto capensis, is present at the site.

Plant species theme sensitivity
Relative plant species theme sensitivity is low. Possible sensitive plant species of which the likely presence or absence have been investigated are listed in Tables 4.2 – 4.9 and include plant species on a local and provincial scale which could be prone to harvesting. One plant species which is not threatened but which is nationally listed as Declining, *Crinum bulbispermum*, occurs at the riparian zone of the Loopspruit non-perennial river at the site. The riparian zone and buffer zone (32 m) of the Loopspruit non-perennial river are excluded from the proposed footprint, whereby safegarding this Least Concern but nationally Declining plant species, *Crinum bulbispermum*. There appears to be not threat to any plant species of particular conservation concern if the development is approved.

Terrestrial biodiversity theme sensitivity
Relative terrestrial biodiversity at the site is very high. This high sensitivity that is ascribed to the site area, is because of the presence of Critical Biodiversity Area 1, which is in turn is based on a Vulnerable ecosystem, the Rand Highveld Grassland (Gm 11), mapped for the site. During surveys at the site, it was found that the original vegetation type is extensively and highly modified, including being ploughed/ cultivated in the past, and that the scope for the site to distinctly contribute to the conservation of Rand Highveld Grassland, is small. Because the site is also part of a sub-quaternary catchment of a Fish Support Area, the aquatic theme also contributes to the perceived high terrestrial sensitity. Such as addressed under the aquatic theme sensitivity, a distinct and significant impact of the development to the sub-quaternary catchment, is not anticipated

- Continued monitoring and eradication of alien invasive plant species are imperative. Declared alien invasive species such as *Prosopis glandulosa* (Mesquite), *Melia azedarach* (Syringa) and alien invasive Australian *Acacia* species (Australian wattles) should not be allowed to establish.
- If the development is approved an opportunity exists to plant indigenous plant species at the site.
- Following the mitigations which will be upheld and planned footprint for development all the impact risks listed above are moderate or low.

8.2 SOCIO ECONOMIC FACTORS

8.2.1 SOCIAL AMENITIES

The site is located within the Urban Edge of the Municipality. The proposed development will attribute to accelerate housing delivery within the context of sustainable human settlements as it aims to create viable residential stands within the urban edge of Potchefstroom.

In addition to the above mentioned the proposed development will maximise the use of available land by converting the agricultural property into viable residential units within the urban edge. An additional advantage of the proposal is that the cultivated land will not be lost as pivots are proposed to the west of the development nearer the Loop Spruit.

As such, it is clear that the proposed development is aligned with the guiding principles and spatial vision of the SDF and that the application should be encouraged.

The proposed development will also ensure that:

- The housing shortage of the area will be partially addressed.
- During the construction phase of the proposed development, employment opportunities will be created and thus decrease the unemployment rate of the area.
- During the operational phase of the proposed development, additional employment opportunities will be created.
- The tax base of the Local Municipality will be broadened.

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.

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 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) and the provision of proper accommodation facilities (Which has been designed to be as energy efficient as possible) will contribute towards lessening air pollution in the area.

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

A SAHRA Specialist has been appointed and found the following: "Based on the aerial images of the area, and the heritage desktop study, it is therefore deemed unlikely that any significant sites, features or material of cultural heritage (archaeological and/or historical) origin and/or significance will exist in the study area & proposed development area. Recent historical activities (mainly agricultural activities) would have impacted on any if they did exist here in the past and would have disturbed or destroyed these to a large degree. Known archaeological and historical sites, features and material have been identified in the larger geographical area and this needs to be taken into consideration during actions related to any possible future development.

The existing farmstead, with the related infrastructure that forms part of the existing farming activities on the farm, has not been assessed in the field, and as such its age/origin and heritage significance has not been determined. However, it has been indicated that the farmstead and related infrastructure will be preserved and kept intact and will not be impacted by the proposed development.

It is therefore recommended that Motivation for Exemption from a full Phase I Heritage Impact Assessment as part of the Environmental Screening Process for possible development on Portion 47 of the Farm Elandsheuvel 436IQ, Potchefstroom, Northwest Province, be granted to the applicants taking into consideration the following:

The subterranean nature of cultural heritage (archaeological and/or historical) resources must always be kept in mind. 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. This could include previously unknown and unmarked graves and/or cemeteries. Furthermore, should there be any future plans to do any alterations or changes to the existing farmstead and any of the related farming-related infrastructure then a Detailed Heritage Assessment needs to be undertaken to determine their age/origin and significance in order to recommend on the way forward. Any demolition or alteration to structures older than 60 years of age needs to be undertaken with a permit obtained from SAHRA".

8.2.5 AESTHETICS

The topography of the study area is relatively flat and open, with little or no rocky ridges or outcrops present. The landscape will change from entirely agricultural to residential, mixed use nearer the road, whilst an agricultural element (4 new pivots) is proposed to the west.

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.

The proposed development will change the scenic resources of the local area from an undeveloped area to a formal residential area. There will be some visual intrusion and it may be perceived as medium, however as there are other businesses to the north of the site, with residential element of Ailanto to the South, it is considered to that the impact can also be low as it will blends in with these surrounding uses.

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.

AGRICULTURAL POTENTIAL

Although the property is zoned agricultural, it is located within the urban edge of Potchefstroom. It is acknowledged that the existing centre pivots and cultivated land nearer Wilgeboom Road will be lost, however this will be relocated within the development to the west nearer the Loop Spruit. As such, irrigated land will not be lost and the land's agricultural use preserved.

9. ENVIRONMENTAL IMPACT ASSESSMENT

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
Duration (time scale)	Short term	Up to 5 years
	Medium term	6 – 15 years
	Long term	More than 15 years
Extent (area)	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.
Magnitude (Intensity)	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).
Probability	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

Nature of the potential impact		Description of the effect, and the affected aspect of the environment
	Definite	The impact will definitely occur
Significance	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
Reversibility	Low	There is little chance of correcting the adverse impact
	Medium	There is a moderate chance of correcting the adverse impact
	High	There is a high chance in correcting the adverse impact
Risk	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 township and agricultural use (Preferred Alternative)					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
DIRECT IMPACTS:					
Geographical Physical Social Economic	The proposed clearance of 61.16 hectares of indigenous vegetation in order to establish a mixed use development	Duration	Long term	Obtain the necessary environmental authorization for the development. Conduct a Fauna and Flora Habitat survey to determine the sensitivity of the area. Implement the mitigation measures as described in the Environmental Management Plan.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Low		Low
		Risk	Low		Medium
	The active channel, riparian zone and buffer zone (32 m) of the Loopspruit non-perennial river as well as the wetland (possibly largely artificial) with its buffer zone (32 m), has been designated. 41 500 m2 of the proposed development is located within 100 metres from the edge of these watercourses from which vegetation will be cleared.	Duration	Long term	Obtain the necessary environmental authorization for the development. Conduct a Fauna and Flora Habitat survey to determine the sensitivity of the area. Implement the mitigation measures as described in the Environmental Management Plan.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		Probability	Definite		Definite
		Significance	Medium		High
		Reversibility	Low		Low
		Risk	Low		High
	Plan for the provision of services for the development.	Duration	Long term	Appoint a Civil Engineer to assess the availability and design 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	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

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 1: Mixed land use township and agricultural use (Preferred Alternative)					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
	surface and underground water.	Probability	Definite	There should be 1 Chemical toilet for every 30 workers on site.	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. The findings of the 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 are dug according to specifications as prescribed by the Civil Engineer. 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
Indirect impacts:					
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.	Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 1: Mixed land use township and agricultural use (Preferred Alternative)					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
				Ensure that all construction vehicles are in good working order and not leaking oil and or fuel. No vehicles may be serviced on site.	
	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 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
Cumulative impacts:					
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

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 1: Mixed land use township and agricultural use (Preferred Alternative)					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
	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 an issue.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		High
		Reversibility	Low		Low
		Risk	Medium		Medium
	Loss of indigenous vegetation.	Extent	Local	No mitigation measures possible.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	Low		Low
		Risk	Medium		Medium
	Loss of Agricultural Land	Extent	Local	New Centre pivots will be established to the West of the residential development	Local
		Magnitude (Intensity)	Low		Low
		Probability	Definite		Definite
		Significance	Low		Low
		Reversibility	Low		Low
		Risk	Low		Low

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 2: Single land use: Housing only					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
DIRECT IMPACTS:					
Geographical Physical Social Economic	The proposed clearance of 61.16 hectares of indigenous vegetation in order to establish a mixed use development	Duration	Long term	Obtain the necessary environmental authorization for the development. Conduct a Fauna and Flora Habitat survey to determine the sensitivity of the area. Implement the mitigation measures as described in the Environmental Management Plan.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Low		Low
		Risk	Low		Medium
	The active channel, riparian zone and buffer zone (32 m) of the Loopspruit non-perennial river as well as the wetland (possibly largely artificial) with its buffer zone (32 m), has been designated. 41 500 m2 of the proposed development is located within 100 metres from the edge of these watercourses from which vegetation will be cleared	Duration	Long term	Obtain the necessary environmental authorization for the development. Conduct a Fauna and Flora Habitat survey to determine the sensitivity of the area. Implement the mitigation measures as described in the Environmental Management Plan.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		Probability	Definite		Definite
		Significance	Medium		High
		Reversibility	Low		Low
		Risk	Low		High

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 2: Single land use: Housing only					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
				The construction camp shall not be located within 100m of any watercourse.	
	Plan for the provision of services for the development.	Duration	Long term	Appoint a Civil Engineer to assess the availability and design 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. Continued monitoring and eradication of alien invasive plant species are imperative. It is in particular declared alien invasive species such as *Prosopis glandulosa* (Mesquite), *Melia azedarach* (Syringa) and alien invasive Australian *Acacia* species (Australian wattles) that should not be allowed to establish.	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. There should be 1 Chemical toilet for every 30 workers on site.	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. The findings of the 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	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 2: Single land use: Housing only					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
				vehicles that are standing for more than 24 hours.	
	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 are dug according to specifications as prescribed by the Civil Engineer. 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
Indirect impacts:					
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).	Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 2: Single land use: Housing only					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
				NO glass, plastic, metal, or paper shall be allowed to pollute the area.	
	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
		Cumulative impacts:			
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
	Loss of indigenous vegetation.	Extent	Local	No mitigation measures possible.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	Low		Low
		Risk	Medium		Medium
	Loss of Agricultural Land	Extent	Local		Local

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 2: Single land use: Housing only					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
		Magnitude (Intensity)	Low	New Centre pivots will be established to the West of the residential development.	Low
		Probability	Definite		Definite
		Significance	Low		Low
		Reversibility	Low		Low
		Risk	Low		Low

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)**
DIRECT IMPACTS:					
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
	No impact on the watercourses in the area.	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
Indirect impacts:					
Geographical 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.	Extent	Local	Ensure that the development is constructed and operated as planned.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Medium		Medium
		Risk	High		High
Cumulative impacts:					
Geographical Physical Social Economic Cultural	If this option is implemented, the projected boost to the local and regional economy will not take place.	Extent	Local	Ensure that the development is constructed and operated as planned.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High

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)**
	No new employment opportunities will be created. No improvement to local skills development will take place. No broadened Tax base for the JB Marks Local Municipality .	Reversibility	High		High
		Risk	Medium		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)					
ALTERNATIVE 1: Mixed land use township (Preferred Alternative)					
Environmental Attribute	**Environmental Attribute**	**Environmental Attribute**	**Environmental Attribute**	**Environmental Attribute**	**Environmental Attribute**
DIRECT IMPACTS:					
Geographical Physical Social Economic	The proposed clearance of 61.16 hectares of indigenous vegetation in order to establish a mixed use development	Duration	Long term	Obtain the necessary environmental authorization for the development. Implement the findings of the Fauna and Flora Habitat survey. Implement the mitigation measures as described in the Environmental Management Plan.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Low		Low
		Risk	Low		Medium
	The active channel, riparian zone and buffer zone (32 m) of the Loopspruit non-perennial river as well as the wetland (possibly largely artificial) with its buffer zone (32 m), has been designated. 41 500 m2 of the proposed development is located within 100 metres from the edge of these watercourses from which vegetation will be cleared.	Duration	Long term	Obtain the necessary environmental authorization for the development. Implement the findings of the Fauna and Flora Habitat survey. Implement the mitigation measures as described in the Environmental Management Plan.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Low		Low
		Risk	Low		Medium
	Rehabilitate disturbed surfaces which 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
		Duration	Short term	Start the extermination of any invasive species	Medium term
		Extent	Local		Local

ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)					
ALTERNATIVE 1: Mixed land use township (Preferred Alternative)					
Environmental Attribute	**Environmental Attribute**	**Environmental Attribute**	**Environmental Attribute**	**Environmental Attribute**	**Environmental Attribute**
	Eradicate foreign and invader plant species which are likely to invade disturbed areas.	Magnitude (Intensity)	Low	as soon as possible and maintain the eradication programme. Eradication of alien invasive plant species are imperative. It is in particular declared alien invasive species such as *Prosopis glandulosa* (Mesquite), *Melia azedarach* (Syringa) and alien invasive Australian *Acacia* species (Australian wattles) that should not be allowed to establish.	Low
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Poorly planned ablution facilities for construction workers may cause pollution of surface and underground water.	Duration	Short term	Provide portable ablution facilities that will not cause pollution during the construction phase. There should be 1 Chemical toilet for every 30 workers on site	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	Implement the findings of the Geo-Technical Engineer. 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	Duration	Short term	Ensure that the trenches are dug	Short term
		Extent	Local		Local

ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)					
ALTERNATIVE 1: Mixed land use township (Preferred Alternative)					
Environmental Attribute	**Environmental Attribute**	**Environmental Attribute**	**Environmental Attribute**	**Environmental Attribute**	**Environmental Attribute**
	collapse on people or on equipment and people- especially small children, can fall into it.	Magnitude (Intensity)	Medium	according to specifications as prescribed by the Civil Engineer. 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.	Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Indirect impacts:				
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. No vehicles may be serviced on site.	Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	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	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 township (Preferred Alternative)					
Environmental Attribute	**Environmental Attribute**	**Environmental Attribute**	**Environmental Attribute**	**Environmental Attribute**	**Environmental Attribute**
				rain and or handling errors). NO glass, plastic, metal, or paper shall be allowed to pollute the area.	
	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
Cumulative impacts:					
Geographical Physical Social Economic	Enhancement of the social well-being of the local communities 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
	Solid waste: The proposed development will add additional solid waste into the existing waste stream of the JB Marks Local Municipality . Sewage: The proposed development will add additional sewage into the existing sewage stream of the JB Marks Local Municipality.	Extent	Local	Ensure that the development is constructed as planned by the Civil Engineer.	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 township (Preferred Alternative)					
Environmental Attribute	**Environmental Attribute**	**Environmental Attribute**	**Environmental Attribute**	**Environmental Attribute**	**Environmental Attribute**
	Water supply: The proposed development will add pressure to the water supply of JB Marks 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
	Indigenous vegetation will be removed.	Extent	Local	No mitigation measures possible.	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: Mixed land use township (Preferred Alternative)					
Environmental Attribute	**Environmental Attribute**	**Environmental Attribute**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
DIRECT IMPACTS:					
Geographical Physical Social Economic Cultural	Poorly maintained and serviced infrastructure may cause environmental problems.	Extent	Local	It will be the responsibility of the Local Municipality to maintain the infrastructure.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium- high		High
		Reversibility	High		Medium
		Risk	High		High
Indirect impacts:					
Geographical Physical Social Economic Cultural	Lack of rehabilitation may cause problems	Extent	Local	It will be the responsibility of the Local Municipality 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
Cumulative impacts:					
Geographical Physical Social Economic Cultural	Enhancement of the social well-being of the local communities for which the development is intended	Extent	Local	No mitigation measures required.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High

ENVIRONMENTAL IMPACT ASSESSMENT (Operational Phase)					
ALTERNATIVE 1: Mixed land use township (Preferred Alternative)					
Environmental Attribute	**Environmental Attribute**	**Environmental Attribute**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
		Reversibility	High		High
		Risk	Medium		Medium
Geographical Physical Social Economic Cultural	Broadened tax base: The proposed development will generate more income for the JB Marks Local Municipality.	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	**Salinization:** Salinization of soil negatively impacts plant development and induces land degradation. Saline earths show lower agricultural productivity, worsen farmers' wellbeing, and the economic situation in the region. Salinization of soil is an **excessive accumulation of water-soluble salts**. Soil salinization occurs when soluble salts are retained in the earth. It happens either naturally or because of improper anthropogenic activities, particularly farming practices. Besides, some earths are initially saline due to low salt dissolution and removal. **Soil salinization causes include**: • dry climates and low precipitations when excessive salts are not flushed from the earth; • high evaporation rate, which adds salts to the ground surface; • poor drainage or waterlogging when salts are not washed due to a lack of water transportation; • irrigation with salt-rich water, which amplifies salt content in earths; • removal of deep-rooted vegetation and a raised water table as a consequence;	Duration	Permanent	The use of herbicides, insecticides, pesticides and fertilizer must be in accordance with directions and instructions as per the supplier/product. Do not over use. Plan to prevent soil salinization **typical methods to prevent soil salinization**: • Optimize irrigation (reduce salty water usage, implement drip irrigation, use desalinated, recycled, rain-harvested water, and don't over irrigate). • Add organic matter and manure to keep moisture and reduce irrigation. • Refrain from deep tillage/heavy machinery not to transfer soil salts to the root zone area, which induces salinization. • Use cover crops or mulch to protect the ground surface.	Permanent
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High

ENVIRONMENTAL IMPACT ASSESSMENT (Operational Phase)					
ALTERNATIVE 1: Mixed land use township (Preferred Alternative)					
Environmental Attribute	**Environmental Attribute**	**Environmental Attribute**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
	• leakage from geological deposits and penetration into groundwater; • inappropriate application of fertilizers when excess nitrification accelerates soil salinization.				

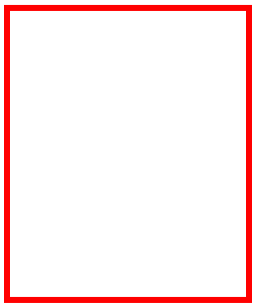
10. PUBLIC PARTICIPATION.

10.1 ADVERTISEMENT AND NOTICE

Publication name	Potchefstroom Herald	
Date published	24/03/2023	
Site notice 1 position	Latitude	Longitude
	26°43'57.91"S	27° 8'5.99"E
Date placed	23/03/2023	

PLEASE SEE PROOF BELOW

PROOF OF NEWSPAPER ADVERTISEMENT:



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)
N/A	Neighbour	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. G. Bashan**	0123921300/ **012 336 8577**		GovenderB@dws.gov.za	**Provincial Office: Gauteng/ Vaal River Catchment Management Agency Bothongo Plaza East, Level 15 285 Francis Baard Street (Postal: Private Bag X995) PRETORIA, 0001**
Head of Department: North-West Department of Agriculture and Rural Development	**Dr. P. Mokaila**	018-3895723	018-389 5090	pmokaila@nwpg.gov.za	**Private Bag X2039 Mmabatho 2735**
North West Department of Biodiversity	**Head of Department**	018 389 5719/ 5431/ 5688	018 392 4377		**Private Bag X2039 Mmabatho 2735**
North West Roads	**Mr. Motsepe Phahlane**	018 388 1435	018 388 1377		Private Bag X2080 Mmabatho 2735
Dr. Kenneth Kaunda District Municipality	**The District Municipal Manager**	018 473 8000	018 473 2523		**Private Bag X5017 Klerksdorp 2570**
JB Marks local municipality	**The Municipal Manager**	018 299 5111	018 297 0477		**PO Box 113 Potchefstroom 2531**

Ward 2 JB Marks Local municipality	**Cllr P de Necker Ward 2**	018 299 5111	018 297 0477		**PO Box 113 Potchefstroom 2531**
EMF JB Marks	**N Rikhotso**			ntombir@tlokwe.co.za	**PO Box 113 Potchefstroom 2531**
Eskom	**Mr. M Dala**	**083 735 9327**		DalaME@eskom.co.za	
SAHRA	**SAHRIS**			sahrisadmin@sahra.org.za	

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hannieduplooy@abenviro.co.za

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

24/03/2020

Dear Sir / Madam

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED CLEARANCE OF 61.16 HECTARES OF INDIGENOUS VEGETATION IN ORDER TO ESTABLISH A MIXED USE DEVELOPMENT, CONSISTING OF RESIDENTIAL 2 ERVEN; BUSINESS USES AND PRIVATE OPEN SPACE. THE DEVELOPMENT WILL ALSO INCLUDE THE ESTABLISHMENT OF 4 CENTRE PIVOTS AND THE INSTALLATION OF SERVICES OF WHICH WATER AND SEWER PIPELINES ARE PROPOSED TO CROSS THE LOOP SPRUIT. 30.85 HECTARES OF THE DEVELOPMENT WILL BE ON LAND THAT WAS PREVIOUSLY USED FOR AGRICULTURAL PURPOSES. THE DEVELOPMENT IS LOCATED ON PORTION 47 AND 48 OF THE FARM ELANDSHEUVEL 436, POTCHEFSTROOM, NORTH WEST PROVINCE

AB ENVIRO CONSULT was appointed by **Rumar Rentals (PTY) LTD** to submit an application to the North West Department Economic development, Environment, Conservation and Tourism for the above mentioned proposed development. Attached please find a notification and a copy of the Draft Scoping Report of the proposed development for your comments. 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 by the 28th April 2023, 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,

Mrs. Hannie du Plooy
EAP-EAPASA 2019/1573

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

24/03/2020

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Reg no. 2000/016653/23

Directorate: Department of Water and Sanitation
The Department of Water and Sanitation
Provincial Office: Gauteng/ Vaal River Catchment Management Agency
Bothongo Plaza East, Level 15
285 Francis Baard Street
PRETORIA, 0001
Tel. 012 392 1300

24/03/2020

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Mr. Motsepe Phahlane
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24/03/2020

Dear Sir / Madam

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Mr M Dala
Eskom
DalaME@eskom.co.za

24/03/2020

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ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED CLEARANCE OF 61.16 HECTARES OF INDIGENOUS VEGETATION IN ORDER TO ESTABLISH A MIXED USE DEVELOPMENT, CONSISTING OF RESIDENTIAL 2 ERVEN; BUSINESS USES AND PRIVATE OPEN SPACE. THE DEVELOPMENT WILL ALSO INCLUDE THE ESTABLISHMENT OF 4 CENTRE PIVOTS AND THE INSTALLATION OF SERVICES OF WHICH WATER AND SEWER PIPELINES ARE PROPOSED TO CROSS THE LOOP SPRUIT. 30.85 HECTARES OF THE DEVELOPMENT WILL BE ON LAND THAT WAS PREVIOUSLY USED FOR AGRICULTURAL PURPOSES. THE DEVELOPMENT IS LOCATED ON PORTION 47 AND 48 OF THE FARM ELANDSHEUVEL 436, POTCHEFSTROOM, NORTH WEST PROVINCE

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

Yours sincerely,

Mrs. Hannie du Plooy
EAP-EAPASA 2019/1573

AB ENVIRO

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Reg no. 2000/016653/23

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hannieduplooy@abenviro.co.za

The Municipal Manager
Dr. Kenneth Kaunda District Municipality
Private Bag X5017
Klerksdorp
2570

24/03/2020

Dear Sir / Madam

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED CLEARANCE OF 61.16 HECTARES OF INDIGENOUS VEGETATION IN ORDER TO ESTABLISH A MIXED USE DEVELOPMENT, CONSISTING OF RESIDENTIAL 2 ERVEN; BUSINESS USES AND PRIVATE OPEN SPACE. THE DEVELOPMENT WILL ALSO INCLUDE THE ESTABLISHMENT OF 4 CENTRE PIVOTS AND THE INSTALLATION OF SERVICES OF WHICH WATER AND SEWER PIPELINES ARE PROPOSED TO CROSS THE LOOP SPRUIT. 30.85 HECTARES OF THE DEVELOPMENT WILL BE ON LAND THAT WAS PREVIOUSLY USED FOR AGRICULTURAL PURPOSES. THE DEVELOPMENT IS LOCATED ON PORTION 47 AND 48 OF THE FARM ELANDSHEUVEL 436, POTCHEFSTROOM, NORTH WEST PROVINCE

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Reg no. 2000/016653/23

The Municipal Manager
JB Marks Local Municipality
PO Box 113
Potchefstroom
2520

24/03/2020

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Cllr. P. de Necker
Ward 2
JB Marks Local Municipality
PO Box 113
Potchefstroom
2520

24/03/2020

Dear Sir / Madam

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Reg no. 2000/016653/23

N Rikhotso
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24/03/2020

Dear Sir / Madam

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Email : RaesibeM@Dalrrd.gov.za

24/03/2020

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10.4 ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Summary of response from EAP
To Follow	

10.5 COMMENTS AND RESPONSE REPORT

I&AP registered:	Comment received:	Response by the EAP:
To follow	To follow	

11. CONCLUDING STATEMENT.

The proposed development falls within JB Marks Local Municipality's area of jurisdiction and the Dr Kenneth Kaunda District Municipality. The site is located on the south–eastern outskirts (within the urban edge) of Potchefstroom. The proposed private development will be situated next to the D1646 (known as Wilgeboom Road) on the southern side travelling to Parys. Ailanto (Grimbeek Park Ext 12) is located to the South of this development. The development will consist out of 1000 Residential 2 stands and 2 Business 2 stands. The access to the development will be via the Wilgeboom Road (D1646), the main access to the development will be gated and have security for controlled access. 4 New centre pivots are proposed nearer the Loop spruit (bordering the site to the west).

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).

Although the emphasis is on housing, complimentary land uses have been included in the township. People want easy access to job opportunities and want their living environment, such as residential townships to be placed at strategic positions with good access routes in close proximity to amenities.

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.

Although this is only the Scoping phase of the proposed development, no "fatal flaws" has been encountered as of yet. All the issues envisaged at this stage can be mitigated.

12 PLAN OF STUDY FOR EIA

12.1 Description of the alternatives to be considered and assessed

One of the objectives of an EIA 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 will be assessed in the EIAR, in terms of environmental, social and technical feasibility.

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

12.1 Land Use Alternatives

12.1.1 Mixed land use township and agricultural use (Alternative 1)

Alternative Site layouts have been developed for the proposed development.

The appointed Town and Regional planner have produced the proposed layout plan, to be constructed in 5 phases with the focus on housing varying between Residential 2 and proposed to include 2 business erven. 4 Centre Pivots are proposed to the west nearer the Loop Spruit.
Although the emphasis is on housing, complimentary land uses have been included in the township (business erven). People want easy access to job opportunities and want their living environment, such as residential townships to be placed at strategic positions with good access routes in close proximity to these amenities with availability of quality infrastructure and job-creation.

12.1.2 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.

In turn, a mixed use node acts 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.

12.1.3 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. The site is located within the Urban Edge of the Municipality. The proposed development will attribute to accelerate housing delivery within the context of sustainable human settlements as it aims to create viable residential and business stands within the urban edge of Potchefstroom addressing the housing need of the town.

12.2 Description of the aspects to be assessed as part of the environmental impact assessment process

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 following aspects and their possible impacts will be assessed

- Geology -structure and rock-type
- Topography- macro and micro-relief
- Climate: Temperature, rainfall, and wind.
- Soil
- Fauna
- Flora
- Surface Water
- Underground water
- Air Quality
- Noise
- Archaeology
- Cultural Sites
- Aesthetics
- Technical issues
- Sociological Issues
- Economic Issues

- The evaluation of concerns in order to assign priority to the important issues: The study is designed to address concerns as well as to prioritise issues as part of the process.
- Developing a strategy for addressing and resolving each issue: All relevant issues will be addressed in order of priority. In this sense the inputs of all I&APs, as well as all other socio-economic factors of importance will be resolved in order of priority.
- Providing feedback at regular intervals in which comments by authorities have been incorporated: Feedback to I&APs is the only logical way by which eventual acceptance can be achieved. It is therefore a standing practise in all studies conducted by the consultant that feedback is provided on a continuous basis.

12.3 Aspects to be assessed by specialists

The process followed can be described as follows:

1) The EAP was contracted by the land owner as their 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 Town Planner has developed the layout in conjunction with the surveyor
4) The Civil Engineer was appointed to determine the capability of existing infrastructure to be linked to proposed development and readily available bulk services. He also designed the proposed infrastructure.
5) A SAHRA Specialist has been appointed to determine the possible impact of the development on Archaeological and Cultural features.
6) A Fauna and Flora and Wetland specialist has been appointed to determine the impact of the proposed development on the Fauna and Flora and wetlands of the area. He was also appointed to delineate the extent watercourses on site.
7) An Environmental Screening Process was conducted by the EAP to ensure that all the relevant Environmental Legislation is taken into consideration.
8) Desk top studies were conducted and alternatives assessed.
9) Site inspections were carried out to verify the outcomes of the desktop studies, and the preferred alternative defined.
10) A full Public Participation Process is being followed to obtain inputs from interested and affected parties..
11) 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.
12) 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.

The inputs from Specialists, interested and affected parties, together with the knowledge of the EAP will be used to determine measures to avoid, mitigate and manage potential impacts. These measures will be described in the Environmental Management Programme.

12.4 Description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists,

And

12.5 Description of the proposed method of assessing duration and significance

Impacts will be rated using the following methodology:

Nature of the potential impact		Description of the effect, and the affected aspect of the environment
Duration (time scale)	Short term	Up to 5 years
	Medium term	6 – 15 years
	Long term	More than 15 years
Extent (area)	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.
Magnitude (Intensity)	Low	Site-specific and wider natural and/or social functions and processes are

Nature of the potential impact		Description of the effect, and the affected aspect of the environment
		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).
Probability	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
Significance	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
Reversibility	Low	There is little chance of correcting the adverse impact
	Medium	There is a moderate chance of correcting the adverse impact
	High	There is a high chance in correcting the adverse impact
Risk	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

Nature of the potential impact		Description of the effect, and the affected aspect of the environment
		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 will be 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. A surveyor has been appointed to map the area and determine site levels.

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. Various Specialists are involved in assessing different aspects including Civil Engineer, Electrical Engineer, Surveyor, Town Planner, Botanical Specialist, Wetland Specialist, SAHRA Specialist and the EAP.

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. The Botanical Specialist will determine the sensitivity and distribution of flora and associated fauna, and the wetland specialist will ensure that the relevant aquatic ecosystems are assessed.

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. EAP, Town Planner, Civil Engineer and SAHRA specialist.

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. . EAP, Town Planner, Civil Engineer and SAHRA specialist.

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. SAHRA Specialist.

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. SAHRA Specialist.

The inputs from Specialists, interested and affected parties, together with the knowledge of the EAP will be used to determine measures to avoid, mitigate and manage potential impacts. Inputs from I&APs will be considered for all the above in order to ensure a sustainable development.

12.6 Stages at which the competent authority will be consulted

1) The first consultation will be in the form of the application submission
2) A Draft Scoping report will be submitted to the Department.
3) 40 Days after this draft has been submitted, the final Scoping report will be submitted to the Department.
4) Once the Final Scoping report has been accepted, a Draft EIA Report will be submitted to the Department.
5) 30 Days after this draft EIA Report has been submitted, the final EIA Report will be submitted to the Department.

12.7 Particulars of the public participation process that will be conducted during the environmental impact assessment process

Public and stakeholder involvement in the EIA process is widely recognised as being an *essential* component of the EIA process. The input and contribution added to the process, by public comment and involvement, leads to better and more acceptable decision-making. The involvement of interested parties, adjacent land owners, NGO bodies and others, can help to identify whether all impacts have been included and whether all risk groups have been identified.

The engagement process will provide stakeholders with the opportunity to raise their issues and concerns and to interact on a one-on-one basis with the project team.

Registered I&APs shall be informed of the approval or rejection of the scoping report, and will be encouraged to continue their active participation in the EIA process by staying involved in the process, and commenting on the scoping report approval conditions / requirements.

The PPP to be conducted during the EIA phase will entail the following:

- ❖ Update the existing stakeholder database, following the review of the draft and final scoping reports by registered IAP's and DEDECT
- ❖ Announcement of the EIA phase of the project, which entails the following:

1) Distribution of Letters, notices, the Draft and final EIAR to all registered I&APs via email, fax or post;
2) Hosting Public Meetings (if necessary);
3) Integration of comments into a Comments and Response Report;

12.8 Description of the tasks that will be undertaken as part of the environmental impact assessment process

Actions
1. Assessment Phase
1.1 Undertake assessment phase by assessing and evaluating potential impacts identified in the Scoping phase.
1.2 Review and manage specialist studies required.
1.3 Compile a draft Environmental Impact Report (EIR).
1.4 Compile a draft Environmental Management Plan for the Construction phase.
1.5 Compile an Information Sheet (summary of EIR) and distribute to identified I&APs
1.6 Distribute DEIR to I&APs
1.7 Allow the identified public to provide comment within a 30 day period on above report.
1.8 Address comments received and finalise EIR
1.9 Should the draft EIR require substantial changes, these changes will be incorporated into the final EIR and distributed.
1.10 Submit EIR to authorities for a final decision
1.11 Once the decision is issued, all I&Ps must be formally informed of the decision

12.9 Measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored

An EIA involves *prediction* and thus a certain degree of *uncertainty* is an integral part. There are two types of uncertainty associated with environmental impact assessments: those associated with the process and, those associated with predictions. With the former the uncertainty is whether the most important impacts have been identified and whether recommendations will be acted upon or ignored. For the latter, the uncertainty is in the accuracy of the findings. The main types of uncertainty and the ways in which they can be minimized are summarized as follows:

- ❖ **Uncertainty of prediction**: this is important at the data collection stage and the final certainty will only be resolved once implementation commences. Research can reduce the uncertainty;

- **Uncertainty of values**: this reflects the approach taken in the EIA process. Final certainty will be determined at the time decisions are made. Improved communications and extensive negotiations should reduce this uncertainty;

- **Uncertainty of related decision**: this affects the decision making element of the EIA process and final certainty will be determined by post evaluation. Improved coordination will reduce uncertainty.

The importance of *wide consultation* cannot be overemphasized in minimizing the risk of missing important impacts. The significance of impacts is subjective, but the value judgments required are best arrived at by consensus: public participation and consultation with a wide sector of the community will reduce uncertainty.

The accuracy of predictions is dependent on a variety of factors such as lack of data or lack of knowledge. Prediction capabilities are generally good in the physical and chemical sciences, moderate in ecological sciences and poor in social sciences.

The results of the EIA should indicate the level of uncertainty with the use of confidence limits and probability analyses wherever possible. Sensitivity analysis similar to that used in economic evaluation, could be used if adequate quantifiable data are available. A range of outcomes can be found by repeating predictions and adjusting key variables.

An EIA cannot give a precise picture of the future. The EIA enables uncertainty to be managed and, as such, is an aid to better decision making. (*S. Cliff, 2015, P92.*)

13. AFFIRMATION BY EAP

I **Mrs JE du Plooy** 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:

AB Enviro consult

Name of company:

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