

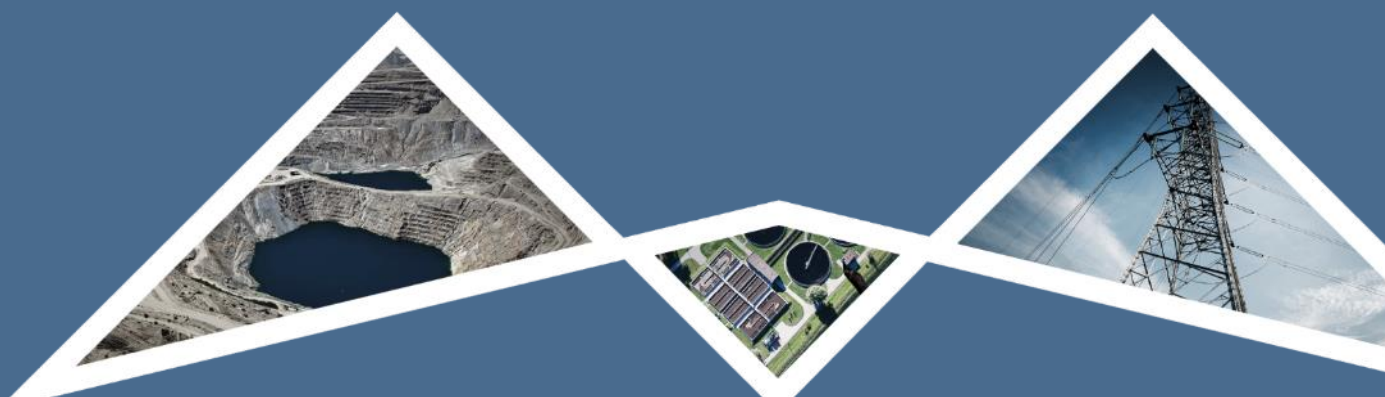


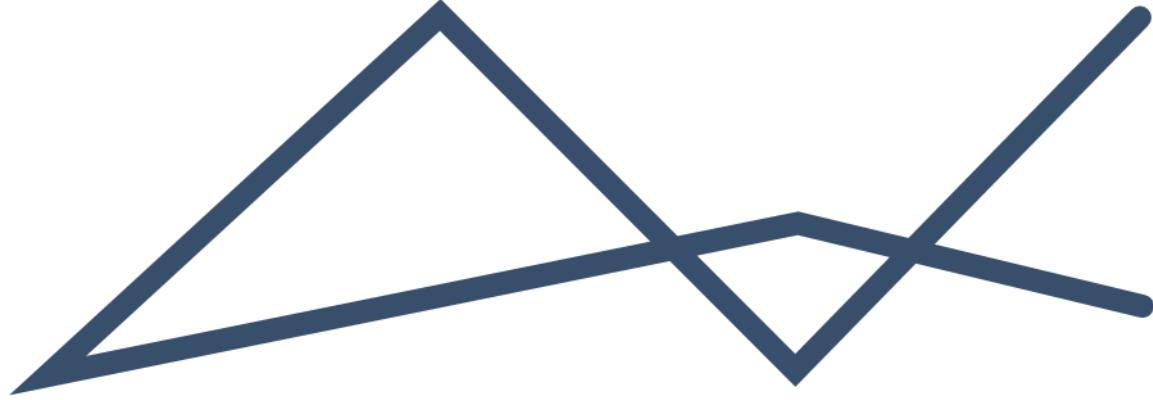
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ENVIRONMENTAL SCOPING REPORT FOR PUBLIC REVIEW

MASHISHING TOWNSHIP ESTABLISHMENT ON PORTION 39 AND
PORTION OF PORTION 81 OF THE FARM LYDENBURG TOWN AND
TOWNLANDS 31-JT

DARDLEA REF: 1/3/1/16/1E-178





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Abbreviations

CA	:	Competent Authority
CMA	:	Catchment Management Agency
DEA	:	Department of Environmental Affairs
DMR	:	Department of Mineral Resources
DWA	:	Department: Water Affairs
DWS	:	Department of Water Affairs and Sanitation
EAP	:	Environmental Assessment Practitioner
EDM	:	Ehlanzeni District Municipality
EIA	:	Environmental Impact Assessment
EIMS	:	Environmental Impact Management Services
EMPr	:	Environmental Management Programme Report
GN	:	Government Notice
HIA	:	Heritage Impact Assessment
I&AP	:	Interested & Affected Party
IEM	:	Integrated Environmental Management
KIPD	:	Koplan Intuthuko Planning & Development
Mamsl	:	Metres above mean sea level
MDARDLEA	:	Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs
MPRDA	:	Minerals and Petroleum Resources Development Act, 2002
NEMWA	:	National Environmental Management: Waste Amendment Act, 2008
NEMA	:	National Environmental Management Act, 2002
NEMA	:	National Environmental Management Act
NHRA	:	National Heritage Resources Act
NWA	:	National Water Act, 1998
PHRA	:	Provincial Heritage Resources Authority
PPP	:	Public Participation Process
SAHRA	:	South African Heritage Resources Agency
TCLM	:	Thaba Chweu Local Municipality
WMA	:	Water Management Area
WUL	:	Water Use Licence



EXECUTIVE SUMMARY

With an increase in population, the demand for housing in rural and urban areas also increases, this is particularly evident with a number of informal settlements mushrooming along urban edges. Home ownership is one of the most important issues in establishing stability in a community. The Mpumalanga Department of Human Settlement has been implementing housing projects in the Ehlanzeni District Municipality (EDM) and has identified the need to establish a new township in Mashishing approximately 4 km north west of the Lydenburg town, within the Thaba Chweu Local Municipality (TCLM), Mpumalanga Province. The proposed township establishment will be located on portion 39 and portion of portion 81 of the farm Lydenburg Town and Townlands 31-JT. The proposed development will entail a phased construction (Phase A and B) of a housing development with a footprint of approximately 231.3883 ha along with its associated infrastructure.

The proposed development is listed as an activity which requires an Environmental Authorisation (EA) from the relevant Competent Authority (CA), under the provisions of Section 24 of the National Environmental Management Act (Act 107 of 1998 - NEMA). Environmental Impact Management Services (Pty) Ltd (EIMS) has been appointed as the Environmental Assessment Practitioner (EAP) by Koplán Intuthuko Planning & Development (KIPD) on behalf of the applicant, the TCLM, to assist in preparing and submitting the Scoping and Environmental Impact Assessment (EIA) Reports, a Water Use Licence Application (WULA), as well as undertaking a Public Participation Process (PPP), to obtain an EA for the proposed Mashishing Township Establishment. In order to comply with national legislation, the proposed project will require authorisation in terms of the NEMA as well as national water Act (NWA). As such the project is required to undertake and submit the following reports for adjudication by the relevant Authorities:

- Scoping Report, and
- EIA and EMPr, as per the requirements of the 2014 EIA Regulations (as amended) promulgated under the NEMA.

An application for EA has been submitted to the designated CA, namely the Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs (MDARDLEA).

PURPOSE OF THE SCOPING REPORT

This Scoping Report pertains to presenting the findings of the scoping phase of the EIA process being undertaken towards the application for EA for the proposed Mashishing township establishment. The objectives of the scoping report are to:

- Identify the policies and legislation that are relevant to the activity;
- To motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- To identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking;



- To provide preliminary identification and confirmation of the preferred site layout, through a detailed site layout process, which includes an impact and risk assessment process including cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment. The site layout investigations and selection of the preferred alternative will be refined and finalised in the subsequent EIA phase;
- To identify the key issues to be addressed in the detailed assessment phase;
- To agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required, as well as the extent of further consultation to be undertaken. This will assist in determining the impacts and risks the activity will impose on the preferred site and/or layout through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development infrastructure within the preferred site layout; and
- To identify preliminary measures to avoid, manage, or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored. These mitigation measures will be further refined during the EIA phase.

PUBLIC PARTICIPATION

The Public Participation Process (PPP) for the proposed development has been undertaken in accordance with the requirements of the NEMA EIA Regulations (2014) as amended, and in line with the principles of Integrated Environmental Management (IEM). The PPP commenced on the 13th of November 2017 with an initial notification and call to register for a period of 30 days, ending on the 15th of December 2017. This scoping report has been made available for public review and comment for a period of 30 days in line with the legislative timeframes. The comments received from I&AP's during the initial call to register to date have been captured in a public consultation summary included in this report and appended in detail in the form of a Public Participation Report. Comments received during this scoping report public review period will also be addressed and added to the public consultation summary as part of the finalised Scoping Report to be submitted to MDARDLEA for their review and decision-making. On acceptance of the scoping report from MDARDLEA, an EIA Report, including an EMPr, will also be compiled and presented for public comment as part of this EIA process during which time further stakeholder engagement will take place.



This scoping report has been made available for review and comment at the Mashishing (Lydenburg) Public Library. Please ensure all comments on the scoping report are submitted to EIMS by 05th of November 2018. Contact details are provided below:

Environmental Impact Management Services (Pty) Ltd (EIMS)

P.O. Box 2083 Pinegowrie 2123

Phone: 011 789 7170 / Fax: 011 787 3059

Contact: Cheyenne Muthukarapan

Email: mashishing@eims.co.za

PRELIMINARY ENVIRONMENTAL IMPACT ASSESSMENT

A preliminary assessment was undertaken to identify all the potential risks and impacts associated with each phase of the proposed township development. The background information from similar EIAs and specialist studies undertaken for the site were consulted as well as a screening of all the activities planned for the development to ensure that all the potential impacts have been identified. Each of the identified risks and impacts for the project phases were assessed using the impact assessment methodology described in the body of the report. The impact assessment criteria include the nature, extent, duration, magnitude/intensity, reversibility, probability, public response, cumulative impact, and irreplaceable loss of resources.

The following impacts were determined to have a potentially medium negative final significance:

- Loss/destruction of natural habitat;
- Displacement of faunal species;
- Altered hydrological regime;
- Erosion of wetlands;
- Nutrient enrichment; and
- Increase in the spread of diseases.

In terms of positive impacts, the following key benefits have been identified:

- Employment opportunities; and
- Opportunities for local contractors and SMEs.

The positive and negative impacts will be further assessed during the EIA phase of the project. Furthermore, potential mitigation measures have been recommended and will be refined and supplemented based on input from the EAP, public consultation, and specialist assessments during the EIA phase of the project. The Environmental Management Programme (EMPr) prepared in the EIA phase will, include the identified appropriate mechanisms for avoidance and mitigation of the negative impacts and enhancing the positive.



1. INTRODUCTION

Environmental Impact Management Services (Pty) Ltd (EIMS) has been appointed as the Environmental Assessment Practitioner (EAP) by Koplan Intuthuko Planning & Development (KIPD) on behalf of the Thaba Chweu Local Municipality (TCLM) to assist in preparing and submitting the Scoping and Environmental Impact Assessment (EIA) Reports, a Water Use Licence Application (WULA), as well as undertaking a Public Participation Process (PPP), to obtain an Environmental Authorisation (EA) for the proposed Mashishing Township Development. A detailed description of the project is provided in Section 3 below.

With an increase in population, the demand for housing in rural and urban areas also increases, this is particularly evident with a number of informal settlements mushrooming along urban edges. Home ownership is one of the most important issues in establishing stability in a community. The Mpumalanga Department of Human Settlement has been implementing housing projects in the Ehlanzeni District Municipality (EDM), where the proposed development is situated. In terms of the provincial survey conducted in January to July 2006 there was a backlog of 113,000 houses in the province, and the district backlog was 95,000. A majority of people in the rural areas are living in traditional or informal type of houses. The mushrooming of informal settlements also contributes to the increase in the housing shortage, and therefore, the estimated backlogs have steadily increased over the past few years. Estimates regarding the size of the housing backlog differ widely. What is clear, however, is the fact that the TCLM is in urgent need of housing and service delivery. The District has a challenge in developing human settlements in terms of the National Housing Strategy, which encourages housing people close to their places of employment (EDM IDP, 2017 – 2022).

TCLM is a Category B (local) municipality located in the north-western region of the Mpumalanga Province in the Ehlanzeni District. It is one of four municipalities in the district. The escarpment divides the district into eastern and western halves. It is located on the far north-eastern part of the district. It shares its northern boundaries with Limpopo. The TCLM is located on the Lowveld escarpment of Mpumalanga, with an average elevation of 1 400 m above sea level and altitudes varying from 600 to 2 100 m. The main economic sectors are forestry, agriculture, mining, business services and tourism. The western half (Lydenburg Town) is dominated by agricultural and farming activities, while forestry is the main economic activity of the eastern half (Sabie and Graskop Towns) (TCLM IDP, 2017 – 2022).

Mashishing (previously known as Lydenburg) is a town in the TCLM. Officially known as Mashishing, Lydenburg is situated on the Sterkspruit/Dorps River tributary of the Olifants River at the base of the Long Tom Pass. The name is derived from the Dutch Lijdenburg, or "Town of Suffering". Mashishing is the oldest town in the province, and a hub of heritage, where the famous Lydenburg Heads, which are said to date back to 400AD, were found in the 1950s. Also found here, are old stone houses. Known as the home of trout fishing, Lydenburg has become the centre of the South African fly-fishing industry and is an agricultural and mining hub.

The TCLM promotes the development of residential townships in the Mashishing area, which falls under its jurisdiction. The objective of this project is to establish a sustainable housing settlement adjacent to the existing Mashishing town. In an effort to achieve this objective the municipality identified and reserved land on one of



its properties located on farm Lydenburg Town and Townlands 31-JT for a residential development. The current land use of the proposed development area consists land currently zoned as “agricultural land”, but is in the process of being rezoned for township development. The proposed development area has already largely been occupied by informal settlements. Pockets of arable land is mostly used for subsistence farming by the local community.

A Scoping and EIA process is being followed for this EA application, comprising of Scoping and EIA Phases, due to the nature of the National Environmental Management Act (NEMA) Listed Activities triggered by the EA application (see Section 4 for details on the legislative requirements). The EIA process entails the submission of Scoping and EIA Reports to the competent authority, the Mpumalanga Department of Agriculture and Rural Development, Land and Environmental Affairs (MDARDLEA), towards decision-making regarding the EA application. This Scoping Report summarises the findings and recommendations of the Scoping phase.

The aim of the environmental Scoping study and report is to:

- Identify the relevant policies and legislation relevant to the activity;
- Motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- Identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;
- Identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;
- Identify the key issues to be addressed in the assessment phase;
- Agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and
- Identify suitable measures to avoid, manage or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

The Scoping study culminates in the compilation of this Scoping Report, as well as a Plan of Study (PoS) for the EIA outlining the suggested way forward during the EIA phase. The Scoping Report and the PoS for EIA will be submitted to the competent authority for decision making and comment after public review.

An important component of an EIA process is the undertaking of a PPP. The PPP has been, and will be, undertaken during the Scoping and EIA phases, and is described in detail in Section 7 of this report.



The Scoping report has been compiled in terms of Regulation 21(3) and Appendix 2 of the NEMA EIA Regulations, 2014 (as amended). The PPP commenced on the 13th of November 2017 with an initial notification and call to register for a period of 30 days, ending on the 15th of December 2017. This Scoping Report was made available for public review and comment for a total period of 30 days, from the 04th of October 2018 to the 05th of November 2018, as per Regulation 3(8) and 40 of the EIA Regulations, 2014 (as amended). The EA application to MDARDLEA was submitted on the 26th of September 2018.



1.1. REPORT STRUCTURE

This report has been compiled in accordance with the requirements of Regulation 21(3) and Appendix 2 of the NEMA EIA Regulations, 2014 (as amended). A summary of the report structure, and the specific sections that correspond to the applicable regulations, is provided in Table 1 below.

Table 1: Report Structure

Environmental Regulation	Description	Section in Report
NEMA Regulation 982 (2014)		
Appendix 2(1)(a):	Details of – i) The EAP who prepared the report; and ii) The expertise of the EAP, including a curriculum vitae;	1
Appendix 2(1)(b):	The location of the activity. Including – i) The 21 digit Surveyor General code of each cadastral land parcel; ii) Where available, the physical address and farm name; iii) Where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	2
Appendix 2(1)(c):	A plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is – i) A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or ii) On a land where the property has not been defined, the coordinates within which the activity is to be undertaken;	2
Appendix 2(1)(d):	A description of the scope of the proposed activity, including – i) All listed and specified activities triggered; ii) A description of the activities to be undertaken, including associated structures and infrastructure;	3
Appendix 2(1)(e):	A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning	4



Environmental Regulation	Description	Section in Report
	frameworks and instruments that are applicable to this activity and are to be considered in the assessment process;	
Appendix 2(1)(f):	A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	5
Appendix 2(1)(h):	<p>A full description of the process followed to reach the proposed preferred activity, site and location within the site, including –</p> <ul style="list-style-type: none"> i) Details of all alternatives considered; ii) Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; iii) A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them; iv) The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; v) The impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts – <ul style="list-style-type: none"> aa. Can be reversed; bb. May cause irreplaceable loss or 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 associated with the alternatives; vii) Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; viii) The possible mitigation measures that could be applied and level of residual risk; 	7, 8, 9, 10 and 11



Environmental Regulation	Description	Section in Report
	<ul style="list-style-type: none"> ix) The outcome of the site selection matrix; x) If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and xi) A concluding statement indicating the preferred alternatives, including preferred location of the activity; 	
Appendix 2(1)(i):	<p>A plan of study for undertaking the environmental impact assessment process to be undertaken, including –</p> <ul style="list-style-type: none"> i) A description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity; ii) A description of the aspects to be assessed as part of the environmental impact assessment process; iii) Aspects to be assessed by specialists; iv) A description of the proposed method of assessing the environmental aspects, including a description of the proposed method assessing the environmental aspects to be assessed by specialists; v) A description of the proposed method of assessing duration and significance; vi) An indication of the stages at which the competent authority will be consulted; vii) Particulars of the public participation process that will be conducted during the environmental impact assessment process; and viii) A description of the tasks that will be undertaken as part of the environmental impact assessment process; ix) Identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored. 	10
Appendix 2(1)(j)	<p>An undertaking under oath or affirmation by the EAP in relation to –</p> <ul style="list-style-type: none"> i) The correctness of the information provided in the report; ii) The inclusion of comments and inputs from stakeholders and interested and affected parties; and 	13



Environmental Regulation	Description	Section in Report
	iii) Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;	
Appendix 2(1)(k):	An undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the environmental impact assessment;	13
Appendix 2(1)(l):	Where applicable, any specific information required by the competent authority; and	N/A
Appendix 2(1)(m):	Any other matter required in terms of section 24(4)(a) and (b) of the Act.	N/A



1.2. DETAILS OF THE EAP

EIMS was founded in 1993 and has steadily grown to be a significant player in the environmental management consulting industry in South Africa and the rest of Africa. EIMS and its resources have been involved with many significant EIA projects and offers access to a broad body of knowledge and experience with the various Integrated Environmental Management tools (EIA; EMPr; EMP; SEA; EMF; etc.). EIMS is responsible for project management and the compilation of the Environmental Management Programme (EMPr) and EIA/EMP for the proposed Mashishing Township Development project.

In terms of Regulation 13 of the 2014 EIA Regulations (Government Notice R. 982), an independent Environmental Assessment Practitioner (EAP), must be appointed by the applicant to manage the application. EIMS has been appointed by KIPD on behalf of the Applicant as the EAP and is compliant with the definition of an EAP as defined in Regulations 1 and 13 of the EIA Regulations and Section 1 of the NEMA. This includes, *inter alia*, the requirement that EIMS is:

- 1) Objective and independent;
- 2) Has expertise in conducting EIA's;
- 3) Comply with the NEMA, the Regulations and all other applicable legislation;
- 4) Takes into account all relevant factors relating to the application; and
- 5) Provides full disclosure to the applicant and the relevant environmental authority.

The declaration of independence of the EAP and the Curriculum Vitae (indicating the experience with environmental impact assessments and relevant application processes) of the consultants that were involved in the EA process and the compilation of this report are attached as Appendix A.

EIMS is a private and independent environmental management-consulting firm that was founded in 1993. EIMS has in excess of 20 years' experience in conducting EIAs, including many EIA's for mines and mining related projects. Please refer to the EIMS website (www.eims.co.za) for examples of EIA documentation currently available. The EAP's responsible for preparing this Scoping Report are Ms Nobuhle Hughes (Project Manager) and Mr Sikhumbuzo Mahlangu (Environmental Consultant). Brief details of their expertise and experience are presented below.

EAP Name: Nobuhle Hughes (Pr.Sci. Nat)

EAP Name: Sikhumbuzo Mahlangu (Pr.Sci. Nat)

SACNASP Registration Number: 400163/15

SACNASP Registration Number: 4004429/13

Contact no: 011 789 7170

Contact no: 011 789 7170

Email address: nobuhle@eims.co.za

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Nobuhle is a registered Professional Natural Scientist in the fields of Botany and Environmental Science with over 10 years of experience as a research scientist and an environmental practitioner. Through her work experience, Nobuhle has acquired extensive skills in project management, report writing, environmental impact assessments (EIA's) and environmental management programmes (EMPr's), as well as in public participation. She is currently a senior environmental practitioner and project manager at Environmental Impact Management Services (Pty) Ltd, where she has conducted numerous small to complex EIA's. As such, Nobuhle has prepared and submitted many Environmental



Authorisation (EA) applications as well as compiled Basic Assessments, Scoping and EIA Reports and their associated EMPPr's. Furthermore, Nobuhle has conducted, often taking the management role, several simple to controversial public participation processes.

Sikhumbuzo Mahlangu is an environmental consultant at EIMS with over seven years' experience in environmental management. His core experience and expertise lie mainly in water quality assessments, bio-monitoring, wetland assessments and environmental compliance auditing. He has been involved in the compilation of a number of similar EIA's, Integrated Water Use Licence Applications (IWULAs) as well as substantial environmental compliance monitoring and auditing experience in the construction sector.

The declaration of independence and the Curriculum Vitae (indicating the experience with environmental impact assessment and relevant application processes) of the EAP are attached as Appendix A.

1.3. SPECIALIST CONSULTANTS

Three specialist consultants have been appointed to provide discipline specific input during the EIA process as follows:

- Freshwater ecosystems (aquatics) and Wetlands;
- Heritage; and
- Ecology.

The specialist studies involved the gathering of data relevant to identifying and assessing environmental impacts at scoping level that may occur as a result of the proposed project. These impacts were then assessed according to pre-defined impacts rating methodology pre- and post-mitigation (refer to Section 9 for the impact assessment methodology). Specialists recommended appropriate mitigation/management measures to minimise potential negative impacts or enhance potential benefits, respectively. The specialist declarations of independence are included in the specialist reports (see Appendix C).



2. DESCRIPTION OF THE PROPERTY

The proposed Mashishing Township Development area is situated approximately 4 km north west of the Lydenburg town and ~60km west of Sabie off the R37 road in the TCLM, which is situated in the Ehlanzeni District Municipality (Mpumalanga Province, South Africa). Table 2 provides a summary of the properties that are affected by this application.

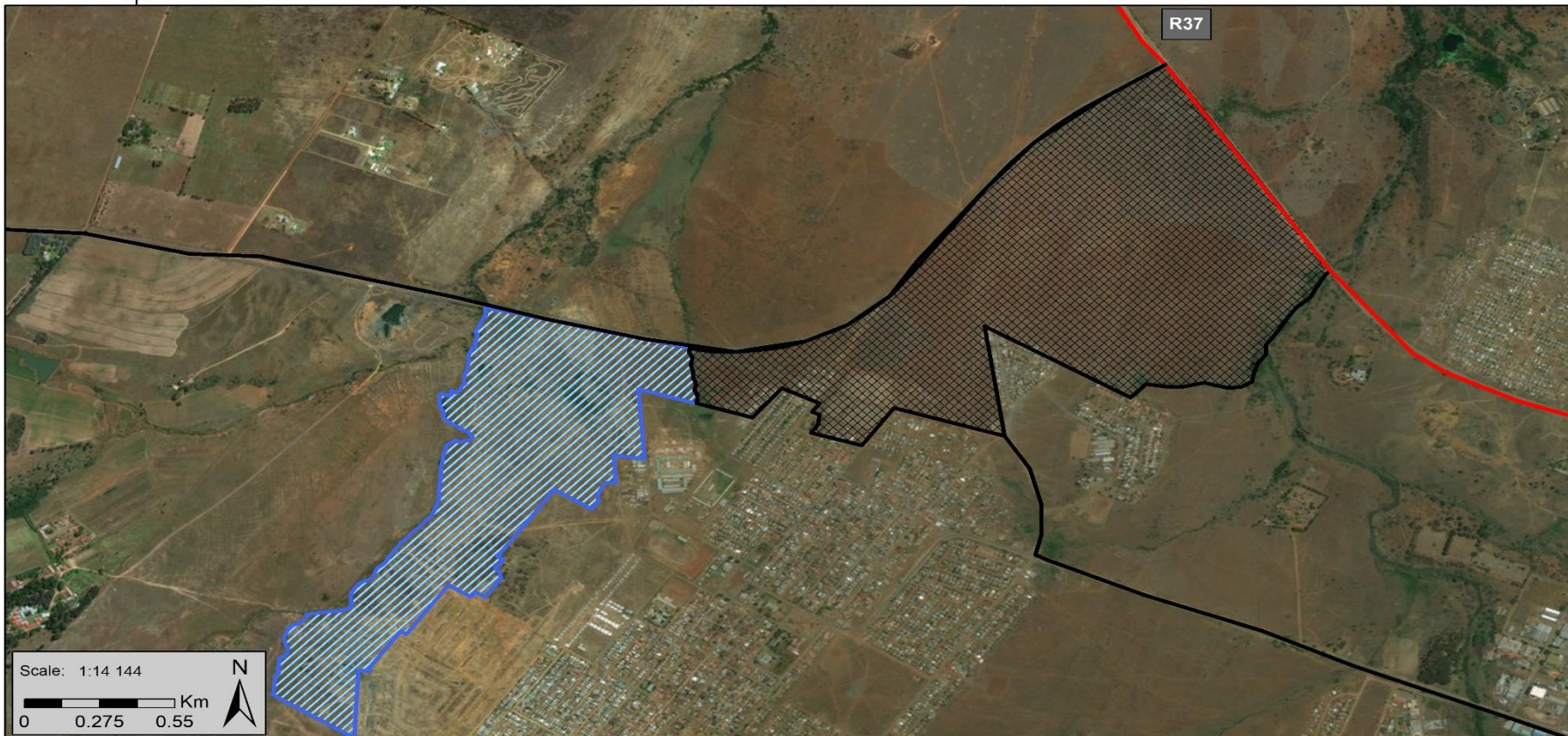
Table 2: Property description

Farm Name	<u>Land Owner</u> TCLM is the land owner of the Farm Lydenburg Town and Townlands 31-JT.		
Application Area (Ha)	The properties affected by the current application covers an area of approximately 231.4 hectares (ha).		
Development footprint size (Ha)	The development footprint of the current application covers an area of approximately 229.6 hectares (ha)		
Magisterial District	The proposed Mashishing Township is situated in the TCLM, situated in the Ehlanzeni District Municipality.		
Distance and direction from nearest town	The proposed Mashishing Township area is situated approximately 4 km north west of the Mashishing (Lydenburg) town, ~60 km west of Sabie, ~60 km north-east of Dullstroom and ~56 km south of Burgersfort.		
21 digit Surveyor General Code for each Portion	Properties affected by this Application and within the proposed development area		
	Farm Name:	Portion:	SG Codes:
	Farm Lydenburg Town and Townlands	Portion of portion 81	TOJT0000000003100081
Portion 39		TOJT0000000003100039	

Figure 1 below presents the locality map of the proposed Mashishing Township Establishment areas. A phased approach to the development will be followed as indicated by the map (Phases A and B).



30.4









<p>Locality Map Mashishing (Lydenburg) Township EIA</p> 	<p>Legend</p> <p>Roads</p> <ul style="list-style-type: none">  Secondary Roads  Major Road  Development: Phase B  Development: Phase A 		<p>Data Sources: ENPAT 2000; CSG, ESRI</p> <p>Coord System: GCS WGS 1984 Datum: WGS 1984 Units: Degree Ref: 1208_Locality Map_20180817_PH</p> <p>Compiled: SS/PH Reviewed: NH Approved: LW</p> <p>Date: 2018/08/17 EIMS Ref: 1208</p>
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Figure 1: Locality map of the proposed Mashishing Township Establishment Phase A and Phase B areas.



3. DESCRIPTION AND SCOPE OF THE PROPOSED ACTIVITY

This section serves to provide a description of the nature and extent of the proposed project.

3.1 PROPOSED PROJECT OVERVIEW

The proposed project entails the establishment of a township in Mashishing town (previously Lydenburg). The project is required in order to address the housing backlog that has faced the TCLM for a number of years. The proposed project area is located on portion 39 and portion of portion 81 of the Farm Lydenburg Town and Townlands 31-JT, within the TCLM, approximately 4 km north-west of the Mashishing (Lydenburg) Town (refer to Figure 1). The municipality is one of the four municipalities of the Ehlanzeni District Municipality (EDM) in Mpumalanga Province. TCLM is located on the far north eastern part of the EDM. It shares its northern boundaries with the Limpopo Province. The proposed project will entail a phased construction of a housing development with a footprint of approximately 231.4 ha along with its associated infrastructure (e.g. access roads, storm water drainage, municipal services, etc.). The proposed development will consist mostly of residential erven (residential zoning 1), with some cemeteries, business areas, schools, municipal areas, and public open spaces. A finalised layout of the development will be included in the EIA report.

3.2 DESCRIPTION OF ACTIVITIES TO BE UNDERTAKEN

The proposed Mashishing Township development will be undertaken in a phased manner, namely Phase A and Phase B. The footprint for Phase A is approximately 77.9 ha, and that of Phase B ~151.7 ha. A decision has yet to be taken on which phase will be constructed first.

3.2.1 CONSTRUCTION PHASE

Construction phase activities for the proposed Mashishing Township will involve, but not be limited to, the following components:

- Site clearance;
- Delivery of construction material;
- Erection of a site camp;
- Excavation;
- Storm water drainage;
- Installation of portable water; and
- Sewage pipe networks; and
- Foundations, etc.

3.2.1.1 SITE ESTABLISHMENT

The construction process typically commences with site establishment. Site establishment deals with the provision of infrastructure (primarily temporary infrastructure) required for the purposes of construction and to allow the contractors to commence physical work. Services (including temporary services) will be installed including water, sewage, and power, as well as land being levelled, access roads built, and construction offices established. The terrain will be fenced off and security control established, as well as first aid facilities put in place. Depending on the contractor appointed and the site-specific details, there may be a need for a concrete batching plant to be erected for the construction process. In the event



that a concrete batching plant is required, the relevant permits, approvals, and authorisations will need to be obtained by the contractor prior to the commencement of any related activities.

3.2.1.2 ESTABLISHMENT OF LAYDOWN AREAS

A laydown area will be established at the project site and will contain a site office, chemical toilets and lock-up facilities for valuables. It is anticipated that no fuel or oil will be stored within the laydown area of the project site (to be confirmed during the EIA Phase). Electricity will most probably be provided by either the Municipality or mobile generators. Electricity will be used for lighting and construction use such as welding and powering electrical equipment.

3.2.1.3 ESTABLISHMENT OF WASTE STORAGE AREAS

A waste storage area will be established and will be used to store waste on site before removal by a suitably licensed contractor. All waste will be managed and disposed of in a manner that prevents potential impacts on the environment and risks to human health. The Contractor will be responsible for waste management within the construction site, removal of waste material produced from the site and to implement any mitigation measures to minimise waste or redress problems arising from the waste from the site. Activities during the construction phase will result in the generation of a variety of waste types, which can broadly be classified into distinct categories based on their nature and the options for their disposal. These include:

- Excavated material suitable for reclamation and fill;
- Construction and demolition waste some of which may be suitable for reclamation and fill. This category includes the vegetation cleared at the commencement of the works;
- Hazardous waste;
- General waste or refuse; and
- Sewage and waste water.

The storage, handling and transportation of excavated material prior to utilisation on site or disposal of any unsuitable material at public waste fill sites could lead to the generation of dust and may be visually intrusive. Therefore, waste management control will be required to prevent or minimise impacts related to the storage, handling and transportation of waste.

The site area, including the temporary haul roads, will have to be cleared of vegetation at the commencement of construction. This process will include the removal of trees and shrubs, and the mixture of topsoil and vegetative matter that will not be suitable for public fill, this will require disposal to a licensed landfill site. However, by stripping/uprooting the vegetation first, before removing the top soil, it would be possible to separate the earth into material for reuse on site, material suitable for public fill and the fraction that would require disposal to landfill. In this way, the amount of waste will be minimised.

It is unlikely that any large quantities of chemical or hazardous waste will be generated during the construction phase of this project. However, construction materials should be handled, stored, transported and disposed of in an appropriate manner in accordance with the relevant legislation requirements. Other waste including sewage, waste water, and general refuse will be generated and will also need to be collected and disposed offsite appropriately by a licensed contractor to a suitable registered disposal site. Principles of waste minimisation at source, segregation for reuse, recycling and treatment or disposal will be applied to the handling of waste.



3.2.1.4 DEVELOPMENT OF ACCESS ROADS AND TOWNSHIP STREETS

Infrastructure that will be required will include, among others, the development of access roads and associated township streets, street lights and storm water management infrastructure. It is anticipated that raw material will be sourced locally and will include steel reinforcing, bricks, cement, sand and stones, roofing material, water pipes, electrification equipment, etc. Water will be sourced locally or trucked in by road from a licenced source.

Whilst every reasonable effort will be made to maximize the use of existing roads, the construction process and the operation of the development facilities will require access for construction vehicles. The site is easily accessible through the R37 road that connects the Lydenburg and Burgersfort Town. Other access roads for the purpose of delivering construction material may be required during construction, however those will be temporary, and their location will be determined during the EIA phase of the project.

The main activities to be involved during the construction of permanent access roads and township streets will include the following:

- Route surveying and pegging;
- Identification and licensing of suitable sources of road building materials;
- Bulk earthworks, grading and contouring;
- Import of materials for layering; and
- Surfacing (e.g. asphalt, gravel).

For the purpose of construction, it is anticipated that the construction of temporary access roads will be undertaken by the relevant appointed contractor in accordance with the relevant recommendations in the Environmental Management Programme. Based on the current dimensions and location, it is not anticipated that any listed activity will be triggered by the development of roads associated with this township.

3.2.1.5 LABOUR REQUIREMENTS DURING CONSTRUCTION

For the construction phase, skilled and unskilled labourers will be required. Skilled labour will be sourced nationally, including within Mpumalanga Province. However, semi-skilled and unskilled labour will be sourced locally as far as practicable. Skilled labourers will be required to operate machinery and equipment on site. Skilled supervisors will also be required. Unskilled workers will be used for manual labour tasks on site, such as vegetation clearing, digging, etc.

It is at this stage not yet known how many employees will be active on-site during construction. The construction area will need to make provision for the construction staff and will include a temporary construction camp. The construction camp would typically include:

- Access facilities;
- Ablution facilities;
- Areas for the storage of hazardous substances required for construction (e.g. oils and lubricants that will be stored and dispensed at the construction camp);
- Material lay-down areas;
- Accommodation facilities (if required);
- Waste storage and transition areas (various waste streams);
- Offices;



- Parking areas;
- Fuel storage;
- Water storage facilities;
- Stormwater management facilities; and
- Workshop areas.

Construction work will be undertaken during normal working hours. No construction is anticipated after hours/during the night.

3.2.2 OPERATION PHASE

The operational phase refers to the actual operation of the proposed township establishment and associated structures (e.g. residential township/houses).

Since the operation of the proposed township is likely to rely on the existing municipal services and the extension thereof, the proposed new township will be dependent on existing service delivery being in place. The operation of the proposed township is unlikely to put a significant burden on local services and the surrounding environment, provided that proper service delivery is in place. Services delivery such as electricity, water, sewage, waste collection, maintenance of streets, etc., will be the responsibility of the TCLM.

3.2.3 DECOMMISSIONING PHASE

In accordance with the requirements of the EIA Regulations, 2014 (as amended) it is important to consider and assess the likely impacts resulting from the decommissioning of the proposed township facilities and infrastructure. It is important to note that at present there is no intention to decommission the proposed township development and associated infrastructure at any time in the near future. Where necessary, applicable maintenance and repairs will be carried out to ensure continuous operation.

In the unlikely event that the proposed township development needs to be decommissioned, a proper procedure should be followed. Decommissioning typically involves the following activities:

- Disconnection and removal of equipment;
- Dismantling and demolition of structures;
- Re-use, recycle, reduce, and/or dispose of relevant materials;
- Re-instatement of disturbed areas; and
- Rehabilitation and monitoring.

The ultimate objective of the decommissioning phase would be to re-instate the affected areas to a state similar or better condition to the current environment.



4. POLICY AND LEGISLATIVE CONTEXT

This section provides an overview of the governing legislation identified which may relate to the proposed project. A summary of the applicable legislation is provided in Table 3 below. The primary enviro-legal requirement for this project stems from the need for an EA to be issued by the competent authority, the MDARDLEA, in accordance with the requirements of the NEMA. In addition, there are numerous other pieces of legislation governed by many acts, regulations, standards, guidelines and treaties on an international, national, provincial and local level, which should be considered in order to assess the potential applicability of these for the proposed activity. More detail on the legislative framework is presented in Section 4.1 below.

Table 3: Applicable Legislation and guidelines overview

Applicable Legislation and Guidelines	Reference Where Applied
<p>(A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process).</p>	
<p>APPLICABLE LEGISLATION</p>	
<p><u>Constitution of the Republic of South Africa, Act 108 of 1996</u></p> <p>The constitution of any country is the supreme law of that country. The Bill of Rights in chapter 2 section 24 of the Constitution of South Africa Act (Act 108 of 1996) makes provisions for environmental issues and declares that: “Everyone has the right -</p> <ul style="list-style-type: none"> (a) to an environment that is not harmful to their health or well-being; and (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that: <ul style="list-style-type: none"> (i) prevent pollution and ecological degradation; (ii) promote conservation; and (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development” <p>Therefore, the EIA process being conducted fulfills the requirements of the Bill of Rights.</p>	<p>Throughout the Scoping and EIA process</p>
<p>National Environmental Management Act (Act 107 of 1998 – NEMA) and the EIA Regulations, 2014 (as amended) thereunder:</p> <p>The NEMA requires that a project of this nature must undergo a Scoping and EIA process; an Environmental Management Programme must also be compiled. Regulations applicable to this project include the following:</p>	<p>Throughout the Scoping and EIA process</p>



Applicable Legislation and Guidelines

Reference Where Applied

- EIA Regulations R.982 (2014) in terms of NEMA.
- Listing Notice 1: R.983 (2014) in terms of NEMA.
- Listing Notice 2: R.984 (2014) in terms of NEMA.
- Listing Notice 3: R.985 (2014) in terms of NEMA.

Minerals and Petroleum Resources Development Act (MPRDA) (Act no 28 of 2002), as amended and Mineral and Petroleum Resource Development Regulations, 2004 as amended:

Throughout the Scoping and EIAR process

The MPRDA governs the sustainable utilisation of South Africa's mineral resources. In the event that the proposed activities require material (e.g. sand, gravel, aggregate) for the purposes of construction then the provisions of the MPRDA may apply. With respect to creating borrow pits there will be a requirement for either a mining permit (less than 2ha) or a mining right (larger than 2ha) depending on the extent of the proposed borrow pit. These mining permits and rights require the compilation of an environmental management plan or an environmental management programme (including an EIA) respectively, as well as a public consultation process, prior to being considered. The decision-making authority in respect of these permits/rights is the Department of Mineral Resources (DMR).

It is important to note that this EIA process and application for EA does not make provision for any borrow pits. Should these be required during construction, a separate application will have to be submitted to the DMR.

National Water Act (NWA) (Act 36 of 1998):

The NWA recognises that water is a scarce and unevenly distributed national resource which must be managed encompassing all aspects of water resources.

Unless water uses (if any) required for the project are permissible water uses as envisaged in the NWA, a water use licence (WUL) will be required for those water uses applicable which will require submission of an application to the Department of Water and Sanitation (DWS).

Potential Section 21 water uses which may be applicable to this project include:

- Activity 21 (a): Taking water from a water resource.
 - **Applicability:** Depending on the location of the proposed activities and the facilities required for construction there may be a need to extract water from available resources (incl. surface and/or groundwater). In the event that water is to be obtained

Throughout the Scoping and EIA process, including the WULA – pertaining to all water related aspects



from an unlicensed natural resource then there may be a need to apply for a WUL.

- Activity 21 (c): Impeding or diverting the flow of water in a watercourse.
 - **Applicability:** This listing applies to any activity that would impede or alter the flow of a wetland, seepage area, or river. Access roads, or other activities that require construction inside these features, to stop or divert the flow, would render this water use applicable.

- Activity 21 (i): Altering the bed, banks, course or characteristics of a water course.
 - **Applicability:** the NWA Regulations defines altering as “the temporary or permanent alteration of a watercourse for...”. The available dictionary definition of alteration is, “change, revise, modify, vary, transform, adjust, adapt, convert, remodel, restyle, refashion, remould, revamp, correct, amend”. In the event that any activities towards the establishment of the proposed township, whether temporary or permanent, result in the alteration of a watercourse, a WUL may be required.

- Activity 21 (g): Disposing of waste in a manner which may detrimentally impact on a water resource.
 - **Applicability:** Disposal of waste (including excavated material, and waste water) from the proposed project if not undertaken properly, may have negative impacts to the existing surface water bodies within and around the proposed site. Should such waste impacts on surrounding water resources be anticipated, then this water use will require a WUL application.

National Heritage Resources Act, 1999 (Act no 25 of 1999):

The National Heritage Resources Act aims to promote good management of cultural heritage resources and encourages the nurturing and conservation of cultural legacy so that it may be bestowed to future generations. Due to the location and extent of the proposed township, it is likely that some heritage resources may occur within the project study area. Furthermore, the proposed project will involve the expansion of some existing cemeteries.

Heritage specialist study, Scoping and EIA process including EMPr.



Applicable Legislation and Guidelines	Reference Where Applied
<p>Specific Environmental Management Acts (SEMAS):</p> <p>The SEMAs refer to specific portions of the environment where additional legislation over and above the NEMA are applicable. SEMAs relevant to this application include the following:</p> <ul style="list-style-type: none"> • National Environmental Management: Biodiversity Act, 2004 (Act no 10 of 2004). • National Environmental Management: Air Quality Act, 2004 (Act no 39 of 2004). • National Environmental Management: Waste Act, 2008 (Section 4.1.5) (Act no 59 of 2008). • National Environmental Management: Protected Areas Act, 2003 (Act no 57 of 2003). 	<p>Scoping and EIA process. Specialist studies, Baseline description and EMPr. Permits to be applied for if any protected tree species are to be removed from the site.</p>
APPLICABLE GUIDELINES	
<p>Integrated Environmental Management Information Guidelines series:</p> <p>This series of guidelines was published by the Department of Environmental Affairs (DEA), and refers to various environmental aspects. Applicable guidelines in the series include:</p> <ul style="list-style-type: none"> • Guidelines 5: Companion to NEMA EIA Regulations of 2010. • Guideline 7: Public Participation. • Guideline 9: Need and Desirability. <p>Additional guidelines published in terms of the NEMA EIA Regulations (2006), in particular:</p> <ul style="list-style-type: none"> • Guideline 3: General Guide to Environmental Impact Assessment Regulations, 2006. • Guideline 4: Public Participation in support of the Environmental Impact Assessment Regulations, 2006. • Guideline 5: Assessment of alternatives and impacts in support of the Environmental Impact Assessment Regulations, 2006. 	<p>The guidelines will be used throughout the Scoping and EIA process.</p>
<p>Best Practice Guideline (BPG) series:</p> <p>The BPG series is a series of publications by the then Department of Water Affairs and Forestry (now DWS – Department of Water and Sanitation) providing best practice principles and guidelines relevant to certain aspects of water management. BPG relevant to this project include the following:</p> <ul style="list-style-type: none"> • BPG H2: Pollution Prevention and Minimisation of Impacts. 	<p>Surface water and groundwater specialist studies, Scoping and EIA process including EMPr.</p>



Applicable Legislation and Guidelines

Reference Where Applied

- BPG G1: Storm Water Management.
- BPG G3: Water Monitoring Systems.
- BPG G4: Impact Prediction.

4.1 APPLICABLE NATIONAL LEGISLATION

The legal framework within which the proposed Mashishing Township Establishment operates is governed by many Acts, Regulations, Standards and Guidelines on an international, national, provincial and local level. Legislation applicable to the project includes (but is not limited to):

- THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT.
- THE NATIONAL WATER ACT.
- CATCHMENT MANAGEMENT STRATEGIES.
- THE NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT.
- THE NATIONAL ENVIRONMENTAL MANAGEMENT AIR QUALITY ACT.
- THE NATIONAL HERITAGE RESOURCES ACT.
- THE NATIONAL FORESTS ACT.
- NATIONAL ENVIRONMENTAL MANAGEMENT BIODIVERSITY ACT: ALIEN AND INVASIVE SPECIES LIST.
- THE SUB-DIVISION OF AGRICULTURAL LAND ACT.
- THE CONSERVATION OF AGRICULTURAL RESOURCES ACT.
- NOISE CONTROL REGULATIONS.
- NOISE STANDARDS.
- ENVIRONMENT CONSERVATION ACT.
- THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT.
- THE SOUTH AFRICAN NATIONAL ROADS AGENCY LIMITED AND NATIONAL ROADS ACT.
- MPUMALANGA ROADS ACT.
- INTEGRATED DEVELOPMENT PLAN FOR TCLM.

4.1.1 NATIONAL ENVIRONMENTAL MANAGEMENT ACT

The main aim of NEMA is to provide for co-operative governance by establishing decision-making principles on matters affecting the environment. In terms of the NEMA EIA Regulations, 2014 (as amended), the applicant is required to appoint an EAP to undertake the EIA, as well as conduct the public participation process. In South Africa, EIA's became a legal



requirement in 1997 with the promulgation of regulations under the Environment Conservation Act (ECA). Subsequently, NEMA was passed in 1998. Section 24(2) of NEMA empowers the Minister and any MEC, with the concurrence of the Minister, to identify activities which must be considered, investigated, assessed and reported on to the competent authority responsible for granting the relevant environmental authorisation. On 21 April 2006 the Minister of Environmental Affairs and Tourism promulgated regulations in terms of Chapter 5 of the NEMA. These regulations, in terms of the NEMA, were amended in June 2010, December 2014 and again in April 2017. The December 2014 NEMA Regulations are applicable to this project.

The objective of the EIA Regulations is to establish the procedures that must be followed in the consideration, investigation, assessment and reporting of the activities that have been identified. The purpose of these procedures is to provide the competent authority with adequate information to make decisions which ensure that activities which may impact negatively on the environment to an unacceptable degree are not authorized, and that activities which are authorized, are undertaken in such a manner that the environmental impacts are managed to acceptable levels.

In accordance with the provisions of Sections 24 (5) and Section 44 of the NEMA the Minister has published EIA Regulations (GN R. 982) pertaining to the required process for conducting EIA's. These Regulations provide a detailed description of the EIA process to be followed when applying for EA for any listed activity. The Regulations differentiate between a simpler Basic Assessment Process (required for activities listed in GN R. 983 – LN1 – and GN R. 985 – LN3) and a more comprehensive EIA process (activities listed in GN R. 984 – LN2). In the case of this project there are activities triggered under GN R. 984 and as such a Scoping and EIA process is necessary. Table 4 presents all the anticipated listed activities under the NEMA EIA Regulations, 2014 (as amended) that are applicable to this project.

In this regard, approval is sought for the following activities:

- Residential development on land previously zoned for agriculture;
- Physical alteration of vacant agricultural land for township development. The total area to be transformed exceeds 20 hectares;
- Development of facilities for bulk transportation of stormwater and sewage;
- Construction of buildings and road crossings within 32 metres of a watercourse; and
- Possible deposition and/or excavation of material from a watercourse.

A Scoping and EIA process is reserved for activities which have the potential to result in significant impacts which are complex to assess. The Scoping and EIA phases of the EIA process accordingly provide a mechanism for the comprehensive assessment of activities that are likely to have more significant environmental impacts. Figure 2 below provides a graphic representation of all the components of a full EIA process.

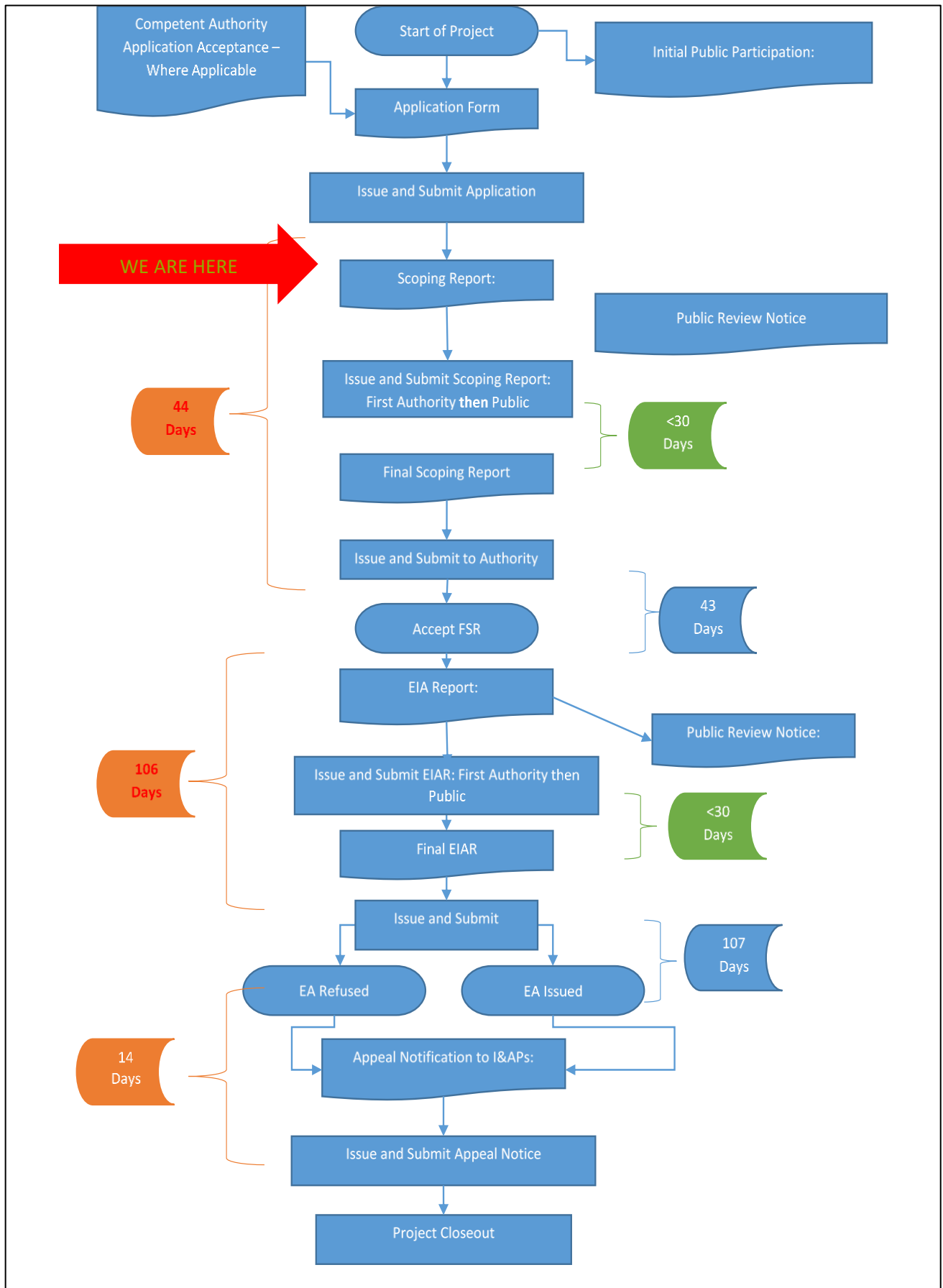


Figure 2: EIA process diagram.



Table 4 below indicates the listed activities in terms of the NEMA EIA Regulations, 2014 (as amended), that are applicable to the proposed Mashishing Township Establishment.

Table 4: Listed activities in terms of the NEMA EIA Regulations (2014)

Listing Notice	Activity No	Listed Activity Description	Reason for inclusion:
Activities in terms of NEMA (1998) listed activities - Government Notice R983 – Listing Notice 1			
LN1	9	<p><i>The development of infrastructure exceeding 1000 metres in length for the bulk transportation of water or storm water-</i></p> <p>(i) with an internal diameter of 0,36 metres or more; or</p> <p>(ii) with a peak throughput of 120 litres per second or more; excluding where-</p> <p><i>(a) such infrastructure is for bulk transportation of water or storm water or storm water drainage inside a road reserve or railway line reserve; or</i></p> <p><i>(b) where such development will occur within an urban area.</i></p>	<p>Facilities for bulk transportation of stormwater may be required as part of the construction and/or operational activities for this project. The dimensions of the stormwater infrastructure are unknown at present but will be clarified during the EIA phase.</p>
LN1	10	<p><i>The development and related operation of infrastructure exceeding 1000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes</i></p> <p>(i) with an internal diameter of 0,36 metres or more; or</p> <p>(ii) with a peak throughput of 120 litres per second or more; excluding where-</p> <p><i>(a) such infrastructure is for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes inside a road reserve or railway line reserve; or</i></p> <p><i>(b) where such development will occur within an urban area.</i></p>	<p>Facilities for bulk transportation of sewage will be required as part of the construction and/or operational activities for this project. The dimensions of the sewage infrastructure are unknown at present but will be clarified during the EIA phase.</p>
LN1	27	<p><i>The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for-</i></p> <p><i>(i) the undertaking of a linear activity; or</i></p> <p><i>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</i></p>	<p>More than 1 ha of indigenous grassland will need to be cleared for the proposed development.</p>
LN1	28	<p><i>Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:</i></p>	<p>The proposed project involves an establishment of a residential development in the form of a township within a land bigger than 5 ha that was previously used for agriculture.</p>



Listing Notice	Activity No	Listed Activity Description	Reason for inclusion:
		<p><i>(i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or</i></p> <p><i>(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.</i></p>	
LN1	44	<i>The expansion of cemeteries by 2500 square metres or more.</i>	The proposed project involves the expansion of existing cemeteries.
Activities in terms of NEMA (1998) listed activities - Government Notice R984 – Listing Notice 2			
LN2	15	<p><i>The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for-</i></p> <p><i>(i) the undertaking of a linear activity; or</i></p> <p><i>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</i></p>	The proposed township will be on a portion of portion 81 of the Farm Lydenburg Town and Townlands 31-JT. The proposed study area is ± 231.3883 ha.
Activities in terms of NEMA (1998) listed activities - Government Notice R985 – Listing Notice 3			
LN3	4	<p><i>The development of a road wider than 4 meters with a reserve less than 13.5 meters.</i></p> <p><i>f. Mpumalanga</i></p> <p><i>i. Outside urban areas:</i></p> <p><i>(aa) A protected area identified in terms of NEMPAA, excluding disturbed areas;</i></p> <p><i>(bb) National Protected Area Expansion Strategy Focus areas;</i></p> <p><i>(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;</i></p> <p><i>(dd) Sites or areas identified in terms of an international convention;</i></p> <p><i>(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</i></p> <p><i>(ff) Core areas in biosphere reserves; or</i></p> <p><i>(gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas, where such areas comprise indigenous vegetation; or</i></p> <p><i>ii. Inside urban areas:</i></p>	The proposed project involves development of roads wider than 4 meters and possibly a reserve less than 13.5 meters.



Listing Notice	Activity No	Listed Activity Description	Reason for inclusion:
		<p>(aa) Areas zoned for use as public open space; or</p> <p>(bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose.</p>	

4.1.2 THE NATIONAL WATER ACT

The National Water Act, 1998 (Act 36 of 1998 – NWA) makes provision for two types of applications for water use licences, namely individual applications and compulsory applications. The NWA also provides that the responsible authority may require an assessment by the applicant of the likely effect of the proposed licence on the resource quality, and that such assessment be subject to the EIA Regulations. A person may use water, if the use is-

- Permissible as a continuation of an existing lawful water use (ELWU);
- Permissible in terms of a general authorisation (GA);
- Permissible under Schedule 1; or
- Authorised by a licence.

These processes are described in Figure 3.

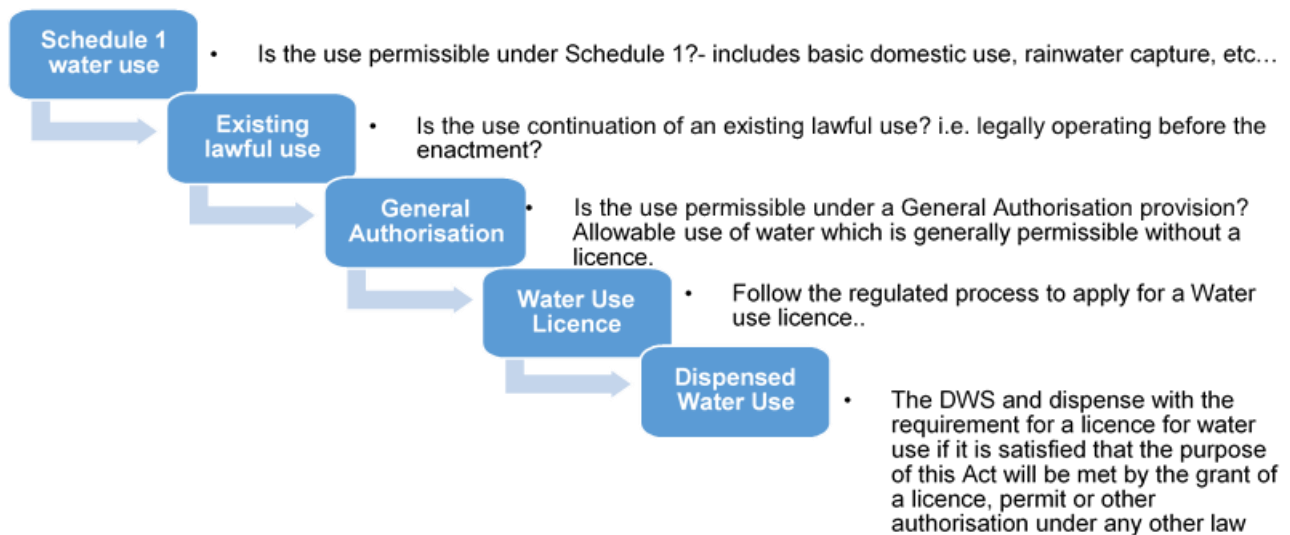


Figure 3: Authorization Process for New Water Uses

The NWA defines 11 water uses. A water use may only be undertaken if authorised by the Department of Water and Sanitation (DWS). Water users are required to register certain water uses that actually took place on the date of registration, irrespective of whether the use was lawful or not. The water uses for which an authorisation/license can be issued includes:

- a) taking water from a water resource;



- b) storing water;
- c) impeding or diverting the flow of water in a watercourse;
- d) engaging in a stream flow reduction activity contemplated in section 36;
- e) engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1);
- f) discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduits;
- g) disposing of waste in a manner which may detrimentally impact on a water resource;
- h) disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process;
- i) altering the bed, banks, course or characteristics of a watercourse;
- j) removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and
- k) using water for recreational purposes.

4.1.3 CATCHMENT MANAGEMENT STRATEGIES

Catchment Management Agencies (CMAs) are tasked with coordinating the water demands, interests and responsibilities of all relevant government departments, institutions and water users within a specific CMA. This is to ensure that on a regional scale, water is protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner for the benefit of all persons. The main instrument that guides and governs the activities of a CMA is the Catchment Management Strategy (CMS) which, while conforming to relevant legislation and national strategies, provides detailed arrangements for the protection, use, development, conservation, management and control of the region's water resources. According to DWS' water management areas delineations, the proposed Mashishing Township Establishment area (Phases A and B) falls within the Olifants Water Management Area, delineated as water management area No, 4, which subsequently falls under the B Primary drainage area.

4.1.4 THE NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT

The applicable waste legislation is No. 59 of the– National Environmental Management: Waste Act, 2008 (NEMWA). On 2 June 2014 the National Environmental Management: Waste Amendment Act came into force. Waste is subject to all the provisions of the NEMWA.

Section 16 of the NEMWA must also be considered with regards to the proposed project which states the following:

1. A holder of waste must, within the holders power, take all reasonable measures to-
 - a) "Avoid the generation of waste and where such generation cannot be avoided, to minimise the toxicity and amounts of waste that are generated;
 - b) Reduce, re-use, recycle and recover waste;



- c) Where waste must be disposed of, ensure that the waste is treated and disposed of in an environmentally sound manner;
- d) Manage the waste in such a manner that it does not endanger health or the environment or cause a nuisance through noise, odour, or visual impacts;
- e) Prevent any employee or any person under his or her supervision from contravening the Act; and
- f) Prevent the waste from being used for unauthorised purposes.”

These general principles of responsible waste management will be incorporated into the requirements in the EMPr to be implemented for this project.

Waste can be defined as either hazardous or general in accordance to Schedule 3 of the NEMWA (2014) as amended. “Schedule 3: Defined Wastes” has been broken down into two categories – Category A being hazardous waste; and Category B being general waste.

In order to attempt to understand the implications of these waste groups, it is important to ensure that the definitions of all the relevant terminologies are defined:

- Hazardous waste: means “any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristic of that waste, have a detrimental impact on health and the environment and includes hazardous substances, materials or objects within business waste, residue deposits and residue stockpiles.”
- Residue deposits: means “any residue stockpile remaining at the termination, cancellation or expiry of a prospecting right, mining right, mining permit, exploration right or production right.”
- Residue stockpile: means “any debris, discard, tailings, slimes, screening, slurry, waste rock, foundry sand, mineral processing plant waste, ash or any other product derived from or incidental to a mining operation and which is stockpiled, stored or accumulated within the mining area for potential re-use, or which is disposed of, by the holder of a mining right, mining permit or, production right or an old order right, including historic mines and dumps created before the implementation of this Act.”
- General waste: means “waste that does not pose an immediate hazard or threat to health or to the environment, and includes – domestic waste; building and demolition waste; business waste; inert waste; or any waste classified as non-hazardous waste in terms of the regulations made under Section 69.”

It is important to note that during the scoping phase, evidence of an old non-functional sewage plant infrastructure was identified on the proposed Phase A part of the study area. Since this part of the site seems to have been used for sewage treatment in the past, there is a possibility that the soil within the area may have been contaminated. As such, a contamination study will need to be undertaken prior to construction and should the results thereof identify contamination that requires an application for a Waste Management Licence, then the said licence must be obtained prior to construction on the affected area.



4.1.5 THE NATIONAL ENVIRONMENTAL MANAGEMENT AIR QUALITY ACT

The National Environmental Management: Air Quality Act (Act No. 39 of 2004 as amended – NEMAQA) is the main legislative tool for the management of air pollution and related activities. The Object of the Act is:

- To protect the environment by providing reasonable measures for-
 - i. the protection and enhancement of the quality of air in the republic;
 - ii. the prevention of air pollution and ecological degradation; and
 - iii. securing ecologically sustainable development while promoting justifiable economic and social development; and
- Generally to give effect to Section 24(b) of the constitution in order to enhance the quality of ambient air for the sake of securing an environment that is not harmful to the health and wellbeing of people.

The NEMAQA mandates the Minister of Environment to publish a list of activities which result in atmospheric emissions and consequently cause significant detrimental effects on the environment, human health and social welfare. All scheduled processes as previously stipulated under the Air Pollution Prevention Act (APPA) are included as listed activities with additional activities being included to the list. The updated Listed Activities and Minimum National Emission Standards were published on the 22nd November 2013 (Government Gazette No. 37054).

According to the Air Quality Act, air quality management control and enforcement is in the hands of local government with District and Metropolitan Municipalities as the licensing authorities. Provincial government is primarily responsible for ambient monitoring and ensuring municipalities fulfil their legal obligations, with national government primarily as policy maker and co-ordinator. Each sphere of government must appoint an Air Quality Officer responsible for co-ordinating matters pertaining to air quality management. Given that air quality management under the old Act was the sole responsibility of national government, local authorities have in the past only been responsible for smoke and vehicle tailpipe emission control.

The National Pollution Prevention Plan Regulations were published in March 2014 (Government Gazette 37421) and tie in with The National Greenhouse Gas Emission Reporting Regulations which took effect on 3 April 2017. In summary, the regulations aim to prescribe the requirements that pollution prevention plans of greenhouse gases, declared as priority air pollutants, need to comply with in terms of the NEMAQA. The regulations specify who needs to comply, and by when, as well as prescribing the content requirements.

4.1.6 THE NATIONAL HERITAGE RESOURCES ACT

The National Heritage Resources Act (Act 25 of 1999 - NHRA) stipulates that cultural heritage resources may not be disturbed without authorization from the relevant heritage authority. Section 34(1) of the NHRA states that, “*no person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority...*”. The last few years have seen a significant change towards the inclusion of heritage assessments as a major component of Environmental Impacts Processes required by NEMA and MPRDA. This change requires us to evaluate the Section of these Acts relevant to heritage (Fourie, 2008b):



- The NEMA 23(2)(b) states that an integrated environmental management plan should, “...*identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage*”.
- A study of subsections (23)(2)(d), (29)(1)(d), (32)(2)(d) and (34)(b) and their requirements reveals the compulsory inclusion of the identification of cultural resources, the evaluation of the impacts of the proposed activity on these resources, the identification of alternatives and the management procedures for such cultural resources for each of the documents noted in the Environmental Regulations. A further important aspect to be taken account of in the Regulations under NEMA is the Specialist Report requirements laid down in Section 33 (Fourie, 2008b).

In accordance with the legislative requirements and EIA rating criteria, the regulations of the South African Heritage Resources Agency (SAHRA) and Association of Southern African Professional Archaeologists (ASAPA) have also been incorporated to ensure that a comprehensive and legally compatible Heritage Scoping Report is compiled in accordance with sections anticipated to be triggered by the project, as follows:

- Section 34 (1) – “*no person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority...*” .; and
- Section 38 – (1) Subject to the provisions of subsections 7,8,9, any person who intends to undertake a development categorised as: (a) the construction of a road, wall, powerline, pipeline, canal, or other similar form of linear development or barrier exceeding 300m in length; (b) the construction of a bridge or similar structure exceeding 50m in length; (c) any development of other activity which will change the character of a site – (i) exceeding 5000m² in extent; (ii) involving three or more existing erven or subdivisions thereof; (iii) involving 3 or more erven or divisions thereof which have been consolidated within the past 5 years; (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage authority; (d) the rezoning of a site exceeding 10000m² in extent; (e) any other category of development provided for in regulations by SAHRA or a provincial heritage authority must at the very earliest stages of initiating such a development, notify the responsible heritage authority and furnish it with details regarding the location, nature and extent of the proposed development. The heritage authority may then instruct that a HIA is done.

4.1.7 THE NATIONAL FORESTS ACT

According to this act (Act No. 84 of 1998), the Minister may declare a tree, group of trees, woodland or a species of trees as protected. The prohibitions provide that “*no person may cut, damage, disturb, destroy or remove any protected tree, or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a licence granted by the Minister.*”

From the scoping phase ecology study undertaken, no protected trees were found to occur in the proposed development area. However, this will be verified when a detailed ecology specialist study is undertaken for the EIA phase of the project.



4.1.8 NATIONAL ENVIRONMENTAL MANAGEMENT BIODIVERSITY ACT: ALIEN AND INVASIVE SPECIES LIST

This Act (2014) is applicable since it protects the quality and quantity of arable land in South Africa. Loss of arable land should be avoided and declared Weeds and Invaders in South Africa are categorised according to one of the following categories, and require control or removal:

- Category 1a Listed Invasive Species: Category 1a Listed Invasive Species are those species listed as such by notice in terms of section 70(1)(a) of the Act as species which must be combated or eradicated;
- Category 1b Listed Invasive Species: Category 1b Listed Invasive Species are those species listed as such by notice in terms of section 70(1)(a) of the Act as species which must be controlled;
- Category 2 Listed Invasive Species: Category 2 Listed Invasive Species are those species listed by notice in terms of section 70(1)(a) of the Act as species which require a permit to carry out a restricted activity within an area specified in the Notice or an area specified in the permit, as the case may be; and
- Category 3 Listed Invasive Species: Category 3 Listed Invasive Species are species that are listed by notice in terms of section 70(1)(a) of the Act, as species which are subject to exemptions in terms of section 71(3) and prohibitions in terms of section 71A of Act, as specified in the Notice.

The provisions of this Act have been considered and where relevant incorporated into the proposed mitigation measures and requirements of the EMPr, to be further updated in the EIA phase of this application.

4.1.9 THE SUB-DIVISION OF AGRICULTURAL LAND ACT

In terms of the Subdivision of Agricultural Land Act (Act 70 of 1970), any application for change of land use must be approved by the Minister of Agriculture, while under the Conservation of Agricultural Resources Act (Act 43 of 1983) no degradation of natural land is permitted.

4.1.10 THE CONSERVATION OF AGRICULTURAL RESOURCES ACT

The Conservation of Agricultural Resources Act (Act 43 of 1983) states that the degradation of the agricultural potential of soil is illegal. The Conservation of Agriculture Resources Act (Act 43 of 1983) requires the protection of land against soil erosion and the prevention of water logging and salinization of soils by means of suitable soil conservation works to be constructed and maintained. The utilisation of marshes, water sponges and watercourses are also addressed.

4.1.11 NOISE CONTROL REGULATIONS

In terms of section 25 of the ECA, the national Noise Control Regulations (NCR) (GN R154 in Government Gazette No. 13717, dated 10 January 1992) were promulgated. The NCRs were revised under GN R. 55 of 14 January 1994 to make it obligatory for all authorities to apply the regulations. The Free State Province did promulgate provincial regulations (PN 24) in 1998 however, the Mpumalanga Province has not done so yet and as such, the ECA Noise Control Regulations apply. These noise control regulations will need to be considered in relation to the potential noise that may be generated mainly during the construction and decommissioning phases of the proposed township establishment project. The two key aspects of the noise control regulations relate to: disturbing noise; and noise nuisance.



Section 4 of the regulations prohibits a person from making, producing or causing a disturbing noise, or allowing it to be made produced or caused by any person, machine, device or apparatus or any combination thereof. A disturbing noise is defined in the regulations as *'a noise level which exceeds the zone sound level or if no zone sound level has been designated, a noise level which exceeds the ambient sound level at the same measuring point by 7 dBA or more.'*

Section 5 of the noise control regulations in essence prohibits the creation of a noise nuisance. A noise nuisance is defined as *'any sound which disturbs or impairs or may disturb or impair the convenience or peace of any person'*. Noise nuisance is anticipated from the proposed project particularly to those residents that are situated in close proximity to the project sites.

The South African National Standard 10103 also applies to the measurement and consideration of environmental noise and should be considered in conjunction with these regulations.

4.1.12 NOISE STANDARDS

There are a few South African Scientific Standards (SABS) relevant to noise from mines, industry and roads. They are:

- South African National Standard (SANS) 10103:2008. 'The measurement and rating of environmental noise with respect to annoyance and to speech communication';
- SANS 10210:2004. 'Calculating and predicting road traffic noise';
- SANS 10328:2008. 'Methods for environmental noise impact assessments';
- SANS 10357:2004. 'The calculation of sound propagation by the Concave method';
- SANS 10181:2003. 'The Measurement of Noise Emitted by Road Vehicles when Stationary'; and
- SANS 10205:2003. 'The Measurement of Noise Emitted by Motor Vehicles in Motion'.

The relevant standards use the equivalent continuous rating level as a basis for determining what is acceptable. The levels may take single event noise into account, but single event noise by itself does not determine whether noise levels are acceptable for land use purposes. With regards to SANS 10103:2008, the recommendations are likely to inform decisions by authorities, but non-compliance with the standard will not necessarily render an activity unlawful per se.

4.1.13 ENVIRONMENT CONSERVATION ACT

The Environment Conservation Act (Act 73 of 1989 – ECA) was, prior to the promulgation of the NEMA, the backbone of environmental legislation in South Africa. To date the majority of the ECA has been repealed by various other Acts, however Section 25 of the Act and the Noise Regulations (GNR 154 of 1992) promulgated under this section are still in effect. These Regulations serve to control noise and general prohibitions relating to noise impact and nuisance.

4.1.14 THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT

The MPRDA aims to “make provision for equitable access to, and sustainable development of, the nation’s mineral and petroleum resources”. The MPRDA outlines the procedural requirements that need to be met to acquire mineral and petroleum rights in South Africa. The MPRDA governs the sustainable utilisation of South Africa’s mineral resources. In the event that the proposed activities require material (e.g. sand, gravel, aggregate, etc.) for the purposes of construction then the provisions of the MPRDA may apply.



In terms of the MPRDA, a Mining Right must be issued prior to the commencement of any mining activities which includes borrow pits, etc. As per Section 79(4)(a) and (b) of the MPRDA, the Applicant is required to conduct an EIA and submit an EMPr for approval as well as to notify in writing and consult with Interested and Affected Parties (I&APs) within 120 days of acceptance of the Application. The MPRDA also requires adherence with related legislation, chief amongst them is the National Environmental Management Act (Act No. 107 of 1998, NEMA) and the National Water Act (Act No. 36 of 1998, NWA).

4.1.15 THE SOUTH AFRICAN NATIONAL ROADS AGENCY LIMITED AND NATIONAL ROADS ACT

The South African National Roads Agency Limited (SANRAL) and National Roads Act (Act 7 of 1998) makes provision for a national roads agency for the Republic to manage and control the Republic's national roads system and take charge, amongst others, of the development, maintenance and rehabilitation of national roads within the framework of government policy; for that purpose to provide for the establishment of SANRAL; to prescribe measures and requirements with regard to the Government's policy concerning national roads, the declaration of national roads by the Minister of Transport and the use and protection of national roads; to repeal or amend the provisions of certain laws relating to or relevant to national roads; and to provide for incidental matters.

The Act provides for certain processes and procedures which should be followed in the event that any structures are erected on or within the defined 'building restriction area' of a National Road. In this regard EIMS has included SANRAL as a pre-identified key Interested and Affected Party (I&AP) and as such they will be informed of the proposed project and will be provided with an opportunity to comment on all submissions.

4.1.16 MPUMALANGA ROADS ACT

The main objectives of the Mpumalanga Roads Act (Act No.1 of 2008) include the following:

- To provide for the establishment, transformation, restructuring and control of the Mpumalanga Provincial road network;
- To develop and implement Provincial road policy and standards; to provide for optimum road safety standards, efficient and cost-effective management of the Provincial road network, the maintenance of Provincial roads assets and the provision and development of equitable road access to all communities within the Province; and
- To provide for transparency in the development and implementation of the Provincial road network policies and practices; and to provide for matters connected therewith.

4.1.17 INTEGRATED DEVELOPMENT PLAN FOR TCLM (2017 – 2022 TERM)

Section 25 of the Municipal System Act (MSA) (Act No. 32 of 2000) requires that every elected Council must develop and adopt a strategic plan, commonly known as Integrated Development Plan (IDP) to guide & inform the municipality's planning, development and budgeting. This Act also requires that the approved IDP be reviewed annually based on its performance & other changing circumstances deemed relevant and necessary by the municipal council. Integrated development planning is a process through which a municipality prepare an inclusive strategic development plan for a period of five-year.



The need for the integrated development plans is entrenched in the South African Constitution (section 152 and 153). The Constitution states that local government is in charge of the development process in municipalities and it is in charge of municipal planning. Furthermore, the MSA provides that all municipalities have to undertake an integrated development planning process to produce integrated development plans. As the Integrated Development Plan is a legal requirement it has a legal status and thus supersedes all plans that guide development at a local government level. It is very important for a municipality to have an IDP, one of the primary role of this council policy (IDP) document is to coordinate and consolidate all planning and budgeting within a municipality. The aim of this planning is to achieve the envisaged vision of the municipal council. The IDP should inform the following:

- The budget processes of the municipality,
- Allocation of scarce resources to maximize development impact in areas of greatest needs,
- Alignment of municipal, provincial, national and parastatals programmes and projects
- To ensure sustainable development and growth,
- Facilitate an inclusive planning within the municipal jurisdiction,
- To facilitate credible accessibility to the municipality and its governance structures by citizens,
- To enable active citizen participation in affairs pertaining to planning and development,
- Facilitate access to development funding,
- Encourage local and international investment,
- Building capacity among Councillors and officials,
- Effective and efficient use of the available resources for a maximum development impact in the communities.

The proposed development is therefore in line with the municipal IDP to address developmental challenges such as water supply, electricity supply, human settlement development and socio-economic up-liftment.

4.1.18 MPUMALANGA BIODIVERSITY CONSERVATION PLAN

The Mpumalanga Tourism and Parks Agency (MTPA) and the Department of Agriculture and Land Administration (DALA) have jointly developed the Mpumalanga Biodiversity Conservation Plan (MBCP). As the first such plan produced for the Province, it is intended to guide conservation and land-use decisions in support of sustainable development. The MBCP is the first spatial biodiversity plan for Mpumalanga that is based on scientifically determined and quantified biodiversity objectives. The purpose of the MBCP is to contribute to sustainable development in Mpumalanga. Its specific objectives are:

- To guide the MTPA in implementing its biodiversity mandate, including working with landowners to improve the provincial protected area network; and
- To provide biodiversity information that supports land-use planning and helps to streamline and monitor environmental decision-making.



4.2 PERIOD FOR WHICH AUTHORISATION IS REQUIRED

Active construction of the proposed township is only expected to start in two to three years' time pending a positive RoD. Construction is expected to last at least another two to three years post authorisation.



5. NEED AND DESIRABILITY OF THE PROPOSED ACTIVITY

This section will examine the need and desirability of the proposed Mashishing Township Establishment project. Thaba Chweu Local Municipality (TCLM) is the second smallest municipality in the Ehlanzeni District Municipality. The local municipality consists of three main towns namely: Mashishing formerly known as Lydenburg, Sabie, and Graskop. These towns are characterized by formal and informal settlements comprising of different community groups with different developmental challenges such as water supply, electricity supply, human settlement, tourism development and socio-economic up-liftment. The TCLM has formally acknowledged the community concerns and issues brought to their attention (e.g. community protests by Sabie community in September 2015) with the intention to address them.

Despite some concerns regarding service delivery with the proposed new township, the proposed development will play an important role in combating unemployment and poverty because more jobs will be created during construction and to a lesser extent during the operational phase. The project is also anticipated to contribute to alleviating the informal housing challenge within the area. The proposed township establishment is the most practicable environmental option for this site since it will benefit the existing community by formally establishing a township, thereby providing housing, municipal services, in addition to creating employment opportunities.

The proposed development site is currently zoned as “Agricultural Land” but is in the process of being rezoned for township development. The proposed Mashishing Township establishment project will allow the applicant to develop much needed low-cost housing for the growing population of the Mashishing town.

The needs and desirability analysis component of the “*Guideline on need and desirability in terms of the Environmental Impact EIA Regulations (Notice 819 of 2014)*” includes, but is not limited to, describing the linkages and dependencies between human well-being, livelihoods and ecosystem services applicable to the area in question, and how the proposed development’s ecological impacts will translate into socio-economic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.). Table 5 below present the needs and desirability analysis undertaken for the Mashishing Township Establishment project.

Table 5: Needs and Desirability Analysis for the Proposed Mashishing Township Establishment

Ref No.	Question	Answer
1	Securing ecological sustainable development and use of natural resources	
1.1	How were the ecological integrity considerations taken into account in terms of: Threatened Ecosystems, Sensitive and vulnerable ecosystems, Critical Biodiversity Areas, Ecological Support Systems, Conservation Targets, Ecological drivers of the ecosystem, Environmental Management Framework, Spatial Development Framework	Refer to Section 9.2.2 and 9.2.5, the impact assessment and recommended mitigation and management measures, of this Scoping Report. All identified impacts and any new impacts will be further assessed during the EIA phase of the project, the findings of which will be presented in an EIA Report and associated EMPr. The following specialist studies were conducted during the



Ref No.	Question	Answer
	(SDF) and global and international responsibilities.	<p>scoping phase and will continue into the EIA phase of the project in support of this application:</p> <ul style="list-style-type: none"> • Ecology Study; • Freshwater ecosystems (aquatics) and Wetland Study; and • Heritage Study; <p>Further assessment in these fields of studies, and the updating of identified impacts and recommended mitigation and management measures will be included in the EIA Report and associated EMPr during the EIA phase of this project. The need of the project in terms of the Ehlanzeni District Municipality SDF will also be further assessed and determined in the EIA phase.</p>
1.2	How will this project disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? What measures were explored to avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy the impacts? What measures were explored to enhance positive impacts?	Refer to the impact assessment and mitigation measures in Section 9 of this Scoping Report, as well as Appendix C for the Ecology Scoping Report. The identified potential impacts and their assessment will be further expanded upon in the EIA phase as part of the EIA Report and associated EMPr.
1.3	How will this development pollute and/or degrade the biophysical environment? What measures were explored to either avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy the impacts? What measures were explored to enhance positive impacts?	Refer to the impact assessment and mitigation measures in Section 9 of this Scoping Report, as well as Appendix C for the Ecology Scoping Report. The identified potential impacts and their assessment will be further expanded upon in the EIA phase as part of the EIA Report and associated EMPr.
1.4	What waste will be generated by this development? What measures were explored to avoid waste, and where waste could not be	Refer to Section 3 of this Scoping report with regards to waste generation and disposal. Waste management will



Ref No.	Question	Answer
	<p>avoided altogether, what measures were explored to minimise, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?</p>	<p>be further expanded upon in the EIA phase as part of the EIA Report and associated EMPr.</p>
<p>1.5</p>	<p>How will this project disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy the impacts? What measures were explored to enhance positive impacts?</p>	<p>A Heritage specialist study has been undertaken which will inform the subsequent EIA and EMPr. Refer to Section 9 of this Scoping Report for impact assessment and proposed mitigation measures. This aspect will be further expanded upon in the EIA phase as part of the EIA Report and associated EMPr.</p>
<p>1.6</p>	<p>How will this project use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy the impacts? What measures were explored to enhance positive impacts?</p>	<p>Refer to Section 9.2.2 and 9.2.5, the impact assessment and recommended mitigation and management measures, of this Scoping Report. All identified impacts and any new impacts will be further assessed during the EIA phase of the project, the findings of which will be presented in an EIA Report and associated EMPr.</p>
<p>1.7</p>	<p>How will this project use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impacts on the ecosystem jeopardise the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What</p>	<p>Refer to Section 9.2.3 and 9.2.4, the impact assessment and recommended mitigation and management measures, of this Scoping Report. All identified impacts and any new impacts will be further assessed during the EIA phase of the project, the findings of which will be presented in an EIA Report and associated EMPr.</p>



Ref No.	Question	Answer
	<p>measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts?</p>	
1.7.1	<p>Does the proposed project exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. dematerialised growth)?</p>	<p>The proposed Mashishing township establishment project is not expected to increase the dependency on the use of existing resources, and will maintain economic growth within the TCLM, as existing municipal services will be expanded to accommodate the new establishment.</p>
1.7.2	<p>Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources should be used?</p>	<p>The proposed project entails the development of a residential township where a large portion of the proposed study area is already transformed. Where natural resources will be impacted upon by the proposed development, mitigation and/or management measures have been recommended, and will be updated and included in the finalised EIA Report and associated EMPr.</p>
1.7.3	<p>Do the proposed location, type and scale of development promote a reduced dependency on resources?</p>	<p>The location of both Phase A and Phase B of the proposed Mashishing Township Establishment will be adjacent to an already existing town and will thus utilise existing infrastructure. Moreover, additional/new infrastructure will be required to accommodate the additional population resulting from the new township including service delivery demands.</p>
1.8	<p>How were a risk-averse and cautious approach applied in terms of ecological impacts:</p>	
1.8.1	<p>What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?</p>	<p>Refer to Section 12 for the assumptions and limitations in relation to this scoping report and investigations pertaining to this project to date. These will be further updated during the EIA phase.</p>



Ref No.	Question	Answer
		<p>The current knowledge gaps include, but are not limited, to the following:</p> <ul style="list-style-type: none"> • Detailed and site-specific information regarding some of the environmental aspects identified during this Scoping phase, will be gathered during the upcoming EIA phase. • The results of the EIA Phase will include input from the commissioned specialist studies (ecology, freshwater ecosystems, heritage, aquatics and wetlands) to be conducted in the EIA phase.
1.8.2	What is the level of risk associated with the limits of current knowledge?	The level of risk is low as this scoping report represents the preliminary scoping or baseline level study, whilst the upcoming EIA phase will be further informed by detailed assessment by the various specialists, input from the EAP, as well as input from the I&APs and commenting authorities (in response to the Scoping initial call to register, and this Scoping Report public review period).
1.8.3	Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	Sufficient information was gathered prior to the onset of this EIA process to indicate that the potential development of the proposed township is feasible. In addition it is noted that parts of the proposed development area have already been transformed and are largely occupied by informal settlements.
1.9	How will the ecological impacts resulting from this development impact on people's environmental right in terms following?	
1.9.1	Negative impacts: e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance	Refer to Section 9, which details the impact assessment and recommended mitigation and management measures identified during the Scoping Phase. All identified impacts and any new impacts will be further assessed during the EIA phase of the project, and the findings will be presented in an EIA Report and associated EMPr.



Ref No.	Question	Answer
	is not possible, to minimise, manage and remedy negative impacts?	
1.9.2	Positive impacts: e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts?	Refer to Section 9, the impact assessment and recommended mitigation and management measures, of this Scoping Report. All identified impacts and any new impacts will be further assessed during the EIA phase of the project, and the findings will be presented in an EIA Report and associated EMPr.
1.10	Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)?	Refer to Section 8 for the socio-economic baseline of the study area. Furthermore, refer to Section 9 for the identified socio-economic impacts and their associated proposed mitigation. The identified socio-economic impacts and any new related impacts will be further assessed during the EIA phase of the project, and the findings will be presented in an EIA Report and associated EMPr.
1.11	Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?	Refer to Section 9.2.2, the impact assessment and recommended mitigation and management measures, of this Scoping Report. All identified ecological impacts and any new related impacts will be further assessed during the EIA phase of the project, and the findings will be presented in an EIA Report and associated EMPr.
1.12	Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the "best practicable environmental option" in terms of ecological considerations?	Refer to Sections 6 and 11 of this Scoping Report for details of the alternatives considered. This aspect will be further assessed during the EIA phase of the project, and the findings will be presented in an EIA Report and associated EMPr.
1.13	Describe the positive and negative cumulative ecological/biophysical impacts bearing in mind	Refer to Section 9 of this Scoping Report for the identified impacts and recommended mitigation measures. All



Ref No.	Question	Answer
	the size, scale, scope and nature of the project in relation to its location and existing and other planned developments in the area?	identified impacts and any new impacts will be further assessed during the EIA phase of the project, and the findings will be presented in an EIA Report and associated EMPr.
2	Promoting justifiable economic and social development	
2.1	What is the socio-economic context of the area, based on, amongst other considerations, the following:	
2.1.1	The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks or policies applicable to the area,	The Thaba Chweu Local Municipality Integrated Development Plan (IDP) for the period of 2017 – 2022 details a poverty rate of 21.5% and an unemployment rate of 20.5%. It has been observed that a large number of employment opportunities in this municipality come from the mining sector, followed by community services and then agriculture. Manufacturing, trade and private household share almost the same percentage in terms employment, whereas finance, utilities and transport contribute the least in absorbing labour. Both the TCLM and EDM IDPs identify housing and infrastructure development as one of the most important issues in establishing stability in a community. TCLM has in conjunction with the district municipality also conducted a comprehensive land-audit to determine the status of land ownership. Land availability and ownership becomes key in determining housing development within TCLM.
2.1.2	Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.),	The applicant will make use of labourers from the local community as far as possible during the construction period. The TCLM has an approved SDF which was adopted in 2015 which details land use developmental decisions and management. The municipality also has an approved Spatial Planning and Land Use Management By-Law approved in 2015. The by-law will amongst others serve



Ref No.	Question	Answer
		to guide land use management for development application within the jurisdiction of TCLM.
2.1.3	Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.), and	Refer to the baseline environment in Section 8.6 and 8.7 of this Scoping Report.
2.1.4	Municipal Economic Development Strategy ("LED Strategy").	The proposed project will promote and support the sustainability of existing businesses, and will assist in increasing local beneficiation and shared economic growth, through extending the development of a formal residential township.
2.2	Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area?	Refer to Section 9.2.6 for the identified socio-economic impacts and their associated proposed mitigation. The identified socio-economic impacts and any new related impacts will be further assessed during the EIA phase of the project, the findings of which will be presented in an EIA Report and associated EMPr.
2.2.1	Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?	The proposed project will complement the local socio-economic initiatives identified for the area and provide some skills development, through the employment of local people and support of existing businesses such as SME's. TCLM will review its LED strategy aimed at revisiting key priority economic sectors and new pillars of economic growth in the medium to long terms. The prioritized sector of tourism, as the key driver of LED, still applies, and other key drivers including agriculture, forestry, manufacturing and mining which is booming in the Lydenburg area will also be revisited.
2.3	How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	It is anticipated that the proposed residential township development will have far reaching positive impacts to the local society and community of TCLM at large. The project will create temporary employment opportunities for the local residents during the construction phase, provide affordable housing and access to social and



Ref No.	Question	Answer
		municipal services, and will present new economic opportunities to communities previously lacking in resources. This aspect will be further expanded on in the EIA phase.
2.4	Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long-term? Will the impact be socially and economically sustainable in the short- and long-term?	Refer Section 9 for the identified socio-economic impacts and their associated proposed mitigation in this Scoping Report. The identified socio-economic impacts and any new related impacts will be further assessed during the EIA phase of the project, the findings of which will be presented in an EIA Report and associated EMPr.
2.5	In terms of location, describe how the placement of the proposed development will:	
2.5.1	Result in the creation of residential and employment opportunities in close proximity to or integrated with each other.	Refer to Section 6 of this Scoping Report for details on the alternatives considered, particularly with regards to the location. Furthermore, it is anticipated that the proposed residential township development will have far reaching positive impacts to the local society and community of TCLM at large. The project will create temporary employment opportunities for the local residents during the construction phase, provide affordable housing and access to social and municipal services, as well as present new economic opportunities to communities previously lacking in resources.
2.5.2	Reduce the need for transport of people and goods.	
2.5.3	Result in access to public transport or enable non-motorised and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms of public transport),	
2.5.4	Compliment other uses in the area,	Refer to item 1.3 of this table (above). The proposed project entails the development of a residential township adjacent to the existing Mashishing and Kellysville townships. Therefore, it is anticipated that the proposed development will complement the existing land use as well as alleviate housing shortage concerns within the TCLM and EDM.
2.5.5	Be in line with the planning for the area.	Refer to item 2.2.1 of this table (above).



Ref No.	Question	Answer
2.5.6	For urban related development, make use of underutilised land available with the urban edge.	The proposed project will make use of undeveloped municipal land largely transformed with informal settlements.
2.5.7	Optimise the use of existing resources and infrastructure,	Refer to Section 3 of this Scoping Report for details of the proposed development. The proposed project entails the development of a residential township adjacent to the existing Mashishing and Kellysville township. The development will provide affordable housing, access to existing social and municipal services, as well as present new economic opportunities to communities previously lacking in resources particularly those in the informal settlements within the proposed study area. Since the proposed development is in close proximity to an existing town and township, existing municipal services are anticipated to be utilised whereby those services that need to be expanded to accommodate the new residential area will be put in place.
2.5.8	Opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement),	
2.5.9	Discourage "urban sprawl" and contribute to compaction / densification.	The proposed Mashishing township will result in the formalisation of the existing informal settlements in the area providing formal housing and municipal services such as electricity, roads, sewage etc. The local community will have access to job opportunities, particularly during construction when local labour will be sought as far as possible. In this regard, the influx of additional workers and migrants to the area as a direct result of the proposed project is not anticipated to be significant.
2.5.10	Contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs,	Refer to items 2.5.7 – 2.5.9 of this table (above).
2.5.11	Encourage environmentally sustainable land development practices and processes	The proposed township establishment application for Environmental Authorisation is being undertaken in



Ref No.	Question	Answer
		<p>accordance with the EIA Regulations, 2014 (as amended) and other relevant environmental legislation and guidelines. Principles of the legislation considered for this development include and encourage environmentally sustainable land development practices and processes. Furthermore, the proposed development is on land that is already mostly used as residential land.</p>
2.5.12	<p>Take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.),</p>	<p>Refer to item 1.7.3 of this table (above). The proposed project is associated township development in an area already occupied by informal settlements and that is adjacent to existing townships.</p>
2.5.13	<p>The investment in the settlement or area in question will generate the highest socio-economic returns (i.e. an area with high economic potential).</p>	<p>The proposed project will contribute to the local, and regional Gross Domestic Product (GDP), and also on the local communities through the employment of local community members and local contractors, as well as other influences that the housing developments will bring to the local communities, such as affordable housing, contributions to community upliftment programmes, access to municipal services, etc.</p>
2.5.14	<p>Impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area, and</p>	<p>Refer to impact assessment on heritage and cultural environment in Section 9.2.1 of this Scoping Report.</p>
2.5.15	<p>In terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?</p>	<p>The proposed project will act as a catalyst to create a more integrated settlement through the upliftment and formalisation of the existing informal settlements within the study area, expansion of municipal services, and other socio-economic benefits that are likely to arise from the establishment of a new township.</p>
2.6	<p>How was a risk-averse and cautious approach applied in terms of socio-economic impacts:</p>	



Ref No.	Question	Answer
2.6.1	What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?	<p>Refer to Section 12 for the assumptions and limitations in relation to this scoping report and investigations pertaining to this project to date. These will be further updated during the EIA phase.</p> <p>The current knowledge gaps in this regard however include, but are not limited, to the following:</p> <ul style="list-style-type: none"> • Detailed and site-specific information regarding the socio-economic aspects of the project identified during this Scoping phase are not yet determined. These will be addressed further and finalised during the EIA phase.
2.6.2	What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge?	<p>The level of risk is low as the project is not expected to have far reaching negative impacts on socio-economic conditions. In fact, the proposed development would have a positive impact in terms of the improvement of equality, social fabric, and livelihoods through the provision of decent housing. Refer to Section 9.2.6 for all identified socio-economic impacts highlighting the potential risks that may arise from the proposed township including the significance of the impact or risk.</p>
2.6.3	Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	<p>The proposed development area has already been largely transformed by the existing informal settlements. Furthermore, several specialist studies were undertaken to ensure a cautious approach to the identification of potential impacts and mitigation and/or management measures have been recommended in an effort to minimise the negative risk or impact, and to enhance the positive. The impact assessment methodology and sensitivity mapping exercise utilised in determining the various alternatives for this project, incorporate a risk-averse approach.</p>
2.7	How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following:	



Ref No.	Question	Answer
2.7.1	Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?	Refer to the impact assessment and mitigation measures in Section 9 of this Scoping Report. This aspect will be further explored in the EIA and EMPr.
2.7.2	Positive impacts. What measures were taken to enhance positive impacts?	Refer to the impact assessment and mitigation measures in Section 9 of this Scoping Report. This aspect will be further explored in the EIA and EMPr.
2.8	Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socioeconomic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?	Refer to the impact assessment and mitigation measures in Section 9 of this Scoping Report. This aspect will be further explored in the EIA and EMPr.
2.9	What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?	Refer to the impact assessment and mitigation measures in Section 9 of this Scoping Report. This aspect will be further explored in the EIA and EMPr.
2.10	What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)? Considering the need for social equity and justice, do the alternatives identified, allow the "best practicable environmental option" to be selected, or is there a need for other alternatives to be considered?	Refer to the impact assessment and mitigation measures in Section 9 of this Scoping Report. This aspect will be further explored in the EIA and EMPr.



Ref No.	Question	Answer
2.11	What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?	By conducting a Scoping and Environmental Impact Assessment Process, the applicant ensures that equitable access has been considered. Refer to the impact assessment and mitigation measures in Section 9 of this Scoping Report. This aspect will be further explored in the EIA and EMPr.
2.12	What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	Refer to the impact assessment and mitigation measures in Section 9 of this Scoping Report. The EIA and EMPr will specify timeframes within which mitigation measures must be implemented.
2.13	What measures were taken to:	
2.13.1	Ensure the participation of all interested and affected parties.	Refer to Section 7 of this Scoping Report, describing the public participation process to be undertaken for the proposed project.
2.13.2	Provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation,	Refer to Section 7 of this Scoping Report, describing the public participation process to be implemented for the proposed project. The advertisement and site notices have been made available in English, Sepedi and Afrikaans to assist in understanding of the project.
2.13.3	Ensure participation by vulnerable and disadvantaged persons,	Public consultations are also planned to be undertaken in the scoping and EIA phases of the project.
2.13.4	Promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means,	
2.13.5	Ensure openness and transparency, and access to information in terms of the process,	



Ref No.	Question	Answer
2.13.6	Ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge,	
2.13.7	Ensure that the vital role of women and youth in environmental management and development were recognised and their full participation therein will be promoted?	
2.14	Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g. a mixture of low-, middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)?	Refer to Section 7 of this Scoping Report, describing the public participation process to be implemented for the proposed project. This aspect will be further explored in the EIA and EMPr.
2.15	What measures have been taken to ensure that current and / or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?	Workers will be educated on a regular basis as to the environmental and safety risks that may occur within their work environment. Adequate measures will be taken to ensure that the appropriate personal protective equipment is issued to workers based on the areas that they work and the requirements of their job.
2.16	Describe how the development will impact on job creation in terms of, amongst other aspects:	
2.16.1	The number of temporary versus permanent jobs that will be created.	It is anticipated that a number of new jobs will be created during the construction phase of the project. Local workers will be utilised as far as possible.
2.16.2	Whether the labour available in the area will be able to take up the job opportunities (i.e.	



Ref No.	Question	Answer
	do the required skills match the skills available in the area).	
2.16.3	The distance from where labourers will have to travel.	It is anticipated that workers will travel from the adjacent local areas to the proposed development.
2.16.4	The location of jobs opportunities versus the location of impacts.	It is anticipated that a number of new jobs opportunities will be created during the construction phase of the project.
2.16.5	The opportunity costs in terms of job creation.	
2.17	What measures were taken to ensure:	
2.17.1	That there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment.	The Scoping and EIA Process requires governmental departments to communicate regarding any application. In addition, all relevant departments will be notified at various phases of the project by the EAP.
2.17.2	That actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures.	
2.18	What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage?	Refer to Section 7 of this Scoping Report, describing the public participation process to be implemented for the proposed project, as well Section 9, for the impact on any environmental resources, in the Scoping Report.
2.19	Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?	Refer to the impact assessment and mitigation measures in Section 9 of the Scoping Report. This aspect will be further explored in the EIA and EMPr.
2.20	What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects will be paid	Refer to the impact assessment and mitigation measures in Section 9 of the Scoping Report. This aspect will be further explored in the EIA and EMPr.



Ref No.	Question	Answer
	for by those responsible for harming the environment?	
2.21	Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?	Refer to Section 6, description of the process followed to reach the proposed preferred site, of the Scoping Report. This aspect will be further explored in the EIA and EMPr.
2.22	Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area?	Refer to Section 9.2.6 of this Scoping Report. This aspect will be further explored in the EIA and EMPr.



6. PROJECT ALTERNATIVES

The identification of alternatives is a key aspect of the success of the EIA process. All reasonable and feasible alternatives must be identified and screened to determine the most suitable alternatives to consider and assess in the EIA phase. There are, however, some significant constraints that must be considered when identifying alternatives for a project of this scope. Such constraints include social, financial and environmental issues, which will be discussed in the evaluation of the alternatives. Alternatives can typically be identified according to:

- Location alternatives;
- Layout/Design alternatives;
- Process/Technological alternatives; and
- Activity alternatives (including the No-Go option).

For any alternative to be considered feasible such an alternative must meet the need and purpose of the development proposal without presenting significantly high associated impacts. As mentioned in Section 5, the need for the proposed project includes the following key drivers:

- To address the current housing shortage;
- To improve service delivery;
- To prevent extensive conditions of poverty; and
- To prevent the further persistence of social imbalances.

The alternatives are described, and the advantages and disadvantages are presented below. It is further indicated which alternatives are considered feasible from a technical as well as environmental perspective.

Alternatives can also be distinguished into discrete or incremental alternatives. Discrete alternatives are overall development options, which are typically identified during the pre-feasibility, feasibility and/or scoping phases of the EIA process (DEAT; 2004). Incremental alternatives typically arise during the EIA process and are usually suggested as a means of addressing identified impacts. These alternatives are closely linked to the identification of mitigation or management measures and are not specifically identified as distinct alternatives. This section provides information on the development footprint alternatives, the properties considered, as well as the type of activity, activity layout, technological and operational aspects of the activity.

6.1 DETAILS OF LOCATION ALTERNATIVES

Location alternatives relate to the main project components (e.g. proposed Mashishing township site) as well as the location of ancillary activities and structures (e.g. construction camps, laydown areas, staff accommodation, etc.). At this stage the proposed project is anticipated to be located approximately 4 km north west of the existing Mashishing (Lydenburg) town, 60km west of Sabie off the R37 road, within the Thaba Chweu Local Municipality (TCLM), in Mpumalanga Province. The proposed project will be located on a portion of portion 81 of the Farm Lydenburg Town and Townlands 31-JT. The proposed township footprint will be approximately 231 hectares in size. The proposed township



establishment study area, comprising of Phase A and Phase B, is owned by the TCLM and earmarked for a housing development to address the issue of housing shortage that the local municipality is facing.

The majority of the proposed project study area has been significantly transformed, with informal settlements mushrooming almost throughout the boundaries of both Phase A and Phase B components of the study area and their associated agricultural activities which are mainly cultivation. Advantages associated with the proposed study area include the following:

- The proposed development site of the study area is owned by the applicant (TCLM);
- The proposed development site is already significantly transformed by informal settlements, thus limited environmental impacts can be expected; and
- The proposed development site is in close proximity to the Mashishing (Lydenburg) city centre where shopping malls, schools, healthcare centres, etc. are located.

Selection of new potential sites for the proposed township will likely result in new impacts as a result of the possible disturbance of undeveloped land/environment, as well as financial implications if the acquisition of new privately owned land is required. Furthermore, the municipality identified and earmarked this location for residential development previously. As such, no other locations were assessed. Location alternatives are therefore not considered feasible for this application and will not be assessed further post this scoping phase.

6.2 LAYOUT/DESIGN ALTERNATIVES

Design and layout alternatives ensure the consideration of different design and spatial configurations of the proposed development on a specific area, in order to enhance the positive impacts and to reduce the negative impacts. As such, due consideration will be given to the placement, location and orientation of required infrastructure and activities in relation to site environmental aspects/sensitivities. The following Layout options will be considered in more detail during the EIA phase and part of determining the preferred layout for the proposed township:

- Maximum development option

Maximum development places its focus on developing the proposed site (Phase A and Phase B study area) as if there are no sensitivities within the proposed site.

- Environmental sensitivity option

However, with the Environmental sensitivity option, it is anticipated that the proposed township development will be directly affected by, among others, the following:

- Sensitivity of the proposed study area (e.g. wetlands, heritage sites, sensitive fauna and flora and the steep gradient of the site, etc.).
- Findings and recommendations of the specialist studies, (e.g. heritage, ecology, freshwater ecosystem/aquatic and wetland study);
- Engagement with Interested and affected Parties (Public participation); and
- Detailed engineering designs.



Under the environmental sensitivity option, two township layouts/designs determined by the following aspects will be considered:

- The location of 1:100 year flood lines and the ecological sensitivity; and
- The wetland buffer zones (layout to be updated in the EIA phase where more design details will be available).

It should be noted that, buffer zones required around the sensitive features will in turn affect the number of stands that the proposed development will provide. The bigger the buffer around the wetland/drainage lines, the lesser the number of stands will be within the proposed study area. These layout/design alternatives will be assessed further during the EIA phase.

6.3 DETAILS OF PROCESS/TECHNOLOGY ALTERNATIVES

Process alternatives imply the investigation of alternative processes or technologies that can be used to achieve the same goal. This includes using environmentally friendly designs or materials and re-using scarce resources like water and non-renewable energy sources. As far as the proposed township development is concerned, the following will be investigated as process alternatives:

- The proper management of stormwater, especially along the access roads/residential street surfaces and drains. It is recommended that where possible, environmentally friendly technologies are considered during construction of the houses and associated infrastructure;
- The reduction of generated waste during the construction and decommissioning phases where possible; and
- Use of energy efficient technologies during the operational phase such as solar energy for water heating. It is recommended that solar energy for water heating be investigated/considered in order to decrease electricity demand from the municipality/Eskom grid.

Process alternatives will be defined and implemented as incremental alternatives during the EIA phase, particularly as proposed mitigation and/or management measures in the EMP. Any feasible technology alternatives will be assessed further during the EIA phase.

6.4 DETAILS OF ACTIVITY ALTERNATIVES

The proposed township development area (both Phase A and Phase B) is currently zoned as agricultural land, although it has been significantly transformed by the existing informal settlements and their associated impacts. Two activity alternatives are considered in this scoping report (Activity Alternatives A1 and A2).

- **Activity Alternative A1 – Development option:** This option pertains to the land being transformed into a formal residential development in the form of a township.
- **Activity Alternative A2 – No-go option.** The ‘no-go’ or ‘do nothing’ alternative is the option of not undertaking the proposed activity or any of its alternatives. The ‘do nothing’ alternative also provides the baseline against which the impacts of other alternatives should be compared.

The no-go alternative means that the potential benefits of local and regional employment at the TCLM as a result of the establishment of the proposed township would not be realized in the short term. Furthermore, when considering the No-



Go alternative, the impacts (both positive and negative) associated with any other specific alternative or the current project proposal would not occur and in effect the impacts of the No-Go alternative are therefore inadvertently assessed by assessing the other alternatives. In addition to the direct implications of retaining the *status quo* there are certain other indirect impacts, which may occur should the No-Go alternative be followed. The No-Go alternative as a specific alternative was not considered feasible for the following reasons:

- If the proposed township development does not proceed in its entirety, then the municipality will not be able to meet its mandate with regards to providing decent housing for the local community; and
- Positive impacts associated with the proposed project will not occur (e.g. employment creation, improvement of service delivery, etc.).

The No-Go alternative was therefore not considered feasible for this application and will not be assessed further post this scoping phase.



7. STAKEHOLDER ENGAGEMENT

The Public Participation Process (PPP) is a requirement of several pieces of South African legislation and aims to ensure that all relevant Interested and Affected Parties (I&APs) are consulted, involved and their comments are taken into account and a record included in the reports submitted to the decision-making Authorities. The process ensures that all stakeholders are provided this opportunity as part of a transparent process which allows for a robust and comprehensive environmental study. The PPP for the proposed project needs to be managed sensitively and according to best practises in order to ensure and promote:

- Compliance with international best practice options;
- Compliance with national legislation;
- Establishment and management of relationships with key stakeholder groups; and
- Involvement and participation in the environmental study and authorisation/approval process.

As such, the purpose of the PPP and stakeholder engagement process is to:

- Introduce the proposed project;
- Explain the authorisations required;
- Explain the environmental studies already completed and yet to be undertaken (where applicable);
- Solicit and record any issues, concerns, suggestions, and objections to the project;
- Provide opportunity for input and gathering of local knowledge;
- Establish and formalise lines of communication between the I&APs and the project team;
- Identify all significant issues for the project; and
- Identify possible mitigation measures or environmental management plans to minimise and/or prevent negative environmental impacts and maximize and/or promote positive environmental impacts associated with the project.

GENERAL APPROACH TO SCOPING AND PUBLIC PARTICIPATION

The PPP for the proposed project has been undertaken in accordance with the requirements of the NEMA EIA Regulations (2014) as amended, and in line with the principles of Integrated Environmental Management (IEM). IEM implies an open and transparent participatory process, whereby stakeholders and other I&APs are afforded an opportunity to comment on the project and to have their views considered and included as part of project planning.

7.1. IDENTIFICATION OF INTERESTED AND AFFECTED PARTIES (I&APS)

An initial I&AP database was compiled based on previous similar EIA projects in the vicinity of this project, and Windeed searches. The I&AP database includes amongst others landowners, communities, regulatory authorities and other specialist interest groups.



7.1.1. LIST OF ORGANS OF STATE/AUTHORITIES IDENTIFIED AND NOTIFIED

The following, but not limited to, Government Authorities were notified of the proposed project:

- Mpumalanga Tourism and Parks Authority
- Mpumalanga Department of Health
- Mpumalanga Department of Human Settlement
- Mpumalanga Department of Public Works, Roads and Transport
- Mpumalanga Department of Social Development
- Mpumalanga Department of Water and Sanitation
- Mpumalanga Tourism and Parks Agency
- Mpumalanga Department of Rural Development and Land Affairs
- National Department of Agriculture, Forestry and Fisheries
- National Department of Environmental Affairs
- National Department of Mineral Resources
- National Department of Rural Development and Land Reform
- National Department of Water and Sanitation
- Inkomati Usuthu Catchment Management Agency
- Ehlanzeni District Municipality
- South African National Roads Agency Limited (SANRAL)
- South African Heritage Resources Agency (SAHRA)
- Eskom Holdings SOC Limited
- Transnet SOC Limited

7.1.2. OTHER KEY STAKEHOLDERS IDENTIFIED AND NOTIFIED

- Wildlife & Environmental Society of South Africa (WESSA)
- South African national parks (Sanparks)
- Trips SA
- South African National Biodiversity Institute (SANBI)
- Endangered Wildlife Trust (EWT)



7.2. INITIAL NOTIFICATION (NOTICES, ADVERTISEMENTS, AND BACKGROUND INFORMATION DOCUMENT)

The PPP commenced on the 13th of November 2017 with an initial notification and call to register for a period of 30 days, ending on the 15th of December 2017. The initial notifications were distributed in the following manner:

7.2.1. REGISTERED LETTERS, FAXES AND EMAILS

Notification letters (English, Afrikaans and Sepedi), facsimiles, and emails were distributed to all pre-identified key I&APs including government organisations, Non-Governmental Organisations (NGOs), relevant municipalities, ward councillors, landowners and other organisations that may be affected.

The notification letters/faxes/emails included the following information to I&APs:

- List of anticipated activities to be authorised;
- Scale and extent of activities to be authorised;
- The purpose of the proposed project;
- Details of the affected properties (including a locality map);
- Details of the relevant legislation particularly the NEMA Regulations;
- Details of the National Water Act water uses that will be triggered;
- Initial registration period timeframes; and
- Contact details of the EAP.

7.2.2. NEWSPAPER ADVERTISEMENTS

Advertisements describing the proposed project and EIA process were placed in newspapers with adequate circulation in the vicinity of the study area. The initial advertisements were placed in the Mpumalanga Provincial Gazette (in English) on the 10th of November 2017, and in the Steelburger newspaper (in English, Afrikaans and Sepedi) on the 10th of November 2017. The newspaper adverts included the following information:

- Project name;
- Applicant name;
- Project location;
- Nature of the activity; and
- Relevant EIMS contact person for the project.

7.2.3. SITE NOTICE PLACEMENT

Twenty-two (22) A2 Correx site notices were placed at 22 locations along and within the perimeter of the proposed project area on the 13th & 14th of November 2017 as part of the initial notification. The on-site notices included the following information:

- Project name;



- Applicant name;
- Project location;
- Map of proposed project area;
- Project description;
- Legislative requirements; and
- Relevant EIMS contact person for the project.

7.2.4. POSTER PLACEMENT

Eight (8) A3 posters in English, Afrikaans and Sepedi were placed at eight local public gathering places at the Mashishing (Lydenburg) town near the study area. The posters and written notification afforded the general public in the vicinity of the proposed study area the opportunity to register for the project as well as to submit their issues/queries/concerns. The contact person at EIMS, contact number, email and faxes were stated on the posters. Comments/concerns and queries were encouraged to be submitted in either of the following manners:

- Electronically (facsimile, email);
- Telephonically; and/or
- Written letters.

7.3. AVAILABILITY OF DRAFT SCOPING REPORT NOTIFICATION

Notification regarding the availability of this Scoping Report for public review has been given in the following manner to all registered I&APs (which includes key stakeholders and affected landowners):

- Registered letters with details on where the scoping report is available from, as well as the public review comment period;
- Facsimile notifications with information similar to that in the registered letter described above; and/or
- Email notifications with a letter attachment containing the information described above.

The scoping report was made available for public review at the Mashishing Public Library from the 5th of October 2018 until 5th of November 2018, a period of 30 days.

7.4. ISSUES AND RESPONSES

Issues raised to date have been addressed in a transparent manner and included in the Issues and Responses Report (Appendix B), and a summary of the key issues/comments raised thus far in the public participation process include the following:

- Registration and Participation;
- Request for project information;
- Employment opportunities; and
- Infrastructure and services.



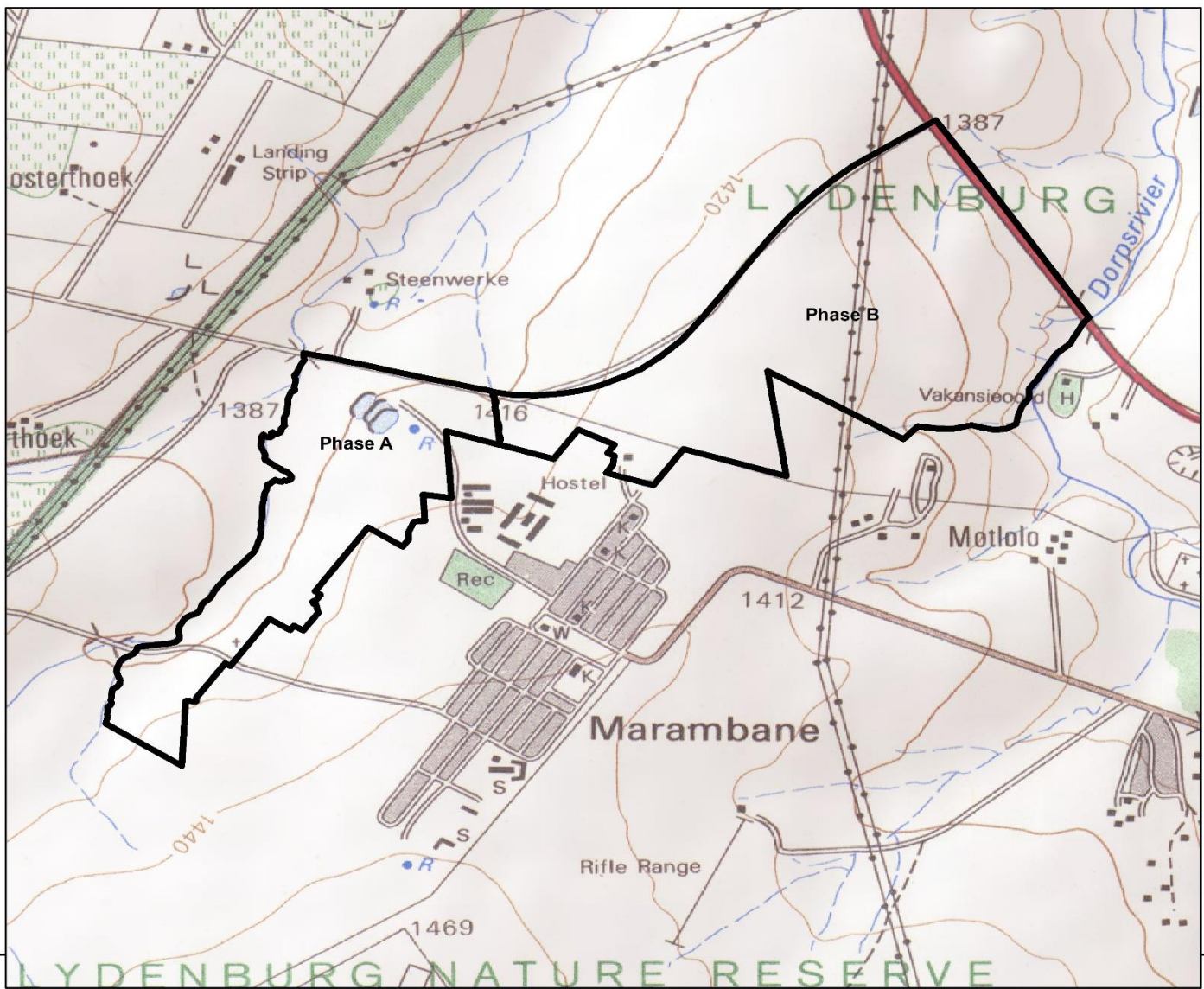
8. ENVIRONMENTAL ATTRIBUTES AND BASELINE ENVIRONMENT

This section of the Scoping Report provides a description of the environment that may be affected by the proposed township establishment project. Aspects of the biophysical, social and economic environment that could be directly or indirectly affected by, or could affect, the proposed development have been described. This information has been sourced from existing information and specialist investigations undertaken for the proposed township.

8.1. TOPOGRAPHY

The proposed project area is located within the Thaba Chweu Local Municipality whose landscape is characterised by mountains, which provide an attractive variety to the landscape promoting scenic tourism. The municipality is located on the Lowveld escarpment of the Mpumalanga Province with an average elevation of 1 400 m above sea level and altitudes varying from 600 to 2 100 m. The municipality shares its boundaries with the following municipalities: Bushbuckridge Local Municipality to the east, Greater Tubatse Local Municipality to the north, and Mbombela Local Municipality to the South (TCLM IDP, 2017-2022). Mashishing is located at the base of the Long Tom Pass on the banks of the Sterkspruit River. The average elevation of (Mashishing (Lydenburg) is approximately 1 416 m above sea level.

The study area itself has a generally moderately undulating landscape. The study area varies in elevation from approximately 1 349 to 1 432 m above sea level, with the highest point near the eastern end of the site and the lowest point in the drainage line at the north-eastern boundary. A topographical map is included as Figure 4.



Topographical Map
Mashishing Township EIA

Legend
 Study Area (Phase A and B)



0 0.375 0.75 Km
 Scale: 1:15 000
 N

Data Sources:
 ENPAT 2000; CSG, ESRI
 Coord System: GCS WGS 1984
 Datum: WGS 1984
 Units: Degree
 Ref: 1208_Topographical Map

Date: 2018/08/17
 EIMS Ref: 1208
 Compiled: SS/PH
 Reviewed: NH
 Approved: LW



Figure 4: Topography/digital elevation model.



8.2. GEOLOGY AND SOILS

Mashishing (Lydenburg) and its surrounds are underlain by greenish grey fine-grained shale and mudstone belonging to the Boven Member of the Silverton Formation of the Pretoria Group, Transvaal Sequence. Diabase belonging to the Marico Diabase Suite, which is probably related to an early intrusive phase of the Bushveld Complex, has intruded into the sediments of the Transvaal Sequence. The diabase is encountered mainly as dykes and is characteristically encountered at the contact between shales and quartzites and often over long distances of strike. As a result along the margins of the dykes, within the chill zone, hornfels has formed due to the baking effect on the sediments.

The site is characterised by red clay soils mostly derived from shales of the Pretoria Group (including the Silverton and Timeball Hill Formations), and shales occasionally intersected with bands of quartzite or andesite. Land types Ba, Fa, Ib and Ae, with predominantly Mispah, Glenrosa or Hutton soil forms. The regional geological map of the study area and surroundings is shown in Figure 5 below.

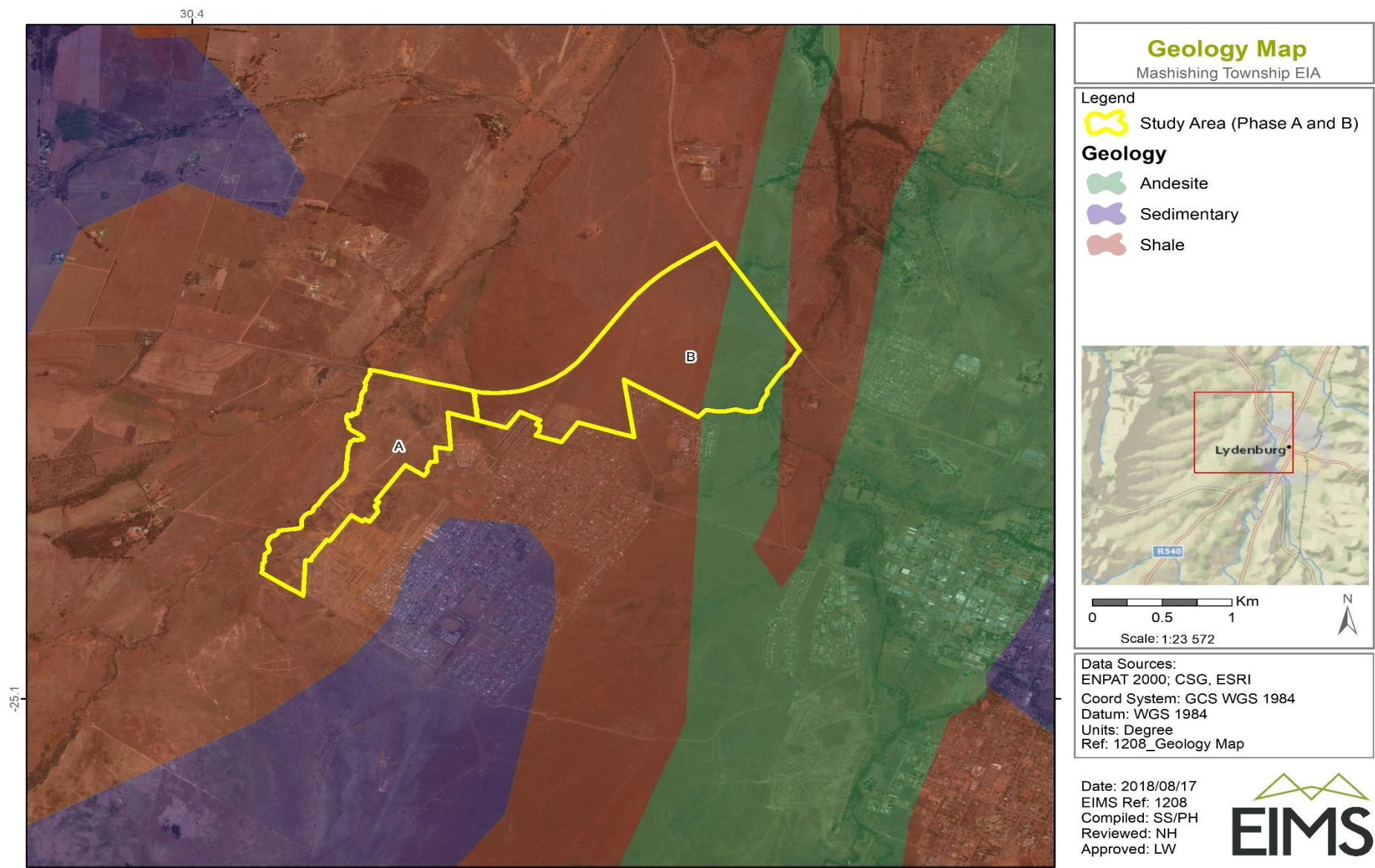


Figure 5: Regional geological map.



8.3. CLIMATE

Mpumalanga is a province where the climate varies due to its topography. Ehlanzeni District Municipality falls within the summer rainfall region with the rainy season normally lasting from October to March. Mashishing (Lydenburg) is located on the Lowveld Region and has a tropical climate with warm sub-tropical temperatures and experiences high summer rainfalls. Annual temperatures within the study area ranges from 10°C to 22°C, with mean daily maximum temperatures in February ranging from 18°C to 30°C, and mean daily minimum temperatures in July ranging from 0°C to 7°C. The Annual rainfall ranges between 580mm and 810mm (MAP 707 mm) and is generally lower than in surrounding areas because it falls within a rainshadow. The area experiences fairly infrequent frost (Mucina & Rutherford, 2006).

8.4. SOCIO-ECONOMIC

The following section provides a summary of the social and economic environment that may be influenced by the proposed project. Information in this section was sourced from Stats SA and the most recent Integrated Development Plans (IDP's) for the TCLM as well as the Ehlanzeni District Municipality. The information source from the the Stats SA website are based on a 2011 National census.

According to the NEMA (1998) environment refers to the surroundings in which humans exist. When viewing the environment from a socio-economic perspective the question can be asked what exactly the social environment is. Different definitions for social environment exist, but a clear and comprehensive definition that is widely accepted remains elusive. Barnett & Casper (2001) offers the following definition of human social environment:

“Human social environments encompass the immediate physical surroundings, social relationships, and cultural milieus within which defined groups of people function and interact. Components of the social environment include built infrastructure; industrial and occupational structure; labour markets; social and economic processes; wealth; social, human, and health services; power relations; government; race relations; social inequality; cultural practices; the arts; religious institutions and practices; and beliefs about place and community. The social environment subsumes many aspects of the physical environment, given that contemporary landscapes, water resources, and other natural resources have been at least partially configured by human social processes. Embedded within contemporary social environments are historical social and power relations that have become institutionalized over time. Social environments can be experienced at multiple scales, often simultaneously, including households, kin networks, neighbourhoods, towns and cities, and regions. Social environments are dynamic and change over time as the result of both internal and external forces. There are relationships of dependency among the social environments of different local areas, because these areas are connected through larger regional, national, and international social and economic processes and power relations.”

The environment influences and constrains behaviour, but behaviour also leads to changes in the environment. The impacts of a project on people can only be truly understood if their environmental context is understood. The baseline description of the social environment will include a description of the area within a provincial, district and local context that will focus on the identity and history of the area as well as a description of the population of the area based on a number of demographic, social and economic variables.



The following Table 6, presents a summary of the socio-economic aspects which may have a bearing on the proposed project.

Table 6: Summary of the socio-economic aspects

Thaba Chweu Local Municipality	
District Municipality	Ehlanzeni District Municipality (EDM)
Province	Mpumalanga Province
Municipal Area Size	5719 km ²
Number of Wards	14
Population Size	98387 individuals
Number of households	33352
Estimated growth/change in population size from 2001	1.87% increase
Population composition	81.6% of the population is made up of African black people, followed by 14.5% of white people, 2.6% colored people, and 1.2% Asian and/or other cultures.
Languages	Predominantly Sepedi is spoken by >36% of the population, isiSwati spoken by ~18% followed by Afrikaans with an average of 15%, and isiZulu with an average of 8%.
Age	The highest percentage of the population (69.9%) is in the economically active group which is the 15-64 years old category.
Gender	The ratio-percentage of males to females is 51:49, thus currently marginally in favor of males.
Education	Of those aged 20 years and older, 4.5% have completed primary school, 33,7% have some secondary education, 30.7% have completed matric, and 9,6% have some form of higher education.
Land use	The dominant land use is commercial agriculture and farming activities.
Housing	According to the most recent statistics, 74.6% of the households within the Thaba Chweu Local Municipality live in formal dwellings/structures, the remainder of households being comprised of informal dwellings and other forms of housing (e.g. flatlets/rooms or caravans).
Access to water	Mashishing (Lydenburg) is currently experiencing major challenges from both the infrastructure and source point of view in terms of access to water. Only 11222 households in the municipality have access to piped water in their dwellings/house, with 17465 of the households having access to piped water in their yards.
Nearby towns	Sabie and Ohrigstad. The municipality is one of the four municipalities within the EDM in Mpumalanga. It shares its northern boundaries with the Limpopo Province.
Percentage employment	Approximately 36.6% of the population is employed.
Percentage unemployment	Approximately 20.5% of the population is unemployed.
Largest employing sector	A significant number of people are employed in the agriculture and forestry sector, where jobs are seasonal. The mining industry also offers a significant amount of employment.
Largest economic contribution	The main economic drivers in the municipality are agriculture and forestry. This includes the production of subtropical and deciduous fruits, crop farming, livestock rearing, game farming and timber production. There are more than 30 mines operating in Mashishing (Lydenburg) and Steelpoort, producing mainly platinum.
Tourism	Thaba Chweu is home to and is in close proximity to some of South Africa's prime tourist attractions. These include God's Window, The Three Rondavels, Pilgrim's Rest, Blyde Canyon, Mac Mac Falls and Kruger National Park. Mashishing (Lydenburg) is the oldest town in the province, and a hub of heritage where the famous Lydenburg



Aspect	Thaba Chweu Local Municipality
	Heads, which are said to date back to 400AD, were found in the 1950s. Also found here are old stone houses. Most of all, this is the home of trout fishing.

It is anticipated that the Proposed Township Establishment will have far reaching positive impacts to the local society and community of TCLM. The project will create temporary employment opportunities for the local residents during the construction phase, provide affordable housing and access to social services and economic opportunities that will be within reasonable distance from the development.

8.5. CULTURAL AND HERITAGE RESOURCES

PGS Heritage (Pty) Ltd was contracted to undertake a cultural heritage scoping assessment for the proposed Mashishing Township Establishment in 2017 (Appendix C). A screening desktop assessment was undertaken during the scoping phase and a more detailed impact assessment which will include a site visit will be undertaken during the EIA phase. The province of Mpumalanga is known to be rich in archaeological sites that tell the story of humans and their predecessors in the region going back some 1.7 million years (Delius & Hay, 2009).

The Heritage Scoping assessment has shown that the study area and surrounding area has some heritage resources situated inside the two phases' foot print areas (Phase A and Phase B). Through data analysis and a desktop investigations the following issues were identified from a heritage perspective. The data analysis has enabled the identification of possible heritage sensitive areas that include:

- Dwellings;
- Clusters of dwellings (homesteads and farmsteads);
- Archaeological sensitive areas (based on historical descriptions); and
- Structures.

Preliminary impact rating has shown that the potential impact on heritage resources by the proposed township can possibly be medium to high, but through detailed fieldwork during the EIA phase this impact can probably be reduced to Medium-Low or totally mitigated through design.

8.6. LAND USE

The study area is currently zoned as "Agricultural Land" but is in the process of being re-zoned for township development. The proposed study area has been significantly transformed by informal settlements and thus the dominant land use within the study area has become residential. Other land uses include subsistence crop farming, particularly close to the existing watercourses.

8.7. FLORA

The information in this section was sourced from the Ecology specialist report compiled by David Hoare Consulting cc for the Scoping Phase of the Mashishing Township Establishment (Appendix C). It is widely recognised that to conserve natural resources it is of the utmost importance to maintain ecological processes and life support systems for plants, animals and humans. To ensure that sustainable development takes place, it is therefore important that possible impacts on the environment are considered before relevant authorities approve any development.



According to the most recent vegetation map of the country (Mucina *et al.*, 2005) the study area is within a single regional vegetation type, which is the Lydenburg Thornveld (Mucina & Rutherford 2006). In the Mpumalanga Province, this vegetation type is situated in a broad band between the high-lying mountains from just north of Ohrigstad, tapering southwards through Lydenburg to as far south as the area in the vicinity of the Kwena Dam. The altitude is from 1 160 – 1 660 m, occurring at lower levels at the foot of the mountains and on undulating plains. This is open, frost-hardy woodland. Structurally this unit comprises of closed grassland which is almost always wooded, sometimes densely so in rocky areas and less so in frost-ridden valleys where *Acacia karroo* is still able to persist. Many woody plants have evolved a suffrutex habit (*Argyrobium wilmsii*), where aerial parts die back to an underground rootstock during cold winters. The vegetation distribution of the study area and surroundings is shown in Figure 8.

The Mpumalanga Biodiversity Conservation Plan and the more recent Mpumalanga Biodiversity Sector Plan indicate that most remaining patches of natural habitat have moderate to low conservation value. The latter Plan does not show high sensitivity for any remaining natural habitat on site but indicates that approximately half of the site is within a buffer zone for a protected area. There are two plant species protected according to the National Environmental Management: Biodiversity Act that have a geographical distribution that includes the study area. These are *Merwillia plumbea* and *Crinum bulbispermum*, both of which could potentially occur on site. Broad habitat maps of the study area (Figure 6 & Figure 7) were produced by mapping from aerial imagery for this project. This showed that significant parts of the study area have been transformed by informal housing and associated cultivation. The remaining natural areas include grassland and drainage lines. A map showing all Critical Biodiversity Areas (CBAs) is included in Figure 9.

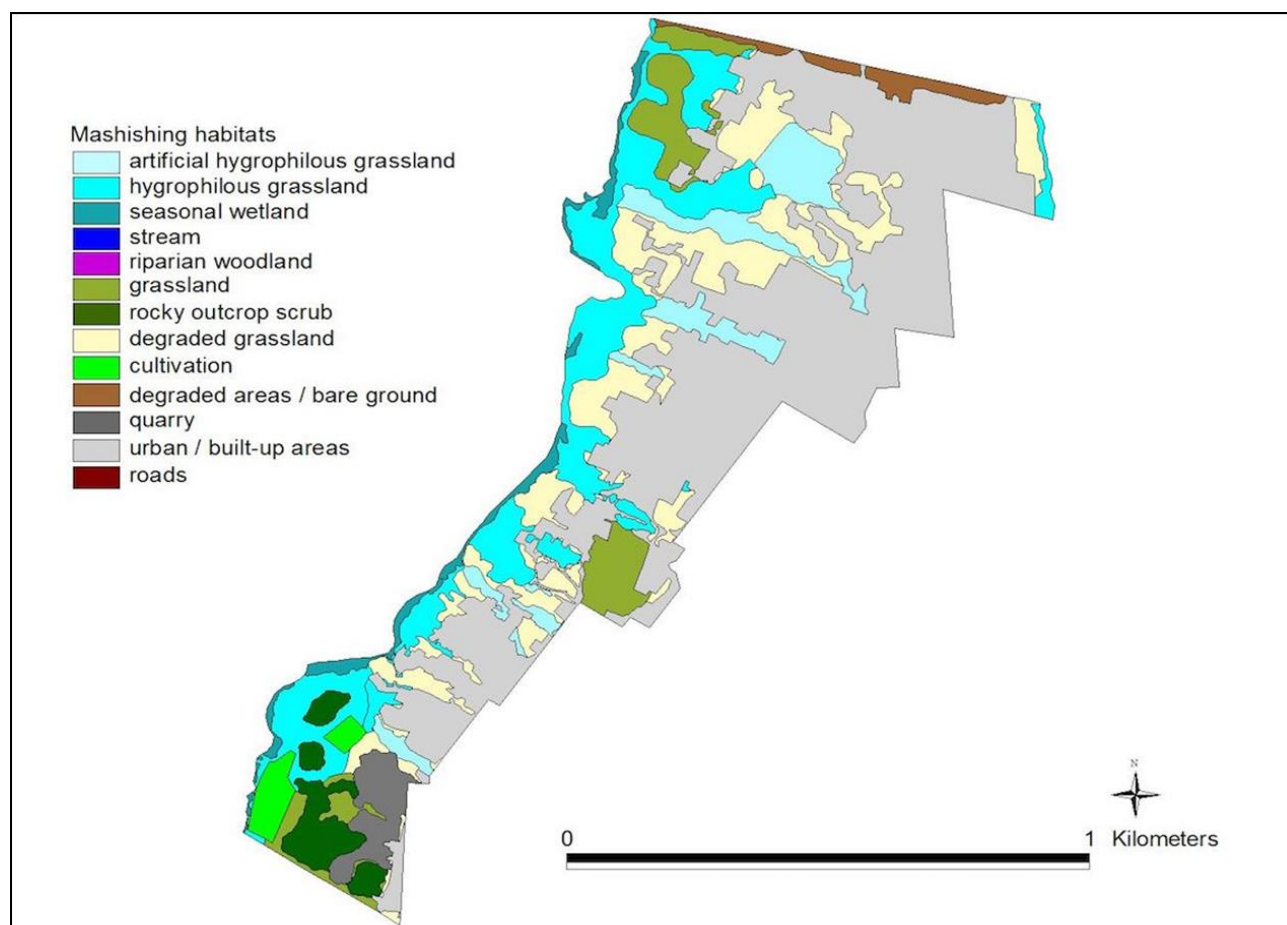


Figure 6: Broad habitats of the study area for Mashishing Phase A.

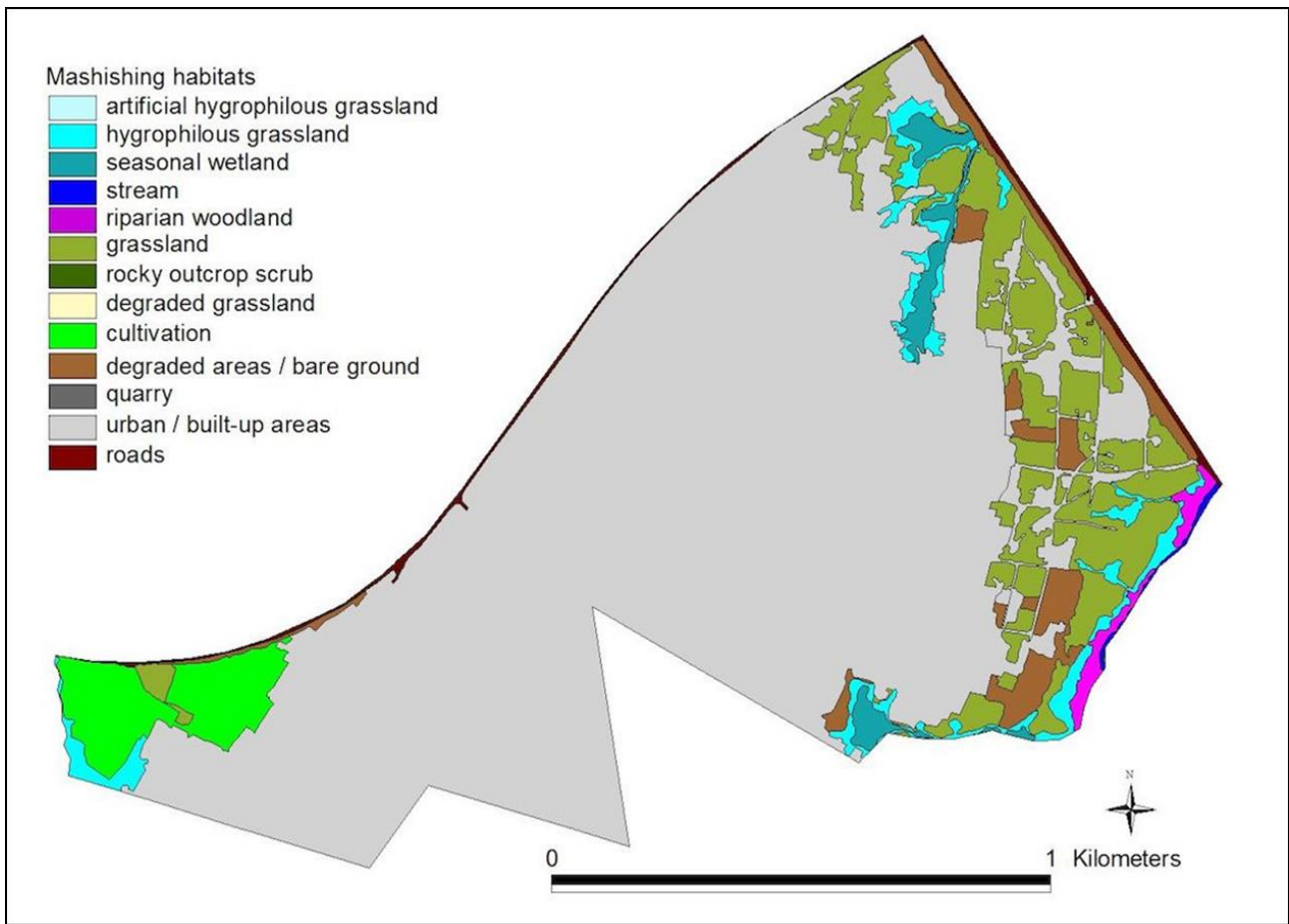


Figure 7: Broad habitats of the study area for Mashishing Phase B.

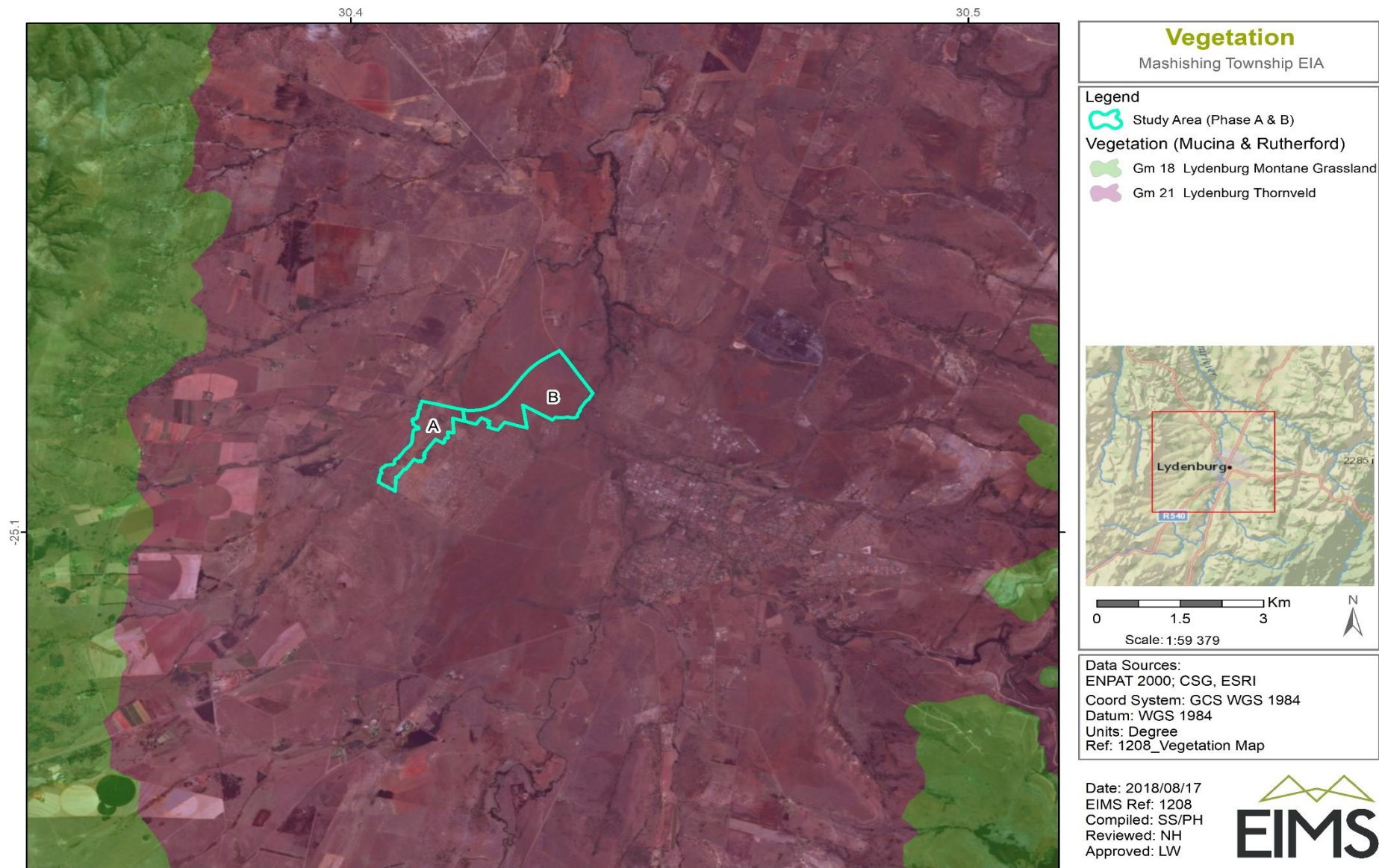
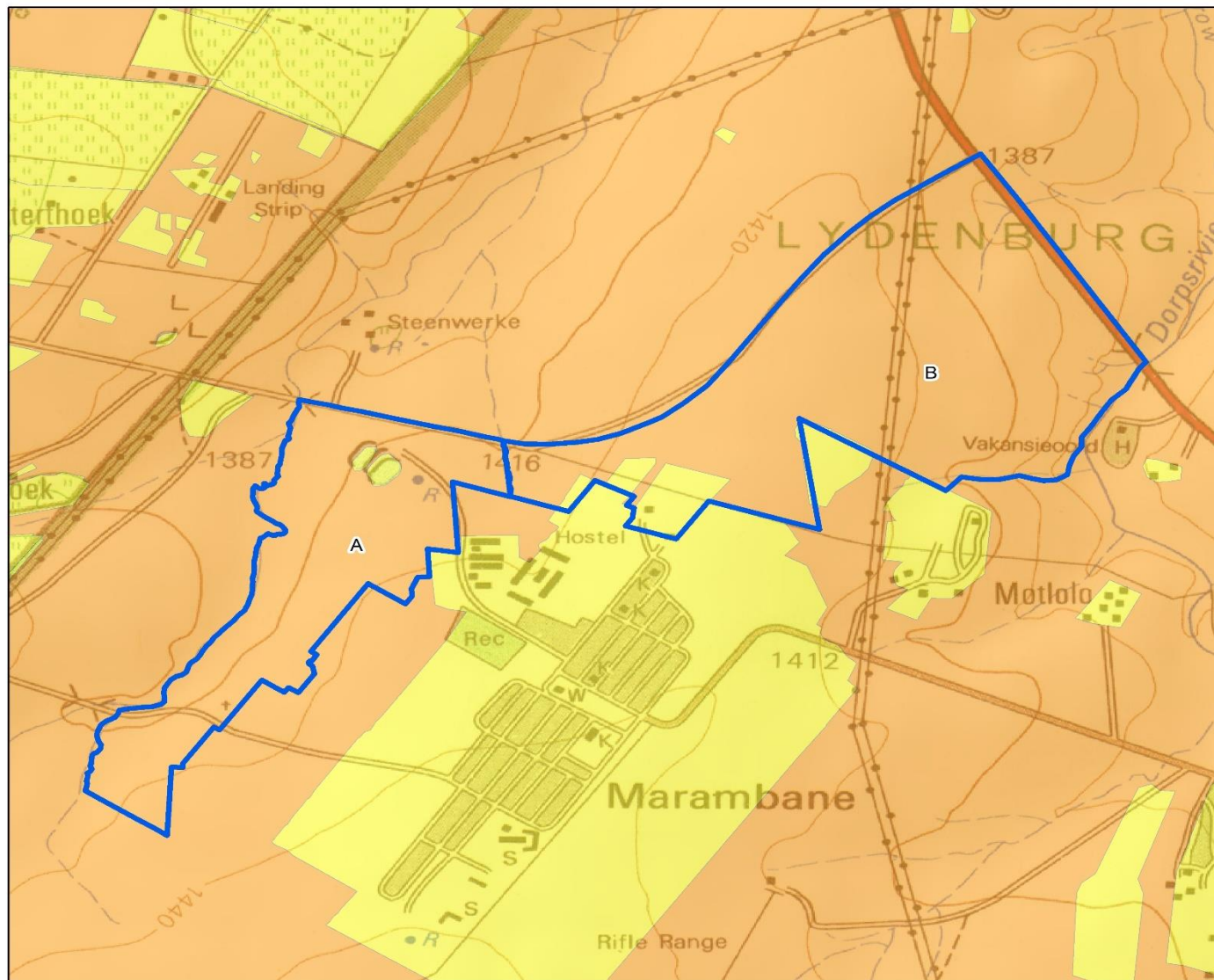


Figure 8: Vegetation map.



Critical Biodiversity Area (CBA)
Mashishing Township EIA

Legend

- Study Area (Phase A and B)
- Critical Biodiversity Area
- Ecological Support Area
- Modified
- Other Natural Areas
- Protected Areas

Critical Biodiversity Area (CBA)

- Critical Biodiversity Area
- Ecological Support Area
- Modified
- Other Natural Areas
- Protected Areas

0 0.35 0.7 Km
Scale: 1:14 141

Data Sources:
ENPAT 2000; CSG, ESRI
Coord System: GCS WGS 1984
Datum: WGS 1984
Units: Degree
Ref: 1208_CBA

Date: 2018/08/17
EIMS Ref: 1208
Compiled: SS/PH
Reviewed: NH
Approved: LW

Figure 9: Terrestrial Critical Biodiversity Areas (CBA) map.



8.8. FAUNA

The information in this section was sourced from the Ecology specialist report compiled by David Hoare Consulting cc for the Scoping Phase of the Mashishing Township Establishment (Appendix C). A total of 134 mammal species have a geographical distribution that includes the general study area in which the site is located. Of the species currently listed as threatened or protected, the Brown Hyaena, Serval and the Honey Badger are considered to have a medium to high probability of occurring on site, based on habitat suitability. Given the nature of the proposed project and the fact that many of the species of concern are relatively mobile, few threatened, near threatened or protected mammal species are likely to be significantly negatively impacted by activities on site. The study area contains habitat that is suitable for various frog species, although only one protected species could potentially occur on site, the Giant Bullfrog. The site does not contain breeding habitat for this species, so it would only occur there as foraging individuals.

A total of 110 reptile species have a geographical distribution that includes the general study area in which the site is found. Four species of conservation concern could potentially occur on site, namely Breyer's Long-tailed Seps, listed as Vulnerable, and the Coppery Grass Lizard, the Large-scaled Grass Lizard and the Striped Harlequin Snake, all three listed as Near Threatened. A total of 418 bird species have a geographical distribution that includes the general study area in which the site is found. The study area contains habitat that is suitable for various bird species of conservation concern. Those that could potentially be found on site are the Grey-crowned Crane, African Marsh Harrier, Denham's Bustard, Lanner Falcon, Southern Bald Ibis, White-bellied Korhaan, Secretarybird, Blue Crane, European Roller, and Abdim's Stork.

8.9. SURFACE WATER

The study area is located within the Southern Temperate Highveld freshwater ecoregion, which is delimited by the South African interior plateau sub-region of the Highveld aquatic ecoregion, of which the main habitat type, in terms of watercourses, is regarded as Savannah-Dry Forest Rivers. Aquatic biotas within this bioregion have mixed tropical and temperate affinities, sharing species between the Limpopo and Zambezi systems. The Southern Temperate Highveld freshwater ecoregion is considered to be bio-regionally outstanding in its biological distinctiveness, and its conservation status is regarded as Endangered. The ecoregion is defined by the temperate upland rivers and seasonal pans (Nel *et al.*, 2004; Darwall *et al.*, 2009; Scott, 2013).

The study area is located within the newly revised Olifants Water Management Area (WMA), which now also includes the Letaba River catchment. Accordingly, the main rivers include the Elands River, the Wilge River, the Steelpoort River, the Olifants River, and the Letaba River. More specifically, the study area falls within Quaternary Catchments B42B & B42C (refer to Figure 11) and was located adjacent to two watercourses, namely the Dorps River which represents the eastern boundary of Phase B, and the Marambane River which forms the western boundary of Phase A and which confluences with the Dorps River approximately 3km downstream of the study site. The surface water attributes within and surrounding the study area are depicted in Figure 12.

One hydro-geomorphic (HGM) type, a hillslope seepage connected to a watercourse was delineated during the present study and classified into four separate HGM units. In addition to the wetland units delineated, two sections of riparian habitat were also delineated, one section on the eastern boundary associated with the Dorps River and the other section on the western boundary associated with the Marambane River (refer to Figure 10). Results from the freshwater ecosystem indicated that wetlands within the study area have been largely altered as a result of changes in water inputs



(derived from its catchment) and water retention and distribution patterns within the wetland unit itself, as well as vegetation changes due to several historic and current anthropogenic impacts.

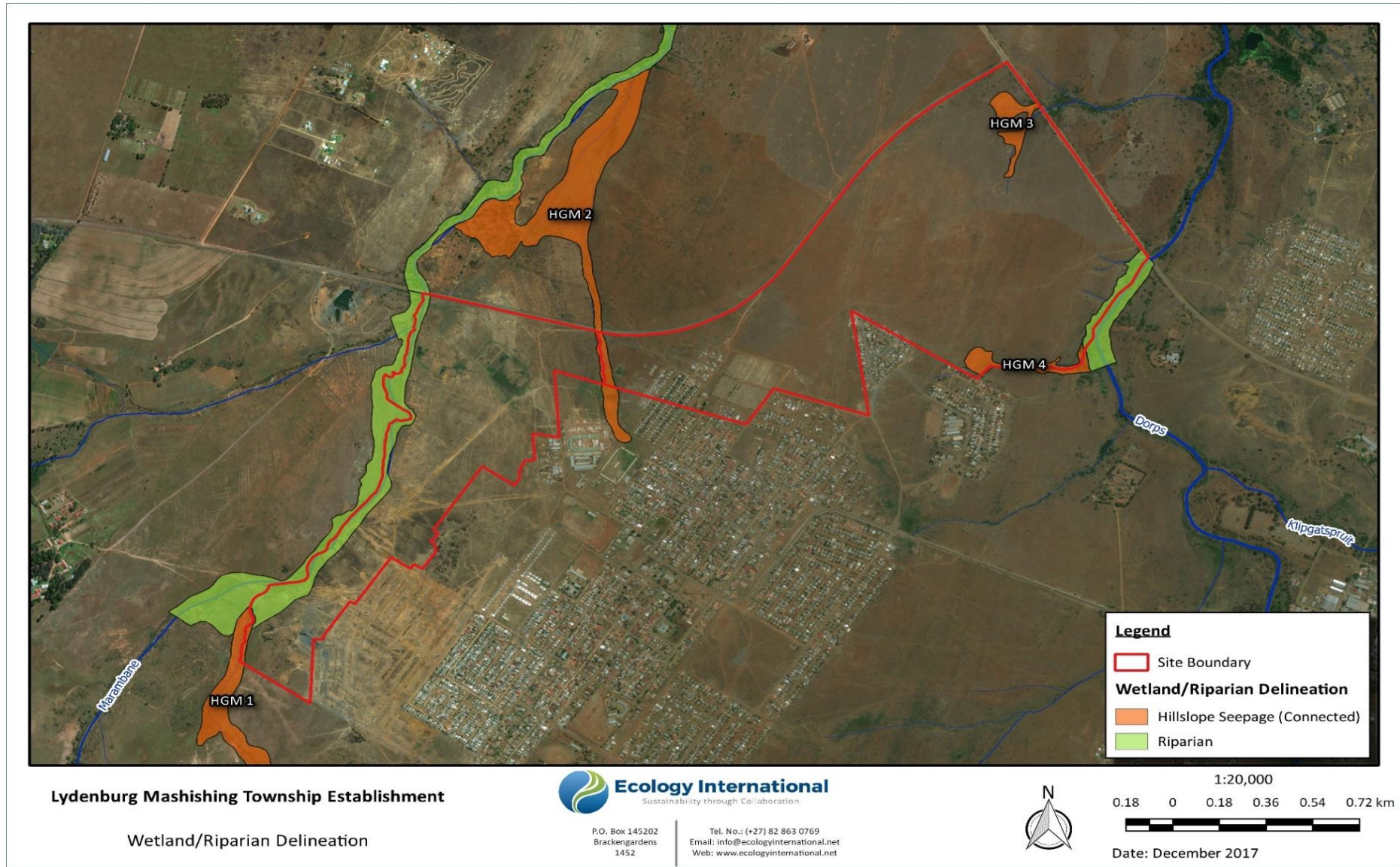


Figure 10: Wetland and riparian delineation for the study area.

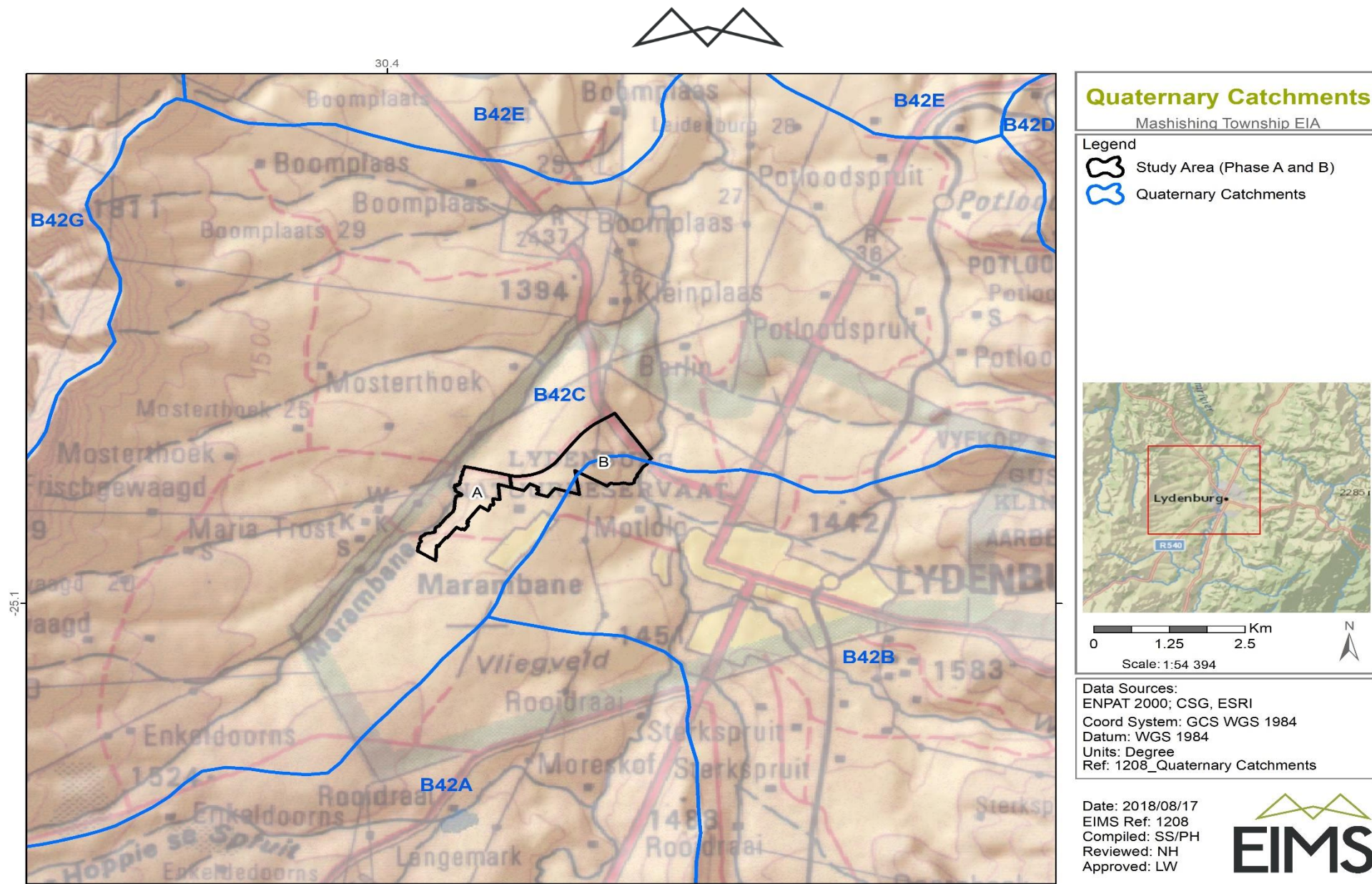


Figure 11: Quaternary catchments in relation to the development area.

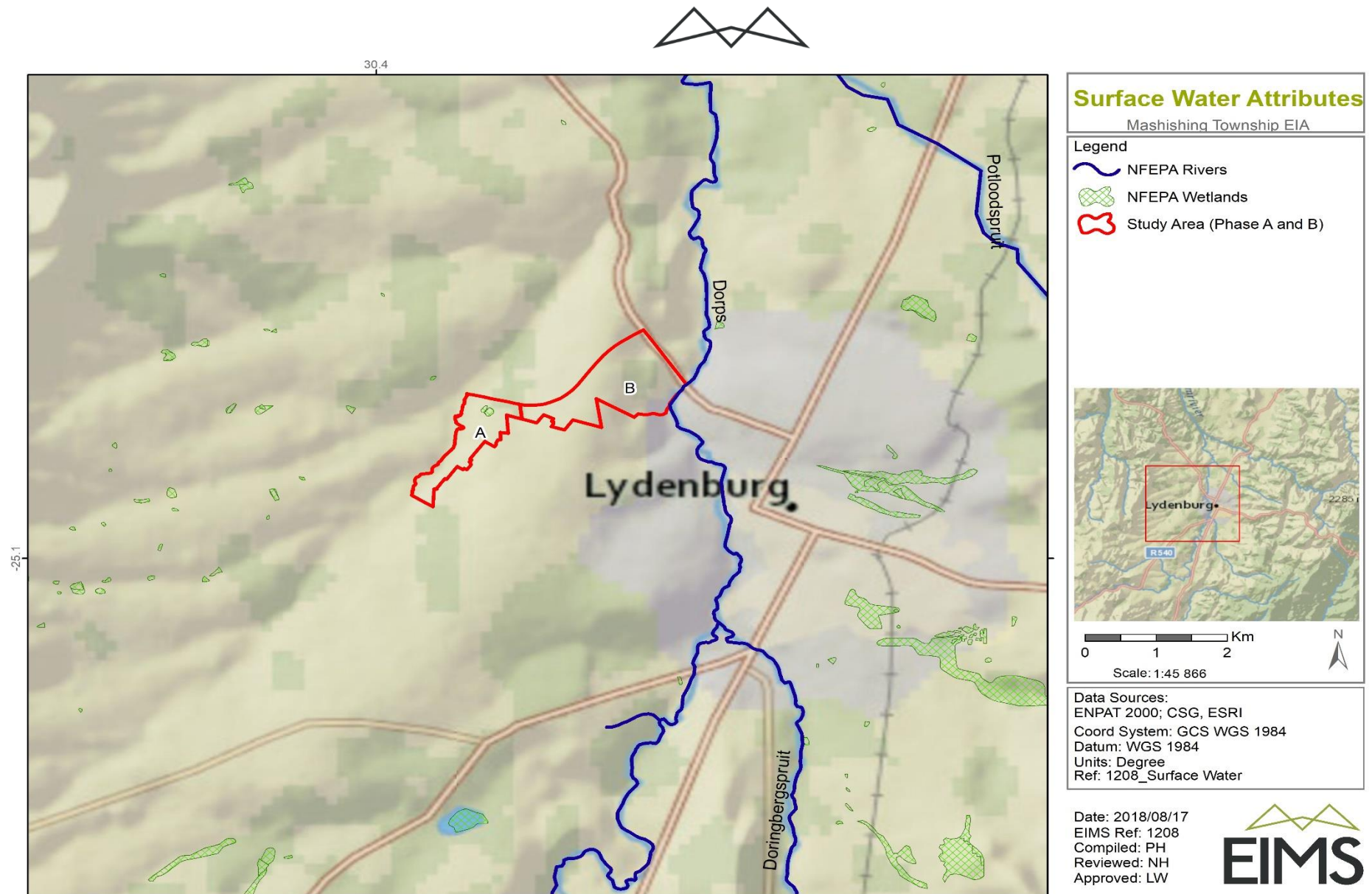


Figure 12: Surface water attributes.



9. IMPACT ASSESSMENT

9.1. THE IMPACT ASSESSMENT METHODOLOGY

The impact significance rating methodology, as provided by EIMS, is guided by the requirements of the NEMA 2014 EIA Regulations (as amended). The broad approach to the significance rating methodology is to determine the environmental risk (ER) by considering the consequence (C) of each impact (comprising Nature, Extent, Duration, Magnitude, and Reversibility) and relate this to the probability/likelihood (P) of the impact occurring. This determines the environmental risk. In addition, other factors, including cumulative impacts, public concern, and potential for irreplaceable loss of resources, are used to determine a prioritisation factor (PF) which is applied to the ER to determine the overall significance (S).

The significance (S) of an impact is determined by applying a prioritisation factor (PF) to the environmental risk (ER).

The environmental risk is dependent on the consequence (C) of the particular impact and the probability (P) of the impact occurring. Consequence is determined through the consideration of the Nature (N), Extent (E), Duration (D), Magnitude (M), and Reversibility (R) applicable to the specific impact.

For the purpose of this methodology the consequence of the impact is represented by:

$$C = (E+D+M+R) \times N$$

4

Each individual aspect in the determination of the consequence is represented by a rating scale as defined in Table 7.

Table 7: Criteria for determination of impact consequence

Aspect	Score	Definition
Nature	- 1	Likely to result in a negative/ detrimental impact
	+1	Likely to result in a positive/ beneficial impact
Extent	1	Activity (i.e. limited to the area applicable to the specific activity)
	2	Site (i.e. within the development property boundary),
	3	Local (i.e. the area within 5 km of the site),
	4	Regional (i.e. extends between 5 and 50 km from the site)
	5	Provincial / National (i.e. extends beyond 50 km from the site)
Duration	1	Immediate (<1 year)
	2	Short term (1-5 years),
	3	Medium term (6-15 years),
	4	Long term (the impact will cease after the operational life span of the project),
	5	Permanent (no mitigation measure of natural process will reduce the impact after construction).
Magnitude/ Intensity	1	Minor (where the impact affects the environment in such a way that natural, cultural and social functions and processes are not affected),



Aspect	Score	Definition
	2	Low (where the impact affects the environment in such a way that natural, cultural and social functions and processes are slightly affected),
	3	Moderate (where the affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way),
	4	High (where natural, cultural or social functions or processes are altered to the extent that it will temporarily cease), or
	5	Very high / don't know (where natural, cultural or social functions or processes are altered to the extent that it will permanently cease).
Reversibility	1	Impact is reversible without any time and cost.
	2	Impact is reversible without incurring significant time and cost.
	3	Impact is reversible only by incurring significant time and cost.
	4	Impact is reversible only by incurring prohibitively high time and cost.
	5	Irreversible Impact

Once the C has been determined the ER is determined in accordance with the standard risk assessment relationship by multiplying the C and the P. Probability is rated/scored as per Table 8.

Table 8: Probability scoring

Probability	1	Improbable (the possibility of the impact materialising is very low as a result of design, historic experience, or implementation of adequate corrective actions; <25%),
	2	Low probability (there is a possibility that the impact will occur; >25% and <50%),
	3	Medium probability (the impact may occur; >50% and <75%),
	4	High probability (it is most likely that the impact will occur - > 75% probability), or
	5	Definite (the impact will occur),

The result is a qualitative representation of relative ER associated with the impact. ER is therefore calculated as follows:

$$ER = C \times P$$

Table 9: Determination of environmental risk

Consequence	5	5	10	15	20	25
	4	4	8	12	16	20
	3	3	6	9	12	15
	2	2	4	6	8	10
	1	1	2	3	4	5
		1	2	3	4	5
	Probability					

The outcome of the environmental risk assessment will result in a range of scores, ranging from 1 through to 25. These ER scores are then grouped into respective classes as described Table 10.

Table 10: Significance classes



Environmental Risk Score	
Value	Description
< 9	Low (i.e. where this impact is unlikely to be a significant environmental risk),
≥ 9; < 17	Medium (i.e. where the impact could have a significant environmental risk),
≥17	High (i.e. where the impact will have a significant environmental risk).

The impact ER will be determined for each impact without relevant management and mitigation measures (pre-mitigation), as well as post implementation of relevant management and mitigation measures (post-mitigation). This allows for a prediction in the degree to which the impact can be managed/mitigated.

In accordance with the requirements of Appendix 2 and Appendix 3 of the 2014 EIA Regulations (GN R. 982), and further to the assessment criteria presented above it is necessary to assess each potentially significant impact in terms of:

- Cumulative impacts; and
- The degree to which the impact may cause irreplaceable loss of resources.

In addition, it is important that the public opinion and sentiment regarding a prospective development and consequent potential impacts is considered in the decision making process.

In an effort to ensure that these factors are considered, an impact prioritisation factor (PF) will be applied to each impact ER (post-mitigation). This prioritisation factor does not aim to detract from the risk ratings but rather to focus the attention of the decision-making authority on the higher priority/significance issues and impacts. The PF will be applied to the ER score based on the assumption that relevant suggested management/mitigation impacts are implemented.

Table 11: Criteria for the determination of prioritisation

Public response (PR)	Low (1)	Issue not raised in public response.
	Medium (2)	Issue has received a meaningful and justifiable public response.
	High (3)	Issue has received an intense meaningful and justifiable public response.
Cumulative Impact (CI)	Low (1)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is unlikely that the impact will result in spatial and temporal cumulative change.
	Medium (2)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is probable that the impact will result in spatial and temporal cumulative change.
	High (3)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is highly probable/definite that the impact will result in spatial and temporal cumulative change.
Irreplaceable loss of resources (LR)	Low (1)	Where the impact is unlikely to result in irreplaceable loss of resources.
	Medium (2)	Where the impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.



High (3)	Where the impact may result in the irreplaceable loss of resources of high value (services and/or functions).
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The value for the final impact priority is represented as a single consolidated priority, determined as the sum of each individual criteria represented Table 11. The impact priority is therefore determined as follows:

$$\text{Priority} = \text{PR} + \text{CI} + \text{LR}$$

The result is a priority score which ranges from 3 to 9 and a consequent PF ranging from 1 to 2 (refer to Table 12).

Table 12: Determination of prioritisation factor

Priority	Ranking	Prioritisation Factor
3	Low	1
4	Medium	1.17
5	Medium	1.33
6	Medium	1.5
7	Medium	1.67
8	Medium	1.83
9	High	2

In order to determine the final impact significance, the PF is multiplied by the ER of the post mitigation scoring. The ultimate aim of the PF is to be able to increase the post mitigation environmental risk rating by a full ranking class, if all the priority attributes are high (i.e. if an impact comes out with a medium environmental risk after the conventional impact rating, but there is significant cumulative impact potential, significant public response, and significant potential for irreplaceable loss of resources, then the net result would be to upscale the impact to a high significance). The environmental significance rating is presented in Table 13.

Table 13: Environmental Significance Rating

Value	Description
< -10	Low negative (i.e. where this impact would not have a direct influence on the decision to develop in the area).
≥ -10 < -20	Medium negative (i.e. where the impact could influence the decision to develop in the area).
≥ -20	High negative (i.e. where the impact must have an influence on the decision process to develop in the area).
0	No impact
< 10	Low positive (i.e. where this impact would not have a direct influence on the decision to develop in the area).
≥ 10 < 20	Medium positive (i.e. where the impact could influence the decision to develop in the area).
≥ 20	High positive (i.e. where the impact must have an influence on the decision process to develop in the area).



The significance ratings and additional considerations applied to each impact will be used to provide a quantitative comparative assessment of the alternatives being considered. In addition, professional expertise and opinion of the specialists, the environmental consultants and the input from I&APs and commenting authorities will be applied to provide a qualitative comparison of the alternatives under consideration. This process will identify the best alternative for the proposed project.

9.2. IMPACTS IDENTIFIED

The following potential impacts were identified during the scoping phase investigations and pertain to the proposed study area. As a result of the scoping phase assessment and the sensitivity mapping exercise, a preferred layout alternative will be identified to be assessed further in the EIA phase.

It should be noted that this report will be made available to I&APs for review and comment and their comments and concerns will be addressed in the final EIA Report submitted to the competent authority (MDARDLEA) for adjudication. The results of the public consultation will be used to update the identified potential impacts and proposed mitigation measures, where applicable.

Please note that these preliminary impacts will be subject to amendment based on the EIA phase assessment and the results of public consultation undertaken during the EIA phase.

9.2.1. PRELIMINARY IMPACTS ON HERITAGE RESOURCES

This section presents the preliminary potential impacts identified from a desktop analysis of the proposed development area with regard to heritage resources. While several project phases exist, only impacts associated with the Site Establishment and Earthworks/Construction Phase are included here. The reason for this is that no impacts are anticipated on the identified heritage resources during the other phases of the project. A desktop heritage assessment survey was conducted in January 2018 and during that survey three possible types of cultural heritage features of significance were identified, namely: Iron Age settlements older than 100 years; Architectural Structures possibly older than 60 years; and cemeteries. A heritage impact assessment study will be undertaken and the results presented in the EIA phase with relevant updates to the scoping phase findings.

The following preliminary impacts (as well as their impact rating) on heritage resources were identified during scoping:

A) Disturbance/Destruction of Archaeological Sites or Historic Buildings

Unidentified archaeological sites can seriously hamper construction and development activities and timelines. Destruction/damage or disturbance of such sites requires a permit from the responsible heritage authority.

Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Disturbance/destruction of archeological sites or historic structures	Construction	-12.75	-3.50	-4.67



Proposed Preliminary Mitigation

During design and before construction no-go areas need to be demarcated. Alternatively, mitigation measures such as the archaeological excavation of sites must be planned and scheduled to fit within the timing of the project phases. The recorded localities of these archaeological or heritage sites (based on the specialist impact assessment study to be undertaken) should be avoided during the placement of development footprint areas. The Heritage Impact Assessment study will be required to determine the significance of each identified heritage feature or site and to assess the possible development impacts on each said feature or site.

B) Disturbance/Destruction of Graves

In addition to the graves identified during the desktop assessment, there is a possibility that unidentified graves may be located within the study area. Should graves and other heritage features be confirmed on site and in particular within the preferred footprint, impact on these features will trigger various pieces of legislation that protect them.

Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Disturbance/destruction of marked and unmarked graves	Construction	-12.75	-2.25	-3.00

Proposed Preliminary Mitigation

Cemeteries and grave sites are protected by various legislation and the best option would be the *in-situ* preservation of the sites. Should this not be possible, a standard grave relocation process (including a detailed social consultation process) must be undertaken. In addition to the known archaeological sites, any new sites identified by the Heritage Impact Assessment Study during the EIA phase in support of this application, must be afforded protection as per the above mitigation.

C) Disturbance/Destruction of Fossil Material

There is a possibility that fossils could be encountered during excavation within the development footprint. Unidentified paleontological resources and the discovery of such resources can seriously hamper construction and development timelines. Damage, destruction or removal of such sites requires a permit from the responsible heritage authority. A Heritage Impact Assessment survey will be undertaken in due course and the findings and mitigation measures included in the subsequent EIA Report and associated EMPr.

Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Disturbance/destruction of fossils	Construction	-17.00	-4.50	-6.00
	Operation			



Proposed Preliminary Mitigation

The desktop heritage impact study undertaken in January 2018 within the vicinity of the proposed Mashishing township establishment found three possible types of cultural heritage features of significance, namely: Iron Age settlements; Architectural Structures; and cemeteries. Preliminary impact rating has shown that the impact on heritage resources can possibly be medium to high, but through detailed fieldwork during the EIA phase this impact can probably be reduced to Medium-Low or totally mitigated through design. A detailed heritage impact assessment study will be undertaken, and the results presented in the EIA phase with relevant updates to the scoping phase findings and mitigation measures.

9.2.2. PRELIMINARY IMPACTS ON ECOLOGY

The following preliminary impacts on the ecological resources within the study area were identified and assessed for the various project phases (planning and design, construction, operation, decommissioning, and rehabilitation and closure). No impacts on the ecological receiving environment have been identified that will occur during the Planning and Design Phase, Decommissioning Phase, and the Rehabilitation and Closure Phase. The removal of the vegetation cover on site and other disturbances may increase the erosion potential of the site. Since a large portion of the site is already disturbed by informal settlements, sewage leaks and agricultural activities, the erosion potential for these areas may increase moderately. Below are the construction and operational phase preliminary impacts on ecological resources identified during scoping, as well as their impact rating.

An Ecology Impact Assessment specialist study was undertaken in support of this application and the findings and recommended mitigation measures are presented below and will be further discussed in the EIA Report and associated EMPr.

Assessment of impacts associated with Construction

A) Loss/Destruction of Natural Habitat and removal of protected species

The proposed development will lead to the loss of some natural habitat. It is not possible to avoid this loss without refraining from development on the natural parts of the site. Several species listed as threatened under NEMBA and the South African Red Data list could potentially occur within the study area. Should any of these species be found on site no development activities may take place in or close to the habitat of the species until a permit is obtained for their removal. This may potentially have a moderate to high impact on the overall species numbers and distribution. There is, however, potential to mitigate this impact, through search and rescue operations and good soil rehabilitation practices.

Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Loss/destruction of natural habitat	Construction	-20.00	-8.00	-10.67

Proposed Preliminary Mitigation



Undertake activities in previously disturbed places and/or habitats with a lower sensitivity score. Leave natural habitats as well as any recommended buffer zones out of the footprint of development. Rehabilitate disturbed areas as soon as possible and control alien plants.

B) Habitat Fragmentation and Edge Effects

Due to the existing fragmentation of the natural habitat, the proposed development will contribute to this impact however, to a lesser degree than if the entire study area was pristine.

Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Habitat fragmentation and edge effects	Construction	-6.50	-3.00	-4.00

Proposed Preliminary Mitigation

Undertake activities in previously disturbed areas and/or habitats with lower sensitivity. Where possible, locate activities on the boundaries of existing disturbance. Use existing access roads as much as possible and rehabilitate disturbed areas as soon as possible.

C) Displacement of Faunal Species

The proposed activities on site will lead to localised damage of habitat. The study area is adjacent to an existing urban area, which would discourage fauna from using the site. The overall loss of habitat is, however, expected to be quite a small proportion of the total habitat within the general area. Loss of faunal habitat will therefore be low.

Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Displacement of faunal species	Construction	-13.00	-13.00	-13.00
	Operation			

Proposed Preliminary Mitigation

Where possible undertake activities in previously disturbed places and/or habitats with a lower sensitivity, limit effects on surrounding areas, and rehabilitate disturbed areas as soon as possible to promote habitat availability for faunal species.

D) Blockage of Seasonal and Dispersal Movements

Proposed activities will result in insignificant loss of habitat, especially migration corridors. Habitat fragmentation is also expected to be minimal.



Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Blockage of seasonal and dispersal movements	Construction	-3.00	-1.50	-1.50
	Operation			

Proposed Preliminary Mitigation

Where possible undertake activities in previously disturbed areas and/or habitats with a lower sensitivity score. Where possible, locate activities on the boundaries of existing disturbance. Use existing access roads as much as possible and rehabilitate disturbed areas as soon as possible.

E) Flora Direct and Indirect Mortality

There are various plant species of concern that could potentially be affected by the proposed activities on site. The exact location of some of these is unknown and a flora walk-through survey is required to improve the confidence in this assessment.

Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Flora direct and indirect mortality	Construction	-14.00	-4.50	-6.75

Proposed Preliminary Mitigation

Where possible, walk-through survey of study area prior to construction commencing. Search and rescue of species of concern (if any). Obtain permits for any listed/protected species found on site. Where possible, undertake activities in previously disturbed areas and/or habitats with lower sensitivity. Where possible, locate activities on the boundaries of existing disturbance, and use existing access roads as much as possible.

F) Protected Trees Direct & Indirect Mortality

There are three species of protected trees that could potentially be affected by the proposed activities on site, namely *Elaeodendron transvaalensis*, *Pittosporum viridiflorum* and *Pterocarpus angolensis*. The area where they are likely to occur is in the riparian zone on the eastern side of the study area and in surrounding grasslands on the slopes overlooking the riparian zone. Whether these occur on site or not is unknown and if any occur there then the exact location of these is unknown.



Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Protected trees direct and indirect mortality	Construction	-6.00	-1.75	-2.04

Proposed Preliminary Mitigation

Where possible, walk-through survey of study area prior to construction commencing. Obtain permits for any protected tree species found on site. Where possible, undertake activities in previously disturbed areas and/or habitats with lower sensitivity. Modify footprint of proposed development, if necessary.

G) Fauna Direct and Indirect Mortality

There are risks to fauna, for example illegal hunting/poaching as well as threats from movement of machinery. During construction, relatively sedentary species may suffer direct mortality. Sedentary species that could occur on site are the reptile species of conservation concern, namely the Coppery Grass Lizard (Near Threatened), Large-scaled Grass Lizard (Near Threatened), Breyer's Long-tailed Seps (Vulnerable) and the Striped Harlequin Snake (Near Threatened).

The assessment is based on a worst-case scenario affecting species of the highest conservation status.

Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Fauna direct and indirect mortality	Construction	-9.75	-5.50	-7.33

Proposed Preliminary Mitigation

Where possible, undertake site-specific walk-through surveys for potential species of concern. Where possible, undertake activities in previously disturbed areas and/or habitats with lower sensitivity, locate activities on the boundaries of existing disturbance, and use existing access roads as much as possible. Educate construction crews on the types of species that may be encountered and ensure that workers report sightings and the said species is located for active relocation.

Assessment of impacts associated with Operation

A) Introduction/Invasion by Alien Species

Disturbing activities on site will favour alien plants in places. In most cases, it is in the interests of the landowner to control infestations.



Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Introduction/Invasion by alien species	Operation	-13.00	-2.00	-2.67

Proposed Preliminary Mitigation

Where possible undertake activities in previously disturbed areas and/or habitats with lower sensitivity. Where possible, locate activities on the boundaries of existing disturbance. Use existing access roads as much as possible and rehabilitate disturbed areas as soon as possible. Manage alien plants within close proximity to the site and compile an alien plant management plan.

9.2.3. PRELIMINARY IMPACTS ON GEOHYDROLOGY (GROUNDWATER)

The following preliminary impacts on the geohydrological resources or groundwater within the study area were identified and assessed for the various project phases (planning and design, construction, operation, decommissioning, and rehabilitation and closure). No impacts on the geohydrological receiving environment have been identified that will occur during the planning and design phase and decommissioning Phase. Below are the preliminary impacts on geohydrological resources for the construction, operational, and rehabilitation and closure phases identified during scoping, as well as their impact rating according to the methodology described above.

The potential groundwater impacts were derived based on previous experience and literature review. The impacts shown take into account the worst-case scenario and may not happen at the proposed Mashishing Township development, however these impacts need to be considered and addressed further during the EIA.

A) Contamination of Groundwater (i.e. chemicals, fuel, wastes, sedimentation)

During construction certain hazardous substances may be utilised and possibly stored on site (e.g. fuels, oils, pesticides, herbicides, sewage, etc.). If not correctly controlled, these substances can inadvertently enter the local and regional water resources. The probability and magnitude of this impact is dependent to a large extent on the correct use, implementation and storage of relevant hazardous and dangerous substances, and less on the proximity of the construction sites to the receiving water resources. Groundwater contamination may occur as a result of hydrocarbon (oil and diesel) spillages on the surface. Groundwater contamination may occur during construction, operational, rehabilitation and closure phases.

Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Contamination of groundwater (e.g. chemicals, fuel, waste, sedimentation)	Construction Operation	-15.00	-5.00	-7.50



Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
	Rehabilitation and Closure			

Proposed Preliminary Mitigation

It is recommended that all hazardous materials that can pollute the soil and water as a result of leaks or spillages should be managed and stored in an appropriate manner. Storage of all hazardous substances on site must be done in accordance with best practice standards, and where necessary a bund must be provided. Hazardous substances must be stored in a secure location isolated from direct contact with the soils and covered where necessary. Pollution of surface water and groundwater aquifers is to be prevented at all costs, a spill response procedure must be prepared and applied, vehicles must be maintained to proactively prevent unnecessary spills (fuels, lubricants, etc.), and stormwater from the site should be managed effectively in order to avoid pollution of nearby non-perennial streams/drainage lines. Sound groundwater management measures need to be developed based on the results of the impact assessment and to be presented in the EIA Report and associated EMPr.

9.2.4. PRELIMINARY IMPACTS ON HYDROLOGY (SURFACE WATER)

The following preliminary impacts on the hydrological/surface water resources within the study area were identified and assessed for the various project phases (planning and design, construction, operation, decommissioning, and rehabilitation and closure). No impacts on hydrology have been identified that will occur during the Planning and Design Phase and the Decommissioning Phase.

Below are the preliminary impacts on hydrological resources for the construction, operation, and rehabilitation and closure phases identified during scoping, as well as their impact rating.

Assessment of Impacts associated with Construction

A) Decreased Water Quality

Hydrocarbon-based fuels or lubricants spilled from construction vehicles, construction materials that are not properly stored, and litter deposited by construction workers may be washed into the surface water bodies. Should appropriate toilet facilities not be provided for construction workers at the construction crew camps, the potential exists for surface water resources and surrounds to be further contaminated by raw sewage. While it is acknowledged that the impacts associated with the proposed activities will be negligible, every effort should still be taken limit additional contributions.

Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Decreased water quality	Construction	-7.00	-1.50	-2.00



Impact	Project	Pre-Mitigation	Post-Mitigation	Final
	Phase	Score	Score	Significance
	Operation			

Proposed Preliminary Mitigation

Construction vehicles are to be maintained and kept in good working order, and all substances that can pollute the environment during a spillage should be kept on bunded surfaces as far as possible. Proper stormwater management should be implemented. A detailed stormwater management plan will be prepared by a hydrologist/aquatic specialist and will be included in the EIA Report and associated EMPr.

B) Erosion of Wetlands

The removal of surface vegetation will cause exposed soil conditions where rainfall and high winds can cause mechanical erosion. High rainfall, inadequate drainage systems, hardened surfaces and bare areas are likely to increase surface run off velocities and peak flows received by wetlands during both the construction and operational phases of the proposed activity.

Impact	Project	Pre-Mitigation	Post-Mitigation	Final
	Phase	Score	Score	Significance
Erosion of wetlands	Construction	-6.00	-1.50	-2.00
	Operation			

Proposed Preliminary Mitigation

Stormwater should not be allowed to discharge directly into wetlands or watercourses or within their designated buffer zones. In this regard, the use of flow spreaders and flow dissipaters must be considered to allow stormwater to enter the buffer zones in a diffuse manner. Where watercourse crossings are required, crossings are to be designed using box culverts that facilitate dispersed water flow and they should traverse the wetlands at an angle perpendicular to the flow of the watercourse, and their base should not be lower than the current level of the watercourse. Erosion features must not be allowed to develop on a large scale before effecting repairs. Where erosion features do manifest, rehabilitation interventions are to be developed by a civil engineer with experience pertaining to wetland rehabilitation, with input from a suitably-qualified wetland specialist.

C) Sedimentation

The clearing of natural vegetation and the stripping of topsoil for the preparation of the site for construction may result in the increased runoff of sediment from the site and associated stockpiles into associated watercourses. Various impacts have been attributed to sedimentation of aquatic ecosystems, including reduction of light penetration (resulting in reduction in photosynthesis and subsequently, productivity), alteration of foraging dynamics of both carnivores and



herbivores, impacting on predator and prey relationships, clogging of gills, rendering the watercourse unfit for various aquatic organisms, truncating and shifting the trophic pyramid, absorption of nutrients onto suspended particles, rendering them unavailable and thereby reducing the productivity of the river, filling of interstitial spaces, thereby destroying habitat for macro invertebrates and vertebrates owing to sedimentation, etc.

Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Sedimentation	Construction	-11.25	-4.50	-6.00
	Operation			

Proposed Preliminary Mitigation

Delineated integrated buffer zones are to be clearly demarcated, and no access of construction equipment or stockpiling of any items should be allowed within said demarcated areas. The construction period is to be limited to periods of low rainfall (i.e. winter) in order to limit runoff from the construction area. Proper stormwater management should be implemented, and proper management of stockpile and erosion control should be implemented.

Assessment of Impacts associated with Operation

A) Altered Hydrological Regime

One of the primary impacts associated with urbanisation is the impact of stormwater generated on site during times of rainfall. Increased impermeable surfaces within the study area as a result of the proposed township development will decrease catchment infiltration and increase stormwater runoff from the site, resulting in the increase in the periodicity and magnitude of flood events (e.g. increased flood peaks) within the associated watercourses, thus resulting in an altered hydrological regime. This has particular relevance to the potential impact on instream biota which include a Near-Threatened fish species.

Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Altered hydrological regime	Construction	-20.00	-9.75	-14.63
	Operation			

Proposed Preliminary Mitigation

Hydrological stormwater modelling of various layout designs should be conducted in order to better determine the magnitude of the impact associated with the proposed development on the receiving riverine hydrology, and should include evaluation of potential seasonal differences. Stormwater should as far as possible be managed on-site, and not be allowed to discharge directly into wetlands or watercourses or within their designated buffer zones. In this regard, the



use of flow spreaders and flow dissipaters must be considered to allow stormwater to enter the buffer zones in a diffuse manner. An ecologically-sound stormwater management plan must be implemented at the onset of the construction phase and carried through to the operational phase, and must include the use of Sustainable Urban Design Systems (SuDS) as well as Water Sensitive Urban Design (WSUD) within the final township design (e.g. permeable pavements, alignment/orientation of roads, etc.).

B) Erosion of Wetlands

High rainfall, inadequate drainage systems, hardened surfaces and bare areas are likely to increase surface run off velocities and peak flows received by wetlands during the operational phase of the proposed activity. In addition to altering hydrology within the associated riverine environment, poor township planning and the resulting increased catchment runoff will increase the potential for wetland erosion to occur during the operational phase of the project.

Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Erosion of wetlands	Construction	-13.00	-8.25	-11.00
	Operation			

Proposed Preliminary Mitigation

Stormwater should not be allowed to discharge directly into wetlands or watercourses or within their designated buffer zones. In this regard, the use of flow spreaders and flow dissipaters must be considered to allow stormwater to enter the buffer zones in a diffuse manner. An ecologically-sound stormwater management plan must be implemented at the onset of the construction phase and should include the use of Sustainable Urban Design Systems (SuDS). Where possible, highly sensitivity areas identified in surface water assessment should be avoided during construction.

C) Nutrient Enrichment

Increased development within the study area is likely to increase the demands on existing sewage infrastructure both within the immediate study area as well as the treatment thereof at the Lydenburg Wastewater Treatment Works (WWTW). With no formal infrastructure supporting the inhabitants currently present within the study area, raw sewage is currently discharging into the Marambane River. Given that the associated watercourses support populations of a Near-Threatened fish species and that nutrient input into the Marambane River has already resulted in a localised reduction in the abundance of this species, additional input of raw sewage into the Marambane River and/or the Dorps River as a result of insufficient capacity of existing infrastructure and/or inability of the Lydenburg WWTW to adequately treat the resulting increase in inflow as a result of the proposed township is raised as a concern.



Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Nutrient enrichment	Construction	-22.00	-9.75	-14.63
	Operation			

Proposed Preliminary Mitigation

Ensure that the sewage infrastructure proposed for the development has the capacity to deal with the demands of the proposed housing densities within the study area. Ensure that the Lydenburg WWTW (or any other treatment works that will be treating the resulting raw sewage) has the capacity to adequately treat the sewage originating from the proposed development.

9.2.5. PRELIMINARY IMPACTS ON SOILS AND GEOLOGY

Preliminary impacts on the soil and geology within the study area were identified and assessed for the various project phases (planning and design, construction, operation, decommissioning, and rehabilitation and closure). No impacts on soil and geology have been identified for the Planning and Design Phase, rehabilitation and closure and the Decommissioning Phase.

The major potential impact that would occur as a result of the township development and related activities would be the loss of potentially productive agricultural land, along with a reduction in land capability. Where permanent physical structures are established, this impact is virtually permanent, while for other disturbed areas, spoil and topsoil can be replaced and rehabilitated to a certain degree, although a reduction in agricultural potential usually occurs. Successful rehabilitation will depend on how well the construction personnel follow the prescribed guidelines in terms of correct stripping practice (depth), optimum stockpiling (height and duration) and proper rehabilitation (physical manipulation and fertilisation).

Below are the preliminary impacts on soil and geology features during the construction and operation phases, as well as the impact rating.

Assessment of Impacts associated with Construction

A) Loss/Disturbance of Topsoil (including Contamination, Erosion and Compaction)

During construction, compaction of soil from heavy vehicles and machinery travelling off-road as well as operation on site may occur. Erosion from disturbances to soil structure and vegetation cover is also likely. Contamination of soil could also result from hydrocarbon or chemical spillages. Paving of the roads also has a direct impact on the concentration of water downstream which may lead to erosion and gully formation.



Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Loss/disturbance of topsoil (including contamination, erosion and compaction)	Construction	-14.00	-5.00	-6.67

Proposed Preliminary Mitigation

Waste, hydrocarbons, and other chemicals should be handled and disposed of adequately to avoid contamination of soil. Erosion control measures should be implemented, and compaction of soil avoided where possible. Topsoil to be used during rehabilitation should be cleared and stored separately prior to other construction activities. Development of a proper stormwater management plan is also required to account for the increase in stormwater runoff.

Assessment of Impacts associated with Operation

A) Reduction in Agricultural Potential and Loss of Fertility

Reduction in natural soil fertility may be caused by removal, storage (stockpiling) and replacement of the soil profile. Aspects such as acidification, loss of nutrients and organic matter could apply. Such an impact will probably become greater, the longer such conditions apply however, active rehabilitation would mitigate this situation to a degree.

Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Loss of fertility	Operation	-9.75	-4.50	-5.25

Proposed Preliminary Mitigation

Proper soil management and rehabilitation must be implemented.

9.2.6. PRELIMINARY SOCIO-ECONOMIC IMPACTS

The following preliminary impacts on the socio-economic environment within the study area were identified and assessed for the various project phases (planning and design, construction, operation, decommissioning, and rehabilitation and closure). No impacts on socio-economics have been identified that will occur during the Planning and Design Phase, Decommissioning Phase, and the Rehabilitation and Closure Phase.

Below are the construction and operational phase preliminary impacts on socio-economic environment identified during scoping, as well as their impact rating.

Assessment of Impacts associated with Construction

A) Interference with Existing Land Uses



The proposed study area comprises of informal settlements and associated cultivation which has caused extensive alteration of natural habitats within the study area. Some previously cultivated areas are no longer cultivated and now contain a secondary cover of vegetation. There are two main natural features remaining on site, watercourses/wetlands, and remaining areas of grassland.

Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Interference with existing land uses	Construction	-17.00	-6.00	-7.00

Proposed preliminary Mitigation

Undertake activities in previously disturbed areas and/or habitats with lower sensitivity, use existing access roads as much as possible, limit effects on surrounding areas, and rehabilitate disturbed areas as soon as possible. A phased approach to the development will also be beneficial to allow relocation of people to the completed section while the other is still under construction. This will have to involve accurate and detailed beneficiary registers, proper scheduling and extensive consultation in order to avoid extensive delays and frustrations to the community members affected.

B) Nuisance and Impact on Sense of Place (i.e. noise, dust, etc.)

Sense of place can be described as ‘characteristics that make a place special or unique, as well as to those that foster a sense of authentic human attachment and belonging’. The construction of the proposed project within an area that holds a specific sense of place may have the potential to alter this. The impact on the sense of place is closely linked to the likely visual impact of an activity. For the purpose of construction, lay down areas and/or a construction camp will be required and will have impacts on the visual characteristics of the area. Additional vehicles, increased noise and dust, the removal of vegetation for foundations as well as the potential influx of workers will all contribute to the alteration of the sense of place. Furthermore, current occupiers of the proposed development area may need to be relocated to other areas of the township during construction and possibly post-construction.

Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Nuisance and impact on sense of place (i.e. noise, dust, etc.)	Construction	-15.00	-6.75	-7.88

Proposed Preliminary Mitigation

Noise producing activities should be limited to day-time after 07h00 and no later than 17h00 on weekdays. South African National Standards (SANS) noise regulations should be complied with at all times. Adequate dust suppression measures should be utilised to minimise dust production. There must be a formal procedure in place on how to report incidents to ensure records of all grievances are kept, and responses are given within a certain timeframe. Where relocations are



required, the applicant should endeavour to consult with the affected parties and appropriate arrangements made such as housing the affected residents on the same stand or within close proximity to the area they previously occupied.

C) Waste Management and Disposal

The construction of the proposed township will result in the generation and accumulation of significant quantities of excavated materials and inert concrete/cement rubble. Other waste material that will be generated as a result of the construction process will typically include:

- Solid waste (construction debris, inert materials-overburden, cement bags, wrapping materials, timber, cans, wire, nails, food, and other organic wastes, etc.); and
- Liquid waste (oil, paint, sewage, fuel, etc.).

Impact	Project	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Waste management and disposal	Construction	-18.75	-4.00	-5.33

Proposed Preliminary Mitigation

Solid waste shall be stored in an appointed area in covered, waterproof and scavenger proof bins for collection and disposal. A refuse control system shall be established for the collection and removal of refuse. Disposal of solid waste shall be at a Department of Environmental Affairs (DEA) licensed landfill site or at a site approved by DEA in the event that an existing operating landfill site is not within reasonable distance from the study area. No waste shall be burned or buried at or near the site offices, or anywhere else on the site. No littering by construction team or any other employee shall be allowed on site. The facilities shall be maintained in a neat and tidy condition and the site shall be kept free of litter. All necessary waste disposal permits must be obtained beforehand. A suitable waste disposal service provider must also be appointed to ensure that all waste is managed and disposed appropriately. Safe waste disposal certificates shall be obtained from the waste disposal facility and kept on site.

D) Safety and Security (i.e. Access to Properties, Theft, Fire Hazards, Spontaneous Combustion of Coal Stockpiles, etc.)

The presence of construction workers, but more importantly, the potential influx of, especially, criminal opportunists, could potentially affect the safety and security of residents within the surrounding settlements, and construction workers. These impacts could include an increase in general theft, house breakings, and threats to personal safety. Furthermore, increased human activities during construction add to the risk of accidental veld and forest fires.



Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Safety and security (i.e. access to properties, theft, fire hazards, etc.).	Construction	-11.00	-6.75	-7.88

Proposed Preliminary Mitigation

All contractors and employees should wear photo identification cards and the relevant personal protective equipment (PPE). Vehicles should be clearly marked as construction vehicles. Entry and exit points of the construction site should be controlled. All regulatory requirements and relevant standards must be complied with for necessary fire prevention, detection and response on site. In the event that an uncontrolled fire occurs the relevant authorities (e.g. Fire Protection Officers and Fire Protection Associations) as well as the relevant landowner representatives (incl. neighbouring landowners) must be informed immediately. Fire extinguishers must be available, properly maintained and easily accessible.

E) Damage/Disruption of Services (i.e. Water, Electricity, Sewage, etc.)

The construction process may result in accidental damage to existing services that may transverse or be adjacent to the proposed project area. Vibration and excavations during construction may negatively impact on buried services such as water and sewage pipelines.

Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Damage / disruption of services (i.e. water, electricity, sewage, etc.).	Construction	-13.00	-3.50	-4.08

Proposed Preliminary Mitigation

Before the project commences, an asset and services baseline of services that may be affected must be compiled. A copy of the baseline records should be given to the service provider, and a master document kept by the applicant. If any damage occurs, the affected service should be reinstated to its pre-project status on conclusion of investigations into the cause. Notice of any service interruptions must be given at least a day before the interruption takes place – an SMS or e-mail system can be used for this purpose.

F) Impact on Existing Infrastructure (i.e. Roads, Fences, etc.)

Activities may have an impact on existing infrastructure such as increased traffic on the adjacent road network, damage to roads (such as the R37), damage to fences and other local infrastructure. Remains of an old, non-functional sewage plant infrastructure were identified during scoping and will need to be demolished before construction can take place. Furthermore, it is anticipated that some existing dwelling structures may need to be demolished, particularly those that



are located within the proposed road servitude, cadastral boundary and on land earmarked for any non-residential use (i.e.: park or school).

Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Impact on existing infrastructure (i.e. roads, fences, etc.)	Construction	-16.25	-6.75	-7.88

Proposed preliminary Mitigation

An asset and infrastructure baseline of any new public and/or private infrastructure that may be affected by the developmental activities must be compiled. A copy of the baseline records should be given to the relevant landowner/s and/or the developer and his contractors/service providers, and a master document kept by the applicant. If any damage occurs, the damaged infrastructure should be reinstated to its pre-project status on conclusion of investigations into the cause. The land on which the old sewage plant is located may be contaminated, it is therefore recommended that a contamination study be commissioned to ascertain the suitability of the land for residential development prior to construction. Moreover, the applicant should endeavour to consult affected occupiers and appropriate arrangements made such as alternative housing in same area or within close proximity to where they were originally living when the new development is complete.

G) Perceptions and Expectations

The proposed project is likely to create great interest, particularly with regards to the potential for employment and housing, perceived safety and security risks, and the exact nature of the proposed project.

Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Perceptions and expectations	Construction	-12.50	-5.25	-6.13

Proposed Preliminary Mitigation

Perceptions and expectations must be managed through ongoing, open and transparent communication with affected stakeholders, communities, landowners and occupiers.

H) Employment Opportunities

Employment opportunities for some unskilled, skilled labour as well as providing services during construction (e.g. accommodation, transportation, etc.) may arise from this project. At this stage of the proposed project, it is not clear exactly how many people will be employed during construction. However, the construction of a township is not a highly



specialised task and therefore a significant number of the construction team can be taken/employed from the local communities.

Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Employment opportunities	Construction	+9.00	+12.50	+12.50

Proposed Preliminary Mitigation

Recruitment for labour or services should be focused in the local area and preference given to the local communities as far as possible.

I) Opportunities for Local Contractors and SMEs

Job opportunities for local people would mostly be limited to unskilled jobs. However, both national and local government places an emphasis on Small and Medium Enterprises (SMEs) and thus, if there are local contractors with the required skills and experience to conduct activities such as the construction of access roads and the erection of fences, opportunities could exist for local contractors and SMEs during the construction process.

Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Opportunities for local contractors and SMEs	Construction	+6.00	+6.75	+6.75

Proposed Preliminary Mitigation

Procurement of building materials and services should be focused in the local area and preference given to the local SMEs as far as possible.

J) Potential In-migration of People

On a project of this nature, which is localised, close to towns and settlements, with a limited number of employment opportunities, and relatively unspecialised skills requirements, in-migration to the surrounding areas, *per se*, is not seen as a significant impact. If in-migration does occur, migrants could potentially come from surrounding towns like Lydenburg, Kellysville and the existing Mashishing township. In-migration would be in the form of job seekers, informal vendors, formal housing seekers and criminal opportunists in the vicinity of the construction site.



Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Potential in-migration of people	Construction	-17.50	-6.75	-7.88

Proposed Preliminary Mitigation

Recruitment for labour or services should be limited to the local area and preference given to the local communities as far as possible. A security company should be appointed to act as a visible deterrent to criminal opportunists, if possible.

K) Potential Markets for Informal Trading

The closest grocery stores and shopping facilities to the proposed project are located in the Mashishing (Lydenburg) town, which is about 4 km from the proposed project. This relatively far distance will make informal vendors close to the construction site an alternative option for construction workers. The presence of informal vending and trading stalls in close proximity to construction camps and/or the construction sites could, if not managed carefully, result in littering and uncontrolled dumping of refuse.

Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Potential markets for informal trading	Construction	-13.75	-5.25	-5.25

Proposed Preliminary Mitigation

Proper waste management practices should be encouraged if informal vending and trading stalls do occur in close proximity to construction camps.

L) Impacts on Pedestrian and Road Safety

In order to construct the proposed township, a significant amount of material (e.g. bricks, cement, sand and other accessory components) is required, and all this material needs to be transported to the site by heavy construction vehicles. *En route* to the site, the increased number of heavy vehicles on the roads could impact on safety of motorists, other road users and, especially through towns, on pedestrians.

Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Impacts on pedestrian and road safety	Construction	-12.00	-3.50	-3.50



Proposed Preliminary Mitigation

There are standard road safety measures and mitigation measures which can be implemented to effectively mitigate this impact such as the use of emergency strobe lights, keeping safe following distances, flagmen, maintaining speed limits and the use of escort vehicles where necessary.

M) Increase in the Spread of Diseases

Any construction or development activity which causes migration of people has the potential to increase the spread of diseases. In this case, one of the most serious of these is HIV/AIDS. Induced migration, as well as the movement of contractor construction workers from elsewhere in the country, can potentially increase the spread of HIV/AIDS. Also, the construction of the proposed project will require construction materials to be transported to the site. Drivers of heavy vehicles are commonly seen as a potential contributing factor to the spread of the disease.

There is also the risk that if the construction camp is not managed efficiently, a lack of adequate water, sanitation, and waste facilities may lead to unhygienic living conditions and the easy spread of water-borne diseases. Such events will not only affect construction workers and thereby the progress on the construction of the proposed project, but may also spread to local communities.

Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Increase in the spread of diseases	Construction	-18.00	-9.75	-14.63

Proposed Preliminary Mitigation

Continuous education about the risk, spread and prevention of Sexually Transmitted Infections (STIs) such as HIV/AIDS needs to be given to the construction workers. Furthermore, mitigation measures such as the distribution of condoms and other forms of contraceptives to the workers can be utilised. Proper sanitation and clean drinking water needs to be provided for the construction workers.

N) Potential Effect on Tourism and Eco-tourism

Thaba Chweu Local Municipality is well known for its tourism attraction. There are a number of nature reserves in the area, most of these areas are sensitive and not developable. The Mashishing (Lydenburg) town is in close proximity of the proposed study area and may be affected both positively (i.e. providing accommodation facilities for some contractors) and negatively (i.e. impact on other guests) during the construction phase. Other key tourism sites such as Gustav Klingbiel Nature Reserve and Kromklip Funksie & ontspanningsoord are a considerable distance away from the proposed project and thus should not be significantly affected by it.



Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Potential effect on tourism and eco-tourism	Construction	-9.00	-4.50	-6.00

Proposed Preliminary Mitigation

The significance of this impact is closely linked to the physical location of the proposed township and specifically the construction activities as well as the consequent visual intrusion. It is therefore advisable that features such as the construction camp and laydown areas are located as far as possible from the closest visual receptors and the construction activities are limited to normal working hours.

Assessment of Impacts associated with Operation

A) Waste Management and Disposal

The operation of the proposed township will result in the generation and accumulation of significant quantities of domestic waste.

Impact	Project Phase	Pre-Mitigation Score	Post-Mitigation Score	Final Significance
Waste management and disposal	Construction	-12.50	-4.00	-5.33

Proposed Preliminary Mitigation

Solid waste shall be stored in waterproof and scavenger proof waste bins provided by the local municipality, for collection and disposal. A municipal refuse control system shall be established for the collection and removal of refuse.

10. PLAN OF STUDY FOR THE IMPACT ASSESSMENT

The section below outlines the proposed plan of study which will be conducted for the various environmental assessments during the EIA Phase. It is also important to note that the plan of study will also be guided by comment obtained from I&APs and other stakeholders during the Scoping report review period of the PPP.

10.1. DESCRIPTION OF ALTERNATIVES TO BE CONSIDERED

The alternatives considered and discussed in Section 6 of this report, including location, activity, layout and design, process/technological alternatives have led to the identification of feasible development alternatives to be addressed or investigated further during the EIA phase. The feasible development alternatives considered during scoping and being carried forward to the EIA phase are discussed below.

10.1.1. PROCESS/TECHNOLOGY ALTERNATIVES



The following process or technological alternatives will be taken forward for consideration in the EIA phase:

Process alternatives imply the investigation of alternative processes or technologies that can be used to achieve the same goal. This includes using environmentally friendly designs or materials, and re-using scarce resources like water and non-renewable energy sources. As far as the proposed township development is concerned the following is anticipated to be investigated as process alternatives:

- The proper management of stormwater especially along the access roads/residential streets surfaces and drains. It is recommended that where possible, environmental friendly technologies are considered during the construction of the houses and associated infrastructure;
- The reduction of generated waste during construction and decommissioning phases, where possible; and
- Use of energy efficient technologies during the operational phase such solar energy for water heating and street lighting. It is recommended that solar energy for water heating be investigated/considered in order to decrease electricity demand from the municipality/Eskom grid.

Process alternatives will be defined and implemented as incremental alternatives during the EIA phase and in the EMPr.

10.1.2. LAYOUT/DESIGN ALTERNATIVES

Design and layout alternatives ensure the consideration of different design and spatial configurations of the proposed development on a specific area, in order to enhance the positive impacts and to reduce the negative impacts. As such, due consideration will be given to the placement, location and orientation of required infrastructure and activities in relation to the study area's environmental aspects/sensitivities. Both location alternatives will be addressed further in the EIA phase. This includes:

- Maximum development over entire area; and
- Sensitivity-based approach to avoid or buffer sensitive areas if high sensitivity areas are identified.

It is anticipated that the most appropriate development alternative at this stage is likely to be the sensitivity-based approach, although the maximum-development approach may be viable if specialist studies confirm limited sensitivities on the ground during their detailed impact assessment during the EIA phase. Furthermore, it is important to note that the impact assessment to be undertaken during the EIA phase will also involve the quantitative assessment of all development alternatives which were not included in this scoping report, indicating the impacts of each alternative and then selecting the most appropriate or preferred development alternative going forward.

The maximum development alternative places its focus on site development as if there are no sensitivities within the proposed site. However, with the environmental sensitivity-based alternative option the township development will be directly affected by, among others, the following:

- Sensitivity of the proposed site (e.g. wetlands, heritage sites, sensitive fauna and flora, and the steep gradient of the site, etc.).
- Findings and recommendations of the specialist studies, (e.g. wetland, ecology and heritage studies);
- Engagement with Interested and affected Parties (Public participation) and commenting authorities; and



- Detailed engineering and design plan designs.

It should be noted that, buffer zones required around the site sensitive features will in turn affect the number of stands that the proposed township development will provide. The bigger the buffer around the sensitive features, the lesser the number of erven to be acquired or available from the proposed site.

10.2. DESCRIPTION OF THE ASPECTS TO BE ASSESSED AS PART OF THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The following aspects will be assessed further during the EIA phase investigations to be undertaken:

- Waste management and disposal;
- Safety and security;
- Disruption of services;
- Impact on existing infrastructure;
- Geohydrology;
- Cultural and heritage resources;
- Surface/freshwater ecosystems; and
- Ecology.

The following aspects will be not be investigated further during the EIA phase, as findings of the EIA detailed assessment are unlikely to yield significant new information that would alter the impact significance score, their impact significance score is not likely to vary regardless of the preferred alternatives particularly that of location, and the identified impacts can be managed adequately through standard mitigation and management measures:

- Interference with land use;
- Loss of topsoil and fertility;
- Sense of place;
- Potential in-migration of people;
- Opportunities for local contractors and small and medium-sized enterprises (SMEs);
- Potential markets for informal trading;
- Impacts on pedestrian and road safety; and
- Potential effect on tourism and eco-tourism.

10.3. ASPECTS TO BE ASSESSED BY SPECIALISTS

Table 14 below details the various aspects of the project to be addressed in the EIA phase through detailed specialist assessment studies. The table also includes a proposed Scope of Work (SoW)/Terms of Reference (ToR) for each of the EIA specialist studies.



Table 14: Details of specialists input during the EIA Phase

Aspect	Component	Company Responsible	Consultant	Scope of Work / Terms of Reference
Surface / Freshwater Ecosystems	Aquatic and Wetland Assessments	Ecology International (Pty) Ltd	Byron Grant and Willem Lubbe	<p>The freshwater ecosystems impact assessment will include, but not limited to:</p> <ul style="list-style-type: none"> • Identified potential impacts (cumulative, direct and indirect) will be quantified (where possible) and fully described for each feasible alternative. • Comparative assessment of the identified alternatives. • Recommendations must be made regarding mitigation and/or management measures to address the unavoidable impacts identified. • The recommendations and mitigation/management measures must include a detailed description of implementation and means of measuring their success. An indication of methods for implementation, timeframes, costs and responsibilities should be given. • Residual impacts after mitigation must then be evaluated such that actual implemented results can be measured against those predicted. • Contribution to the preparation of a detailed site specific EMPR relating to the specific field of expertise and impacts identified, based on the mitigation and management measures identified.
Ecology	Flora and Fauna Ecology	David Hoare Consulting (Pty) Ltd	David Hoare	<p>The ecological impact assessment will include, but not limited to:</p> <ul style="list-style-type: none"> • General floristic diversity in natural vegetation will be determined in the field. Quantitative data will be collected in natural vegetation by undertaking vegetation sampling according to the Braun-Blanquet approach (Mueller-Dombois & Ellenberg 1974; Westhoff & van der Maarel 1978); • Habitat suitability for Red Data flora species will be assessed in the field; • Potential presence of Red Data flora species will be assessed based on field data collection and literature information. A list of Red Data flora species which could potentially occur within the study area will be compiled on the basis of existing data (from SANBI, environmental and conservation authorities, etc.); • In order to present an ecological overview of the study area and assess the potential impacts on the ecological environment it is imperative that the suitability of the study area for the potential presence of Red Data fauna species be investigated. The most reliable manner, in which the presence/absence of Red Data fauna species can be assessed, without the aid of exhaustive



Aspect	Component	Company Responsible	Consultant	Scope of Work / Terms of Reference
				<p>trapping surveys, is by means of assessments of the presence, status and linkage of available habitat in the study area. These attributes are rated for each Red Data fauna species that has a geographical distribution including the study area using the available literature and personal field experience. Three parameters will be used to assess the probability of occurrence for each species:</p> <ol style="list-style-type: none"> i. Habitat requirements: most Red Data animals have very specific habitat requirements and the presence of these habitat characteristics within the study area will be assessed; ii. Habitat status: in the event that available habitat is considered suitable for these species, the status or ecological condition is assessed. Often, a high level of degradation of a specific habitat type will negate the potential presence of Red Data species (especially wetland-related habitats where water-quality plays a major role); and iii. Habitat linkage: movement between areas used for breeding and feeding purposes forms an essential part of ecological existence of many species. The connectivity of the study area to these surrounding habitats and adequacy of these linkages are assessed for the ecological functioning Red Data species within the study area; and <ul style="list-style-type: none"> • Expected outcomes of this part of the investigation will include descriptions of the floristic and faunal environment that will be influenced by the proposed township development, the status and importance of the vegetation, sensitive areas will be identified and highlighted, and the likelihood of Red Data flora and faunal species occurring in the study area will be indicated. Potential impacts on biodiversity, sensitive habitats and ecosystem function will be listed and described. These will be compiled from a generic list of possible impacts derived from previous projects of this nature and from a literature review of the potential impacts of the proposed township establishment on the ecological environment.
Heritage	Heritage Impact Assessment	PGS Heritage (Pty) Ltd	Wouter Fourie and Jessica Angel	<p>A heritage impact assessment will be undertaken and shall include the following aspects:</p> <ul style="list-style-type: none"> • Literature review; • Physical survey; and • Data collation and report writing. <p>The fieldwork component consists of a general field survey of the larger footprint area for the project and is aimed at identifying heritage and/or fossil resources potentially falling within the area.</p>



10.4. PROPOSED METHOD OF ASSESSING ENVIRONMENTAL ASPECTS

The same method of assessing impact significance as was used during the Scoping phase will be applied during the EIA phase. This methodology is described in detail in Section 9.1.

10.5. PROPOSED METHOD FOR ASSESSING SIGNIFICANCE

The significance of environmental impacts will be rated before and after the implementation of mitigation measures. These mitigation measures may be existing measures or additional measures that may arise from the impact assessment and specialist input. The impact rating system considers the confidence level that can be placed on the successful implementation of the mitigation. The proposed method for the assessment of environmental impact or issues is set out in the Section 9.1. This impact assessment methodology enables the assessment of environmental issues including: the severity of impacts (including the nature of impacts and the degree to which impacts may cause irreplaceable loss of resources), the extent of the impacts, the duration and reversibility of impacts, the probability of the impact occurring, and the degree to which the impacts can be mitigated.

The specialist studies will recommend practicable mitigation measures or management actions that will effectively minimise or eliminate negative impacts, enhance beneficial impacts, and assist project design. If appropriate, the specialist studies will differentiate between essential mitigation measures, which must be implemented and optional mitigation measures, which are recommended (“nice-to-haves”).

10.6. STAGES AT WHICH COMPETENT AUTHORITIES WILL BE CONSULTED

The competent authority will be consulted when the application for Environmental Authorisation is submitted, when the scoping report is made available for public review and when the scoping report is finalised, as well as during the EIA phase when the EIA report is made available for public review and later for the finalised version of the said report. No authority meetings are scheduled during the scoping phase. However, if and/or when an authority requires a meeting and/or site visit, one will be arranged. The date, time, and venue of the meeting and/or site visit will be scheduled post dissemination of the project notification documents should one be required. The purpose of the authority meeting would be to explain the project in detail to authorities and clarify the process undertaken and any other requirements going forward. The conditions of the scoping report approval from the competent authority will be implemented through the EIA phase. The public reviewed EIA Report and EMPR will be submitted to the competent authority for review and decision-making.

10.7. PROPOSED METHOD OF EIA PHASE PUBLIC PARTICIPATION

The proposed public participation process to be followed for the EIA phase is provided below, as follows:

- The commenting periods that will be provided to the I&APs (and the commenting authorities) will be thirty (30) days long;
- The dates of the review and commenting period for the EIA report and EMPR will be determined at a later date and communicated to all registered I&APs through faxes, emails, and/or registered letters;



- The location at which the hard copy of the EIA report will be made available will be the same public places within the project area where the Scoping Report was made available. Furthermore, where requested, electronic copies of the report will be sent to stakeholders, as well as being placed on the EIMS website: www.eims.co.za;
- Public participation will be undertaken in accordance with NEMA GNR 982 (Chapter 6) of the EIA Regulations, 2014 (as amended); and
- All comments and issues raised during the EIA phase comment period will be incorporated into the EIA report/EMPR to be submitted to the competent authority.

10.8. DESCRIPTION OF TASKS THAT WILL BE UNDERTAKEN DURING THE EIA PROCESS

The plan of study in terms of the impact assessment is detailed in the above sections, and is summarised below. The following tasks will be undertaken as part of the EIA phase of the project:

- Detailed specialist studies
- Public consultation (notification of the availability of the EIA report for review and comment to all registered I&APs)
- Authority consultation:
 - Consultation with MDARDLEA and the commenting authorities; and
 - Authorities consultation (including meetings) to provide authorities with project related information and obtain their feedback, where necessary or upon request.
- Document compilation:
 - The EIA report and EMPR will be compiled in line with the requirements of Appendix 3 and 4 of the NEMA 2014 EIA Regulations (as amended);
 - The EIA report and EMPR will be made available for public comment for a period of 30 days; and
 - The EIA report and EMPR will be finalised and submitted to the MDARDLEA for review and decision-making.

10.9. MEASURES TO AVOID, REVERSE, MITIGATE, OR MANAGE IMPACTS

All comments received from I&APs during the scoping report review period will be taken into consideration and will inform the high-level mitigation measures proposed. Detailed mitigation measures will be further developed as part of the findings of the EIA phase. The potential impacts will further be assessed in terms of their mitigation potential, taking into consideration the following:

- Reversibility of the impact:
 - Reversible,
 - Partially reversible, or
 - Irreversible.



- Irreplaceable loss of resources:
 - Replaceable,
 - Partially replaceable, or
 - Irreplaceable.
- Potential of impacts to be mitigated:
 - High,
 - Medium, or
 - Low.

This information will be recorded for each identified impact, and will be provided in the EIA report and the proposed mitigation and/or management measures included as part of the EMPr.



11. SENSITIVITY MAPPING

The alternatives described and discussed above have largely been derived based on the consideration of environmental sensitivities within the proposed Mashishing Township Establishment study area that are likely to be impacted upon by the proposed activities and infrastructure. Environmental sensitivity mapping provides a strategic overview of the environmental, cultural and social assets, opportunities, and constraints in a defined spatial context. The sensitivity mapping technique integrates numerous datasets (basemaps and shapefiles) into a single consolidated layer making use of Geographic Information System (GIS) software and analysis tools. Moreover, environmental sensitivity mapping is a rapid and objective method applied to identify areas which may be particularly sensitive to development based on environmental, cultural and social sensitivity weightings – which is determined by specialists input within each respective field based on aerial or ground-surveys. Environmental sensitivity is used to aid in decision-making during consultation processes, forming a strategic part of Environmental Impact Assessment processes. Table 15 below provides a breakdown of the sensitivity rating and weightings applied to determine the sensitivity score of each aspect. Figure 13 provides a graphical illustration of the sensitivity mapping exercise applied to determine the overall environmental sensitivity within the study area.

Table 15: Sensitivity rating and weighting

Sensitivity Rating	Description	Weighting
Least concern	The inherent feature status and sensitivity is already degraded. The proposed development will not affect the current status and/or may result in a positive impact. These features would be the preferred alternative for mining or infrastructure placement.	-1
Low/Poor	The proposed development will not have a significant effect on the inherent feature status and sensitivity.	0
High	The proposed development will negatively influence the current status of the feature.	1
Very high	The proposed development will have a significantly negative influence on the current status of the feature.	2

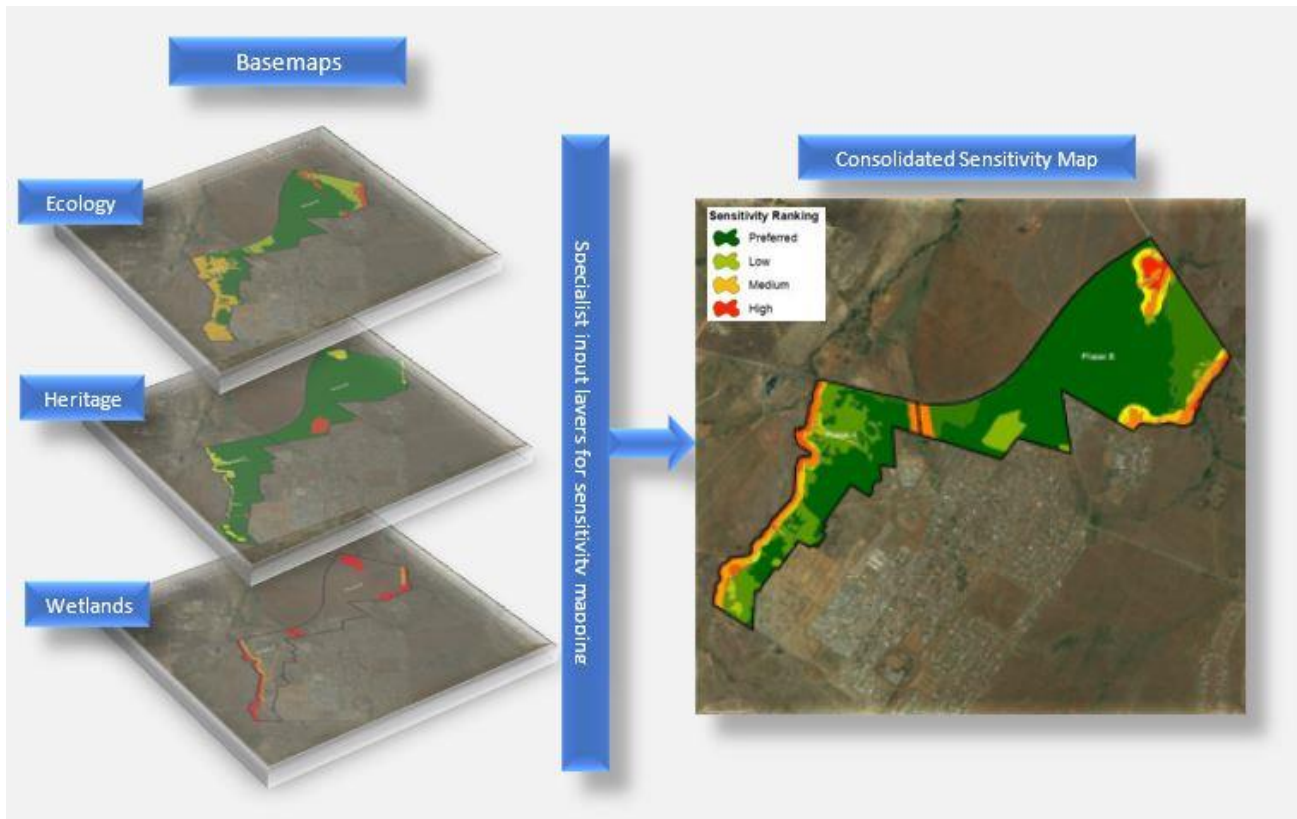


Figure 13: Sensitivity mapping approach.



12. ASSUMPTIONS, LIMITATIONS, AND UNCERTAINTIES

Certain assumptions, limitations, and uncertainties are associated with the Scoping phase. This scoping report is based on information that is currently available and, as a result, the following limitations and assumptions are applicable:

12.1. HERITAGE

- Not detracting in any way from the comprehensiveness of the proposed fieldwork to be undertaken, it is necessary to realise that the heritage resources located during the fieldwork do not necessarily represent all the possible heritage resources present within the study area. Various factors account for this, including the subterranean nature of some archaeological sites and the current dense vegetation cover. As such, should any heritage features and/or objects not included in the present inventory be located or observed on site during construction and thereafter, a heritage specialist must immediately be contacted.
- Such observed or located heritage features and/or objects may not be disturbed or removed in any way until such time that the heritage specialist has been able to make an assessment as to the significance of the site (or material) in question. This applies to graves and cemeteries as well.

12.2. ECOLOGY

- Red List species are, by their nature, usually very rare and difficult to locate. Compiling the list of species that could potentially occur in an area is limited by the paucity of collection records that make it difficult to predict whether a species may occur in an area or not. The methodology used in this assessment is designed to reduce the risks of omitting any species, but it is always possible that a species that does not occur on a list may be located in an area where it was not formerly known to exist;
- Lists of threatened, rare and sensitive species are dynamic in the sense that new information is collected on a continuous basis, information does not necessarily become quickly available in the public domain and important information is sometimes only available from obscure or restricted sources. There is therefore the possibility that species of concern for the study area have not been detected from general literature sources. The latest available information was used for this assessment;
- Animal species, especially birds, are mostly highly mobile and often migrate seasonally. Any field assessment of relatively short duration is therefore unlikely to record anything more than the most common species that happen to be on site at the time of the survey. Such field surveys are generally a poor reflection of the overall diversity of species that could potentially occur on site;
- This study excludes any assessment of invertebrates;
- This study does not constitute a formal wetland study. If any wetlands occur on site, their description is in terms of them being unique habitats and/or containing a unique species composition, but does not constitute a legally determined wetland boundary; and
- It is difficult to accurately map secondary grasslands from aerial imagery and areas currently mapped as natural may possibly be secondary. The only way to accurately map such degradation is through extensive field-based surveys where plant species composition can be used to confirm whether an area is secondary or not. The budget



and timeframes associated with this assessment are inadequate for undertaking such a detailed study. Uncertainty surrounding the location of secondary grasslands therefore remains.

12.3. FRESHWATER AQUACTIC SYSTEMS

- In order to obtain definitive data regarding the biodiversity, hydrology and functioning of rivers and wetlands, studies should ideally be conducted over a number of seasons and over a number of years. The current study relied on information gained during a field survey conducted over several days during a single season, desktop information for the area as well as professional judgment and experience;
- Wetland and riparian areas within transformed landscapes, such as urban, agricultural settings, or mining areas with existing infrastructure, are often affected by disturbances that restrict the use of available wetland indicators, such as hydrophytic vegetation or soil indicators (e.g. dense stands of alien vegetation, vegetation removal, dumping, sedimentation, infrastructure encroachment, infilling, etc.);
- Wetland and riparian assessments are based on a selection of available techniques that have been developed through the Department of Water and Sanitation (DWS). These methods are, however, largely qualitative in nature with associated limitations due to the range of interdisciplinary aspects that have to be taken into consideration. Current and historic anthropogenic disturbance within and surrounding the study area has resulted in soil profile disturbances as well as successional changes in species composition in relation to its original /expected benchmark condition; and
- Delineations of wetland areas were largely dependent on the extrapolation of field indicator data obtained during field surveys, 5m contour data for the study area, and from interpretation of geo-referenced orthophotos and satellite imagery as well as historic aerial imagery data sets received from the National Department of Rural Development and Land Reform. As such, inherent ortho-rectification errors associated with data capture and transfer to electronic format are likely to decrease the accuracy of wetland boundaries in many instances.

12.4. GENERAL

- The levels of confidence for the heritage and ecology impact assessment section (Chapter 9) are considered low until detailed specialist studies are conducted in the EIA phase.
- In determining the significance of impacts, including mitigation, it is assumed that mitigation measures proposed in this report are correct and will be effectively implemented and managed throughout the life of the project.



13. UNDERTAKING REGARDING CORRECTNESS OF INFORMATION

I Sikhumbuzo Mahlangu herewith undertake that the information provided in the foregoing report is correct, and that the comments and inputs from stakeholders and Interested and Affected Parties has been correctly recorded in this scoping report.

Signature of the EAP

Date: 04 October 2018

UNDERTAKING REGARDING LEVEL OF AGREEMENT

I Sikhumbuzo Mahlangu herewith undertake that the information provided in the foregoing scoping report is correct, and that the level of agreement with Interested and Affected Parties and stakeholders has been correctly recorded and reported herein.

Signature of the EAP

Date: 04 October 2018



14. REFERENCES

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