DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR THE PROPOSED DERMACATION OF SITES ON PORTION OF THE FARM NATORP 227-LT IN MPHAMBO, COLLINS CHABANE LOCAL MUNICIPALITY, LIMPOPO PROVINCE.

REF NO: 12/1/9/2-V139

MARCH 2022

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DOCUMENT CONTROL	
Report Title	draft environmental impact assessment report for the proposed dermacation of sites on portion of the tarm Natorp 227-Lt in Mphambo, Collins Chabane Local Municipality, Limpopo Province.
Document ID	Draft Environmental Impact Assessment
Client	Collins Chabane Local Municipality
Date	March 2022
APPROVAL:	
Name	Phakwago M. Kabelo
Title	Environmental Assessment Practitioner
Signature	

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EXECUTIVE SUMMARY

Mang Geoenviro Services was appointed by Ngoti Development Consultants on behalf of Collins Chabane Local Municipality as an independent environmental consultancy to conduct an Environmental Impact Assessment for the proposed demarcation of sites in Mphambo within the Collins Chabane Local Municipality, 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-V139.

GENERAL SITE DESCRIPTION

The proposed development is located in Mphambo village under the Jurisdiction of Collins chabane local municipality, Vhembe District Municipality. The applicant is proposing a demarcation of 1000 sites covering an area of approximately 216.19 hectares in Mphambo, Limpopo Province, and the site can be accessed from the main road (R81). The proposed demarcation of sites is situated on portion of the farm Natorp 227-LT in Mphambo village, Limpopo Province. The geographical coordinates of the site are 23°05'06.2"S 30°39'55.3"E.

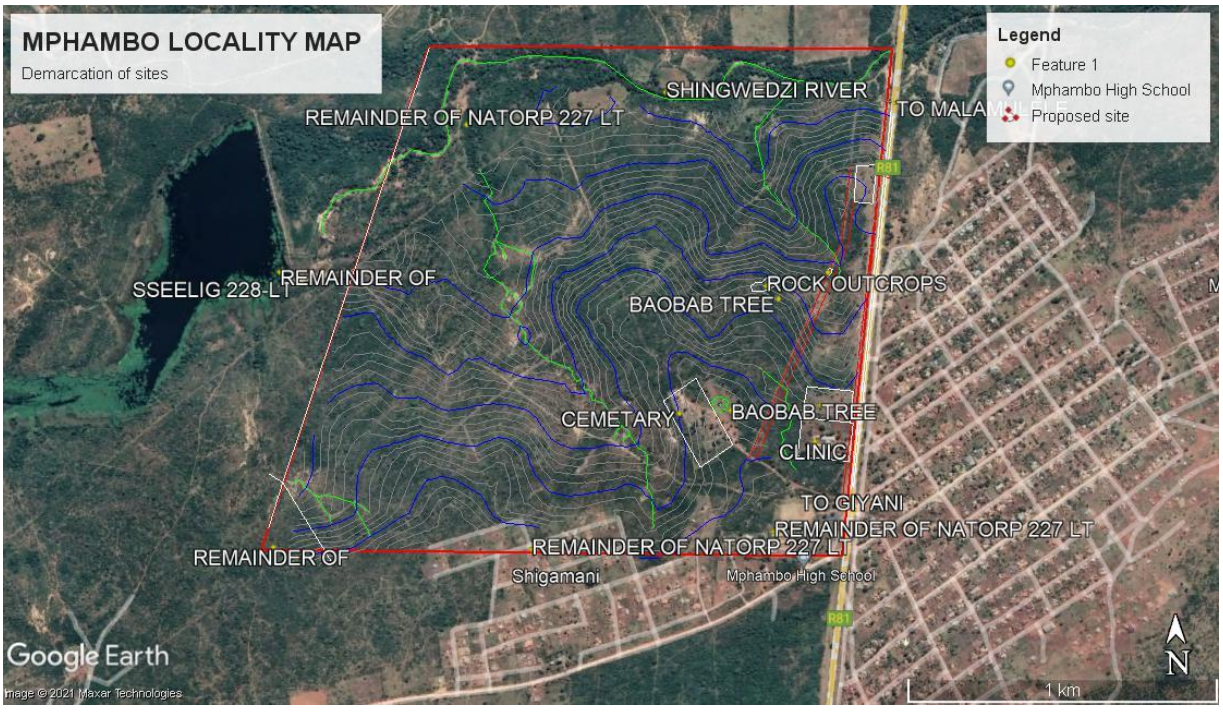


Figure 1: Locality Map

ACRONYMS AND ABBREVIATIONS

LEDET	Limpopo Department of Economic Development, Environmental & Tourism
EMPr	Environmental Management Plan Report
NEMA	National Environmental Management Act
EA	Environmental Authorization
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
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer

TABLES

FIGURES

LIST OF APPENDICES

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 Ngoti development consultansts on behalf of Collins chabane Local Municipality to conduct an Environmental Impact Assessment for the proposed demarcation of 1000 sites on portion of the farm Natorp 227-LT in Limpopo Province. The geographical coordinates of the proposed site are: 23°05'06.2"S 30°39'55.3"E and the proposed development site is 216.19 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

Collins Chabane Local Municipality

927 Malamulele – A

Collins Chabane Drive

0982

Contact person: Tiko Shimange

Tel/ Cell: 083 326 0539

E-mail: tiko.shimange@collinschabane.gov.za

4 PROPOSED ACTIVITY

4.1 Location of the Proposed Activity

The site for the proposed development is located in Mphambo village approximately 27km from the town of Malamulele in Limpopo Province. The proposed development site can be accessed from the main road (R81) in Mphambo village. The internal streets are gravel roads.

The geographical coordinates of the proposed site are: 23°05'06.2"S 30°39'55.3"E.

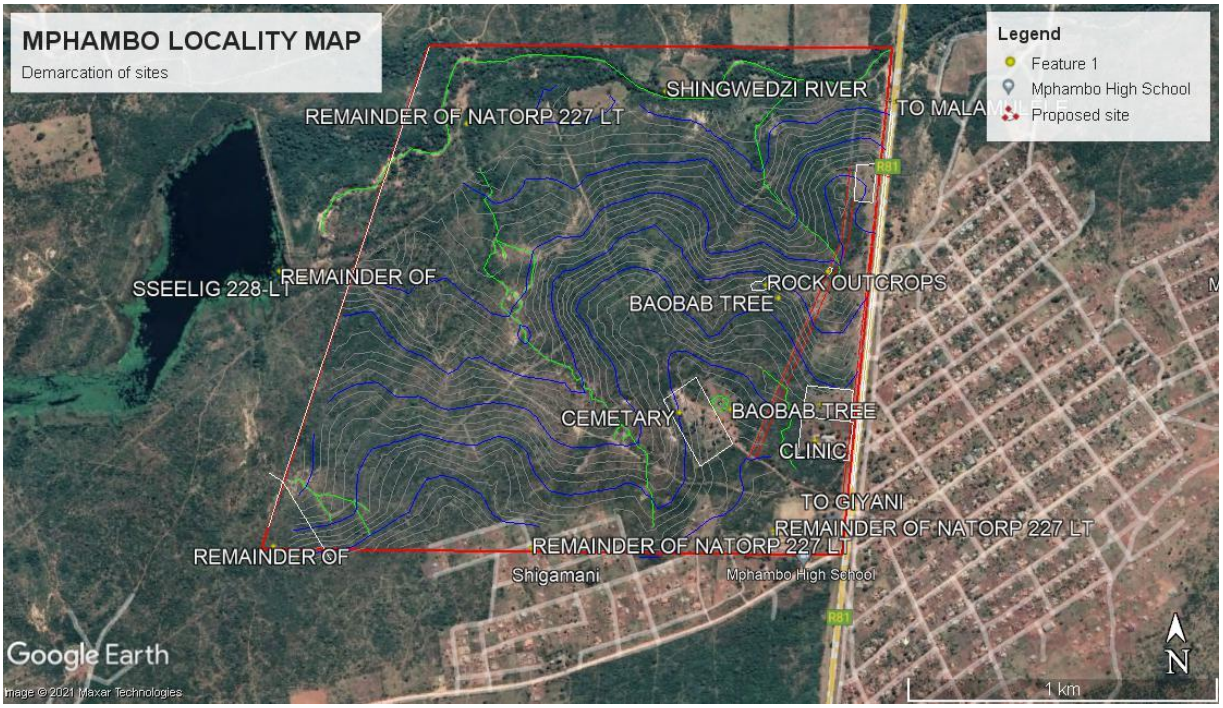


Figure 2 Locality Map

4.2 Description of Proposed Activity

The proposed development entails 1000 demarcations of the sites in Mphambo village which will include the following infrastructure-**REFER TO THE LAYOUTS**

- 964 Residential 1
- 4 Business 1
- 3 Institutional – 1 Community facility and 2 churches
- 11 Municipal – 1 Clinic, 1 Cemetery and 9 Pipeline servitudes
- 4 Educational – 3 Creche and 1 School
- 14 Public Open Space
- Streets

There are existing infrastructures (church, cemetery, school, clinic and pipelines) within the vicinity of the proposed development site which will be formalized as part of the proposed development. The duration of the proposed demarcation of sites in Mphambo village is anticipated to be 10 years.

An area of approximately 216.19 hectares of the proposed development of demarcation of sites which will be utilized for township establishment for residential purpose as indicated on the layout plan below.

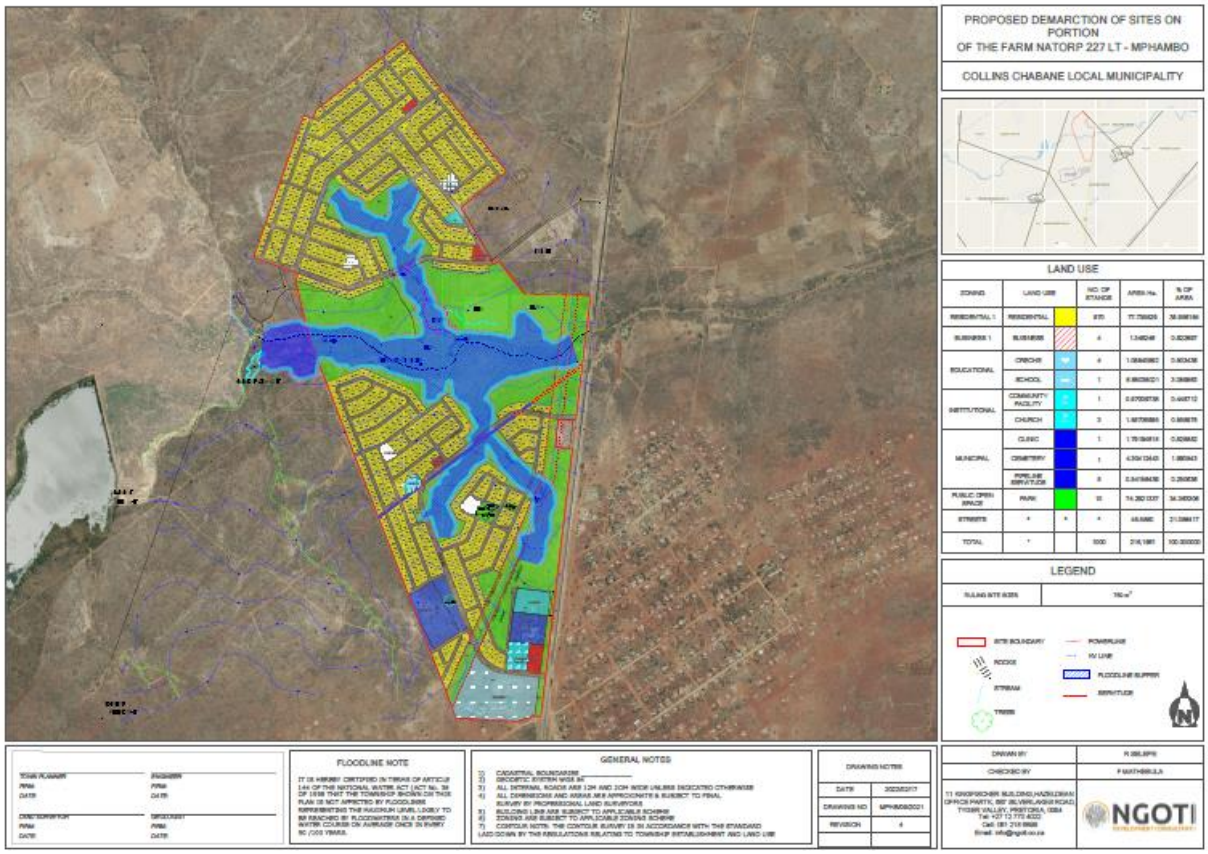


Figure 3: Layout Plan

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 the main road (R81). The internal streets are gravel roads.

5.2 Water

The proposed development fall under both Malamulele east regional water scheme south (NN7S) and the Xikundu WTW water scheme.

5.3 Sewer Services

There is no existing bulk waste water treatment infrastructure in Makuleke village, domestic wet or dry sanitation is utilized in the village. This is the form of pit toilets, septic tanks and soakaways.

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 terrain will be drained by channeling of stormwater on the road surface to the natural low point. The stormwater will then flow over the veld to the stream.

5.6 Electricity

There is an existing mv feeder lines that are located along the tarred road, the mv line is mink conductor; therefore, the Mphambo village will be connect electricity from the existing Mphako feeder medium volatage line on 22KV.

6 NEED AND DESIRABILITY OF PROPOSED ACTIVITY

- The proposed development will contribute towards improving employment opportunites.
- The proposed development will increase basic services and infrastructure development in the area such as water, sanitation, transport and communicaton.
- 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 residential purposes and business opportunities for locals 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

No site alternatives were identified so far, however there is a possibility of a layout alternative that will still meet the objective of the project scope.

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 Mphambo 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 it is anticipated that this development will relieve the demand for housing and basic services in the region. It is anticipated that the no-go alternative will constrain the development planning of the Local Municipality.

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 327, 07 April 2017	23	The proposed development involve formalization of an existing cemetery on an extent area of approximately 4.30 hectares.
GNR 327, 07 April 2017	28	The proposed project entails demarcation of sites for residential purposes on an area currently zoned agricultural.
GNR 325, 07 April 2017	15	The proposed demarcation of 1000 sites will entail clearance of an extent area of 216.19 hectares.

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 30(1). The following actions have already been undertaken as part of this process:

- Advertisement in the local newspaper
- Placement of notices on site

- 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 (the Limpopo Mirror) to notify people about the project and request them to register as IAPs and comment on the proposed development.

9.2.2 Site Notices

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 DRAFT EIA Report was circulated to the stakeholders for observation and comments.

9.2.5 Comments Received

Comments received on the draft EIAR will be attached as part of the final EIAR.

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 28th of January 2021 and acknowleged on the 17th of February 2021.
- The draft scoping report and plan of study for EIA was made available for comments to all registered I&AP's.
- 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 04th of March 2022 and was accepted on the 30th of March 2022.
- 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	Comments	Response

10 ENVIRONMENTAL ASPECTS

10.1 Literature Review

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

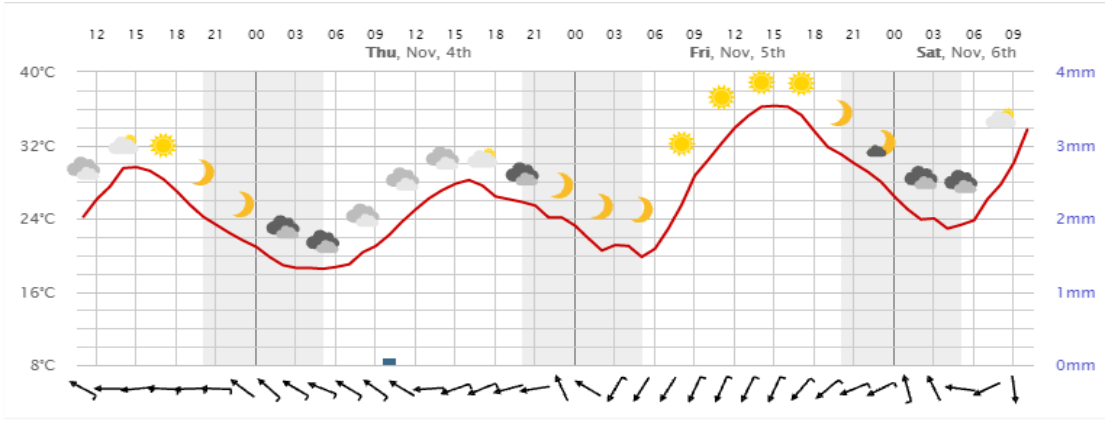
10.2 Description of the Environment

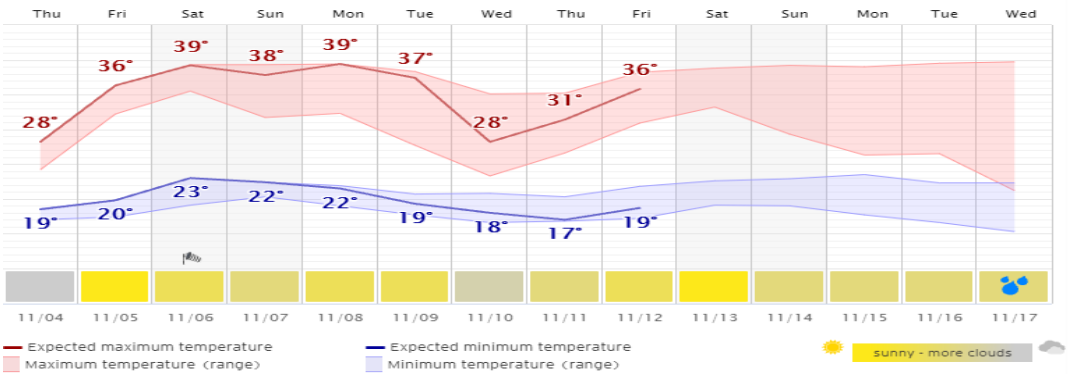
10.2.1 Topography

The topography within the Collins Chabane Local Municipality are plains, low Mountain, and lowlands. The landscapes have been carved out by the meanderings and erosion activities. The soil in this region is as a result of Soutpansberg group of sandstones and smaller amount of conglomerate, shale and mostly basalt.

10.2.2 Climate

The proposed site shows a good average forecast for Ka-Mphambo. The red numbers show the expected high temperature for a given day, while the blue numbers show the expected low temperature. Because forecast uncertainty increases with time, we also display the range of possible high/low temperature outcomes, shown as the shaded red/blue regions. The actual high/low temp could fall anywhere in that shaded region, and the larger the shaded regions are, the higher the forecast uncertainty is.





10.2.3 Biodiversity

Ka-Mphambo area has amazing biological diversity of flora and fauna. The proposed development area falls within the greater Savanna Biome, commonly known as the Bushveld with some small pockets of grassland and forest Biomes. These and other factors have produced a unique assortment of ecological niches which are in turn occupied by a wide variety of plant and animal species. The area is comprised of the Mountain Fynbos, Sacred Forests as well as centuries old Baobab Trees.

10.2.4 Hydrology

The Vhembe District Municipality has a relatively limited supply of both the ground and surface water. The area comprised of few catchments areas which are stressed by high demand of water for development activities such as agriculture, human consumption and mining.

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:

Mveledzo 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 were birds nests potted during the site vist.

There were no mammal species that was found and identified on site. The identified species were checked on the SANBI redlist and they were found to be endemic and none endemic to South Africa and they were all of least concern, although birds nest where noticed on site there was presence of different birds species noted in the vicinity of site. Therefore, the proposed area can be identified as an area of medium conservation value with only protected species identified namely *schlerocharia birrea* and there is no bioderversity sensitive environment in close proximity of the site.

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.
- If one big plant is removed it must be replaced by four juvenile of the same species.
- If the recommendation made on the EMPr are adhered to then there will be minimal damage to the existing grassland and all associated species close to the proposed township.

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:

Octon Geological Consultants (Pty) Ltd

Cell: 079 440 9921

Email: info@octongeo.co.za

Contact Person: Mr Mashiana Khano

Area of expertise: Geotechnical Specialist

Findings:

- The soil of the proposed development site is classified as SC and GC (Silty sands with low plasticity index). The soils are domaintly fine grained silty sands and the clay content is generally low.
- Excavatavility of soil on site is categorized as intermediate conditions. This allows an excavation of below 2.8m with a TLB.
- The sand and gravel soils on site has a high sand and gravel averaging at 35.1 %, 35.6 % and silt clays averaging at 28.5%; with a corresponding low Grading Modulus of averaging at 1.5 %; which is indicative of medium-fine grained material and the Potential for Expansiveness is low.
- The site does not indicate any signs of global slope instability with low possibility of landslides and mudslides occurance.
- No signs of erosion were identified on site.

- Both surface and subsurface drainage should be constructed such that no water ingress into the subsurface soils in and around the foundation base is possible.
- No dolomitic instability or mining activities were present on the site.
- No groundwater seepage was encountered on the site.

Recommendations:

- It is recommended that the installation of underground services and surface drainage is undertaken in accordance with SANS 1200 LF-1983.
- No ponding of water should be permitted on the site.
- Recommended foundation types need to be taken into consideration during construction.
- **the application of the following procedures is recommended during construction:**
    - Removal of in-situ material up to 600mm beyond the perimeter of the building and to a depth of 600mm below the current ground level and spoil.
    - The above operation can be followed by compaction of the in-situ material to 90% MOD AASHOTO.
    - Backfill and compact using the imported G5 quality material in layers of 150mm compacted thickness to a density of at least 95% Mod AASHTO density at OMC +/- 2% up to top of the proposed founding level.
    - A minimum cover of 600mm of compacted soil mattress is required below the concrete raft foundation.
- A risk management should ensure that storm water is efficiently and effectively removed from the proximity of the infrastructure and safely distributed or deposited into either municipal storm water systems or natural river courses.
- Where storm water canals cross the site and carry large quantities of water, the canals should be lined.

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:

Apelser Archaeological Consulting

P.O Box 73703
Lynnwood Ridge
0040

Tel: 083 459 3091
Fax: 086 263 5671
E-mail: apac.heritage@gmail.com
Contact Person: Anton Pelser

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 odentified on 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.

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

There is no existing infrastructure for water, sewer, access road and stormwater. However, there is an existing bulk water infrastructure in Mphambo village. The proposed development will fall under the Middle Letable RWS: Malamulele West Scheme which receives water from Nandom Dam on the Luvuvhu river.

Sewer Services

There is no existing bulk waste water treatment infrastructure in Mphambo village. Domestic wet or dry sanitation is utilised in the village. This is the form of pit toilets, septic tanks and soakaways. The new development will have a sewer ADWF of 664.4kℓ/d a gross sewer flow of 764.1kℓ/d.

It is recommended that a combination of private domestic dry sanitation toilet systems and septic tank and soakaways be utilised to handle the township wastewater. The dry sanitation toilets used in the township must not be smelly or attract flies. Domestic septic tanks and soakaways can be utilised provided the insitu soil percolation test results permit the use of soakaways. There are toilets that can be bought from commercial suppliers such as:

- Enviro-loo domestic toilets.
- Precast complete concrete structure toilets.

Electricity

There is an existing mv feeder lines that are located along the tarred road, the mv line is mink conductor; therefore, the Mphambo village will be connect electricity from the existing Mphako feeder medium volatage line on 22KV. The feeder line will feed from Malamulele Substation and the capacity is 3x20MVA 66/22KV.

It is recommended that the township can be connected without upgrading the network.MV feeder will be constructed within the township connecting the distribution transformer. Implementation network must be installing according to Eskom distribution network standard.

Road

There is an existing functioning road network (R81) that can be used to access the proposed development.

Stormwater drainage system

The stormwater will drain on according to the slope of the natural ground. The terrain will be drained by V-drains or channelling of stormwater on the road surface to the natural low point. The stormwater will then flow over the veld to the stream. Stormwater discharge control will be applied in order to reduce the damaging effect of the increase in runoff due to densification.

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 0.6kg/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
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.

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. **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. **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.
Intensity	**Describes whether an impact is destructive or benign** **Low:** impact affects the environment in such a way that natural, cultural and social functions and processes are not affected. **Moderate**: affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way. **High:** natural, cultural and social functions and processes are altered to extent that they temporarily cease. **Very high:** natural, cultural and social functions and processes are altered to extent that they permanently cease.
Probability	**Describes the likelihood of an impact to occur:** **Improbable:** likelihood of the impact materializing is very low. **Possible:** the impact may occur. **Highly probable**: most likely that the impact will occur. **Definite:** the impact will occur.
Significance	**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:** **Low**: the impacts are less important. **Medium**: the impacts are important and require attention, mitigation is required to reduce the negative impacts. **High**: the impacts are of great importance. Mitigation is therefore crucial.

Cumulative	**In relation to an activity, means the impact of an activity that in itself may not be significant but nay become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.**
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.**

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.

Alternative (preferred alternative) Design/ Planning Phase			
Identified Impacts- Planning Phase			
Impact	Significance rating of impact before mitigation	Proposed mitigation	Significance rating of impact after mitigation
Direct Impacts			
Poor Design- Structural failures	High (Negative)	Ensure compliance with the industry standards	Low (Negative)
Indirect Impacts			
Disregard of legislative requirement	High (Negative)	Ensure compliance with relevant legislation and legal standards	Low (Negative)
Construction Phase			
Identified Impacts- Construction Phase			
Impact	Significance rating of impact before mitigation	Proposed mitigation	Significance rating of impact after mitigation
Direct Impacts			
Loss of vegetation and faunal habitat	Medium (Negative)	• Maintain the viability of the indigenous seed bank in excavated soil so that it can be used for subsequent re-vegetation of any disturbed areas.	Low (Negative)

		• Prevent impact of construction activities to extend on to neighbouring land demarcated and fenced construction camp; strict control of labourers. • Avoid unnecessary loss of indigenous trees.	

Increased risk of dust and erosion from clearing of vegetation and earth moving vehicles	Medium (Negative)	• All vehicles must be along existing lines or tracks.
		• Erosion protection measures must be implemented on the site to reduce erosion and sedimentation of the receiving environment. Measures could include:
		  ○ Sediment traps
		  ○ Sandbags
		  ○ Bunding around soil stockpiles.
		• Adequate dust control strategies should be applied to minimise dust disposition; they can include periodic spraying of roads with water, cover trucks to prevent dust emission during transportation
			Low (Negative)

Waste collection services	High (Negative)	Confirmation from the municipality must be sought to ensure the municipal waste collection service will collect the waste generated by the proposed development/ activity.	Low (Negative)
Potential noise impact from the use of construction equipment	Medium (Negative)	• Limit construction activities to day time hours. • Construction personnel must wear personal protective equipment where appropriate. • All machineries to be utilised on the site must be fitted with buffers and must be maintained in good working conditions in order to minimize noise. • The contractor shall warn all local community that could be affected by the noise generation from construction activities.	Low (Neutral)

Increase in stormwater runoff resulting from construction activities	Medium (Negative)	• To prevent stormwater damage, the increase stormwater runoff resulting from construction activities must be estimated and drainage patterns accessed accordingly. • Temporary cut off drains and berms may be required to capture stormwater and promote infiltration.	Low (Negative)
Potential health injuries to construction personnel as a result of construction work.	Medium (Neutral)	The contractor must ensure that all construction personnel are provided with adequate PPE for use where appropriate.	Low (Negative)
Disturbance of Heritage Resources from construction activities.	Low (Negative)	SAHRA must immediately be alerted in case evident or artefacts, paleontological fossils, additional graves or heritage resources are discovered during the course of development.	Negligible
Socio-economic Impact: Employment creation and skills development opportunities during the construction phase, which is expected to give rise to new jobs. This impact is rated as positive.	Medium (Positive)	• Enhance the use of local labour and local skills as far as reasonably possible. • Where the required skills do not occur locally, and where appropriate and applicable, ensure that relevant local individuals are trained. • Ensure that an equitable percentage allocation is provided for local labour employment as well as specify the use of small-to-medium enterprises and training specifications in the Contractors contract. • Ensure that goods and services are sourced from the local and regional economy as far as reasonably possible.	High (Positive)
Air quality impact: Emissions from construction vehicles and	Medium (Negative)	• Ensure that cleared areas and unpaved surfaces are sprayed with water (obtained from an approved source) to minimise dust generation. • Approved soil stabilizers may be utilised to limit dust generation.	Low (Negative)

generation of dust as a result of earthworks		• Ensure that construction vehicles travelling on unpaved roads do not exceed a speed limit of 40 km/hour. • Adequate dust control strategies should be applied to minimise dust deposition, for example: Periodic spraying of the entrance road and environmentally friendly dust control measures (e.g. mulching and wetting) where and when dust is problematic	
No-go alternative			
Direct Impacts: • None of the impacts mentioned above will occur. • If the proposed project does not proceed, increased income and economic spin-off activities will not be realised. **Indirect Impacts:** There are no indirect impacts during the construction phase for the No-go Option. **Cumulative Impacts:** There are no cumulative impacts during the construction phase for the No-go Option.			
Operational Phase			
Identified Impacts- Operational Phase			
Impact	Significance rating of impact before mitigation	Proposed mitigation	Significance rating of impact after mitigation
Direct Impacts			

Visual impacts will increase during the operation phase due to development and lighting	Medium (Negative)	Lighting and layout to be maintained as per the layout plan to ensure bright street lighting is not permitted	Low (Negative)
Lack of road maintenance will lead to a deterioration in the internal and access roads	High (Negative)	Road maintenance must be done regularly by the Collins Chabane Local Municipality	Low (Negative)
Risk of fire explosion	Medium (Negative)	• Prevent spread of fire to surrounding buildings or vegetation • Adequate firefighting training must be given to staff. • Ensure that relevant signage e.g. no smoking, is displayed in potentially dangerous areas and is abided by.	Low (Negative)
Socio-economic Impact: Skills development opportunities and economic spin off activities will also occur during the operational phase. This impact is rated as positive.	Medium (Positive)	• Enhance the use of local labour and local skills as far as reasonably possible. • Where the required skills do not occur locally, and where appropriate and applicable, ensure that relevant local individuals are trained. • Ensure that goods and services are sourced from the local and regional economy as far as reasonably possible.	High (Positive)
Indirect Impacts			
Impact on the surrounding community in terms of	Medium (Negative)	• Ensure that surrounding gardens are well maintained. The planting of indigenous vegetation is encouraged. • Use water sparingly in maintaining gardens.	Low (Negative)

visibility and great environment		• Institute an appropriate building and site maintenance programme.	
No-go alternative			
Direct Impacts: • None of the impacts mentioned above will occur. • If the proposed project does not proceed, increased income and economic spin-off activities will not be realised. **Indirect Impacts:** There are no indirect impacts during the construction phase for the No-go Option. **Cumulative Impacts:** There are no cumulative impacts during the construction phase for the No-go Option.			

13 KEY ENVIRONMENTAL IMPACTS

The following possible environmental impacts were identified

Environmental issues	Possible cause	Potential impacts
Air Pollution and Noise		
Smoke	- Vehicle emissions. - Fires.	- Health problems. - Air pollution. - Public nuisance. - Noise pollution.
Dust	- During construction. - Vehicle operation on roads. - Vegetation clearing.	
Fumes	- Fumes from vehicles. - Fumes from machinery.	
Noise	- 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	- 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.	- Pollution of surface and groundwater. - Health risk. - Lower water quality. - Soil degradation. - Erosion. - Siltation.
Silt deposition in surface water	- Erosion risk due to increased run-off from built up area. - Erosion from cleared areas during construction.	
Pollution from sanitation system	- Leakages of system and incorrect management of sanitation system. - 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.	- Lose scarce resource - Increased pressure on ground water supply sources.
Environmental issues	**Possible cause**	**Potential impacts**
Land/Soil degradation		
Soil contamination and degradation	- 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.	- Soil degradation - Loss of topsoil - Dust formation - Erosion
Environmental issues	**Possible cause**	**Potential impacts**
Biodiversity		
Decline in fauna and flora diversity	- Cleaning of site for construction. - Pollution of soil. - Pollution of water resources. - Physical establishment of development. - Loss of habitat due to establishment of development.	- 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	- 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.	- Negative impact on landscape quality character. - Negative impact on sense of place.
Visual impact	- Construction site and buildings. - Lights at night. - Presence of new development. - Overhead power lines.	- 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	- Accidental fires. - Burning of waste. - Cooking with fires.	- 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.	- Change of land use to business, Motor sales and streets/roads.	- Impact negatively on agricultural production. - Land will no longer be used for agriculture.
Impact of the residential and other development on adjacent landowners	- 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.)	- Nuisance and disruption. - Noise pollution. - Air pollution. - Negative visual impact.

Impacts related to the establishment of a construction camp with accommodation	- 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.	Adverse impact on the environment. - Resentment from neighbouring residents.
Impact ground and water pollution from littering and waste disposal during construction and operational phases	- The presence of a large work force and equipment and machinery during construction causing littering and dumping refuge and builder's rubble on site. -Construction activities from heavy vehicles and machinery.	- Soil and water pollution
	- The construction of structures such as open trenches and earth heaps might also hold safety risks for people.	- Safety risks for motorists, passengers, pedestrians and residents of the area
	- A lack of proper ablution facilities for temporary workers during construction.	- 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.	- 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	- 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	- 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 constructon 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.