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| **DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR THE PROPOSED DEMARCATION OF SITES ON A PORTION OF THE FARM KEERWEDER 169-MT,IN DOLI-DOLI UNDER THE JURISDICTION OF MAKHADO LOCAL MUNICIPALITY IN LIMPOPO PROVINCE.** |
| **REF NO**: 12/1/9/2-V127  NOVEMBER 2021 |
| **PREPARED FOR:**    Makhado Local Municipality  Civic Center,  No 83 Krogh street  Louis Trichardt  0920 |
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| **Report Title** | DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR THE PROPOSED DEMARCATION OF SITES ON A PORTION OF THE FARM KEERWEDER 169-MT, IN DOLI-DOLI UNDER THE JURISDICTION OF VHEMBE DISTRICT MUNICIPALITY, LIMPOPO PROVINCE |
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| **Signature** |  |

Table of Contents

[EXECUTIVE SUMMARY 6](#_Toc85637956)

[GENERAL SITE DESCRIPTION 7](#_Toc85637957)

[ACRONYMS AND ABBREVIATIONS 8](#_Toc85637958)

[TABLES 9](#_Toc85637959)

[FIGURES 9](#_Toc85637960)

[LIST OF APPENDICES 9](#_Toc85637961)

[NEMA REQUIREMENTS 10](#_Toc85637962)

[1 INTRODUCTION 13](#_Toc85637963)

[1.1. COMPILATION OF EIA REPORT 13](#_Toc85637964)

[1.2. TERMS OF REFERENCE 13](#_Toc85637965)

[1.3. INFORMATION ON THE METHODOLOGY OF EIA 14](#_Toc85637966)

[2 ENVIRONMENTAL ASSESSMENT PRACTITIONER 14](#_Toc85637967)

[2.1. Details of environmental assessment practitioner (eap) who prepared the report 14](#_Toc85637968)

[3. PROJECT BACKGROUND 15](#_Toc85637969)

[3.1. Particulars of Applicant 15](#_Toc85637970)

[4. PROPOSED ACTIVITY 15](#_Toc85637971)

[4.1. Location of the Proposed Activity 15](#_Toc85637972)

[4.2. Description of Proposed Activity 16](#_Toc85637973)

[5. infrastructure and services 17](#_Toc85637974)

[5.1. Roads 17](#_Toc85637975)

[5.2. Water 17](#_Toc85637976)

[5.3. Sewer Services 17](#_Toc85637977)

[5.4. Solid Waste 17](#_Toc85637978)

[5.5. Electricity 17](#_Toc85637979)

[6. NEED AND DESIRABILITY OF PROPOSED ACTIVITY 18](#_Toc85637980)

[7. FEASIBLE AND REASONABLE ALTERNATIVES 18](#_Toc85637981)

[7.1. Site Alternatives 18](#_Toc85637982)

[7.2. Activity Alternatives 18](#_Toc85637983)

[7.2.1. Transport, Traffic noise and vibrations 18](#_Toc85637984)

[7.3. Design Alternatives 18](#_Toc85637985)

[7.4. No-go option 19](#_Toc85637986)

[8. NEMA LISTED ACTIVITIES TO BE APPLIED FOR 19](#_Toc85637987)

[9. PUBLIC PARTICIPATION 20](#_Toc85637988)

[9.1. INTRODUCTION AND OBJECTIVES 20](#_Toc85637989)

[9.2. METHODOLOGY 20](#_Toc85637990)

[9.2.1. Newspaper Advertisement 20](#_Toc85637991)

[9.2.2. Site Notices 20](#_Toc85637992)

[9.2.3. Background Information Documents 20](#_Toc85637993)

[9.2.4. Consultation with Stakeholders 20](#_Toc85637994)

[9.2.5. Comments Received 21](#_Toc85637995)

[9.3. Draft Scoping Report and the Plan of Study for EIA 21](#_Toc85637996)

[9.4. Final Scoping Report and the Plan of Study for EIA 21](#_Toc85638003)

[9.5. SUMMARY OF KEY ISSUES RAISED BY THE I & AP’s 21](#_Toc85638005)

[10. ENVIRONMENTAL ASPECTS 22](#_Toc85638006)

[LITERATURE REVIEW 22](#_Toc85638007)

[10.1. DESCRIPTION OF THE ENVIRONMENT 22](#_Toc85638008)

[10.1.1. Topography 22](#_Toc85638009)

[10.1.2. Geology and Soils 22](#_Toc85638011)

[10.1.3. Vegetation 22](#_Toc85638012)

[10.1.4. Climate 22](#_Toc85638013)

[10.1.5. Hydrology 23](#_Toc85638014)

[10.1.6. Sensitive Area 23](#_Toc85638016)

[10.2. SUMMARY OF FINDINGS AND RECOMMENDATIONS OF SPECIALIST STUDIES AND SPECIALISED PROCESSES 23](#_Toc85638018)

[10.2.1. Ecological Assessment 23](#_Toc85638019)

[10.2.2. Electrical Services Report 24](#_Toc85638020)

[10.2.3. Paleontological Specialist 25](#_Toc85638021)

[10.2.4. Heritage and archeological Specialist 26](#_Toc85638022)

[10.2.5. Geotechnical Specialist Report 27](#_Toc85638023)

[10.2.6. Engineering and Services Specialist 28](#_Toc85638024)

[10.2.7. Socio- Economic Impact Assessment Report 30](#_Toc85638025)

[11. IMPACT ASSESSMENT 31](#_Toc85638026)

[11.1. Methodology to assess the Impacts 31](#_Toc85638027)

[11.2. Methodology to assess the Impacts 31](#_Toc85638028)

[12. Aspects, related impacts, significance and proposed mitigation measure 34](#_Toc85638029)

[13. KEY ENVIRONMENTAL IMPACTS 52](#_Toc85638030)

[14. ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE 56](#_Toc85638031)

[15. AUTHORISATION OF ACTIVITY AND CONDITIONS 56](#_Toc85638032)

[16. CONCLUSION 57](#_Toc85638033)

[17. RECOMMENDATIONS 58](#_Toc85638034)

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# EXECUTIVE SUMMARY

Mang Geoenviro Services was appointed by Makhado Local Municipality to conduct an Environmental Impact Assessment for the proposed demarcation of sites on a portion of the farm keerweder 169-MT in Doli-Doli, under the Makhado Local Municipality in Limpopo Province.

The applicant is proposing to demarcate 350 sites covering an area of approximately of 50.61 hectares in Doli-doli village, Limpopo Province. The project will entail 350 sites which will consist of the following infrastructure-

**REFER TO THE LAYOUT PLAN**

* 340 Residential
* 3 Business
* 2 Educational (crèche)
* 6 Public open space (park)
* 1 Place of worship
* Street

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-V127.**

# GENERAL SITE DESCRIPTION

The proposed project is located in Doli-doli village under the Jurisdiction of Makhado Local Municipality, Vhembe District Municipality. The geographical coordinates of the proposed site are: 22°44'7.34’’ S 30°10'14.78’’ E. The applicant is proposing to demarcate 350 sites covering an area of approximately of 50.61 hectares in Doli-doli Village, and the site can be accessed from the unnamed gravel road. The proposed site is situated on a portion of farm keerweder 169-MT, situated 200km north of Polokwane along the N1, R523, D3671, to D3673 roads, in Vhembe District Municipality, Limpopo Province.

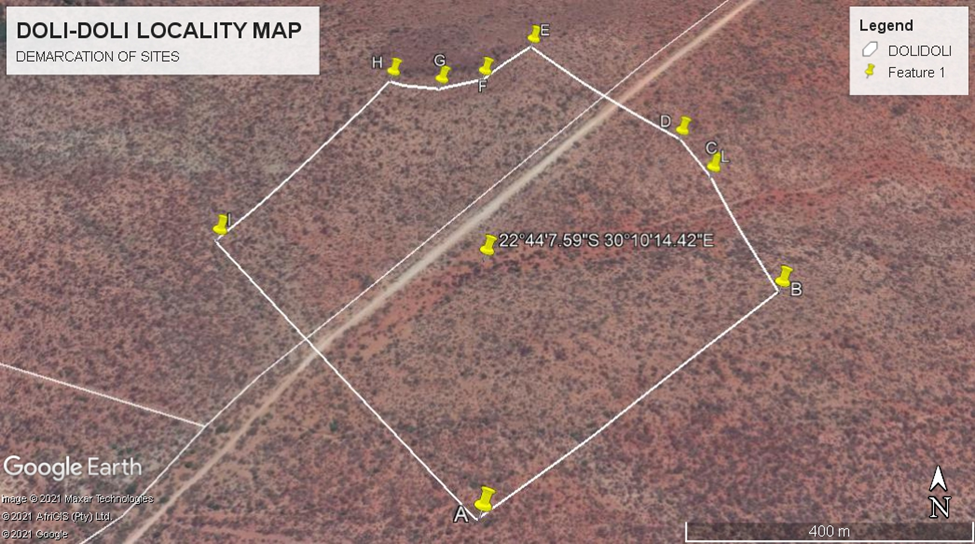


Figure 1: Locality Map

# 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

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

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# LIST OF APPENDICES

Appendix 1 Locality Map

Appendix 2 Layout Plan

Appendix 3 Details and Expertise of the EAP

Appendix 4 Public Participation Process

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 Geotechnical Investigation Report

Appendix 7.4 Engineering Services Report

Appendix 7.5 Flood line Report

Appendix 8 Environmental Management Programme

Appendix 9 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 l&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.*

# INTRODUCTION

Mang Geoenviro Services was appointed by Ngoti development consultants on behalf of Makhado Local Municipality to conduct an Environmental Impact Assessment for the proposed demarcation of 350 sites on a portion of farm Keerweder 169-MT, Vhembe District Municipality, Limpopo Province. The geographical coordinates of the proposed site are: 22°44'7.34’’ S 30°10' 14.78’’ E, the proposed project site is approximately 50.61 hectares.

## 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 30(1)(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 31 (2)(a) – (s) of the Regulations No. 543 of 18 June 2010 promulgated in terms of Chapter 5 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 35.

## 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.

## 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.

# 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

# PROJECT BACKGROUND

## Particulars of Applicant

**Makhado Local Municipality**

Civic Center,

No 83 Krogh street

Louis Trichardt

092

Contact person: Mr. RV Phalandwa

Tel/ Cell: 082 529 9969

E-mail: [rudzanip@makhado.gov.za](mailto:rudzanip@makhado.gov.za)

# PROPOSED ACTIVITY

## Location of the Proposed Activity

The proposed project site is located in Doli-doli village, Limpopo Province. The geographical coordinates of the proposed site are: 22°44'7.34’’ S 30°10'14.78’’ E and the proposed development site is approximately 50.61 hectares.

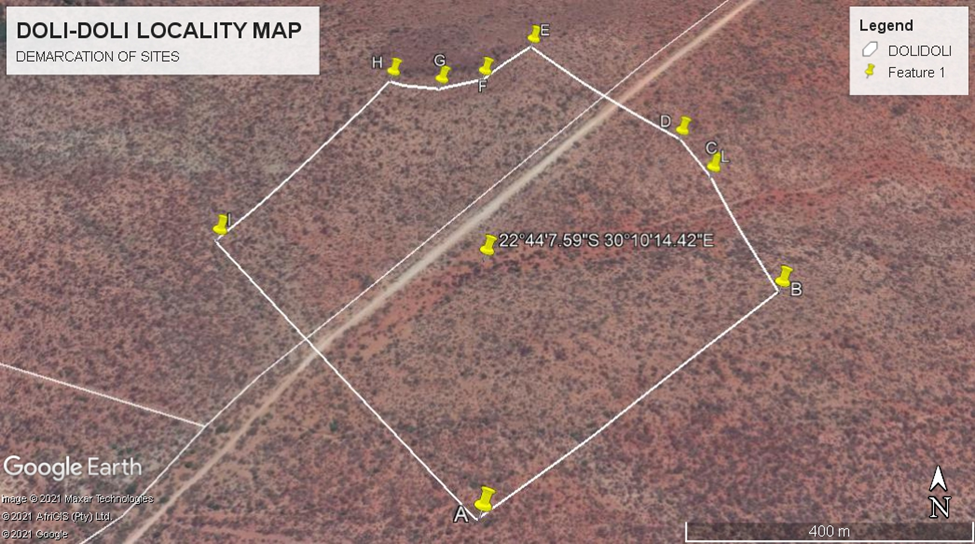


Figure 2 Locality Map

## Description of Proposed Activity

The project will entail the establishment of 350 sites at Doli-doli village under the jurisdiction of the Makhado Local Municipality which will consist of the following infrastructure-

**REFER TO THE LAYOUT PLAN**

* 340 Residential
* 3 Business
* 2 Educational (Educational)
* 6 Public open space (Park)
* 1 place of worship
* Streets

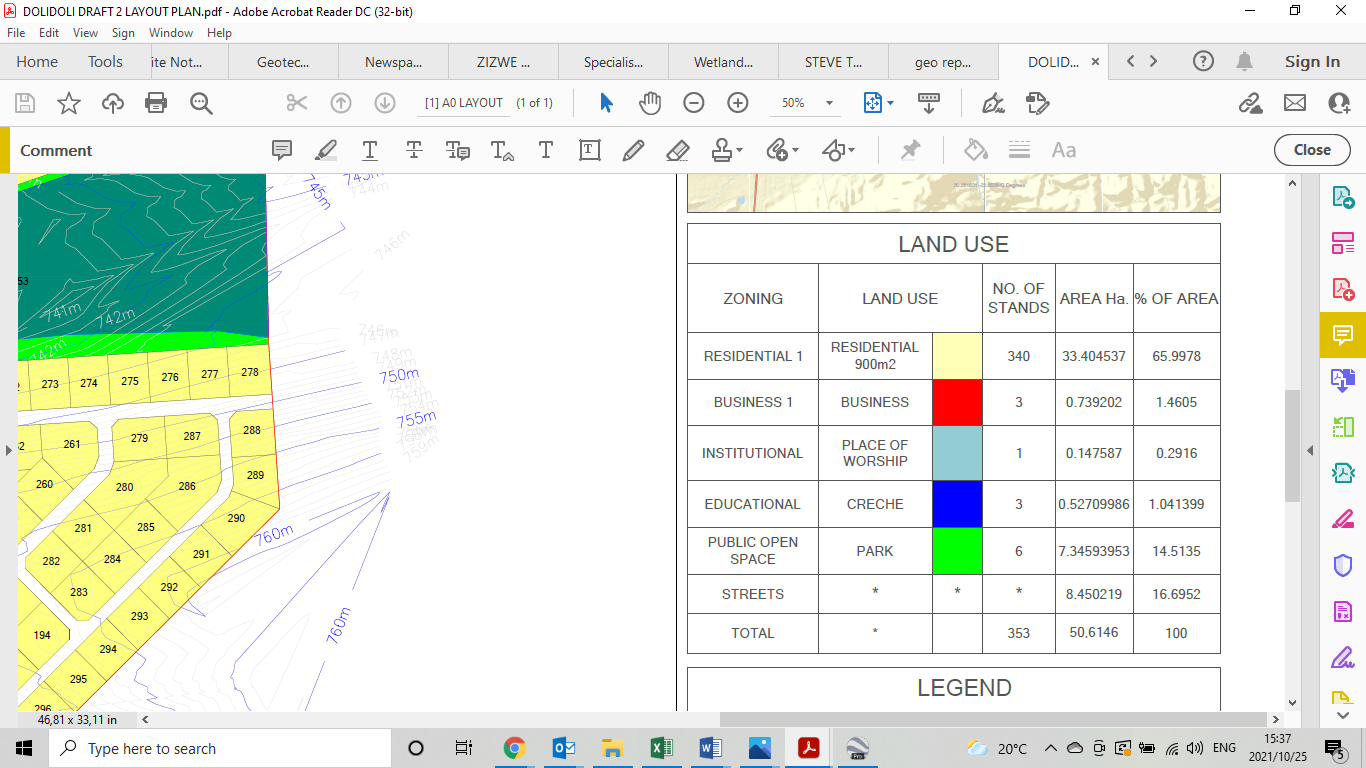


Figure 3: Layout Plan

# infrastructure and services

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

## Roads

The site can be accessed from an existing internal streets within Doli-Doli Village. There is an existing functioning road network that can be used to access the proposed development.

## Water

The proposed demarcation of sites has no existing bulk pipelines and no existing water reticulation infrastructure. There are two existing boreholes and one reservoir which can supply water to the proposed township. It is situated in the vicinity of Nzhelele Dam; However, it is proposed that a concerted Water Use License Application to the DWS to access water from the Nzhelele Dam for use within Nzhelele North Regional Water Scheme (NN13) for the proposed township.

## Sewer Services

There is no existing wastewater treatment infrastructure and bulk sewer pipelines in Doli-Doli; However, a wastewater treatment works is proposed to handle the sewer flows that will be generated by the township. The proposed bulk sewer pipelines will consist of 1.5km long sewer outfall will have to start from the stands with the lowest elevation and conveyed to the WWTW proposed. The underlying soils on the site are suitable for soak aways required for a septic tank system.

## Solid Waste

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

* 1. **Storm Water Drainage**

Storm water runoff onsite will be handled through an internal stormwater system that will be provided to drain the site in a safe and efficient way.

The Stormwater generated onsite can be channeled to follows the natural slope of the ground, to the lowest point.

## Electricity

There is existing electricity supply infrastructure along the D3673 access road to Doli-Doli village.

# 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 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.

# FEASIBLE AND REASONABLE ALTERNATIVES

## 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 changed to another area, the problem will remain the same or unsolved.

## Activity Alternatives

### 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.

## Design Alternatives

The unique character and appeal of the proposed development site in Doli-Doli 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.

## No-go option

The no-go alternative is the option not to go ahead with the development. The no-go alternative will only be considered as an alternative if it is concluded that the preferred alternative will have significant negative impacts on the environment which cannot be reduced or managed to an acceptable level. As it is , there it has already been indicated that there is a need and desirability for the proposed development 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.

# 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 18 June 2010 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.

*Table 1: Listed activities triggered by the development*

|  |  |  |
| --- | --- | --- |
| **LISTED ACTIVITY** | **ACTIVITY Number** | **DESCRIPTION** |
| GNR 325 of 7 April 2017 | Activity 15 | The proposed development involves clearing and preparing an area approximately 50.6 hectares. |

# PUBLIC PARTICIPATION

## **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 56 of the NEMA 2010 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.

## 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

### 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.

### Site Notices

Notices were placed at various points around the site.

### 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.

### Consultation with Stakeholders

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

### 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.

## **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 13th of July 2021 and acknowledged on the 17th of July 2021.
* The Draft Scoping Report and Plan of Study for EIA was made available for comments to all registered I&AP’s.

Comments received were attached as part of the report.

* Verbal comments from members of the community were in favor 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.

## **Final Scoping Report and the Plan of Study for EIA**

* The Final scoping report was submitted to LEDET on the 26th of August 2021 and was accepted on the 04th of October 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.

## SUMMARY OF KEY ISSUES RAISED BY THE I & AP’s

No issues were raised.

# ENVIRONMENTAL ASPECTS

## LITERATURE REVIEW

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

## DESCRIPTION OF THE ENVIRONMENT

### Topography

The Vhembe District Municipality is characterized by both high-lying and low-lying areas. Its relief is divided into the lowveld in the east; the Limpopo valley in the north and northwest; the Soutpansberg region in the central part, and the Pietersburg plateau in the south. The altitude above sea level of the Vhembe District varies between 200m in the northeastern part of the area and over 1 500 m in the Soutpansberg mountain range.

### Geology and Soils

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.

### Vegetation

The Vhembe District Municipality is characterized by the Savanna biome and it covers approximately 98% of the vegetation with the remainder being made up of Forest (1%) and Grassland (0.2%) biome.

### Climate

The climate of Vhembe District Municipality is warm and temperate, whereby it varies between 18 degrees in the area that has mountains and 28 degrees in the rest of the area, with 25.5 degrees Celsius in average. 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.

### Hydrology

### The study area consists of various river systems that forms a part of the major catchment area, known as Limpopo and Olifants primary catchment areas consist of 85.65% and 14.35% respectively. The major river systems found in these catchment areas include Luvuvhu river system, Nzhelele river systems, little Letaba river as well as the Sand and Hout river system.

### Sensitive Area

### The project area has high terrestrial biodiversity sensitivities. The ecological/ biodiversity study has to be done rating of the sensitives of the area.

## 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 Section 32 of Regulations No. R. 543 published in the Government Notice No. 33306 of 18 June 2010 of NEMA. Specialist studies relevant to the project include:

### Ecological Assessment

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

**Details of the Specialist:**

Mveledzo Environmental and Safety Solutions (PTY) LTD

Office No: 02 ENM Timber Building

Nelspruit, Mpumalanga

1200

Cell: 081 434 4234

Email: [mudaut2010@gmail.com](mailto:mudaut2010@gmail.com)

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

Area of expertise: Ecology Specialist.

**Findings:**

The proposed site is located within the Savanah Biome dominated by indigenous plant species with an exception of very few exotic plant species. 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 the balance of the site was considered to be on their original state and is maintaining the indigenous plant species of conservation concern. There was evidence of present of birds since there are birds nest that were spotted during the site visit.

There were no mammal species that was found and identified on site. The identified species were checked on the SANBI red list 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 biodiversity sensitive environment in close proximity of the site.

The proposed site is situated in a high biodiversity value area characterized by some functional ecosystems and pristine habitats.

**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.
* Concurrent rehabilitation of all the affected areas is recommended
* 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.

### Electrical Services Report

Electrical Services specialist assessment was conducted outline the design philosophy of the electrical medium voltage and low voltage installation for the proposed area.

**Details of the Specialist:**

Dalimede Projects (Pty) Ltd

Cell: 079 368 8414/015 291 0775

Email:admin@dalimede.com

Contact Person: Litmus Mthunzi (Pr.Sci.Nat)

Area of expertise: electrical Engineer

**Findings:**

* There is an existing medium voltage feeder lines that are supplying the area.
* None of the stands are electrified.
* The medium voltage line is a Hare Conductor.
* The proposed site will be connecting electricity from existing medium voltage on 22KV and the Mamvuka Feeder medium voltage line on 22KV which will be fed from paradise substation with a capacity of 132/22KV.

**Recommendations:**

* It is recommended that the development connects according to Eskom Distribution standard.

### Paleontological 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:**

The Paleontologist Consultant

Private Bag 652

Wits 2050

Johannesburg

Tel:

Cell:

Fax:

E-mail: [marion.bamford@wits.ac.za](mailto:marion.bamford@wits.ac.za)

Contact Person: Prof Marion Bamford

Area of expertise: Paleontologist Specialist

**Findings:**

* The geological structures suggest that the rocks are too old to contain body fossils and not even trace fossils have been recorded from the Wyllies Poort Formation (Soutpansberg Group).
* The Formation is indicated as moderately sensitive in the SAHRIS map.
* it is extremely unlikely that any fossils would be preserved in the arenites of the Wyllie’s Poort Formation.

**Recommendations:**

* It is recommended that a palaeontologist is called to assess and collect a representative sample in a case where-by trace fossils such as Microbially Induced Sedimentary Structures (MISS) are found once the fences and amenities are constructed for the site. Moreover, they should be rescued and photographed
* If any graves are identified in the study area in future, it is recommended that the graves should be retained in situ.

### 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:**

Vhufa Hashu Heritage Consultants

25 Roodt Street

Nelspruit

1200

Tel: 013 752 5551

Cell:083 357 3669

Fax: 086 263 5671

E-mail: [info@vhhc.co.za](mailto:info@vhhc.co.za)

Contact Person: Mr. Richard R Munyai

Area of expertise: Heritage and Archaeology Specialist

**Findings:**

* No Heritage or Archaeological sites were identified within the proposed site
* No historical sites / materials were found on site

**Recommendations:**

* It is recommended that a monitoring program be designed to deal with potential chance archaeological or historical finds, including unmarked human burials that may accidentally be found during development**.** If any graves are identified in the study area in future, it is recommended that the graves should be retained in situ.
* No further studies or mitigations are recommended due to the fact that within the proposed development site and its surroundings.

### Geotechnical Specialist Report

The purpose of this study is to define the founding materials and establishing broader geotechnical conditions and their suitability to the proposed demarcation of site e project.

**Details of Specialist:**

Mutali Geoscience Solutions

Unit 01 A Stanford Business Park

817 16th Road. Randjespark

Midrand

1685

Tel: 079 081 2369

Cell: 067 706 9904

E-mail: info@mutali.co.za

Contact Person: Mr. Mavetha Lavhesani

Area of expertise: Geologist Specialist

**Findings:**

* The study area is underlain by sandy gravel at an upper stratum of residual soil and quartzite bedrock of the wylies poor formation which is composed of red-pink and red-pink quartzite with minor pebble washes.
* The laboratory tests indicated that material underlying the site exhibits low collapse potential and non-expansiveness, and have low content of clay.
* Residual soil was encountered in all test pits with an average thickness of 0.49m in the range 0.2m to 0.64m below ground level.

**Recommendations:**

* It is recommended that site must be graded to prevent ponding of storm water.
* The recommended foundation type is a reinforced strip foundation founded on a G7 engineerd soil mattress
* It is recommended that the excavated sand may be mixed with coarse materials (sand/concrete) and utilized for construction and foundation lining for Raft Foundation.

### 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](Tel:079) 368 8414

Fax: 086 518 0234

Email: admin@dalimede.com

Contact Person: Litmos Mthunzi

Area of expertise: Civil Engineer

**Findings and Recommendations:**

**Water**

The Doli-Doli village is within the Nzhelele North Regional Water Scheme (NN13) and it abstracts raw water from two boreholes and a reservoir that are currently available.

**Sewer Service**

There are no existing waste water treatment works and existing bulk sewer pipelines in the area.

* The township will need to have water reticulation to house connection level
* The township has an AADD of 333.2kℓ/d
* The proposed development will have an estimated sewer ADWF of 283.2kℓ/d and a gross sewer flow of 325.7kℓ/d.
* Wastewater treatment works is also proposed to handle the sewer flows generated by the township
* A 1.5km long sewer outfall will have to start from the stands with the lowest elevation and conveyed to the WWTW proposed.

**Road**

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

The road infrastructure to internally service the development will be the standards of the Red Book, TMH, TRH books and the local municipality.

There is an existing access road on the site and the vehicles will have a clear view of vehicles on the on the main road from both sides. However, it is recommended that warning signs of exiting vehicles ahead be placed on both sides of the exit along the main road in order to mitigate possible accidents

**Electricity**

There is an existing electricity supply infrastructure along the D3673 access road to Doli-Doli village. This could be utilized to supply the development, subject to approval from the power authority Makhado Local Municipality

**Stormwater drainage system**

Stormwater runoff onsite will be handled through an internal stormwater system that will be provided to drain the site in a safe and efficient way.

* It is recommended to make use of Sustainable Urban Drainage System (SuDS) to manage the stormwater runoff before being discharged into the natural water courses
* The storm water can be discharged into the adjacent streams.
* The storm water discharge control will be applied in order to reduce the damaging effect of the increase in runoff.

**Solid waste**

A regional landfill situated nearest the site is to be used to dispose solid waste. The local municipality is responsible for connecting and disposing the solid waste. If the municipality is not able to provide this service, then a private company will need to be appointed by the development owners for the service.

### Socio- Economic Impact Assessment Report

**Details of Specialist:**

Great Warthong Geo-Environmental Group (Pty) Ltd

No.114 Dzata Street

Office No 004

Vleifontein

0948

[Tel: 015 547 0524 /082 269](Tel:079) 4524

Fax: 086 518 0234

Email: admin@greatwarthong.co.za

Contact Person: Mr Nethononda G.L

Area of expertise: Ecological and Botanical Specialist

**Findings and recommendations:**

The dominant economic sector is the general government which contributes about 27.37% of the GVA of the Municipality. The General Government employs about 14.35% of the Makhado Local Municipality population. only 29% of the population within Makhado Local Municipality is employed while vast majority of the population is not economically active. 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.

# 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.

## 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.

All the identified potential impact was assessed according to the following Impact Assessment Methodology as described below. This methodology has been utilized for the assessment of environmental impacts where the consequence (severity of impact, spatial scope of impact and duration of impact) and likelihood (frequency of activity and frequency of impact) have been considered in parallel to provide an impact rating and hence an interpretation in terms of the level of environmental management required for each impact. The risk ratings and significance are indicated in the tables below.

## 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 recognizing impacts, one must recognize 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 (+) | | | | |

# 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** | **E** | **D** | **I** | **P** | **Significance Rating Before Mitigation Measures** | **Proposed Mitigation Measures** | **E** | **D** | **I** | **P** | **Significance Rating After Mitigation Measures** |
| **Planning/ Designing Phase** | | | | | | | | | | | |
| Poor Design – Structural failures | 1 | 3 | 3 | 2 |  | Ensure compliance with the industry standards | 1 | 1 | 1 | 2 | Low (Negative) |
| Disregard of legislative requirement | 2 | 2 | 3 | 2 |  | Ensure compliance with relevant legislation and legal standards | 1 | 1 | 2 | 1 | Low (Negative) |
| **Construction Phase** | | | | | | | | | | | |
| Alteration of topography due to stockpiling of soil, building material and debris and waste material on site. | 2 | 2 | 1 | 4 | Medium | All stockpiles must be restricted to designated areas and are not to exceed a height of 2 metres.   * 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. | 1 | 1 | 1 | 2 | Low (Negative) |
| Consumption and use of surface water for construction purposes (i.e. water tankers for  dust suppression). | 2 | 1 | 2 | 3 | Medium | The Municipality to comment and advice on surface water availability and integrity. | 1 | 1 | 1 | 2 | Low (Negative) |
| Contaminated run-off:   * 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. | 2 | 1 | 3 | 2 | Medium | * Bunded areas should be used to store chemicals. * Clean-up of spills as soon as they occur. * 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. | 1 | 1 | 1 | 2 | Low (Negative) |
| Clearance of alien vegetation already present on portions of the study area. | 2 | 2 | 2 | 3 | Medium | 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. | 1 | 1 | 1 | 2 | Low (Positive) |
| Erosion, degradation and loss of topsoil due to construction activities as well surface and stormwater run-off. | 1 | 3 | 3 | 2 | Medium | * 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 EMPr 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. | 1 | 1 | 2 | 2 | Medium (positive) |
| Removal and use of local flora for firewood. | 2 | 4 | 3 | 3 | High | * No cutting down of trees for firewood. * Utilize commercially sold wood or other sources of energy. * Training of contractors on environmental awareness and the importance of flora. | 2 | 1 | 2 | 2 | Medium(negative) |
| Contamination of the surface and site with general waste. General waste produced on site includes:   * Office waste (e.g. food waste, paper, plastic); * Operational waste (clean steel, wood, glass); and * General domestic waste (food, cardboards, paper, bottles, tins). | 2 | 3 | 3 | 2 | Medium | An adequate number of general waste receptacles, including bins must be arranged around the site to collect all domestic refuse, and to minimize littering.   * 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. * 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. |  |  |  |  | Low (Negative) |
| with general and hazardous waste. Hazardous waste produced on site includes:   * 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). | 1 | 3 | 3 | 2 | Medium | Hazardous Waste Landfill Site. The Environmental Manager must have as part of his/her records the waste manifest for each batch-based disposal.   * 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. | 1 | 1 | 1 | 2 | Low (Negative) |
| Generation and disposal of sewage waste of temporary construction toilets. | 1 | 2 | 2 | 3 |  | * 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. * All incidents must be reported to the responsible site officer as soon as it occurs. | 1 | 1 | 1 | 2 | Low (Negative) |
| Dust and emissions during construction generated by debris handling and debris piles, truck transport, bulldozing, general construction. | 2 | 2 | 3 | 2 | High | * 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. | 1 | 1 | 2 | 2 | Low (Negative) |
| Generation of fumes from vehicle emissions may pollute the air. | 2 | 2 | 2 | 2 | Medium | * All earth moving vehicles and equipment must be regularly maintained to ensure their integrity and reliability in order to prevent smoke emissions | 1 | 1 | 1 | 2 | Low (Negative) |
| During the construction phase there is likely to be an increase in noise pollution from construction vehicles and construction staff. | 2 | 2 | 3 | 3 | High | * 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). | 1 | 1 | 2 | 2 | Medium (Negative) |
| Disturbance of sites of archaeological, historical and cultural significance. | 2 | 4 | 3 | 2 | High | * 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. | 1 | 2 | 2 | 2 | Medium1 (Negative) |
| During the construction phase there is likely to be an increase in traffic from construction vehicles. | 2 | 2 | 3 | 3 | High | * 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. | 1 | 1 | 1 | 2 | Low (Negative) |
| The development will result in job creation and provision of employment. | 2 | 2 | 1 | 4 | Medium (Positive) | * 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 mechanised1) should be practiced. * The principles of equality, BEE, gender equality and non-discrimination will be implemented. | 2 | 3 | 1 | 4 | High (Positive) |
| Job creation during the construction phase could result in the influx of people to the area. | 2 | 2 | 3 | 2 | Medium (Positive) | * If possible, all labour should be sourced locally. * Contractors and their families may not stay on site. * No informal settlements will be allowed. | 2 | 2 | 2 | 2 | Medium (Positive) |
| Public safety during construction may be compromised. | 2 | 2 | 2 | 2 | Medium (Negative) | * Members of the public adjacent to the construction site should be notified of construction activities in order to limit unnecessary disturbance or interference. * Construction activities will be undertaken during daylight hours and not on Sundays. | 1 | 1 | 1 | 2 | Medium (Negative) |
| **Operational Phase** | | | | | | | | | | | |
| Leaks of untreated water from pipelines may occur and impact on the shallow groundwater quality. | 2 | 2 | 2 | 2 | Medium (Negative) | * Any leaks should be fixed immediately and areas rehabilitated as needed. | 2 | 1 | 1 | 1 | Low (Negative) |
| Increase in Environmental Degradation & Pollution | 2 | 2 | 2 | 2 | Medium ( Negative) | * 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 ecology. Run-off water should be diverted to storm water management services and infrastructures; | 2 | 1 | 1 | 2 | Low (Negative) |
| Generation and disposal of domestic waste by the proposed development. | 2 | 3 | 2 | 2 | Medium (Negative) | Waste will be collected by an accredited waste company and disposed of at an appropriate and licensed waste disposal facility. | 1 | 1 | 2 | 2 | Low (Negative) |
| The development will result in job creation and provision of employment. | 2 | 2 | 2 | 2 | Medium (Positive) | * 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 | 2 | 2 | 2 | 2 | Medium (Positive) |
| Dust from cleared areas | 2 | 2 | 3 | 2 | Medium (Negative) | * 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. | 2 | 1 | 1 | 2 | Low (Negative) |
| Increase in soil erosion | 2 | 3 | 2 | 2 | Medium (Negative) | * All reasonable measures should be implemented during the Operational Phase to minimise erosion. * Remedial action must be taken at the first signs of erosion. | 1 | 1 | 1 | 2 | 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. | | | | | | | | | | | |

# 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.  - Threat to health.  - Danger to human life. |
| Fires | - Accidental fires.  - Burning of waste.  - Cooking with fires. |
| **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. |

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# 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.

# 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:

1. Increased water use during the construction phase.
2. Planting indigenous, rare and endangered species and rehabilitation (POSITIVE).
3. The socio-economic impact for creating temporary and permanent jobs (POSITIVE).
4. 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.

# 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 Programme (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.

# RECOMMENDATIONS

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

* All requirements from the Makhado 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.