



**Proposed upgrading of gravel road to paving
blocks, Emlotsheni Road, Kanyamanzane, City of
Mbombela, Mpumalanga Province**

Draft Basic Assessment Report

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CORE Environmental Services

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EXECUTIVE SUMMARY

The City of Mbombela is proposing to pave the existing internal Emlotsheni road within Kanyamazane. As part of the construction/surfacing process, culverts will also be constructed at three respective water crossings along the alignment of the existing road. Although the paving of the existing road does not trigger any listed activity in accordance with the National Environmental Management Act 107 of 1998, Environmental Authorisation is however required for activities taking place within a watercourse.

The existing road proposed for surfacing is approximately 3 km in length. The following activities will form part of the proposed project:

- Paving block
- Precast curbing installed with concrete
- V-drains
- Chemical stabilization of base and subbase layer (lime or cement)
- Subsoil drains for road layer works protection in cut areas of the road
- Use of borrow pits, during road layer works

Core Environmental Services was subsequently appointed as an independent Environmental Consultant, to apply for the Environmental Authorisation by means of conducting a Basic Environmental Authorisation Application process in accordance with GNR 982, 2014 (as amended in 2017). The application for Environmental Authorisation will be submitted to the Department of Agriculture, Rural Development, Land and Environmental Affairs (DARLDEA) for consideration.

The establishment of the development area are likely to result in environmental and socio-economic impacts. The identified impacts are listed below and discussed thereafter:

- *Impact on biodiversity;*
- *Generation of dust;*
- *Impact on soil;*
- *Impact on water resources;*
- *Socio-economic impact.*

The table below summarises the impacts identified and assessed for the establishment of the project:

IMPACT	SIGNIFICANCE BEFORE MITIGATION MEASURES	SIGNIFICANCE AFTER MITIGATION MEASURES
Construction Phase Impacts		
Biodiversity Impact	Low	Very Low
Generation of dust	Low	Very Low
Erosion	Low	Very Low
Soil Pollution	Low	Very Low
Impact on water resources	Medium	Low
Job opportunities	Low (+)	Medium (+)
Health and Safety	Low	Very Low
Operational Phase Impacts		
Impact on Dust	Medium (+)	Medium (+)
Impact on water resources	Medium (+)	Medium (+)
Socio-economic Impact	High (+)	High (+)

The assessment of the possible impacts associated with the construction and operational activities, concluded that the impact on the surrounding environment is of **low significance** and as the road is currently existing, the construction of the road and culverts will actually have a positive impact on the biophysical and social environment if mitigation measures are adhered to. Recommendations have however been made to address the impacts which could affect the biophysical and socio-economic environment. Recommendations for the mitigation of impacts are included within Section 6 and also the Draft Environmental Management Plan attached.

It is the opinion of the EAP that the EA for this project should be granted, and the proposed mitigation included as the conditions of the authorisation.

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ABBREVIATIONS

BAR	Basic Assessment Report
CBA	Critical Biodiversity Area
EA	Environmental Authorisation
GNR	General Notice Regulation
I&AP	Interested and Affected Party
LIA	Late Iron Age
MDARDLEA	Mpumalanga Department of Agriculture, Rural Development, Land and Administration
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NHRA	National Heritage Resources Agency
PPP	Public Participation Process
SACAA	South African Civil Aviation Authority

1. OVERVIEW OF THE PROJECT

1.1 Introduction

The City of Mbombela is proposing to pave the existing internal Emlotsheni road within Kanyamazane. As part of the construction/surfacing process, culverts will also be constructed at three respective water crossings along the alignment of the existing road. Although the paving of the existing road does not trigger any listed activity in accordance with the National Environmental Management Act 107 of 1998, Environmental Authorisation is however required for activities taking place within a watercourse.

Core Environmental Services was subsequently appointed as an independent Environmental Consultant, to apply for the Environmental Authorisation by means of conducting a Basic Environmental Authorisation Application process in accordance with GNR 982, 2014 (as amended in 2017). The application for Environmental Authorisation will be submitted to the Department of Agriculture, Rural Development, Land and Environmental Affairs (DARLDEA) for consideration. As activities will be taking place within a watercourse, a Water Use License will also be required in accordance with Section 21 of the National Water Act 36, of 1998 for impeding or diverting the flow of water in a watercourse and altering the bed, banks, course of characteristics of a watercourse during the construction as well as operational phase of the project.

The City of Mbombela is also proposing to use material from a borrow pit located near the project area. An application for the borrow pit will subsequently also be required to be submitted to the Department of Mineral Resources and Energy (DMRE).

The proposed paving of the Emlotsheni Road therefore requires three approvals prior to the commencement of the activity. These approvals include:

- Environmental Authorisation from DARLDEA;
- Water Use License from Inkomati Usuthu Catchment Management Agency;
- Mining Permit for the borrow pit from Department of Mineral Resources and Energy

1.2 Location

The road to be paved is located on portion 0 of the farm Nymasaan 137-JU, Kanyamazane, City of Mbombela, Mpumalanga Province. The three water crossings are located at the following coordinates:

Location 1:

25°26'39.29"S
31°10'47.03"E,

Location 2:

25°26'42.94"S
31°10'50.60"E

Location 3:

25°26'48.76"S
31°10'45.46"E

The borrow pit is proposed at a located near the project area at the following coordinates:
25°29'47.33"S 31°10'51.16"E



FIGURE 1: LOCALITY MAP OF EMLOTSHENI ROAD, KANYAMAZANE, CITY OF MBOMBELA

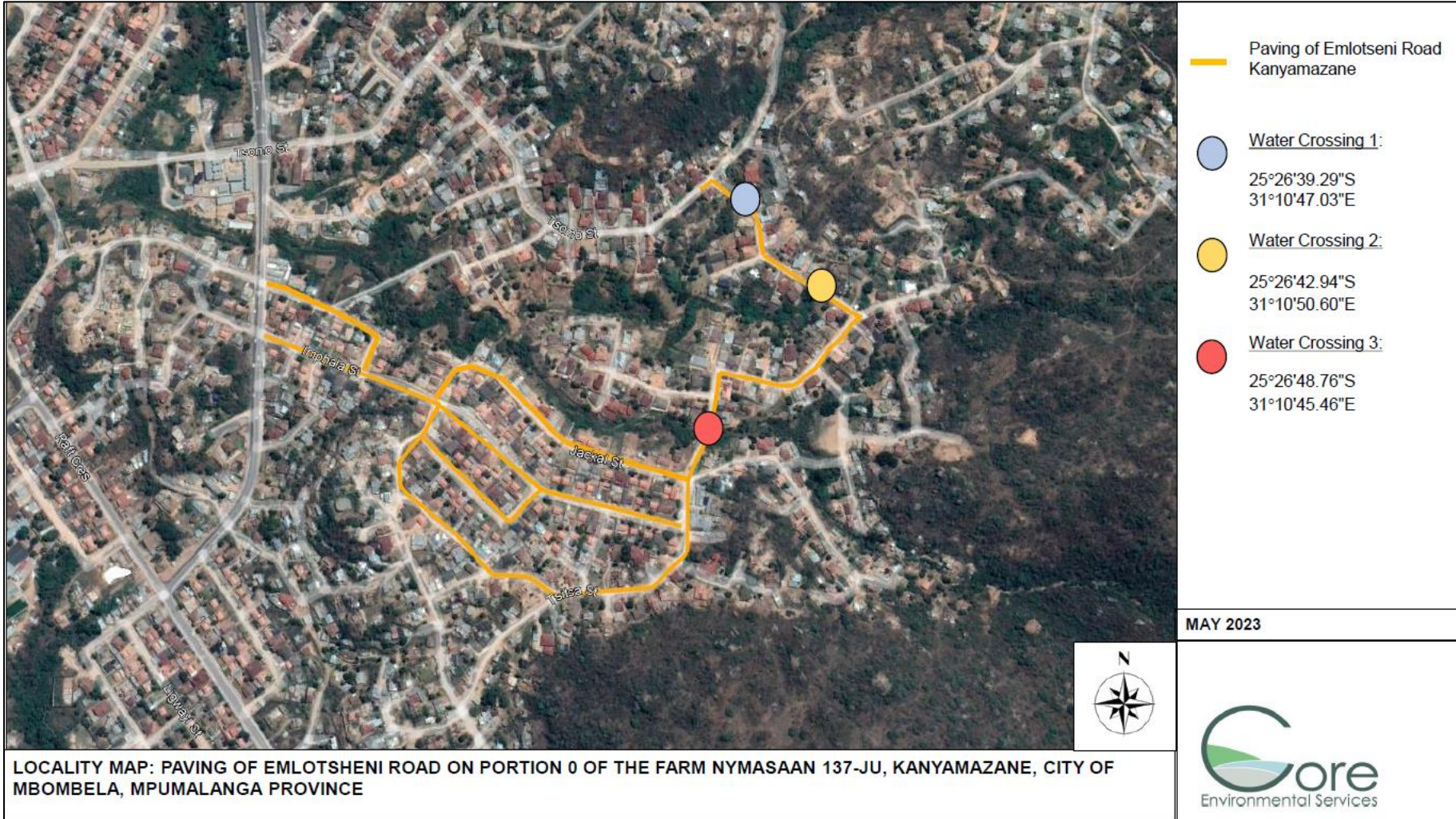


FIGURE 2: LOCALITY MAP OF THE WATER CROSSINGS ALONG THE EMLOTSHENI ROAD, KANYAMAZANE, CITY OF MBOMBELA



FIGURE 3: LOCALITY MAP OF THE PROPOSED BORROW PIT, EMLOTSHENI ROAD UPGRADE, KANYAMAZANE, CITY OF MBOMBELA

1.3 Details of the EAP

Ms. Anne-Mari White is an Environmental Specialist, who started her studies at the North-West University (NWU) and completed her Bachelor of Science: Environmental Management at the University of South Africa (UNISA) in 2007. Ms. White is registered with the Environmental Assessment Practitioners Association of South Africa (EAPASA Reg No: 2020/602) as well as the South African Council for Natural Scientific Professionals as a Certificated Natural Scientist (Reg. No 300067/15). In addition to her qualification, she completed short courses in soil classification and wetland delineations (Terrasoil Science), Geographic Information Systems (University of KwaZulu-Natal), and Environmental Impact Assessments (NWU).

1.4 Policy, Legal and Administrative Framework

TABLE 1: LEGISLATION APPLICABLE TO THE PROJECT

Applicable legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments considered	Project application and type (permit / licence / authorisation / comment)
The Constitution of South Africa, Act No. 108 of 1996	<p>City of Mbombela will be required to adhere to the Environmental Management Programme (EMPr) requirements to ensure that social and environmental management considerations are considered and implemented.</p> <p>As per Section 25 the Constitution, a public participation process (PPP) was and will continue to be undertaken, as this is considered to be an essential mechanism for informing stakeholders of their rights and obligations in terms of the project.</p>
National Environmental Management Act, 1998 (Act No. 107 of 1998)	Environmental Authorisation will subsequently be applied for by means of conducting a Basic Environmental Authorisation process as regulated within GNR982 of 2014 (as amended in 2017).
National Water Act 36, 1998 (Act No. 36 of 1998)	This Act provides for fundamental reform of law relating to water resources and use. The preamble to the Act recognises that the ultimate aim of water resource management is to achieve sustainable use of water for the benefit of all users and that the protection of the quality of water resources is necessary to ensure sustainability of the nation's water resources in the interests of all water users.

	<p>The project entails the construction of culverts and stormwater infrastructure within three water crossings and for this reason an application is submitted to the Inkomati-Usuthu Catchment Management Agency (IUCMA)</p>
<p>National Biodiversity Act, 2004 (Act No. 10 of 2004)</p>	<p>The act provides for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998; the protection of species and ecosystems that warrant national protection; the sustainable use of indigenous biological resources, the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resource; the establishment and functions of a South African National Biodiversity Institute; and for matters connected therewith.</p> <p>The National Biodiversity Act, 2004, must therefore be considered prior to the clearance of vegetation to minimise the impact on the terrestrial biodiversity.</p>
<p>Occupational Health and Safety Act, 1998 (Act No. 85 of 1998)</p>	<p>The Act provides for the health and safety of people at work and for the health and safety of people using plant and machinery.</p> <p>During establishment, work must be conducted with strict adherence to the Occupational Health and Safety Act 85 of 1998.</p>
<p>National Heritage Resources Act, 1999 (Act No 25 of 1999)</p>	<p>This legislation aims to promote good management of the national estate, and to enable and encourage communities to nurture and conserve their legacy so that it may be bequeathed to future generations.</p> <p>Should any other items of significance be discovered during establishment, a Heritage Specialist must be contacted immediately, and work must cease until confirmation from the Specialist is received. For this reason, the applicant must adhere to the regulations stipulated within the National Heritage Resources Act, 1999.</p>
<p>Mpumalanga Provincial Roads Act, 2008 (Act No 1 of 2008)</p>	<p>The Act provides for the establishment, transformation, restructuring and control of the Mpumalanga Provincial road network; to develop and implement Provincial road policy, norms and standards; to provide for optimum road safety standards, efficient and cost-effective management of the Provincial road network, the maintenance of Provincial road assets and the provision and development of equitable road access to all communities within the Province; to provide for transparency in the development and implementation of Provincial road network policies and practices; and to provide for matters connected therewith.</p>

<p>City of Mbombela Integrated Development Plan (IDP) (2021 - 2022)</p>	<p>The primary objectives of the IDP are to foster economic growth that creates jobs and improve infrastructure within the province.</p> <p>Within the IDP's SWOT Analysis it was listed that one of the weaknesses are poor public road infrastructure, facilities, and pedestrian access to enable service delivery and economic development. This proposed project will aim to address this aspect.</p> <p>Job opportunities will be created by the proposed activities which supports economic growth within the area as well as contributing to improving infrastructure that contributes to the goals listed within the IDP.</p>
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1.5 National Environmental Management Act 107 of 1998

In accordance with the National Environmental Management Act 107, of 1998, the following listed activities will be triggered by the proposed development and will require approval prior to commencement:

As the upgrading and/or paving of the road entails the construction of culverts to ensure the free flow of water through drainage lines and watercourse, the following activity is applicable for the construction activities proposed to be undertaken within the watercourse.

GNR 983, 2014 (as amended in 2017), Activity 19:

The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from (i) a watercourse;

More than 10 cubic metres of sand/soil and/or silt will be moved filled or removed from a watercourse.

1.6 Description of the project

The **City of Mbombela** is proposing to upgrade the Emlotsheni gravel road to paving blocks within the Kanyamazane township. The existing road proposed for surfacing is approximately 3 km in length.

The following activities will form part of the proposed project:

- Paving block
- Precast curbs installed with concrete
- V-drains
- Chemical stabilization of base and subbase layer (lime or cement)
- Subsoil drains for road layer works protection in cut areas of the road
- Use of borrow pits, during road layer works

1.7 Need and Desirability

The upgrading of the existing gravel road is motivated by the following:

- The upgrade of the gravel road to paving blocks are predicted to decrease traveling time and reduce damage to residents' vehicles.
- Paving blocks are durable and low maintenance.
- The laying of the paving blocks is a labour-intensive process, which means it is used to create employment and people with no formal skills can be trained to lay paving blocks.
- Another advantage is that most of the revenue earned from paving projects is spent in the township where the project is located. This stimulates local economic enterprise and improves the quality of life for the residents.

2. PUBLIC PARTICIPATION PROCESS

The purpose of this chapter is to provide an outline of the public participation process (PPP) to date and the way forward with respect to the Basic Assessment process.

Consultation with the public forms an integral component of the EA process. This process enables Interested and Affected Parties (I&APs) (e.g. directly affected landowners, national-, provincial- and local authorities, and local communities etc.) to raise their issues and concerns regarding the proposed activities, which they feel should be addressed in the BA process. The PPP has thus been structured such as to provide I&APs with an opportunity to gain more knowledge about the proposed project, to provide input through the review of documents/reports, and to voice any issues or concerns at various stages throughout the BA process.

I&APs were identified during the public participation phase of the project. All the parties identified as an I&AP (surrounding landowners, relevant departments, stakeholders, local and district authorities) have automatically been registered in the I&APs database for the project. The registered I&AP list is attached as **Annexure C.1**.

In effort to engage potential stakeholders, different communication methods were used to inform them about the project and how to get involved in the BA process. These methods include:

- Distributing English Background Information Documents (BIDs) to all registered I&APs, proof of which is attached in **Annexure C.2**;
- Placement of media advert in a local newspaper (The Mpumalanga News) on 4 May 2023 (see **Annexure C.3**).
- Placing of a notice at the proposed site took place on 2 May 2023 (see **Annexure C.4**)

The draft Basic Assessment Report will be made available for public review from June 2023 – July 2023.

To date, the following comments have been received:

TABLE 2: COMMENTS RECEIVED AND RESPONSES ISSUED

Interested and Affected Party / Organ of State	Comment	Response
Mr. Amos Khumalo Landowner / resident	<u>24 May 2023:</u> “I can be contacted for the proposed borrow pit. I am situated at Kanyamazane and have the authority to occupy and use the land where the borrow pit is located.”	<u>Response from the EAP:</u> Thank you for your comment. We acknowledge receipt thereof. Your comment regarding the ownership of the property is noted. We are currently in the planning phase of the project whereby all required applications are being applied for prior to the commencement of the associated activities.

3. CONSIDERATION OF ALTERNATIVES

The EIA process requires the developer to identify and investigate/assess feasible and reasonable alternatives. The project alternatives range from the location where the activity is proposed, type of activity to be undertaken, design of activity, technology to be used in the activity to the option of not implementing the activity (No-Go Alternative).

The assessment of the alternatives is a complicated and multi-faceted issue, which is essential to the success of this application and ultimately to the proper, responsible and sustainable operation of the proposed project.

3.1 Alternative Selection

3.1.1 Location alternatives

No other locality alternatives could be investigated as the application includes the paving of existing gravel roads.

3.1.2 Design Alternatives

A low-level bridge was considered as a design, however after in depth research it was concluded that it will not be an appropriate design. These watercourses within rural areas are often polluted. Debris and waste will easily restrict the flow of water and impair downstream users. During the heavy rainfall season the bridge will overflow and restrict vehicular movement. The construction of a low-level bridge is time consuming and costly when compared with the installation of culverts.

Culverts are commonly used both as cross-drains to relieve drainage of ditches at the roadside, and to pass water under a road at natural drainage and stream crossings. The construction of the box culverts at the three drainage crossings (as per design specifications, Appendix A) will improve water quality as the culverts allow water to flow freely. The urban nature of the surrounding area and the terrain influenced the choice of design standards. The design parameters are in accordance with the road design standard requirements of The Guidelines for Human Settlement, Planning and Design.

The construction of the box culverts is therefore the preferred option.

3.1.3 No-Go alternative

The no-go alternative would be to not authorise the application for the paving of the existing gravel roads and water crossings. Should this alternative be favourable, the construction will not take place, and the current negative impact will remain. The impacts associated with the proposed construction process were not found to be so severe for the no-go alternative to be further investigated. In fact, the paving of the road would improve the current impacts of dust, and sedimentation of the watercourses/drainage areas, and therefore the no go alternative was not further investigated.

4. DESCRIPTION OF THE AFFECTED ENVIRONMENT

The description of the affected environment below draws on existing knowledge from published data, previous studies, specialist investigations, site visits to the area and is used to understand the possible effects of the proposed project on the environment.

4.1 Topography

The topography of project area is approximately 620m above mean sea level, with the project area sloping from east to west at all three water crossing locations.

4.2 Climate

The Study Area falls within the summer rainfall region of South Africa, which is warm and temperate, with cold dry winters and warm summers. The summer rainfall is sporadic, with frequent thunderstorms, associated with high intensity rainfall events. The KARINO Weather Station (0556178_W) is the closest station with reliable results, located 9 km away from the site under investigation. The weather station has a record duration of 39 years. The Mean Annual Precipitation (MAP) is reported as 745 mm per annum.

4.3 Ecology

Terrestrial Ecology: The study area is classified as Lowveld (A10), according to Acocks (1988). The project area falls within the Savannah Biome. The Savannah Biome is the largest Biome in southern Africa, occupying 46% of its area, and over one-third the area of South Africa. It is well developed over the lowveld and Kalahari region of South Africa. It is characterized by a grassy ground layer and a distinct upper layer of woody plants. The vegetation type is classified as the **Pretoriuskop Sour Bushveld**.

Pretoriuskop Sour Bushveld is found from around Hazyview and Pretoriuskop Camp in the southwestern part of the Kruger National Park to the Malekutu area. Also, in the Crocodile Estates area between Nelspruit and Crocodile Gorge. This vegetation type is regarded as *least threatened*. 40% of the vegetation type is conserved in the Kruger National Park. A very small area is also conserved in the private Mthethomusha Nature Reserve. About 16% of the vegetation type have been transformed by cultivation and by development of settlements.

According to the Mpumalanga Biodiversity Sector Plan, 2014, the project area falls within an Ecological Support Area (ESA): Protected Area Buffers. ESA's are "areas that are not essential for meeting (conservation) targets, but play an important role in supporting the functioning of CBA's and that deliver important ecosystem services" (Lötter et al., 2014). Protected Area Buffers are areas that surround proclaimed protected areas that moderate the negative impacts of land-uses that may affect the ecological functioning of those protected areas.

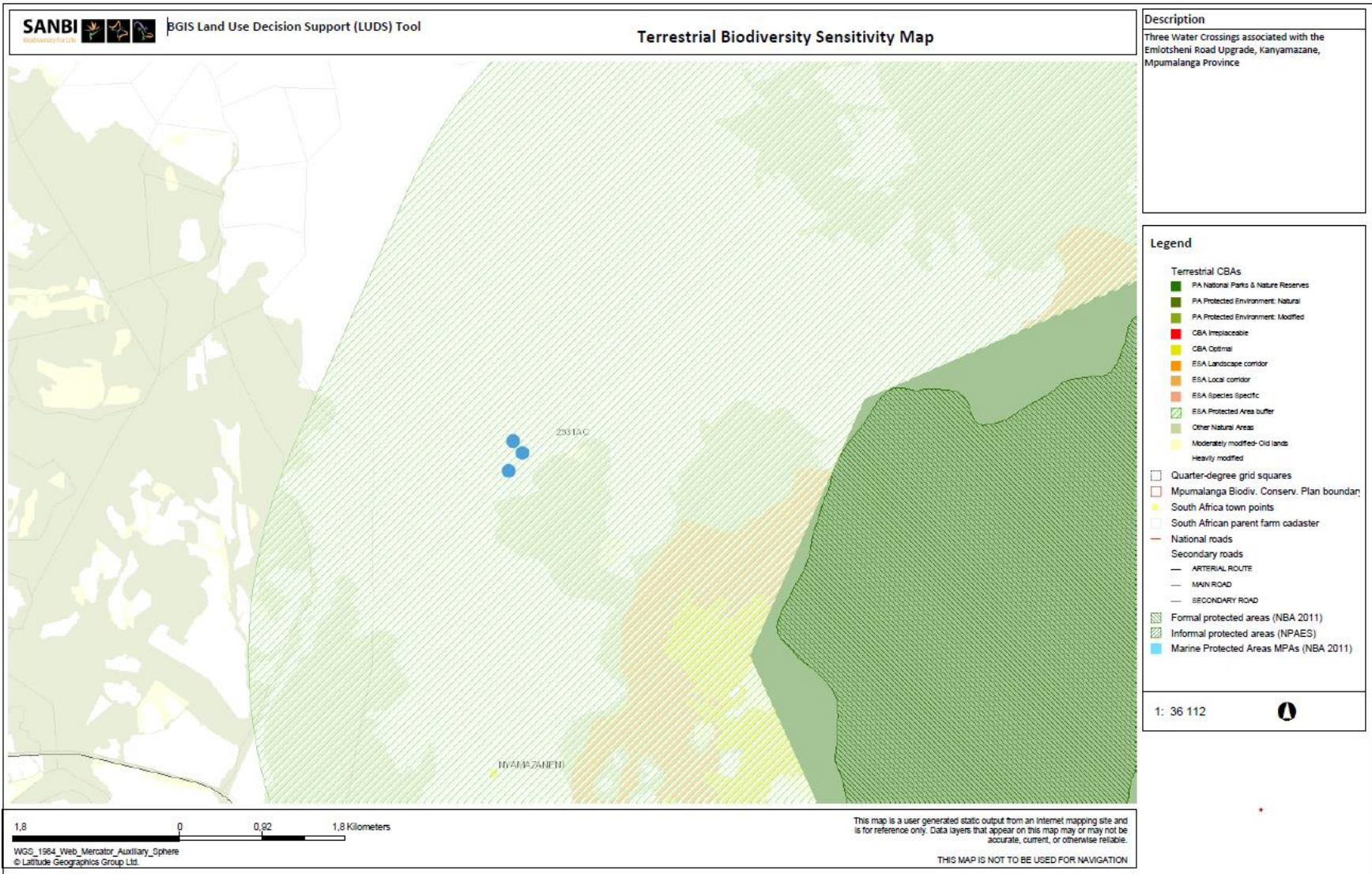


FIGURE 4: TERRESTRIAL BIODIVERSITY SENSITIVITY MAP FOR THE PROPOSED THREE WATER CROSSINGS, EMLOTSHENI ROAD UPGRADE, CITY OF MBOMBELA

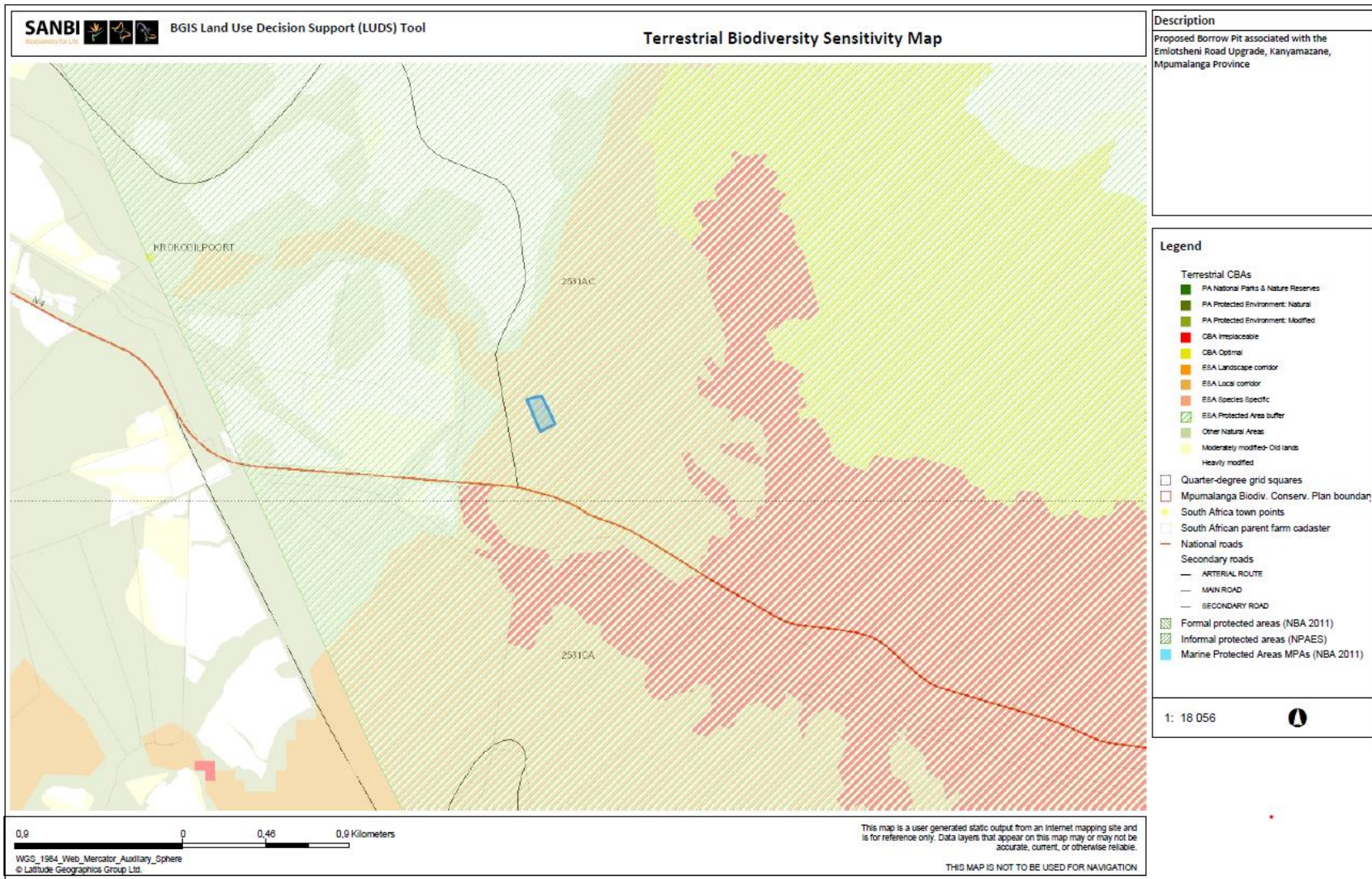


FIGURE 5: TERRESTRIAL BIODIVERSITY SENSITIVITY MAP FOR THE BORROW PIT AREA

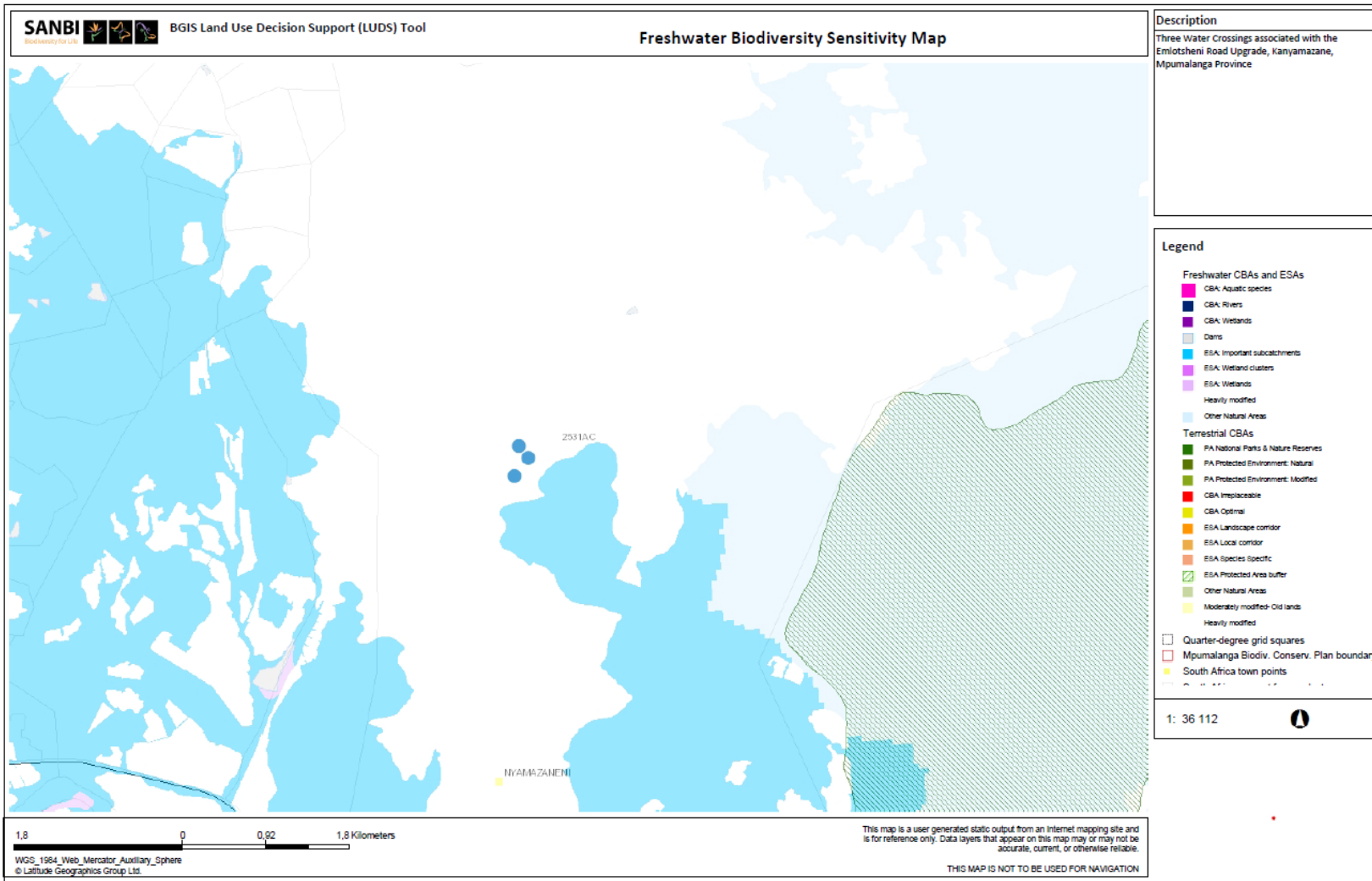


FIGURE 6: AQUATIC BIODIVERSITY SENSITIVITY OF THE WATER CROSSING LOCATIONS, EMLOTSHENI ROAD UPGRADE

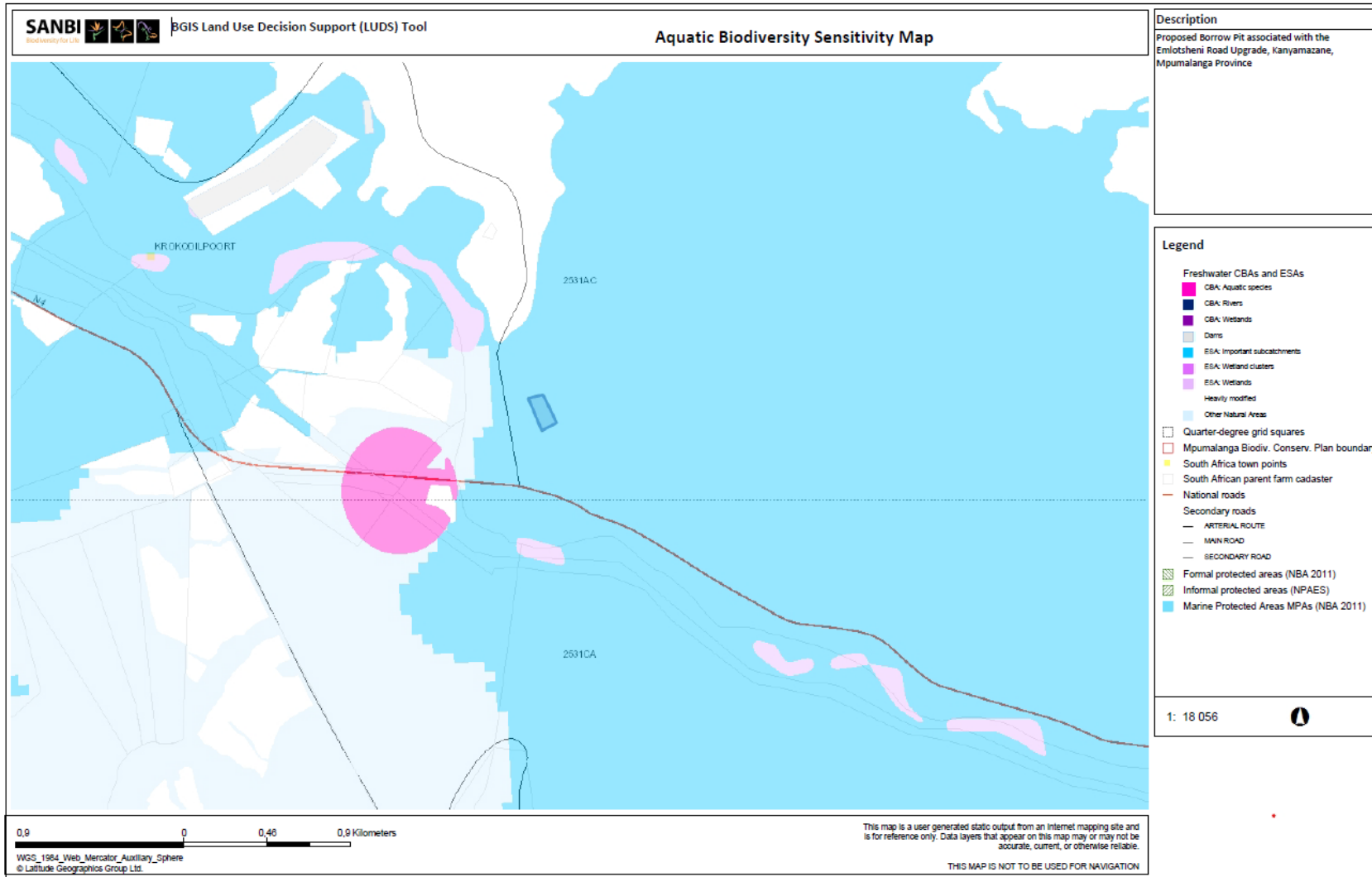


FIGURE 7: AQUATIC BIODIVERSITY SENSITIVITY MAP FOR THE BORROW PIT LOCATION, EMLOTSHENI ROAD UPGRADE

It is however noted that the areas proposed to be impacted have already been transformed as the project entails the upgrading of an existing gravel road. Following the site investigation, it was also noted that the proposed borrow pit is already being used. These activities are however not being undertaken by the City of Mbombela. The area proposed to be impacted by the borrow pit, has therefore already been cleared of vegetation.

Freshwater Ecology:

According to the Mpumalanga Biodiversity Sector Plan, 2014, the freshwater ecosystems within the study area where the water crossings are located, is classified as heavily modified. (Figure 6)

The area where the borrow pit is located, does however fall within an Ecological Support Area: Important Sub-catchments. These areas are not essential for meeting biodiversity representation targets (thresholds), however, it does play an important role in supporting the ecological functioning of critical biodiversity areas. (Figure 7).

4.4 Surface and Groundwater

The area where construction of the culvert structures / water crossings are proposed, falls within a watercourse/drainage line, known as a Tributary of the Crocodile River, which is located approximately 5km south of the proposed water crossings and approximately 250m west of the proposed borrow pit location.

As activities will be undertaken within a watercourse/drainage line, it is required that all activities are focused on maintaining water quality and also maintaining the integrity of natural habitat.

During the site investigation, there was no water within these drainage lines, and it is therefore assumed that there is only water within these drainage lines during and directly after rain or storm events. If construction activities are restricted to the low flow periods, the impact on the quality of the water and integrity of the watercourse would be minimized.

4.5 Land use

The construction site falls within an urban and homestead area. Large areas of the surrounding environment have been transformed to residential areas (formal and informal).

4.6 Geology and Soils

The Granite Lowveld is found from north to south the Swazian Gudplaats Gneiss, Mukhutswi Gneiss, Nelspruit Suite and Mpuluzi Granites form the main geological features. The granites and gneiss weathered into sandy soils in the higher areas with clay soils high in sodium in the lower areas (Mucina and Rutherford, 2006).

The soil within the project area is classified as undifferentiated shallow soils. Soils with minimal development, usually shallow, on hard or weathering rock, with or without intermittent diverse soils. Soil may receive water runoff from associated rock, water intake areas. Lime generally present in part or most of the landscape

4.8 Heritage

No Heritage Impact Assessment was conducted as the surfacing process will take place on an existing road which has already been transformed. However, it is recommended that the applicant be made aware that distinct archaeological material or human remains may only be revealed during the development phase. Sub-surface finds must be assessed by a qualified archaeologist after which an assessment should be conducted.

4.9 Socio-Economic Environment

The project area is located within the City of Mbombela. The larger portion of the 695 913 individuals within the Mbombela Local Municipality, lives in peri-urban and rural areas. Approximately 75% of the people live within communal areas on the eastern axis of the city which is also the area where the multipurpose centre is proposed.

The City of Mbombela currently has an unemployment rate of 28% with 50% of the people living below the poverty line. The levels of skill and qualifications of the population is also fairly low which is problematic for future economic development. The socio-economic context of the surrounding environment can therefore be described as a community with a low percentage of education and high unemployment rate.

5. SPECIALIST ASSESSMENT REQUIREMENTS AS IDENTIFIED IN THE SCREENING REPORT

The following specialist assessments were identified within the Department of Environmental Affairs Screening Report to be conducted as part of the Basic Environmental Impact Assessment:

- Visual Impact Assessment

The surfacing of the existing roads will have no additional visual impact on the surrounding area. For this reason, no visual impact assessment was conducted.

- Heritage and Paleontological Impact Assessment

The project area consists of the existing roads for which the areas have already been impacted by the road. For this reason, no Heritage or Paleontological Assessment would be required.

- Terrestrial Biodiversity Assessment / Plant and Animal Species Assessment

The proposed project site falls within an area which has already been modified and cleared of vegetation. The surrounding area is currently used for residential purposes. The respective drainage areas are heavily invaded with alien invasive plant species and most of the construction activities are restricted to areas previously disturbed. For this reason, no Biodiversity Assessment was conducted.

- Hydrology Impact Assessment

In view of the degraded state of the wetland areas/ drainage line and the fact that there is no water within the respective drainage lines during most of the year, it is the opinion of the EAP that no Hydrological impact assessment is required. The culvert structures proposed will have sufficient capacity to accommodate the flow of water within these drainage lines.

- Socio-economic Assessment

The proposed project will not have any negative impact on the socio-economic environment. Contrary to this, some additional job opportunities will be created during the construction phase of the project, which will impact the surrounding community positively. Improved infrastructure will also have positive impact on the socio-economic environment.

As no negative socio-economic impact is expected with the proposed project, it is the opinion of the EAP that no Socio-Economic Impact Assessment is required.

6. METHODOLOGY OF ASSESSING THE SIGNIFICANCE OF IMPACTS

This section outlines the method used for assessing the significance of the potential environmental impacts during the construction/establishment, operational and decommissioning phases.

For each impact, the **EXTENT** (spatial scale), **MAGNITUDE** and **DURATION** (time scale) would be described, as shown in Table 3. These criteria are then used to determine the **SIGNIFICANCE** of the impact, firstly in the case of no mitigation and then with the most effective mitigation measure(s) in place. The mitigation described in the Report represents the full range of plausible and pragmatic measures but does not necessarily imply that they would be implemented.

The following tables show the scale used to assess these variables and defines each of the rating categories.

TABLE 3: ASSESSMENT CRITERIA FOR THE EVALUATION OF IMPACTS

Criteria	Category	Description
Extent or spatial influence of impact	Regional	Beyond a 30km radius of the candidate site.
	Local	Within a 30km radius of the candidate site.
	Site-specific	On site or within 100 m of the candidate site.
Magnitude of impact (at the indicated spatial scale)	High	Natural and/ or social functions and/ or processes are <i>severely</i> altered
	Medium	Natural and/ or social functions and/ or processes are <i>notably</i> altered
	Low	Natural and/ or social functions and/ or processes are <i>slightly</i> altered
	Very low	Natural and/ or social functions and/ or processes are <i>negligibly</i> altered
	Zero	Natural and/ or social functions and/ or processes remain <i>unaltered</i>
Duration of impact	Long-term	More than 10 years after construction
	Medium-term	Up to 5 years after construction
	Construction-term	Up to 3 years

The **SIGNIFICANCE** of an impact is derived by taking into account magnitude, duration and extent of each impact. The criteria employed in arriving at the different significance ratings is shown in Table 4.

TABLE 4: DEFINITION OF SIGNIFICANCE RATINGS

Significance ratings	Level of criteria required
High	<ul style="list-style-type: none"> • High magnitude with a regional extent and long-term duration • High magnitude with either a regional extent and medium-term duration or a local extent and long-term duration • Medium magnitude with a regional extent and long-term duration
Medium	<ul style="list-style-type: none"> • High magnitude with a local extent and medium-term duration • High magnitude with a regional extent and construction period or a site-specific extent and long-term duration • High magnitude with either a local extent and construction period duration or a site-specific extent and medium-term duration • Medium magnitude with any combination of extent and duration except site specific and construction period or regional and long term • Low magnitude with a regional extent and long-term duration
Low	<ul style="list-style-type: none"> • High magnitude with a site-specific extent and construction period duration • Medium magnitude with a site-specific extent and construction period duration • Low magnitude with any combination of extent and duration except site specific and construction period or regional and long term • Very low magnitude with a regional extent and long-term duration
Very low	<ul style="list-style-type: none"> • Low magnitude with a site-specific extent and construction period duration • Very low magnitude with any combination of extent and duration except regional and long term
Neutral	<ul style="list-style-type: none"> • Zero magnitude with any combination of extent and duration

Once the significance of an impact has been determined, the **PROBABILITY** and **CONFIDENCE** of this impact are determined using the rating systems outlined in Table 5 and Table 6. The significance of an impact should always be considered in concert with the probability of that impact occurring. Lastly, the **REVERSIBILITY** of the impact is estimated using the rating system outlined in Table 7.

TABLE 5: DEFINITION OF PROBABILITY RATINGS

Probability ratings	Criteria
Definite	Estimated greater than 95 % chance of the impact occurring.
Probable	Estimated 5 to 95 % chance of the impact occurring.
Unlikely	Estimated less than 5 % chance of the impact occurring.

TABLE 6: DEFINITION OF CONFIDENCE RATINGS

Confidence ratings	Criteria
Certain	Wealth of information on and sound understanding of the environmental factors potentially influencing the impact.
Sure	Reasonable amount of useful information on and relatively sound understanding of the environmental factors potentially influencing the impact.
Unsure	Limited useful information on and understanding of the environmental factors potentially influencing this impact.

TABLE 7: DEFINITION OF REVERSIBILITY RATINGS

Reversibility ratings	Criteria
Irreversible	The activity will lead to an impact that is in all practical terms permanent.
Reversible	The impact is reversible within 2 years after the cause of the impact is removed.

7. ENVIRONMENTAL IMPACT ASSESSMENT

The biophysical and social environment will be impacted during the construction and operational phases of the agricultural activities. For this reason, the impacts below are assessed for both phases.

7.1 Impacts during the construction process

The construction activities are likely to result in environmental and socio-economic impacts. The identified impacts are listed below and discussed thereafter:

- *Impact on biodiversity;*
- *Generation of dust;*
- *Impact on soil;*
- *Impact on water resources;*
- *Socio-economic impact.*

7.1.1. Impact on biodiversity

Description of the potential impact

During the construction process, the existing gravel road will be rehabilitated and upgraded to paving blocks. Machinery will be used during these activities. The area to be disturbed will however be restricted to the upgrading of the existing gravel road and areas already previously disturbed. Currently, the drainage lines are invested with alien invasive species.

As for the area proposed for the borrow pit, it is also noted that this area has already been cleared and material is excavated. This activity is however not being undertaken by the City of Mbombela.

Significance of the impact

The proposed road and water crossings are limited to the existing gravel road and already disturbed footprint. As mentioned, the proposed project site falls within an area which has been characterised as “*Moderately/Heavily Modified*” in accordance with the MBSP, 2014, although it is located within an Ecological Support Area (ESA) Buffer. The project areas as well as surrounding areas have already been completely transformed.

Modified areas offer the most flexibility regarding potential land-uses, but these should be managed in a biodiversity-sensitive manner, aiming to maximize ecological functionality.

The drainage lines are invested with alien invasive species. It is not anticipated that the activity will compromise biodiversity or ecological functions and therefore the impact is of low significance.

TABLE 8: SIGNIFICANCE OF BIODIVERSITY IMPACT

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Magnitude	Extent	Duration	Probability	Impact Rating	Impact Rating
Impact on biodiversity [NEGATIVE]	Low	Site Specific	Short-term	Probable	Very Low	Very Low

Mitigation measures

- The footprint of activities associated with construction activities must be restricted to the existing gravel road and alignment.
- It must be ensured that the materials used during construction activities are located far away from any other watercourse or drainage lines.
- All disturbed areas must be rehabilitated, however, as the activity is restricted to the surfacing of the road and the construction of the culverts, the area affected is very restricted.
- Stipulations of the Environmental Management Program (EMPr) should be adhered to during the construction phases of the project.

7.1.2. Generation of dust

Description of the potential impact

Soil will be disturbed during the construction phase of the proposed project. Heavy moving vehicles used to surface the gravel road, could generate dust affecting adjacent owners and road users.

Dust generated as a result of activities at the borrow pit could also have an impact on the adjacent road.

Significance of the impact

The construction site is located within a township. There are many residents living along the existing gravel road which could be affected by the generation of dust. The impacts associated with the generation of dust is also of short duration and therefore of medium significance prior to the implementation of mitigation measures.

Mitigation measures must however be implemented to minimise the generation of dust.

TABLE 9: DUST GENERATION

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Magnitude	Extent	Duration	Probability	Impact Rating	Impact Rating
Dust generation [NEGATIVE]	Medium	Site Specific	Short term	Probable	Low	Very Low

Mitigation measures

- Areas may not be disturbed and left for unattended for long periods of time;
- Heavy moving vehicles and other vehicles must adhere to a speed limit of 40km/h;
- Construction site must be sprayed with water to limit the generation of dust of the surfaces.

7.1.3 Impact on soil

Description of the potential impact

The construction process will disturb the soil surface and increase the possibility of soil erosion.

Other activities which could have an impact on soil, include any spillage of hazardous substances. Hazardous substances such as oil, diesel etc., could be spilled while refuelling or using machinery, leading to the pollution of soil which can alter microbial processes and be toxic to soil organisms.

Significance of the impact

During establishment, soil could be impacted by the following:

- Erosion; and
- Contamination with the use and possible spillage of hazardous substances.

This impact soil pollution is of medium magnitude, site specific and short duration and for this reason the impact is of also of low significance prior to the implementation of mitigation measures.

TABLE 10: IMPACT ON SOIL

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Magnitude	Extent	Duration	Probability	Impact Rating	Impact Rating
Soil pollution [NEGATIVE]	Medium	Site Specific	Short-term	Probable	Low	Very Low

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Magnitude	Extent	Duration	Probability	Impact Rating	Impact Rating
Erosion [NEGATIVE]	Medium	Site Specific	Short term	Probable	Low	Very Low

Mitigation measures

- To minimise the possibility of erosion, it is recommended that no disturbed areas be left unattended. Disturbance and removal must be restricted to the proposed footprint.
- Measures to reduce the velocity of water, must be taken on areas prone to erosion.
- Should there be any spillage of hazardous substances during the desilting activities, soil must be removed up to a depth of 300mm and be disposed of at a registered hazardous waste disposal facility. Proof of such disposal must be kept on file.

7.1.4 Impact on water resources

Description of the potential impact

The area where activities are to take places falls within a watercourse/drainage lines. This requires that activities are focused on maintaining water quality and the integrity of natural habitat.

Currently, there is no water within the drainage lines and the area has already been heavily disturbed. Should construction within these drainage lines be restricted to the low flow periods, the impact on the water resources would be limited with the implementation of mitigation measures.

Significance of the impact

Any spillages within the drainage line will have an impact on the water quality of the watercourse and therefore special care must be taken when works are conducted within these watercourses. The impact is however of low significance with the implementation of mitigation measures.

TABLE 11: IMPACT ON WATER RESOURCES

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Magnitude	Extent	Duration	Probability	Impact Rating	Impact Rating
Impact on water resources [NEGATIVE]	Medium	Local	Short-term	Probable	Medium	Low

Mitigation measures

- No material or stockpiles may be stored within 50m from the edge of a watercourse.
- It must be ensured that all machinery working within the watercourse must be in a good working condition to ensure that there are no oil leaks.
- Should vehicles be washed, it must take place on a designated area, located far from these watercourses. Washing of equipment or any vehicles are not allowed within or near any watercourse.

7.1.5 Socio-economic Impact

Description of the potential impact

During the construction activities, various temporary job opportunities will be created for the paving of the existing road. In terms of safety and security, there is always risk associated when working with machinery and therefore it is essential that all workers comply with the Health and Safety Act 85 of 1993.

Significance of the impacts

Based on the methodology detailed in **Section 6**, the following ratings have been assigned to the 'employment opportunities' and impact associated with health and safety of employees, respectively.

The job opportunities during the construction phase are short-lived and therefore the impact is only of medium (+) significance. In terms of the health and safety aspects of workforce, the significance of the impact has been rated to be of low significance due to the short construction timeframe. Mitigation measures must however be adhered to.

TABLE 12: SOCIO-ECONOMIC IMPACT

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Magnitude	Extent	Duration	Probability	Impact Rating	Impact Rating
Job opportunities [POSITIVE]	Medium	Local	Short-term	Define	Low	Medium (+)
Health and Safety [NEGATIVE]	Medium	Site Specific	Short-term	Probable	Low	Very Low

Mitigation measures

The applicant and/or project manager must ensure that local residents receive preference for job opportunities where local labour might be required.

It is imperative that all personnel adhere to the Occupational Health and Safety Act 85 of 1998 and that no personnel enter any other surrounding properties.

7.2 Operational Phase Impacts

During operation the activities are likely to result in the following environmental and socio-economic impacts:

- *Impact on dust;*
- *Impact on water resources;*
- *Socio-economic impact.*

7.2.1. Impact on Dust

Description of the potential impact

Currently, the existing road is a gravel road which generates a lot of dust when vehicles travel on this road. By paving the existing road, the generation of dust will be minimised during the operational phase.

Significance of the impact

There are many residents living next to the road and the surfacing of the road will reduce the generation of dust remarkably. Less dust will be generated when vehicles drive on the road or when there is heavy wind in the area, therefore the surfacing of the road will have a positive impact.

TABLE 13: IMPACT ON DUST

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Magnitude	Extent	Duration	Probability	Impact Rating	Impact Rating
Dust generation [POSITIVE]	Medium	Site Specific	Long-term	Definite	Medium (+)	Medium (+)

The improved infrastructure will have a positive impact on the local community. No mitigation measures would be required to further enhance this impact.

7.2.2. Impact on water resources

Description of the potential impact

The current dirt roads have no storm water infrastructure within the drainage lines. Currently, there is no water within the drainage lines and the area has already been heavily disturbed. The paving will prevent structural damage to the roads during heavy rain downpour and also reduce the amount of sediment entering the watercourse following storm events.

Significance of the impact

Water is a scarce resource in South Africa and therefore any change in the natural flow regime will result in lower flows of water downstream. The paving of the roads and construction of stormwater infrastructure will improve the current impact on the watercourse as sedimentation will be reduced and the culvert structures will ensure the flow of water throughout the watercourse if the culvert structures are maintained.

The impact on the water resource during the operational phase is therefore of medium (positive) magnitude, long term duration and local extent. For this reason, the impact is of medium (positive) significance.

TABLE 14: IMPACT ON WATER RESOURCES

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Magnitude	Extent	Duration	Probability	Impact Rating	Impact Rating
Impact on water resources [POSITIVE]	Medium	Local	Long-term	Probable	Medium (+)	Medium (+)

Mitigation measures

- Ensure that the area is to be kept in a good ecological condition.
- Ensure that the constructed culverts are maintained and kept clear of debris to prevent any blockages, causing flooding and affecting downstream habitats.

7.2.3. Socio-economic Impact

Description of the potential impact

The improved infrastructure will enable easy movement for the community that will facilitate economic development and result in improved quality of life.

Significance of the impact

Based on the methodology detailed in **Section 6**, the following ratings have been assigned to the 'Socio-economic' impact before and after mitigation.

TABLE 15: SOCIO-ECONOMIC IMPACT

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Magnitude	Extent	Duration	Probability	Impact Rating	Impact Rating
Socio-economic [POSITIVE]	High	Local	Long-term	Definite	High (+)	High (+)

The improved infrastructure will have a positive impact on the local community. No mitigation measures would be required to further enhance this impact.

7.3 Environmental Impact Statement

The table below summarises the impacts identified and assessed for the construction activities proposed for the project:

TABLE 16: ENVIRONMENTAL IMPACT STATEMENT

IMPACT	SIGNIFICANCE BEFORE MITIGATION MEASURES	SIGNIFICANCE AFTER MITIGATION MEASURES
Construction Phase Impacts		
Biodiversity Impact	Low	Very Low
Generation of dust	Low	Very Low
Erosion	Low	Very Low
Soil Pollution	Low	Very Low
Impact on water resources	Medium	Low
Job opportunities	Low (+)	Medium (+)
Health and Safety	Low	Very Low
Operational Phase Impacts		
Impact on Dust	Medium (+)	Medium (+)
Impact on water resources	Medium (+)	Medium (+)
Socio-economic Impact	High (+)	High (+)

8. CONCLUSION AND WAY FORWARD

8.1 Assumptions and Limitations

In undertaking this investigation and compiling the Draft Basic Assessment Report, the following has been assumed:

- The information provided by the proponent is accurate and unbiased, and no information that could change the outcome of the Environmental Authorisation process has been withheld.
- The scope of this investigation is limited to assessing the environmental impacts associated with the establishment and operation of the agricultural area.
- The conclusion and recommendations proposed are based solely on the information, scope of works as agreed with the proponent.

8.2 Conclusion

The essence of all environmental assessment processes is aimed at ensuring informed decision-making and environmental accountability. Furthermore, it assists in achieving environmentally sound and sustainable development. The impact assessment for this project has been undertaken in line with the requirements prescribed in the NEMA regulations.

The assessment of the possible impacts associated with the construction and operational activities, concluded that the impact on the surrounding environment is of **low significance** and as the road is currently existing, the construction of the road and culverts will actually have a positive impact on the biophysical and social environment if mitigation measures are adhered to. Recommendations have however been made to address the impacts which could affect the biophysical and socio-economic environment. Recommendations for the mitigation of impacts are included within Section 6 and also the Draft Environmental Management Plan attached.

The significance of the potential environmental (biophysical and social) impacts associated with the proposed project are discussed in detail under **Section 6**.

It is the opinion of the EAP that the EA for this project should be granted, and the proposed mitigation included as the conditions of the authorisation.

8.2 Way Forward

The next steps for the Basic Assessment process will be to distribute the Draft Basic Assessment Report and make it available to the public (including the registered I&APs) and Organs of State for a period of 30 days, during which the Competent Authority (DARDLEA) will also be given the opportunity to provide comments on the report. After the 30-day comment period, all comments will be addressed by the EAP and incorporated within the Final Basic Assessment Report to be submitted to the DARDLEA for decision making. All registered I&APs will be notified of the decision and will be given an opportunity to appeal as per the NEMA requirements.

9. REFERENCES

Bushbuckridge Local Municipality Final Integrated Development Plan 2021/2022

National Environmental Management Act 107 of 1998 (NEMA 107, 1998)

General Notice Regulation 982, 983, 984 and 985 of 2014 (as amended in 2017)

Mpumalanga Biodiversity Conservation Plan, 2014

Mucina, L. and Rutherford, M.C. (eds.) 2006. The vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19. South African Biodiversity Institute, Pretoria.