

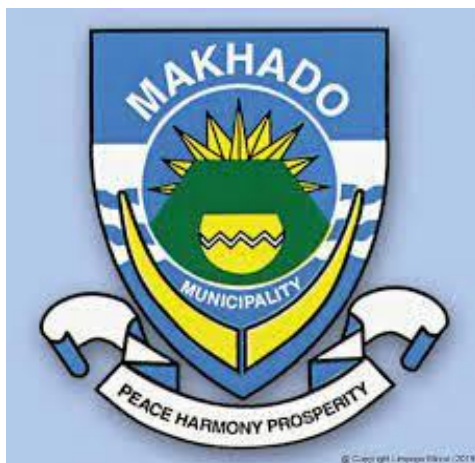


**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR THE PROPOSED
TOWNSHIP ESTABLISHMENT ON PORTION 1 OF THE FARM NATURELLE LOKASIE
272-LS, MAKHADO LOCAL MUNICIPALITY IN LIMPOPO PROVINCE.**

REF NO: 12/1/9/2-V120

OCTOBER 2021

PREPARED FOR:
Makhado Local Municipality
Civic Center
No 83 Krogh street
Louis Trichardt
0920



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DOCUMENT CONTROL	
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Document ID	DRAFT ENVIRONMENTAL IMPACT ASSESSMENT
Client	MAKHADO LOCAL MUNICIPALITY
Date	OCTOBER 2021
APPROVAL:	
Name	PHAKWAGO M. KABELO
Title	ENVIRONMENTAL ASSESSMENT PRACTITIONER
Signature	



Table of Contents

EXECUTIVE SUMMARY	5
GENERAL SITE DESCRIPTION	5
ACRONYMS AND ABBREVIATIONS.....	6
TABLES	7
FIGURES	7
LIST OF APPENDICES	7
NEMA REQUIREMENTS.....	8
1 INTRODUCTION.....	11
1.1 COMPILATION OF EIA REPORT	11
1.2 TERMS OF REFERENCE.....	11
1.3 INFORMATION ON THE METHODOLOGY OF EIA.....	11
2 ENVIRONMENTAL ASSESSMENT PRACTITIONER	12
2.1 DETAILS OF ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP) WHO PREPARED THE REPORT.....	12
3 PROJECT BACKGROUND.....	12
3.1 Particulars of Applicant.....	12
4 PROPOSED ACTIVITY.....	13
4.1 Location of the Proposed Activity	13
4.2 Description of Proposed Activity.....	13
5 infrastructure and services	14
5.1 Roads	14
5.2 Water	14
5.3 Sewer Services.....	15
5.4 Solid Waste	15
5.5 Storm Water Drainage.....	15
5.6 Electricity	15



6	NEED AND DESIRABILITY OF PROPOSED ACTIVITY	15
7	FEASIBLE AND REASONABLE ALTERNATIVES	15
7.1	Site Alternatives.....	15
7.2	Activity Alternatives	16
7.2.1	Transport, Traffic noise and vibrations	16
7.3	Design Alternatives.....	16
7.4	No-go option.....	16
8	NEMA LISTED ACTIVITIES TO BE APPLIED FOR	16
9	PUBLIC PARTICIPATION.....	17
9.1	INTRODUCTION AND OBJECTIVES	17
9.2	METHODOLOGY	17
9.2.1	Newspaper Advertisement.....	18
9.2.2	Site Notices	18
9.2.3	Background Information Documents	18
9.2.4	Consultation with Stakeholders	18
9.2.5	Comments Received	18
9.3	Draft Scoping Report and the Plan of Study for EIA.....	18
9.4	Final Scoping Report and the Plan of Study for EIA.....	19



EXECUTIVE SUMMARY

Mang Geoenviro Services was appointed by Makhado Local Municipality as an independent environmental consultancy to conduct an Environmental Impact Assessment for the proposed township establishment on portion 1 of the farm Naturelle Lokasie 272-LS, Makhado Local Municipality in Limpopo Province.

The process was registered for an EIA (Scoping) process with the Limpopo Department of Economic development, Environment and Tourism (LEDET) under Regulation 982 to 985 as amend by 324 to 327 of the National Environmental Management Act (Act No 107 of 1998) and was assigned the reference number: **12/1/9/2-V120**.

GENERAL SITE DESCRIPTION

The proposed development is located in Tshikota Extension 2 under the Jurisdiction of Makhado local municipality, Vhembe District Municipality. The applicant is proposing to establish a new township development covering an area of approximately of 28.56 hectares in Tshikota Extension 2, Limpopo Province, and the site can be accessed through the Rissik street from the main road (R522). The proposed township establishment is situated on on portion 1 of the farm Naturelle Lokasie 272-LS which will be used for residential, business, educational, institutional, public open space and roads in Tshikota extension 2 in Limpopo.



Figure 1: Locality Map



ACRONYMS AND ABBREVIATIONS

LEDET	Limpopo Department of Economic Development, Environmental & Tourism
EMPr	Environmental Management Plan Report
NEMA	National Environmental Management Act
S&EIR	Scoping and Environmental Impact Reporting
EIAr	Environmental Impact Assessment
I&AP	Interested and Affected Parties
EIA	Environmental Impact Assessment
SAHRA	South African Heritage Resource Agency
SAHRIS	South African Heritage Resource Information Systems
HIA	Heritage Impact Assessment
TIA	Traffic Impact Assessment
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer



TABLES

Table 1	Listed Activities triggered by the development
Table 2	Significance Ratings
Table 3	Key Environmental Impacts

FIGURES

Figure 1	Locality Map
Figure 2	Layout Map
Figure 3	Layout Plan

LIST OF APPENDICES

Appendix 1	Locality Map
Appendix 2	Layout Plan
Appendix 3	Details and Expertise of the EAP
Appendix 4	Proof of Public Participation
Appendix 4.1	Communication to Interested and affected parties/ Authorities
Appendix 4.2	Register/ Proof of Notice Delivery
Appendix 4.3	On-Site Notices
Appendix 4.4	Newspaper Advert
Appendix 4.5	Comments from the I&AP
Appendix 6	Site Pictures
Appendix 7	Specialist Studies
Appendix 7.1	Ecological/ Biodiversity Study Report
Appendix 7.2	Heritage Report
Appendix 7.3	Desktop Palaeontological Study Report
Appendix 7.4	Geotechnical Investigation Report
Appendix 7.5	Engineering Services Report
Appendix 7.6	Flood line Report
Appendix 7.7	Socio-Economic Report
Appendix 8	Environmental Management Plan
Appendix 9	Comments and Response Report
Appendix 10	Specialist Declaration Forms



NEMA REQUIREMENTS

In accordance with the NEMA Regulations f Chapter 5, 1998, Section 31 Environmental Impact Assessment Reports require the following:

Environmental Impact Assessment Reports

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-

(a). details of-

(i). the EAP who prepared the report; and

(ii). the expertise of the EAP, including a curriculum vitae;

(b). the location of the activity, including:

(i). the 21-digit Surveyor General code of each cadastral land parcel;

(ii). where available, the physical address and farm name; and

(iii). where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;

(c). a plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is-

(i). a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken;

(ii). on land where the property has not been defined, the coordinates within which the activity is to be undertaken;

(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;

(f). a motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred location;

(g). a motivation for the preferred development footprint within the approved site;

(h). a full description of the process followed to reach the proposed development footprint within the approved site, including:

(i). details of the development footprint 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 development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;



- (v). the impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts-*
 - (aa) can be reversed;*
 - (bb) may cause irreplaceable loss of resources; and*
 - (cc) can be avoided, managed or mitigated;*
- (vi). the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;*
- (vii). positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;*
- (viii). the possible mitigation measures that could be applied and level of residual risk;*
- (ix). if no alternative development locations for the activity were investigated, the motivation for not considering such; and*
- (x). a concluding statement indicating the preferred alternative development location within the approved site;*
 - (i). 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 location through the life of the activity, including-*
 - (i). a description of all environmental issues and risks that were identified during the environmental impact assessment process; and*
 - (ii). an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;*
 - (j). an assessment of each identified potentially significant impact and risk, including cumulative impacts;*
 - (i). the nature, significance and consequences of the impact and risk;*
 - (ii). the extent and duration of the impact and risk;*
 - (iii). the probability of the impact and risk occurring;*
 - (iv). the degree to which the impact and risk can be reversed;*
 - (v). the degree to which the impact and risk may cause irreplaceable loss of resources; and*
 - (vi). the degree to which the impact and risk can be mitigated;*
- (k). where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;*
 - (l). an environmental impact statement which contains-*
 - (i). a summary of the key findings of the environmental impact assessment;*



- (ii). a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and*
- (iii). a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;*
- (m). based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation;*
- (n). the final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment;*
- (o). 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). a description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;*
- (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;*
- (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;*
- (s). an undertaking under oath or affirmation by the EAP in relation to:*
 - (i). the correctness of the information provided in the reports;*
 - (ii). the inclusion of comments and inputs from stakeholders and I&APs;*
 - (iii). the inclusion of inputs and recommendations from the specialist reports where relevant; and*
 - (iv). any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;*
- (t). where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;*
- (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;*
- (v). any specific information that may be required by the competent authority; and*
- (w). any other matters required in terms of section 24(4)(a) and (b) of the Act.*



1 INTRODUCTION

Mang Geoenviro Services was appointed by Makhado Local Municipality to conduct an Environmental Impact Assessment for the proposed township establishment on portion 1 of the farm Naturelle Lokasie 272-LS in Limpopo Province. The geographical coordinates of the proposed site are: **23°3'17.57" S 29°52' 34.78" E**. and the proposed development site is 28.56 hectares.

1.1 COMPILATION OF EIA REPORT

The following report was compiled by Mang Geoenviro Services on acceptance of the submitted scoping report and advice from the competent authority in terms of regulation 22 (a) to proceed with the tasks contemplated in the plan of study for environmental impact assessment, including the public participation process. The report was compiled according to Regulation 3 (a) of the Regulations 982 of December 2021 promulgated in terms of Appendix 3 of the National Environmental Management Act (Act No. 107 of 1998) stipulating the information that is necessary for the competent authority to consider the application and to reach a decision contemplated in regulation 24.

1.2 TERMS OF REFERENCE

The objective of this study is to conduct an environmental impact assessment. The broad terms of reference for an assessment exercise are to:

- Conduct an in-depth investigation into biophysical aspects, and socio economic aspects focusing on key issues;
- Address the issues that were identified during the scoping process and investigation, which are associated with this planned project;
- Advise the proponent about the potential impacts (positive and negative impacts) of their planned development, as well as the implications for the design, construction and operational phases of the project;
- Identify possible measures to mitigate the potential impacts of the planned project;
- Address the cumulative impact of all aspects of the planned development as well as recommend possible mitigating measures.

1.3 INFORMATION ON THE METHODOLOGY OF EIA

This report addresses the biophysical as well as the socio-economic environments. The information was captured in the following manner:

- Site visits to determine the setting, visual character and land-uses in the area;
- I & APs were informed and consulted by phone, newspaper advertisement, emails, letters and notice boards
- Identifying positive, as well as negative issues;



- Specialist studies done by independent specialists in areas where impacts were identified;
- Making recommendations and presenting guidelines for the mitigation of impacts identified during this exercise.

2 ENVIRONMENTAL ASSESSMENT PRACTITIONER

2.1 DETAILS OF ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP) WHO PREPARED THE REPORT

Co-Ordination, Supervision, and Report Writing:

Phakwago M. Kabelo – Mang Geoenviro Services

Public Participation

Phakwago M. Kabelo – Mang Geoenviro Services

Key Qualifications of EAP:

- Key competencies and experience include Environmental Impact Assessments, Environmental Management Plans, Public Participation Process and Project Management.
- Registered with SACNASP (134805).

Education:

National Diploma: Environmental Sciences

3 PROJECT BACKGROUND

3.1 Particulars of Applicant

Makhado Local Municipality

Civic Center

No 83 Krogh street

Louis Trichardt

0920

Contact person: Mr RV Phalandwa

Tel/ Cell: 082 529 9969

E-mail: rudzanip@makhado.gov.za



4 PROPOSED ACTIVITY

4.1 Location of the Proposed Activity

The proposed township establishment is situated on the southern side of Tshikota township and north of the Tshikota grave yard, west of the street to the grave yard. The site area to be developed is situated south of Tshikota township, road R522 from Makhado(formally known as Louis Trichardt) to Vivo and North of the N1 within Makhado Local Municipality, Vhembe District, Limpopo Province.

The geographical coordinates of the proposed site are: **23°3'17.57" S 29°52' 34.78" E**



Figure 2 Locality Map

4.2 Description of Proposed Activity

The proposed township development will entail 301 sites at Tshikota Extension 2 sites which will include the following infrastructure-REFER TO THE LAYOUTS

- 291 Residential 1
- 1 Business 1
- 1 Educational
- 8 Public Open Space
- Streets



An area of approximately 28.5 hectares of the proposed development of township establishment which will be utilized for township establishment for residential purpose as indicated on the layout plan below.

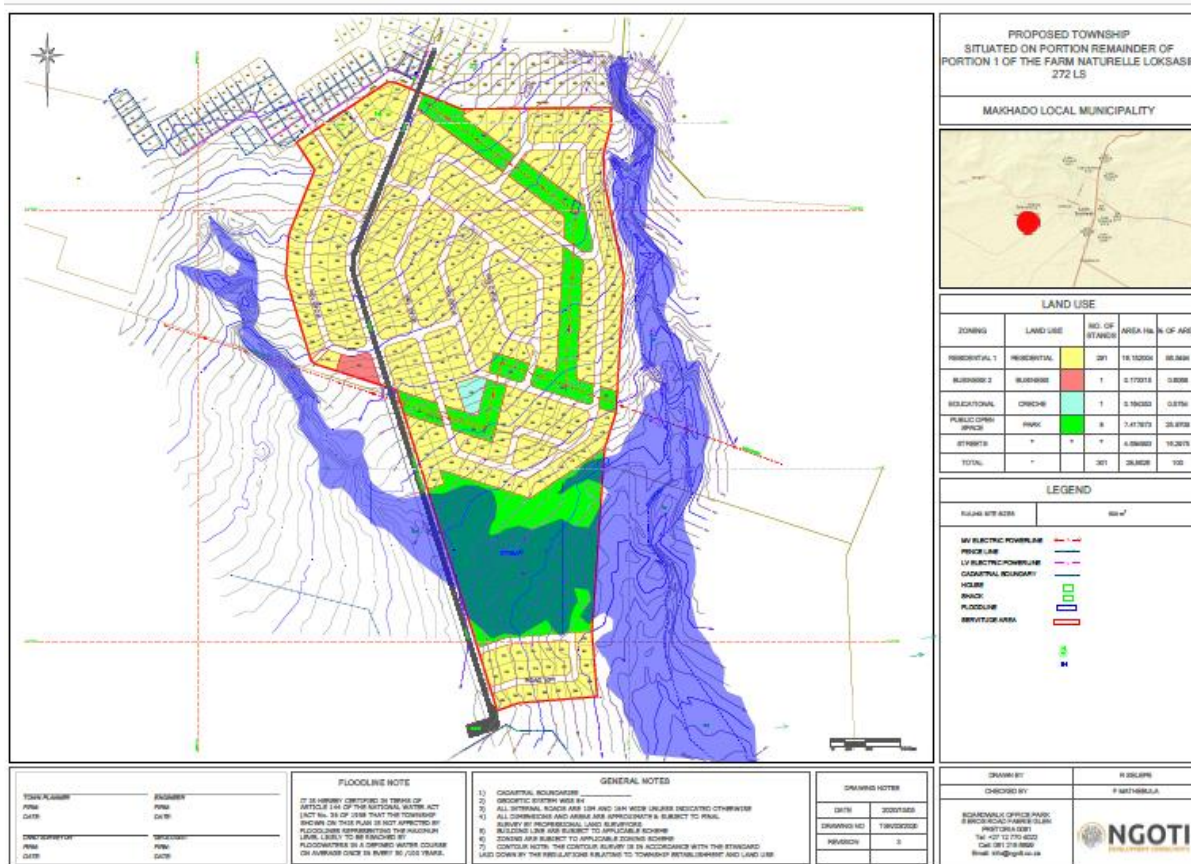


Figure 3: Layout Plan

5 INFRASTRUCTURE AND SERVICES

The following associated infrastructure and services are also envisaged for the development.

5.1 Roads

The site can be accessed from an existing internal streets within Tshikota Ext 2. The internal streets are gravel roads.

5.2 Water

The proposed development will have a water supply from the Kutama-Sinthumule bulk water supply project, from Nandoni Dam.



5.3 Sewer Services

There is an existing sewer bulklines in town known as Louis Trichardt waster water treatment, the proposed development is within the sewer basin of the sewerage of the town.

5.4 Solid Waste

The local municipality is responsible for connecting and disposing the solid waste, there is a regional landfill situated nearest to the site which can be used to dispose solid waste.

5.5 Storm Water Drainage

The stormwater system in Louis Trichardt does not reach the proposed development site. Therefore, Stormwater generated onsite can be channelled to follows the natural slope of the ground, to the lowest point.

5.6 Electricity

There is existing electricity supply infrastructure in the town and adjacent to the site. This can be utilised to supply the development, subject to approval from the power authority.

6 NEED AND DESIRABILITY OF PROPOSED ACTIVITY

- The proposed development will contribute towards improving employment opportunities
- The proposed development will increase basic services and infrastructure development in the area such as water, sanitation, transport and communication.
- There will be improvement in economic growth.

The development's location is therefore desirable due to its location in terms of:

- There will be sites for business opportunities for the residents in the surrounding area.
- Furthermore, the development will eventually be integrated with the environment, have proper service provision and it will be well planned.
- It will create job opportunities (permanent and temporary), ensure social upliftment of the area, create investment opportunities and create a sustainable development environment.
- The proposed development will not have any significant detrimental impact on the surrounding areas and is not in conflict with the adjacent land uses.

7 FEASIBLE AND REASONABLE ALTERNATIVES

7.1 Site Alternatives

There is no alternative site for the proposed development, as the project area is located within the problem area and if the project is change to another area, the problem will remain the same or unsolved.



7.2 Activity Alternatives

7.2.1 Transport, Traffic noise and vibrations

The major impacts that can be brought about by the development are soil erosion. Options that exist to reduce these impacts are:

- Rehabilitation of affected areas after the construction phase is finished.
- Avoiding of unnecessary vegetation clearance.
- Proper management of topsoil throughout the development.

7.3 Design Alternatives

The unique character and appeal of Khombo Village were taken into consideration with the design philosophy. Various layout alternatives were considered by the applicant and town planners, also taking terrain and environmental constraints into account, the current design plan being the result.

7.4 No-go option

This option would come into effect if this assessment reveals fatal flaws in the process. To date no fatal flaws have been revealed. The no-go alternative of not developing the proposed site would leave the environment in the current state.

The no-go would not be the preferred alternative from a socio-economic perspective, as the development in general would result in a variety of employment opportunities and provide an economic boost to the area.

8 NEMA LISTED ACTIVITIES TO BE APPLIED FOR

In April 2006 the Minister of Environmental Affairs and Tourism passed Environmental Impact Assessment Regulations in terms of Chapter 5 of the National Environmental Management Act, 1998 (NEMA). The regulations replaced the Environmental Impact Assessment (EIA) regulations which were promulgated in terms of the Environment Conservation Act, 1989 in 1997. The most recent regulations came into place on 08 December 2014 and, therefore, all application must be made in terms of these NEMA regulations. The purpose of this process is to determine the possible negative and positive impacts of the proposed development on the surrounding environment and to provide measures for the mitigation of negative impacts and to maximize positive impacts.

Notice No. R 982 to 985, specifically 983, 984 and 985 as amended by Notice No. R 324 to 327 list activities that must be considered in the process to be followed. The Activities listed in Notice No. R 984 as amended by 325 requires that



the Scoping and EIA process be followed. However, the draft guidelines document supplied by DEAT states that if any activity being applied for is made up of more than one listed activity and the scoping and EIA process is required for one or more of these activities, the full EIA process must be followed for the whole application.

The proposed development includes a number of listed activities and therefore it will be necessary to follow a full EIA process (as an independent process) in terms of NEMA. The applicant is therefore applying for the following listed activities.

LISTED ACTIVITY	ACTIVITY Number	DESCRIPTION
GNR 325 of 7 April 2017	Activity 15	The proposed development involves clearing and preparing an area approximately 28.5 hectares.
GNR 327 of 7 April 2017	Activity 28	The proposed project entails an establishment of an area for residential purposes.

Table 1: Listed activities triggered by the development

9 PUBLIC PARTICIPATION

9.1 INTRODUCTION AND OBJECTIVES

As an important component of the EIA process, the public participation process involves public inputs from interested and affected parties (IAPs) according to Section 43 of the NEMA 2014 Regulations. I & AP may comment during the planning phase of the proposed project.

The key objectives of the public participation process are to:

- Identify a broad range of I & APs, and inform them about the proposed project;
- Understand and clearly document all issues, underlying concerns and suggestions raised by IAPs; and
- Identify areas that require further specialist investigation.

9.2 METHODOLOGY

The public participation process was undertaken in accordance with the plan of study accepted in terms of Regulation 22 (a). The following actions have already been undertaken as part of this process:

- Advertisement in the local newspaper
- Placement of site notices
- Distribution of Background Information Documents (BIDs) to the landowners adjacent to the proposed development site.



- Phone calls and email consultation with stakeholders

9.2.1 Newspaper Advertisement

The proposed project was advertised in the local newspaper to notify people about the project and request them to register as IAPs and comment on the proposed development.

9.2.2 Site Notices

Site notices were placed at various points around the site.

9.2.3 Background Information Documents

Notices/ letters regarding the background information of the proposed development activity were also hand delivered to the landowners/ occupiers located next to the proposed development site.

9.2.4 Consultation with Stakeholders

The scoping report was circulated to the stakeholders for observation and comments.

9.2.5 Comments Received

Comments received on the scoping report are attached as part of the draft EIAR. The EIA Report is currently being circulated for comments.

9.3 Draft Scoping Report and the Plan of Study for EIA

- The draft scoping report and the plan of study for EIA was submitted to LEDET on the 06th of May 2021 and acknowledged on the 18th of May 2021
- The draft scoping report and plan of study for EIA was made available for comments to all registered I&AP's.
- No comments were received relating to the Draft Scoping report from other I&AP's.
- Verbal comments from members of the community were in favour of the proposed development
- The environmental impact assessment process will be based on the actions and findings of the scoping phase as well as the comments and reviews by authorities and from interested and affected parties.
- All documentation lists and proof of the Public Participation process were incorporated in the draft Scoping report.



9.4 Final Scoping Report and the Plan of Study for EIA

- The Final scoping report was submitted to LEDET on the 05th of August 2021 and was accepted on the 19th of September 2021.
- This Final scoping report and plan of study for EIA was made available for comments to all registered I&AP's.
- Written comments were received from IAPs.
- All comments and responses to comments have been included in the EIA report.
- All documentation lists and proof of the Public Participation process were incorporated in this report.
- The environmental impact assessment process is based on the actions and findings of the scoping phase as well as the comments and reviews by authorities and from interested and affected parties.

9.5 SUMMARY OF KEY ISSUES RAISED BY THE I & AP's

Organization	Name	Date Received	Comments	Response
SAHRA	Nokukhanya Khumalo	01/07/2021	Interim Comment: SAHRA requested for the PIA study to be done and be submitted with the draft EIA report.	The PIA study has been carried out and attached as part of the draft EIA report.

10 ENVIRONMENTAL ASPECTS

10.1 LITERATURE REVIEW

Literature pertinent to this area and its immediate environs has been reviewed.

10.2 DESCRIPTION OF THE ENVIRONMENT

10.2.1 Topography

The topography of the site is generally flat and hilly. The mainly flat slopes allow for developments without the need for massive site earthworks.

10.2.2 Climate

The climate in Tshikota is warm and temperate. In winter, there is much less rainfall than summer. The average annual temperature is 18.7°C. The rainfall in the area under investigation is around 793mm per year. The driest month is August with 9mm of rain. Most precipitation falls in January with an average of 153mm. January is warmest month of



the year. The temperature in January averages 21.9°C. Moreover; in June, the average temperature is 13.4°C, it is the lowest average temperature of the whole year. Furthermore, there is a difference of 144mm of precipitation between the driest and wettest months, with the average temperature varying during the year by 8.5°C.

10.2.3 Geology of the Area

The study area covers part of the junction between the granite-greenstone terrain of the north-eastern part of the Kaapvaal Craton and the highly metamorphic rocks of the Southern Marginal zone of the Limpopo Mobile Belt.

10.2.4 Biodiversity

The study area a fairly homogenous savannah biome. The site is dominated by indigenous plant species with very few exotic plant species. The site is mostly covered by juvenile plant species

10.2.5 Historical, archaeological or cultural sites

A heritage specialist was appointed to assess the site and determine whether any significant material or graves are present at or near the site.

10.3 SUMMARY OF FINDINGS AND RECOMMENDATIONS OF SPECIALIST STUDIES AND SPECIALISED PROCESSES

The necessary specialist studies and specialized processes have been performed in areas where possible negative impacts were identified. This was done according to Appendix 6 of GNR 982 published in the Government Gazette. 38282 of 08 December 2014 of NEMA. Specialised studies relevant to the project include:

10.3.1 Ecological Assessment

An ecological study was conducted to assess the area for protected and endangered plant and animal species.

Details of the Specialist:

Mvedzo Environment and Safety Solutions (PTY) LTD

Office No: 02 ENM Timber Building

Nelspruit, Mpumalanga

1200

Cell: 081 434 4234



Email: mudaut2010@gmail.com

Contact Person: Takalani Mudau (Pr.Sci.Nat)

Area of expertise: Ecology Specialist.

Findings:

The savannah biome is fairly Homogenous in the proposed site as well as the surrounding area, it was found that the majority of the site is recovering from an event of disturbance since majority of plant species are juveniles.

There are croplands that are flourishing very well at the site and it is dominated by indigenous plant species with exception of very few exotic plant species. There was evidence of present of birds since there are birds nest that were spotted during the site vist.

The site is a favorable location for the township activity. There is sufficient space available at the site to accommodate the development and there are no any sensitive environmental and there were no species species which falls within the protected plant category which were noted on site. The area still maintains the indigenous environment though the wood harvesting, illegal dumping and was evident.

Recommendations:

- The *schlerocharia birrea* species must be avoided and be protected as practically possible, if there is no way for them to be avoided the permit from the department of Agriculture Forestry and Fisheries to relocate or to cut must requested.
- Vegetation clearing must always be kept at minimal.
- Recommendation made from the EMPr must be adhered to in order to have minimal damage to the existing grassland and all associated species close to the proposed township.
- If one big plant is removed it must be replaced by four juvenile of the same species.
- The applicant must rehabilitate and increase the conservation value of the area after the construction

10.3.2 Geotechnical Specialist

A geotechnical assessment was conducted only to identify potentially adverse geotechnical conditions at the site in order to facilitate and inform the planning phase of the proposed development.

Details of the Specialist:

Mang Geoenviro Services (Pty) Ltd

Cell: 079 081 2369



Email: j.vhethas@gmail.com

Contact Person: Mr Lavhesani Mavhetha (Pr.Sci.Nat)

Area of expertise: Geotechnical Specialist

Findings:

- The excavation conditions of the proposed development are categorized as soft mechanical excavation to 1.0m below existing ground level.
- No outcrops of weathered granite bedrock were encountered during the investigation on site.
- No inherent slope stability issues were identified during the field investigation. Slope stability issues are unlikely to be a problem on this site.
- Natural ground water seepage was not encountered in any of the test pits and there is no indication of temporary perched water tables in the soil profile, not even at the contact between soil and bedrock. Groundwater seepage is not expected to be problematic at shallow depths on this site.
- According to the test pit data the site is generally underlain by granite.

Recommendations:

- All rainwater should be channeled away from the structures (Adequate drainage should be implemented).
- Earthworks and opening of foundations excavations should be carried out by a competent person. Laboratory testing of the collected samples indicate that the underlying soil exhibits low to medium heave potential.
- During the construction phase, it is highly recommended that qualified personnel should regularly inspect and monitor, to track and record deviations in the actual foundation conditions from those predicted as reported in this geotechnical site investigation report.
- Excavate to a minimum of 0,7 m depth to remove all the existing loose to medium dense sandy gravel, over the entire footprint of the structure and the access roads and parking areas, plus 1,5 m wider all round and replace it with material of the following specification.
- The majority of the removed material is likely to be suitable for re-compaction but should be tested to ensure that it meets the required standards prior to placing it back into the excavations.
- Modified normal shallow foundations may be used, with maximum bearing pressures limited to 50 kPa.



10.3.3 Heritage and archeological Specialist

The purpose of this study is to identify heritage resources within a proposed development area, assess their significance, the impact of the development on the heritage resources and to provide relevant mitigation measures to alleviate impacts to the heritage resources.

Details of Specialist:

HCAC Heritage Consultants

Suite 34

Modimolle

0510

Tel: 082 373 8491

Fax: 086 691 6461

E-mail: jaco.heritage@gmail.com

Contact Person: Mr. J. Van der Walt

Area of expertise: Heritage and Archeology Specialist

Findings:

No cultural heritage (archaeological or historical) sites, features or objects were found. There is no structures/buildings on site which are older than 60 years and there are no graves identified on site. No burial sites or graves were recorded but there is a formal cemetery on the south and located away from the development site.

Recommendations:

No further studies or mitigations are recommended due to the fact that within the proposed development site and its surroundings there are no archaeological or place of historical significance to be impacted by the proposed development. However, should any chance archaeological or any physical cultural resources be discovered, heritage authorities should be informed. The cemetery should be avoided at all costs during construction.

10.3.4 Engineering and Services Specialist

A report on the civil services, including solid waste and water options to demonstrate the provision of infrastructure required for the required township.

**Details of Specialist:**

Dalimede Projects (Pty) Ltd
34 Jorrisen Street
Polokwane, 0699

Tel: 079 368 8414

Fax: 086 518 0234

Email: admin@dalimede.com

Contact Person: Litmos Mthunzi

Area of expertise: Civil Engineer

Findings and Recommendation:**Water**

Louis Trichardt town water sources is Albasini Dam, Nandoni dam on Luvuvhu River and boreholes. However, the actual water abstracted could not be confirmed in all these sources. There are existing bulk water pipelines feeding Louis Trichardt town and Tshikota areas.

The proposed development will tap-off existing water bulk lines. The proposed bulk line connection is expected to be 1km long due to the close integration of the site to existing water services. Approval to cross road servitudes will require prior approval from authorities before construction commencement.

Sewer Services

The Louis Trichardt town generated wastewater is treated at the Louis Trichardt WWTW. The activated sludge plant has a design capacity of 3.6Mℓ/day. The actual sewer flow handled by this plant could not be confirmed and Makhado WWTW it is new, the plant has a design capacity of 5Mℓ/day. The actual sewer flow handled by this plant could not be confirmed. However, the received sewer flows are less than the design capacity, hence indicating availability of spare capacity of the WWTW. These plant treats the wastewater generates from the town, covering industrial, domestic, business, educational, institutional and other land uses.

The existing Tshikota sewer outfall is currently overloaded. Therefore it is recommended to use the new proposed outfall service that is located 2.5km away from the development site.

Electricity



There are existing MV feeder lines that are supplying the area. The MV line is Mink Conductor. Industrial 22kV feeder is fed from Makhado main Substation. The current loading from Makhado Substation is 5MVA. It is recommended that the township can be connected. The construction will be constructed within the township connecting the distribution transformer.

Stormwater drainage system

The town has a functioning stormwater system. However, the stormwater system does not reach the proposed development. Stormwater generated onsite can be channelled to follow the natural slope of the ground, to the lowest point. It is envisioned to use Sustainable Urban Drainage Systems (SuDS) to manage stormwater runoff from the site. It is recommended that a stormwater management plan be submitted to the municipality before construction starts.

Solid waste

The solid waste generation range from 0.41 kg per capita per day in the poor areas, to 1.29 kg per capita per day.

The lower rate of 0.41kg/c/d was adopted for the township. Solid waste will be generated by the development.

It is recommended that a regional landfill situated nearest the site is used to dispose solid waste. The local municipality is responsible for connecting and disposing the solid waste.

10.3.5 Floodline Report

Details of Specialist:

Dalimede Projects (Pty) Ltd

34 Jorrisen Street

Polokwane, 0699

[Tel: 079 368 8414](tel:0793688414)

Fax: 086 518 0234

Email: admin@dalimede.com

Contact Person: Litmos Mthunzi

Area of expertise: Floodline Specialist

It is recommended that a buffer zone of 20m should be provided between the 1:100 floodline area and any proposed development.



10.3.6 Paleontological Desktop study

Details of specialist:

Paleobotanist

Private bag 652

WITS Johannesburg

2050

Email: Marion.bamford@wits.ac.za

Contact Person: Prof Marion Bamford

Area of expertise: Paleontologist

Findings:

Based on the geology of the area it can be assumed that the formation and layout of the soils, sands and alluvium are typical for the country and do not contain trace fossils or fossil plant, insect, invertebrate and vertebrate material. The uncertainty is the interpretation by SAHRIS.

Recommendations:

The experience and the lack of any previously recorded fossils from the area, it is extremely unlikely that any fossils would be preserved in the Aeolian sands of the Quaternary. There is a very small chance that fossils from pans or springs may have been entrapped in the sands of the Kalahari Group(Quaternary), based only on the interpretation of the palaeosensitivity for this region by SAHRIS, a Fossil Chance Find Protocol should be added to the EMPr. However, if fossils are found once excavations have commenced then they should be rescued and a palaeontologist must be called to assess and collect the representative sample.

10.3.7 Social Impact Assessment Study

Details of Specialist:

Great Warthog Geo-Environmental Group

No.114 Dzata Street

Office No 004

Vleifontein

0948



Tel: 015 547 0524/ 082 269 4524

Email: admin@greatwarthog.co.za

Contact Person: Mr Nethononda G.L

Area of expertise: Socio-economic impact assessment

Findings:

- The project area is within ward 16 of Makhado Local Municipality and has a population of 9781, which contributes just 2% of the total population of Makhado Local Municipality ward 7, which includes Tshikota Township and the study area, is a home to 14228.
- The project area has majority population as females with 5286 (54%) and the males in the project area account for 4495 (46%).
- The majority of the people residing in the municipality speaks Tshivenda as their first language. A total of 312 915 people in the Municipality speaks Tshivenda followed by 65 561 Xitsonga speaking people.
- There are 44 public clinics and 7 mobile clinics that serve the municipality. There are 3 public hospitals in Makhado Local Municipality and only 1 private hospital.
- Only 29% of the population within Makhado Local Municipality is employed, majority of the population is not economic active with 49%. The unemployed and those discouraged to seek for employment make up 7% of the study area, the unemployment rate within the project area is way below the national unemployment rate.

Recommendations:

The magnitude and significance of the potential socio-economic impacts associated with the establishment of new Township at Tshikota ext 2 project outweigh the potential negative socio-economic impacts. It is therefore recommended that the development as proposed be supported by the competent authorities, subject to the implementation of the recommended enhancement and mitigation measures put forth in this report.

11 IMPACT ASSESSMENT

An environmental Impact Assessment must take into account the nature, scale and duration of effects on the environment whether such effects are positive (beneficial) or negative (detrimental). Each issue / impact is also assessed according to the project stages from planning, through construction and operation to the decommissioning phase. Where necessary, the proposal for mitigation or optimisation of an impact is noted.



11.1 Methodology to assess the Impacts

To assess the impacts on the environment, the process has been divided into two main phases namely the Construction phase and the Operational phase. The activities, products and services present in these two phases have been studied to identify and predict all possible impacts.

In any process of identifying and recognising impacts, one must recognise that the determination of impact significance is inherently an anthropocentric concept. Duinker and Beanlands, (1986) in DEAT 2002, Thompson (1988), (1990) in DEAT 2002 stated that the significance of an impact is an expression of the cost or value of an impact to society.

However, the tendency is always towards a system of quantifying the significance of the impacts so that it is a true representation of the existing situation on site. This has been done by using wherever possible, legal and scientific standards which are applicable.

The significance of the aspects/impacts of the process have been rated by using a matrix derived from Plomp (2004) and adapted to some extent to fit this process. These matrixes use the consequence and the likelihood of the different aspects and associated impacts to determine the significance of the impacts.

Nature	Classification of whether the impact is positive or negative , direct or indirect
Extent	Spatial scale of impact and classified as: Site: the impacted area is the whole site or a significant portion of the site Local: within a radius of 2 km of the construction site. Regional: the impacted area extends to the immediate, surrounding and neighboring properties. National: the impact can be considered to be of national significance.
Duration	Indicates the lifetime of the impact and is classified as: Short term: the impact will either disappear with mitigation will be mitigated through natural processes in a span shorter than the construction phase. Medium term: the impact will last for the period of the construction phase, where after it will be entirely negated.



	<p>Long term: the impact will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter. The only class of impact which will be non-transitory.</p> <p>Permanent: mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient.</p>
Intensity	<p>Describes whether an impact is destructive or benign</p> <p>Low: impact affects the environment in such a way that natural, cultural and social functions and processes are not affected.</p> <p>Moderate: affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way.</p> <p>High: natural, cultural and social functions and processes are altered to extent that they temporarily cease.</p> <p>Very high: natural, cultural and social functions and processes are altered to extent that they permanently cease.</p>
Probability	<p>Describes the likelihood of an impact to occur:</p> <p>Improbable: likelihood of the impact materializing is very low.</p> <p>Possible: the impact may occur.</p> <p>Highly probable: most likely that the impact will occur.</p> <p>Definite: the impact will occur.</p>
Significance	<p>Based on the above criteria the significance of issues was determined. The total number of points scored for each impact indicates the level of significance of the impact, and is rated as follows:</p> <p>Low: the impacts are less important.</p> <p>Medium: the impacts are important and require attention, mitigation is required to reduce the negative impacts.</p> <p>High: the impacts are of great importance. Mitigation is therefore crucial.</p>
Cumulative	<p>In relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.</p>



Mitigation	Where negative impacts are identified, mitigation measures (ways of reducing impacts) have been identified. An indication of the degree of success of the potential mitigation measures is given per impact.
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Criteria for the rating of impacts				
Criteria	Description			
Extent	National	Regional	Local	Site
Duration	Permanent	Long-term	Medium-term	Short-term
Intensity	Very high	High	Moderate	Low
Probability	Definite	Highly probable	Possible	Improbable
Points allocation	4	3	2	1
Significance Rating of classified impacts				
Impact	Points	Description		
Low	4-6	A low impact has no permanent impact of significance. Mitigation measures are feasible and are readily instituted as part of a standing design, construction or operating procedure.		
Medium	7-9	Mitigation is possible with additional design and construction inputs.		
High	10-12	The design of the site may be affected. Mitigation and possible remediation are needed during the construction and/or operational phases. The effects of the impact may affect the broader environment.		
Very high	13-16	The design of the site may be affected. Mitigation and possible remediation are needed during the construction and/ or operational phases. The effects of the impact may affect the broader environment.		
Status	Perceived effect of the impact			
Positive (+)	Beneficial impact			
Negative (-)	Adverse impact			
Negative impacts are shown with a (-) while positive ones are indicated as (+)				



12 ASPECTS, RELATED IMPACTS, SIGNIFICANCE AND PROPOSED MITIGATION MEASURE

In this section, all the possible impacts that can be predicted in both the construction and operational phases are addressed. Specific mitigation measures are proposed and the significance of these impacts given with and without mitigation measures.



Impacts	Significance Rating Before Mitigation Measures	Proposed Mitigation Measures	Significance Rating After Mitigation Measures
Planning/ Designing Phase			
Poor Design – Structural failures	High (Negative)	Ensure compliance with the industry standards	Low (Negative)
Disregard of legislative requirement	High (Negative)	Ensure compliance with relevant legislation and legal standards	Low (Negative)
Construction Phase			
Alteration of topography due to stockpiling of soil, building material and debris and waste material on site.	Medium (Negative)	<p>All stockpiles must be restricted to designated areas and are not to exceed a height of 2 metres.</p> <ul style="list-style-type: none"> • Stockpiles created during the construction phase are not to remain during the operational phase. • The contractor must be limited to clearly defined access routes to ensure that sensitive and undisturbed areas are not disturbed. 	Low (Negative)
Consumption and use of surface water for construction purposes (i.e. water tankers for dust suppression).	Medium (Negative)	The Municipality to comment and advice on surface water availability and integrity.	Low (Negative)
Contaminated run-off:	Medium (Negative)	<ul style="list-style-type: none"> • Bunded areas should be used to store chemicals. • Clean-up of spills as soon as they occur. 	Low (Negative)



<ul style="list-style-type: none"> • Spillage of fuels, lubricants and other chemicals; • Inadequate stormwater management around the site; the dumping of construction material, including fill or excavated material into, or close to surface water features that may then be washed into these features; • Construction-related activities such as cement batching; • Construction equipment, vehicles and workshop areas will be a likely source of pollution as a non-point source; and • Lack of provision of ablutions that may lead to the creation of 'informal ablutions' within or close to a surface water resource. 		<ul style="list-style-type: none"> • Keep construction activities away from the surface water resources. • Adequate provision of ablutions for construction employees. • Wastewater must not be allowed to come into direct contact with exposed soils or run across the site. Vehicles and machinery may not be washed on site. All wastewater must be collected in a sealed container and disposed of by an approved waste contractor. 	
<p>Clearance of alien vegetation already present on portions of the study area.</p>	<p>Low (Positive)</p>	<p>All alien vegetation within the proposed development footprint should be removed from site and disposed of at a registered waste disposal site for the duration of construction, and continuous monitoring of seedlings need to occur until construction is complete.</p>	<p>Medium (Positive)</p>



<p>Erosion, degradation and loss of topsoil due to construction activities as well surface and stormwater run-off.</p>	<p>High (Negative)</p>	<ul style="list-style-type: none"> • Minimise the clearance of vegetation to avoid exposure of soil. • Protect areas susceptible to erosion with mulch or a suitable alternative. • Implement the appropriate topsoil and stormwater runoff control management measures as per the EMP to prevent the loss of topsoil. • Topsoil should only be exposed for minimal periods of time and adequately stockpiled to prevent the topsoil loss and run-off. 	<p>Medium (Negative)</p>
<p>Removal and use of local flora for firewood.</p>	<p>Low (Negative)</p>	<ul style="list-style-type: none"> • No cutting down of trees for firewood. • Utilise commercially sold wood or other sources of energy. • Training of contractors on environmental awareness and the importance of flora. 	<p>Low (Negative)</p>
<p>Contamination of the surface and site with general waste. General waste produced on site includes:</p> <ul style="list-style-type: none"> • Office waste (e.g. food waste, paper, plastic); • Operational waste (clean steel, wood, glass); and • General domestic waste (food, cardboards, paper, bottles, tins). 	<p>Low (Negative)</p>	<p>An adequate number of general waste receptacles, including bins must be arranged around the site to collect all domestic refuse, and to minimize littering.</p> <ul style="list-style-type: none"> • Bins must be provided on site for use by employees. • Bins should be clearly marked and lined for efficient control and safe disposal of waste. • Different waste bins, for different waste streams must be provided to ensure correct waste separation. A fenced area must be allocated for waste sorting and disposal on the site. • General waste produced on site is to be collected in skips for disposal at the local municipal waste site. Hazardous waste is not to be mixed or combined with general waste earmarked for disposal at the municipal landfill site. 	<p>Low (Negative)</p>



		<ul style="list-style-type: none"> • Under no circumstances is waste to be burnt or buried on site. • Waste bins should be cleaned out on a regular basis to prevent any windblown waste and/or visual disturbance. • All general waste must be removed from the site at regular intervals and disposed of in suitable waste receptacle. 	
<p>with general and hazardous waste.</p> <p>Hazardous waste produced on site includes:</p> <ul style="list-style-type: none"> • Oil and other lubricants, diesel, paints, solvent; • Containers that contained chemicals, oils or greases; and • Equipment, steel, other material (rags), soils, gravel and water contaminated by hazardous substances (oil, fuel, grease, chemicals or bitumen). 	<p>Medium (Negative)</p>	<p>Hazardous Waste Landfill Site. The Environmental Manager must have as part of his/her records the waste manifest for each batch based disposal.</p> <ul style="list-style-type: none"> • Hazardous waste bins must be clearly marked, stored in a contained area (or have a drip tray) and covered (either stored under a roof or the top of the container must be covered with a lid). • A hazardous waste disposal certificate must be obtained from the waste removal company as evidence of correct disposal. • In the case of a spill of hydrocarbons, chemicals or bituminous, the spill should be contained and cleaned up and the material together with any contaminated soil collected and disposed of as hazardous waste to minimize pollution risk. 	<p>Low (Negative)</p>
<p>Generation and disposal of sewage waste of temporary construction toilets.</p>	<p>Low (Negative)</p>	<ul style="list-style-type: none"> • On-site chemical toilets will be provided for domestic purposes during construction phase. • The contractors will be responsible for the maintenance of the chemical toilets. • Should any spills or incidents occur; the material will be cleaned up immediately and disposed of appropriately. 	<p>Low (Negative)</p>



		<ul style="list-style-type: none"> All incidents must be reported to the responsible site officer as soon as it occurs. 	
Dust and emissions during construction generated by debris handling and debris piles, truck transport, bulldozing, general construction.	Low (Negative)	<ul style="list-style-type: none"> Dust must be suppressed on the construction site and during the transportation of material during dry periods by the regular application of water. Water used for this purpose must be used in quantities that will not result in the generation of run-off. Loads could be covered to avoid loss of material in transport, especially if material is transported off site. Dust and mud should be controlled at vehicle exit and entry points to prevent the dispersion of dust and mud beyond the site boundary. Facilities for the washing of vehicles should be provided at the entry and exit points. A speed limit of 40 km/hr should be set for all vehicles travelling over exposed areas. During the transfer of materials, drop heights should be minimized to control the dispersion of mater being transferred. The height of all stockpiles on site should be a maximum of 2m. Use of dust retardant road surfacing if made necessary due to the exceedance of Air Quality Guidelines. 	Low (Negative)
Generation of fumes from vehicle emissions may pollute the air.	Low (negative)	<ul style="list-style-type: none"> All earth moving vehicles and equipment must be regularly maintained to ensure their integrity and reliability in order to prevent smoke emissions 	Low (Negative)



<p>During the construction phase there is likely to be an increase in noise pollution from construction vehicles and construction staff.</p>	<p>Medium (negative)</p>	<ul style="list-style-type: none"> • All construction activities should be undertaken according to daylight working hours between the hours of 07:00 – 17:00 on weekdays and 7:30 – 13:00 on Saturdays. • No construction activities may be undertaken on Sunday. • Provide all equipment with standard silencers. Maintain silencer units in vehicles and equipment in good working order. • All earth moving vehicles and equipment must be regularly maintained to ensure their integrity and reliability. • Construction staff working in area where the 8-hour ambient noise levels exceed 60 dBA must have the appropriate Personal Protective Equipment (PPE). • All operations should meet the noise standard requirements of the Occupational Health and Safety Act (Act No. 85 of 1993). 	<p>Low (Negative)</p>
<p>Disturbance of sites of archaeological, historical and cultural significance.</p>	<p>Low (negative)</p>	<ul style="list-style-type: none"> • There were no sites or objects of archaeological, historical and cultural significance identified, however, if during construction any possible finds are made, the operations must be stopped and a qualified archaeologist be contacted for an assessment of the find. • It is advisable that an information section on cultural resources be included in the SHEQ training given to contractors involved in surface earthmoving activities. These sections must include basic information on: • The archaeologist needs to evaluate the finds on site and make recommendations towards possible mitigation measures. 	<p>Low (Negative)</p>



During the construction phase there is likely to be an increase in traffic from construction vehicles.	Medium (Negative)	<ul style="list-style-type: none"> • Construction vehicles are to avoid main roads during peak traffic hours. • All vehicles entering the Site are to be roadworthy. • Seatbelts are to be worn at all times. • When using heavy or large vehicles / equipment, “spotters” are to be present to assist the driver with his blind spots. • Any incident or damage to a vehicle must be reported immediately. 	Low (Negative)
The development will result in job creation and provision of employment.	Medium (Positive)	<ul style="list-style-type: none"> • All labour (skilled and unskilled) and contractors should be sourced locally where possible. • A labour and recruitment policy must be developed, displayed and implemented by the contractor. • Recruitment at the construction site will not be allowed. • Where possible, labour intensive practices (as opposed to mechanised) should be practiced. • The principles of equality, BEE, gender equality and non-discrimination will be implemented. 	High (Positive)
Job creation during the construction phase could result in the influx of people to the area.	Medium (positive)	<ul style="list-style-type: none"> • If possible all labour should be sourced locally. • Contractors and their families may not stay on site. • No informal settlements will be allowed. 	High (Positive)
Public safety during construction.	Medium (Negative)	<ul style="list-style-type: none"> • Members of the public adjacent to the construction site should be notified of construction activities in order to limit unnecessary disturbance or interference. 	Medium (Negative)



		<ul style="list-style-type: none"> Construction activities will be undertaken during daylight hours and not on Sundays. 	
Construction staff safety during construction.	High (Negative)	<ul style="list-style-type: none"> Ensure the appointment of a Safety Officer to continuously monitor the safety conditions during construction. All construction staff must have the appropriate PPE. The construction staff handling chemicals or hazardous materials must be trained in the use of the substances and the environmental, health and safety consequences of incidents. Report and record any environmental, health and safety incidents to the responsible person. 	Medium (Negative)
Operational Phase			
Leaks of untreated water from pipelines may occur and impact on the shallow groundwater quality.	Medium (Negative)	<ul style="list-style-type: none"> Any leaks should be fixed immediately and areas rehabilitated as needed. 	Low (Negative)
Increased urban run-off from urban infrastructure and roads.	Low (Negative)	<ul style="list-style-type: none"> The stormwater management plan must be implemented. 	Low (Negative)
Emergency evacuation plan	Low (Negative)	<ul style="list-style-type: none"> Upon completion of the construction phase, an emergency evacuation plan must be drawn up to ensure the safety of the land users in the case of an emergency. 	Low (Negative)
Increase in Environmental Degradation & Pollution	Low (Negative)	<ul style="list-style-type: none"> Prevent any influx of run-off water (from residences) or effluent into wetland habitat. Run-off water from gardens typically contains seeds of exotic and garden-variety plants that pose a threat to wetland vegetation and 	Low (Negative)



		ecology. Run-off water should be diverted to storm water management services and infrastructures;	
Generation and disposal of domestic waste by the proposed development.	Medium (Negative)	Waste will be collected by an accredited waste company and disposed of at an appropriate and licensed waste disposal facility.	
The development will result in job creation and provision of employment.	Medium (Positive)	<ul style="list-style-type: none"> The principles of gender equality, maximizing local employment should be implemented in the provision and establishment of jobs. Jobs for the maintenance of infrastructure and services will be created following the completion of the development. These jobs might be made available to existing labour there creating long term employment. Service contractors could have access to other developments or projects in the area thereby creating long term employment 	Medium (Positive)
Dust from cleared areas	Medium (Negative)	<ul style="list-style-type: none"> Exposed soil surfaces should be wet down where required to avoid dust emissions. Vehicles transporting construction material such as building sands should remain at a speed limit of 40km/h and if required cover their loads with a tarpaulin to avoid dust emissions. The height of stockpiles should be limited to 1.5m. Newly cleared and exposed areas must be managed for dust and landscaped with indigenous vegetation to avoid soil erosion. Where necessary, temporary stabilization measures must be used until vegetation establishes. 	Low (Negative)



Increase in soil erosion	Low (Negative)	<ul style="list-style-type: none">• All reasonable measures should be implemented during the Operational Phase to minimise erosion.• Remedial action must be taken at the first signs of erosion.	Low (Negative)
Decommissioning Phase			
Due to the permanent nature of the development, no decommissioning is foreseen. If the project is to be decommissioned the same mitigations contained in the construction phase will apply.			



13 KEY ENVIRONMENTAL IMPACTS

The following possible environmental impacts were identified

Environmental issues	Possible cause	Potential impacts
Air Pollution and Noise		
Smoke	<ul style="list-style-type: none"> - Vehicle emissions. - Fires. 	<ul style="list-style-type: none"> - Health problems. - Air pollution. - Public nuisance. - Noise pollution.
Dust	<ul style="list-style-type: none"> - During construction. - Vehicle operation on roads. - Vegetation clearing. 	
Fumes	<ul style="list-style-type: none"> - Fumes from vehicles. - Fumes from machinery. 	
Noise	<ul style="list-style-type: none"> - Construction machinery and vehicles. - Presence of construction camp. - Operation noise (music and people). 	
Environmental issues	Possible cause	Potential impacts
Water quality		
Pollution of water sources	<ul style="list-style-type: none"> - Spillage of fuel & oil from vehicles. - Spillage of building material e.g. cement etc. - Migration of contaminants off the site. - Solid waste in storm water. - Littering. 	<ul style="list-style-type: none"> - Pollution of surface and groundwater. - Health risk. - Lower water quality. - Soil degradation. - Erosion. - Siltation.
Silt deposition in surface water	<ul style="list-style-type: none"> - Erosion risk due to increased run-off from built up area. - Erosion from cleared areas during construction. 	
Pollution from sanitation system	<ul style="list-style-type: none"> - Leakages of system and incorrect management of sanitation system. 	



	<ul style="list-style-type: none"> - Inadequate measures to prevent sewage spillages. - Overflow of sewage to groundwater. 	
Environmental issues	Possible cause	Potential impacts
Water quantity		
Impact on amount of water resources available	Over-utilisation of available water.	<ul style="list-style-type: none"> - Lose scarce resource - Increased pressure on ground water supply sources.
Environmental issues	Possible cause	Potential impacts
Land/Soil degradation		
Soil contamination and degradation	<ul style="list-style-type: none"> - Spillages of oil, chemicals from machinery & vehicles. - Removal of vegetation during clearing for construction. - Sewerage spillages. - Erosion due to increased runoff from built-up areas. - Increased erosion of drainage channels. - Site clearing during construction. 	<ul style="list-style-type: none"> - Soil degradation - Loss of topsoil - Dust formation - Erosion
Environmental issues	Possible cause	Potential impacts
Biodiversity		
Decline in fauna and flora diversity	<ul style="list-style-type: none"> - Cleaning of site for construction. - Pollution of soil. - Pollution of water resources. - Physical establishment of development. - Loss of habitat due to establishment of development. 	<ul style="list-style-type: none"> - Loss of biodiversity. - Loss of habitat. - Negative impact on biodiversity. - Negative impact on rare /endangered/ endemic species and habitats.



Environmental issues	Possible cause	Potential impacts
Cultural/Heritage		
Possible loss of heritage sites	<ul style="list-style-type: none"> - Damage / loss during construction. - Damage / loss during operation. 	- Possible loss of cultural heritage.
Environmental issues	Possible cause	Potential impacts
Visual impact		
Impact of the proposed development of sense of place.	- The physical existence of the development.	<ul style="list-style-type: none"> - Negative impact on landscape quality character. - Negative impact on sense of place.
Visual impact	<ul style="list-style-type: none"> - Construction site and buildings. - Lights at night. - Presence of new development. - Overhead power lines. 	<ul style="list-style-type: none"> - Obstruction. - Visual intrusion. - Public nuisance.
Environmental issues	Possible cause	Potential impacts
Health and Safety		
Security	- Influx of people to area including construction workers and others after completion.	- Loss of safe and secure environment.
Fires	<ul style="list-style-type: none"> - Accidental fires. - Burning of waste. - Cooking with fires. 	<ul style="list-style-type: none"> - Threat to health. - Danger to human life.
Environmental issues	Possible cause	Potential impacts
Socio-economic impacts		



Impact from change of land use from agriculture to township.	<ul style="list-style-type: none"> - Change of land use to business, Motor sales and streets/roads. 	<ul style="list-style-type: none"> - Impact negatively on agricultural production. - Land will no longer be used for agriculture.
Impact of the residential and other development on adjacent landowners	<ul style="list-style-type: none"> - Noise from construction activities, - Dust generated by construction vehicles and from site preparation. - The visual impact of lights. -The visual impact of residential and other units (business, institutional etc.) 	<ul style="list-style-type: none"> - Nuisance and disruption. - Noise pollution. - Air pollution. - Negative visual impact.
Impacts related to the establishment of a construction camp with accommodation	<ul style="list-style-type: none"> - Location of construction camp. - Environmental impacts of construction activities e.g. spillage of hazardous liquids such as oil and fuel onto the soil surface. - Accommodation of construction teams on site - Littering, accidental fires, collecting of firewood and poaching. - Undesirable visitors to the area. 	<ul style="list-style-type: none"> Adverse impact on the environment. - Resentment from neighbouring residents.
Impact ground and water pollution from littering and waste disposal during construction and operational phases	<ul style="list-style-type: none"> - The presence of a large work force and equipment and machinery during construction causing littering and dumping refuse and builder's rubble on site. -Construction activities from heavy vehicles and machinery. 	<ul style="list-style-type: none"> - Soil and water pollution
	<ul style="list-style-type: none"> - The construction of structures such as open trenches and earth heaps might also hold safety risks for people. 	<ul style="list-style-type: none"> - Safety risks for motorists, passengers, pedestrians and residents of the area
	<ul style="list-style-type: none"> - A lack of proper ablution facilities for temporary workers during construction. 	<ul style="list-style-type: none"> - Soil and water pollution - Unhygienic conditions - Health risk.



Impact from the provision of structures and infrastructure services	- The development, construction and provision of infrastructure services.	<ul style="list-style-type: none"> - Pollution from sanitation systems - Pollution of water resources. - Negative visual impact of overhead power lines and electricity supply and waste removal. - Soil erosion as a result of the construction of internal roads and water reticulation networks.
Impact on archaeological /cultural / social features	<ul style="list-style-type: none"> - The development of structures and infrastructure services for residential and other sites. - Clearing of construction sites. - Construction of access roads. - Excavation of trenches for the installation of underground pipelines and cables. 	- Negative impact on cultural or heritage resources.
Job creation Ownership	<ul style="list-style-type: none"> - Temporary jobs during construction phase. - Permanent jobs during operation. - New businesses. 	- Positive impact – job Creation.

14 ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE

- In this report it is assumed that the developer will act responsibly taking the environment into consideration at all times.
- It is assumed that the applicant will ensure that the mitigation measures in this report are complied with and that all monitoring and maintenance requirements will be followed closely.
- It is assumed that the development will stay within the ambit of the design of the development - it may be smaller with the result of fewer impacts.
- It is also assumed that this EIA Report will be sufficient to make an informed decision with regard to granting environmental authorization.



- All issues identified during the EIA process are addressed in the EIA Report and specialist studies.

15 AUTHORISATION OF ACTIVITY AND CONDITIONS

The purpose of this report is to provide the relevant authority with sufficient information regarding the potential impacts of the development to make an informed decision regarding the approval of the Environmental Impact Assessment report. Potential impacts were identified in consultation with I&AP's and technical specialists (where applicable) and were assessed using a matrix and by applying professional knowledge.

The potentially significant negative and positive impacts that have been identified should be mitigated through the implementation of the mitigation measures contained in Section 12 of this report.

Impacts with a rating of Medium-high or High are impacts which are regarded as potentially significant, rated without any mitigation measures. In this impact assessment, the following impacts were regarded as potentially significant impacts:

- i. Increased water use during the construction phase.
- ii. Planting indigenous, rare and endangered species and rehabilitation (POSITIVE).
- iii. The socio-economic impact for creating temporary and permanent jobs (POSITIVE).
- iv. The socio-economic impact of new business opportunities (POSITIVE).

It is submitted that the proposed mitigation measures, will effectively diminish the impacts to acceptable levels. Given the socio-economic requirements of the development, the residual impacts are not of sufficient importance to prevent the development.

It is the professional opinion of Mang Geoenviro Services that the proposed development does not present any fatal flaws in terms of negative impacts to the environment and therefore will not have any significant detrimental impacts to render the project unfeasible.

The Department is therefore respectfully requested to evaluate this Impact Assessment Report, as part of an application that has been lodged in terms of Chapter 5 of the National Environment Management Act, 1998(Act no 107 of 1998), in respect of the activities identified in Government Notices R545.

It is proposed that the following conditions must be included in the Environmental Authorisation if the project is authorised:

- The mitigation measures contained in Section 12 of this report must be implemented.
- The management and or mitigation measures contained in the Environmental Management Programme must be implemented.
- A detailed engineering geological investigation must be conducted at the sites of buildings PRIOR, to any construction activities on site.



- The responsibilities to obtain any further authorisations and/or licenses will rest on the proponent of the project, PRIOR to any activities on site.

16 CONCLUSION

The development proposal has no fatal flaws in terms of the institutional, bio-physical or socio-economic environments. In fact, it is believed that the proposed development compliments the required and desired balance to be achieved between socio-economic and ecological / environmental factors.

The Environmental Management Program (EMPr) and all the mitigation measures addressed in all the specialist reports should be strictly adhered to, therefore mitigating impacts as far as possible. Should this site not be developed, it will remain as an isolated and unconnected land area that will be vulnerable to crime and potential illegal informal occupation.

17 RECOMMENDATIONS

It is recommended that this application be approved with the following conditions:

- All requirements from the Collins Chabane Local Municipality be adhered to including:
- All other state departments' comments and input be adhered to
- The conditions of the Record of Decision from the competent authority (LEDET).
- The EMPr conditions as attached to this document.
- An Environmental Control Officer (ECO) should be appointed to audit the Environmental Management Plan on a bi-weekly basis during construction phase.