

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

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

for:

Environmental Impact Assessment for the proposed clearance of 149,5516 ha of indigenous vegetation, located within a critical biodiversity area (CBA 1) and within 100 meters from a non-perennial stream, in order to establish a Township, located on a portion of the farm Schweizer Reneke Townlands 62 HO known as Ipelegeng Extension 12, Mamusa Local Municipality, North West Province.

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DRAFT REPORT

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EXECUTIVE SUMMARY

The land owner, the Mamusa Local Municipality, has appointed AB Enviro Consult CC, an independent environmental consultancy, to undertake an Environmental Impact Assessment for the proposed clearance of 149,5516 ha of indigenous vegetation, located within a critical biodiversity area (CBA 1) and within 100 meters from a non-perennial stream, in order to establish a Township, located on a portion of the farm Schweizer Reneke Townlands 62 HO known as Ipelegeng Extension 12, Mamusa Local Municipality, North West Province.

In terms of section 9(1) of the National Housing Act (107 of 1997), every municipality must, as part of the municipality's process of integrated development planning (IDP) take all reasonable and necessary steps to ensure that the inhabitants within its area of jurisdiction have access to adequate housing on a progressive basis by setting housing delivery goals, identifying suitable land for housing development and planning, facilitating, initiating and co-coordinating housing development in its area of jurisdiction.

Housing comprises a series of complex interrelationships between people, their needs and values and resources within a political and legal environment. This complexity requires a focused approach to efforts aimed at providing housing. National Government has started to respond by putting the necessary policy and legislative environment in place.

This framework outlines the roles and responsibilities of different spheres of government in relation to housing, as well as dealing with aspects relating to the design and content of housing policy and legislation. In the context of this framework the Mamusa Local Municipality is required to take all reasonable steps to ensure the provision of adequate housing to its residents.

Various policy directions and legislation exist relating to the role and responsibilities of the different spheres of government to provide and ensure the provision of housing opportunities to affected communities. Of these, the comprehensive plan for the Development of sustainable Human Settlements based on the Breaking New Ground Principles (BNG) forms the basis on which housing development should be implemented.

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

- Progressive Informal Settlement Eradication: These settlements must be integrated into the broader urban setup so as to overcome spatial, social and economic exclusion. The plans encourage the eradication of informal settlements through in-situ upgrading in desired locations coupled with the relocation of household where development is not possible or desirable.
- Promoting densification and Integration: The aim is to integrate previously excluded groups into the urban area so as to enable them to enjoy the benefits it offers and to create more integrated, functional and environmentally sustainable human settlements, towns and cities.
- Enhancing Spatial Planning: Greater co-ordination and alignment of various planning instruments and economic policies lies at the heart of sustainable human settlements.
- Provision of a mix of housing typologies for different income groups (Subsidised, GAP, Affordable and bonded Housing opportunities).

- Enhancing the location of New Housing Projects: The location of past housing projects was said to reinforce apartheid spatial settlement patterns. Spatial restructuring aims to achieve a more decisive Intervention In land markets. The following interventions are envisaged viz. accessing well located state-owned and parastatal land: acquisition of well-located private land for housing development, funding for land acquisition and fiscal incentives.

HOUSING AND STANDS NEEDS

- The waiting list of the municipality currently indicated a need for 6000 houses. This waiting list increased drastically from 3171 units in 2014 (NW Multi Year Development Plan 2014).
- According to the 2013 spatial Development Framework (SDF) for Mamusa Local Municipality there were 804 informal structures not on stands (squatters) and 303 informal structures in backgrounds. (This was also indicated in the 2013 Housing Sector Plan for Mamusa Local Municipality)
- Due to the fact that there are no vacant stands in Schweizer-Reneke/ Ipelegeng Urban area, households are currently squatting on municipal vacant land, parks, school sites and in the backyards and the community already submitted two memorandums to the municipality demanding additional stands

The proposed development is based on the premise that the proposed township area should be a fully integrated human settlement catering not only for low cost subsidised housing but also for other housing typologies including inter alia but not limited to GAP housing, affordable bonded housing, the necessary social, community and recreational facilities as well as opportunities for job creation and employment.

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

The 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:

Number and date of the relevant notice:	Activity No (s) (in terms of the relevant notice) :	Listed activity as per project description²:	Anticipated years to complete construction (From date of commencement)
GN.R. 325, 7 April 2017	15	The proposed clearance of 149,5516 ha of indigenous vegetation to establish a mixed use Township located on a portion of the farm Schweizer RenekeTownlands 62 HO known as	10 years

		Ipelegeng Extension 12, Mamusa Local Municipality, North West Province.	
GN.R. 327, 7 April 2017	28(i)	Residential, mixed, retail, commercial and institutional developments where such land was used for agriculture on and after 01 April 1998 and where such development: (i) will occur inside the urban area of Schweizer Reneke, where the total land to be developed is 149,5516 hectares.	10 Years
GN.R. 324, 7 April 2017	12 (h)(iv)	The proposed clearance of 149,5516 ha of indigenous vegetation, located within a critical biodiversity area (located within a critical Biodiversity area 1 as identified in the North West Bioregional Plan) and within 100 meters from a non-perennial stream located on a portion of the farm Schweizer Reneke Townlands 62 HO known as Ipelegeng Extension 12.	10 years

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.

No "fatal flaws" has been encountered as of yet. All the issues envisaged at this stage can be mitigated.

1. INTRODUCTION

The land owner, the Mamusa Local Municipality, has appointed AB Enviro Consult CC, an independent environmental consultancy, to undertake an Environmental Impact Assessment for the proposed clearance of 149,5516 ha of indigenous vegetation, located within a critical biodiversity area (CBA 1) and within 100 meters from a non-perennial stream, in order to establish a Township, located on a portion of the farm Schweizer Reneke Townlands 62 HO known as Ipelegeng Extension 12, Mamusa Local Municipality, North West Province.

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Of these, the comprehensive plan for the Development of sustainable Human Settlements based on the Breaking New Ground Principles (BNG) forms the basis on which housing development should be implemented.

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

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

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 in terms of the 2014 EIA Regulations, as amended and published in Government Notice R. 326 of 7 April 2017, 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 land owner, Mamusa Local Municipality 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) The Civil Engineer has been appointed to determine the capability of existing infrastructure to be linked to proposed development and readily available bulk services. He will also designed the proposed infrastructure.
- 4) An engineer has determined the flood lines and this delineation has been used by the Town and Regional Planner to design the layout plan.
- 5) The town and regional planner have designed the proposed layout of the development informed by the surveyor's, Geo-Technical Engineer's and flood line engineer's findings.
- 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 specialist has been appointed to determine the impact of the proposed development on the Fauna and Flora of the area.
- 8) A Wetland specialist has been appointed to determine the impact of the proposed development on the watercourses of the area.
- 9) An Environmental Screening Process was conducted by the EAP to ensure that all the relevant Environmental Legislation is taken into consideration.
- 10) Desk top studies were conducted and alternatives assessed.
- 11) Site inspections were carried out to verify the outcomes of the desktop studies, and the preferred alternative defined.
- 12) A full Public Participation Process is being followed to obtain inputs from interested and affected parties.
- 13) 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.

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

The purpose of the Scoping Report was to document the outcome of the Scoping Phase of the project. The report fulfilled the requirements of the EIA Regulations (2014) for the documentation of the scoping phase. The Scoping Report was compiled in terms of the 2014 EIA Regulations, as amended in accordance with Section 21(3) as amended and published in Government Notice R. 326 of 7 April 2017.

Following the approval of the Draft Scoping Report, the Final Scoping Report was approved on 18 October 2021.

1.4 EIA PHASE

The EIA phase determines the *significance of the impact* of the proposed activity on the surrounding Environment. During the EIA phase, an Environmental Impact Assessment Report (EIAR) is compiled, and, following public review, is submitted to the approving authority – the DACE.

The EIA process is undertaken in accordance with the 2014 EIA Regulations, as amended and published in Government Notice R. 326 of 7 April 2017.

The EIAR (including all specialist reports) will be made available to all registered interested and affected parties (I&APs), providing them an opportunity to comment and to verify that the issues raised through the process have been captured and adequately addressed and considered within the study.

1.4.1 Objective of the environmental impact assessment process

The objective of the environmental impact assessment process is to, through a consultative process-

1. determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
2. describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the development footprint on the approved site as contemplated in the accepted scoping report;
3. identify the location of the development footprint within the approved site as contemplated in the accepted scoping report; based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;
4. determine the –

- i. nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and
 - ii. degree to which these impacts-
 - (aa) can be reversed;
 - (bb) may cause irreplaceable loss of resources, and
 - (cc) can be avoided, managed or mitigated;
5. identify the most ideal activity within the development footprint of the approved site as contemplated in the accepted scoping report based on the lowest level of environmental sensitivity identified during the assessment;
 6. identify, assess, and rank the impacts the activity will impose on the development footprint on the site as contemplated in the accepted scoping report through the life of the activity;
 7. identify suitable measures to avoid, manage or mitigate identified impacts; and identify residual risks that need to be managed and monitored.

1.4.2 Scope of assessment and content of environmental impact assessment reports

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

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

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

Table 1 below provides a summary of the legislative requirements in terms of an EIA Report as stipulated in Section 23 of the 2014 EIA Regulations, as amended and published in Government Notice R. 326 of 7 April 2017. Cross-references are provided in terms of the relevant section within this DEIA Report where the NEMA and DEIA Report requirements have been addressed.

Table 1: DEIA Report content as per Section 23 of the 2014 EIA Regulations, as amended and published in Government Notice R. 326 of 7 April 2017 Appendix 3.

3. (1) *An environmental impact assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include:*

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for EIA Reports	Location in this EIA report
Appendix 3, section 3 (a)	Details of the EAP who prepared the report; and the expertise of the EAP, including a curriculum vitae;	Paragraph 2
Appendix 3, section 3 (b)	The location of the development footprint of the activity on the approved site as contemplated in the accepted scoping report, including –	Paragraph 4

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for EIA Reports	Location in this EIA report
	(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
Appendix 3, section 3 (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;	Appendix A1 and Appendix A2 Paragraph 4
Appendix 3, section 3 (d)	A description of the scope of the proposed activity, including – (i) all listed and specified activities triggered and being applied for; and (ii) a description of the associated structures and infrastructure related to the development;	Paragraph 3 Paragraph 3
Appendix 3, section 3 (e)	A description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context	Paragraph 5
Appendix 3, section 3 (f)	A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred development footprint within the approved site as contemplated in the accepted scoping report.	Paragraph 6
Appendix 3, section 3 (g)	a motivation for the preferred development footprint within the approved site as contemplated in the accepted scoping report	Paragraph 4
Appendix 3, section 3 (h)	A full description of the process followed to reach the proposed development footprint within the approved site as contemplated in the accepted scoping report, 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. (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; (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 8 Paragraph 10 Paragraph 10 Paragraph 8 Paragraph 9 Paragraph 9 Paragraph 9 Paragraph 9 Paragraph 9

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for EIA Reports	Location in this EIA report
	<p>(viii) The possible mitigation measures that could be applied and level of residual risk;</p> <p>(ix) If no alternatives, including alternative footprints for the activity were investigated, the motivation for not considering such and;</p> <p>(x) A concluding statement indicating the location of the preferred alternatives, including preferred footprint within the approved site as contemplated in the accepted scoping report.</p>	<p>Paragraph 9</p> <p>Not Applicable</p> <p>Paragraph 12</p>
Appendix 3, section 3 (i)	<p>A full description of the process undertaken to identify, assess and rank the impacts the activity and associated structures and infrastructure will impose on the preferred development footprint on the approved site as contemplated in the accepted scoping report through the life of the activity, including-</p> <p>(i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and</p> <p>(ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;</p>	<p>Paragraph 9</p> <p>Paragraph 8</p> <p>Paragraph 9</p>
Appendix 3, section 3 (j)	<p>An assessment of each identified potentially significant impact and risk, including-</p> <p>(i) cumulative impacts;</p> <p>(ii) the nature, significance and consequences of the impact and risk;</p> <p>(iii) the extent and duration of the impact and risk;</p> <p>(iv) the probability of the impact and risk occurring;</p> <p>(v) the degree to which the impact and risk can be reversed;</p> <p>(vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and</p> <p>(vii) the degree to which the impact and risk can be mitigated;</p>	<p>Paragraph 9</p> <p>Paragraph 9</p> <p>Paragraph 9</p> <p>Paragraph 9</p> <p>Paragraph 9</p> <p>Paragraph 9</p>
Appendix 3, section 3 (k)	<p>Where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;</p>	<p>Paragraph 11</p>
Appendix 3, section 3 (l)	<p>An environmental impact statement which contains-</p> <p>(i) a summary of the key findings of the environmental impact assessment;</p> <p>(ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred development footprint on the approved site as contemplated in the accepted scoping report indicating any areas that should be avoided, including buffers; and</p> <p>(iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;</p>	<p>Paragraph 12.2 and 12.2 Figure 2</p> <p>Paragraph 12</p>
Appendix 3, section 3 (m)	<p>Based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation</p>	<p>Paragraph 11 and 12</p>
Appendix 3, section 3 (n)	<p>The final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment</p>	<p>Paragraph 12</p>
Appendix 3, section 3 (o)	<p>Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation</p>	<p>Paragraph 3.1.2.1</p>

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for EIA Reports	Location in this EIA report
Appendix 3, section 3 (p)	A description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed	Paragraph 1.4.3
Appendix 3, section 3 (q)	A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation	Paragraph 12.4
Appendix 3, section 3 (r)	Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised	Not Applicable
Appendix 3, section 3 (s)	An undertaking under oath or affirmation by the EAP in relation to- (i) The correctness of the information provided in the report; (ii) The inclusion of the comments and inputs from stakeholders and interested and affected parties; and (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties.	Paragraph 13 Paragraph 13 Paragraph 13 Paragraph 13
Appendix 3, section 3 (t)	Where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts.	Not Applicable
Appendix 3, section 3 (u)	An indication of any deviation from the approved scoping report, including the plan of study, including- (i) any deviation from the methodology used in determining the significance of potential environmental impacts and risks; and (ii) a motivation for the deviation;	Not Applicable
Appendix 3, section 3 (v)	Any specific information that may be required by the competent authority.	Not Applicable
Appendix 3, section 3 (w)	Any other matters 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.
- 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 Town and Regional Planner designed the proposed development in such a way that the layout of the proposed development satisfies the needs of future occupiers of the site
- A SAHRA Specialist has been appointed to determine the possible impact of the development on Archaeological and Cultural features.

- An ecologist has been appointed to determine the impact of the proposed development on the Fauna and Flora of the area.
- A Wetland Specialist was appointed to determine the impact of the proposed development on wetlands and riparian zones in the area.
- 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 25 years (1996-2021) this consultancy has successfully applied for, and obtained positive ROD's and EA's for more than 380 projects. Environmental Control Officer's duties are also performed on various projects.

The company was involved (from 1992-1994) in evaluation of 114 applications for the subdivision of land, 23 applications for resort developments, and 54 applications for business rights for the Department of Agriculture, Conservation and the Environment - North West Province.

The consultancy is qualified to undertake professional studies in waste management and is still involved in the development of waste disposal- (solid and liquid effluent), and emission studies. These studies are conducted both academically and practically. This work relates to mine waste, domestic waste and effluent as well as to the monitoring of waste disposal. Environmental audits in this respect are undertaken on a regular basis

ACADEMIC AND PROFESSIONAL QUALIFICATIONS OF PROF DE VILLIERS

Post-Matric Qualifications

<u>YEAR</u>	<u>Qualification</u>	<u>Institution</u>	<u>Field of Study</u>
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

PROFESSIONAL QUALIFICATIONS AND REGISTRATIONS

<u>YEAR</u>	<u>Qualification/ Registration</u>	<u>Institution</u>	<u>Field of Study</u>
1986	Professional Natural Scientist	S.A. Council for Natural Scientists	Environmental Science

1994	Quality Auditor	ESKOM	Auditing
1998	Personnel & Verifying Auditor	SAATCA	Environmental Auditing
2006	Environmental Assessment Practitioner	Interim Certification Board EAPSA	Environmental Science

MEMBERSHIP AND PARTICIPATION IN SOCIETIES, COUNCILS, ETC.

Name of professional societies	YEAR	Capacity
S.A. Geographical Society.	1967-1996	Board Member
Society for Geography	1968-2004	Member
SAGS Western Transvaal	1985-1989 1987- 1989 1996	Chairman
Africa Geographical Association	1993-1995	Vice-President.
Society for the Vaal River Catchment	1980-1999	Member
S.A. Society for Photogrammetry, Remote Sensing and Cartography	1984-1996	Member
Dendrological Society	1986-2005	Member
Birdlife South Africa	2003-present	Member
British Geomorphological Research Group	1985-1997	Member
Int Com on Water Resource Systems	1985-1997	Member
Int Com on Continental Erosion	1986-1990	Member
Int Com on Remote Sensing and Data Transmission	1986-1991	Member
Society for S.A. Geographers	1995-2005	Member
SA Photogrammetrical and Geo. Info.	1995-2003	Member
S.A. Association of Geomorphologists	1994-1999	Board Member and member
SADC Mine Dump Study Group	1996-2005	Member

ACADEMIC AND PROFESSIONAL QUALIFICATIONS MR J.P. DE VILLIERS

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

PROFESSIONAL QUALIFICATIONS AND REGISTRATIONS

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

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)	PU FOR CHE	Geography

	Cum Laude		
2003	Masters degree in Environmental Management	PU FOR CHE	Environmental Management
2001	Aquabase Intro	AQUABASE	Hydrology
2001	Geomedia Professional	INTERTECH	GIS
2001	Map Info	SPATIAL TECHNOLOGY	GIS

PROFESSIONAL QUALIFICATIONS AND REGISTRATIONS

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

3. DESCRIPTION OF THE ACTIVITY

The land owner, Mamusa Local Municipality, has appointed AB Enviro Consult CC, an independent environmental consultancy, to undertake an Environmental Impact Assessment for the proposed clearance of 149,5516 ha of indigenous vegetation, located within a critical biodiversity area (CBA 1) and within 100 meters from a non-perennial stream, in order to establish a Township, located on a portion of the farm Schweizer Reneke Townlands 62 HO known as Ipelegeng Extension 12, Mamusa Local Municipality, 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, environmental sensitivity, service provision, erf size, access, road layout, as well as the geotechnical features and flood lines. To ensure that the proposed development do not infringe on any design principles and the environmental sensitive areas, development will only be allowed to take place according to the prescribed methods. The total area of the Township is 274,3495 ha in extent. The total area of indigenous vegetation that will be removed is 149,5516 hectares. This was calculated as follows:

Description of area	Land use	Area in Ha	Total Area in Ha
Total Area of Township	All Proposed Land uses	274,3495 Ha	274,3495 Ha
Areas that will not involve the removal of indigenous vegetation:	Municipal (Erf 1346 and Erf 1347)	113,3122 Ha (113,7941 Ha (Total area of all three Municipal Erven) – 0,4819 Ha (Area of Municipal Erf 326))	124,7979 Ha
	Public Open Spaces	11,4857 Ha	
Total area of indigenous vegetation that will be removed	All Proposed Land uses less Land uses that will not involve the clearance of indigenous vegetation	149,5516 Ha	149,5516 Ha

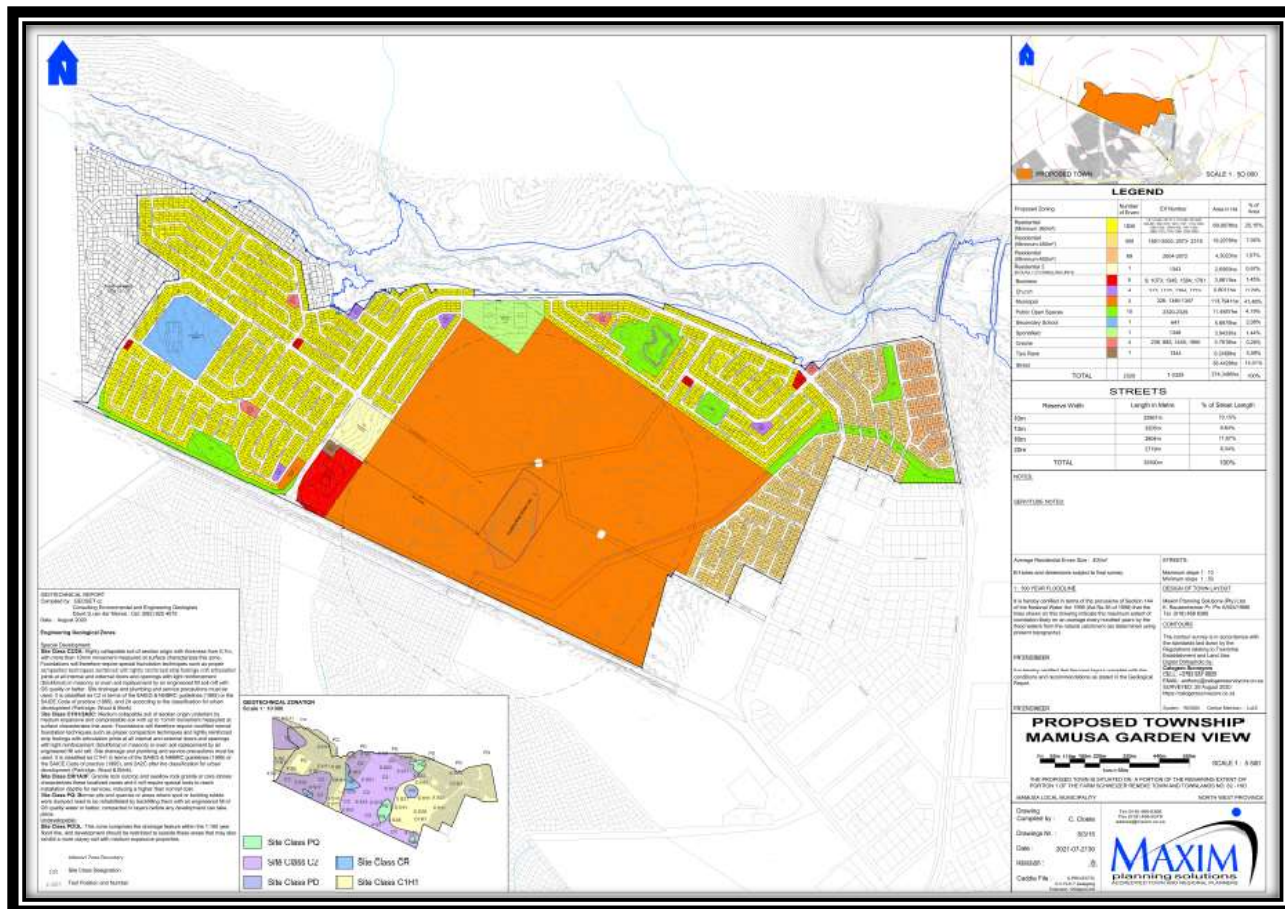


FIGURE 1. Proposed layout plan.

The proposed land use composition of the development is as follows:

Proposed Zoning	Number of Erven	Erf Number	Area in Ha	% of Area
Residential (Minimum 360m²)	1830	1 86; 19-200; 237-311; 313-326; 327-640; 642-89; 899-1072; 1074-1121; 1123-1268; 1269-1342; 1349-1442; 1447-1593; 1595-1773; 1775-1790; 1792-1848	69,0078ha	25,15%
Residential (Minimum 450m²)	400	1851-2003; 2073- 2319	19,2078ha	7,00%
Residential (Minimum 600m²)	69	2004-2072	4,3023ha	1,57%
Residential 2 80 DUITS = 213 DWELLING UNITS	1	1343	2,6563ha	0,97%
Business	5	9; 1073; 1345; 1584; 1791	3,9811ha	1,45%
Church	4	312; 1132; 1294; 1774	0,8011ha	0,29%
Municipal	3	326; 1346-1347	113,7941ha	41,48%
Public Open Spaces	10	2320-2329	11,4857ha	4,19%
Secondary School	1	641	5,6975ha	2,08%
Sportsfield	1	1348	3,9433ha	1,44%
Creche	4	236; 892; 1446; 1850	0,7810ha	0,28%
Taxi Rank	1	1344	0,2488ha	0,09%
Street			38,4428ha	14,01%
TOTAL	2329	1-2329	274,3495ha	100%

STREETS		
Reserve Width	Length in Metre	% of Street Length
10m	22861m	70,15%
13m	3205m	9,84%
16m	3804m	11,67%
20m	2719m	8,34%
TOTAL	32590m	100%

Services are proposed to connect to municipal infrastructure and have been designed as follow:

Bulk Water

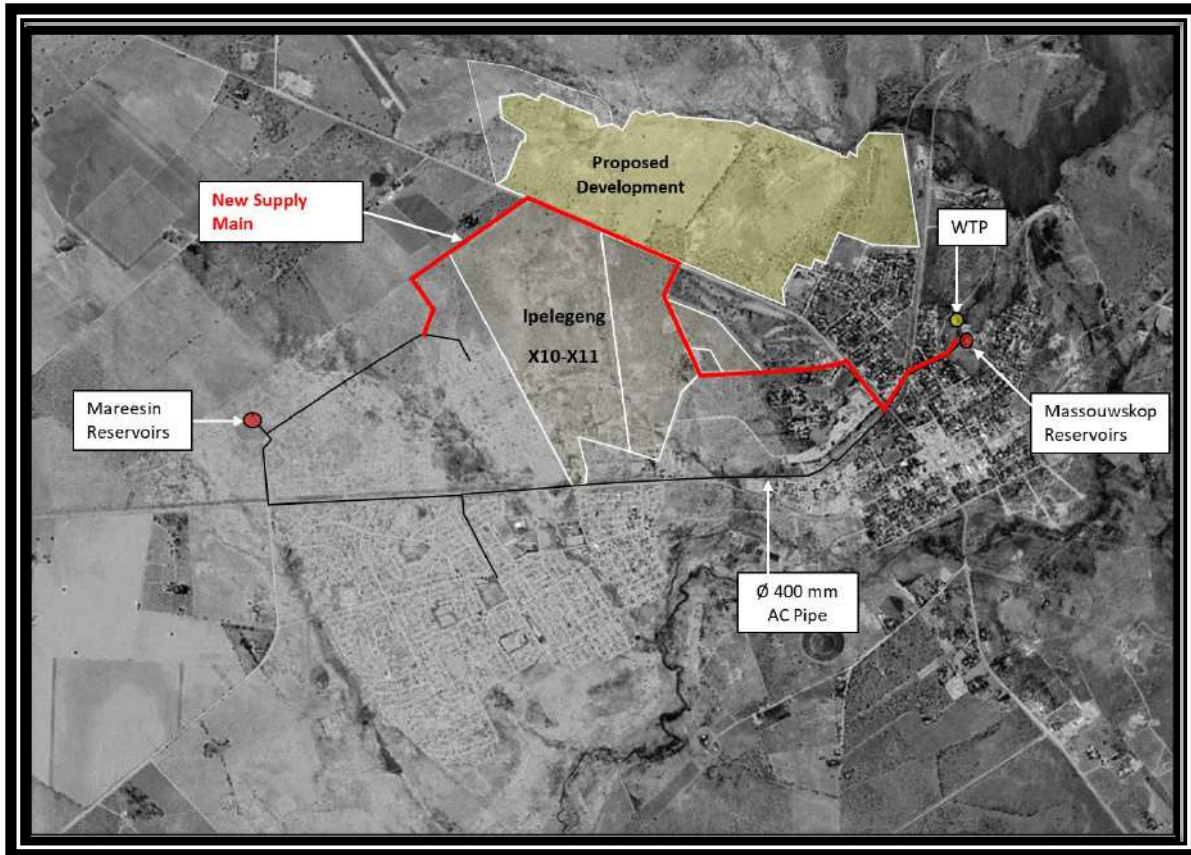
The estimated current Average Annual Daily Demand (water) equates to 5.9 Mℓ / day. The Proposed Development could increase the water demand to 8.8 Mℓ/day. The existing 6 Mℓ/day WTP will not be able to meet the future water demand. However, the capacity shortfall of the WTP can be mitigated by augmenting the supply volume of the Mamusa bulk water pipeline. The current bulk water storage reservoirs do not have sufficient capacity to accommodate the development. It is proposed that the storage capacity be increased to compensate for the storage shortfalls in future.

In addition, it is proposed that a new bulk supply main be constructed to provide potable water to the development from the Massouwskop reservoirs. Please see Figure below.

Please note that these proposed upgrading of the Bulk Infrastructure does not form part of this application.

The design of internal services will be dependent on the final proposed development layout. The following design guidelines will be followed:

- The internal water supply network will consist of uPVC and/or HDPE pipes of varying diameter according to designs of the Civil Engineer.
- Sufficient storage capacity for water demand and fire water supply.
- Provision of isolating valves, air release valves and fire hydrants to comply with the requirements of the Local Authority and Building Regulations.
- Cognisance will be taken of pipe diameters and water pressure for firefighting purposes



Proposed Bulk Water Infrastructure Augmentation

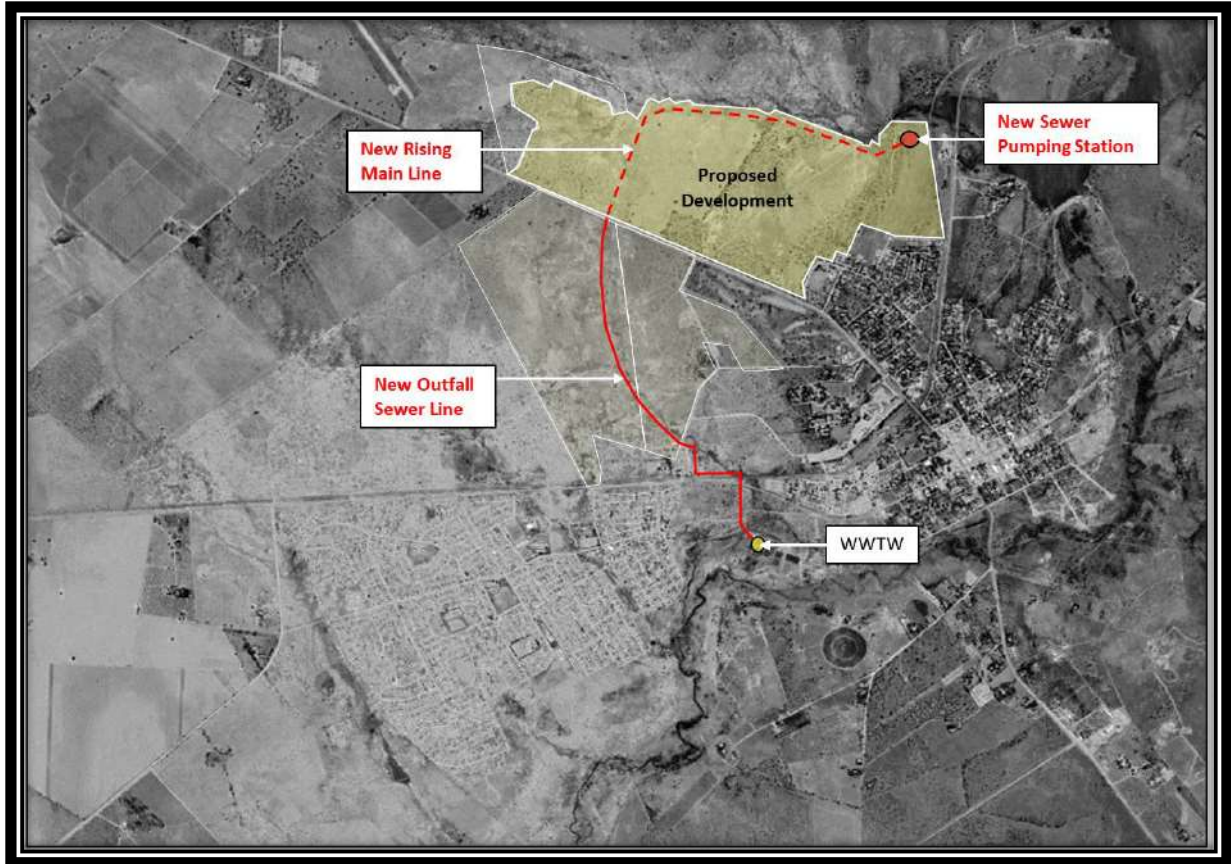
Wastewater

The estimated current wastewater generation equates to 5.7 Mℓ / day. The Proposed Development could increase the wastewater generation to 8.6 Mℓ / day. The existing WWTW will have capacity to accommodate the increased wastewater loading. In order to convey wastewater generated by the development to the WWTW, it is proposed that a new sewer pumping station be constructed as well as a new rising main and bulk outfall sewer line. Please see Figure below.

Please note that these proposed upgrading of the Bulk Infrastructure does not form part of this application.

Depending on the future development layout, an internal sewer network of Ø 110mm and Ø 160mm pipes with related Y-junction connections and inspection eyes will be installed to comply with the minimum specifications stipulated in the SANS 10400 Building Regulations. Manholes and rodding eyes will be constructed at necessary positions to allow for effective maintenance.

The internal sewer network will be connected to the new gravity outfall sewer as explained above



Proposed New Wastewater Infrastructure

Access

The Proposed Development is located north of the R34 road (Vryburg - Schweizer-Reneke). Primary access to the Proposed Development will be from the R34 road which was recently reconstructed where provision was made for an intersection as indicated in the figure below.

The design of the internal access roads shall provide for an appropriate road surface with cross sections designed to accommodate the channelling of storm water generated on the development area.

Where storm intensity calculations dictate, sufficiently designed concrete channels will be constructed as part of the road cross section to channel storm water as described in the relevant section above.

Roads and storm water infrastructure will generally be designed to follow the natural runoff patterns to avoid ponding and flooding of properties with associated damage

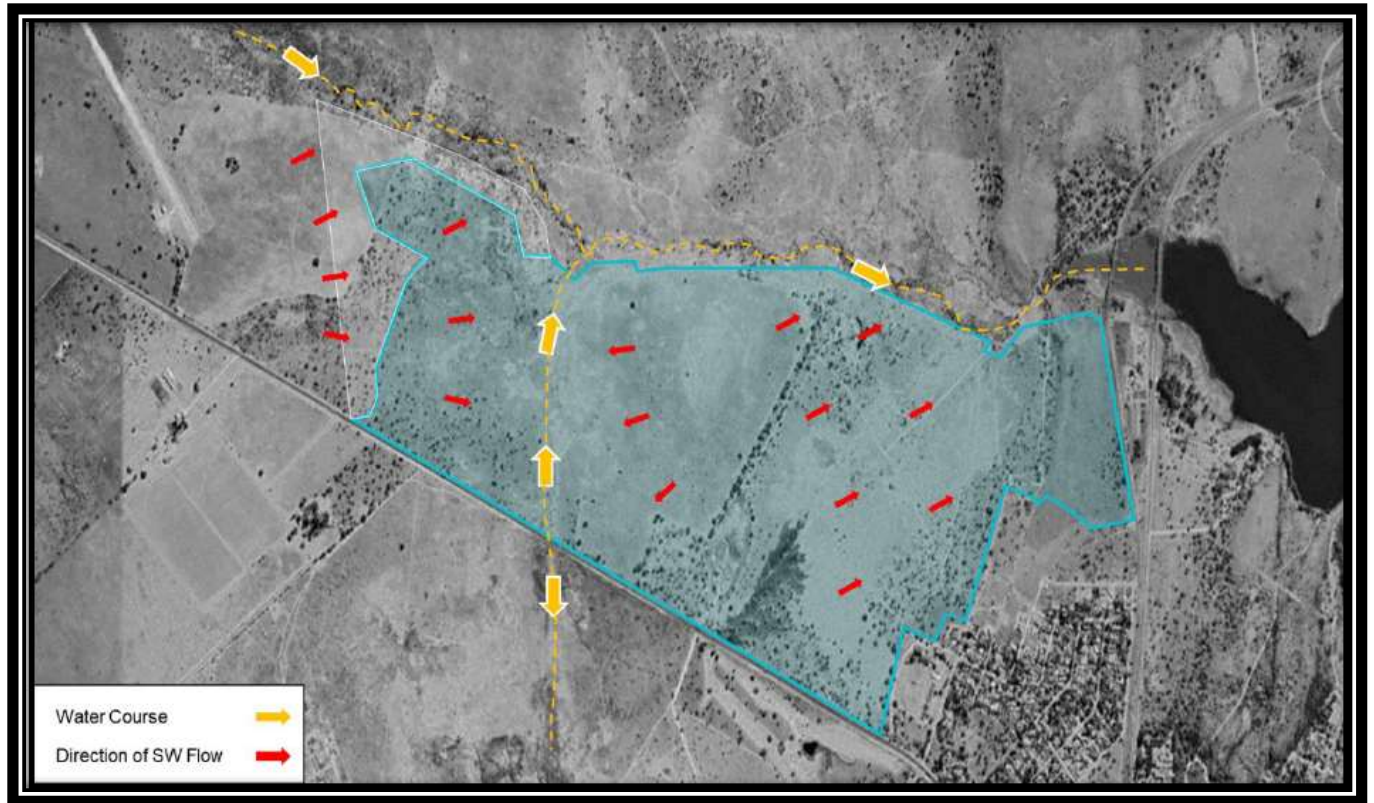


Access to Proposed Development

Storm Water

The Proposed Development is located in a valley with a natural stormwater low-point dividing the eastern and western portions of the development. The natural topography of the area slopes towards the storm water low-point and a watercourse to the north. Due to the natural topography, the area may be prone to stormwater erosion. Urbanisation of the demarcated area will increase the peak storm-water runoff (1-in-2 years recurrence interval) from 4.8 m³/s to 11.3 m³/s. The following figure indicates the direction of stormwater flow.

Stormwater infrastructure will be designed to accommodate runoff as surface flow in an open system. This will be achieved by designing internal roadways to disperse stormwater towards the watercourses. Comprehensive information on stormwater attenuation should be presented in the detailed design report of internal services for approval by the municipality.



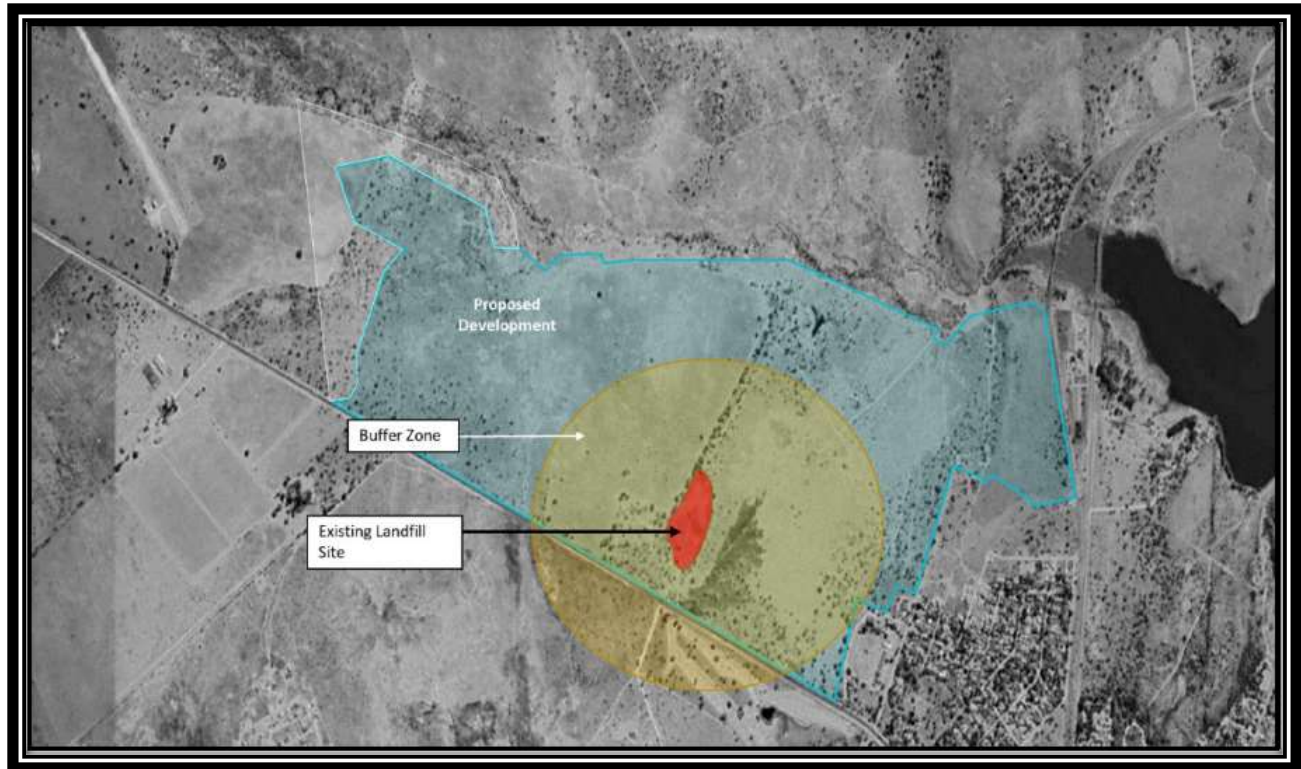
Direction of Storm-water Flow

Solid Waste

Municipal Solid Waste (MSW) removal is a function of the Waste & Environmental Management Division of the MLM. According to the SDF: *“a black bag system is used and a special refuse truck. Large containers are also used in the industrial and business areas”* to facilitate MSW removal.

The community currently theoretically generates an estimated MSW volume of 89.9 tons per day. The Proposed Development will theoretically increase the estimated total MSW to 97.7 tons per day. The estimated increase in MSW will amount to 10.2m³ per day. The encouragement of an integrated waste management system will dramatically reduce MSW and promote Reduce, Reuse and Recycle practices.

As previously mentioned, the existing landfill site is located within the Proposed Development and operate as a G:S:B - municipal landfill site. According to the permit conditions the Schweizer-Reneke landfill site requires a 500 m buffer zone. It is proposed that the capacity of the current landfill site must be established and evaluated. The following figure graphically illustrates the landfill site and buffer zone:



Landfill

4. DESCRIPTION OF THE PROPERTY

The proposed development is situated on a portion of the farm Schweizer Reneke Townlands 62 HO known as Ipelegeng Extension 12, Mamusa Local Municipality, North West Province. Schweizer-Reneke and Ipelegeng form part of the Mamusa Local Municipality which falls under the jurisdiction of Dr Ruth Segomotsi Mompoti District Municipality (DRSM).

On a district level, the Dr Ruth Segomotsi Mompoti District Municipality is one of the 4 districts in the North West province of South Africa. This vast district has a very scattered rural settlement pattern. The district is located in the barren north-western side of the country, far away from the large towns and cities in the North West Province. It shares its borders with the Free State province to the South, the Northern Cape Province to the West and the Republic of Botswana to the North. The Dr Ruth Segomotsi Mompoti District Municipality [DC 39] is approximately 43 700 km² in size (41.67% of the total area of the North West province) and has an estimated population of 480 456 people (13.97% of the total population of the North West province). DRSM has the smallest population of all the district municipalities of the North West province.

The Mamusa Local Municipality is a Category B municipality and spans over an approximate area of 3 681 km² which equates to 7.8 % of the DRSM region. The town of Schweizer-Reneke is located 66 km south-east of Vryburg and 71 km west of Wolmaransstad. Schweizer-Reneke/ Ipelegeng is situated in the Harts River Valley. The Mamusa Local Municipality district is considered rural in nature with agriculture scattered all over the region. The municipal structure consists of five distinct nodes situated on prominent trade routes. The respective urban nodes are:

- Schweizer-Reneke / Ipelegeng / Charon
- Amalia / Molatswanene
- Glodina
- Migdol
- Avonster

The township of Ipelegeng is located on the western outskirts of Schweizer-Reneke.

The site extends from the R32 to the south, a narrow non-perennial river, with its active channel and riparian zone, is present to the north of the site (Photo 1). An in-channel dam, the Wentzeldam is located to the northeast of the site. The site is bounded by residential erven and a railway line to the east and open undeveloped land to the west with landing strip beyond. The Existing Solid Waste Site forms part of the site with a 500m buffer zone incorporated into the proposed layout and zoned a municipal 2 stand to be retained (Photo 2).

The entire site is located in a Critical Biodiversity Area (CBA) as defined in the 2015 North West Biodiversity Sector Plan (SANBI). Vegetation at most of the site is visibly degraded and cover of vegetation in many areas is conspicuously poor (Photo 3). Vegetation at an informal rubbish dump site is transformed. Some areas have been cleared, exposing soil. Low rocky ridges are present at the northeastern part of the site (Photo 4). Indigenous trees at the site include *Vachellia erioloba* (Camel Thorn), *Vachellia hebeclada* subsp. *hebeclada* (Candlepod Thorn; shrub-height at site), *Vachellia karroo* (Sweet Thorn), *Tarchonanthus camphoratus* (Camphor Bush) and *Grewia flava* (Velvet Raisin; shrub-height at site), some Savanna remains in parts of the site.



Photograph 1. Narrow and defined active channel at northern parts of the site.

Photo: R.F. Terblanche.



Photograph 2. Existing Solid Waste Site



Photograph 3. Degraded area at the site.

Photo: R.F. Terblanche



Photograph 4. Low Rocky Ridge at the site.

Photo: R.F. Terblanche

Landowner:	Mamusa Local Municipality		
Contact person:	Mr. Ruben Gincane		
Postal address:	PO Box 5, SCHWEIZER-RENEKE		
Postal code:	2780	Cell:	N/A
Telephone:	053 963 1331	Fax:	053 963 2474
E-mail:	gincaner@mamusalm.gov.za		

In instances where there is more than one landowner, please attach a list of landowners with their contact details to this application.

Local authority in whose jurisdiction the proposed activity will fall:	Mamusa Local Municipality
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Municipal Ward No:	9
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Nearest town or districts:	SCHWEIZER-RENEKE		
Contact person:	Mr. Ruben Gincane		
Postal address:	PO Box 5, SCHWEIZER-RENEKE		
Postal code:	2780	Cell:	N/A
Telephone:	053 963 1331	Fax:	053 963 2474
E-mail:	gincaner@mamusalm.gov.za		

Site Co-ordinates

Latitude (S):

Longitude (E):

Alternative S1 (preferred or only site alternative)

27°	10'	17.03"	25°	18'	34.63"
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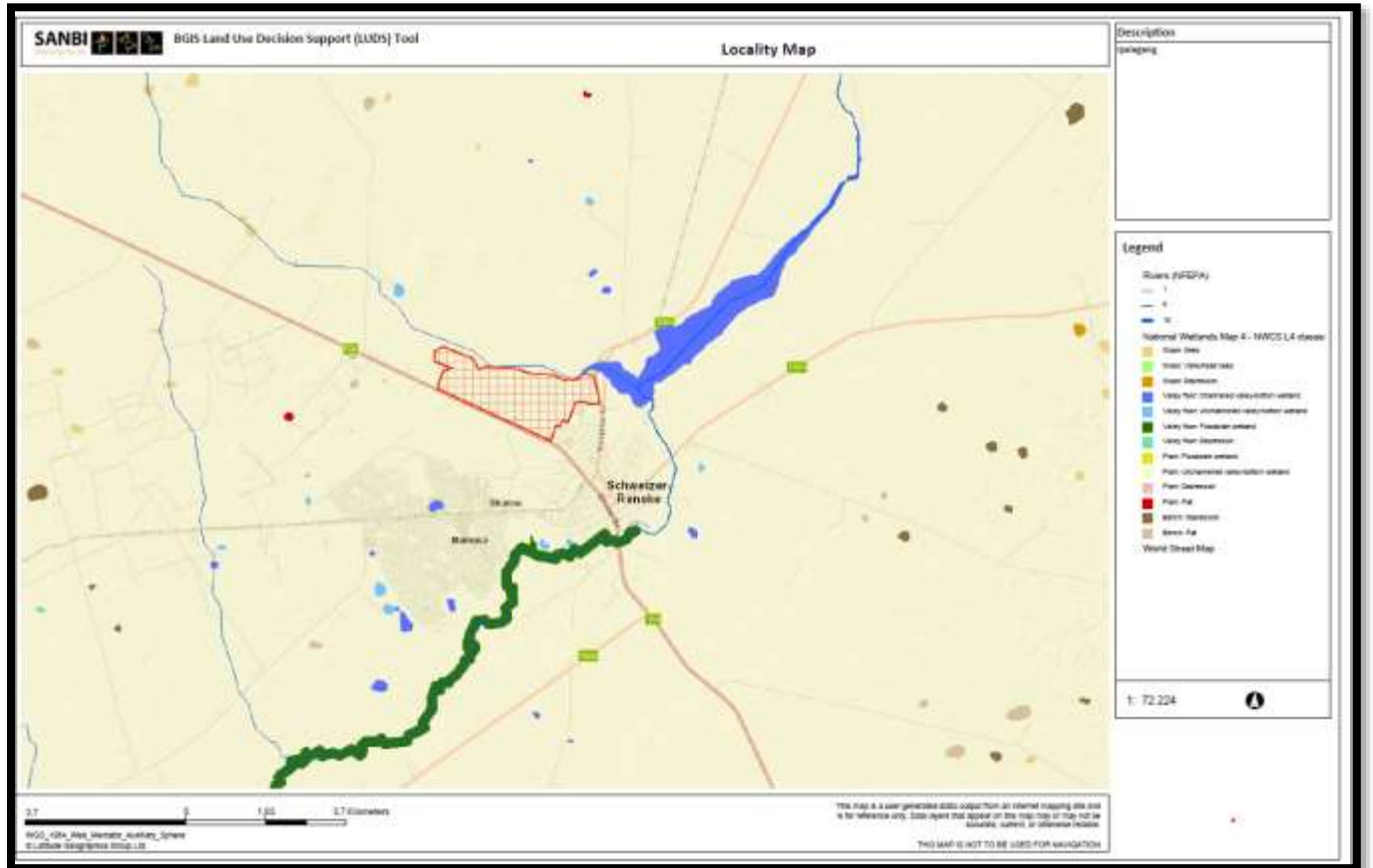


FIGURE 2. LOCALITY MAP

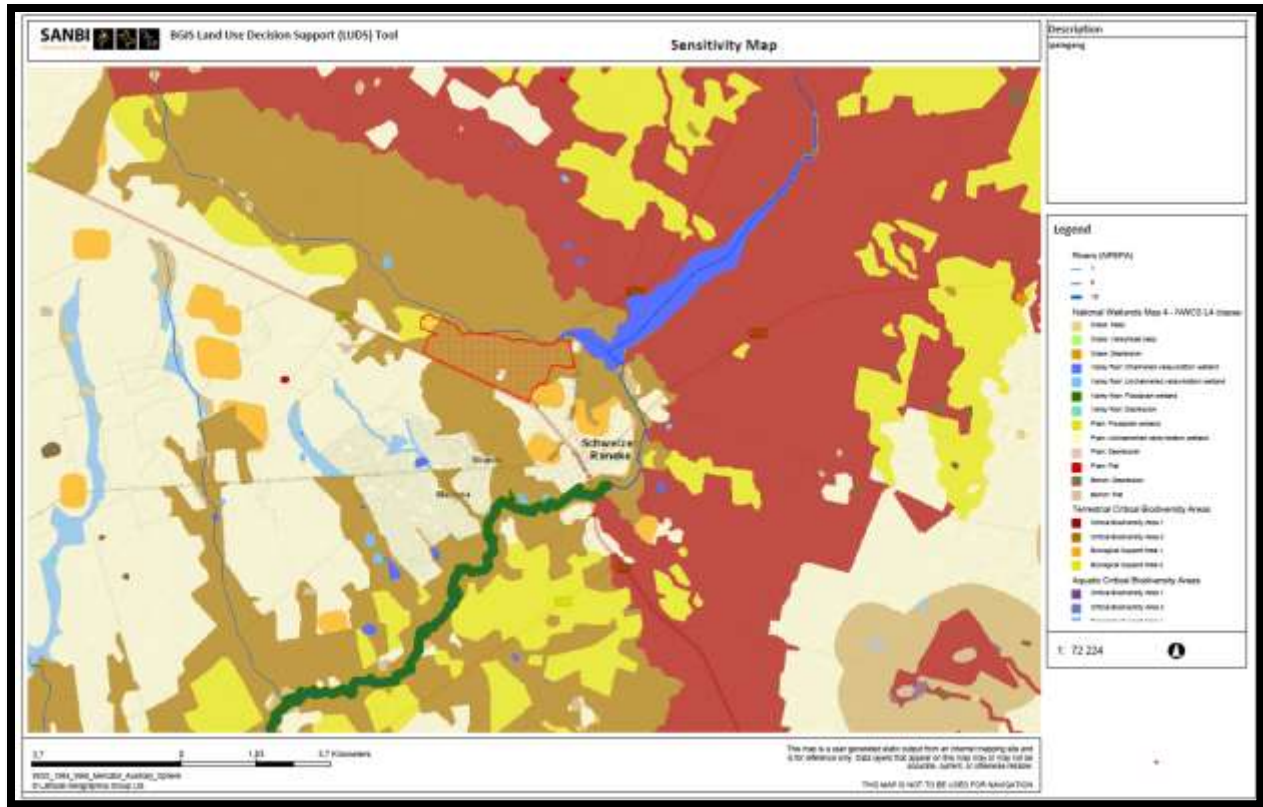


FIGURE 3: SENSITIVITY MAP

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 Report.	National & Provincial (DEA And DEDECT)	27 November 1998
The Bill of Rights, Constitution of South Africa, Section 27 (1)(b)	<p>The Constitution of the Republic of South Africa is the legal source of all law, including environmental law, in South Africa. The Bill of Rights is fundamental to the Constitution of South Africa and in, section 24 of the Act, it is stated that:</p> <p>Everyone has the right (a) to an environment that is not harmful to their health or well-being; and (b) to have the environment protected, for the benefit of present and future generations through reasonable legislative and other measures that (i) prevent pollution and ecological degradation; (ii) promote conservation; and (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.</p>	National Government	1994

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	<p>Given that environmental management is founded partly on the principles of public participation, Section 195 of the Constitution is of primary relevance:</p> <p>(1) Public administration must be governed by the democratic values and principles enshrined in the constitution, including the following principles: (a) (b) (c) (d) (e) Peoples needs must be responded to, and the public must be encouraged to participate in policymaking. (f) Public administration must be accountable. (g) Transparency must be fostered by providing the public with timely, accessible and accurate information (Government Gazette, 1996).</p>		
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 reports and the public participation process that should be followed.	National & Provincial (DEA And DEDECT)	7 April 2017
National Water Act (36 OF 1998)	<p>National Water Act (NWA), 1998 (Act 36 of 1998) is the primary statute providing the legal basis for water management in South Africa and has to ensure ecological integrity, economic growth and social equity when managing and using water.</p> <p>The major objectives of the National Water Act are to:</p> <ul style="list-style-type: none"> •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. <p>Section 19 of the National Water Act states that the person responsible for land upon which any activity is or was performed which causes, has caused or is likely to cause, pollution of a water resource, must take all reasonable measures to prevent any such pollution from occurring, continuing or recurring.</p>	Department of water and sanitation	1998

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Environmental Management: Biodiversity Act (NEMBA) (ACT NO. 10 OF 2004)	<p>The National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004), provides for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998; the protection of species and ecosystems that warrant national protection; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources; the establishment and functions of a South African National Biodiversity Institute; and for matters connected therewith.</p> <p>In terms of Chapter 4 of the Above Act:</p> <p>52. (1) (a) The Minister may, by notice in the Gazette, publish a national list of ecosystems that are threatened and in need of protection.</p> <p>(b) An MEC for environmental affairs in a province may, by notice in the Gazette, publish a provincial list of ecosystems in the province that are threatened and in need of protection.</p> <p>(2) The following categories of ecosystems may be listed in terms of subsection:</p> <p>(a) critically endangered ecosystems, being ecosystems that have undergone severe degradation of ecological structure, function or composition as a result of human intervention and are subject to an extremely high risk of irreversible transformation;</p> <p>(b) endangered ecosystems, being ecosystems that have undergone degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems;</p> <p>(c) vulnerable ecosystems, being ecosystems that have a high risk of undergoing significant degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems or endangered ecosystems; and</p> <p>(d) protected ecosystems, being ecosystems that are of high conservation</p>	National & Provincial (DEA And DEDECT)	2004

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	<p>value or of high national or provincial importance, although they are not listed in terms of paragraphs (a), (b) or (c).</p> <p>(3) A list referred to in subsection (1) must describe in sufficient detail the location of each ecosystem on the list.</p> <p>53 (1) The Minister may, by notice in the Gazette, identify any process or activity in a listed ecosystem as a threatening process.</p> <p>(2) A threatening process, identified in terms of subsection (1) must be regarded as a specified activity contemplated in section 24(2)(b) of the National Environmental Management Act (1998) and a listed ecosystem must be regarded as an area identified for the purpose of that section.</p>		
<p>National Environmental Management: Protected Areas Act (ACT NO. 57 OF 2003)</p>	<p>This Act aims to provide for a national system of protected areas in South Africa as part of a strategy to manage and conserve its biodiversity. The Protected Areas Act tries to ensure the protection of the entire range of biodiversity, referring to natural landscapes and seascapes. The Act makes express reference to the need to move towards Community Based natural Resource Management (CBNRM) as its objectives include promoting the participation of local communities in the management of protected areas. The purpose of the Act is:</p> <ul style="list-style-type: none"> •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. 	<p>National & Provincial</p>	<p>2003</p>

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	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, DEDECT together with the List of Waste Activities that Have, or are Likely to Have, a Detrimental Effect on the Environment, GN No. 921 of 29 November 2013	Legislation consulted to determine whether a waste licence will have to be obtained for the development.	National & Provincial (DEA And DEDECT)	2008
<i>Mineral and Petroleum Resources Development Act (MPRDA), Act 28 of 2002</i>	<p>The Act distinguishes between mining permits and mining rights as follows:</p> <p>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 Management Plan (EMP to DME for approval prior to the onset of activities).</p> <p>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.</p> <p>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.</p> <p>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.</p>	Relevant Provincial Authorities.	2002
<i>National Environmental Management: Air Quality Act (Act 39 of 2004)</i>	To protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation	Relevant Provincial Authorities.	2004

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	and for securing ecologically sustainable development while promoting justifiable economic and social Development. Construction activities may cause some air pollution.		
<i>The Conservation of Agricultural Resources Act (Act 43 of 1983)</i>	This Act regulates the flow pattern of runoff water, control of weeds and invader plants.	Relevant Provincial Authorities.	1983
<i>National Veldt and Forest Fire Act (Act 101 of 1998)</i>	Chapter 4 places a duty on owners to prepare and maintain firebreaks.	Relevant Provincial Authorities.	1998
<i>National Forests Act, Act 84 of 1998 (NFA) DEDECT with GN1602 of December 2016.</i>	During the construction phase of the development certain protected trees may be affected. Licences will have to be obtained from the Minister before the affected trees may be cut, disturbed, damaged or destroyed. GN1602 of December 2016 contains the list of protected trees.	National and Provincial authorities.	1998
<i>Occupational Health and Safety Act (Act 85 of 1993)</i>	To provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery and the protection of persons other than persons at work against hazards to health.	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 have been 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)
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 NUMBER OF DAYS:	300-350 days

6. NEED AND DESIRIBILITY

As in the rest of South Africa, there is a housing shortage in the area. In terms of section 9(1) of the National Housing Act (107 of 1997), every municipality must, as part of the municipality's process of integrated development planning (IDP) take all reasonable and necessary steps to ensure that the inhabitants within its area of jurisdiction have access to adequate housing on a progressive basis by setting housing delivery goals, identifying suitable land for housing development and planning, facilitating, initiating and co-coordinating housing development in its area of jurisdiction.

Housing comprises a series of complex interrelationships between people, their needs and values and resources within a political and legal environment. This complexity requires a focused approach to efforts aimed at providing housing. National Government has started to respond by putting the necessary policy and legislative environment in place.

This framework outlines the roles and responsibilities of different spheres of government in relation to housing, as well as dealing with aspects relating to the design and content of housing policy and legislation. In the context of this framework the Mamusa Local Municipality is required to take all reasonable steps to ensure the provision of adequate housing to its residents.

Various policy directions and legislation exist relating to the role and responsibilities of the different spheres of government to provide and ensure the provision of housing opportunities to affected communities.

Of these, the comprehensive plan for the Development of sustainable Human Settlements based on the Breaking New Ground Principles (BNG) forms the basis on which housing development should be implemented.

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

- Progressive Informal Settlement Eradication: These settlements must be integrated into the broader urban setup so as to overcome spatial, social and economic exclusion. The plans encourage the eradication of informal settlements through in-situ upgrading in desired locations coupled with the relocation of household where development is not possible or desirable.
- Promoting densification and Integration: The aim is to integrate previously excluded groups into the urban area so as to enable them to enjoy the benefits it offers and to create more integrated, functional and environmentally sustainable human settlements, towns and cities.
- Enhancing Spatial Planning: Greater co-ordination and alignment of various planning instruments and economic policies lies at the heart of sustainable human settlements.
- Provision of a mix of housing typologies for different income groups (Subsidised, GAP, Affordable and bonded Housing opportunities).
- Enhancing the location of New Housing Projects: The location of past housing projects was said to reinforce apartheid spatial settlement patterns. Spatial restructuring aims to achieve a more decisive Intervention In land markets. The following interventions are envisaged viz. accessing well located state-owned and parastatal land: acquisition of well-located private land for housing development, funding for land acquisition and fiscal incentives.

HOUSING AND STAND NEEDS

- The waiting list of the municipality currently indicated a need for 6000 houses. This waiting list increased drastically from 3171 units in 2014 (NW Multi Year Development Plan 2014).
- According to the 2013 spatial Development Framework (SDF) for Mamusa Local Municipality there were 804 informal structures not on stands (squatters) and 303 informal structures in backgrounds. (This was also indicated in the 2013 Housing Sector Plan for Mamusa Local Municipality)
- Due to the fact that there are no vacant stands in Schweizer-Reneke/ Ipelegeng Urban area, households are currently squatting on municipal vacant land, parks, school sites and in the backyards and the community already submitted two memorandums to the municipality demanding additional stands

The proposed development is based on the premise that the proposed township area should be a fully integrated human settlement catering not only for low cost subsidised housing but also for other housing typologies including inter alia but not limited to GAP housing, affordable bonded housing, the necessary social, community and recreational facilities as well as opportunities for job creation and employment.

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

The proposed development addresses the need identified by the Mamusa Local Municipality, for the provision of additional mixed land use and social mix, such as the availability of housing for the people of the City.

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.

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 (Alternative 1)

Alternative Site layouts have been developed for the proposed development.

The proposed land use composition of the development (excluding public open space & streets) are as follows:

- 1 830 x Stands (Residential Minimum 360 m²)
- 400 x Stands (Residential Minimum 450 m²)
- 69 x Stands (Residential Minimum 600 m²)
- 213 x Dwelling units (1 X Residential 2 erf – 80DU/ha)
- 5 x Business Stands (Business)
- 4 x Church
- 3 x Municipal
- 1 x Secondary School
- 1 x Sportsfield
- 4 x Creche
- 1 x Taxi Rank

The appointed Town and Regional planner have produced the proposed layout plan with the above mix proposed for the township. Although the emphasis is on housing, complimentary land uses have been included in the township. People want easy access to job opportunities, schools, etc. and want their living environment to be placed at strategic positions with good access routes in close proximity to these amenities.

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

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

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

7.1.2 Single land use: Housing only (Alternative 2)

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

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

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

7.1.3 No-go Alternative

The only other alternative that exists for the proposed development is the “no-go” option which will imply that the status quo will prevail. This is unacceptable as Informal settlements consist of non-conventional housing built without complying with legal building procedures. Broadly, these crude dwellings mostly lack proper indoor infrastructure, such as water supply, sanitation, drainage, waste disposal and proper road access. There is also a bond between poor housing and environmental conditions in informal settlements which also reflects poverty. Linking basic services such as water to health is viewed as a false separation as these services are ‘intimately related to housing’. It becomes a housing issue if children playing outside the house contract diarrhoea via ingesting pathogens from faecal matter which contaminates the land on which they play. Otherwise, it is the house which provides for shelter against injury, weather and disease. Improving the surroundings of the house is to limit severe health risks existing within poor quality housing.

In addition to the above mentioned, other land parcels will have to be sourced to provide for this need within the community. This will imply that the development will not take place and will result in urban sprawl.

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

8.1 BIO-PHYSICAL ASPECTS

8.1.1 GEOLOGY AND SOIL

The site is underlain by Archean granite and gneiss of the Archean Basement Complex, from the oldest time span in the Randian Erathem. Surficial deposits include the colluvium and Aeolian sand covering the lithology. Locally a transported layer of diamondiferous river terrace gravel was encountered on the centre portion of the site, which was possibly economically mined in the past. No dolomite occurs in the area and no stability investigation is required.

Some minor problems regarding excavatability to 1,5m can be expected on site, but a competent TLB may be required to reach installation depths for services in some places. To ensure the stability of excavations, it will need standard sidewall protection in excavations exceeding 1,5m.

Zoning of the site revealed a zone with constraints regarding the different soil types.

The engineering geological zonation:

Special Development:

Site Class C2/2A:

Highly collapsible soil of aeolian origin with thickness in excess of 0,75m, with more than 10mm movement measured at surface characterizes this zone. Foundations will therefore require special foundation techniques such as proper compaction techniques combined with lightly reinforced strip footings with articulation joints at all internal and external doors and openings with light reinforcement (brickforce) in masonry or even soil replacement by an engineered fill soil raft with G5 quality or better. Site drainage and plumbing and service precautions must be used. It is classified as C2 in terms of the SAIEG & NHBRC guidelines (1995) or the SAICE Code of practice (1995), and 2A according to the classification for urban development (Partridge, Wood & Brink).

Site Class C1H1/2A2C:

Medium collapsible soil of aeolian origin underlain by medium expansive and compressible soil with up to 15mm movement measured at surface characterizes this zone. Foundations will therefore require modified normal foundation techniques such as proper compaction techniques and lightly reinforced strip footings with articulation joints at all internal and external doors and openings with light reinforcement (brickforce) in masonry or even soil replacement by an engineered fill soil raft. Site drainage and plumbing and service precautions must be used. It is classified as C1H1 in terms of the SAIEG & NHBRC guidelines (1995) or the SAICE Code of practice (1995), and 2A2C after the classification for urban development (Partridge, Wood & Brink).

Special Development with Risk

Site Class CR/1A3F:

Granite rock outcrop and shallow rock granite or core stones characterize these localized zones and it will require special tools to reach installation depths for services, inducing a higher than normal cost.

Site Class PQ:

Borrow pits and quarries or areas where spoil or building rubble were dumped need to be rehabilitated by backfilling them with an engineered fill of G5 quality or better, compacted in layers before any development can take place.

Undevelopable:

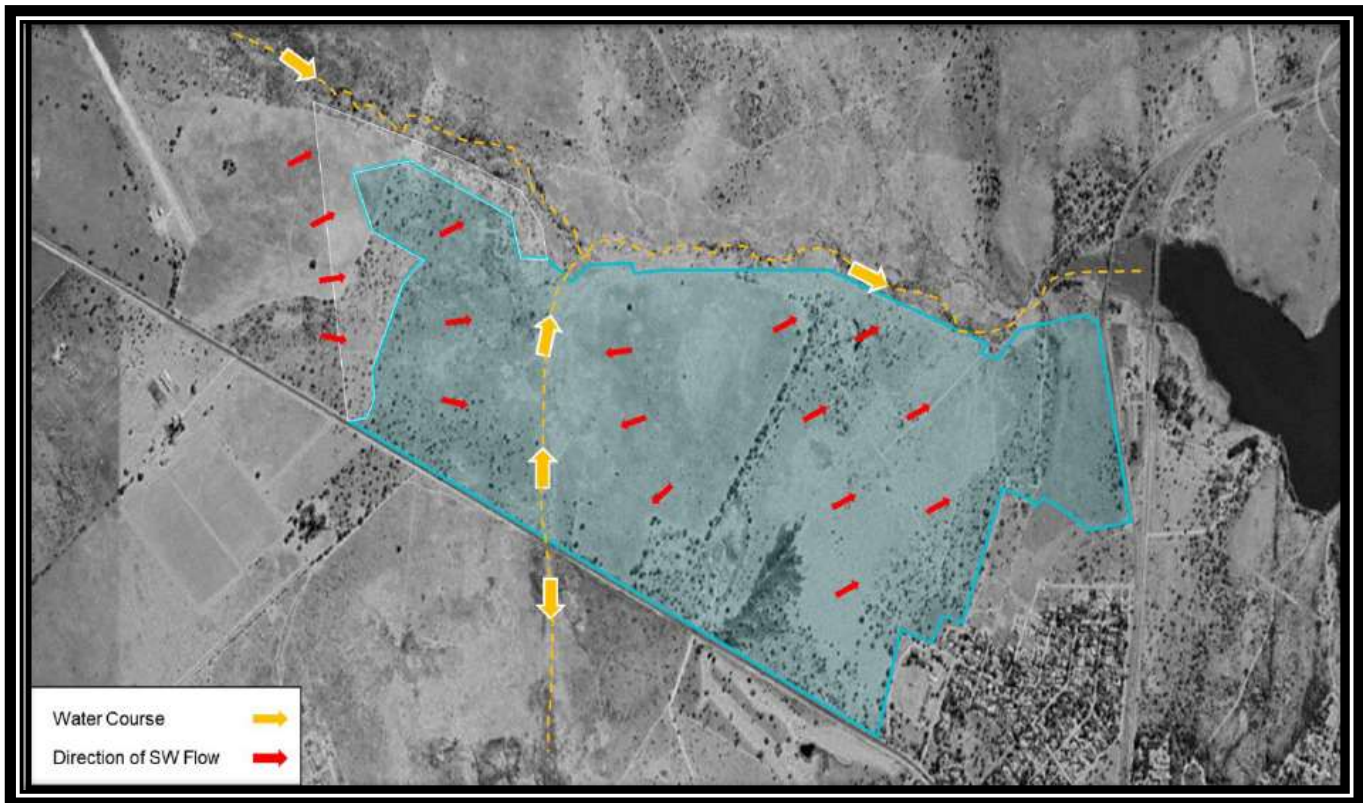
Site Class PD/3L:

This zone comprises the drainage feature within the 1:100 year flood line, and development should be restricted to outside these areas that may also exhibit a more clayey soil with medium expansive properties. The geotechnical problems encountered will require modified normal to special foundation techniques and construction, and proper standard compaction techniques and drainage is required.

8.1.2 TOPOGRAPHY

The site is located on a shallow slope towards the northeast. It is situated at between 1302 (at the dam) and 1320 metres above mean sea level. The Proposed Development is located in a valley with a natural stormwater low-point dividing the eastern and western portions of the development. The natural topography of the area slopes towards the storm water low-point and a watercourse to the north. Due to the natural topography, the area may be prone to stormwater erosion. Urbanisation of the demarcated area will increase the peak storm-water runoff (1-in-2 years recurrence interval) from 4.8 m³/s to 11.3 m³/s. The following figure indicates the direction of stormwater flow.

Stormwater infrastructure will be designed to accommodate runoff as surface flow in an open system. This will be achieved by designing internal roadways to disperse stormwater towards the watercourses. Comprehensive information on stormwater attenuation should be presented in the detailed design report of internal services for approval by the municipality.



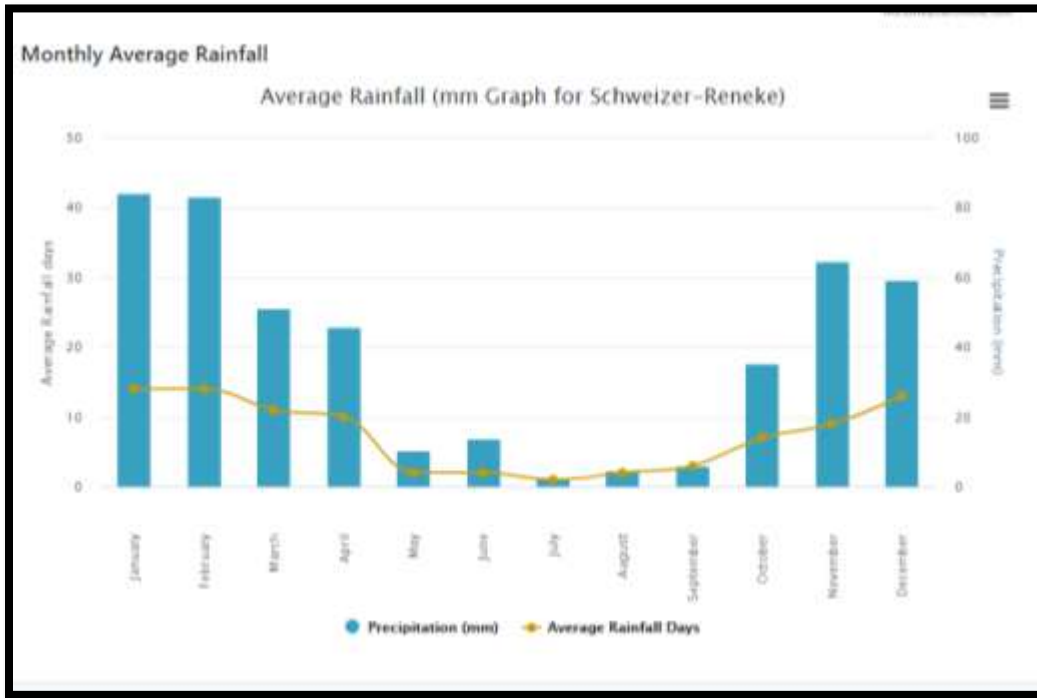
Direction of Storm-water Flow

A detailed site survey have been carried out to establish levels. The Engineering report and the Layout plan will address issues regarding drainage of the site.

8.1.3. CLIMATE

The climate of the area is typical of the South African interior. In the discussion of this variable, certain aspects of rainfall, temperature and wind that can influence the project will be highlighted.

8.1.3.1. Rainfall



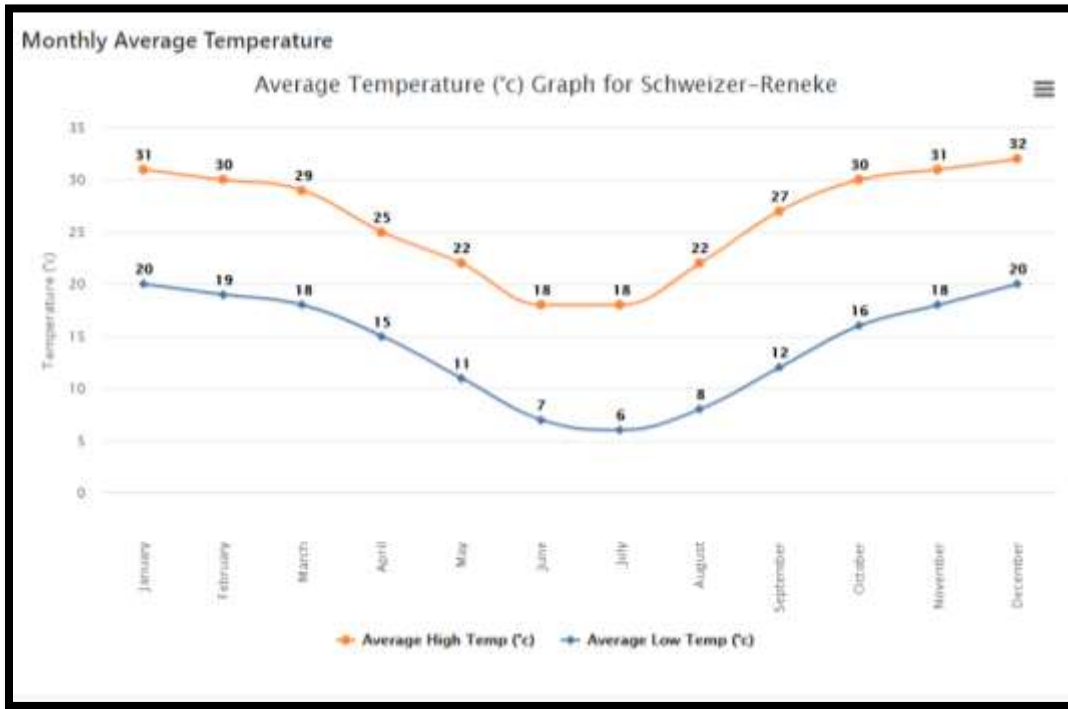
Source: <https://www.worldweatheronline.com/schweizer-reneke-weather-averages/north-west/za.aspx>
(Visited: 23/06/2021)

The variability of rainfall as well as the high intensity events will definitely influence the project. On average however, the impact of rainfall can be considered as positive, as sufficient water is generally available for sustaining vegetation. Extreme dry conditions during dry spells will negatively affect the project due to the secondary effects on vegetation as well as the possibility of fire hazards. Extreme maximum events can also have a negative effect on the project during all its phases.

The overall impact can therefore be considered to be “variable” during the construction and operational phases (local in extent and long term in duration). The likelihood that these impacts may occur is probable, medium in intensity and significance. Steps to mitigate negative effects will be described in various sections of the Management Plan.

Due to the scale of the operation, the rainfall of the area cannot be affected by the project and is therefore “Not Applicable”.

8.1.3.2. Temperature



Source: <https://www.worldweatheronline.com/schweizer-reneke-weather-averages/north-west/za.aspx>
(Visited: 23/06/2021)

In combination with a dry spell, such hot temperatures may be favourable for the spreading of veldt fires.

The general impact of this variable on the project can be considered as positive during the construction and operational phases. The impacts can however be considered as having low intensity impacts of low significance. The extent is local and short term in duration.

Due to the scale of the project, it is clear that it will have no impact on the environment”.

8.1.3.3. Wind

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

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

Wind can be considered as having a low intensity, and a low significance negative impact on the construction and operational phases of the project. The probability is probable and the impacts are local but short in duration. The project can have no influence on the wind and is therefore “not applicable.

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".

Water availability and demand has been calculated by the consulting Civil Engineers, to enable a sustainable waterborne sewage system as well as potable water supply for both the existing and future developments in the area.

8.1.4. SURFACE DRAINAGE


The site is located on a shallow slope less than 6% towards the northeast. Plate flow is the dominant drainage pattern on site, and no drainage channel intersects the site. Drainage occurs in a north-easterly direction towards the Harts River and the Wentzel Dam.

A narrow non-perennial river, with its active channel and riparian zone, is present at the northern part of the site. An in-channel dam, the Wentzeldam, is present at the northeastern part of the site. This active channel is narrow but well defined. Note that an existing dirt road with a concrete wall across the watercourse, a railway line as well as a tar road (R506) currently run across the watercourse area which is of medium-high sensitivity. Low concrete wall, where the dirt road crosses at the northeastern parts of the site, results in seasonal impoundment of water near an inlet of the Wentzel Dam.

Non-perennial active channel (“dry streambed”) and in-channel dam at site



Figure 4. Indication the narrow non-perennial river and in-channel dam, at the site, as well as some main disturbances.

	Light blue outline		Route of active channel at the site
	Darker blue outline and shading		Artificial Waterbody (In-channel Dam)

Riparian zones have distinctive characteristic vegetation which is often visibly distinct from the surrounding vegetation. It is often clearly adapted to different levels of frequency and inundation and distributed accordingly within the broad riparian zone. The more water loving or mesic species are therefore located close to the river channel, while species which are less dependent on water are located further away. It is the ability of species to tolerate different levels of inundation, the need for excessive water availability, or the need for close river proximity for growth, propagation, temperature control and nutrient enrichment which clearly determinate the structural, compositional and functional characteristics of riparian zones (Kemper, 2001).

Riparian zone along the active channel contains indigenous tree species such as *Vachellia karroo*, *Searsia pyroides*, *Searsia lancea*, *Diospyros lycioides* and *Ziziphus mucronata*. Indigenous grass species such as *Cynodon dactylon* and exotic grass species such as *Paspalum dilatatum* are also present at the riparian zone. Alien invasive herb species such

as *Oenothera rosea* and *Rumex crispus* are present at the riparian zone/ fringes of the dam. *Persicaria* species (Knotweeds) occur at the permanent zones of watercourse.

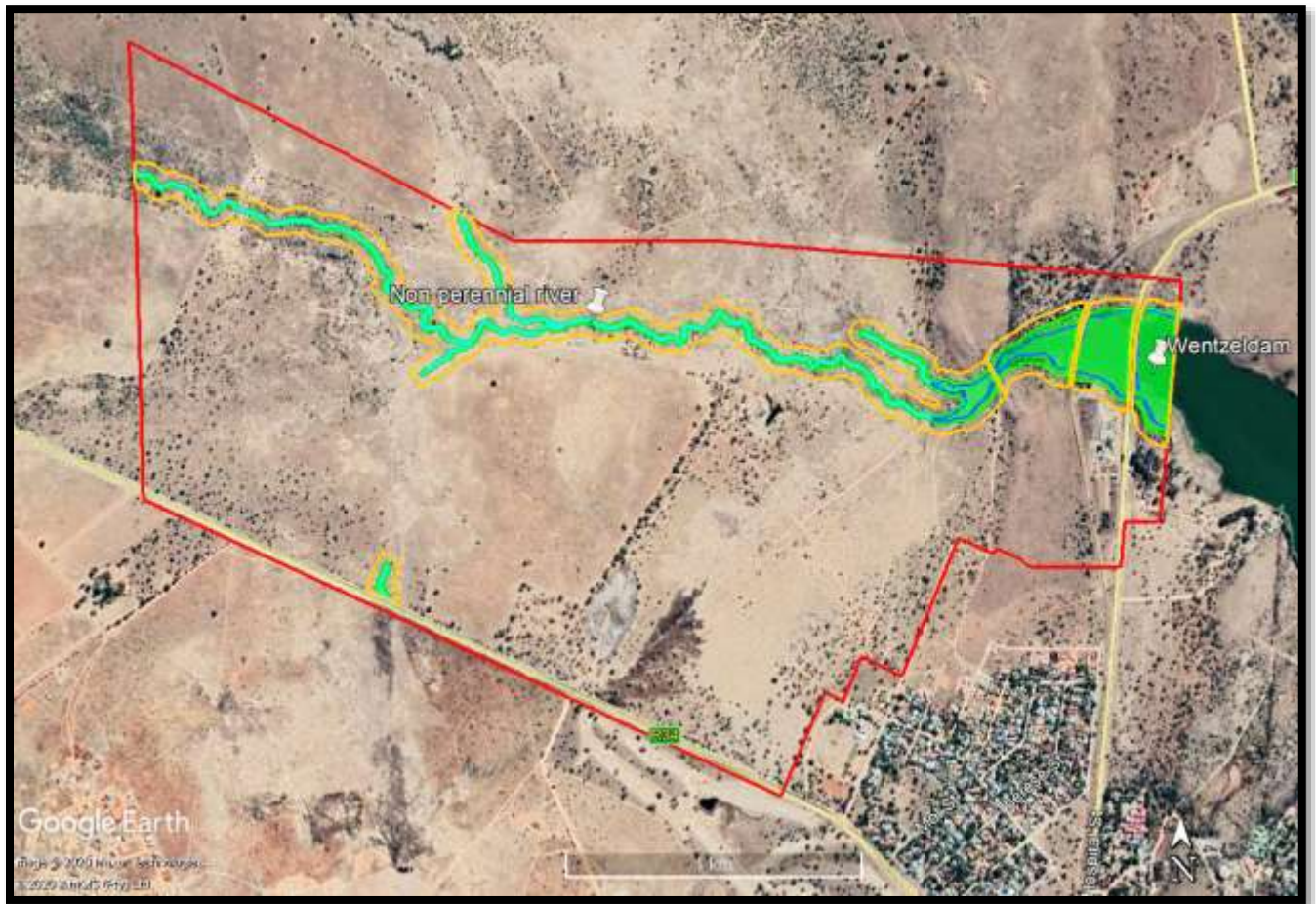


Figure 5. Indication of non-perennial river and in-channel dam, with their riparian zones and buffer zones at the site.

- Light blue outline Route of active channel at the site
- Green outline and shading Riparian zone
- Orange outline Outer edge of buffer zone
- Darker blue outline and shading Artificial Waterbody (In-channel Dam)

Present ecological status (PES) of the Non-perennial River at the site is CATEGORY C which means the watercourse is moderately modified but with some loss of natural habitats. Ecological Importance and Sensitivity (EIS) at the site is Category 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.

8.1.5. GROUND WATER

Seepage and the presence of perennial fluctuations of ground water were not encountered on site, but a seasonal perched water table may exist. A ferruginised profile indicates that some perennial water level fluctuations occur.

Ground water in the form of seepage was not intersected in any test pits during the investigation, but some problems are foreseen and normal water tightening techniques such as damp course on foundation levels are required. The expected high permeability of the silty sand may lead to leachate from sanitation systems to reach the ground water, and with the relative shallow residual rock, a closed water borne sewage system is recommended. Special care must be taken to ensure adequate surface drainage to prevent the accumulation of water next to structures. Storm water diversion measures such as ponding pools are recommended to control peak flows during thunderstorms. All embankments must be adequately compacted and planted with grass to stop any excessive erosion and scouring of the landscape.

The impact and significance of this variable is considered low, probable but with a low significance.

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. WETLANDS AND RIPARIAN ZONES

Wetlands that could be classified as Floodplain Wetlands, Channelled Valley-bottom Wetlands, Unchannelled Valley-bottom Wetlands, Depressions (Pans), Seeps or Wetland Flats appear to be absent at site. Riparian zone along the active channel contains indigenous tree species such as *Vachellia karroo*, *Searsia pyroides*, *Searsia lancea*, *Diospyros lycioides* and *Ziziphus mucronata*. Indigenous grass species such as *Cynodon dactylon* and exotic grass species such as *Paspalum dilatatum* are also present at the riparian zone. Alien invasive herb species such as *Oenothera rosea* and *Rumex crispus* are present at the riparian zone/ fringes of the dam. *Persicaria* species (Knotweeds) occur at the permanent zones of watercourse. The succulent alien invasive plant species *Cylindropuntia imbricata* (Umbricate Prickly Pear) is conspicuous at the site and also at and near the riparian zone.

The non-perennial river at the site, with its riparian zone and buffer zone, is likely to be impacted by the proposed developments, but to a limited extent. 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. Loss of wetland Threatened or Near-Threatened Plants, Mammals, Reptiles, Amphibians and Invertebrates at the proposed footprint appears to be unlikely.

8.1.7. FLORA

The study area is at Ipelegeng, west of Schweizer-Reneke, North West Province, South Africa. Site is situated at the Savanna Biome which is represented by the Schweizer-Reneke Bushveld vegetation type (Mucina & Rutherford, 2006). A brief overview of the vegetation type, which serves as an outline of the ecological context of the site, follows.

SVk 3 Schweizer-Reneke Bushveld

Distribution: Schweizer-Reneke Bushveld is located in the North-West Province of South Africa in an area to the east of Amalia in the west and from farming areas around Broedersput in the north to Never Mind (Christiana District) in the south. Altitude is 1250-1400 m (Mucina & Rutherford, 2006).

Vegetation and landscape features: Plains, slightly undulating plains and some hills, supporting open woodland with a fairly dense shrub layer, with trees *Acacia erioloba*, *Acacia karroo*, *Acacia tortilis*, *Searsia lancea* and shrubs *Acacia hebeclada*, *Diospyros lycioides*, *Grewia flava* and *Tarchonanthus camphoratus* (Mucina & Rutherford, 2006).

Geology and soils: Andesitic lavas of the Allanridge Formation of the Ventersdorp Supergroup, sometimes covered with silcrete or calcrete of the Kalahari Group. Deep (0.9-1.2 m) sandy soils, with Hutton and Clovelly the dominant soil forms. Land Types: Ah and Ae and some Bc (Mucina & Rutherford, 2006).

Climate: Rainfall in summer with very dry winters. Mean annual precipitation (MAP) about 440 – 520 mm. Frost frequent in winter (Mucina & Rutherford, 2006).





Important taxa of the Schweizer-Reneke Bushveld listed by Mucina & Rutherford (2006): Tall tree: *Acacia erioloba*. Small trees: *Acacia karroo*, *Acacia tortilis* subsp. *heteracantha*, *Rhus lancea*. Tall shrubs: *Asparagus laricinus*, *Diospyros lycioides* subsp. *lycioides*, *Grewia flava*, *Tarchonanthus camphoratus*, *Diospyros pallens*, *Ehretia rigida* subsp. *rigida*, *Gymnosporia buxifolia*, *Rhus tridactyla*. Low shrubs: *Acacia hebeclada* subsp. *hebeclada*, *Aptosimum decumbens*, *Chrysocoma ciliata*, *Gnidia polycephala*, *Pentzia viridis*. Woody climber: *Asparagus africanus*. Graminoids: *Antheophora pubescens*, *Digitaria eriantha* subsp. *eriantha*, *Heteropogon contortus*, *Stipagrostis uniplumis*, *Themeda triandra*, *Aristida congesta*, *Aristida stipitata* var. *spicata*, *Chloris virgata*, *Cynodon dactylon*, *Eragrostis biflora*, *Eragrostis rigidior*, *Eragrostis superba*, *Eragrostis trichophora*, *Sporobolus fimbriatus*. Herbs: *Barleria macrostegia*, *Hermannia tomentosa*, *Hibiscus pusillus*, *Indigofera daleoides*, *Lippia scaberrima*, *Osteospermum muricatum*, *Pollichia campestris*, *Rhyncosia adenodes*. Geophytic herbs: *Dipcadi papillatum*, *Nerine laticoma*.

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

Vegetation at most of the site is visibly degraded and cover of vegetation in many areas is conspicuously poor. Vegetation at an informal rubbish dump site is transformed. Some areas have been cleared, exposing soil. A conspicuous high frequency of alien invasive weeds occurs at disturbed areas, in particular at hitherto cleared places. A number of alien invasive weed species are present at previously cleared and perviously cultivated areas. These alien invasive weeds include *Argemone ochroleuca* (Mexican Poppy), *Gomphrena celosioides* (Globe Amaranth), *Schkuhria pinnata* (Dwarf Marigold), *Tagetes minuta* (Khaki Weed), *Conyza bonariensis* (Flea Bane), *Datura ferox* (Large Thorn-apple), *Datura stramonium* (Common Thorn Apple), *Richardia brasiliensis* (Mexican Richardia), *Acanthospermum australe* (Prostrate Starbur) and *Xanthium spinosum* (Spiny Cocklebur). The succulent alien invasive plant species *Cylindropuntia imbricata* (Umbricate Prickly Pear) is conspicuous at the site.



Figure 6. Indication of non-perennial river (active channel, riparian zone, buffer zone), in-channel dam and low rocky ridges at the site.

- | | | |
|---|---------------------------------|---------------------------------------|
|  | Light blue outline | Route of active channel at the site |
|  | Green outline | Riparian zone |
|  | Brown outline and shading | Low rocky ridges |
|  | Darker blue outline and shading | Artificial Waterbody (In-channel Dam) |

Indigenous trees at the site include *Vachellia erioloba* (Camel Thorn), *Vachellia hebeclada* subsp. *hebeclada* (Candlepod Thorn; shrub-height at site), *Vachellia karroo* (Sweet Thorn), *Tarchonanthus camphoratus* (Camphor Bush) and *Grewia flava* (Velvet Raisin; shrub-height at site). The indigenous shrub *Asparagus larcinus* (Wild Asparagus) is found at disturbed places at the site. Indigenous grass species include *Eragrostis lehmanianna*, *Eragrostis superba*, *Aristida congesta*, *Pogonarthria squarrosa*, *Heteropogon contortus*, *Melinis repens* and *Tragus berteronianus*. Indigenous forb species and shrublets include *Bulbine narcissifolia*, *Barleria macrostegia* and *Berkheya onopordifolia*. Herbaceous shrub *Gomphocarpus fruticosus* is also at the site. Dwarf shrubs and shrublets at the site include *Felicia muricata*. The widespread succulent *Aloe grandidentata* occurs at several places at the site.



Photo 5. Branches and foliage of *Vachellia erioloba* (Camel Thorn) at the site.

Photo: R.F. Terblanche

One plant species, *Vachellia erioloba* (Camel Thorn) that is not threatened but listed as Protected tree species occurs at the site. In terms of a part of section 15(1) of the National Forests Act No. 84 of 1998, no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a license granted by the Minister. *Vachellia erioloba* is numerous at some areas at the site. A Camel Thorn Tree Forest or large Camel Thorn trees (>10 m) such as at Kathu and Witsand in the Northern Cape Province, are absent at the site. If the development is approved it is likely that some Camel Thorn trees (*Vachellia erioloba*) should be removed, in which case a permit for removal would be imperative, and should be applied for.

Patches of degraded grassland with some indigenous grass species, herbaceous species and few trees remain at the site. The shrub *Protasparagus laricinus* is conspicuous at the site and its concentrations approach bush encroachment at some places. Indigenous grass species include *Panicum coloratum*, *Aristida congesta*, *Aristida adscensionis*, *Eragrostis lehmanianna*, *Chloris virgata*, *Eragrostis superba*, *Hyparrhenia hirta*, *Tragus berteronianus* and *Melinis repens*. Indigenous forbs and dwarf shrubs include *Tripteris aghillana*, *Bulbine narcissifolia*, *Barleria macrostegia*, *Hibiscus pusillus*, *Chamaesyce inaequilatera*, *Felicia muricata* and *Ziziphus zeyheriana*. Herbaceous shrub *Gomphocarpus fruticosus* is widespread at the site. Indigenous trees such as *Ziziphus mucronata* (Buffalo-thorn), *Vachellia karroo* (Sweet Thorn) and *Searsia lancea* (Karee) are present.



Photo 6. Patch of savanna that remains at the site.

Photo: R.F. Terblanche

A number of alien invasive weed species are present at previously cleared and previously cultivated areas. These alien invasive weeds include *Datura ferox* (Large Thorn-apple), *Datura stramonium* (Common Thorn Apple), *Argemone ochroleuca* (Mexican Poppy), *Gomphrena celosioides* (Globe Amaranth), *Schkuhria pinnata* (Dwarf Marigold), *Tagetes minuta* (Khaki Weed), *Conyza bonariensis* (Flea Bane), *Verbena aristigera* (Fine-leaved Verbena), *Plantago lanceolata* (Buckhorn Plantain), *Physalis viscosa* (Sticky Gooseberry) and *Xanthium spinosum* (Spiny Cocklebur).

Two low rocky ridges are found at the northeaster parts of the site.



Figure 7 Indication of low rocky ridges and 30 m buffer zones at the northeastern parts of the site.

- Brown outline and shading Low rocky ridges
- Orange outline and shading Outer edge of buffer zone

Savanna at the site is represented by the Schweizer-Reneke Bushveld vegetation type (SVk 3) which is listed as a Threatened Ecosystem, Vulnerable, according to the National List of Threatened Ecosystems (2011). Terrestrial vegetation at the site has been modified and transformed at parts, in the past and most of the vegetation appears degraded. Some areas contain savanna in fairly natural condition. The scope overall, for the conservation of natural savanna at the site, is small.

8.1.8. FAUNA

Mammals

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

Mammals of particular conservation concern

Threatened mammal species of the North West Province. Literature sources: Friedman & Daly, (2004), Skinner & Chimimba (2005), Wilson & Reeder (2005). With mammal species which normally needs a large range their residential status does not implicate that they are exclusively dependent on the site or use the site as important shelter or for reproduction. No = Not recorded at site/ Unlikely to be resident at the site. Yes: Recorded at the site/ Likely to be resident at the site.

Species	Threatened Status	Recorded at site during survey	Likely to be found based on habitat assessment
<i>Chrysospalax villosus</i> Rough-haired golden mole	Vulnerable	No	No
<i>Cloeotis percivali</i> Short-eared Trident Bat	Vulnerable/ Near-threatened	No	No
<i>Diceros bicornis</i> Black rhinoceros	Critically Endangered	No	No
<i>Lycaon pictus</i> African wild dog	Endangered	No	No
<i>Loxodonta africana</i> African elephant	Vulnerable	No	No
<i>Mystromys albicaudatus</i> White-tailed mouse	Endangered	No	No
<i>Neamblysomus julianae</i> Juliana's Golden Mole	Critically Endangered	No	No
<i>Panthera leo</i> Lion	Vulnerable	No	No
<i>Rhinolophus blasii</i> Blasi's Horseshoe Bat	Vulnerable	No	No
<i>Smutsia temminckii</i> Ground Pangolin	Vulnerable	No	No

Near threatened mammal species known to occur in the North West Province. Literature sources: Skinner & Chimimba (2005). No = Not recorded at site/ unlikely to be resident at the site. Yes: Recorded at the site/ Likely to be resident at the site.

Species	Threatened Status	Recorded at site during survey	Likely to be found based on habitat assessment
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<i>Ceratotherium simum</i> White Rhinoceros	Near threatened	No	No
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Data deficient (or uncertain) mammal species of the North West Province. Literature sources: Skinner & Chimimba (2005). No = Not recorded at site/ unlikely to be resident at the site. Yes: Recorded at the site/ Likely to be resident at the site.

Species	Threatened Status	Recorded at site during survey	Likely be a resident at the site
<i>Myosorex varius</i> Forest shrew	Uncertain	No	No

Bird species of particular conservation concern

The possible presence or absence of threatened bird species and near threatened bird species at the site. With bird species which often have a large distributional range, their presence does not imply that they are particularly dependent on a site as breeding location. **No threat to any threatened bird species or any bird species of particular conservation importance are foreseen.**

Threatened bird species of the North West Province. Literature sources Barnes (2000), Hockey, Dean & Ryan, P.G. (2005) and Chittenden (2007). No = Not recorded at site/ Unlikely to use site as breeding area or particular habitat on which the species depends. Yes = Recorded at site/ Likely to use site as breeding area or particular habitat on which the species depends.

Species	Common name	Threatened Status	Recorded at site during survey	Likely to use site as breeding area or habitat
<i>Aegypius tracheliotos</i>	Lappet-faced Vulture	Vulnerable	No	No
<i>Anthropoides paradiseus</i>	Blue Crane	Vulnerable	No	No
<i>Aquila rapax</i>	Tawny Eagle	Vulnerable	No	No
<i>Ardeotis kori</i>	Kori Bustard	Vulnerable	No	No
<i>Balearica regulorum</i>	Grey Crowned Crane (Mahem)	Vulnerable	No	No
<i>Botaurus stellaris</i>	Eurasian Bittern	Critically Endangered	No	No
<i>Circus ranivorus</i>	African Marsh- Harrier	Vulnerable	No	No
<i>Crex crex</i>	Corn Crake	Vulnerable	No	No
<i>Eupodotis senegalensis</i>	White-bellied Korhaan	Vulnerable	No	No
<i>Falco naumanni</i>	Lesser Kestrel	Vulnerable	No	No
<i>Geronticus calvus</i>	Southern Bald Ibis	Vulnerable	No	No
<i>Gorsachius leuconotus</i>	White-backed Night-heron	Vulnerable	No	No

<i>Gypaetus barbatus</i>	Bearded Vulture	Endangered	No	No
<i>Gyps africanus</i>	White-backed Vulture	Vulnerable	No	No
<i>Gyps coprotheres</i>	Cape Vulture	Vulnerable	No	No
<i>Pelecanus rufescens</i>	Pink-backed Pelican	Vulnerable	No	No
<i>Polemaetus bellicosus</i>	Martial Eagle	Vulnerable	No	No
<i>Rhynchops flavirostris</i>	African Skimmer	Endangered	No	No
<i>Sagittarius serpentarius</i>	Secretarybird	Vulnerable	No	No
<i>Sarothrura ayresi</i>	White-winged Flufftail	Critically Endangered	No	No
<i>Tyto capensis</i>	African Grass-Owl	Vulnerable	No	No

* Though some of the above bird species that roams over large areas may occasionally be found at the site, the site does not appear to be a habitat of particular importance to these birds, and these birds also do not use the site as particular breeding area.

Near threatened bird species of the North West Province. Literature sources Barnes (2000), Hockey, Dean & Ryan, P.G. (2005) and Chittenden (2007). No = Not recorded at site/ Unlikely to be particularly dependent on the site as breeding area or habitat. Yes = Recorded at site/ Likely to be particularly dependant on the site as breeding area or habitat.

Species	Common name	Threatened Status	Recorded at site during survey	Likely to use site breeding area or habitat
<i>Certhilauda chuana</i>	Short-clawed Lark	Near threatened	No	No
<i>Charadrius pallidus</i>	Chestnut-banded Plover	Near threatened	No	No
<i>Ciconia nigra</i>	Black Stork	Near threatened	No	No
<i>Circus macrourus</i>	Pallid Harrier	Near threatened	No	No
<i>Eupodotis caerulescens</i>	Blue Korhaan	Near threatened	No	No
<i>Falco biarmicus</i>	Lanner Falcon	Near threatened	No	No
<i>Falco peregrinus</i>	Peregrine Falcon	Near threatened	No	No
<i>Glareola nordmanni</i>	Black-winged Pratincole	Near threatened	No	No
<i>Leptoptilos crumeniferus</i>	Marabou Stork	Near threatened	No	No
<i>Mirafra cheniana</i>	Melodious lark	Near threatened	No	No
<i>Mycteria ibis</i>	Yellow-billed Stork	Near threatened	No	No

<i>Phoenicopterus minor</i>	Lesser Flamingo	Near threatened	No	No
<i>Phoenicopterus ruber</i>	Greater Flamingo	Near threatened	No	No
<i>Rostratula benghalensis</i>	Greater Painted-snipe	Near threatened	No	No
<i>Sterna caspia</i>	Caspian Tern	Near threatened	No	No
<i>Certhilauda chuana</i>	Short-clawed Lark	Near threatened	No	No

* Though some of the above bird species that roams over large areas may occasionally be found at the site, the site does not appear to be a habitat of particular importance to these birds, and these birds also do not use the site as breeding area.

Reptiles of particular conservation concern

The following tables list possible presence or absence of threatened reptile or near threatened reptile species in the study area. The Atlas and Red List of Reptiles of South Africa, Lesotho and South Africa (Bates, Branch, Bauer, Burger, Marais, Alexander & de Villiers, 2014) has been used as the main source to compile the list for assessment.

Threatened reptile species in North West Province. Main Source: (Bates, Branch, Bauer, Burger, Marais, Alexander & de Villiers, 2014). No = Reptile species is not a resident on the site; Yes = Reptile species is found to be resident on the site.

Species	Threatened Status	Resident at site	Recorded at site during survey	Likely to be found based on habitat assessment
<i>Crocodylus niloticus</i> Nile Crocodile	Vulnerable	No	No	No

Near threatened reptile species in North West Province. Main Source: Bates, Branch, Bauer, Burger, Marais, Alexander & de Villiers (2014). Though *Homoroselaps dorsalis* has not yet been recorded from the North West Province, its presence in some areas or the Province is anticipated. No = Reptile species is not a resident on the site; Yes = Reptile species is found to be resident on the site.

Species	Threatened Status	Resident at site	Recorded at site during survey	Likely to be found based on habitat assessment
<i>Homoroselaps dorsalis</i> Striped Harlequin Snake	Near threatened	No	No	No

Amphibians of particular conservation concern

Near threatened amphibian species in North West Province. No = Amphibian species is not a resident on the site; Yes = Amphibian species is found to be resident on the site.

Species	Threatened Status	Resident at site	Recorded at site during survey	Likely to be found based on habitat assessment
<i>Pyxicephalus adspersus</i> Giant Bullfrog	Near threatened (Currently Least Concern)	No	No	No

Assessment of invertebrate species of particular conservation concern

Butterflies of particular conservation concern

Threatened butterfly species in North West Province and Gauteng Province. Sources: Henning, Terblanche & Ball (2009), Mecenero *et al.* (2013). Invertebrates such as threatened butterfly species are often very habitat specific and residential status imply a unique ecosystem that is at stake.

Species	Threatened Status	Recorded at site during survey	Residential status at the site: Yes confirmed, Highly likely, Likely, Medium possibility, Unlikely, Highly unlikely
<i>Aloeides dentatis dentatis</i> Roodepoort Copper	Endangered	No	Highly unlikely
<i>Chrysoritis aureus</i> Golden Copper	Endangered	No	Highly unlikely
<i>Lepidochrysops praeterita</i> Highveld Blue	Endangered	No	Highly unlikely
<i>Orachrysops mijburghi</i> Mijburgh's Blue	Endangered	No	Highly unlikely

Butterfly species of the North West Province and Gauteng Province that are not threatened and not near threatened but of which are of particular conservation concern and listed in the **Rare** category (Mecenero *et al.*, 2013). No = Butterfly species is unlikely to be a resident at the study area; Yes = Butterfly species is a resident at the study area.

Species	Threatened Status	Recorded at site during survey	Residential status at the site: Yes confirmed, Highly likely, Likely, Medium possibility, Unlikely, Highly unlikely
<i>Colotis celimene amina</i> Lilac Tip	Rare (Low density)	No	Highly unlikely
<i>Lepidochrysops procera</i> Savanna Blue	Rare (Habitat specialist)	No	Highly unlikely
<i>Metisella meninx</i> Marsh Sylph	Rare (Habitat specialist)	No	Highly unlikely

<i>Platylesches dolomitica</i> Hilltop Hopper	Rare (low density)	No	Highly unlikely
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Beetles of particular conservation priority

Fruit chafer species (Coleoptera: Scarabaeidae: Cetoninae) in the Gauteng Province and North-West Province which are of known high conservation priority.

Species	Threatened Status	Recorded at site during survey	Likely to be resident based on habitat assessment
<i>Ichneustoma stobbiai</i>	Uncertain	No	No
<i>Trichocephala brincki</i>	Uncertain	No	No

Scorpion species of particular conservation priority

Rock scorpion species (Scorpiones: Ischnuridae) species that are of known high conservation priority in the Gauteng Province and North-West Province.

Species	Threatened Status	Recorded at site during survey	Likely to be resident at site based on habitat assessment
<i>Hadogenes gracilis</i>	Uncertain	No	No
<i>Hadogenes gunningi</i>	Uncertain	No	No

Ecological Sensitivity at the site

Ecological sensitivity at most of the site is medium. Ecological sensitivity at some of the conspicuously disturbed areas at the site, such as the extensive dumping area is indicated as low. Ecological sensitivity at the non-perennial active channel, in-channel dam and riparian zone, as well as the low rocky ridges and their buffer zones, is medium-high owing to the importance of these watercourses and low rocky ridges as conservation corridors in the larger area (Figure 6). Note that an existing dirt road with a concrete wall across the watercourse, a railway line as well as a tar road (R506) currently run across the area of medium-high sensitivity.

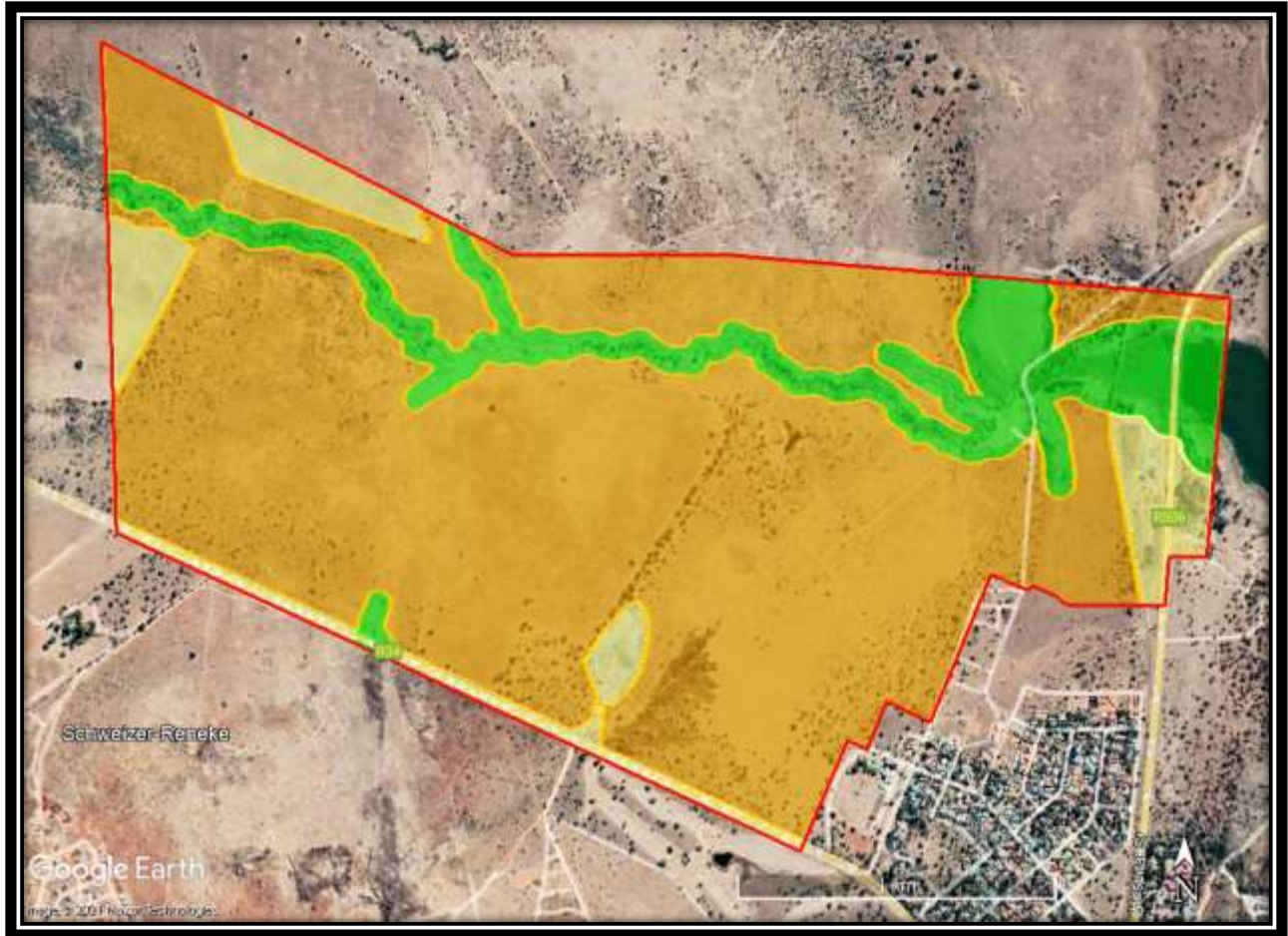






Figure 8 Indications of ecological sensitivity at the site.

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

Summary of risks and impacts

Vegetation at most of the site is visibly degraded and cover of vegetation in many areas is conspicuously poor. Vegetation at an informal rubbish dump site is transformed. Some areas have been cleared, exposing soil. Fairly large patches of disturbed savanna still remain at the site. *Vachellia hebeclada* (Candlepod Thorn) occurs in many clumps at visibly disturbed areas with noticeable poor plant cover.

Indigenous trees at the site include *Vachellia erioloba* (Camel Thorn), *Vachellia hebeclada* subsp. *hebeclada* (Candlepod Thorn; shrub-height at site), *Vachellia karroo* (Sweet Thorn), *Tarchonanthus camphoratus* (Camphor Bush) and *Grewia flava* (Velvet Raisin; shrub-height at site). The indigenous shrub *Asparagus larycinus* (Wild Asparagus) is found at disturbed places at the site. Indigenous grass species include *Eragrostis lehmanianna*, *Eragrostis superba*, *Aristida*

congesta, Pogonarthria squarrosa, Heteropogon contortus, Melinis repens and Tragus berteronianus. Indigenous forb species and shrublets include Bulbine narcissifolia, Barleria macrostegia and Berkheya onopordifolia. Herbaceous shrub Gomphocarpus fruticosus is also found at the site. Dwarf shrubs and shrublets at the site include Felicia muricata. The widespread succulent Aloe grandidentata occurs at several places at the site.

A number of alien invasive weed species are present at previously cleared and perviously cultivated areas. The succulent alien invasive plant species *Cylindropuntia imbricata* (Umbricate Prickly Pear) is conspicuous at the site.

Riparian zone along the active channel contains indigenous tree species such as *Vachellia karroo*, *Searsia pyroides*, *Searsia lancea*, *Diospyros lycioides* and *Ziziphus mucronata*. Indigenous grass species such as *Cynodon dactylon* and exotic grass species such as *Paspalum dilatatum* are also present at the riparian zone. Alien invasive herbaceous species such as *Oenothera rosea* and *Rumex crispus* are present at the riparian zone/ fringes of the dam. *Persicaria* species (Knotweeds) occur at the permanent zones of the watercourse.

Savanna at the site is represented by the Schweizer-Reneke Bushveld vegetation type (SVk 3) which is listed as a Threatened Ecosystem, Vulnerable, according to the National List of Threatened Ecosystems (2011). Terrestrial vegetation at the site has been modified and transformed at parts, in the past and most of the vegetation appears degraded. Some areas contain savanna in fairly natural condition. The scope overall, for the conservation of natural savanna at the site, is small.

No Threatened or Near Threatened plant or animal species appear to be resident at the site.

One plant species, *Vachellia erioloba* (Camel Thorn) that is not threatened but listed as Protected tree species occurs at the site. In terms of a part of section 15(1) of the National Forests Act No. 84 of 1998, no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a license granted by the Minister. *Vachellia erioloba* is numerous at some areas at the site. A Camel Thorn Tree Forest or large Camel Thorn trees (>10 m) such as at Kathu and Witsand in the Northern Cape Province, are absent at the site. If the development is approved it is likely that some Camel Thorn trees (*Vachellia erioloba*) should be removed, in which case a permit for removal would be imperative, and should be applied for.

Ecological sensitivity at most of the site is medium. Ecological sensitivity at some of the conspicuously disturbed areas at the site, such as the extensive dumping area is indicated as low. Ecological sensitivity at the non-perennial active channel, in-channel dam and riparian zone, as well as the low rocky ridges and their buffer zones, is medium-high owing to the importance of these watercourses and low rocky ridges as conservation corridors in the larger area (Figure 6). Note that an existing dirt road with a concrete wall across the watercourse, a railway line as well as a tar road (R506) currently run across this area of medium-high sensitivity.

There is little scope for most of the site to be part of a corridor of particular conservation importance, excluding the watercourse (with its bufferzone) and the low rocky ridges. Non-perennial river at the northern part of the site, as well as the low rocky ridges at the north-eastern parts of the site are corridors of particular conservation concern.

8.2. SOCIO ECONOMIC FACTORS

8.2.1. SOCIAL AMENITIES

In terms of section 9(1) of the National Housing Act (107 of 1997), every municipality must, as part of the municipality's process of integrated development planning (IDP) take all reasonable and necessary steps to ensure that the inhabitants within its area of jurisdiction have access to adequate housing on a progressive basis by setting housing delivery goals, identifying suitable land for housing development and planning, facilitating, initiating and co-coordinating housing development in its area of jurisdiction.

Housing comprises a series of complex interrelationships between people, their needs and values and resources within a political and legal environment. This complexity requires a focused approach to efforts aimed at providing housing. National Government has started to respond by putting the necessary policy and legislative environment in place.

This framework outlines the roles and responsibilities of different spheres of government in relation to housing, as well as dealing with aspects relating to the design and content of housing policy and legislation. In the context of this framework the Mamusa Local Municipality is required to take all reasonable steps to ensure the provision of adequate housing to its residents.

Various policy directions and legislation exist relating to the role and responsibilities of the different spheres of government to provide and ensure the provision of housing opportunities to affected communities.

Of these, the comprehensive plan for the Development of sustainable Human Settlements based on the Breaking New Ground Principles (BNG) forms the basis on which housing development should be implemented.

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

- Progressive Informal Settlement Eradication: These settlements must be integrated into the broader urban setup so as to overcome spatial, social and economic exclusion. The plans encourage the eradication of informal settlements through in-situ upgrading in desired locations coupled with the relocation of household where development is not possible or desirable.
- Promoting densification and Integration: The aim is to integrate previously excluded groups into the urban area so as to enable them to enjoy the benefits it offers and to create more integrated, functional and environmentally sustainable human settlements, towns and cities.
- Enhancing Spatial Planning: Greater co-ordination and alignment of various planning instruments and economic policies lies at the heart of sustainable human settlements.
- Provision of a mix of housing typologies for different income groups (Subsidised, GAP, Affordable and bonded Housing opportunities).
- Enhancing the location of New Housing Projects: The location of past housing projects was said to reinforce apartheid spatial settlement patterns. Spatial restructuring aims to achieve a more decisive Intervention In land markets. The following interventions are envisaged viz. accessing well located state-owned and parastatal land: acquisition of well-located private land for housing development, funding for land acquisition and fiscal incentives.

HOUSING AND STAND NEEDS

- The waiting list of the municipality currently indicated a need for 6000 houses. This waiting list increased drastically from 3171 units in 2014 (NW Multi Year Development Plan 2014).
- According to the 2013 spatial Development Framework (SDF) for Mamusa Local Municipality there were 804 informal structures not on stands (squatters) and 303 informal structures in backgrounds. (This was also indicated in the 2013 Housing Sector Plan for Mamusa Local Municipality)
- Due to the fact that there are no vacant stands in Schweizer-Reneke/ Ipelegeng Urban area, households are currently squatting on municipal vacant land, parks, school sites and in the backyards and the community already submitted two memorandums to the municipality demanding additional stands

The proposed development is based on the premise that the proposed township area should be a fully integrated human settlement catering not only for low cost subsidised housing but also for other housing typologies including inter alia but not limited to GAP housing, affordable bonded housing, the necessary social, community and recreational facilities as well as opportunities for job creation and employment.

It should also be noted that the land is used by the Horse Riding club and the development will have a definite impact on the riding trails and routes as it stands. It will be necessary to reroute the trails and has to be weighed against SPLUMA principles specifically spatial justice and sustainability. It is therefore essential to locate new residential developments in areas that will combat urban sprawl and result in a more compact urban form, which is the reasoning for the location of the proposed development.

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. AGRICULTURE

The main objective of Act 70 is to manage the sub-division of agricultural land to prevent injudicious fragmentation of agricultural land and the creation of uneconomical units. In terms of the Draft Bill, *high potential cropping land* means

land best suited to, and capable of, consistently producing acceptable levels of goods and services for a wide range of agricultural enterprises.

Land in capability classes i to iii, unique agricultural land and land under irrigation will qualify from a resource perspective. The proposed development site has no irrigated land and will therefore not automatically qualify as high potential in terms of the *National policy on the protection of high potential and unique agricultural land*.

The above mentioned is confirmed by the Department Agriculture, Land Reform and Rural Development's (DALRRD) map indicating High Potential Agricultural Land in the area. Figure 9 below is a copy of this map, indicating that the proposed site does not fall within an area classified as "High Potential Agricultural land".

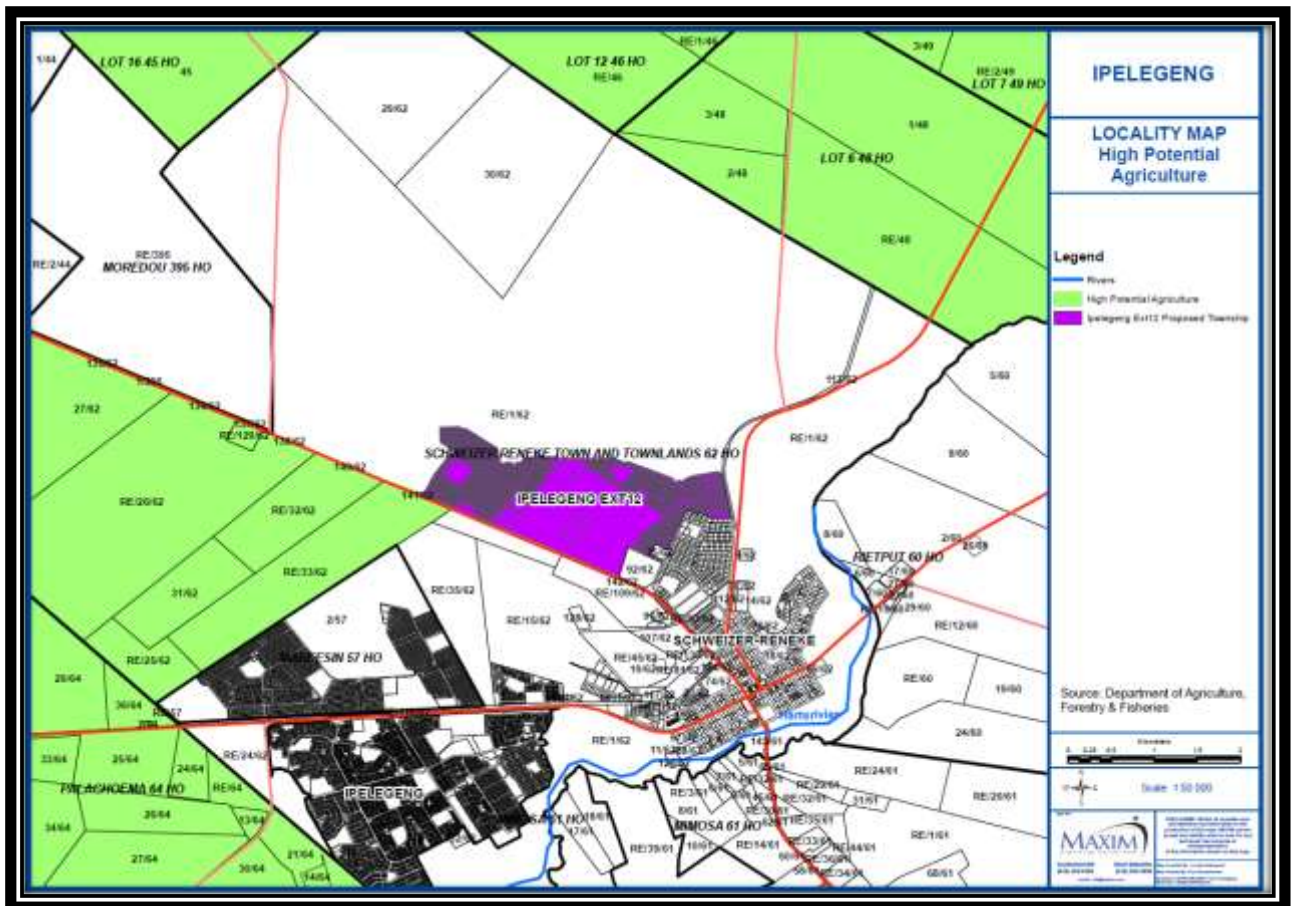


Figure 9: High Potential Agricultural land
(Source: Department of Agriculture, Forestry and Fisheries.)

8.2.3. 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 number of known cultural heritage sites (archaeological and/or historical) exist in the larger geographical area within which the study area falls. There are no known sites on the specific land parcel. No sites, features or material of any real cultural heritage (archaeological and/or historical) origin or significance were identified in the study area during the assessment. The only sites identified are the remains (foundations) of recent farming related structures, but these are of recent age. The dumping of building rubble also occurs in the area in places.

Access to parts of the study was not possible due to the fact that it is fenced-off and is in the hands of private individuals (tenants renting from the Municipality) and entry to these properties were not possible. However, it is believed that it is highly unlikely that any sites of heritage significance will be impacted by the proposed development. The remains of some farming-related structures were also observed on aerial images (Google Earth) of the study area, but these could not be physically assessed however. There could possibly be more similar sites in the larger area.

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

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

8.2.5 AESTHETICS

Vegetation at most of the site is visibly degraded and cover of vegetation in many areas is conspicuously poor. Vegetation at the dump site is transformed. Some areas have been cleared, exposing soil. Fairly large patches of disturbed savanna still remain at the site. *Vachellia hebeclada* occurs in many clumps at visibly disturbed areas with noticeable poor plant cover.

A number of alien invasive weed species are present at previously cleared and previously cultivated areas. These alien invasive weeds include *Argemone ochroleuca* (Mexican Poppy), *Gomphrena celosioides* (Globe Amaranth), *Schkuhria pinnata* (Dwarf Marigold), *Tagetes minuta* (Khaki Weed), *Conyza bonariensis* (Flea Bane), *Datura ferox* (Large Thorn-apple), *Datura stramonium* (Common Thorn Apple), *Richardia brasiliensis* (Mexican Richardia), *Acanthospermum australe* (Prostrate Starbur) and *Xanthium spinosum* (Spiny Cocklebur). The succulent alien invasive plant species *Cylindropuntia imbricata* (Umbricate Prickly Pear) is conspicuous at the site.

Riparian zone along the active channel contains indigenous tree species such as *Vachellia karroo*, *Searsia pyroides*, *Searsia lancea*, *Diospyros lycioides* and *Ziziphus mucronata*. Indigenous grass species such as *Cynodon dactylon* and exotic grass species such as *Paspalum dilatatum* are also present at the riparian zone. Alien invasive herb species such as *Oenothera rosea* and *Rumex crispus* are present at the riparian zone/ fringes of the dam. *Persicaria* species (Knotweeds) occur at the permanent zones of the watercourse

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 site to a residential area. The visual intrusion is considered to be moderate as the proposed development partially fits into the surroundings but will be clearly noticeable.

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.

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
	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

Nature of the potential impact		Description of the effect, and the affected aspect of the environment
	High	There is a high chance in correcting the adverse impact
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 (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	149,5516 hectares of indigenous vegetation will be eradicated in order to establish the development	Duration	Long term	Obtain the necessary environmental authorization for the development.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		Probability	Definite	Conduct a Fauna and Flora Habitat survey to determine the sensitivity of the area.	Definite
		Significance	Medium		Medium
		Reversibility	Low		Low
		Risk	Low		Medium
	The proposed development area is located within a CBA 1 and the vegetation will be eradicated.	Duration	Long term	Obtain the necessary environmental authorization for the development.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		Probability	Definite	Conduct a Fauna and Flora Habitat survey to determine the sensitivity of the area.	Definite
		Significance	Medium		Medium
		Reversibility	Low		Low
		Risk	Low		Medium
	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	High		High	

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)

ALTERNATIVE 1: Mixed land use township (Preferred Alternative)

Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
		Risk	Low		Medium
	Plan for the provision and maintenance of abluion facilities for construction workers to prevent pollution of surface and underground water.	Duration	Short term	Provide portable abluion 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 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
	A non-perennial river (with its riparian zone and buffer zone) are present at a part of the site.	Duration	Permanent	The 1:100 floodline will have to be determined and will have to be incorporated into the final layout plan. The construction camp shall not be located within the 1:100 year flood line or within a 100m of any watercourse; whichever the greater. Construct the infrastructure in accordance with the designs and	Permanent
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 1: Mixed land use township (Preferred Alternative)					
Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
				<p>ensure the natural flow of the river is not disturbed in the long term.</p> <p>Obtain the necessary environmental authorization for the development. Obtain the necessary Water Use Licenses.</p> <p>Implement the mitigation measures as described in the Environmental Management plan..</p>	
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	<p>Spray water on open surfaces to ensure that dust does not cause air pollution during construction.</p> <p>Start the rehabilitation of disturbed surfaces as soon as possible</p>	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	<p>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.</p> <p>Ensure that all construction vehicles are in good working order and not leaking oil and or fuel.</p>	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	<p>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.</p> <p>All cement is housed as to prevent spills (due to rain and or handling errors).</p> <p>NO glass, plastic, metal, or paper shall be allowed to pollute the area.</p>	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	<p>Ensure that contractors (construction phase) abide by all the requirements of the Occupational Health and Safety Act.</p> <p>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</p>	Local
		Magnitude (Intensity)	Medium		Medium
		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 (Preferred Alternative)					
Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
				regard to the environment (acts, regulations, and special guidelines).	
	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.	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. Appoint a Traffic engineer to assess the traffic volumes and existing road network and determine whether upgrades are necessary	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		

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		Duration	Long term		Long term

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)
Physical Social Economic	149,5516 hectares of indigenous vegetation will be eradicated in order to establish the development.	Extent	Local	Obtain the necessary environmental authorization for the development.	Local
		Magnitude (Intensity)	High		High
		Probability	Definite	Conduct a Fauna and Flora Habitat survey to determine the sensitivity of the area.	Definite
		Significance	Medium		Medium
		Reversibility	Low		Low
		Risk	Low		Medium
	The development area is located within a CBA1 and the vegetation will be eradicated.	Duration	Long term	Obtain the necessary environmental authorization for the development.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High	Conduct a Fauna and Flora Habitat survey to determine the sensitivity of the area.	High
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Low		Low
	Risk	Low	Medium		
	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.	Medium term
		Extent	Local		Local
		Magnitude (Intensity)	Low	Spray bare surfaces with water to prevent dust pollution.	Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
	Risk	Low	Medium		
	Plan for the eradication of foreign and invader plant species which are likely to invade disturbed areas.	Duration	Short term	Start the extermination of any invasive species as soon as possible and maintain the eradication programme.	Medium term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low
Probability		Definite	Definite		
Significance		Medium	Medium		
Reversibility		High	High		
Risk	Low	Medium			
Plan for the provision and maintenance of ablation facilities for construction workers to prevent pollution of surface and underground water.	Duration	Short term	Provide portable ablation facilities that will not cause pollution during the construction phase.	Short term	
	Extent	Local		Local	
	Magnitude (Intensity)	Medium		Medium	
	Probability	Definite		Definite	
	Significance	Medium		Medium	
	Reversibility	High		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)
		Risk	Low		Medium
	Plan to manage possible impacts that the project can have on the soil and geology.	Duration	Long term	Properly plan the construction phase in such a manner that impacts on the soil and geology of the area can be minimised.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Medium
		Probability	Definite	The findings of the Geotechnical Engineer must be incorporated into the design of the project.	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.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite	The rule must be to minimize the disturbance of animal life by keeping the footprint as small as possible.	Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	A non-perennial river (with its riparian zone and buffer zone) are present at a part of the site.	Duration	Permanent	The 1:100 floodline will have to be determined and will have to be incorporated into the final layout plan.	Permanent
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite	The construction camp shall not be located within the 1:100 year flood line or within a 100m of any watercourse; whichever the greater.	Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
				Construct the infrastructure in accordance with the designs and ensure the natural flow of the river is not disturbed in the long term.	
				Obtain the necessary environmental authorization for the development. Obtain the necessary Water Use Licenses.	
				Implement the mitigation measures as described in the Environmental Management plan..	

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)
	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.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite	Ensure that the trenches stay open for as short a time as possible.	Definite
		Significance	Medium		Medium
		Reversibility	High	Ensure that open trenches are demarcated as required by the Occupational Health and Safety Act.	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.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable	Start the rehabilitation of disturbed surfaces as soon as possible	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		
	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.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Probable		Probable
		Significance	Medium	Ensure that all contractors are aware of the consequences of non-compliance to the relevant legislation regarding the above-mentioned act as well as with regard to the environment (acts, regulations, and special guidelines).	Medium
		Reversibility	High		High
		Risk	Low		Medium

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)
	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.	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. Appoint a Traffic engineer to assess the traffic volumes and existing road network and determine whether upgrades are necessary	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	

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	No indigenous vegetation will be removed.	Duration	Long term	No mitigation measures required.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 3: (No-Go Option)					
Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
Cultural		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. No new employment opportunities will be created. No improvement to local skills development will take place. No broadened Tax base for the Mamusa Local Municipality.	Extent	Local	Ensure that the development is constructed and operated as planned.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	High		High
		Risk	Medium		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)						
ALTERNATIVE 1: Mixed land use township (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	149,5516 hectares of indigenous vegetation will be eradicated in order to establish the development.	Duration	Long term	Obtain the necessary environmental authorization for the development. Implement the 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 proposed development area is located within a CBA 1		Duration	Long term	Obtain the necessary environmental	Long term
			Extent	Local		Local

ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)

ALTERNATIVE 1: Mixed land use township (Preferred Alternative)

Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
	and the vegetation will be eradicated.	Magnitude (Intensity)	High	authorization for the development.	High
		Probability	Definite	Implement the findings of the Fauna and Flora Habitat survey.	Definite
		Significance	Medium		Medium
		Reversibility	Low		Low
		Risk	Low		Medium
	Un-rehabilitated, disturbed surfaces can lead to erosion and dust pollution.	Duration	Short term	Start the rehabilitation of disturbed surfaces as soon as possible.	Medium term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Medium
		Probability	Definite	Spray bare surfaces with water to prevent dust pollution.	Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Foreign plant species are likely to invade disturbed areas.	Duration	Short term	Start the extermination of any invasive species as soon as possible and maintain the eradication programme.	Medium term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Poorly planned ablation facilities for construction workers may cause pollution of surface and underground water.	Duration	Short term	Provide portable ablation facilities that will not cause pollution during the construction phase.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	The proposed project can impact on the soil and geology.	Duration	Long term	Implement the findings of the Geo-Technical Engineer.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Medium
		Probability	Definite	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.	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.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite

ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)					
ALTERNATIVE 1: Mixed land use township (Preferred Alternative)					
Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
		Significance	Medium	The rule must be to minimize the disturbance of animal life by keeping the footprint as small as possible.	Medium
		Reversibility	High		High
		Risk	Low		Medium
	A non-perennial river (with its riparian zone and buffer zone) are present at a part of the site.	Duration	Permanent	Construct the infrastructure in accordance with the designs and ensure the natural flow of the river is not disturbed in the long term.	Permanent
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Open trenches can be dangerous as they can either collapse on people or on equipment and people- especially small children, can fall into them.	Duration	Short term	Ensure that the trenches are dug according to specifications as prescribed by the Civil Engineer.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
		Duration	Short term	Ensure that the trenches stay open for as short a time as possible.	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	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.	Short term
		Extent	Local		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	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
		Risk	Low	Start the rehabilitation of disturbed surfaces as soon as possible	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.	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 rain and or handling errors). NO glass, plastic, metal, or paper shall be allowed to pollute the area.	Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Non-compliance to the relevant legislation may cause social and environmental problems.	Extent	Local	Ensure that contractors (construction phase) abide by all the requirements of the Occupational Health and Safety Act. Ensure that all contractors are aware of the consequences of non-compliance to the relevant legislation regarding the above-mentioned act as well as with regard to the	Local
		Magnitude (Intensity)	Medium		Medium
		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	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
				environment (acts, regulations, and special guidelines).	
	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 Mamusa Local Municipality. Sewage: The proposed development will add additional sewage into the existing sewage stream of the Mamusa Local Municipality. Water supply: The proposed development will add pressure to the water supply of Mamusa Local Municipality's Water.	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
	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 and findings of the Traffic Engineer for upgrading the accesses are implemented	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 (Construction 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	264 hectares of indigenous vegetation will be eradicated in order to establish the development.	Duration	Long term	Obtain the necessary environmental authorization for the development. Implement the 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 proposed development area is located within a CBA 1 and the vegetation will be eradicated.	Duration		Long term
	Extent		Local	Local	
	Magnitude (Intensity)		High	High	
	Probability		Definite	Definite	
	Significance		Medium	Medium	
	Reversibility		Low	Low	
	Risk		Low	Medium	
	Un-rehabilitated, disturbed surfaces can lead to erosion and dust pollution.		Duration	Short term	Start the rehabilitation of disturbed surfaces as soon as possible. Spray bare surfaces with water to prevent dust pollution.
		Extent	Local	Local	
		Magnitude (Intensity)	Low	Medium	
		Probability	Definite	Definite	
		Significance	Medium	Medium	
		Reversibility	High	High	
		Risk	Low	Medium	
		Foreign plant species are likely to invade disturbed areas.	Duration	Short term	
	Extent		Local	Local	
	Magnitude (Intensity)		Low	Low	
	Probability		Definite	Definite	
	Significance		Medium	Medium	
	Reversibility		High	High	
	Risk		Low	Medium	
Poorly planned abluion facilities for construction workers may cause pollution of surface and underground water.	Duration		Short term	Provide portable abluion facilities that will not cause pollution during the construction phase.	Short term
	Extent	Local	Local		
	Magnitude (Intensity)	Medium	Medium		
	Probability	Definite	Definite		
	Significance	Medium	Medium		
	Reversibility	High	High		

ENVIRONMENTAL IMPACT ASSESSMENT (Construction 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 proposed project can impact on the soil and geology.	Risk	Low		Medium
		Duration	Long term	The findings of the Geo-Technical Engineer must be adhered to.	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.
		Extent	Local	Local	
		Magnitude (Intensity)	Medium	Medium	
		Probability	Definite	Definite	
		Significance	Medium	Medium	
		Reversibility	High	High	
		Risk	Low	Medium	
		Open trenches can be dangerous as they can either collapse on people or on equipment and people-especially small children, can fall into them.	Duration	Short term	
	Extent		Local	Local	
	Magnitude (Intensity)		Medium	Medium	
	Probability		Definite	Definite	
	Significance		Medium	Medium	
	Reversibility		High	High	
Risk	Low		Medium		
				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.		
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.	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
	Magnitude (Intensity)		Low	Low	
	Probability		Probable	Probable	
	Significance		Medium	Medium	

ENVIRONMENTAL IMPACT ASSESSMENT (Construction 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)
		Reversibility	High	are standing for more than 24 hours.	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 rain and or handling errors). NO glass, plastic, metal, or paper shall be allowed to pollute the area.	Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Non-compliance to the relevant legislation may cause social and environmental problems.	Extent	Local	Ensure that contractors (construction phase) abide by all the requirements of the Occupational Health and Safety Act. Ensure that all contractors are aware of the consequences of non-compliance to the relevant legislation regarding the above-mentioned act as well as with regard to the environment (acts, regulations, and special guidelines).	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	New employment opportunities will be created. Local skills development will take place.	Extent	Local	No mitigation measures needed apart from the fact that contractors will have to ensure that they abide to the requirements of the Occupational Health and Safety Act and the Employment Equity Act.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Medium		Medium
		Risk	Low		Medium
Cumulative impacts:					
Geographical		Extent	Local		Local

ENVIRONMENTAL IMPACT ASSESSMENT (Construction 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)
Physical Social Economic	Enhancement of the social well-being of the local communities for which the development is intended	Magnitude (Intensity)	Medium	Ensure that the development is constructed as planned.	Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Medium		Medium
		Risk	Low		Medium
	<u>Solid waste:</u> The proposed development will add additional solid waste into the existing waste stream of the Mamusa Local Municipality. <u>Sewage:</u> The proposed development will add additional sewage into the existing sewage stream of the Mamusa Local Municipality. <u>Water supply:</u> The proposed development will add pressure to the water supply of Mamusa Local Municipality's Water.	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		
	<u>Traffic:</u> 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 Ensure findings of the Traffic Engineer for upgrading the accesses are implemented	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			

ENVIRONMENTAL IMPACT ASSESSMENT (Construction 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 impact on the 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

ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)					
ALTERNATIVE 3: (No-Go Option)					
Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
		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. No new employment opportunities will be created. No improvement to local skills development will take place. No broadened Tax base for the Mamusa Local Municipality.	Extent	Local	Ensure that the development is constructed and operated as planned.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	High		High
		Risk	Medium		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (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		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)
Physical Social Economic Cultural	Enhancement of the social well-being of the local communities for which the development is intended	Magnitude (Intensity)	Medium	No mitigation measures required.	Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	High		High
		Risk	Medium		Medium
Geographical Physical Social Economic Cultural	Broadened tax base: The proposed development will generate more income for the Mamusa 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

10. PUBLIC PARTICIPATION.

10.1 ADVERTISEMENT AND NOTICE

Publication name	Stellalander	
Date published	07/07/2021	
Site notice 1 position Site notice 2 position Site Notice 3 Postion	Latitude	Longitude
	27°10'51.15"S	25°19'0.76"E
	27°10'16.22"S	25°17'38.59"E
	27°10'38.64"S	25°19'14.58"E
Date placed	07/07/2021	

PROOF OF SITE NOTICE AFFIXED IN LINE WITH COVID-19 PROTOCOL: PROTECTIVE GEAR AND SANITIZATION IN PLACE: (SEE BELOW)













PAGE 8		STELLALANDER		7 JULY 2021	
<h1>Geklassifiseerde Advertensies Classified Smalls</h1> <p>Tel: (053) 927 1043 - 6216 - 3747 - 3907 Faks: (053) 927 1044</p> <p>Posbus/P.O. Box 443, VRYBURG 8600</p>					
<p>ADVERTENSIES Advertensies word daarop gelyk op 'n goeie voorbeeldige manier word 27 sentes staande advertensies wat na 17:00 op Maandag per e-pos ontvang word.</p> <p>ADVERTENSIES Advertensies are advised that we do not accept responsibility for ill-placed classified advertisements which reach us after 17:00 on Mondays.</p>					
<p>5 HUISE TE HUUR HOUSES TO LET</p> <p>HOUSE 3 bedrooms, 2 bathrooms, built-in cupboards, air-conditioner. From August 1 September. Rent R5 300 a.m. exclusive. Mny. services. 172 Stella Street, Vryburg. Cell: 072 199 9316. Website 777</p>		<p>17 VOERTUIE TE KOOP VEHICLES FOR SALE</p> <p>ONS koop & verkoop. Ons koop enige motors, bakkies, suik, bakkies of wagners aan 'n lood van nie-gevoerde toestand. Skakel of whatsapp: Johann 072 412 9107. Website 777</p>		<p>23 SPESIALE DIENSTE SPECIAL SERVICES</p> <p>BEST wedding photography & videography services. Contact us on 081 370 1114 or vichothusa@gmail.com. Website 777</p>	
<p>6 WOONSTELLE TE HUUR FLATS TO LET</p> <p>2 SLK woonstel te huur. Water ingesluit. siel krag koop. R2000 p.m. Burnside plot 36. Beskikbaar van 1 Julie 2021. Kontak: 082 885 8578. Website 777</p>		<p>23 SPESIALE DIENSTE SPECIAL SERVICES</p> <p>VIBALEK: tel 053-927 0474, Noydenweg 24, Vryburg. Jannie of Pita. Handel en diens vir yakkies, wasmasjiene, stoves, gasers, blygeregorsers, LF Gas installasies en verligting. 11160 711 ACT TO MEGA Pools and Laps. 6 x 3 Pool and 6 x 4 Laps @ R80 000, 7 x 4 Pool and 7 x 4 Laps @ R85 000, 8 x 4 Pool and 8 x 4 Laps @ R120 000. Contact Joe 070 829 8862. Website 777</p>		<p>24 VAKANSIE-ORDE HOLIDAY RESORTS</p> <p>HARTENROS: Seiforg Vakansieoordel Steep 1 tot 6. Tel: 084-095 0249 / 082 641 4096. Website 777</p>	
<p>DISTRIBUTION AREA Vryburg, Amalia, Blesbuis, Bray, Christians, Beleyville, Hartswaar, Hertogsville, Hoopstad, Pottard, Jan Kempdorp, Kersel, Kuhn, Kurman, Levensgepad, Louisa, Paggings, Pakske, Rigel, Sakhisad, Grandd, Nat Flats, Nanda, Switzer-Kenke, Stella, Toong, Tesse, Vaback, Van Zyl, Warriston, Wolmarstad.</p>		<p>15 ALGEMEENE KOOP MISCELLANEOUS FOR SALE</p> <p>BUY Durban Masala, Spice & Seasonal Flies from F&B. Contact 069 362 0365 for free delivery. Website 777</p>		<p>Don't get left behind! Keep up with</p>	
<p>VOORWAARDE VIR AANVAARDING: Die Stellalander behou die reg om enige advertensies wat nie na 17:00 op Maandag per e-pos ontvang word nie te publiseer. Die Stellalander aanvaar geen aanspreeklikheid vir enige advertensies wat na 17:00 op Maandag per e-pos ontvang word nie te publiseer.</p>		<p>NOTICE ENVIRONMENTAL IMPACT ASSESSMENT PRECISE (EIA AND SCOPING) HEAD REC NO: NW/01/2020/2021. Notice is hereby given of an Environmental Impact Assessment Process to be conducted. This process will be undertaken in terms of Section 24(1)(a) and 24(1)(b) under section 24(1) of the National Environmental Management Act (Act No. 107 of 1998) (Amended Regulations promulgated on 07 April 2017). The proposed project is classified as, and will be conducted in terms of Government Notice No. R 326 of 2017 (Government Notice No. R 326 Listing Notice 2: Activity no 16) (Government Notice No. R 327 Listing Notice 1: Activity no 28(1)) and (Government Notice No. R 328 Listing Notice 3: Activity no 12(1)(iv)). This advertisement complies with the instructions regarding such notices, National Environmental Management Act (Act No. 107 of 1998), as amended (Amended Regulations promulgated on 17 April 2017) (Government Notice No. R 326 of 2017) (Regulation 11(2)(c)(2)). The competent authority is the North West Province, Department of Economic Development, Environment, Conservation and Tourism. The Responsible officer is Mr. N. Mokotji. Tel: (018) 288 5888 or nre@nw.gov.za. PROJECT NAME: Environmental Impact Assessment for the proposed clearance of 274,2189 ha of indigenous vegetation, located within a critical biodiversity area (CBA 1) and within 100 meters from a non-potential stream, in order to establish a township, located on a portion of the farm Swartkops Farm 261 (F&B) known as Paggings Farm, Section 12, Mankwa Local Municipality, North West Province. PROJECT DESCRIPTION: The proposed clearance of 274,2189 ha of indigenous vegetation in order to establish a township consisting of mixed uses including residential, business, institutional, public open spaces, transport and municipal uses, within 100 meters from a non-potential stream. CLIENT: Mankwa Local Municipality. CONSULTANT AND CONTACT PERSON: Mr. J.P. De Villiers of AB Enviro Consult, 7 Louis Leipoldt Street, Potchefstroom, 2521 Tel: 083 648 6105 Fax: 018 293 0671. E-mail: j.p.deville@abenviro.co.za Parties wishing to formally object to and/or comment on the proposed development are requested to forward their objections and comments (with reasons) to AB Enviro Consult, no later than 30 days after the date of this advertisement. An electronic copy of the draft Scoping Report is also available from AB Enviro Consult on request. Date of this Notice: 7 July 2021. Website 777</p>			

K3 111

NOTICE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS (EIR AND SCOPING) READ REF NO: NWP/EIA/28/2021. Notice is hereby given of an Environmental Impact Assessment Process to be conducted. This process will be undertaken in terms of Section 24(M) and 44 made under section 24(5) of the National Environmental Management Act (Act No. 107 of 1998) (Amended Regulations promulgated on 07 April 2017). The proposed project is classified as, and will be conducted - in terms of Government Notice No. R.326 of 2017; (Government Notice No. R.325 Listing Notice 2: Activity no 15) (Government Notice No. R.327 Listing Notice 1; Activity no 28(l)) and (Government Notice No. R.324 Listing Notice 3; Activity no's 12(h)(iv)). This advertisement complies with the instructions regarding such notices, National Environmental Management Act (Act No. 107 of 1998, as amended) (Amended Regulations promulgated on 17 April 2017) (Government Notice No. R.326 of 2017) (Regulation 41(2)(c)(d)). The competent authority is the North West Province: Department of Economic Development, Environment, Conservation and Tourism. The Responsible officer is Ms. N. Mokotedi: Tel: (018) 389 5959 or nmokotedi@nwpg.gov.za **PROJECT NAME:** Environmental Impact Assessment for the proposed clearance of 274,2189 ha of indigenous vegetation, located within a critical biodiversity area (CBA 1) and within 100 meters from a non-perennial stream, in order to establish a Township, located on a portion of the farm Schweizer Reneke Townlands 62 HO known as Ipelegeng Extension 12, Mamusa Local Municipality, North West Province. **PROJECT DESCRIPTION:** The proposed clearance of 274,2189 ha of indigenous vegetation in order to establish a township consisting of mixed uses including residential, business, institutional, public open spaces, transport and municipal uses, within 100 meters from a non-perennial stream. **CLIENT:** Mamusa Local Municipality. **CONSULTANT AND CONTACT PERSON:** Mr. J.P. De Villiers of AB Enviro Consult cc. 7 Louis Leipoldt Street, Potchefstroom, 2531 Tel: 083 548 8105 Fax: 018 293 0671. E-mail: jp@abenviro.co.za Parties wishing to formally object to and / or comment on the proposed development are requested to forward their objections and comments (with reasons) to AB Enviro Consult, no later than 30 days after the date of this advertisement. An electronic copy of the draft Scoping Report is also available from AB Enviro Consult on request. Date of this Notice: 7 July 2021.

K3 111

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

PROOF OF COVID-19 APPROVED PUBLIC PARTICIPATION PROTOCOLS AS WELL AS PROOF OF LETTER DROP:







AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

7 Louis Leipoldt Street,
Potchefstroom, 2531
Tel: + 27 83 5488 106
Fax: + 27 (18) 293 0671
E-mail: jp@abenviro.co.za

07/07/2021

SCHWEIZER REINECKE UITHOURIT

Dear Sir/Madam

Environmental Impact Assessment for the proposed clearance of 149,5516 ha of indigenous vegetation, located within a critical biodiversity area (CBA 1) and within 100 meters from a non-perennial stream, in order to establish a Township, located on a portion of the farm Schweizer Reneke Townlands 62 HO known as Ipelegeng Extension 12, Mamusa Local Municipality, North West Province.

AB ENVIRO CONSULT was appointed by Mamusa Local Municipality to submit an application to the Department of Economic Development, Environment, Conservation and Tourism, North West Province for the above mentioned development.

Attached please find a notification of the development as well as an electronic copy of the draft Scoping report for your comments. We must receive your comments within a period of 30 days from the date of this letter. In the event of your organisation/department not wishing to comment on this matter, it would be appreciated if we could receive written confirmation thereof to enable us to continue with the finalisation of the application.

If no response is however received from your Department/organisation within the said time, it will be assumed that your department/organisation does not wish to comment on this matter and the application will be processed further.

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

Yours sincerely,

PROF. A.B. DE VILLIERS

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



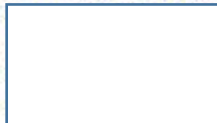
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Potchefstroom, 2531
Tel: + 27 83 5488 105
Fax: + 27 (18) 293 0671
E-mail: jp@abenviro.co.za

07/07/2021

Schweizer Reneke landbou unie



Dear Sir/Madam

Environmental Impact Assessment for the proposed clearance of 149,5516 ha of indigenous vegetation, located within a critical biodiversity area (CBA 1) and within 100 meters from a non-perennial stream, in order to establish a Township, located on a portion of the farm Schweizer Reneke Townlands 62 HO known as Ipelegeng Extension 12, Mamusa Local Municipality, North West Province.

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PROF. A.B. DE VILLIERS

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

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					
Head of Department: North-West Department of Agriculture and Rural Development					
North West Department of Biodiversity					
Dr. Ruth Segomotsi Mompoti District Municipality					
Mamusa Local Municipality					
Ward 9, Mamusa					
Eskom					
Transnet					

SAHRA				info@sahra.org.za
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List of REGISTERED LETTERS
Lys van GEREgistreerde BRIEWE
(with an insurance option/met 'n versekeringsopsie)


Full tracking and tracing/Volledige volg en spoor

Name and address of sender: **AB ENVIRO CONSULT**
 Naam en adres van afsender: **7 LOUIS LEIPOLDT STREET**
POTCHEFSTROOM
2531


Post Office

Enquiries/Navrae Sharecall number/nommer **0860 111 502**
 www.postoffice.co.za

No	Name and address of addressee Naam en adres van geadreseerde	Insured amount Versekerde bedrag	Insurance fee Versekeringsgeld	Postage Posgeld	Service fee Diensgeld	Affix Track and Trace customer copy Plak Volg-en-Spoor-Kliefantekrif REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.postoffice.co.za RC458540963ZA CUSTOMER COPY 301028R
						REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.postoffice.co.za RC458540963ZA CUSTOMER COPY 301028R
						REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.postoffice.co.za RC458540965ZA CUSTOMER COPY 301028R
						REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.postoffice.co.za RC458540977ZA CUSTOMER COPY 301028R
						REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.postoffice.co.za RC458541055ZA CUSTOMER COPY 301028R
						REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.postoffice.co.za RC458540994ZA CUSTOMER COPY 301028R
						REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.postoffice.co.za RC458541028ZA CUSTOMER COPY 301028R
10						
Number of letters posted Getal briewe gepos		Total Totaal	R	R	R	R

Signature of client
Handtekening van kliënt..... 

Signature of accepting officer
Handtekening van aanneembeampte.....

Date stamp 

The value of the contents of these letters is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof.
 Optional insurance of up to R200.00 is available and applies to domestic registered letters only.



AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

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Potchefstroom, 2531
Tel: + 27 83 5488 105
Fax: + 27 (18) 293 0671
E-mail: jp@abenviro.co.za

07/07/2021

[Redacted]

Head of Department: North-West Department of Agriculture and Rural Development

[Redacted]

Dear Sir/Madam

Environmental Impact Assessment for the proposed clearance of 149.5516 ha of indigenous vegetation, located within a critical biodiversity area (CBA 1) and within 100 meters from a non-perennial stream, in order to establish a Township, located on a portion of the farm Schweizer Reneke Townlands 62 HO known as Ipelegeng Extension 12, Mamusa Local Municipality, North West Province.

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Yours sincerely,

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



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Potchefstroom, 2531
Tel: + 27 83 5488 105
Fax: + 27 (18) 293 0671
E-mail: jpi@abenviro.co.za

07/07/2021

Directorate: Biodiversity Management and Conservation
North West Department: Rural, Environment and Agricultural Development



Dear Sir/Madam

Environmental Impact Assessment for the proposed clearance of 149,5516 ha of indigenous vegetation, located within a critical biodiversity area (CBA 1) and within 100 meters from a non-perennial stream, in order to establish a Township, located on a portion of the farm Schweizer Reneke Townlands 62 HO known as Ipelegeng Extension 12, Mamusa Local Municipality, North West Province.

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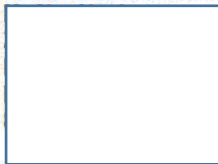
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Reg no. 2000/016653/23

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

07/07/2021

Department of Water and Sanitation
Regional Chief Director: Northern Cape



Tel: (053) 830 8800/6 7600

Dear Sir/Madam

Environmental Impact Assessment for the proposed clearance of 149,5516 ha of indigenous vegetation, located within a critical biodiversity area (CBA 1) and within 100 meters from a non-perennial stream, in order to establish a Township, located on a portion of the farm Schweizer Reneke Townlands 62 HO known as Ipelegeng Extension 12, Mamusa Local Municipality, North West Province.

AB ENVIRO CONSULT was appointed by Mamusa Local Municipality to submit an application to the Department of Economic Development, Environment, Conservation and Tourism, North West Province for the above mentioned development.

Attached please find a notification of the development as well as an electronic copy of the draft Scoping report for your comments. We must receive your comments within a period of 30 days from the date of this letter. In the event of your organisation/department not wishing to comment on this matter, it would be appreciated if we could receive written confirmation thereof to enable us to continue with the finalisation of the application.

If no response is however received from your Department/organisation within the said time, it will be assumed that your department/organisation does not wish to comment on this matter and the application will be processed further.

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

Yours sincerely,

PROF. A.B. DE VILLIERS

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



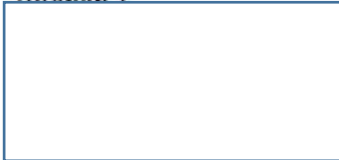
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07/07/2021

TRANSNET



Dear Sir/Madam

Environmental Impact Assessment for the proposed clearance of 149,5516 ha of indigenous vegetation, located within a critical biodiversity area (CBA 1) and within 100 meters from a non-perennial stream, in order to establish a Township, located on a portion of the farm Schweizer Reneke Townlands 62 HO known as Ipelegeng Extension 12, Mamusa Local Municipality, North West Province.

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07/07/2021

The District Municipal Manager
Dr. Ruth Segomotsi Mompati District Municipality



Dear Sir/Madam

Environmental Impact Assessment for the proposed clearance of 149,5516 ha of indigenous vegetation, located within a critical biodiversity area (CBA 1) and within 100 meters from a non-perennial stream, in order to establish a Township, located on a portion of the farm Schweizer Reneke Townlands 62 HO known as Ipelegeng Extension 12, Mamusa Local Municipality, North West Province.

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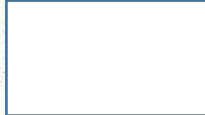
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07/07/2021

The Municipal Manager
Mamusa Local Municipality



Dear Sir/Madam

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07/07/2021

Eskom

Dear Sir/Madam

Environmental Impact Assessment for the proposed clearance of 149,5516 ha of indigenous vegetation located within a critical biodiversity area (CBA 1) and within 100 meters from a non-perennial stream, in order to establish a Township, located on a portion of the farm Schweizer Reneke Townlands 62 HO known as Ipelegeng Extension 12, Mamusa Local Municipality, North West Province.

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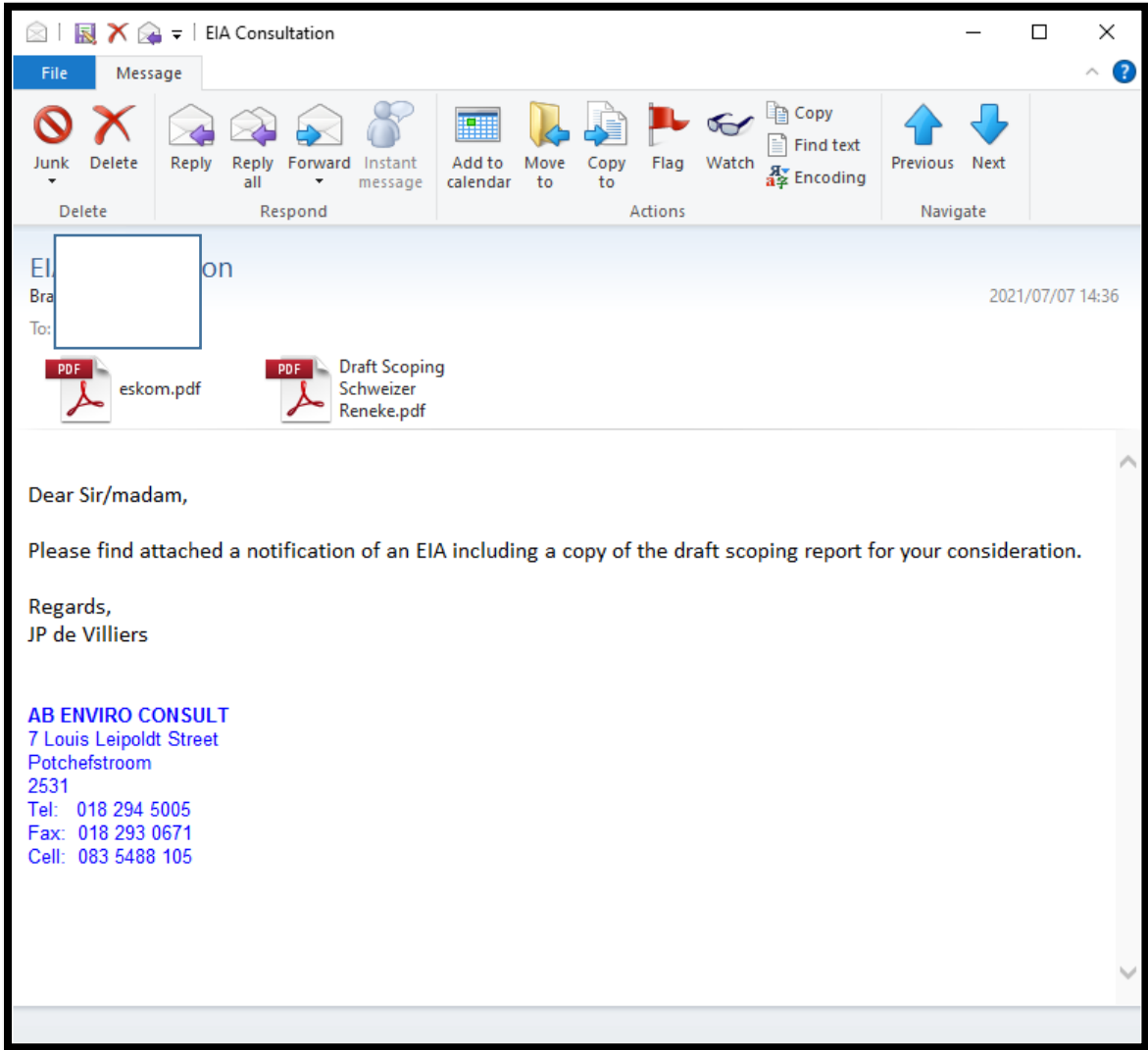
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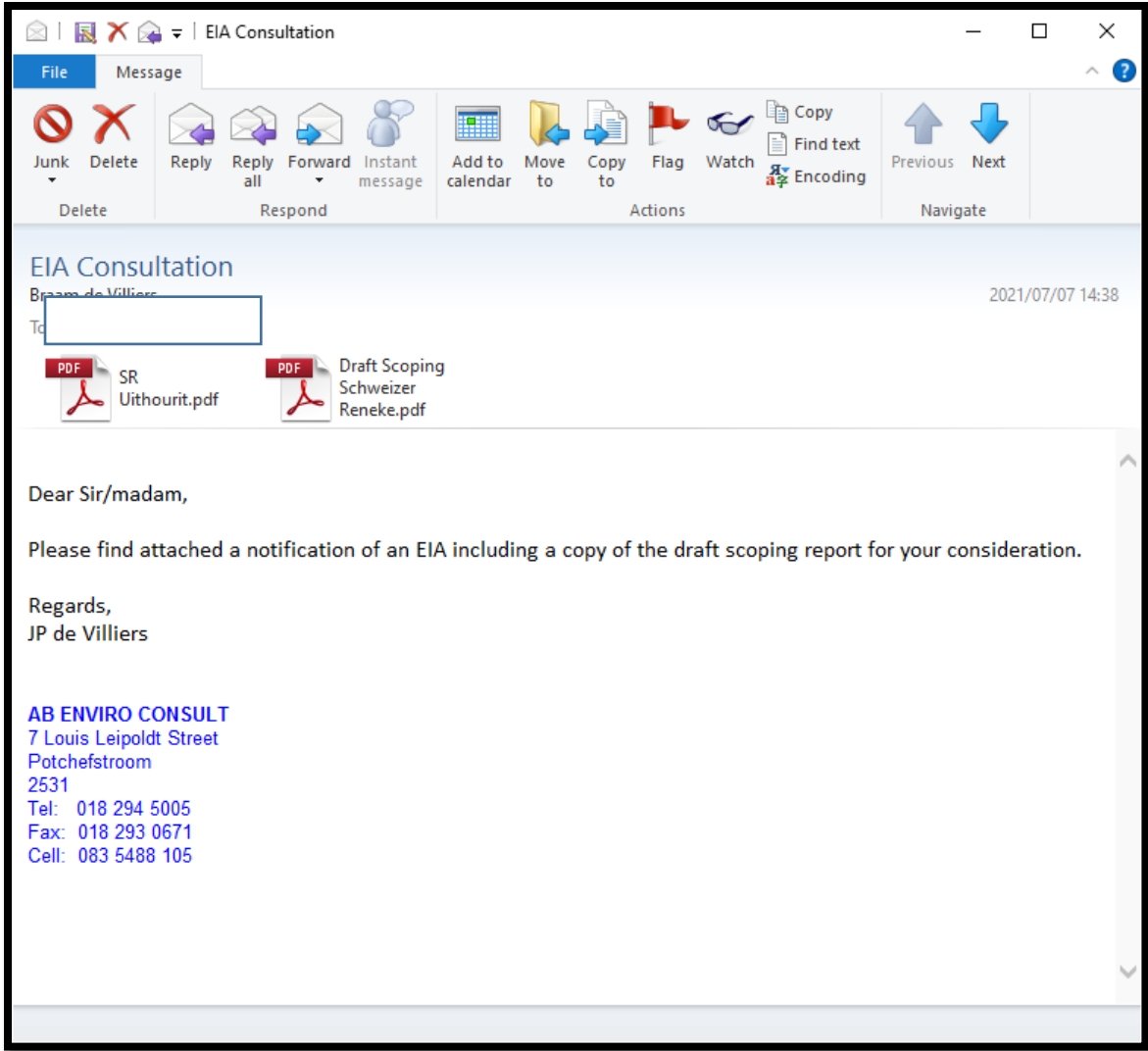
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10.4 ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Summary of response from EAP
<p>[redacted] has been leasing the land for the past 25 from the Municipality to graze his cattle. He currently have 160 head of cattle grazing the land. He stated that has not been informed by the Municipality that they intend to use the area for development</p>	<p>The Eap responded that the purpose of the Public Participation Process is to obtain the inputs from the community. His concern is noted and the EAP advised him to lease with the Municipality in this regard. It also seemed that his lease is on a year-to-year basis and the EAP informed [redacted] that it is not envisaged that construction will start within the next year.</p>
<p>[redacted] enquired as to the standard of housing and the availability of electricity and water as the network is already overloaded</p>	<p>A copy of the services report was sent to Mr. [redacted] consideration and the EAP noted that a condition is proposed as part of the EMP that occupation should not be permitted should the services as planned not be available.</p>
<p>Objects to the proposed township establishment</p> <p>Was a resident of Vancouver Canada and states that the catchment area of the municipal water was out of bounds to all persons including hikers and outdoor enthusiasts due to the possible contamination of the essential resource, which is supported by 2 local world renowned universities</p> <p>As such it boggles the mind as to the development being proposed to either sides of the important sources of the Wentzeldam – the water source, including drinking water of the greater Schweizer Reneke community.</p> <p>The fact that the proposed development proposes a large proportion of low cost housing with associated risks of a variety of contamination including human and animal waste, especially in light of the mismanagement of the municipalities in the province.</p>	<p>Noted</p> <p>EAP outlined the National Water Act's definition of a watercourse / wetland and regulated area of a watercourse. Proposed development will not be within the 1:100 year flood line or within the area which has been delineated by the wetland specialist.</p> <p>The proposed development will be located on the southern side of the stream which feeds into the Wentzeldam and no development will take place within the 1:100 year flood line. and the riparian zone as delineated by a Wetland Specialist.</p> <p>Municipal Solid Waste (MSW) removal is a function of the Waste & Environmental Management Division of the MLM. According to the SDF: "a black bag system is used and a special refuse truck. Large containers are also used in the industrial and business areas" to facilitate MSW removal</p> <p>he Proposed Development slopes towards the north and the existing sewer network in</p>

<p>Clean drinking water is a fundamental human right and objects as a result to the proposed development.</p>	<p>Ipelegeng towards the south, it is confirmed that the Dr Ruth S Mompoti District Municipality as the Water Services Authority has appointed a Professional Service Provider to improve the bulk sewer infrastructure in Ipelegeng. It is reported that this design will significantly improve sewer handling infrastructure while not only alleviating pressure on the current pump stations but also endeavouring to eliminate pump stations. Sourcing of funding is currently underway for the implementation of the project.</p> <p>In terms of managing the risk of sewer overflows as part of the Proposed Development, the pump station will be designed taking into account the concerns raised and incorporating risk mitigation measures which may include, but is not limited to, the incorporation of lined sewer overflow retention ponds and backup generators</p> <p>Noted emphasized that NEMA does make provision for fines and or imprisonment should there be a contravention of conditions to any EA granted</p>
<p>Raw Sewer in Wentzeldam Rainfall will drain all rubbish laying around the main potable water source. Over 20 years Mamusa has experienced continuous raw sewer overflows into the Hartz river downstream from Wentzeldam (main potable water resource). Mamusa LM cannot address the sewer situation conclusively. Electricity supply problems (LM in arrears, outages and loadshedding) lead to raw sewer spillages. How will MLM and DRSM manage to solve existing sewer problems as well as the proposed development's additional load? Risk of sewer pollution to the Wentzel dam and Harts river by the proposal within the catchment area is a risk to all citizens of Mamusa dependent on the provision of bulk water and natural resources along the Harts River and Taung dam.</p>	<p>Municipal Solid Waste (MSW) removal is a function of the Waste & Environmental Management Division of the MLM. According to the SDF: <i>"a black bag system is used and a special refuse truck. Large containers are also used in the industrial and business areas"</i> to facilitate MSW removal.</p> <p>The concern regarding the current state of sewer pump station maintenance and operation in Ipelegeng/ Schweizer-Reneke is noted. Apart from the fact that the Proposed Development slopes towards the north and the existing sewer network in Ipelegeng towards the south, it is confirmed that the Dr Ruth S Mompoti District Municipality as the Water Services Authority has appointed a Professional Service Provider to improve the bulk sewer infrastructure in Ipelegeng. It is reported that this design will significantly improve sewer handling infrastructure while not</p>

<p>Landfill Site: Although licenced it is not managed in accordance to the licence conditions. Access is littered and not negotiable, people living in the parameter of the site and the fence is vandalised. Waste is burnt and causing air pollution. MLM is not adhering to licence conditions currently and will not be able to with an additional 1600 houses around the landfill site. MLM and DRSM is in disagreement as to whom is responsible for managing and funding the operations at the landfill site.</p> <p>Emerging farmers. Townlands are approx. 2500ha, all high yield grazing land. The land is rented out for the last 10 years to 24 emerging cattle farmers each allocated a portion of land to farm generating income for the farmer and LM. It was planned that the land be irrigated to plant Lucerne and other fodder to increase carrying capacity of the pastures to benefit emerging farmers. They</p>	<p>only alleviating pressure on the current pump stations but also endeavouring to eliminate pump stations. Sourcing of funding is currently underway for the implementation of the project.</p> <p>In terms of managing the risk of sewer overflows as part of the Proposed Development, the pump station will be designed taking into account the concerns raised and incorporating risk mitigation measures which may include, but is not limited to, the incorporation of lined sewer overflow retention ponds and backup generators. The appointment of an external service provider to operate and maintain sewer infrastructure in Ipelegeng/ Schweizer-Reneke may also be explored.</p> <p>Although the landfill site falls within the Township Application (And the area is included in the Layout Plan and a Municipal Erf), and operates as a G:S:B - municipal landfill site, the operation and maintenance of the landfill site does not form part of this application. According to the permit conditions the Schweizer-Reneke landfill site requires a 500 m buffer zone and this Condition has been incorporated into the Layout Plan.</p> <p>The fact that <i>“Townlands are approximately 2 500 hectares, all high yield grazing land”</i>, is noted. The Environmental Assessment Practitioner (EAP) disagrees with the statement that <i>“...subsequently will not have any grazing left for their cattle.”</i></p> <p>This Application only deals with the clearance of 149,5516 ha of indigenous vegetation and according to information provided by yourself, there should be 2 350,4484 hectares of grazing land left for emerging farmers. The loss of the 149,5516 ha of grazing land comes with the gain of providing 2 512 residential units, providing at least 7 536 persons (At 3 persons per dwelling) the opportunity of having a roof</p>
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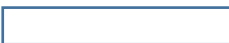
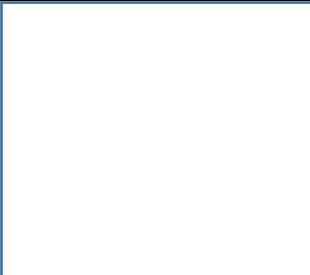
<p>will likely have to sell their cattle and loose grazing pastures.</p> <p>Impact on Fauna and Flora. Habitat for various fauna and flora including Acacia Erioloba which is regulated by the National Forest Act and various birds, reptiles and mammals will be negatively affected</p>	<p>over their heads and access to schools, churches, shops, sport fields, crèches and transport.</p> <p>Fauna and Flora Habitat surveys by R.F. Terblanche during October 2020 and December 2020 were conducted to note key elements of habitats on the site, relevant to the conservation of fauna and flora. The main purpose of the site visits was ultimately to serve as a habitat survey that concentrated on the possible presence (or not) of threatened species and other species of high conservation priority. No Threatened or Near Threatened plant or animal species appear to be resident at the site. Vegetation at most of the site is visibly degraded and cover of vegetation in many areas is conspicuously poor. Some areas have been cleared, exposing soil. A conspicuous high frequency of alien invasive weeds occurs at disturbed areas, in particular at hitherto cleared places.</p> <p>There is little scope for most of the site to be part of a corridor of particular conservation importance, excluding the watercourse (with its buffer zone) and the low rocky ridges. Non-perennial river at the northern part of the site, as well as the low rocky ridges at the north-eastern parts of the site are corridors of particular conservation concern. These factors were taken into consideration with the development of the Layout Plan.</p> <p>One plant species, <i>Vachellia erioloba</i> (Camel Thorn) that is not threatened but listed as Protected tree species occurs at the site. In terms of a part of section 15(1) of the National Forests Act No. 84 of 1998, no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a license granted by the Minister. <i>Vachellia erioloba</i> is numerous at some areas at the site. A Camel Thorn Tree Forest or large</p>
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<p>Impact on transport Protest demonstrations are taking place and have a crippling effect on transport, there is no alternative road through SR where the traffic can be redirected.</p> <p>Alternative land to develop. There is alternative land to develop available at a price below selling price next to extension 5 Ipelegeng and consists mainly of flat lying ground with a small gradient towards the sewer treatment plant which will mitigate sewer pumping and risks involved. Recommends more suitable land be identified.</p>	<p>Camel Thorn trees (>10 m) such as at Kathu and Witsand in the Northern Cape Province, are absent at the site. If the development is approved it is likely that some Camel Thorn trees (<i>Vachellia erioloba</i>) should be removed, in which case a permit for removal would be imperative, and should be applied for.</p> <p>Protest demonstrations are taking place, normally against bad service delivery. It is the aim of this development to provide services in the form of serviced houses. It can thus be anticipated that the proposed development will lessen the need for protesting</p> <p>Outlines SPLUMA principles specifically spatial justice and sustainability. It is therefore essential to locate new residential developments in areas that will combat urban sprawl and result in a more compact urban form. The properties proposed by third parties for acquisition and possible development will however contribute towards urban sprawl and will not lead to a more compact urban form. the locality of the properties proposed as alternative development area, cognisance should be taken of the fact two (2) of the subject properties i.e. Portions 22 and 23 of the farm Palachoema 64, Registration Division H.O., North West Province are located outside the demarcated Urban Edge as defined in terms of the Mamusa Spatial Development Framework. This urban edge is specifically defined to delineate the maximum extent of urban expansion to limit urban sprawl and contribute towards a more compact urban form. Only a small portion of Portion 30 of the farm Palachoema 64, Registration Division H.O., North West Province is located inside the demarcated Urban Edge and the included portion was designated as part of the open space system that is not deemed suitable for residential development purposes. relevant to note that all three alternative properties proposed for development purposes are located on land classified as High Potential</p>
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	<p>Agricultural Land by the Department of Agriculture, Rural Development and Land Reform. All developments on agricultural land are subject to the consent from the Department of Agriculture, Land Reform and Rural Development in terms of Act 70 of 1970 and the probability of this prime agricultural land being released for residential development purposes is regarded as highly unlikely. Taking cognisance of the provisions of the development principles as described above it can be concluded that the utilization of the fore-mentioned properties for residential purposes is unfortunately regarded as a non-viable option.</p>
<p>Horse Riding Club has been operating as a safe and secure area since 2003, providing an important source of income and recognition to the town. The area is well maintained by the club and provide for fun for members and those taking part.</p> <p>The development will jeopardize the future of the club as the area will no longer be suitable for the purposes for which is currently used due to the riding trails and routes will no longer exist or be of use.</p> <p>The pollution and toxic waste which will be caused by the proposed township will be harmful to the horses and other animals as well as to humans who are currently using this area for the purpose of getting out in the open air and enjoying the unspoiled nature and healthy environment.</p>	<p>Noted</p> <p>It is agreed that the proposed development will have a direct impact on the trails that are currently being used by the Club. It will be necessary to reroute these trails, should authorization be granted and the development be constructed. The Proposed Layout Plan below may assist you in determining new/alternative routes. You will note that the big Erf zoned "Municipal" will not form part of the development, as it constitutes a 500 meter buffer around the Landfill Site. This area, as well as the areas below the 1:100 year flood line, located adjacent the stream will remain undeveloped. (Copy of layout plan included in response)</p> <p>The proposed development will be predominantly for a residential development. No "toxic" waste will be produced. Municipal Solid Waste (MSW) removal is a function of the Waste & Environmental Management Division of the MLM.</p>

<p>In short, we hereby strongly object against the proposed development as it will mean the end of our Club which we think is a very useful asset to the town of Schweizer Reneke and adds value in several aspects.</p> <p>We have been advised that there are several other areas, which would be much more suitable for the proposed development, and which can be used without having a severe impact on the community and our Club.</p>	<p>Your concern is noted. As stated above, if some of the trails are rerouted, it may well be that the club will continue to be an asset to the town.</p> <p>Outlines SPLUMA principles specifically spatial justice and sustainability. It is therefore essential to locate new residential developments in areas that will combat urban sprawl and result in a more compact urban form. The properties proposed by third parties for acquisition and possible development will however contribute towards urban sprawl and will not lead to a more compact urban form.</p>
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10.5 COMMENTS AND RESPONSE REPORT

I&AP	Objection/Comment	EAP Response
	<p>Has been leasing the land for the past 25 from the Municipality to graze his cattle. He currently have 160 head of cattle grazing the land. He stated that has not been informed by the Municipality that they intend to use the area for development</p>	<p>The Eap responded that the purpose of the Public Participation Process is to obtain the inputs from the community. His concern is noted and the EAP advised him to lease with the Municipality in this regard. It also seemed that his lease is on a year-to-year basis and the EAP informed Mr.  it is not envisaged that construction will start within the next year.</p>
	<p>Requested information in relation to the proposed development</p>	<p>EAP sent a copy of the layout plan as well as the draft Scoping report</p> <p>Layout plan indicates 600m² stands for higher income housing which will be sold, 450m² stands for medium to higher income housing which will be sold and 360m² stands</p>

	<p>Enquired as to the expiry date for objections</p> <p>Enquired as to the standard of housing and the availability of electricity and water as the network is already overloaded</p>	<p>which is earmarked for RDP housing. The large municipal stand is the solid waste site with a 500m buffer</p> <p>Confirmed the expiry date for objections is 7th August 2021</p> <p>A copy of the services report was sent to Mr. Kilian for consideration and the EAP noted that a condition is proposed as part of the EMP that occupation should not be permitted should the services as planned not be available.</p>
	<p>Requested to be registered as I&AP</p> <p>Enquired whether he may share the information on Whatsapp with groups and other councillors</p>	<p>Confirmed registering Mr [redacted] and sent Draft Scoping and copy of layout plan for consideration</p> <p>Confirmed that the information is in the public domain and that he may share as he sees fit.</p>
	<p>Served as Cllr for Mamusa LM 1999-2018 and currently Cllr for DR RS Mompoti DM and therefore aware of the challenges, problems and capacity of the Mamusa LM. Not against development of residential areas, however the proposed development makes me uncomfortable for various reasons namely:</p> <p>Raw Sewer in Wentzeldam</p>	<p>Municipal Solid Waste (MSW) removal is a function of the Waste & Environmental Management Division of the MLM. According to the SDF: <i>“a black bag system is used and a special refuse truck.</i></p>


	<p>(main potable water resource). Mamusa LM cannot address the sewer situation conclusively. Electricity supply problems (LM in arrears, outages and loadshedding) lead to raw sewer spillages. How will MLM and DRSM manage to solve existing sewer problems as well as the proposed development's additional load? Risk of sewer pollution to the Wentzel dam and Harts river by the proposal within the catchment area is a risk to all citizens of Mamusa dependent on the provision of bulk water and natural resources along the Harts River and Taung dam.</p>	<p><i>Large containers are also used in the industrial and business areas” to facilitate MSW removal.</i></p> <p>The concern regarding the current state of sewer pump station maintenance and operation in Ipelegeng/Schweizer-Reneke is noted. Apart from the fact that the Proposed Development slopes towards the north and the existing sewer network in Ipelegeng towards the south, it is confirmed that the Dr Ruth S Mompoti District Municipality as the Water Services Authority has appointed a Professional Service Provider to improve the bulk sewer infrastructure in Ipelegeng. It is reported that this design will significantly improve sewer handling infrastructure while not only alleviating pressure on the current pump stations but also endeavouring to eliminate pump stations. Sourcing of funding is currently underway for the implementation of the project.</p> <p>In terms of managing the risk of sewer overflows as part of the Proposed Development, the pump station will be designed taking into account the concerns raised and incorporating risk mitigation measures which may include, but is not limited to, the incorporation of lined sewer overflow retention ponds and backup</p>
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	<p>Landfill Site: Although licenced it is not managed in accordance to the licence conditions. Access is littered and not negotiable, people living in the parameter of the site and the fence is vandalised. Waste is burnt and causing air pollution. MLM is not adhering to licence conditions currently and will not be able to with an additional 1600 houses around the landfill site. MLM and DRSM is in disagreement as to whom is responsible for managing and funding the operations at the landfill site.</p> <p>Emerging farmers. Townlands are approx. 2500ha, all high yield grazing land. The land is rented out for the last 10 years to 24 emerging cattle farmers each allocated a portion of land to farm generating income for the farmer and LM. It was planned that the land be irrigated to plant Lucerne and other fodder to increase carrying capacity of the pastures to benefit emerging farmers. They will likely have to sell their cattle and loose grazing pastures.</p>	<p>generators. The appointment of an external service provider to operate and maintain sewer infrastructure in Ipelegeng/Schweizer-Reneke may also be explored.</p> <p>Although the landfill site falls within the Township Application (And the area is included in the Layout Plan and a Municipal Erf), and operates as a G:S:B - municipal landfill site, the operation and maintenance of the landfill site does not form part of this application. According to the permit conditions the Schweizer-Reneke landfill site requires a 500 m buffer zone and this Condition has been incorporated into the Layout Plan.</p> <p>The fact that "<i>Townlands are approximately 2 500 hectares, all high yield grazing land</i>", is noted. The Environmental Assessment Practitioner (EAP) disagrees with the statement that "<i>...subsequently will not have any grazing left for their cattle.</i>"</p> <p>This Application only deals with the clearance of 149,5516 ha of indigenous vegetation and according to information provided by yourself, there should be 2 350,4484 hectares of grazing land left for emerging farmers. The loss of the</p>
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	<p>Impact on Fauna and Flora. Habitat for various fauna and flora including Acacia Erioloba which is regulated by the National Forest Act and various birds, reptiles and mammals will be negatively affected</p>	<p>149,5516 ha of grazing land comes with the gain of providing 2 512 residential units, providing at least 7 536 persons (At 3 persons per dwelling) the opportunity of having a roof over their heads and access to schools, churches, shops, sport fields, crèches and transport.</p> <p>Fauna and Flora Habitat surveys by R.F. Terblanche during October 2020 and December 2020 were conducted to note key elements of habitats on the site, relevant to the conservation of fauna and flora. The main purpose of the site visits was ultimately to serve as a habitat survey that concentrated on the possible presence (or not) of threatened species and other species of high conservation priority. No Threatened or Near Threatened plant or animal species appear to be resident at the site. Vegetation at most of the site is visibly degraded and cover of vegetation in many areas is conspicuously poor. Some areas have been cleared, exposing soil. A conspicuous high frequency of alien invasive weeds occurs at disturbed areas, in particular at hitherto cleared places.</p> <p>There is little scope for most of the site to be part of a corridor of particular conservation importance, excluding the watercourse</p>
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		<p>(with its buffer zone) and the low rocky ridges. Non-perennial river at the northern part of the site, as well as the low rocky ridges at the north-eastern parts of the site are corridors of particular conservation concern. These factors were taken into consideration with the development of the Layout Plan.</p> <p>One plant species, <i>Vachellia erioloba</i> (Camel Thorn) that is not threatened but listed as Protected tree species occurs at the site. In terms of a part of section 15(1) of the National Forests Act No. 84 of 1998, no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a license granted by the Minister. <i>Vachellia erioloba</i> is numerous at some areas at the site. A Camel Thorn Tree Forest or large Camel Thorn trees (>10 m) such as at Kathu and Witsand in the Northern Cape Province, are absent at the site. If the development is approved it is likely that some Camel Thorn trees (<i>Vachellia erioloba</i>) should be removed, in which case a permit for removal would be imperative, and should be applied for.</p>
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	<p>Impact on transport Protest demonstrations are taking place and have a crippling effect on transport, there is no alternative road through SR where the traffic can be redirected.</p> <p>Alternative land to develop. There is alternative land to develop available at a price below selling price next to extension 5 Ipelegeng and consists mainly of flat lying ground with a small gradient towards the sewer treatment plant which will mitigate sewer pumping and risks involved. Recommends more suitable land be identified.</p>	<p>Protest demonstrations are taking place, normally against bad service delivery. It is the aim of this development to provide services in the form of serviced houses. It can thus be anticipated that the proposed development will lessen the need for protesting</p> <p>Outlines SPLUMA principles specifically spatial justice and sustainability. It is therefore essential to locate new residential developments in areas that will combat urban sprawl and result in a more compact urban form. The properties proposed by third parties for acquisition and possible development will however contribute towards urban sprawl and will not lead to a more compact urban form. the locality of the properties proposed as alternative development area, cognisance should be taken of the fact two (2) of the subject properties i.e. Portions 22 and 23 of the farm Palachoema 64, Registration Division H.O., North West Province are located outside the demarcated Urban Edge as defined in terms of the Mamusa Spatial Development Framework. This urban edge is specifically defined to delineate the maximum extent of urban expansion to limit urban sprawl and contribute towards a more compact urban form. Only a small portion of Portion 30 of the farm Palachoema</p>
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		<p>64, Registration Division H.O., North West Province is located inside the demarcated Urban Edge and the included portion was designated as part of the open space system that is not deemed suitable for residential development purposes. relevant to note that all three alternative properties proposed for development purposes are located on land classified as High Potential Agricultural Land by the Department of Agriculture, Rural Development and Land Reform. All developments on agricultural land are subject to the consent from the Department of Agriculture, Land Reform and Rural Development in terms of Act 70 of 1970 and the probability of this prime agricultural land being released for residential development purposes is regarded as highly unlikely. Taking cognisance of the provisions of the development principles as described above it can be concluded that the utilization of the fore-mentioned properties for residential purposes is unfortunately regarded as a non-viable option.</p>
	<p>Objects to the proposed township establishment</p> <p>Was a resident of Vancouver Canada and states that the catchment area of the municipal water was out of bounds to all persons including</p>	<p>Noted</p> <p>EAP outlined the National Water Act's definition of a watercourse / wetland and regulated area of a watercourse. Proposed</p>

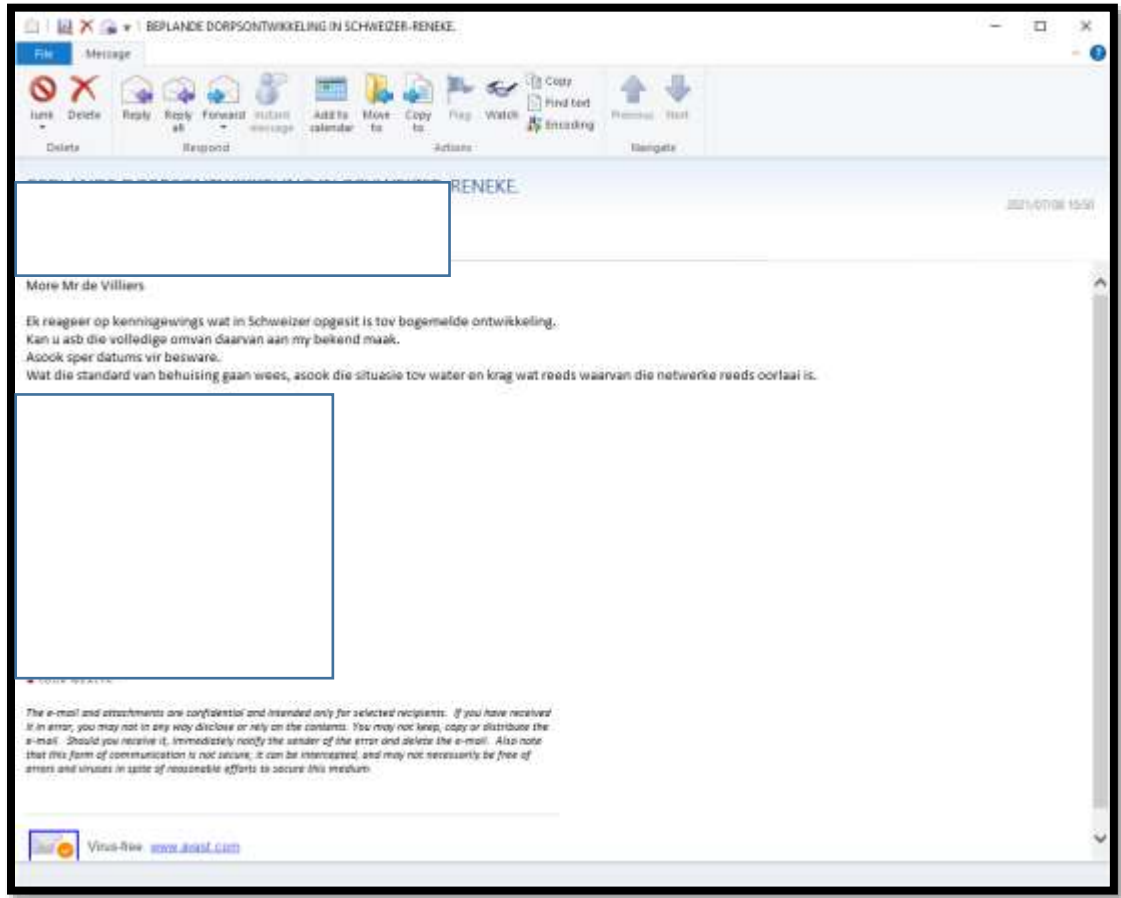
	<p>hikers and outdoor enthusiasts due to the possible contamination of the essential resource, which is supported by 2 local world renowned universities</p> <p>As such it boggles the mind as to the development being proposed to either sides of the important sources of the Wentzeldam – the water source, including drinking water of the greater Schweizer Reneke community.</p> <p>The fact that the proposed development proposes a large proportion of low cost housing with associated risks of a variety of contamination including human and animal waste, especially in light of the mismanagement of the municipalities in the province.</p>	<p>development will not be within the 1:100 year flood line or within the area which has been delineated by the wetland specialist.</p> <p>The proposed development will be located on the southern side of the stream which feeds into the Wentzeldam and no development will take place within the 1:100 year flood line. and the riparian zone as delineated by a Wetland Specialist.</p> <p>Municipal Solid Waste (MSW) removal is a function of the Waste & Environmental Management Division of the MLM. According to the SDF: <i>“a black bag system is used and a special refuse truck. Large containers are also used in the industrial and business areas”</i> to facilitate MSW removal</p> <p>he Proposed Development slopes towards the north and the existing sewer network in Ipelegeng towards the south, it is confirmed that the Dr Ruth S Mompoti District Municipality as the Water Services Authority has appointed a Professional Service Provider to improve the bulk sewer infrastructure in Ipelegeng. It is reported that this design will significantly improve sewer handling infrastructure while not only alleviating pressure on the current pump stations but also</p>
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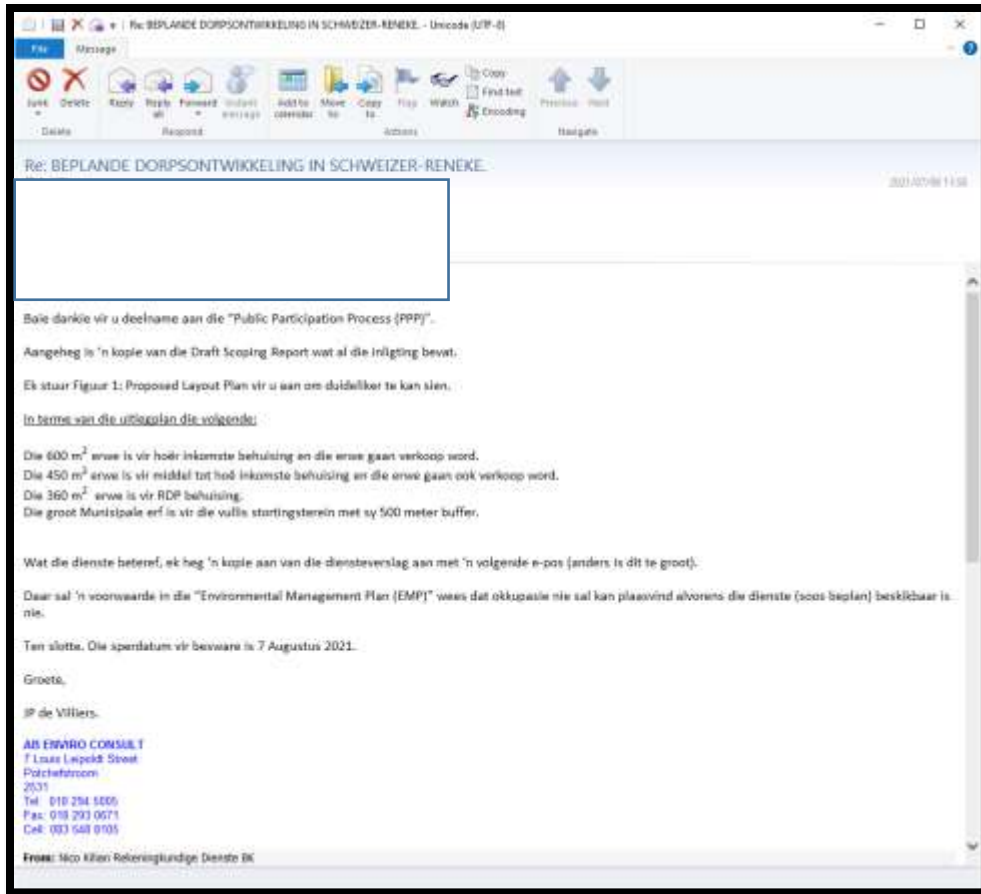
	<p>Clean drinking water is a fundamental human right and objects as a result to the proposed development.</p>	<p>endeavouring to eliminate pump stations. Sourcing of funding is currently underway for the implementation of the project.</p> <p>In terms of managing the risk of sewer overflows as part of the Proposed Development, the pump station will be designed taking into account the concerns raised and incorporating risk mitigation measures which may include, but is not limited to, the incorporation of lined sewer overflow retention ponds and backup generators</p> <p>Noted emphasized that NEMA does make provision for fines and or imprisonment should there be a contravention of conditions to any EA granted</p>
	<p>Club has been operating as a safe and secure area since 2003, providing an important source of income and recognition to the town. The area is well maintained by the club and provide for fun for members and those taking part.</p> <p>The development will jeopardize the future of the club as the area will no longer be suitable for the purposes for which is currently used due to the riding trails and routes will no longer exist or be of use.</p>	<p>Noted</p> <p>It is agreed that the proposed development will have a direct impact on the trails that are currently being used by the Club. It will be necessary to reroute these trails, should authorization be granted and the development be constructed. The Proposed Layout Plan below may assist you in determining</p>

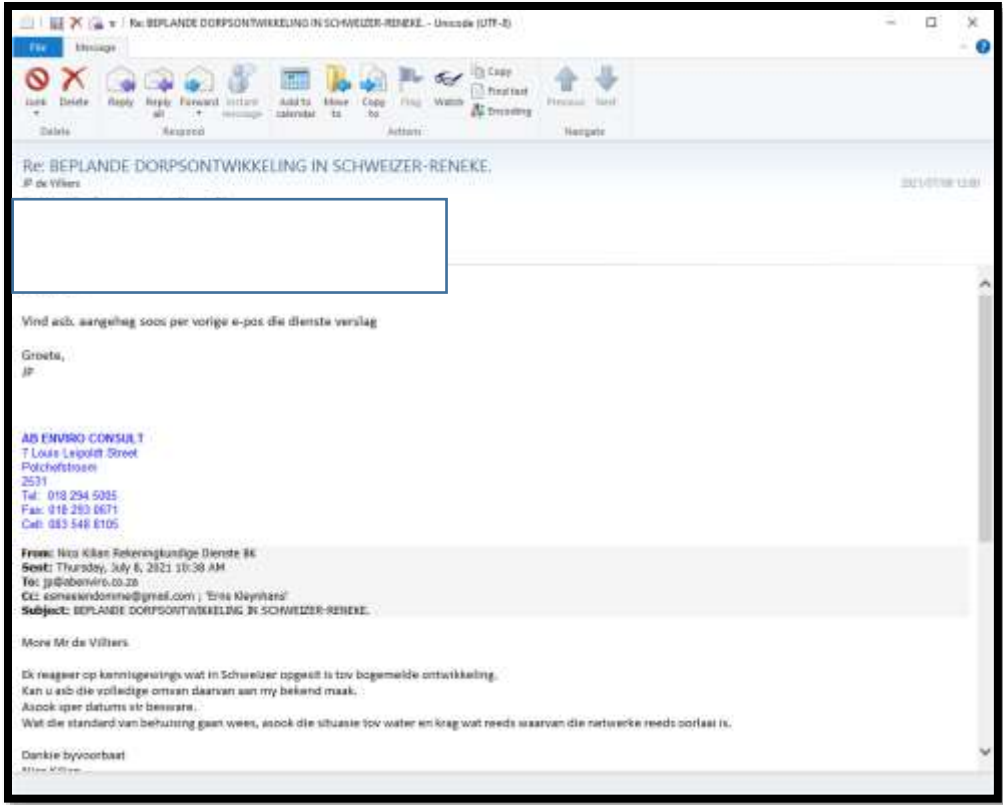
	<p>The pollution and toxic waste which will be caused by the proposed township will be harmful to the horses and other animals as well as to humans who are currently using this area for the purpose of getting out in the open air and enjoying the unspoiled nature and healthy environment.</p> <p>In short, we hereby strongly object against the proposed development as it will mean the end of our Club which we think is a very useful asset to the town of Schweizer Reneke and adds value in several aspects.</p> <p>We have been advised that there are several other areas, which would be much more suitable for the proposed development, and which can be used without having a severe impact on the community and our Club.</p>	<p>new/alternative routes. You will note that the big Erf zoned "Municipal" will not form part of the development, as it constitutes a 500 meter buffer around the Landfill Site. This area, as well as the areas below the 1:100 year flood line, located adjacent the stream will remain undeveloped. (Copy of layout plan included in response)</p> <p>The proposed development will be predominantly for a residential development. No "toxic" waste will be produced. Municipal Solid Waste (MSW) removal is a function of the Waste & Environmental Management Division of the MLM.</p> <p>Your concern is noted. As stated above, if some of the trails are rerouted, it may well be that the club will continue to be an asset to the town.</p> <p>Outlines SPLUMA principles specifically spatial justice and sustainability. It is therefore essential to locate new residential developments in areas that will combat urban sprawl and result in a more compact urban form. The properties proposed by third parties for acquisition and possible development will however contribute towards urban sprawl and will not lead</p>
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		to a more compact urban form.

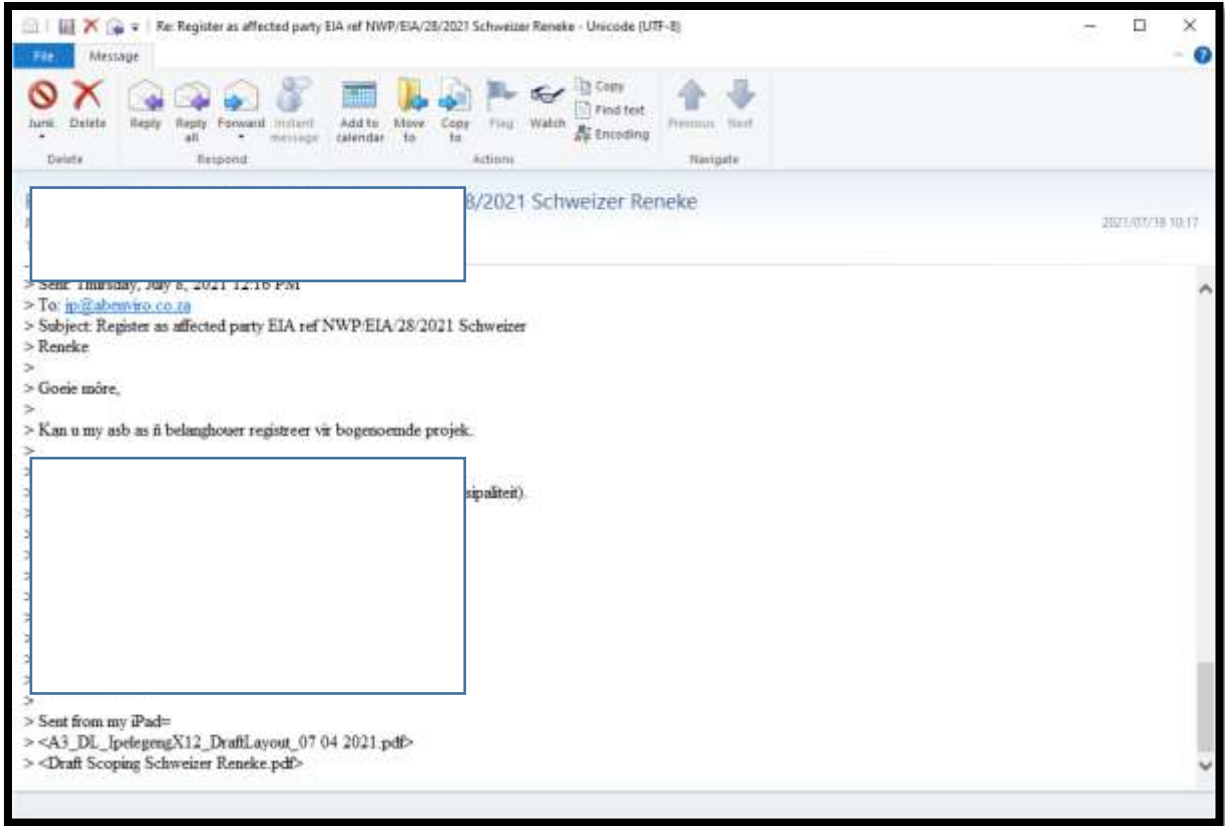
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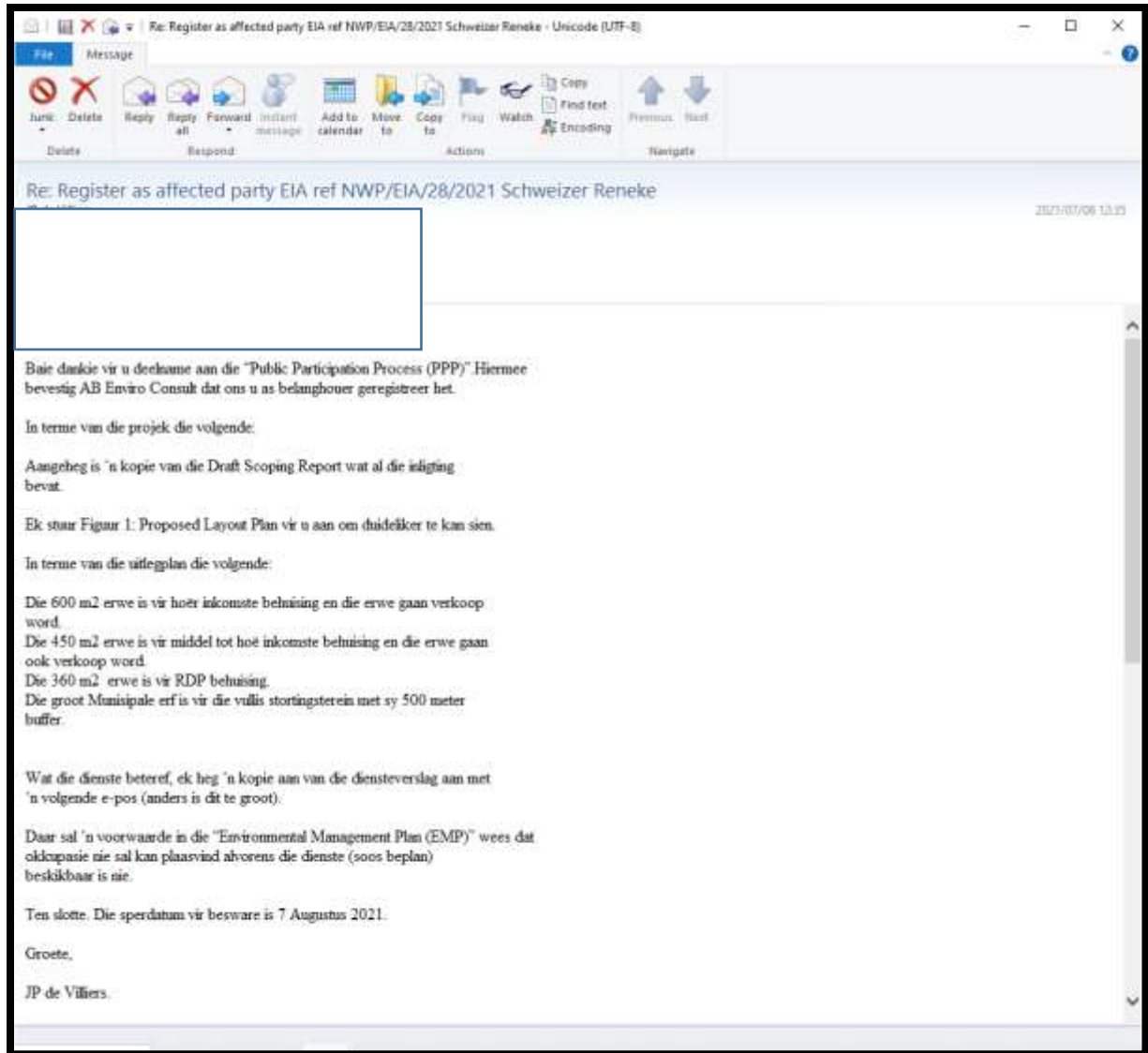


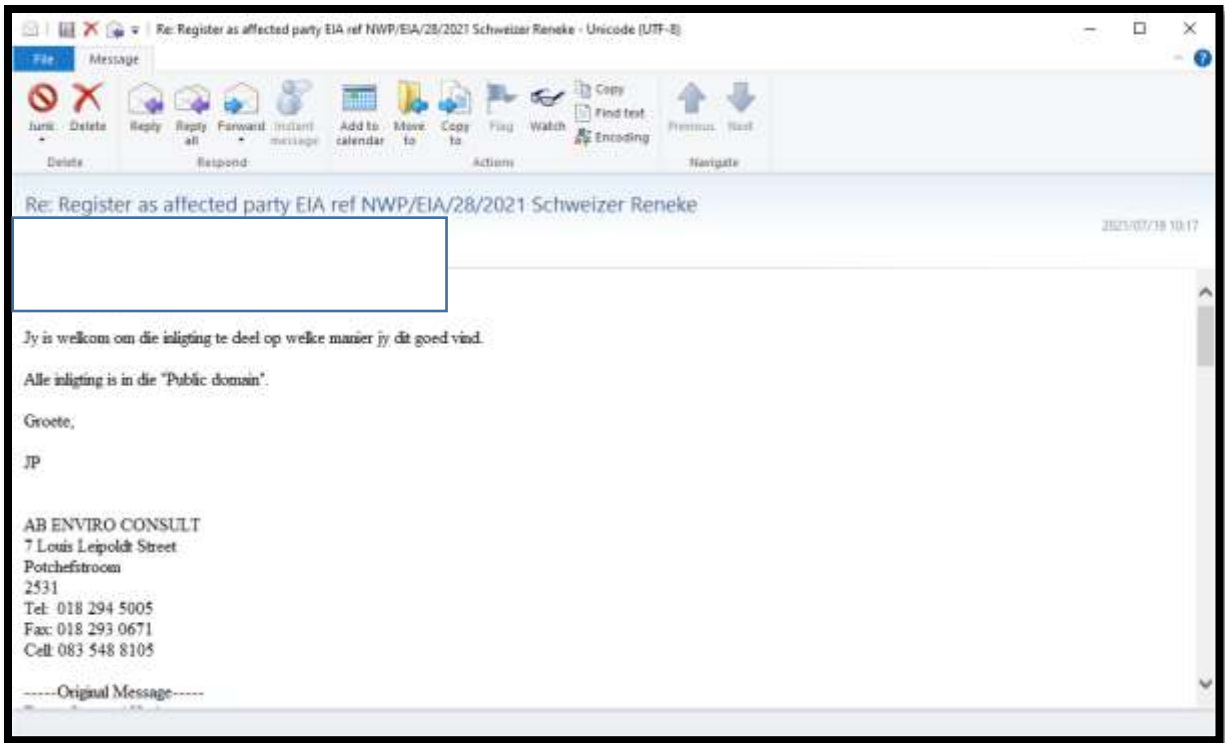
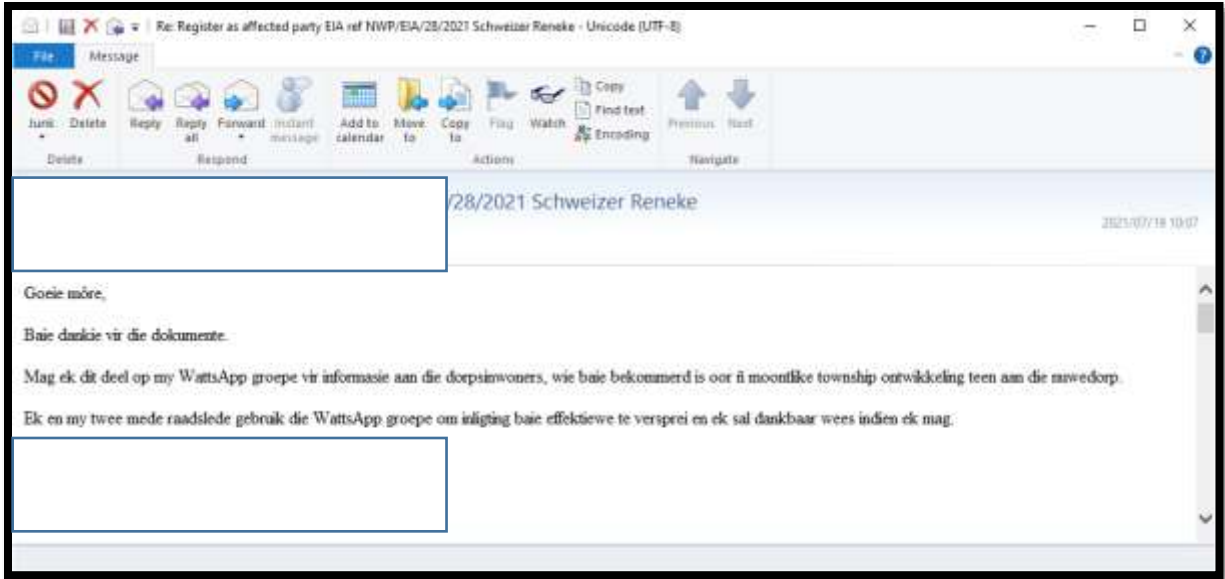


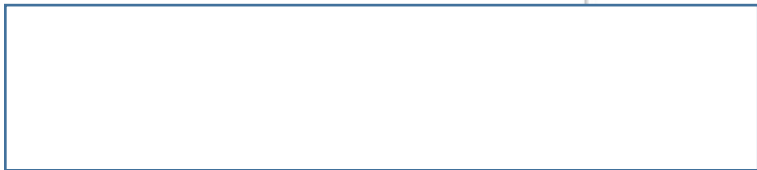


E-Mail [redacted] EAP Response









Reference: DA20210805

5 August 2021

Dear Mr. De Villiers,

I have been residing in Schweizer Reneke for the past 32 years.

I served as a councillor for Mamusa Local Municipality during 1999-2018 and from 2018 till currently at Dr Ruth S Mompoti District Municipality.

The reason I mentioned it is to bring to your attention that I am aware of the past and present challenges, problems and capacity of Mamusa Local Municipality.

I am not against development of new residential areas, though I think what is presented to me, makes me uncomfortable for various reasons namely.

RAW SEWER IN WENTZELDAM:

The proposed development lies lower than the surrounding area and slopes towards the Wentzel dam, our main water source.

A rain down pore will carry all rubbish laying around to our main potable water resource, whether it is plastic or lithium-ion batteries.

During the past 20 years, Mamusa experienced continuous raw sewer overflows, mainly in Ipelegeng, but in Schweizer town as well. This problem is still with us today.

The raw sewer flows into the Hartz river, downstream from Mamusa's main source of potable water, the Wentzel dam.

There were numerous protest demonstrations by residents of Ipelegeng because Mamusa Local Municipality could not and cannot address the sewer situation conclusively.

Furthermore, with Eskom that cannot guarantee a constant electricity supply, sewer pumps are at risk for raw sewer spillage when there is no electricity. (Loadshedding and outages).

Mamusa Local Municipality's electricity account is also in arrears with Eskom (R130 Million), and the latter used to punitively disconnect the town for long periods to enforce payment of arrears.

Mamusa LM owes about 5 years of its purchase and I cannot see how it will be able to pay this account. This has a risk of disconnection from the national grid to enforce payment, though the High Court decision has halted it for the time being.

Mamusa Local Municipality as well as Dr Ruth S Mompoti District Municipality are both listed as the 20 worst run municipalities in South Africa. Taking this into account, how will Mamusa manage to solve the existing sewer problem as well as the proposed development's additional load.

The risk of sewer pollution to the Wentzel Dam and Harts River by the development of a housing project within the catchment area is without a doubt an inevitable risk for all the citizens of Mamusa who are dependent

With treated grey water that must be irrigated on land and trickle back to the Hartz river, the initial plan was to pipe that water up to the rented lands and plant lucerne and other fodder to increase the carrying capacity of the pastures to benefit agricultural conditions for our emerging farmers.

The proposed housing development will cause that these farmers will be subjected to lose the grazing pastures they bargained on for several years and subsequently will not have any grazing left for their cattle.

Furthermore, they will lose income and probably must sell all their cattle due to the loss of the land and grazing pastures.

IMPACT on FAUNA and FLORA:

The area is very well populated with several species of wildlife that will also be affected negatively.

This land provides habitat for duiker, steenbok, cape vulture, lapped-faced vulture, European bee-eater, barn owls, secretary and other birds, falcons, guineafowls, jackals, black-footed African cats and several caracal species. Even greater kudu has been observed by myself. Many more species like snake tortoises and other will be affected negatively.

In terms of section 15 (1) of the National Forests Act, 1998, (Act No 84 of 1998) no person may cut, disturb, damage or destroy any protected tree; or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any product derived from a protected tree, except under a licence or exemption granted from the Minister of Agriculture, Forestry and Fisheries. The indigenous Acacia Erioloba Nr 168 growing on this land is declared as a protective specie in SA and will become firewood if not protected.

IMPACT on TRANSPORT:

With protest demonstrations taking protest to South Africa's main roads, the development next to the R34 may have a crippling effect on transport. There is no alternative road through Schweizer where the traffic can be redirected.

Schweizer Reneke is a main artery towards the Free State (Bloemfontein) and Gauteng, travelling from Namibia and Botswana.

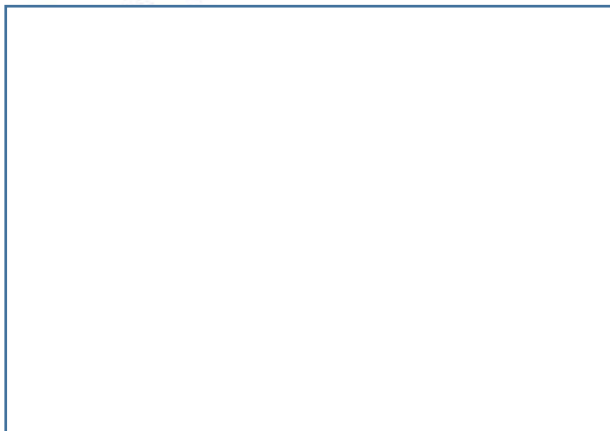
ALTERNATIVE LAND TO DEVELOP:

Alternative land to develop is available at a price below normal selling price. (R 8500 per hectare)

It is next to Extension 5 Ipelegeng and consists of mainly flat lying ground with a small gradient towards the sewer treatment plant which will mitigate sewer pumping and the risks involved.

I hope that my concerns will be taken into account and more suitable alternative land be identified.

Kind Regards,



Re: Epos dokument dalk te groot - Unicode (UTF-8)

File Message

Junk Delete Reply Reply all Forward Instant message Add to calendar Move to Copy to Flag Watch Copy Find text Encoding Previous Next

Delete Respond Actions Navigate

Re: Epos dokument dalk te groot
JP de Villiers 2021/09/17 11:46

Please find response letter to your concerns raised against the proposed development in, Ipelegeng Extension 12, attached.

Regards,
JP de Villiers

AB ENVIRO CONSULT
7 Louis Leipoldt Street
Potchefstroom
2531
Tel: 018 294 5005
Fax: 018 293 0671
Cell: 083 548 8105

-----Original Message-----
From: JP de Villiers
Sent: Friday, August 6, 2021 9:59 AM

ment dalk te groot

Ek het die beswaar ontvang, dankie.



AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

7 Louis Leipoldt Street,
Potchefstroom, 2531
Tel: + 27 83 5488 105
Fax: + 27 (18) 293 0671
E-mail: jp@abenviro.co.za

17/09/2021

Democratic Alliance

Your reference Number: DA20210805
DEDECT Reference Number: NWP/EIA/28/2021

Dear Sir

Environmental Impact Assessment for the proposed clearance of 149.5516 ha of indigenous vegetation, located within a critical biodiversity area (CBA 1) and within 100 meters from a non-perennial stream, in order to establish a Township, located on a portion of the farm Schweizer Reneke Townlands 62 HO known as Ipelegeng Extension 12, Mamusa Local Municipality, North West Province.

Your Letter dated 5 August 2021 has reference:

Once again we thank you for your participation in the Public Participation Process (PPP). Before turning to the points you raised in your letter, please also consider the following:

The Environmental Authorization (EA) (if issued) and the EMPr become legal documents. In terms of the National Environmental Management Act (Act 107 of 1998)(NEMA), Section 24F(2)(c):

"Failing to comply with or contravening the conditions applicable to any environmental authorisation granted for a listed activity or specified activity"

May result in:

Section 24F (4): "Fine not exceeding R5 million, or imprisonment for a period not exceeding ten years, or both such fine and such imprisonment."

Please be assured that we take your concerns seriously and will include all possible mitigation measures and specific outcomes into the Environmental Management Programme (EMPr), for consideration by the Competent Authority in determining whether Environmental Authorization be granted. A copy of this document will be provided to you as part of the Environmental Impact Assessment Report (EIAr) for your perusal and comments/inputs during the PPP that will be conducted as part as the EIA phase of the application.

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

As a politician, and a Citizen of South Africa, you have the right and the duty to report any contraventions of the above mentioned documents to the Compliance and Enforcement Directorate of the Department of Economic Development, Environment, Conservation and Tourism (DEDECT).

RAW SEWER IN WENTZELDAM

Municipal Solid Waste (MSW) removal is a function of the Waste & Environmental Management Division of the MLM. According to the SDF: "a black bag system is used and a special refuse truck. Large containers are also used in the industrial and business areas" to facilitate MSW removal.

The concern regarding the current state of sewer pump station maintenance and operation in Ipelegeng/Schweizer-Reneke is noted. Apart from the fact that the Proposed Development slopes towards the north and the existing sewer network in Ipelegeng towards the south, it is confirmed that the Dr Ruth S Mompati District Municipality as the Water Services Authority has appointed a Professional Service Provider to improve the bulk sewer infrastructure in Ipelegeng. It is reported that this design will significantly improve sewer handling infrastructure while not only alleviating pressure on the current pump stations but also endeavouring to eliminate pump stations. Sourcing of funding is currently underway for the implementation of the project.

In terms of managing the risk of sewer overflows as part of the Proposed Development, the pump station will be designed taking into account the concerns raised and incorporating risk mitigation measures which may include, but is not limited to, the incorporation of lined sewer overflow retention ponds and backup generators. The appointment of an external service provider to operate and maintain sewer infrastructure in Ipelegeng/Schweizer-Reneke may also be explored.

LANDFILL SITE

Although the landfill site falls within the Township Application (And the area is included in the Layout Plan and a Municipal Erf), and operates as a G:S:B - municipal landfill site, the operation and maintenance of the landfill site does not form part of this application. According to the permit conditions the Schweizer-Reneke landfill site requires a 500 m buffer zone and this Condition has been incorporated into the Layout Plan.

EMERGING FARMERS

The fact that "Townlands are approximately 2 500 hectares, all high yield grazing land", is noted. The Environmental Assessment Practitioner (EAP) disagrees with the statement that "...subsequently will not have any grazing left for their cattle."

This Application only deals with the clearance of 149,5516 ha of indigenous vegetation and according to information provided by yourself, there should be 2 350,4484 hectares of grazing land left for emerging farmers. The loss of the 149,5516 ha of grazing land comes with the gain of providing 2 512 residential units, providing at least 7 536 persons (At 3 persons per dwelling) the opportunity of having a roof over their heads and access to schools, churches, shops, sport fields, crèches and transport.

IMPACT ON FAUNA AND FLORA

Fauna and Flora Habitat surveys by R.F. Terblanche during October 2020 and December 2020 were conducted to note key elements of habitats on the site, relevant to the conservation of fauna and flora. The main purpose of the site visits was ultimately to serve as a habitat survey that concentrated on the possible presence (or not) of threatened species and other species of high conservation priority. No Threatened or Near Threatened plant or animal species appear to be resident at the site. Vegetation at most of the site is visibly degraded and cover of vegetation in many areas is conspicuously poor. Some areas have been cleared, exposing soil. A conspicuous high frequency of alien invasive weeds occurs at disturbed areas, in particular at hitherto cleared places.

There is little scope for most of the site to be part of a corridor of particular conservation importance, excluding the watercourse (with its buffer zone) and the low rocky ridges. Non-perennial river at the northern part of the

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MR.J.P. DE VILLIERS (M Sc,HED, EAP-EAPASA, IAIA); MRS.J.E. DU PLOOY (M.E.M; EAP-EAPASA, IAIA)

site, as well as the low rocky ridges at the north-eastern parts of the site are corridors of particular conservation concern. These factors were taken into consideration with the development of the Layout Plan.

One plant species, *Vachellia erioloba* (Camel Thorn) that is not threatened but listed as Protected tree species occurs at the site. In terms of a part of section 15(1) of the National Forests Act No. 84 of 1998, no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a license granted by the Minister. *Vachellia erioloba* is numerous at some areas at the site. A Camel Thorn Tree Forest or large Camel Thorn trees (>10 m) such as at Kathu and Witsand in the Northern Cape Province, are absent at the site. If the development is approved it is likely that some Camel Thorn trees (*Vachellia erioloba*) should be removed, in which case a permit for removal would be imperative, and should be applied for.

IMPACT ON TRANSPORT

Protest demonstrations are taking place, normally against bad service delivery. It is the aim of this development to provide services in the form of serviced houses. It can thus be anticipated that the proposed development will lessen the need for protesting.

ALTERNATIVE LAND TO DEVELOP

All development undertaken in South African is now governed by the Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013) (hereinafter referred to as "SPLUMA") and the general principles set out in Chapter 2 (Development Principles and Norms and Standards) "apply to all organs of state and other authorities responsible for the implementation of legislation regulating the use and development of land, and guide the sustainable use and development of land". Section 7 of the Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013) sets out the principles that apply to spatial planning, land development and land use management. It is specifically due to the provisions of these development principles that the utilization of the fore-mentioned properties for residential purposes is unfortunately regarded as a non-viable option due to the following:

- The principle of spatial justice whereby past spatial and other development imbalances must be redressed through improved access to and use of land (refer Section 7(a)(i) of SPLUMA), read with the following principle
- The principle of spatial sustainability, whereby spatial planning and land use management systems must promote land development in locations that are sustainable and limit urban sprawl (refer Section 7(b)(vi) of SPLUMA).

South Africa needs to tackle the legacies of the past. Apartheid left behind urban sprawl and weak urban connectivity, with poor residents on the urban periphery, far from employment and economic opportunity. The result is costly and inefficient public transportation systems, some of which are also suffering from all manner of institutional dysfunction.

Nearly 4 million 'RDP houses' have increased the housing stock, but the policy has reinforced urban sprawl and disadvantage because houses have been built on cheap land on the outskirts of cities.

Cities need affordable housing located close to economic opportunities, effective crime reduction, efficient, affordable public transport, and a facilitative environment in which to do business for all firms, large and small.

The concept of 'housing as urbanism' considers the social, political and economic components of housing, which, in reality, translates to housing that is closer to employment, municipal services, public spaces, healthcare, schooling facilities and social services, while also providing the household with the physical infrastructure necessary for a good quality of life. These considerations have not been included in the mass roll-out of low-income housing programmes by the South African government to date, as mentioned previously.

PROF A B DE VILLIERS (M Sc, Ph D, SACNASP)

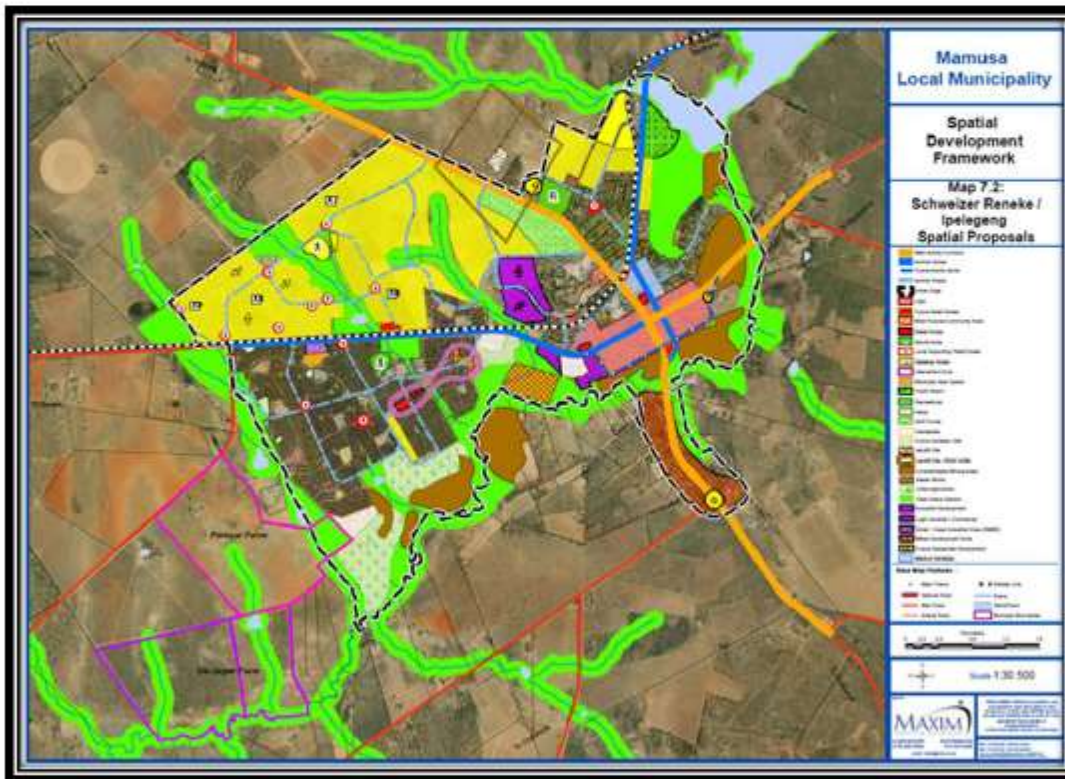
MR.J.P. DE VILLIERS (M Sc, HED, EAP-EAPASA, IAIA); MRS.J.E. DU PLOOY (M.E.M; EAP-EAPASA, IAIA)

Over the long term, the overall cost of housing developments that are better located, subscribing broadly to the principles of 'housing as urbanism', is likely to be less expensive to municipalities and the development's residents than poorly located, sprawled housing developments.

To comply with the development principles set forth in Sections 7(a)(i) and 7(b)(iv) of SPLUMA, it is therefore essential to locate new residential developments in areas that will combat urban sprawl and result in a more compact urban form. The properties detailed above proposed for acquisition and possible development will however contribute towards urban sprawl and will not lead to a more compact urban form.

Taking into consideration the locality of the properties proposed as alternative development area, cognisance should be taken of the fact two (2) of the subject properties i.e. Portions 22 and 23 of the farm Palachoema 64, Registration Division H.O., North West Province are located outside the demarcated Urban Edge as defined in terms of the Mamusa Spatial Development Framework. This urban edge is specifically defined to delineate the maximum extent of urban expansion to limit urban sprawl and contribute towards a more compact urban form. Only a small portion of Portion 30 of the farm Palachoema 64, Registration Division H.O., North West Province is located inside the demarcated Urban Edge and the included portion was designated as part of the open space system that is not deemed suitable for residential development purposes.

The demarcated urban edge is indicated in a black dashed line on the following SDF map whereas the alternative properties proposed for development are outlined in pink and purple



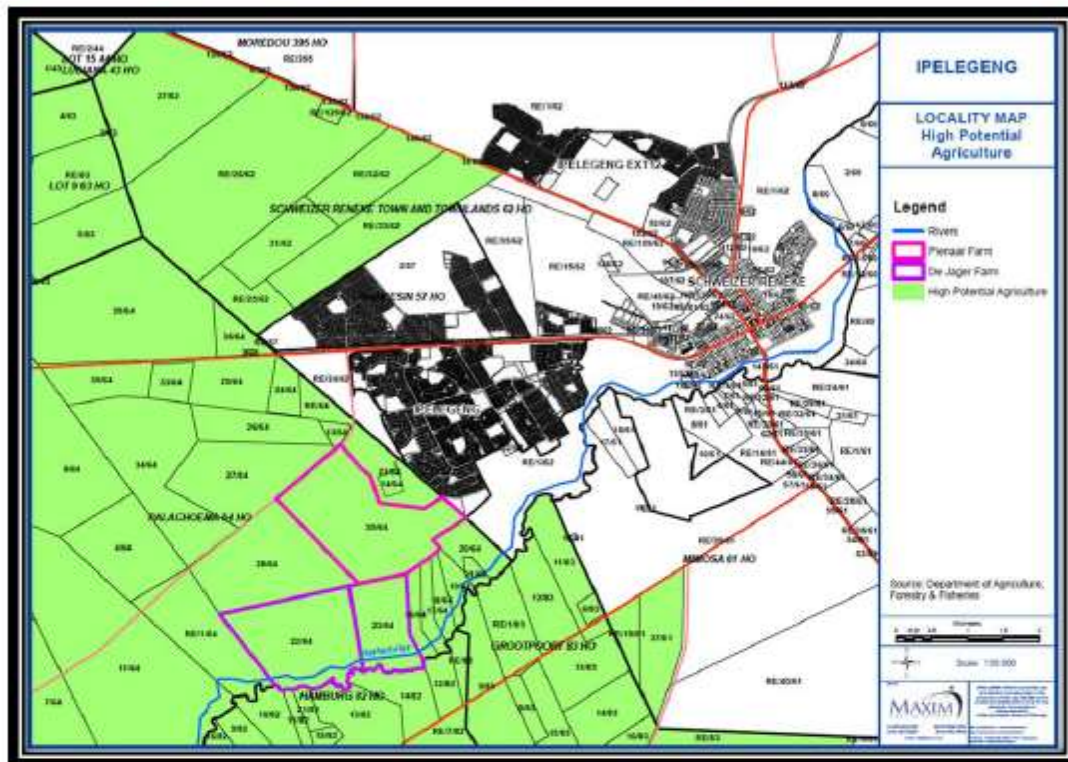
- Principle of spatial sustainability, whereby spatial planning and land use management systems must ensure that special consideration is given to the protection of prime and unique agricultural land (refer Section 7(b)(ii) of SPLUMA):

In this regard it is relevant to note that all three alternative properties proposed for development purposes are located on land classified as High Potential Agricultural Land by the Department of Agriculture, Rural

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MR.J.P. DE VILLIERS (M Sc,HED, EAP-EAPASA, IAIA); MRS.J.E. DU PLOOY (M.E.M; EAP-EAPASA, IAIA)

Development and Land Reform. All developments on agricultural land are subject to the consent from the Department of Agriculture, Land Reform and Rural Development in terms of Act 70 of 1970 and the probability of this prime agricultural land being released for residential development purposes is regarded as highly unlikely.

The locality of the alternative properties proposed for development in relation to the land designated by the Department Agriculture, Land Reform and Rural Development (DALRRD) as High Potential Agricultural Land is indicated on the following map (refer farm portions outlined in pink and purple).



Taking cognisance of the provisions of the development principles as described above it can be concluded that the utilization of the fore-mentioned properties for residential purposes is unfortunately regarded as a non-viable option.

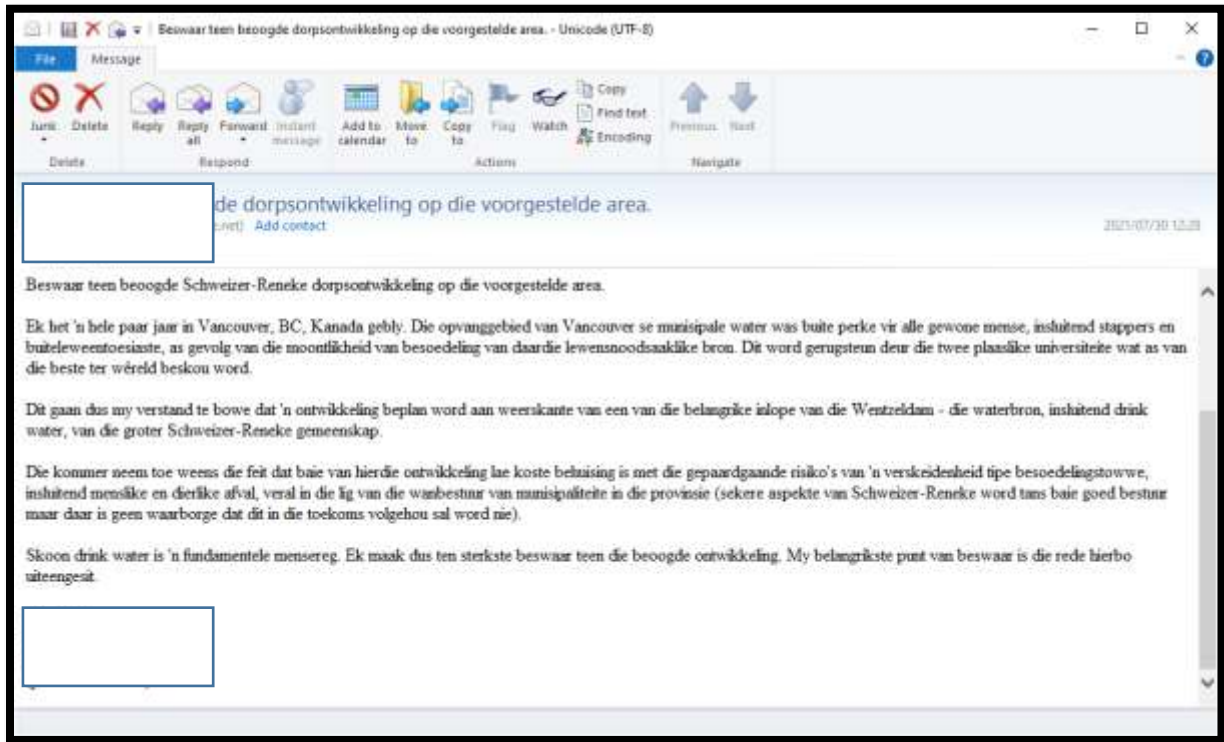
Once again we thank you for your participation in the PPP.

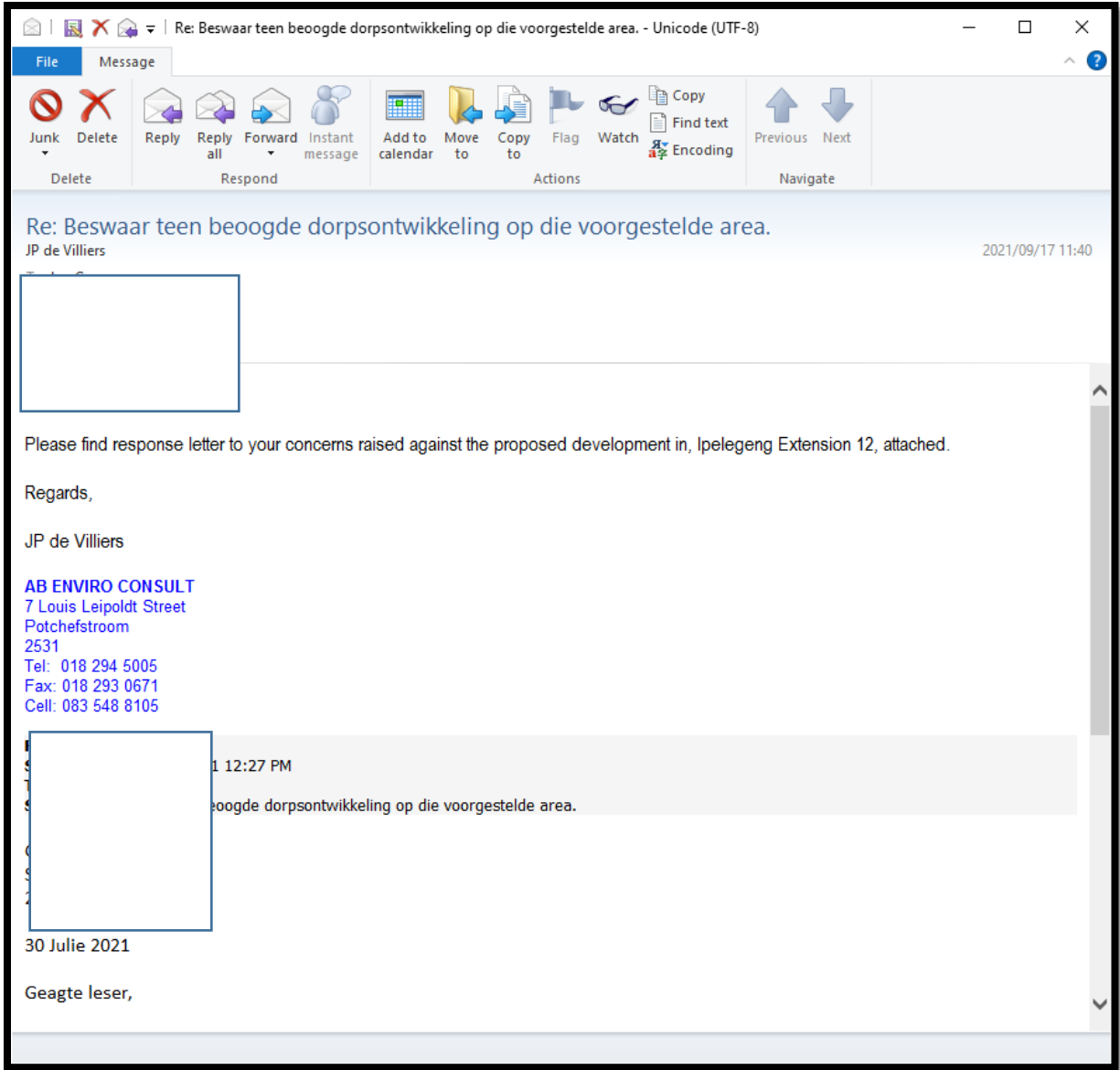
Sincerely yours,

JP de Villiers
EAP-EAPASA 2019/808

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

E-mail from Mr.





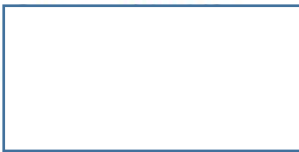


AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

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Fax: + 27 (18) 293 0671
E-mail: jp@abenviro.co.za

17/09/2021



DEDECT Reference Number: NWP/EIA/28/2021

Dear Sir,

Environmental Impact Assessment for the proposed clearance of 149,5516 ha of indigenous vegetation, located within a critical biodiversity area (CBA 1) and within 100 meters from a non-perennial stream, in order to establish a Township, located on a portion of the farm Schweizer Reneke Townlands 62 HO known as Ipelegeng Extension 12, Mamusa Local Municipality, North West Province.

Your Letter dated 30 July 2021 has reference:

Once again we thank you for your participation in the Public Participation Process (PPP). Before turning to the points you raised in your letter, please also consider the following:

The Environmental Authorization (EA) (if issued) and the EMPr become legal documents. In terms of the National Environmental Management Act (Act 107 of 1998) (NEMA), Section 24F(2)(c):

"Failing to comply with or contravening the conditions applicable to any environmental authorisation granted for a listed activity or specified activity"

May result in:

Section 24F (4): "Fine not exceeding R5 million, or imprisonment for a period not exceeding ten years, or both such fine and such imprisonment."

Please be assured that we take your concerns seriously and will include all possible mitigation measures and specific outcomes into the Environmental Management Programme (EMPr), for consideration by the Competent Authority in determining whether Environmental Authorization be granted. A copy of this document will be provided to you as part of the Environmental Impact Assessment Report (EIAR) for your perusal and comments/inputs during the PPP that will be conducted as part as the EIA phase of the application.

PROF A B DE VILLIERS (M Sc, Ph D, SACNASP)
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As a Citizen of South Africa, you have the right and the duty to report any contraventions of the above mentioned documents to the Compliance and Enforcement Directorate of the Department of Economic Development, Environment, Conservation and Tourism (DEDECT).

Your first comment:

Your statement that you have resided in Vancouver Canada BC and that the catchment area of the municipal water was out of bounds to all persons including hikers and outdoor enthusiasts due to the possible contamination of the essential resource, which is supported by 2 local world renowned universities, is noted.

In South Africa, the Management of watercourses fall under the National Water Act, Act No. 36 of 1998 ("NWA"). In response to the above, the first matter to note is that in terms of Government Notice 509 of 2016: *General Authorisation in terms of Section 39 of the National Water Act, 1998 (Act 36 of 1998) For Water Uses As Defined in Section 21(c) or Section 21(i)*, the extent of a watercourse is defined as follows:

The "extent of a watercourse" means:

(a) The outer edge of the 1 in 100 year flood line and/or delineated riparian habitat, whichever is the greatest distance, measured from the middle of the watercourse of a river, spring, natural channel, lake or dam;

(b) Wetlands and pans: The delineated boundary (outer temporary zone) of any wetland or pan.

In the National Water Act (Act 36 of 1998), a "watercourse" is defined as:

(a) A river or spring;

(b) A natural channel in which water flows regularly or intermittently;

(c) A wetland, lake or dam into which, or from which, water flows;

(d) Any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse

From the above it is clear that a "watercourse" can be a river, spring, natural channel, lake, dam, or wetland. Although these are all "watercourses", not all of these are wetlands.

In the National Water Act (Act 36 of 1998), a "wetland" is defined as:

"Land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil"

In the Department of Water and Sanitation's 2014 *Training Manual for Section 21(c) and (i) water uses* the following is stated:

"Riparian areas which are saturated or flooded for prolonged periods would be considered wetlands and could be described as riparian wetlands. However, some riparian areas are not wetlands (e.g. and area where alluvium is periodically deposited by a stream during floods but which is well drained)"

In Government Notice 509 of 2016: *General Authorisation in terms of Section 39 of the National Water Act, 1998 (Act 36 of 1998) For Water Uses As Defined in Section 21(c) or Section 21(i)*, the "regulated area of a watercourse" is defined as follows:

(a) "The outer edge of the 1 in 100 year flood line and/or delineated riparian habitat, whichever is the greatest distance, measured from the middle of the watercourse of a river, spring, natural channel, lake or dam;

PROF A B DE VILLIERS (M Sc, Ph D, SACNASP)
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(b) In the absence of a determined 1 in 100 year flood line or riparian area, the area within 100m from the edge of a watercourse where the edge of the watercourse is the first identifiable annual bank fill flood bench (subject to compliance to section 144 of the Act);

(c) A 500m radius from the delineated boundary (extent) of any wetland or pan"

According to section 144 of the National Water Act (ACT No. 36 of 1998) as amended, no person may establish a development unless the layout plan shows (in a form acceptable to the local authority concerned) lines indicating the maximum level likely to be reached by floodwaters on average once in every 100 years.

The area to be developed is riparian to a non-perennial stream and the 1:100 year flood lines must therefore be shown on the layout plans.

All of the above mentioned Legislation has been taken into account, and the Layout Plan has been developed in such a manner as to ensure that no development takes place below the 1:100 year flood line.

Your next comment:

"As such it boggles the mind as to the development being proposed to either sides of the important sources of the Wentzeldam – the water source, including drinking water of the greater Schweizer Reneke community."

The proposed development will only be on one side of the stream and will also be above the 1:100 year flood line. Flood lines have been determined by an Engineer and the riparian zone has been delineated by a Wetland Specialist.

Your next comment:

The fact that the proposed development proposes a large proportion of low cost housing with associated risks of a variety of contamination including human and animal waste, especially in light of the mismanagement of the municipalities in the province."

Municipal Solid Waste (MSW) removal is a function of the Waste & Environmental Management Division of the MLM. According to the SDF: "a black bag system is used and a special refuse truck. Large containers are also used in the industrial and business areas" to facilitate MSW removal.

Apart from the fact that the Proposed Development slopes towards the north and the existing sewer network in Ipelegeng towards the south, it is confirmed that the Dr Ruth S Mompoti District Municipality as the Water Services Authority has appointed a Professional Service Provider to improve the bulk sewer infrastructure in Ipelegeng. It is reported that this design will significantly improve sewer handling infrastructure while not only alleviating pressure on the current pump stations but also endeavouring to eliminate pump stations. Sourcing of funding is currently underway for the implementation of the project.

In terms of managing the risk of sewer overflows as part of the Proposed Development, the pump station will be designed taking into account the concerns raised and incorporating risk mitigation measures which may include, but is not limited to, the incorporation of lined sewer overflow retention ponds and backup generators. The appointment of an external service provider to operate and maintain sewer infrastructure in Ipelegeng/Schweizer-Reneke may also be explored.

Your last comment:

"Clean drinking water is a fundamental human right and objects as a result to the proposed development."

Your concern is noted and please refer to the introduction of this letter for measures that are in place to ensure that the Municipality adheres to the conditions of any authorization.

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

Once again we thank you for your participation in the PPP.

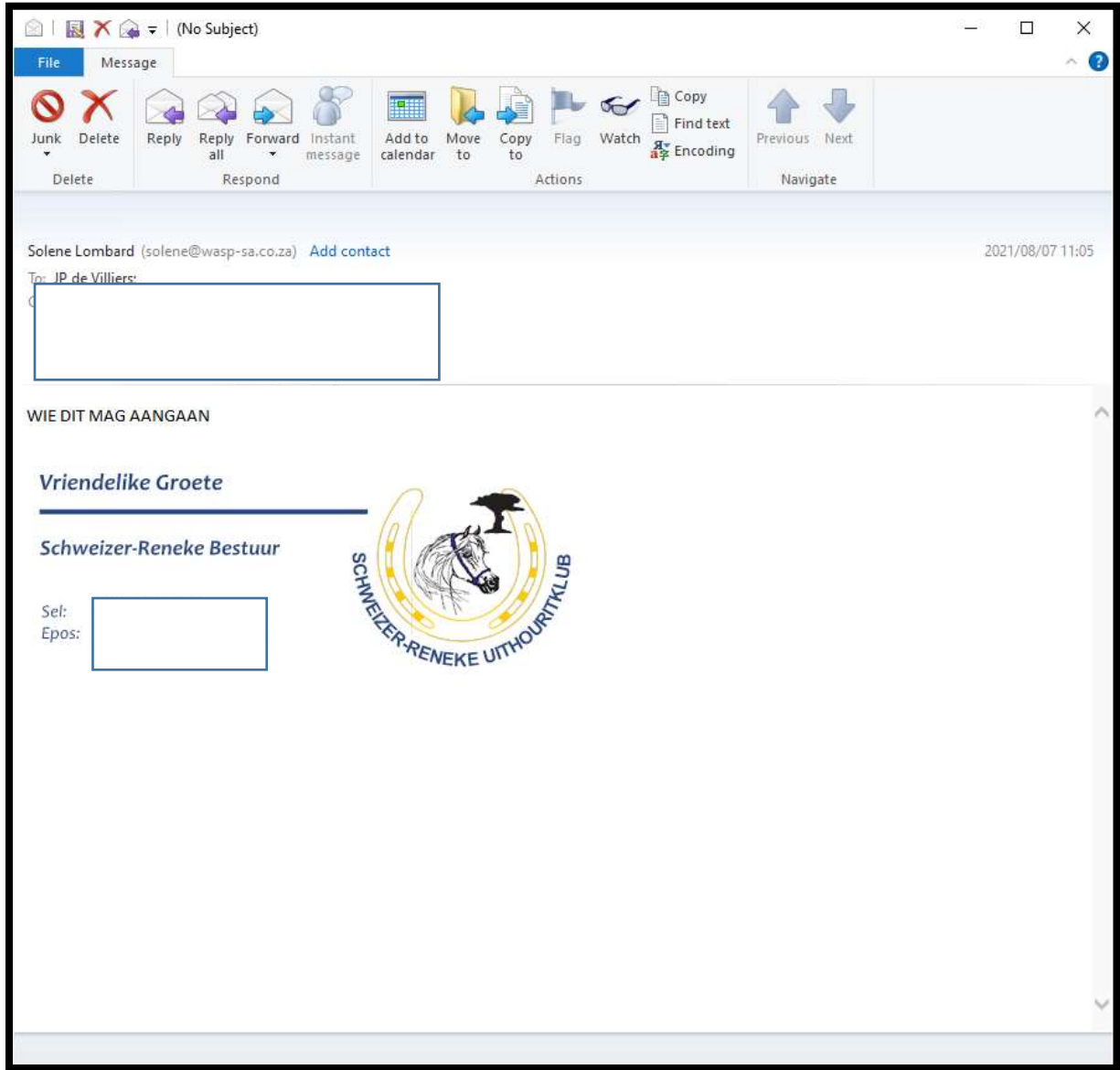
Sincerely yours,



JP de Villiers
EAP-EAPASA 2019/808

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E-mail from and EAPs response:





6 August 2021

Dear Sir

OBJECTION AGAINST NEW TOWNSHIP DEVELOPMENT

1. The Schweizer Reneke Endurance Horse-riding Club has been operating in this area since 2003.
2. The Club provides for a safe and secure area in which a large portion of the community currently take part in several activities hosted by the Club.
3. These activities include a number of horse-riding events and competitions in which many competitors from neighboring towns and people throughout the country come and take part, providing an important source of income and recognition for the town of Schweizer Reneke.
4. These activities also provide for healthy, good clean fun for the members of the Club and those taking part.
5. The area is well maintained by the Club and the natural environment is being well looked after.
6. The proposed development will jeopardize the future of the Club and it will most likely cause the area to no longer be suitable for the purposes for which it is currently being used due to the fact that the riding trails and routes will no longer exist or be of use.
7. The pollution and toxic waste which will be caused by the proposed township will be harmful to the horses and other animals as well as to humans who are currently using this area for the purpose of getting out in the open air and enjoying the unspoiled nature and healthy environment.
8. In short, we hereby strongly object against the proposed development as it will mean the end of our Club which we think is a very useful asset to the town of Schweizer Reneke and adds value in several aspects.
9. We have been advised that there are several other areas, which would be much more suitable for the proposed development, and which can be used without having a severe impact on the community and our Club.

10. Kindly acknowledge receipt hereof by replying to the e-mail address below.

Yours faithfully



SCHWEIZER CLUB MANAGEMENT

WITNESS

Re:

JP de Villiers 2021/09/17 11:49

To: [Redacted]

G

Please find response letter to your concerns raised against the proposed development in, Ipelegeng Extension 12, attached.

Regards,

JP de Villiers


AB ENVIRO CONSULT
7 Louis Leipoldt Street
Potchefstroom
2531
Tel: 018 294 5005
Fax: 018 293 0671
Cell: 083 548 8105

From: [Redacted]
Sent: [Redacted]
To: [Redacted]
Cc: [Redacted]

WIE DIT MAG AANGAAN

Vriendelike Groete

Schweizer-Reneke Bestuur





AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

7 Louis Leipoldt Street,
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Fax: + 27 (18) 293 0671
E-mail: jp@abenviro.co.za

17/09/2021



DEDECT Reference Number: NWP/EIA/28/2021

Dear Madam,

Environmental Impact Assessment for the proposed clearance of 149,5516 ha of indigenous vegetation, located within a critical biodiversity area (CBA 1) and within 100 meters from a non-perennial stream, in order to establish a Township, located on a portion of the farm Schweizer Reneke Townlands 62 HO known as Ipeleqeng Extension 12, Mamusa Local Municipality, North West Province.

Your Letter dated 6 August 2021 has reference:

Once again we thank you for your participation in the Public Participation Process (PPP). Before turning to the points you raised in your letter, please also consider the following:

The Environmental Authorization (EA) (if issued) and the EMPr become legal documents. In terms of the National Environmental Management Act (Act 107 of 1998)(NEMA), Section 24F(2)(c):

"Failing to comply with or contravening the conditions applicable to any environmental authorisation granted for a listed activity or specified activity"

May result in:

Section 24F (4): "Fine not exceeding R5 million, or imprisonment for a period not exceeding ten years, or both such fine and such imprisonment."

Please be assured that we take your concerns seriously and will include all possible mitigation measures and specific outcomes into the Environmental Management Programme (EMPr), for consideration by the Competent Authority in determining whether Environmental Authorization be granted. A copy of this document will be provided to you as part of the Environmental Impact Assessment Report (EIAR) for your perusal and comments/inputs during the PPP that will be conducted as part as the EIA phase of the application.

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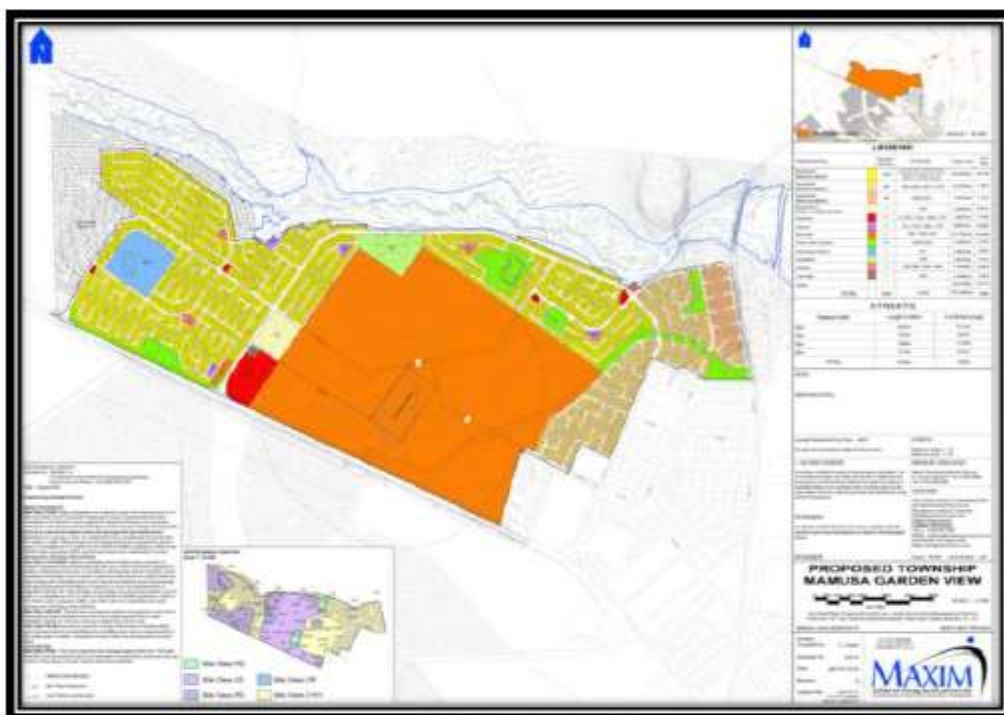
As a Citizen of South Africa, you have the right and the duty to report any contraventions of the above mentioned documents to the Compliance and Enforcement Directorate of the Department of Economic Development, Environment, Conservation and Tourism (DEDECT).

Your Bullets 1 to 5:

The statements made are noted.

Your Bullet 6:

It is agreed that the proposed development will have a direct impact on the trails that are currently being used by the Club. It will be necessary to reroute these trails, should authorization be granted and the development be constructed. The Proposed Layout Plan below may assist you in determining new/alternative routes. You will note that the big Erf zoned "Municipal" will not form part of the development, as it constitutes a 500 meter buffer around the Landfill Site. This area, as well as the areas below the 1:100 year flood line, located adjacent the stream will remain undeveloped.



Proposed Layout Plan

Your Bullet 7:

The proposed development will be predominantly for a residential development. No "toxic" waste will be produced. Municipal Solid Waste (MSW) removal is a function of the Waste & Environmental Management Division of the MLM. According to the SDF: "a black bag system is used and a special refuse truck. Large containers are also used in the industrial and business areas" to facilitate MSW removal. Water bourn sewage will be provided to each household.

Your Bullet 8:

Your concern is noted. As stated above, if some of the trails are rerouted, it may well be that the club will continue to be an asset to the town.

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Your Bullet 9:

ALTERNATIVE LAND TO DEVELOP

All development undertaken in South African is now governed by the Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013) (hereinafter referred to as "SPLUMA") and the general principles set out in Chapter 2 (Development Principles and Norms and Standards) "apply to all organs of state and other authorities responsible for the implementation of legislation regulating the use and development of land, and guide the sustainable use and development of land". Section 7 of the Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013) sets out the principles that apply to spatial planning, land development and land use management. It is specifically due to the provisions of these development principles that the utilization of the fore-mentioned properties for residential purposes is unfortunately regarded as a non-viable option due to the following:

- The principle of spatial justice whereby past spatial and other development imbalances must be redressed through improved access to and use of land (refer Section 7(a)(i) of SPLUMA), read with the following principle
- The principle of spatial sustainability, whereby spatial planning and land use management systems must promote land development in locations that are sustainable and limit urban sprawl (refer Section 7(b)(vi) of SPLUMA).

South Africa needs to tackle the legacies of the past. Apartheid left behind urban sprawl and weak urban connectivity, with poor residents on the urban periphery, far from employment and economic opportunity. The result is costly and inefficient public transportation systems, some of which are also suffering from all manner of institutional dysfunction.

Nearly 4 million 'RDP houses' have increased the housing stock, but the policy has reinforced urban sprawl and disadvantage because houses have been built on cheap land on the outskirts of cities.

Cities need affordable housing located close to economic opportunities, effective crime reduction, efficient, affordable public transport, and a facilitative environment in which to do business for all firms, large and small.

The concept of 'housing as urbanism' considers the social, political and economic components of housing, which, in reality, translates to housing that is closer to employment, municipal services, public spaces, healthcare, schooling facilities and social services, while also providing the household with the physical infrastructure necessary for a good quality of life. These considerations have not been included in the mass roll-out of low-income housing programmes by the South African government to date, as mentioned previously.

Over the long term, the overall cost of housing developments that are better located, subscribing broadly to the principles of 'housing as urbanism', is likely to be less expensive to municipalities and the development's residents than poorly located, sprawled housing developments.

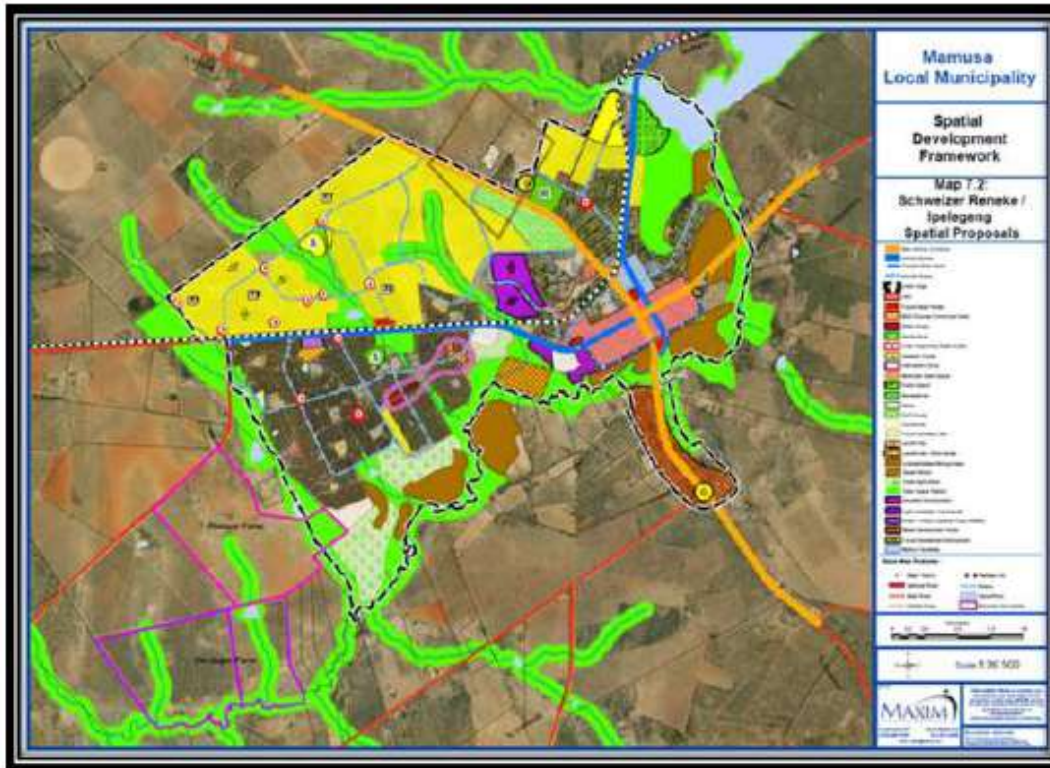
To comply with the development principles set forth in Sections 7(a)(i) and 7(b)(iv) of SPLUMA, it is therefore essential to locate new residential developments in areas that will combat urban sprawl and result in a more compact urban form. The properties detailed above proposed for acquisition and possible development will however contribute towards urban sprawl and will not lead to a more compact urban form.

Taking into consideration the locality of the specific properties proposed as alternative development area, (which have been sited by 3rd parties) cognisance should be taken of the fact two (2) of the subject properties i.e. Portions 22 and 23 of the farm Palachoema 64, Registration Division H.O., North West Province are located outside the demarcated Urban Edge as defined in terms of the Mamusa Spatial Development Framework. This urban edge is specifically defined to delineate the maximum extent of urban expansion to limit urban sprawl and contribute towards a more compact urban form. Only a small portion of Portion 30 of the farm Palachoema 64, Registration Division H.O., North West Province is located inside the demarcated Urban Edge and the included portion was designated as part of the open space system that is not deemed suitable for residential development purposes.

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The demarcated urban edge is indicated in a black dashed line on the following SDF map whereas the alternative properties proposed for development are outlined in pink and purple

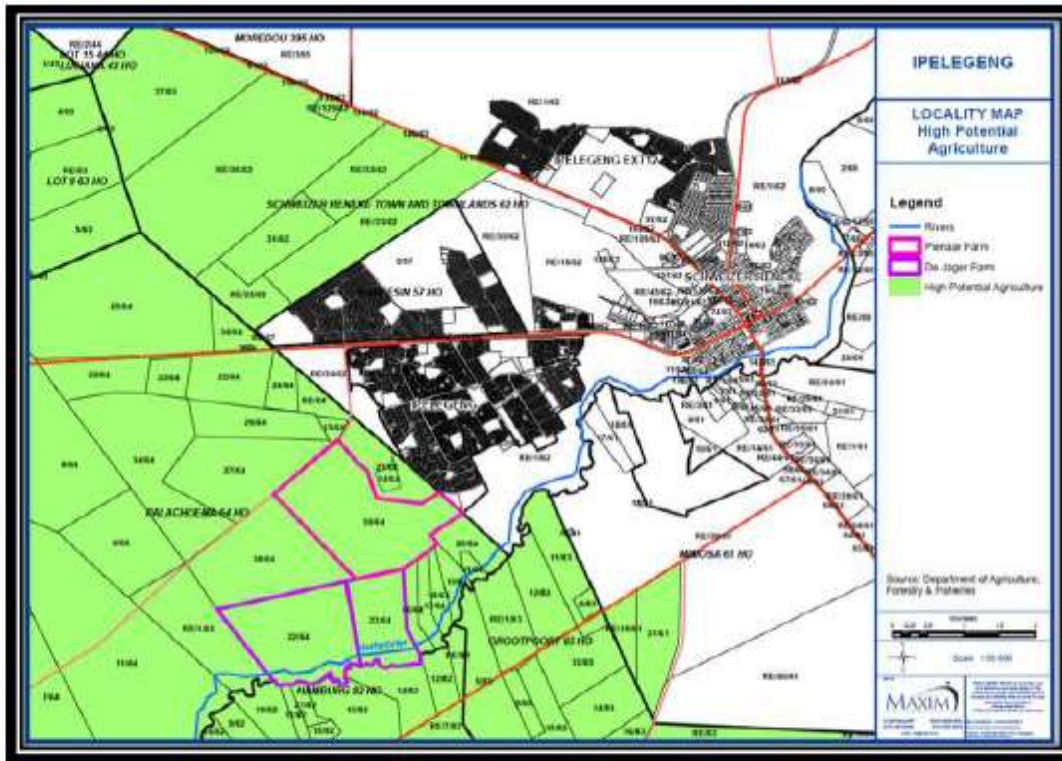


- Principle of spatial sustainability, whereby spatial planning and land use management systems must ensure that special consideration is given to the protection of prime and unique agricultural land (refer Section 7(b)(ii) of SPLUMA):

In this regard it is relevant to note that all three alternative properties proposed for development purposes are located on land classified as High Potential Agricultural Land by the Department of Agriculture, Rural Development and Land Reform. All developments on agricultural land are subject to the consent from the Department of Agriculture, Land Reform and Rural Development in terms of Act 70 of 1970 and the probability of this prime agricultural land being released for residential development purposes is regarded as highly unlikely.

The locality of the alternative properties proposed for development in relation to the land designated by the Department Agriculture, Land Reform and Rural Development (DALRRD) as High Potential Agricultural Land is indicated on the following map (refer farm portions outlined in pink and purple).

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



Taking cognisance of the provisions of the development principles as described above it can be concluded that the utilization of the fore-mentioned properties for residential purposes is unfortunately regarded as a non-viable option.

Once again we thank you for your participation in the PPP.

Sincerely yours,

JP de Villiers
EAP-EAPASA 2019/808

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

11. SUMMARY OF THE FINDINGS AND RECOMMENDATIONS OF SPECIALISTS

11.1 GEO-TECHNICAL REPORT (See Appendix A for a copy of this report)

11.1.1 Terms of Reference

A phase 1 engineering geological investigation with reference to GFSH-2 specification was conducted for the proposed development on the property in Ipelegeng Extension 12, Schweizer Reneke, Mamusa Local Municipality, Northwest Province, and communication between us and the abovementioned parties lead to the field work, commencing in July 2020.

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

11.1.2 Methodology

The following was consulted during the investigation:

- The geological map 2724 Christiana. Scale 1:250 000. The Geological Survey of South Africa.
- The topography map 2725AB Scwheizer Reneke. Scale 1:50 000. The Chief Directorate: Surveys and Land Information, Mowbray.
- Google map satellite image, used as base field map.

SITE INVESTIGATION

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

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

Test pits were dug and representative disturbed samples collected and tested. The position of the test pits are represented in Figure 4 (Appendix A) of the Geotechnical Report. The soil profiles were described according to the methods described by Jennings *et al* (Jennings 1973). This method describes each horizon in terms of moisture content, colour, consistency, structure, type of soil and origin of the soil.

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

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

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

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

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

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

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

LABORATORY TESTS

Although minimum requirements for areas of 345ha required at least 34 samples for foundation indicator tests (GFSH-2), it was reduced to 28 according to the limited variability of the geotechnical character and simplicity of the entire site, as well as the similar limited excavatability on site.

No free swell tests were done as all these areas falls within the drainage features and outside the developable areas.

No consolidometer or potential collapse tests were done as it was impossible to secure any undisturbed soil sample required for these tests.

No soil chemistry samples were tested as all new developments use synthetic pipes not reactive to soil aggressiveness.

The disturbed samples taken during the investigation were tested by the accredited laboratory of SPECIALISED TESTING LABORATORY in Pretoria to determine their physical properties. Indicator tests include grading analyses of each sample taken, the determination of Atterberg limits and linear shrinkage, and compaction tests. The original laboratory results and a summary of results are represented in Table A, Appendix C (Appendix A) of the Geotechnical Report.

11.1.3 Recommendations and Conclusions

- A site of approximately 345 hectares, Ipelegeng Extension 12, Schweizer Reneke, was investigated to determine the engineering geological properties that will influence township proclamation.
- The site is underlain by Archean granite and gneiss of the Archean Basement Complex, from the oldest time span in the Randian Eratem. Surficial deposits include the hillwash and aeolian sand covering the lithology.

- Some problems are foreseen regarding the excavatability to 1,5m depth on site, and localized granite rock outcrop, sub outcrop and core stones can be expected with inflated cost of excavations for the installation of services.
- Zoning of the site revealed zones with constraints regarding the expansive and collapsible properties of the material. It classified as follows.

The following zones were identified on the site:

Special Development:

Site Class C2/2A:

Highly collapsible soil of aeolian origin with thickness in excess of 0,75m, with more than 10mm movement measured at surface characterizes this zone. Foundations will therefore require special foundation techniques such as proper compaction techniques combined with lightly reinforced strip footings with articulation joints at all internal and external doors and openings with light reinforcement (brickforce) in masonry or even soil replacement by an engineered fill soil raft with G5 quality or better. Site drainage and plumbing and service precautions must be used. It is classified as C2 in terms of the SAIEG & NHBRC guidelines (1995) or the SAICE Code of practice (1995), and 2A according to the classification for urban development (Partridge, Wood & Brink).

Site Class C1H1/2A2C:

Medium collapsible soil of aeolian origin underlain by medium expansive and compressible soil with up to 15mm movement measured at surface characterizes this zone. Foundations will therefore require modified normal foundation techniques such as proper compaction techniques and lightly reinforced strip footings with articulation joints at all internal and external doors and openings with light reinforcement (brickforce) in masonry or even soil replacement by an engineered fill soil raft. Site drainage and plumbing and service precautions must be used. It is classified as C1H1 in terms of the SAIEG & NHBRC guidelines (1995) or the SAICE Code of practice (1995), and 2A2C after the classification for urban development (Partridge, Wood & Brink).

Special Development with Risk

Site Class CR/1A3F:

Granite rock outcrop and shallow rock granite or core stones characterize these localized zones and it will require special tools to reach installation depths for services, inducing a higher than normal cost.

Site Class PQ:

Borrow pits and quarries or areas where spoil or building rubble were dumped need to be rehabilitated by backfilling them with an engineered fill of G5 quality or better, compacted in layers before any development can take place.

Undevelopable:

Site Class PD/3L:

This zone comprises the drainage feature within the 1:100 year flood line, and development should be restricted to outside these areas that may also exhibit a more clayey soil with medium expansive properties. The geotechnical problems encountered will require modified normal to special foundation techniques and construction, and proper standard compaction techniques and drainage is required.

- These proposed mitigation measures will be sufficient to successfully address the anticipated geotechnical problems and to ensure the sustainable development as planned.
- **This investigation was done to reveal the geotechnical properties on site with the techniques as described to form our opinion. Although every possible factor during the investigation was dealt with, it is possible to encounter variable local conditions. This will require the inspection of foundations by a competent person to verify expected problems.**

11.2 CIVIL ENGINEER'S REPORT (SEE APPENDIX B)

11.2.1 Terms of reference

Moedi Consulting Engineers (Pty) Ltd. has been appointed to investigate and report on the Bulk Civil Engineering services requirements for the proclamation of Ipelegeng Extension 12.

11.2.2 Methodology

Bulk Water

Current Water Demand

Information with regard to actual water consumption is either not available or unreliable due to the infrequent reading of bulk meters and large-scale water leakages. Several of the bulk meters are out of order and are not repaired or replaced due to financial constraints. There are currently minimal bulk meters installed on supply lines. The MLM does not have the appropriate infrastructure components and management systems in place to measure the extent of such water losses and actual consumer demand.

Due to the lack of the afore-mentioned, the most probable theoretical water demand for the study area is calculated using a rational approach based on water consumption figures derived from the Guidelines for Human Settlement Planning and Design ("Red Book") published by the CSIR.

The publication by the Water Research Commission (WRC) - *Water Consumption Levels In Selected South African Cities* (Van Zyl et al., 2007) was utilised to determine the water demand with an alternative method. The method is a rational approach by considering the socio-economic status of the user and applying the unit consumption rate of the distinct usage activity to an established frequency. The Van Zyl method yielded an 'Average Annual Daily Demand' of 4,8 Mℓ / day for the settlement.

In summary, the 5.9 Mℓ / day determined by the CSIR method can be considered as the upper consumption limits and the 4,8 Mℓ / day established by the Van Zyl method as the lower daily usage. For this development, figures derived from the CSIR (Red Book) will be assumed to provide sufficient accuracy.

Post Development Water Demand

The Van Zyl method yielded an 'Average Annual Daily Demand' of 8.2 Mℓ / day for the settlement. In summary, the 8.8 Mℓ / day determined by the CSIR method can be considered as the upper consumption limits and the 8,2 Mℓ / day established by the Van Zyl method as the lower daily usage.

It must be noted that the theoretical water demand rates utilised to estimate the future water demand implies that the new consumers only use 80 ℓ/capita/day. The availability of ample drinking water tend to alter water consumption, this could substantially increase the water demand of the settlement. By implication, the new

inhabitants could migrate from low volume water users to moderate water consumers. The migration will have a profound effect on the status quo as presented in this report.

Water Conservation & Water Demand Management

There are currently no Water Conservation or Water Demand Management measures in place. By applying the standard IWA Water Balance model developed by Seago & Mckenzie and modified by the Department of Water Affairs to the Schweizer scenario. It is estimated that up to 3 Mℓ / day of potable water could be lost due to water leakages. Thus, it is critical to address this matter.

A funding application with motivation has been submitted for bulk water meters to be installed at strategic positions on the bulk supply lines as well as all existing supply tanks and reservoirs to apply early detection and management principles to water leakages

WASTEWATER

Current Wastewater Generation

Information regarding actual sewer volumes currently generated could not be obtained due to the absence of recorded influent flow data from the Waste Water Treatment Works (WWTW).

Due to the lack of the afore-mentioned, the most probable theoretical wastewater generation for the study area is calculated using a rational approach based on water consumption figures derived from the Guidelines for Human Settlement Planning and Design ("Red Book") published by the CSIR.

The previously mentioned WRC publication was utilised to establish wastewater generation with an alternative method. The method is a rational approach by considering the socio-economic status of the user and applying the applicable unit generation rate. The Van Zyl method yielded an '*Average Wet Weather Flow*' of 4,4 Mℓ / day for the settlement. In summary, the 5.7 Mℓ / day determined by the CSIR method can be considered as the upper daily wastewater generation limit and the 4,4 Mℓ / day established by the Van Zyl method as the lower wastewater generation volume.

Post Development Wastewater Generation

The Van Zyl method yielded an '*Average Wet Weather Flow*' of 7,5 Mℓ / day for the settlement. In summary, the 8.6 Mℓ / day determined by the CSIR method can be considered as the upper daily wastewater generation limit and the 7,5 Mℓ / day established by the Van Zyl method as the lower wastewater generation volume.

11.2.3 Recommendations and Conclusions

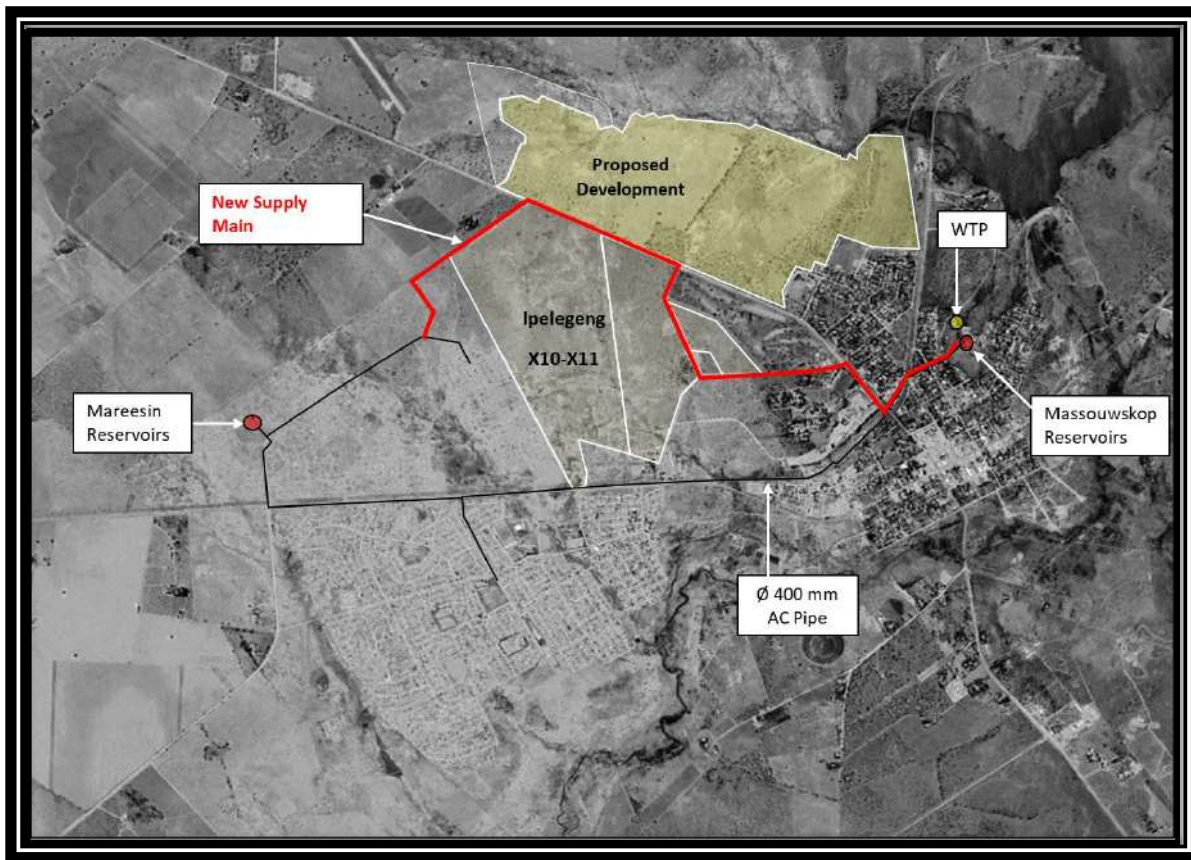
Bulk Water

The estimated current Average Annual Daily Demand (water) equates to 5.9 Mℓ / day. The Proposed Development could increase the water demand to 8.8 Mℓ/day. The existing 6 Mℓ/day WTP will not be able to meet the future water demand. However, the capacity shortfall of the WTP can be mitigated by augmenting the supply volume of the Mamusa bulk water pipeline. The current bulk water storage reservoirs do not have sufficient capacity to accommodate the development. It is proposed that the storage capacity be increased to compensate for the storage shortfalls in future.

In addition, it is proposed that a new bulk supply main be constructed to provide potable water to the development from the Massouwskop reservoirs. Please see Figure below.

The design of internal services will be dependent on the final proposed development layout. The following design guidelines will be followed:

- The internal water supply network will consist of uPVC and/or HDPE pipes of varying diameter according to designs of the Civil Engineer.
- Sufficient storage capacity for water demand and fire water supply.
- Provision of isolating valves, air release valves and fire hydrants to comply with the requirements of the Local Authority and Building Regulations.
- Cognisance will be taken of pipe diameters and water pressure for firefighting purposes



Proposed Bulk Water Infrastructure Augmentation

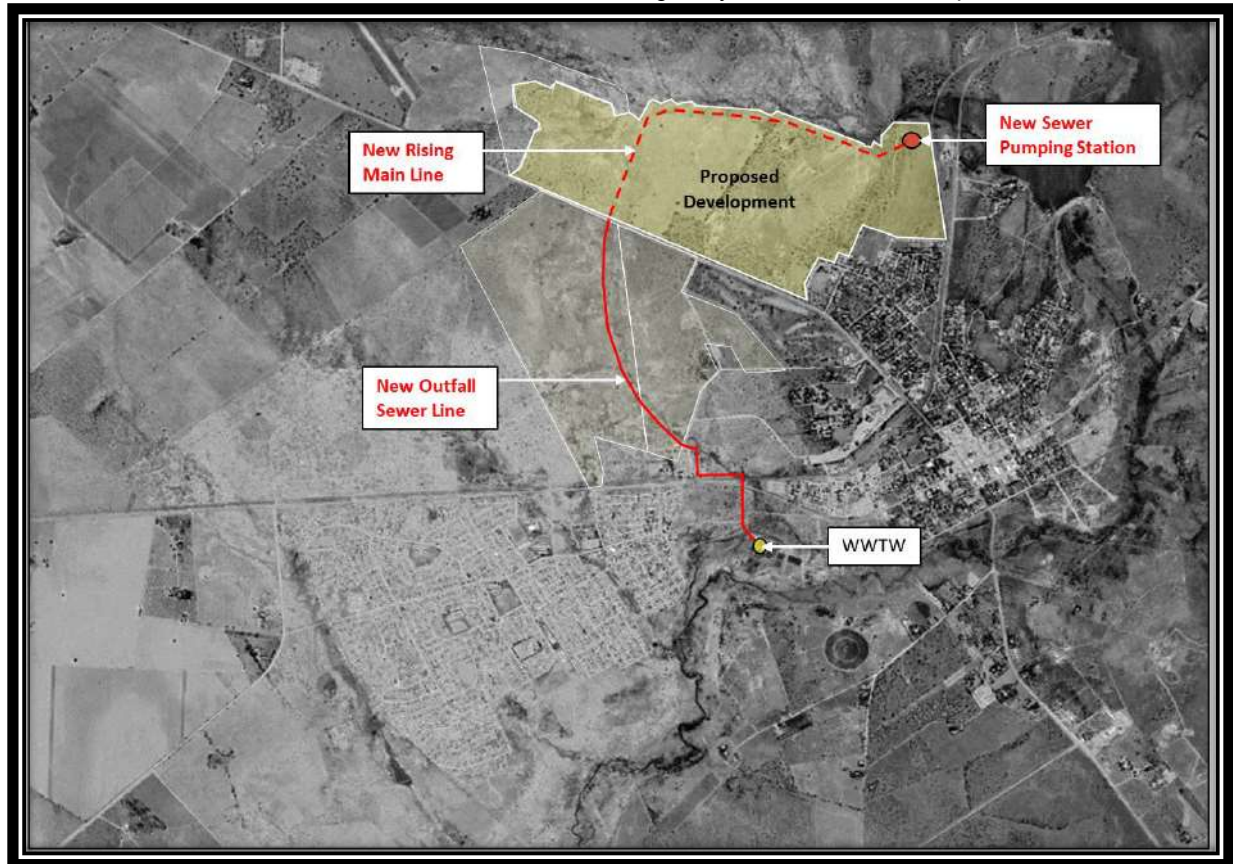
Wastewater

The estimated current wastewater generation equates to 5.7 Ml / day. The Proposed Development could increase the wastewater generation to 8.6 Ml / day. The existing WWTW will have capacity to accommodate the increased wastewater loading. In order to convey wastewater generated by the development to the WWTW, it is proposed that a new sewer pumping station be constructed as well as a new rising main and bulk outfall sewer line. Please see Figure below.

Depending on the future development layout, an internal sewer network of Ø 110mm and Ø 160mm pipes with related Y-junction connections and inspection eyes will be installed to comply with the minimum

specifications stipulated in the SANS 10400 Building Regulations. Manholes and rodding eyes will be constructed at necessary positions to allow for effective maintenance.

The internal sewer network will be connected to the new gravity outfall sewer as explained above



Proposed New Wastewater Infrastructure

Access

The Proposed Development is located north of the R34 road (Vryburg - Schweizer-Reneke). Primary access to the Proposed Development will be from the R34 road which was recently reconstructed where provision was made for an intersection as indicated in the figure below.

The design of the internal access roads shall provide for an appropriate road surface with cross sections designed to accommodate the channelling of storm water generated on the development area.

Where storm intensity calculations dictate, sufficiently designed concrete channels will be constructed as part of the road cross section to channel storm water as described in the relevant section above.

Roads and storm water infrastructure will generally be designed to follow the natural runoff patterns to avoid ponding and flooding of properties with associated damage

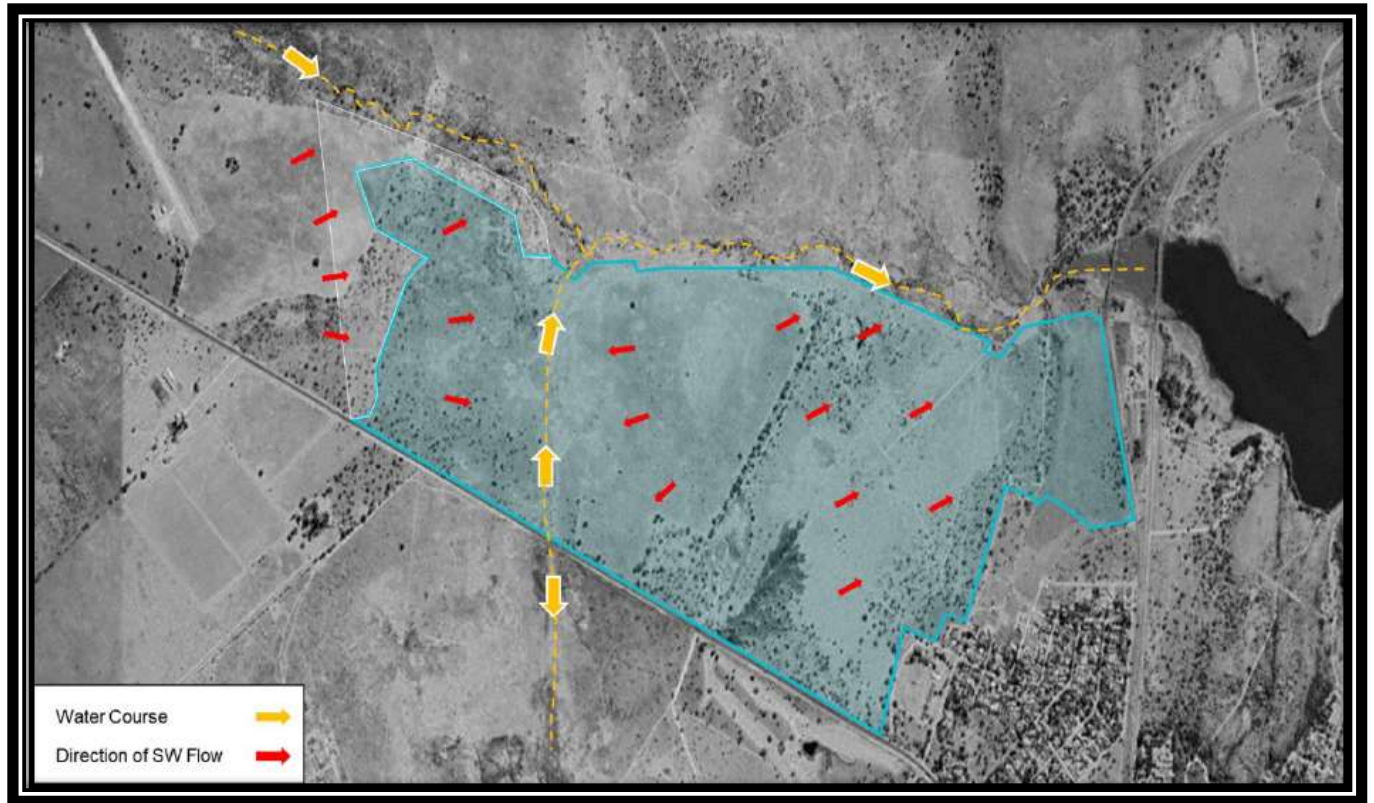


Access to Proposed Development

Storm Water

The Proposed Development is located in a valley with a natural stormwater low-point dividing the eastern and western portions of the development. The natural topography of the area slopes towards the storm water low-point and a watercourse to the north. Due to the natural topography, the area may be prone to stormwater erosion. Urbanisation of the demarcated area will increase the peak storm-water runoff (1-in-2 years recurrence interval) from 4.8 m³/s to 11.3 m³/s. The following figure indicates the direction of stormwater flow.

Stormwater infrastructure will be designed to accommodate runoff as surface flow in an open system. This will be achieved by designing internal roadways to disperse stormwater towards the watercourses. Comprehensive information on stormwater attenuation should be presented in the detailed design report of internal services for approval by the municipality.



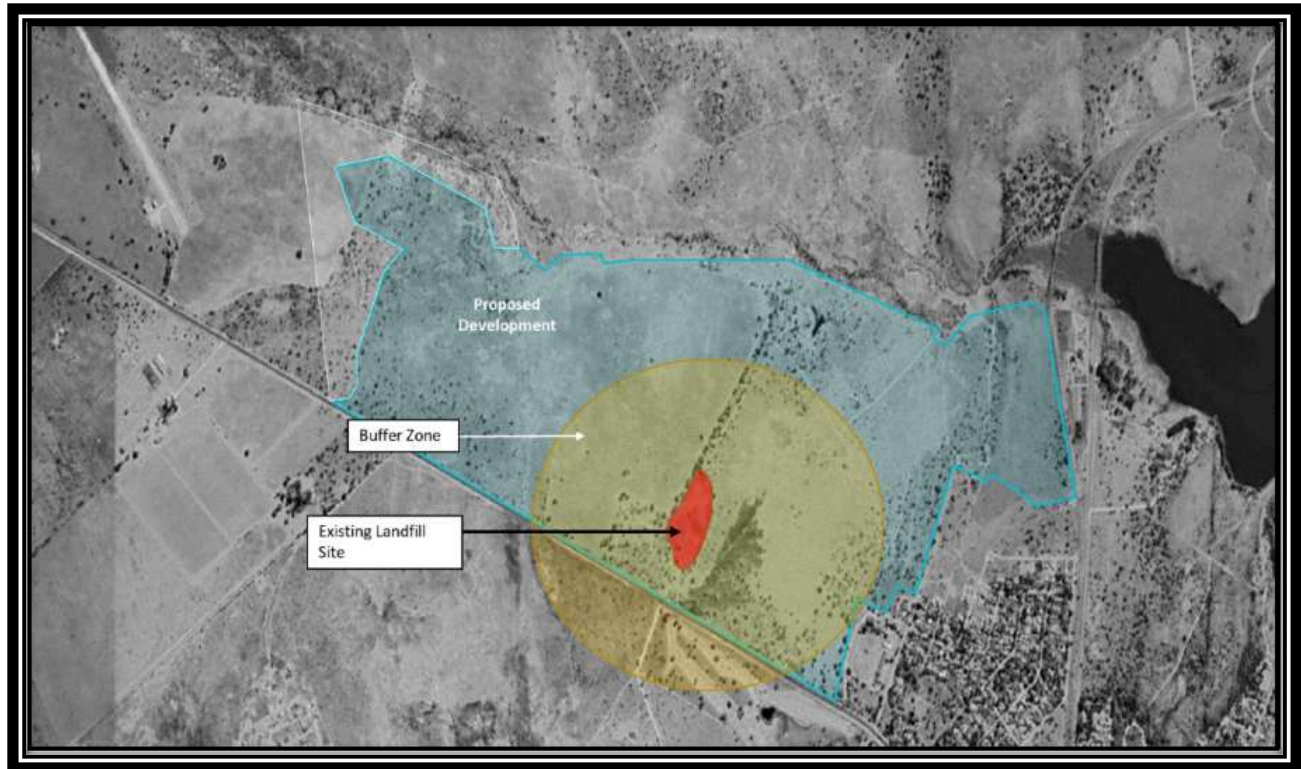
Direction of Storm-water Flow

Solid Waste

Municipal Solid Waste (MSW) removal is a function of the Waste & Environmental Management Division of the MLM. According to the SDF: “a black bag system is used and a special refuse truck. Large containers are also used in the industrial and business areas” to facilitate MSW removal.

The community currently theoretically generates an estimated MSW volume of 89.9 tons per day. The Proposed Development will theoretically increase the estimated total MSW to 97.7 tons per day. The estimated increase in MSW will amount to 10.2m³ per day. The encouragement of an integrated waste management system will dramatically reduce MSW and promote Reduce, Reuse and Recycle practices.

As previously mentioned, the existing landfill site is located within the Proposed Development and operate as a G:S:B - municipal landfill site. According to the permit conditions the Schweizer-Reneke landfill site requires a 500 m buffer zone. It is proposed that the capacity of the current landfill site must be established and evaluated. The following figure graphically illustrates the landfill site and buffer zone:



Landfill

11.3 ECOLOGICAL HABITAT REPORT (SEE APPENDIX C)

11.3.1 Objectives of the habitat study

The objectives of the habitat study are to provide:

- A detailed fauna and flora habitat survey;
- A detailed habitat survey of possible threatened or localised plant species, vertebrates and invertebrates;
- Recording of possible host plants or foodplants of fauna such as butterflies.
- Evaluate the conservation importance and significance of the site with special emphasis on the current status of threatened species;
- Literature investigation of possible species that may occur on site;
- Identification of potential ecological impacts on fauna and flora that could occur as a result of the development; and
- Make recommendations to reduce or minimise impacts, should the development be approved.

11.3.2 Scope of study

- Surveys to investigate key elements of habitats on the site, relevant to the conservation of fauna and flora.
- Recording of any sightings and/or evidence of existing fauna and flora.
- The selective and careful collecting of voucher specimens of invertebrates where deemed necessary.

- An evaluation of the conservation importance and significance of the site with special emphasis on the current status of threatened species.
- Recording of possible host plants or foodplants of fauna such as butterflies.
- Literature investigation of possible species that might occur on site.
- Integration of the literature investigation and field observations to identify potential ecological impacts that could occur as a result of the development.
- Integration of literature investigation and field observations to make recommendations to reduce or minimise impacts, should the development be approved.

11.3.3 Recommendations and Conclusions

- Vegetation at most of the site is visibly degraded and cover of vegetation in many areas is conspicuously poor. Vegetation at an informal rubbish dump site is transformed. Some areas have been cleared, exposing soil. Fairly large patches of disturbed savanna still remain at the site. *Vachellia hebeclada* (Candlepod Thorn) occurs in many clumps at visibly disturbed areas with noticeable poor plant cover.
- Indigenous trees at the site include *Vachellia erioloba* (Camel Thorn), *Vachellia hebeclada* subsp. *hebeclada* (Candlepod Thorn; shrub-height at site), *Vachellia karroo* (Sweet Thorn), *Tarchonanthus camphoratus* (Camphor Bush) and *Grewia flava* (Velvet Raisin; shrub-height at site). The indigenous shrub *Asparagus laricinus* (Wild Asparagus) is found at disturbed places at the site. Indigenous grass species include *Eragrostis lehmanianna*, *Eragrostis superba*, *Aristida congesta*, *Pogonarthria squarrosa*, *Heteropogon contortus*, *Melinis repens* and *Tragus berteronianus*. Indigenous forb species and shrublets include *Bulbine narcissifolia*, *Barleria macrostegia* and *Berkheya onopordifolia*. Herbaceous shrub *Gomphocarpus fruticosus* is also found at the site. Dwarf shrubs and shrublets at the site include *Felicia muricata*. The widespread succulent *Aloe grandidentata* occurs at several places at the site.
- A number of alien invasive weed species are present at previously cleared and perviously cultivated areas. The succulent alien invasive plant species *Cylindropuntia imbricata* (Umbricate Prickly Pear) is conspicuous at the site.
- No wetlands appear to be present at the footprint proposed for the development. A narrow non-perennial river, with its active channel and riparian zone, is present at the northern part of the site. An in-channel dam, the Wentzeldam, is present at the northeastern part of the site.
- Riparian zone along the active channel contains indigenous tree species such as *Vachellia karroo*, *Searsia pyroides*, *Searsia lancea*, *Diospyros lycioides* and *Ziziphus mucronata*. Indigenous grass species such as *Cynodon dactylon* and exotic grass species such as *Paspalum dilatatum* are also present at the riparian zone. Alien invasive herbaceous species such as *Oenothera rosea* and *Rumex crispus* are present at the riparian zone/ fringes of the dam. *Persicaria* species (Knotweeds) occur at the permanent zones of the watercourse.
- Two low rocky ridges are found at the northeastern parts of the site.
- Savanna at the site is represented by the Schweizer-Reneke Bushveld vegetation type (SVk 3) which is listed as a Threatened Ecosystem, Vulnerable, according to the National List of Threatened Ecosystems (2011). Terrestrial vegetation at the site has been modified and transformed at parts, in the past and most of the vegetation appears degraded. Some areas contain savanna in fairly natural condition. The scope overall, for the conservation of natural savanna at the site, is small.
- No Threatened or Near Threatened plant or animal species appear to be resident at the site.
- One plant species, *Vachellia erioloba* (Camel Thorn) that is not threatened but listed as Protected tree species occurs at the site. In terms of a part of section 15(1) of the National Forests Act No. 84

of 1998, no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a license granted by the Minister. *Vachellia erioloba* is numerous at some areas at the site. A Camel Thorn Tree Forest or large Camel Thorn trees (>10 m) such as at Kathu and Witsand in the Northern Cape Province, are absent at the site. If the development is approved it is likely that some Camel Thorn trees (*Vachellia erioloba*) should be removed, in which case a permit for removal would be imperative, and should be applied for.

- Site is part of the Lower Vaal Water Management Area (WMA 10). The site is not part of a Freshwater Ecosystem Priority Area (FEPA) or wetland cluster (Nel et al., 2011a, 2011b).
- Ecological sensitivity at most of the site is medium. Ecological sensitivity at some of the conspicuously disturbed areas at the site, such as the extensive dumping area is indicated as low. Ecological sensitivity at the non-perennial active channel, in-channel dam and riparian zone, as well as the low rocky ridges and their buffer zones, is medium-high owing to the importance of these watercourses and low rocky ridges as conservation corridors in the larger area (Figure 6). Note that an existing dirt road with a concrete wall across the watercourse, a railway line as well as a tar road (R506) currently run across this area of medium-high sensitivity.
- There is little scope for most of the site to be part of a corridor of particular conservation importance, excluding the watercourse (with its bufferzone) and the low rocky ridges. Non-perennial river at the northern part of the site, as well as the low rocky ridges at the northeastern parts of the site are corridors of particular conservation concern.
- 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.

11.4 WETLAND IMPACT ASSESSMENT REPORT (SEE APPENDIX D)

11.4.1 Aims and objectives of the survey

A wetland assessment is required for proposed development at Ipelegeng, Schweizer-Reneke, North West Province, South Africa (elsewhere referred to as the site), and if wetlands are present an assessment of these wetlands will take place. Such an assessment would then focus on the hydro-geomorphic setting, an estimate of the properties of the wetlands, an assessment of the functional aspects of wetlands and an impact assessment to wetlands, should the development be approved.

The objectives of the wetland habitat assessment are to provide:

- An indication of the existence of wetlands at the site and if so:
- An identification of major aspects of the hydro-geomorphic setting and terrain unit at which the wetland occur;
- An estimate of the size and roughness of the wetland
- An indication of the hydric soils at the site;
- An indication of erodability;
- An indication of the presence or absence of peat at the site;
- An outline of hydrological drivers that support the existence and character of the wetland;
- An assessment of the possible presence or absence of threatened or localised plant species, vertebrates and invertebrates of the region, at the site;

- A description of the functions provided by the wetland at the site;
- An interpretation of the priority of the wetland for local communities in the area;
- An interpretation of the priority of the wetland to biodiversity at the site;

11.4.2 Methodology

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

Surveys by R.F. Terblanche were done in October 2020 and December 2020 to note key elements of habitats on the site, relevant to wetland indicators and the conservation of wetland fauna and flora.

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

11.4.3 Recommendations and Conclusions

- A narrow non-perennial river, with its active channel and riparian zone, is present at the northern part of the site. An in-channel dam, the Wentzeldam, is present at the northeastern part of the site. This active channel is narrow but well defined. Note that an existing dirt road with a concrete wall across the watercourse, a railway line as well as a tar road (R506) currently run across the watercourse area which is of medium-high sensitivity. Low concrete wall, where the dirt road crosses at the northeastern parts of the site, results in seasonal impoundment of water near an inlet of the Wentzel Dam.
- Wetlands that could be classified as Floodplain Wetlands, Channelled Valley-bottom Wetlands, Unchannelled Valley-bottom Wetlands, Depressions (Pans), Seeps or Wetland Flats appear to be absent at site.
- Riparian zone along the active channel contains indigenous tree species such as *Vachellia karroo*, *Searsia pyroides*, *Searsia lancea*, *Diospyros lycioides* and *Ziziphus mucronata*. Indigenous grass species such as *Cynodon dactylon* and exotic grass species such as *Paspalum dilatatum* are also present at the riparian zone. Alien invasive herb species such as *Oenothera rosea* and *Rumex crispus* are present at the riparian zone/ fringes of the dam. *Persicaria* species (Knotweeds) occur at the permanent zones of watercourse. The succulent alien invasive plant species *Cylindropuntia imbricata* (Umbricate Prickly Pear) is conspicuous at the site and also at and near the riparian zone.
- Present ecological status (PES) of the Non-perennial River at the site is CATEGORY C which means the watercourse is moderately modified but with some loss of natural habitats (Table 4.2 and Table 4.3). Ecological Importance and Sensitivity (EIS) at the site is Category 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 (Table 4.4 and Table 4.5).

- Site is part of the Lower Vaal Water Management Area (WMA 10). The site is not part of a Freshwater Ecosystem Priority Area (FEPA) or wetland cluster (Nel et al., 2011a, 2011b).
- The non-perennial river at the site, with its riparian zone and buffer zone, is likely to be impacted by the proposed developments, but to a limited extent. 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.
- 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.

11.5 HERITAGE IMPACT ASSESSMENT (HIA) (See Appendix E for a copy of this report)

11.5.1 Terms of Reference for Heritage Impact Assessment

The Terms of Reference for the study was to:

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

5. Review applicable legislative requirements;

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

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

The National Heritage Resources Act

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

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

The National Estate includes the following:

- a. Places, buildings, structures and equipment of cultural significance
- b. Places to which oral traditions are attached or which are associated with living heritage
- c. Historical settlements and townscapes
- d. Landscapes and features of cultural significance
- e. Geological sites of scientific or cultural importance
- f. Sites of Archaeological and palaeontological importance
- g. *Graves and burial grounds*
- h. Sites of significance relating to the history of slavery
- i. Movable objects (e.g. archaeological, palaeontological, meteorites, geological specimens, military, ethnographic, books etc.)

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

- a. The construction of a linear development (road, wall, power line, canal etc.) exceeding 300m in length
- b. The construction of a bridge or similar structure exceeding 50m in length

- c. *Any development or other activity that will change the character of a site and exceed 5 000m² or involve three or more existing erven or subdivisions thereof*
- d. Re-zoning of a site exceeding 10 000 m²
- e. Any other category provided for in the regulations of SAHRA or a provincial heritage authority

11.5.2 Methodology

Survey of literature

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

Field survey

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

Oral histories

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

Documentation

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

11.5.3 Recommendations and Conclusions

A number of known cultural heritage sites (archaeological and/or historical) exist in the larger geographical area within which the study area falls. There are no known sites on the specific land parcel. No sites, features or material of any real cultural heritage (archaeological and/or historical) origin or significance were identified in the study area during the assessment. The only sites identified are the remains (foundations) of recent farming related structures, but these are of recent age. The dumping of building rubble also occurs in the area in places.

Access to parts of the study was not possible due to the fact that it is fenced-off and is in the hands of private individuals (tenants renting from the Municipality) and entry to these properties were not possible. However, it is believed that it is highly unlikely that any sites of heritage significance will be impacted by the proposed development. The remains of some farming-related structures were also observed on aerial images (Google Earth) of the study area, but these could not be physically assessed however. There could possibly be more similar sites in the larger area.

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

From a cultural heritage point of view the proposed Ipelegeng Extension 12 Township Development should therefore be allowed continue, taking cognizance of the above recommendations.

11.6 FLOODLINE REPORT (See Appendix F for a copy of the report)

11.6.1 Terms of Reference

CWT Consulting was appointed by the **Maxim Planning Solutions** to calculate the 1:100 year flood levels in **an unnamed stream** at a proposed new development, **Ipelegeng Extention 12** in the local municipality of **Mamusa**, North-West Province. According to **section 144 of the National Water Act (ACT No. 36 of 1998)** as amended, no person may establish a development unless the layout plan shows (in a form acceptable to the local authority concerned) lines indicating the maximum level likely to be reached by floodwaters on average once in every 100 years.

The area to be developed is riparian to a non-perennial stream and the 1:100 year flood lines must therefore be shown on the layout plans.

11.6.2 Methodology

The rainfall data was derived using software to estimate the storm rainfall in any catchment where coordinates of a reference point in the catchment is used. This program implements procedures to estimate design rainfall in South Africa developed by JC Smithers and RE Schulze. Details of the procedures are contained in the **WRC Report No. 1060/1/03** entitled "Design Rainfall and Flood Estimation in South Africa" by JC Smithers and RE Schulze. The software was developed by MJ Gorven.

The Weather Bureau stations nearest to the reference point in the study area were used to determine the point storm rainfall depths for the 1:100 year storm associated with the two catchments. The data was extracted from Daily Rainfall Estimate Database File updated to 2020.

Methods used to calculate the Flood Peak

Analysis Methodology

The final recommended 1:100 year flood peaks were calculated after considering both **statistical methods** or **deterministic methods**. Both totally different types of flood peak calculation were therefore considered to determine the final recommended 1:100 year flood peaks at the study site.

Deterministic Methods

Various different deterministic methods were used to calculate the flood hydrology for the catchment as this increases the accuracy of the final flood peak calculation. All the methods used take the following into account:

- Evaporation during rain storm
- Wind during rainstorm
- Depth of rainstorm
- Infiltration
- Flow roughness of area.

The following deterministic methods were considered:

1. Rational method as implemented by the Department of Water Affairs.
2. Rational method using an alternative implementation.
3. Standard Design Flood (SDF) method as developed at Pretoria University.
4. The Unit Hydrograph method.
5. The Herbst Algorithm as developed at the Department of Water & Sanitation.
6. The HRU Algorithm as developed at the University of Witwatersrand.
7. The Stephenson & Ten Noordt Algorithms as developed at the University of Witwatersrand.

Due to the size of the catchment the results obtained from only the **first four deterministic methods** mentioned above are deemed to be applicable for this study.

DESCRIPTION OF THE FLOOD LINE CALCULATION

Hydraulic Model

The HEC-RAS model was used to perform the calculations of the water levels. HEC-RAS is an integrated package of hydraulic analysis programs, in which the user interacts with the system through the use of a Graphical User Interface (GUI). HEC-RAS is equipped to model a network of channels, a dendritic system or a single river reach. Certain simplifications must be made in order to model some complex flow situations using the HEC-RAS one-dimensional approach. It is capable of modeling subcritical, supercritical, and mixed flow regime flow along with the effects of bridges, culverts, weirs, and structures.

Procedure

The basic computational procedure of HEC-RAS for steady flow is based on the solution of the one-dimensional energy equation. Energy losses are evaluated by friction and contraction / expansion.

The momentum equation may be used in situations where the water surface profile is rapidly varied. These situations include hydraulic jumps, hydraulics of bridges, and evaluating profiles at river confluences. For unsteady flow, HEC-RAS solves the full, dynamic, Saint-Venant equation using an implicit, finite difference method. The unsteady flow equation solver was adapted from Dr. Robert L. Barkau's UNET package.

11.6.3 Results of the calculation

The flow condition in the stream during the 1:100 year flood is sub-critical flow and the water level at **Section 1** (the section at the downstream end of the study area) will be controlled by the **Wentzel Dam**. The spillway level (Full Supply Level) or **FSL** of the **Wentzel Dam** is **1297,70 m**. The back-water effect of the spillway will raise the water level at **Section 1** with **1,53 m** above the spillway to **1299,23 m**. The 1:100 year flood lines are shown below in **Figure**.



The 1:100 year flood lines

The flow depth during the 1:100 year flood in the **Stream** will be almost **6 meter** at **Section 1** (which is in the inflow to the Wentzel Dam). Both the Road – and the Rail. The flow depth during the 1:100 year flood in the **Stream** will be almost **6 meter** at **Section 1** (which is in the inflow to the Wentzel Dam). Both the Road – and the Rail.

12. CONCLUSIONS AND RECOMMENDATIONS

The land owner, the Mamusa Local Municipality, has appointed AB Enviro Consult CC, an independent environmental consultancy, to undertake an Environmental Impact Assessment for the proposed clearance of 149,5516 ha of indigenous vegetation, located within a critical biodiversity area (CBA 1) and within 100 meters from a non-perennial stream, in order to establish a Township, located on a portion of the farm Schweizer Reneke Townlands 62 HO known as Ipelegeng Extension 12, Mamusa Local Municipality, North West Province.

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

12.1 ENVIRONMENTAL IMPACT STATEMENT

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

In the National Framework for Sustainable Development (NFSD) it is stated that *"the achievement of sustainable development is not a once-off occurrence and its objectives cannot be achieved by a single action or decision. It is an ongoing process that requires a particular set of values and attitudes in which*

economic, social and environmental assets that society has at its disposal, are managed in a manner that sustains human well-being without compromising the ability of future generations to meet their own need. The NFSD further continues to emphasize that South Africa's current development path in certain instances reflects signs of being unsustainable in the long-term. It highlights that a large percentage of growth in economic activity (measured in terms of its contribution to the GDP) is achieved by "consuming' natural resources and degrading our habitat at accelerating rates with the inevitable consequence that future economic growth and development objectives will be prejudiced. "

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

In terms of section 9(1) of the National Housing Act (107 of 1997), every municipality must, as part of the municipality's process of integrated development planning (IDP) take all reasonable and necessary steps to ensure that the inhabitants within its area of jurisdiction have access to adequate housing on a progressive basis by setting housing delivery goals, identifying suitable land for housing development and planning, facilitating, initiating and co-coordinating housing development in its area of jurisdiction.

Housing comprises a series of complex interrelationships between people, their needs and values and resources within a political and legal environment. This complexity requires a focused approach to efforts aimed at providing housing. National Government has started to respond by putting the necessary policy and legislative environment in place.

This framework outlines the roles and responsibilities of different spheres of government in relation to housing, as well as dealing with aspects relating to the design and content of housing policy and legislation. In the context of this framework the Mamusa Local Municipality is required to take all reasonable steps to ensure the provision of adequate housing to its residents.

Various policy directions and legislation exist relating to the role and responsibilities of the different spheres of government to provide and ensure the provision of housing opportunities to affected communities. Of these, the comprehensive plan for the Development of sustainable Human Settlements based on the Breaking New Ground Principles (BNG) forms the basis on which housing development should be implemented.

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

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

- Promoting densification and Integration: The aim is to integrate previously excluded groups into the urban area so as to enable them to enjoy the benefits it offers and to create more integrated, functional and environmentally sustainable human settlements, towns and cities.
- Enhancing Spatial Planning: Greater co-ordination and alignment of various planning instruments and economic policies lies at the heart of sustainable human settlements.
- Provision of a mix of housing typologies for different income groups (Subsidised, GAP, Affordable and bonded Housing opportunities).
- Enhancing the location of New Housing Projects: The location of past housing projects was said to reinforce apartheid spatial settlement patterns. Spatial restructuring aims to achieve a more decisive Intervention In land markets. The following interventions are envisaged viz. accessing well located state-owned and parastatal land: acquisition of well-located private land for housing development, funding for land acquisition and fiscal incentives.

HOUSING AND STANDS NEEDS

- The waiting list of the municipality currently indicated a need for 6000 houses. This waiting list increased drastically from 3171 units in 2014 (NW Multi Year Development Plan 2014).
- According to the 2013 spatial Development Framework (SDF) for Mamusa Local Municipality there were 804 informal structures not on stands (squatters) and 303 informal structures in backgrounds. (This was also indicated in the 2013 Housing Sector Plan for Mamusa Local Municipality)
- Due to the fact that there are no vacant stands in Schweizer-Reneke/ Ipelegeng Urban area, households are currently squatting on municipal vacant land, parks, school sites and in the backyards and the community already submitted two memorandums to the municipality demanding additional stands

The proposed development is based on the premise that the proposed township area should be a fully integrated human settlement catering not only for low cost subsidised housing but also for other housing typologies including inter alia but not limited to GAP housing, affordable bonded housing, the necessary social, community and recreational facilities as well as opportunities for job creation and employment.

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

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

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

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

- It covers the mixed and lower income bracket by providing a higher density housing option;
- The development will inevitably support the use of public transport;

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

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

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

The proposed development will address this shortage.

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

The **Geo-Technical Engineer** has found that the site is underlain by Archean granite and gneiss of the Archean Basement Complex, from the oldest time span in the Randian Erathem. Surficial deposits include the hillwash and aeolian sand covering the lithology. Some problems are foreseen regarding the excavatability to 1,5m depth on site, and localized granite rock outcrop, sub outcrop and core stones can be expected with inflated cost of excavations for the installation of services. Zoning of the site revealed zones with constraints regarding the expansive and collapsible properties of the materiall.

The **Civil Engineer** has determined that the existing 6 Mℓ/day WTP will not be able to meet the future water demand. However, the capacity shortfall of the WTP can be mitigated by augmenting the supply volume of the Mamusa bulk water pipeline. The current bulk water storage reservoirs do not have sufficient capacity to accommodate the development. It is proposed that the storage capacity be increased to compensate for the storage shortfalls in future. In addition, it is proposed that a new bulk supply main be constructed to provide potable water to the development from the Massouwskop reservoirs.

He also concluded that the existing WWTW will have capacity to accommodate the increased wastewater loading. In order to convey wastewater generated by the development to the WWTW, it is proposed that a new sewer pumping station be constructed as well as a new rising main and bulk outfall sewer line.

The **Heritage Impact Assessment** revealed that no sites, features or material of any real cultural heritage (archaeological and/or historical) origin or significance were identified in the study area during the assessment. The only sites identified are the remains (foundations) of recent farming related structures, but these are of recent age. The dumping of building rubble also occurs in the area in places.

The **Fauna and Flora Habitat** study conducted revealed that Vegetation at most of the site is visibly degraded and cover of vegetation in many areas is conspicuously poor. Vegetation at an informal rubbish dump site is transformed. Some areas have been cleared, exposing soil. Fairly large patches of disturbed savanna still remain at the site. *Vachellia hebeclada* (Candlepod Thorn) occurs in many clumps at visibly disturbed areas with noticeable poor plant cover. Indigenous trees at the site include *Vachellia erioloba* (Camel Thorn), *Vachellia hebeclada* subsp. *hebeclada* (Candlepod Thorn; shrub-height at site), *Vachellia karroo* (Sweet Thorn), *Tarchonanthus camphoratus* (Camphor Bush) and *Grewia flava* (Velvet Raisin; shrub-height at site). The indigenous shrub *Asparagus larcinus* (Wild Asparagus) is found at disturbed places at the site. Indigenous grass species include *Eragrostis lehmanianna*, *Eragrostis superba*, *Aristida congesta*, *Pogonarthria squarrosa*, *Heteropogon contortus*, *Melinis repens* and *Tragus berteronianus*. Indigenous forb species and shrublets include *Bulbine narcissifolia*, *Barleria macrostegia* and *Berkheya onopordifolia*. Herbaceous shrub *Gomphocarpus fruticosus* is also found at the site. Dwarf shrubs and shrublets at the site include *Felicia muricata*. The widespread succulent *Aloe grandidentata* occurs at several places at the site. A number of alien invasive weed species are present at previously cleared and perviously cultivated areas. The succulent alien invasive plant species *Cylindropuntia imbricata* (Umbricate Prickly Pear) is conspicuous at the site.

Savanna at the site is represented by the Schweizer-Reneke Bushveld vegetation type (SVk 3) which is listed as a Threatened Ecosystem, Vulnerable, according to the National List of Threatened Ecosystems (2011). Terrestrial vegetation at the site has been modified and transformed at parts, in the past and most of the vegetation appears degraded. Some areas contain savanna in fairly natural condition. The scope overall, for the conservation of natural savanna at the site, is small.

A **Wetland impact assessment** was also done and the specialist came to the following conclusion: A narrow non-perennial river, with its active channel and riparian zone, is present at the northern part of the site. An in-channel dam, the Wentzeldam, is present at the north-eastern part of the site. This active channel is narrow but well defined. Note that an existing dirt road with a concrete wall across the watercourse, a railway line as well as a tar road (R506) currently run across the watercourse area which is of medium-high sensitivity. Low concrete wall, where the dirt road crosses at the north-eastern parts of the site, results in seasonal impoundment of water near an inlet of the Wentzel Dam. Wetlands that could be classified as Floodplain Wetlands, Channelled Valley-bottom Wetlands, Unchannelled Valley-bottom Wetlands, Depressions (Pans), Seeps or Wetland Flats appear to be absent at site.

During the construction phase of the proposed development, jobs will be created and thus the unemployment rate of the area will be reduced.

12.2 ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

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

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

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

12.3 EAP OPINION

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

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

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

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

1. A full copy of the signed EA from DEDECT in terms of NEMA, granting approval for the development must be available on site
2. A copy of the EMPr as well as any amendments thereof must be available on site
3. A suitably qualified ECO must be appointed.
4. Impacts on the environment must be minimised during site establishment and the development footprint must be kept to the approved development area.
5. Vegetation clearing may not commence until such time as the development footprint has been clearly defined.
6. No clearance of vegetation outside of the development footprint may occur. The sensitive area must be clearly demarcated as "No-go zones".
7. No Camel Thorn trees (*Vachellia erioloba*) may be removed before a permit in terms of the National Forests Act No. 84 of 1998 has been obtained.

8. At the end of the construction phase the site and its surrounding area must be free from any pollution that originated as a result of the construction activities.
9. No disturbance of topsoil & subsoil may commence until such time as the development footprint has been clearly defined.
10. No disturbance of topsoil & subsoil outside of the development footprint may occur.
11. At the end of the construction phase the site and its surrounding area must be free from any chemical, fuel, oil and cement spills that originated as a result of the construction activities.
12. At the end of the construction phase the site and its surrounding area must be free from any sewage that originated as a result of the construction activities.
13. At the end of the construction phase the site and its surrounding area must be free from any hazardous or general waste pollution that originated as a result of the construction activities.
14. Dust prevention measures must be applied to minimise the generation of dust.
15. Noise prevention measures must be applied to minimise the generation of unnecessary noise pollution as a result of construction activities on site.
16. Absolutely no burning of waste is permitted.
17. Fires will only be allowed in facilities especially constructed for this purpose.
18. No hunting of animals will be allowed.
19. No intentional destruction of any sites, features or material of cultural heritage (archaeological and/or historical) origin or significance may occur.
20. All Contractors and sub-contractors must abide to the rules and regulations of the Occupational Health and Safety Act, 85 of 1993.
21. No occupation of the site will be allowed until such time as all services has been installed as designed by the Civil Engineer.

13. AFFIRMATION BY EAP

- I, Mr JP de Villiers declare under oath that I:
- a. act as the independent environmental practitioner in this application ;
 - b. do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed;
 - c. do not have and will not have a vested interest in the proposed activity proceeding;
 - d. have no, and will not engage in, conflicting interests in the undertaking of the activity;
 - e. undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required;
 - f. will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
 - g. will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
 - h. will keep a register of all interested and affected parties that participated in a public participation process; and
 - i. will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not.

Signature of the Environmental Assessment Practitioner:

Name of company:

Date:

Signature of the Commissioner of Oaths:

Date

Designation

Official stamp:

14. LIST OF REFERENCES

Department of Environmental Affairs and Tourism. 1992. Integrated Environmental Management. Pretoria, DEAT.

Department of Environmental Affairs and Tourism. 1998. *Guideline Document - EIA Regulations.* Pretoria, DEAT.

Department of Environmental Affairs. 1988. *Climate of South Africa, climate statistics up to 1984.* Weather Bureau (WB40). Pretoria, Government Printer.

Department of Transport, 19--. *Climate of South Africa Part 1 Climate statistics.* Weather Bureau (WB20). Pretoria Government Printer.

S. Cliff. 2015. Environmental Scoping report for the proposed high density residential township "Tanganani extension 7", to be located on a part of Portion 119 of the farm Diepsloot 388 JR, City of Johannesburg Municipality, Gauteng

**APPENDIX A:
GEOTECHNICAL REPORT**

**APPENDIX B:
CIVIL ENGINEERING REPORT**

**APPENDIX C:
FAUNA AND FLORA HABITAT SPECIALIST REPORT**

**APPENDIX D:
WETLAND IMPACT ASSESSMENT REPORT**

**APPENDIX E:
HERITAGE IMPACT ASSESSMENT REPORT**

**APPENDIX F:
FLOOD LINE DETERMINATION REPORT**

**APPENDIX G:
ENVIRONMENTAL MANAGEMENT PLAN**