



**Proposed construction of the Malalane Bypass  
Ring Road, Nkomazi Local Municipality,  
Mpumalanga Province**  
Draft Scoping Report

20 June 2022

<b>CORE Environmental Services</b>	
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# Contents

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- 1. OVERVIEW OF THE PROJECT.....5**
  - 1.1 Introduction .....5
  - 1.2 Location .....5
  - 1.3 Details of the EAP .....9
  - 1.4 Policy, Legal and Administrative Framework .....10
  - 1.5 National Environmental Management Act 107 of 1998 .....12
  - 1.6 Scoping Phase:.....14
  - 1.7 EIA Phase:.....15
  - 1.8 Description of the project .....15
  - 1.9 Need and Desirability .....16
  
- 2. PUBLIC PARTICIPATION PROCESS.....17**
  - 2.1 Approach and Methodology .....17
    - 2.1.1 Identification of Interested and Affected Parties .....17
    - 2.1.2 Public Participation Database .....17
    - 2.1.3 Site Notices .....18
    - 2.1.4 Placement of an Advertisement in the Local Newspaper .....18
    - 2.1.5 Background Information Document .....18
  - 2.2 Summary of Issues raised by I&APs .....18
  
- 3. CONSIDERATION OF ALTERNATIVES .....19**
  - 3.1 Alternative Selection .....19
    - 3.1.1 Location alternatives .....19
    - 3.1.2 Layout alternatives .....20
    - 3.1.3 No-Go alternative .....20
  
- 4. DESCRIPTION OF THE AFFECTED ENVIRONMENT .....21**
  - 4.1 Topography .....21
  - 4.2 Climate .....21
  - 4.3 Terrestrial Ecology .....23
    - 4.3.1 Vegetation Type .....23
    - 4.3.2 National Threatened Ecosystems .....23
    - 4.3.3 Protected Areas .....24
    - 4.3.4 Mpumalanga Biodiversity Sector Plan .....24
  - 4.4 Surface and Groundwater .....27
  - 4.5 Land use .....29
  - 4.6 Geology and Soils .....29
  - 4.8 Heritage .....29
  - 4.9 Socio-Economic Environment .....29
  
- 5. METHODOLOGY OF ASSESSING THE SIGNIFICANCE OF IMPACTS .....31**
- 6. IMPACTS AND RISKS .....34**
- 7. MITIGATION MEASURES .....37**
- 8. PLAN OF STUDY .....39**
- 9. REFERENCES .....47**

# LIST OF FIGURES

Figure 1: Locality Map - Proposed project area .....7  
Figure 2: Layout Map- Proposed Malalane Ring Road .....8  
Figure 3: Temperature in Mpumalanga (Mpumalanga Development Spatial Framework, 2018) ....22  
Figure 4: Mean annual rainfall in Mpumalanga (Mpumalanga Development Spatial Framework, 2018) .....23  
Figure 5: Terrestrial Ecology according to the Mpumalanga Biodiversity Sector Plan, 2014 .....26  
Figure 6: Freshwater Ecology according to the Mpumalanga Biodiversity Sector Plan, 2014 .....28

# LIST OF TABLES

Table 1: Details of the Environmental Assessment Practitioner (EAP).....9  
Table 2: Legislation applicable to the project ..... 10  
Table 3: Listed activities applicable to the project ..... 13  
Table 4: Assessment criteria for the evaluation of impacts .....31  
Table 5: Definition of significance ratings.....32  
Table 6: Definition of probability ratings.....32  
Table 7: Definition of confidence ratings .....33  
Table 8: Definition of reversibility ratings .....33

# APPENDICES

- Appendix A: Locality Map
- Appendix B: Site Photos
- Appendix C: Public Participation Process
- Appendix D: Specialist Reports
- Appendix E: Declaration of EAP and CV

## ABBREVIATIONS

BAR	Basic Assessment Report
CBA	Critical Biodiversity Area
CARA	Conservation of Agricultural Resources Act, 1983 (43 of 1983)
CBA	Critical Biodiversity Area
DEDEAT	Department of Economic Development, Environmental Affairs and Tourism
DEFF	Department of Environment, Forestry, and Fisheries
DHSWS	Department of Human Settlement, Water, and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMPr	Environmental Management Programme
GNR	General Notice Regulation
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
IDZ	Industrial Development Zone
MBSP	Mpumalanga Biodiversity Sector Plan
MDARDLEA	Mpumalanga Department of Agriculture, Rural Development, Land and Administration
NCRECA	Noise Control Regulations under the Environmental Conservation Act, 1989 (73 of 1989)
NDP	National Development Plan
NEMA	National Environmental Management Act, 1998 (Act 107 of 1998)
NEMAQA	National Environmental Management: Air Quality Act, 2004 (No. 39 of 2004)
NEMBA	National Environmental Management: Biodiversity Act, 2004 (No. 10 of 2004)
NEMPA	National Environmental Management: Protected Areas Act, 2003 (57 of 2003)
NEMWA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NHRA	National Heritage Resources Act, 1999 (No. 25 of 1999)
NLM	Nkomazi Local Municipality
PPP	Public Participation Process
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SAPAD	South Africa Protected Areas Database) (2019, Q4)
ToR	Terms of Reference
WULA	Water Use Licence Application

# 1. OVERVIEW OF THE PROJECT

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## 1.1 Introduction

The **South African National Roads Agency Limited (SANRAL)** is proposing to construct the Malalane Ring Road of approximately 6km in length, within the Mpumalanga Province. The N4 highway is the main route between Maputo in Mozambique and Gauteng and at present, the only town which is still affected by the N4-highway, is Malalane. The proposed Malalane Ring Road aims to bypass Malalane Town by means of constructing a new highway to the south of the town. The proposed project also entails the provision of access roads to Malalane for all farms located to the south of Malalane.

In accordance with the National Environmental Management Act 107 of 1998 (NEMA 107, 1998), an Environmental Authorisation (EA) is required prior to the commencement of the proposed construction activities. In accordance with General Notice R982, 2014 (as amended in 2017), a Scoping and Environmental Impact Assessment process must be followed to apply for EA. The proposed project also entails the construction of a bridge crossing the Buffelspruit and in accordance with Section 21 of the National Water Act 36, 1998, a Water Use License (WUL) is also required when any activity takes place within a watercourse.

**Core Environmental Services** was subsequently appointed to apply for the EA by means of conducting a Scoping and Environmental Impact Assessment process as regulated within General Notice Regulation 982, 2014 (as amended in 2017). The applicant is also applying in terms of Section 21 of the National Water Act 36 of 1998 (NWA 36, 1998), for Impeding or diverting the flow of water in a watercourse and altering the bed, banks, course or characteristics of a watercourse.

## 1.2 Location

The proposed starting point for the Malalane ring road is approximately 400 meters west of Riverview Preparatory School, bypassing the town of Malalane to the south and ending approximately 1km east of the Eskom sub-station. The alignment of the Malalane Ring Road is proposed between the coordinates provided below:

Start Coordinates:

25° 30'24.51"S

31° 29'18.76"E

End Coordinates:

25° 29'08.29"S

31° 32'20.84"E

The proposed alignment of the Malelane Ring Road, inclusive of its servitude being investigated, as well as the proposed access roads to Malelane, will affect the following properties:

Farm Name	Portion Number	21-digit Surveyor General codes:
Malelane 389-JU	1	T0JU00000000038900001
Malelane 389-JU	4	T0JU00000000038900004
Malelane 389-JU	7	T0JU00000000038900007
Malelane 389-JU	9	T0JU00000000038900009
Malelane 389-JU	12	T0JU00000000038900012
Malelane 389-JU	16	T0JU00000000038900016
Malelane 389-JU	18	T0JU00000000038900018
Malelane 389-JU	39	T0JU00000000038900039
Malelane 389-JU	48	T0JU00000000038900048
Malelane 389-JU	53	T0JU00000000038900053
Malelane 389-JU	66	T0JU00000000038900066
Malelane 389-JU	88	T0JU00000000038900088
Malelane 389-JU	94	T0JU00000000038900094
Malelane 389-JU	95	T0JU00000000038900095
Malelane 389-JU	99	T0JU00000000038900099
Malelane 389-JU	116	T0JU00000000038900116
Malelane 389-JU	157	T0JU00000000038900157
Malelane 389-JU	176	T0JU00000000038900176
Malelane 389-JU	177	T0JU00000000038900177

Please refer to the locality map below, Figure 1 and 2.

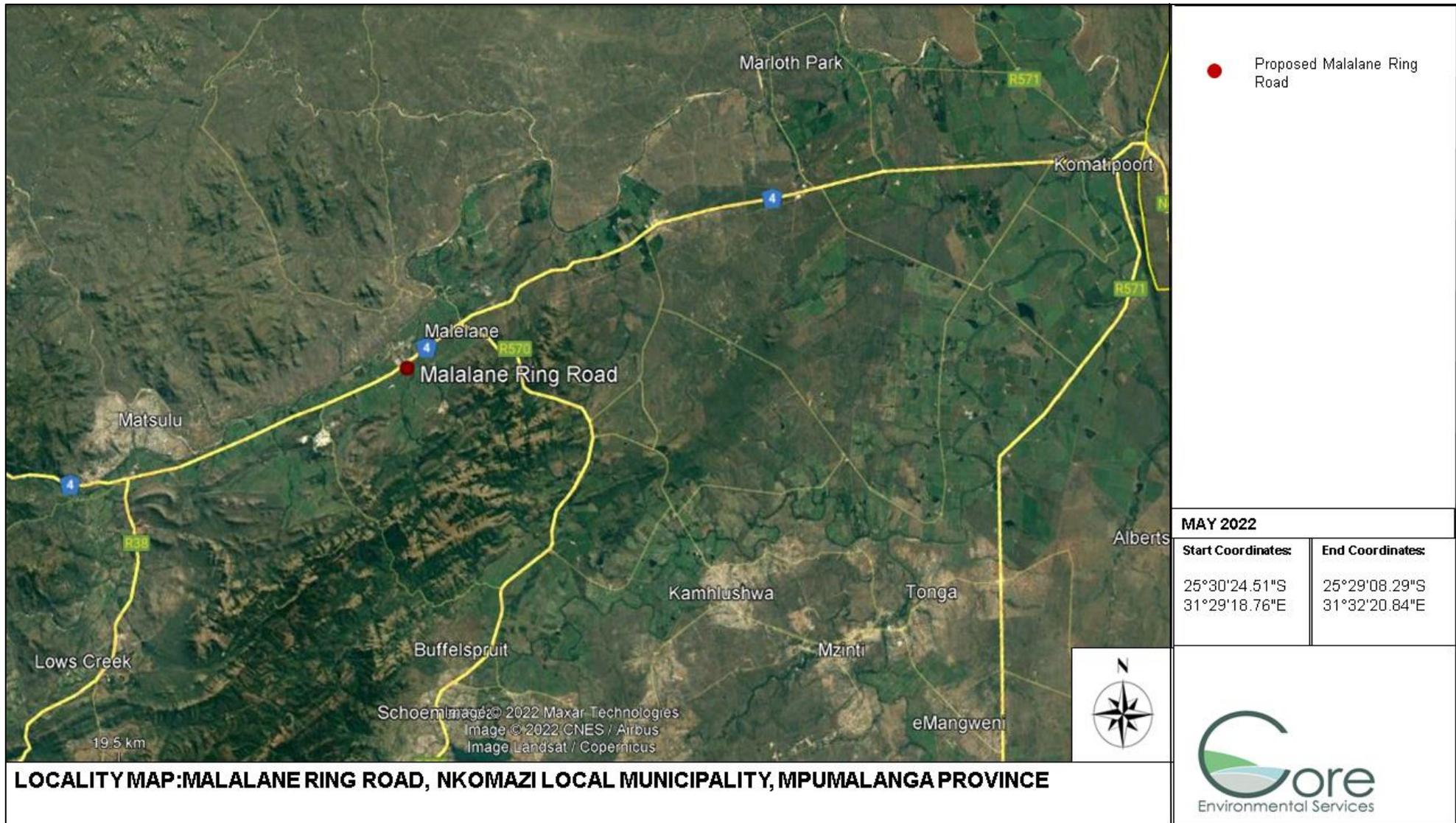


FIGURE 1: LOCALITY MAP - PROPOSED PROJECT AREA

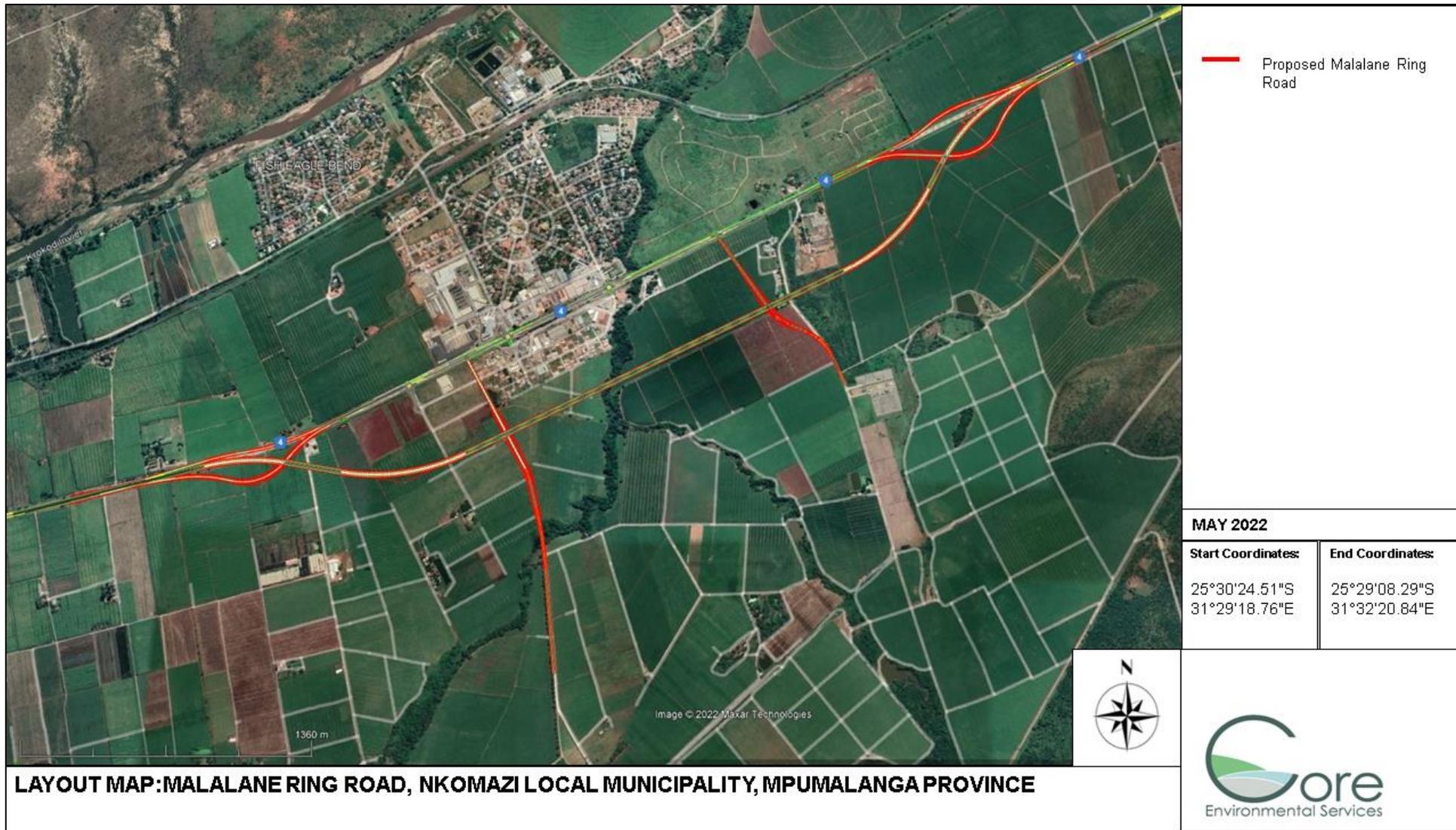


FIGURE 2: LAYOUT MAP- PROPOSED MALALANE RING ROAD

## 1.3 Details of the EAP

Core Environmental Services has been appointed by The South African National Roads Agency Limited (SANRAL) as the independent Environmental Assessment Practitioner (EAP) for the proposed project and meets the general requirements as stipulated in regulations 13(3) of the NEMA 2014 EIA Regulations as amended. Core Environmental Services therefore:

- Is independent and objective;
- Has expertise in conducting EIAs;
- Takes into account all relevant factors relating to the application; and
- Provides full disclosure to the applicant and the relevant environmental authority.

Table 1 below, presents the details of the EAP's involved. A detailed Curriculum Vitae and Qualifications are attached as **Appendix E**

**TABLE 1: DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)**

Name of Company		Core Environmental Services	
Person Responsible	Anne-Mari White	Edmari Lewis	
Professional Registration	<ul style="list-style-type: none"> <li>• Environmental Assessment Practitioners Association of South Africa (EAPASA Reg No: 2020/602)</li> <li>• South African Council for Natural Scientific Professionals as a Certificated Natural Scientist (Reg. No 300067/15)</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental Assessment Practitioners Association of South Africa as a Candidate (EAPASA Reg No: 2021/3452).</li> </ul>	
Address	86 Suiderkruis street Mbombela 1200	86 Suiderkruis street Mbombela 1200	
Telephone Number	060 878 1591	079 459 9881	
Email	Anne-mari@coreenviro.co.za	Edmari@coreenviro.co.za	
Qualifications & Experience	<p><b>BSc. Environmental Management</b></p> <p>14 years of experience</p>	<p><b>BSc. Honours Environmental Management</b></p> <p>02 years of experience</p>	

## 1.4 Policy, Legal and Administrative Framework

TABLE 2: 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><b>SANRAL</b> 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 Scoping and Environmental Impact Assessment process as regulated within GNR982 of 2014 (as amended in 2017).
National Biodiversity Act, 2004 (Act No. 10 of 2004)	<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>National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)</p>	<p>The purpose of this Act is to provide for the protection, conservation and management of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes.</p>
<p>National Heritage Resources Act, 1999 (Act No. 25 of 1999)</p>	<p>The National Heritage Resources Act, 1999 (Act No. 25 of 1999) legislates the necessity for cultural and heritage impact assessment in areas earmarked for development, which exceed 0.5 ha. The Act makes provision for the potential destruction to existing sites, pending the archaeologist's recommendations through permitting procedures. Permits for this specific project would be administered by the Mpumalanga Heritage Agency or South African Heritage Resources Agency (SAHRA).</p>
<p>Noise Control Regulations in terms of the Environmental Conservation, 1989 (Act 73 of 1989)</p>	<p>The assessment of impacts relating to noise pollution management and control, where appropriate, must form part of the EMPr. Applicable laws regarding noise management and control refer to the National Noise Control Regulations issued in terms of the Environment Conservation, 1989 (Act 73 of 1989).</p>
<p>National Water Act, 1998 (Act 36 of 1998)</p>	<p>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> <p>The proposed activities will entail the construction of a bridge, crossing the Buffelspruit therefore, an application for a Water Use License will be submitted to the Inkomati-Usuthu Catchment Management Agency (IUCMA).</p>

Occupational Health and Safety Act, 1998 (Act No. 85 of 1998)	<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>
National Heritage Resources Act, 1999 (Act No 25 of 1999)	<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>Due to the length of the road, a Heritage Specialist will investigate the areas proposed for the road alignment. The Heritage Impact Assessment Report will be submitted to SAHRA as well as the Department of Agriculture, Forestry and Fisheries for comment.</p>
Nkomazi Local Municipality Integrated Development Plan (IDP) (2017 - 2022)	<p>The primary objectives of the IDP is to foster economic growth that creates jobs and improve infrastructure within the Province.</p> <p>Job opportunities will be created by the proposed agricultural activities which supports economic growth within the area.</p>

## 1.5 National Environmental Management Act 107 of 1998

The Scoping and Environmental Impact assessment process has been undertaken in accordance with the requirements of the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998), EIA Regulations, 2014 (as amended in 2017). Activities identified in terms of the Environmental Regulations 2014 (as amended in 2017), may not commence without obtaining Environmental Authorization from the competent authority, **DARDLEA**, and in respect of which the investigation, assessment and communication of activities must follow the EIA procedure as regulated. As per the National Environmental Management Act 107 of 1998 (NEMA 107, 1998), GNR 983, GNR 984 and GN 985 of 2014 (as amended in 2017), the following listed activities are being applied for:

**TABLE 3: LISTED ACTIVITIES APPLICABLE TO THE PROJECT**

Government Notice R983 (as amended) Activity No.	Describe the relevant Activity in writing as per Listing Notice 1 (GN No. R983, as amended)	Describe the portion of the development as per the project description that relates to the applicable listed activity
12	<i>The development of (ii) infrastructure or structures with a physical footprint of 100 square metres or more where such development occurs within (a) a watercourse</i>	The proposed project entails the construction of a bridge crossing the Buffelspruit
19	<i>The infilling or depositing of any material or 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</i>	The proposed project also entails the construction of a bridge crossing the Buffelspruit
27	<i>The clearance of an area of 1 hectare or more but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for-</i> <i>(i) The undertaking of a linear activity; or</i> <i>Maintenance purposes undertaken in accordance with a maintenance management plan</i>	An area of indigenous vegetation will be cleared for the proposed Malalane Ring Road.
Government Notice R984 (as amended) Activity No.	Describe the relevant Activity in writing as per Listing Notice 2 (GN No. R984, as amended)	Describe the portion of the development as per the project description that relates to the applicable listed activity
27	<i>The development of a road</i> <i>(i) A national road as defined in section 40 of the South African National Roads Agency Limited and National Roads Act, 1998 (Act No. 7 of 1998);</i> <i>(ii) A road administered by a provincial authority;</i> <i>(iii) A road with a reserve wider than 30 metres;</i> <i>(iv) A road catering for more than one lane of traffic in both lanes</i>	The proposed Malalane Ring Road aims to bypass Malalane Town by means of constructing a new highway to the south of the town.

Government Notice R985 (as amended) Activity No:	Describe the relevant Activity in writing as per Listing Notice 3 (GN No. R985, as amended)	Describe the portion of the development as per the project description that relates to the applicable listed activity
14 (f)	<p><i>(xii) The infilling or depositing of any material or 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 or more; where such development occurs- (a)within a watercourse;</i></p> <p><i>(f) Areas within 10 kilometers from national parks or world heritage sites or 5 kilometers from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve, where such areas comprise indigenous vegetation</i></p>	<p>The proposed project site is located within the 10km buffer from a national park.</p> <p>The proposed site is located approximately 2km south from the Kruger National Park.</p>

According to the triggered activities, the Applicant is required to conduct a Scoping and Environmental Impact Assessment (Scoping and EIA) for the activities proposed.

## 1.6 Scoping Phase:

The objective of a scoping phase is to, through a consultative process:

- (a) Identify the relevant policies and legislation relevant to the activity;
- (b) Motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- (c) Identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;
- (d) 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 focussing on the geographical, physical, biological, social, economic and cultural aspects of the environment;
- (e) Identify the key issues to be addressed in the assessment phase;
- (f) 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 and activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impact to inform the location of the development footprint within the preferred site; and
- (g) 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.

## 1.7 EIA Phase:

The objective of the environmental impact assessment process is to, through a consultative process –

- (a) Determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
- (b) Describe the need and desirability of the proposed activity, including the need and desirability of the proposed activity in the context of the preferred location;
- (c) Identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic and cultural aspects of the environment;
- (d) Determine the –
  - i. Nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives;
  - ii. Degree to which these impacts –
    1. can be reversed;
    2. may cause irreplaceable loss of resources, and
    3. can be avoided, managed or mitigated;
- (e) identify the most ideal location for the activity within the preferred site based on the lowest level of environmental sensitivity identified during the assessment;
- (f) identify, assess and rank the impact the activity will impose on the preferred location through the life of the activity;
- (g) identify suitable measures to avoid, manage or mitigate identified impact; and
- (h) identify residual risks that need to be managed and monitored

## 1.8 Description of the project

**The South African National Roads Agency Limited (SANRAL)** is proposing to construct the Malalane Ring Road of approximately 6km in length, within the Mpumalanga Province. The N4 highway is the main route between Maputo in Mozambique and Gauteng and at present, the only town which is still affected by the N4-highway, is Malalane. The proposed Malalane Ring Road aims to bypass Malalane Town by means of constructing a new highway to the south of the town. The proposed project also entails the provision of access roads to Malalane for all farms located to the south of Malalane.

A construction camp will be erected on site for the duration of the construction. Designated areas will be established during the construction phase for construction equipment, vehicles and stockpiling. This area will be outside all sensitive areas. As far as possible these will be located within already disturbed areas or areas that will be directly impacted by the road construction footprint. Existing roads will be used as far as possible for access during construction, however where necessary haul roads will temporarily be put into place

In accordance with the National Environmental Management Act 107 of 1998 (NEMA 107, 1998), an Environmental Authorisation (EA) is required prior to the commencement of the proposed construction activities. In accordance with General Notice R982, 2014 (as amended in 2017), a

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Scoping and Environmental Impact Assessment process must be followed to apply for EA. The proposed project also entails the construction of a bridge crossing the Buffelspruit and in accordance with Section 21 of the National Water Act 36, 1998, a Water Use License (WUL) is also required when any activity takes place within a watercourse.

## **1.9 Need and Desirability**

The N4 highway is the main route between Maputo in Mozambique and Gauteng and at present, the only town which is still affected by the N4-highway, is Malalane. The proposed Malalane Ring Road aims to bypass Malalane Town by means of constructing a new highway to the south of the town.

Currently, there is a high volume of traffic flowing through Malalane, as this is the main route to Mozambique and The Kruger National Park. All these vehicles travelling through the town is causing unsafe conditions for the residents of Malalane Town. For this reason, the proposed development aims to firstly improve the traffic flow along the N4 Highway and improve the safety of motorists.

South Africa is a signatory to several international treaties, agreements, and programmes. Some of the policies and directives, emanating from the country's treaties and programmes, impact the development of the Provincial Spatial Development Framework. One of the said programmes is the Maputo Development Corridor (MDC) as part of the Coast 2 Coast Corridor (Walvis Bay to Maputo) which is supported by a transportation corridor connecting Gauteng to the port of Maputo on the east coast. The MDC was launched as a Spatial Development Initiative (SDI) in 1996. The MDC is based on the objectives to:

- Rehabilitate the primary infrastructure network - road, rail, port and dredging, and border posts.
- Maximise investment in both the inherent potential of the corridor area and in the added opportunities.
- Boost social development, employment opportunities of historically disadvantaged communities.

The proposed development will ensure safe and efficient transport along the MDC between South Africa and Mozambique and thus has direct benefits on a national level. The development is necessary to improve the current status of the MDC. This will likely have a positive impact in terms of employment in the region.

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## 2. PUBLIC PARTICIPATION PROCESS

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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 Scoping and Environmental Impact 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.

### 2.1 Approach and Methodology

The public participation approach adopted in this plan is in line with the process contemplated in Regulation 39 through 44 of the EIA Regulations as amended in terms of NEMA and Annexures 2 and 3 of Government Notice No 43412 of 5th of June 2020.

#### 2.1.1 Identification of Interested and Affected Parties

The identified parties include pre-identified government and land owners. Further, an opportunity has been given to I&APs to register. The stakeholders identified include the following:

- Mpumalanga Department of Agriculture and Rural Development and Land Administration
- Mpumalanga Department of Human Settlements, Water and Sanitation;
- Mpumalanga Department of Transport and Public Works;
- Department of Water and Sanitation
- Inkomati-Usuthu Catchment Management Agency (IUCMA)
- N4 Trans African Concessions (TRAC)
- The Mpumalanga Provincial Heritage Resource Authority (MPHRA)
- South African Heritage Resource Agency;
- Ehlanzeni District municipality;
- Nkomazi Local Municipality

#### 2.1.2 Public Participation Database

In accordance with the requirements of the EIA Regulations under Section 24 (5) of NEMA, Regulation 42 of GN R. 982, a register of I&APs must be kept by the public participation practitioner. 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**.

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### **2.1.3 Site Notices**

A2 size notices have been placed at different conspicuous locations within and around the proposed project area. Locations where site notices have been placed include the following:

- The western boundary of the proposed alignment along the N4 highway;
- The eastern boundary of the proposed alignment along the N4 Highway at the Eskom Khanyazwe substation;
- The notice board at the Pick 'n Pay shopping Centre in Malalane.

The placing of site notices took place on 18 May 2022. See **Annexure C.4** for photographic evidence.

### **2.1.4 Placement of an Advertisement in the Local Newspaper**

An advertisement has been placed in the Lowvelder Newspaper on 26 May 2022 to inform I&APs of the proposed project, and their opportunity to register as an I&AP and to submit comments and/or concerns. See **Annexure C.3** for evidence.

### **2.1.5 Background Information Document**

An English Background Information Document was sent to pre-identified government departments, landowners, adjacent and neighbouring landowners, stakeholders, as well as local and district authorities on 23 May 2022. Please see proof of distribution attached as **Annexure C.2**.

## **2.2 Summary of Issues raised by I&APs**

The issues, comments, and concerns raised during the public participation process, together with the responses provided by the Environmental Assessment Practitioner (EAP) is attached as **Annexure C 5**.

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## 3. CONSIDERATION OF ALTERNATIVES

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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

The N4 Malalane Bypass has been in planning for a number of years whereby the appointed engineers discussed and weighed various alternatives.

##### **Location Alternative 1:**

Bypassing Malalane along the northern side of the town:

Malalane Town is bordered by the Kruger National Park and therefore the option of bypassing Malalane to the North of the town, could not be considered.

##### **Location Alternative 2:**

Upgrading the existing N4 Highway:

The other alternative would be to upgrade the current N4 highway at its existing location going through Malalane. In order for this to be an option, sufficient space is required for the expansion of the highway as well as the road reserve. The current highway divides the town of Malalane into two sections and seemingly, residents would need to access both sections located to either side of the highway without any safety hazard. It is not preferred for any highway to include stop signs and/or traffic lights and therefore overhead bridges would have to be provided. Sufficient space for such development is however a limiting factor.

Due to existing buildings and infrastructure already established within Malalane Town, this alternative could not be considered.

##### **Location Alternative 3:**

Bypassing Malalane along the southern side of the town:

The only location alternative for the N4 Malalane Ringroad, was therefore to the south of the town of Malalane. Various factors for the proposed location had to be considered, such as:

- Shortest location to reduce the cost of the alignment; as well as
  - Future and current developments;
-

A residential and commercial development was recently applied for and approved on portion 5 and 6 of the farm Malelane 389-JU. Provision for the alignment of the proposed N4 Malalane Ringroad had to be incorporated into the township design which has been approved and therefore considering any other location alternatives which would be suitable for the affected farm and land owners would be problematic and have a huge financial impact on the owner of the approved development.

### **3.1.2 Layout alternatives**

An Ecological, Aquatic and Heritage Impact Assessment will be undertaken as part of the Environmental Impact Assessment process, to identify any sensitivities within the project area to be of ecological, aquatic or heritage significance. An area of 300m is currently being investigated as part of the EIA process and should any sensitivities be identified within the specialist reports, the alignment might change slightly to ensure that no sensitive area and/or artefacts of cultural or historical significance is affected.

### **3.1.3 No-Go alternative**

The no-go alternative would be to not authorise the proposed N4 Malalane Ringroad which would imply that the situation would remain as it currently is with the N4 highway going through the town of Malalane. With the increase in traffic flow towards Mozambique, it has become imperative to look at alternatives to accommodate the increase in traffic and ensure the road safety of residents within Malalane. It is believed that the traffic flow along the Maputo Corridor will continue to increase, and therefore the option of not constructing the N4 Malalane Bypass, would have a negative impact on the flow of traffic and safety of residents.

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## 4. DESCRIPTION OF THE AFFECTED ENVIRONMENT

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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.

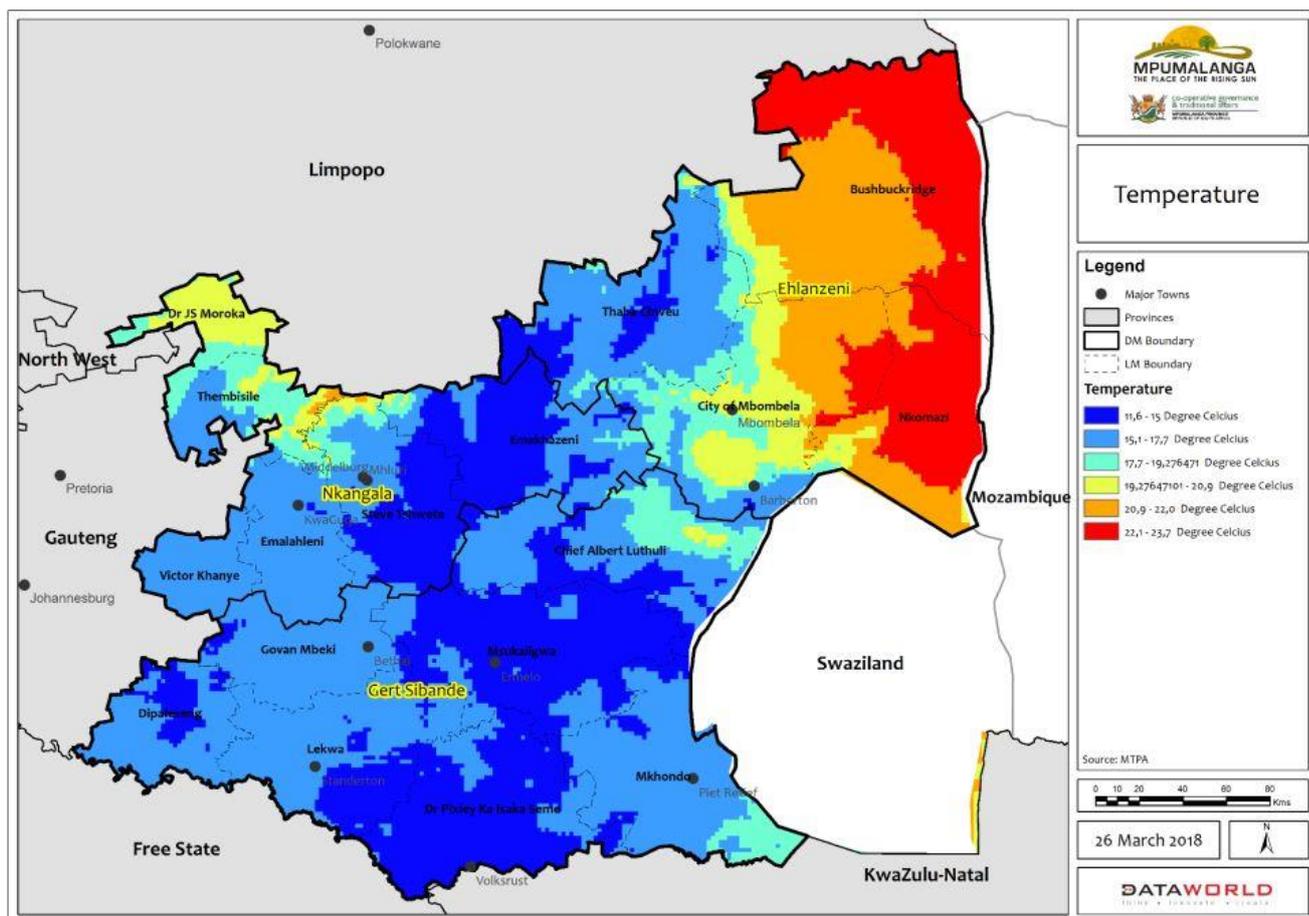
### 4.1 Topography

The topography of Mpumalanga region is a varied one, comprising of the Highveld (high lying) and the Lowveld (low lying) regions. Mpumalanga is mainly situated on the high plateau grassland known as Highveld. The Highveld stretches for hundreds of kilometres eastwards, until it rises towards mountain peaks and deep valleys of the Escarpment in the north-east. From the escarpment, it plunges hundreds of meters down to the low-lying area known as the Lowveld. The Lowveld region is mostly flat with some rocky outcrops.

The alignment of the proposed Malalane Bypass is however relatively flat and approximately 330 meter above mean sea level.

### 4.2 Climate

Mpumalanga has a sub-tropical climate characterised by hot summers and mild to cool winters shifting to cold and frosty conditions in the Highveld regions. World Climate Data presented in the province's Vulnerability Assessment Report shows that the current mean annual temperatures are highest in the north-west and northeast regions of the province, while mean annual precipitation tends to increase towards the eastern regions of the province. The province is characterised by summer rainfall and thunderstorms, except the escarpment area which receives fair levels of precipitation throughout the year (MCCVA, 2015). Mpumalanga has an average temperature of 20°C. Middelburg, in the heart of the Highveld, experiences summer rain and has a summer (October to February) to winter (April to August) range of around 19°C with average temperatures in the contrasting seasons, of 26°C and 8°C. Figure 3 below shows that the average temperature for the Nkomazi Local Municipality is between 22.1 °C and 23.7 °C.



**FIGURE 3: TEMPERATURE IN MPUMALANGA (MPUMALANGA DEVELOPMENT SPATIAL FRAMEWORK, 2018)**

The region experiences a summer-rainfall area separated by the escarpment into two, namely, (a) the Highveld, which is characterised by cold frosty winters and moderate summers, and the (b) Lowveld which is characterised by mild winters and subtropical climate. During winter the Highveld and Escarpment sometimes experience snow. The annual rainfall occurs mainly during summer in the form of heavy thunderstorms. Given its location between the Drakensberg Escarpment and Vaal River traversing through Mpumalanga, the diverse climate in the region makes the production of a wide variety of crops possible. The Lowveld is subtropical and due to its latitude and proximity to the warm Indian Ocean, it is also renowned for citrus and subtropical fruits. The Highveld is comparatively much cooler, due to its altitude, produces much of the summer grains, such as maize and grain sorghum. Exotic trees, plantations such as gum and wattles cover most of the hills on the Escarpment as it receives the most precipitation, with all other areas being moderately hydrated by mostly thunderstorms. Figure 5 below shows that the mean annual rainfall in Malelane is between 593.1mm and 748mm.

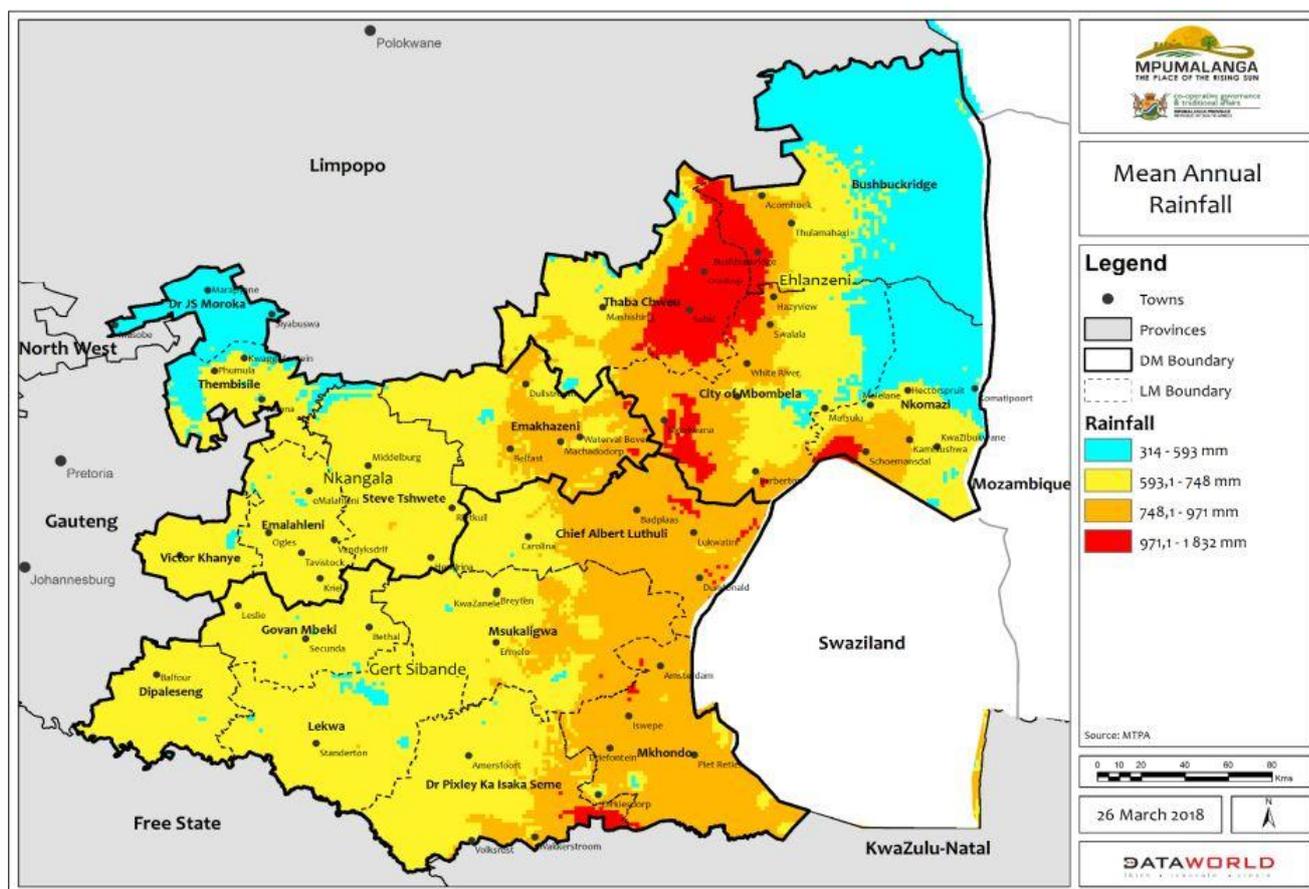


FIGURE 4: MEAN ANNUAL RAINFALL IN MPUMALANGA (MPUMALANGA DEVELOPMENT SPATIAL FRAMEWORK, 2018)

## 4.3 Terrestrial Ecology

### 4.3.1 Vegetation Type

On a national level, the larger study area can be classified as Lowveld (A10), according to Acocks (1988). The site is located 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 Granite Lowveld.

#### Granite Lowveld

This vegetation type occurs at altitudes of 250 - 700 m above mean sea level and is characterised by tall shrubland with few trees to moderately dense low woodland on deep sandy uplands (Mucina and Rutherford, 2006). Dominant species in this vegetation type are: *Acacia nigrescens*, *Sclerocarya birrea* subsp. *caffra*, *Acacia nilotica*, *Albizia harveyi*, *Combretum apiculatum*, *C. imberbe*, *C. zeyheri*, *Ficus stuhlmannii*, *Peltophorum africanum*, *Pterocarpus rotundifolius*, *Terminalia sericea*, *Combretum hereroense*, *Dichrostachys cinerea*, *Euclea divinorum*, *Strychnos madagascariensis*, *Brachiaria nigropedata*, *Digitaria eriantha* subsp. *eriantha*, *Eragrostis rigidior*, *Melinis repens*, *Panicum maximum* and *Pogonarthria squarrosa* (Mucina and Rutherford, 2006).

### 4.3.2 National Threatened Ecosystems

Based on the biodiversity desktop study undertaken, the study area is within an ecosystem of Least Concern (LC). The NEMBA provides for listing threatened or protected ecosystems, in one of four

categories: critically endangered (CR), endangered (EN), and vulnerable (VU) or protected. The purpose of listing threatened ecosystems is primarily to reduce the rate of ecosystem and species extinction. This includes preventing further degradation and loss of structure, function, and composition of threatened ecosystems. The study area falls within a least concerned vegetation type (Granite Lowveld) that is currently well protected (WP).

#### **4.3.3 Protected Areas**

Protected areas are areas of land that are, according to the National Environmental Management: Protected Areas Act, 2003, protected by law and as a result these areas are managed for the conservation of biodiversity.

There are two protected areas within a 10-kilometer radius from the proposed development namely, Dumaneni Reserve and The Kruger National Park. Dumaneni Reserve is an Informal land based protected area (NSBA 2010) approximately 2 kilometers south of the proposed alignment of the Malalane Bypass. The Kruger National Park is a formal land based protected area (NBA 2011), approximately 2 kilometers north of the proposed development.

No other protected areas are located within 10 km of the study area. Refer to Figure 5 below for the formal and informally protected areas associated with the study area.

#### **4.3.4 Important Bird Area (2015)**

The Kruger National Park is identified as an Important Bird Area (IBA) as well. It harbours globally threatened species, regionally threatened species and restricted range and biome-restricted species.

The Biodiversity Specialist will investigate the important bird species within the proposed alignment and the findings will be included within the EIAR.

#### **4.3.5 Mpumalanga Biodiversity Sector Plan**

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.

The entire study area is situated within an ESA Protected Area Buffer, associated with the Kruger National Park. These are areas surrounding protected areas that moderate the impacts of undesirable land-uses that may affect the ecological functioning or tourism potential of PAs. Buffer distance varies according to reserve status: National Parks - 10 km; Nature Reserves - 5 km buffer; and Protected Environments — 1 km buffer.

Most of the study area is classified as *heavily modified*. Heavily modified areas are those preferred for intensive land-uses such as the construction of settlements, industrial development and other land-uses that have a high impact such as agriculture. These land-uses should still be located and managed in ways that maintain any residual ecological functionality, and that does not impact negatively on species for which these modified sites may be important. In some cases, restoration may be advisable.

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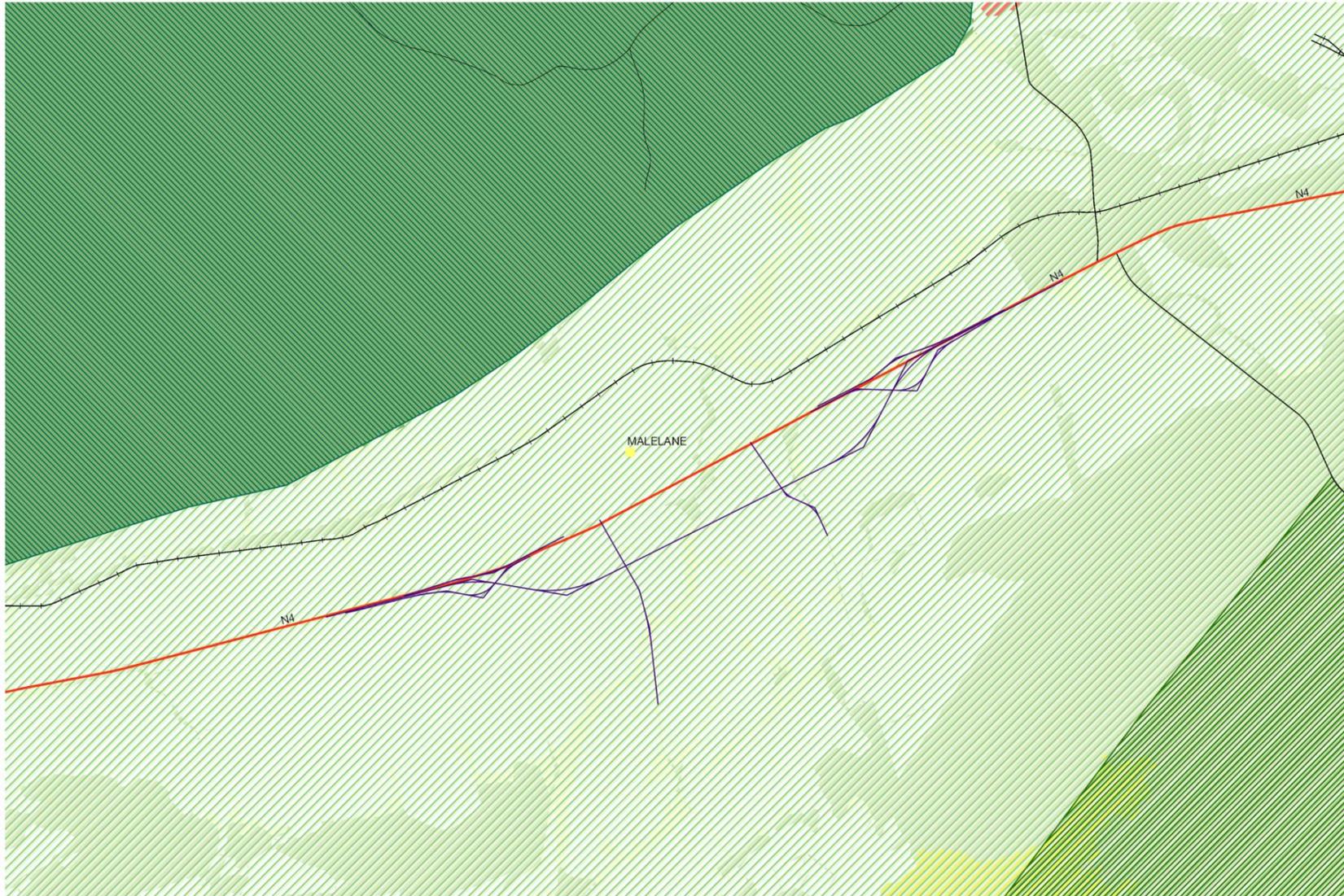
The remaining portions of the study area are classified as “*Other Natural Areas*”. Other Natural Areas refer to areas that have not been identified as a priority in the current systematic biodiversity plan but retain most of their natural character, while performing a range of biodiversity and ecological functions. Other Natural Areas offer much more flexibility in terms of permissible land uses, but the desired management objective should be to minimise habitat and species loss and ensure ecosystem functionality through strategic landscape planning.

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**Terrestrial Ecology**

**Description**

Proposed Malalane Ring Road



**Legend**

**Terrestrial CBAs**

- PA National Parks & Nature Reserves
- PA Protected Environment: Natural
- PA Protected Environment: Modified
- CBA Irreplaceable
- CBA Optimal
- ESA Landscape corridor
- ESALocal corridor
- ESA Species Specific
- ESA Protected Area buffer
- Other Natural Areas
- Moderately modified- Old lands
- Heavily modified
- South Africa town points
- National roads
- Secondary roads
- ARTERIAL ROUTE
- MAIN ROAD
- SECONDARY ROAD
- Railway lines
- National parks (NBA 2011)
- Formal protected areas (NBA 2011)
- Informal protected areas (NPAES)

1: 36 112



1,8 0 0,92 1,8 Kilometers

WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere  
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**FIGURE 5: TERRESTRIAL ECOLOGY ACCORDING TO THE MPUMALANGA BIODIVERSITY SECTOR PLAN, 2014**

## 4.4 Surface and Groundwater

The proposed study area falls under the Komati Catchment Area and quaternary catchment X24D. The quaternary Catchment receives 816.11 mm/annum. There are no NFEPA wetlands that have been noted around the site, however, one artificial wetland is present within the proposed site, classified as Lowveld Group 3 channeled valley bottom wetlands in accordance with the National Freshwater Ecosystem Priority Areas (NFEPA). The proposed project also entails the construction of a bridge crossing the Buffelspruit. The Crocodile River is located approximately 2 kilometers north of the proposed development area; however, the Crocodile River will not be impacted by the proposed road construction.

As part of the Environmental Impact Assessment process, the wetlands will be delineated, identified and included within the Environmental Impact Assessment Report.

According to the Mpumalanga Biodiversity Sector Plan, 2014 the proposed site is classified as an Ecological Support Area (Important Sub catchment) and Heavily Modified. The MTPA requirements for an Ecological Support Area (important sub catchment) are quoted as follows: This sub-category includes National Freshwater Ecosystems Priority Areas (FEPA) sub-catchments and Fish Support Areas (Tiger Fish). A river FEPA is the river reach that is required for meeting biodiversity targets for river ecosystems and threatened fish species. In managing the condition of a river FEPA, it is important to manage not only the river itself, but also the network of streams and wetlands as well as land-based activities in the sub-catchment that supports the river FEPA. A proportion of tributaries and wetlands need to remain healthy and functional in order for the river FEPA to be kept in a good ecological condition. This requires that management activities are focused on maintaining water quantity and quality and the integrity of natural habitat in the sub-catchment. Refer to figure 6 for the freshwater ecology according to MBSP.

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**Freshwater Ecology**

**Description**

Proposed Malalane Ring Road



**Legend**

- Fish Support Areas
- Strategic Water Source Areas
- Freshwater CBAs and ESAs**
- CBA: Aquatic species
- CBA: Rivers
- CBA: Wetlands
- Dams
- ESA: Important subcatchments
- ESA: Wetland clusters
- ESA: Wetlands
- Heavily modified
- Other Natural Areas
- South Africa town points
- National roads
- Secondary roads**
- ARTERIAL ROUTE
- MAIN ROAD
- SECONDARY ROAD
- + Railway lines
- Quarternary river catchment
- Rivers (NFEPA)**
- 1
- 5
- 10
- National wetlands map 4 (NFEPA)

1: 36 112



1,8 0 0,92 1,8 Kilometers

WGS\_1984\_VWeb\_Mercator\_Auxiliary\_Sphere  
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**FIGURE 6: FRESHWATER ECOLOGY ACCORDING TO THE MPUMALANGA BIODIVERSITY SECTOR PLAN, 2014**

## 4.5 Land use

The proposed site is under the administration of Nkomazi Local Municipality, Ehlanzeni District Municipality, in Mpumalanga province. The immediate surroundings to the proposed development site comprise mainly of agricultural lands. The residential communities located adjacent to the proposed alignment include informal, semi-suburban (township) as well as suburban households. The main economic activities and source of employment within the Nkomazi Local Municipality is farming, manufacturing and tourism. The Kruger National Park is located approximately 2 kilometres north of the proposed development.

## 4.6 Geology and Soils

Mpumalanga contains within its boundaries evidence of the earliest phases of the history of the world. The province is characterised by the presence of most the geological formations in the country such as the Witwatersrand Supergroup (gold ore resources), Bushveld Complex (platinum group of minerals), and the Basement Complex geological formations. The Basement Complex is found in the Lowveld as scattered patches in the Southern Highveld (McCarthy and Rubidge, 2005). The stratum consists of various rocks such as dolerite, granite gabbro, gneiss, norite, tuff, and shale. The Barberton Supergroup represents the greenstone belts in Mpumalanga. The greenstone is economically important and made up of valuable deposits such as many golds, antimony, copper-zinc, iron, asbestos, talc, mercury, magnesite, and gemstone. The Lowveld region of the province is underlain by African Cratonic Basement rocks which date more than 2 billion years, with the Highveld region made up of Karoo Sequence sedimentary rocks of a younger, Carboniferous to Permian age.

A large proportion of Nkomazi Local Municipality is underlain with quartz monzonite (30.7%) to the south and central region. Basalt is the second most dominant (16.5%) geology type, located to the east. The north western part is predominantly underlain with arenite and lava. The least occurring geology types are ultramafic rocks, granophyre, gabbro and dolerite.

## 4.8 Heritage

A Heritage Impact Assessment will be undertaken to determine whether the transformation of the proposed land will have any impact on heritage resources or artefacts.

The findings of this study will be included within the Environmental Impact Assessment Report.

## 4.9 Socio-Economic Environment

Mpumalanga Province is located in the north-eastern part of South Africa. The province borders two of South Africa's neighbouring countries viz. Mozambique and Swaziland; and other South African provinces namely; Gauteng, Limpopo, KwaZulu-Natal and Free State Provinces. Mpumalanga is characterised by the high plateau grasslands of the Middleveld, which rolls eastwards for hundreds of kilometres. In the north-east, it rises towards mountain peaks and terminates in an immense escarpment.

The Mpumalanga Province covers an area of 76 495km<sup>2</sup> and has a population of approximately 4 335 965 (IDP, 2017). The capital city of Mpumalanga is Mbombela (previously known as Nelspruit) and other major cities and towns include Emalahleni (previously known as Witbank), Standerton, eMkhondo (previously known as Piet Retief), Malelane, Ermelo, Barberton and Sabie. The province is

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divided into three district municipalities namely, Gert Sibande, Ehlanzeni and Nkangala Districts. The three districts are further subdivided into 17 Local Municipalities of which the proposed development falls within the Nkomazi Local Municipality of the Ehlanzeni District Municipality

The proposed development is located within the Nkomazi Local Municipality. The Nkomazi Local Municipality is located in the eastern part of the Ehlanzeni District Municipality of the Mpumalanga Province. The municipality is strategically placed between Swaziland (North of Swaziland) and Mozambique (east of Mozambique). It is linked with Swaziland by two provincial roads the R570 and R571 and with Mozambique by a railway line and the main national road (N4), which forms the Maputo Corridor.

The larger portion of the 410 907 individuals within the Nkomazi Local Municipality, lives in peri-urban and rural areas. Nkomazi Local Municipality currently has a high level of unemployment and a high household dependency. The levels of skill and qualifications of the population is 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.

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## 5. METHODOLOGY OF ASSESSING THE SIGNIFICANCE OF IMPACTS

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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 4**. 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 4: ASSESSMENT CRITERIA FOR THE EVALUATION OF IMPACTS**

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

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**TABLE 5: DEFINITION OF SIGNIFICANCE RATINGS**

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

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 6** and **Table 7**. 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 8**.

**TABLE 6: 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 7: DEFINITION OF CONFIDENCE RATINGS**

<b>Confidence ratings</b>	<b>Criteria</b>
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 8: DEFINITION OF REVERSIBILITY RATINGS**

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

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## 6. Impacts and Risks

Within this section, the impacts and risks to be assessed during the Environmental Impact Assessment Phase, is identified. The table below identifies all aspects to be assessed during the EIA phase of the project:

Activity	Impact / Risk	Nature	Extent	Duration	Probability	Significance	Degree to which impact:		
							Can be reversed	May cause irreplaceable loss of resources	Can be avoided, managed or mitigated
<b>Alternative 1 (Preferred alternative)</b>									
Site Clearance and construction activities	Floral habitat and diversity. Impact through vegetation clearance	Medium - negative	Site-specific	Long-term	Definite	Medium (-)	Unlikely	Probable	Yes – Sensitive areas will be demarcated
	Fragmentation and destruction of habitats	High - negative	Local	Long term	Highly Probable	Medium (-)	Unlikely	Probable	No – permanent impact on habitat
	Increase in establishment of alien invasive plant species	Medium - negative	Site-specific	Long-term	Probable	Medium (-)	Yes	Improbable	Yes - mitigated
	Soil erosion	High - negative	Site specific	Short term	Probable	Medium	Yes	Improbable	Yes - mitigated
	Dust generation	Moderate - negative	Site-specific	Short-term	Probable	Low (-)	Yes	Improbable	Yes – managed and mitigated
	Noise generation	Moderate - negative	Site specific	Short term	Probable	Medium	Yes	Improbable	Yes- managed and mitigated

	Traffic	High negative	Site specific	Short term	Highly Probable	Medium	Yes	Improbable	Yes – managed and mitigated
	Contribute to climate change and non-renewable resource use	Medium - negative	National	Medium-term	Improbable	Low (-)	Mostly	Probable	Yes –managed, and mitigated
	Soil contamination - by hydrocarbon spillages	Moderate - negative	Site-specific	Short-term	Probable	Low (-)	Yes	Improbable	Yes – avoided
	Surface and groundwater pollution	High-negative	Site Specific	Short-term	Probable	Medium (-)	Yes	Improbable	Yes- avoided
Operational activities (activities associated with new ring road)	Increase in establishment of alien invasive plant species	Medium - negative	Site specific	Long term	Probable	Medium (-)	Yes	Probable	Yes – managed and mitigated
	Ground and surface water pollution	High - negative	Local	Long-term	Probable	High (-)	Yes	Improbable	Yes – avoided
	Soil contamination	Moderate - negative	Site-specific	Short-term	Probable	Low (-)	Yes	Improbable	Yes – avoided, mitigated
	Impact on road safety of residents in Malalane	High - positive	Local	Long term	Definite	High (+)	Yes	Improbable	Yes – Positive Impact no need to mitigate

	Impact on businesses along the existing N4 highway	Moderate - negative	Local	Long term	Probable	Medium (-)	Unlikely	Improbable	Yes – can be minimised if Malalane is easily accessible from the N4 highway
<b>No-go alternative</b>									
Associated Impacts if the Malalane Ring Road is not approved	Socio-economic impact Loss of job opportunities	High - negative	Local	Long term	Definite	Neutral (no possible positive impact)	Yes	Improbable	Yes (if application is approved)
	Safety	High - negative	Site specific	Long term	Define	High (-)	Yes	Improbable	Yes (if application is approved)

## 7. Mitigation Measures

Impact/Risk	Mitigation Measure	Level of residual Risk
Impact on floral habitat and diversity through removal of indigenous vegetation and spreading of alien vegetation	<ul style="list-style-type: none"> <li>• Implement alien vegetation control;</li> <li>• Keep vegetation clearing to a to the development area and exclude any sensitivities from the proposed area;</li> <li>• Ensure that no fauna located on site are harmed;</li> </ul>	Medium
Dust generation during clearance of vegetation and other construction activities within and adjacent to site	<ul style="list-style-type: none"> <li>• Clearance of vegetation must be done in phases as per the construction programme;</li> <li>• Areas may not be disturbed and left for unattended for long periods of time;</li> <li>• Heavy moving vehicles and other vehicles must adhere to a speed limit of 40km/h;</li> </ul>	Low
Noise	<ul style="list-style-type: none"> <li>• Ensure that all construction equipment is well serviced as per the manufacture's manual throughout the construction phase</li> <li>• The requirements of the Noise Control Regulations (2013) must be adhered to</li> </ul>	Low
Traffic	<ul style="list-style-type: none"> <li>• The delivery of construction material and equipment should be limited to hours outside peak traffic times (including weekends) prevailing on the surrounding roads where possible;</li> <li>• Existing access roads must be used;</li> <li>• Delivery vehicles must comply with all traffic laws and bylaws;</li> <li>• Inform communities of planned construction activities that would affect vehicle/ pedestrian traffic.</li> </ul>	Medium

<p>Surface and groundwater contamination</p>	<ul style="list-style-type: none"> <li>• Employee training and awareness;</li> <li>• Spillages of any potentially hazardous materials should be cleaned immediately to avoid contamination of runoff;</li> <li>• No hazardous materials may be stored within 100m from the edge of any watercourse;</li> <li>• Compaction of rock to establish the water crossing must be closely monitored and all machinery used must be in a good working condition;</li> <li>• Water abstraction must be regulated and monitored in accordance with the Water Use License issued;</li> </ul>	<p>Medium</p>
<p>Soil erosion due to areas disturbed and soil contamination caused by hydrocarbon spillages</p>	<ul style="list-style-type: none"> <li>• Employee training and awareness</li> <li>• Spillages of any potentially hazardous materials should be cleaned immediately to avoid contamination;</li> <li>• Erosion abatement measures should be installed in areas prone to erosion</li> </ul>	<p>Very Low</p>
<p>Safety</p>	<ul style="list-style-type: none"> <li>• Ensure that sufficient and appropriate traffic warning signs are provided along the area where construction is taking place;</li> <li>• Workers must ensure that the correct PPE is worn at all times;</li> <li>• Construction vehicles and motorists must keep to the speed limit implemented</li> </ul>	<p>Medium</p>
<p>Socio-economic</p>	<ul style="list-style-type: none"> <li>• Labour must be provided to local residents as far as reasonably possible;</li> <li>• Access to Malalane Town from the N4 highway must be easily accessible for motorists and trucks to still be able to visit Malalane for refreshments or diesel/petrol along the Mozambique Corridor.</li> </ul>	<p>Medium</p>

## 8. Plan of Study

This Plan of Study for Environmental Impact Assessment (PoS for EIA) has been compiled in terms of the content requirements listed in Appendix 2 to the EIA Regulations of 2014 (Government Notice No. R 982 of 2014) under the National Environmental Management Act (Act No. 107 of 1998) (NEMA). The detailed PoS is provided in Table 4.

**Table 4 | Plan of Study for the EIA phase**

<b>Content as required by NEMA</b>
<b>A plan of study for undertaking the environmental impact assessment process to be undertaken, including:</b>
<b>(h) A description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;</b>
<p>The N4 Malalane Bypass has been in planning for a number of years whereby the appointed engineers discussed and weighed various alternatives.</p> <p><b><u>Location Alternatives</u></b></p> <p><b><u>Location Alternative 1:</u></b></p> <p><u>Bypassing Malalane along the northern side of the town:</u></p> <p>Malalane Town is bordered by the Kruger National Park and therefore the option of bypassing Malalane to the North of the town, could not be considered.</p> <p><b><u>Location Alternative 2:</u></b></p> <p><u>Upgrading the existing N4 Highway:</u></p> <p>The other alternative would be to upgrade the current N4 highway at its existing location going through Malalane. In order for this to be an option, sufficient space is required for the expansion of the highway as well as the road reserve. The current highway divides the town of Malalane into two sections and seemingly, residents would need to access both sections located to either side of the highway without any safety hazard. It is not preferred for any highway to include stop signs and/or traffic lights and therefore overhead bridges would have to be provided. Sufficient space for such development is however a limiting factor.</p> <p>Due to existing buildings and infrastructure already established within Malalane Town, this alternative could not be considered.</p> <p><b><u>Location Alternative 3:</u></b></p> <p><u>Bypassing Malalane along the southern side of the town:</u></p> <p>The only location alternative for the N4 Malalane Ringroad, was therefore to the south of the town of Malalane. Various factors for the proposed location had to be considered, such as:</p> <ul style="list-style-type: none"> <li>• Shortest location to reduce the cost of the alignment; as well as</li> <li>• Future and current developments;</li> </ul> <p>A residential and commercial development was recently applied for and approved on portion 5 and 6 of the farm Malelane 389-JU. Provision for the alignment of the proposed N4 Malalane Ringroad had to be incorporated into the township design which has been approved and therefore considering any other</p>

location alternatives which would be suitable for the affected farm and land owners would be problematic and have a huge financial impact on the owner of the approved development.

### **Layout Alternatives**

An Ecological, Aquatic and Heritage Impact Assessment will be undertaken as part of the Environmental Impact Assessment process, to identify any sensitivities within the project area to be of ecological, aquatic or heritage significance. An area of 300m is currently being investigated as part of the EIA process and should any sensitivities be identified within the specialist reports, the alignment might change slightly to ensure that no sensitive area and/or artefacts of cultural or historical significance is affected.

### **No-Go Alternative**

The no-go alternative would be to not authorise the proposed N4 Malalane Ringroad which would imply that the situation would remain as it currently is with the N4 highway going through the town of Malalane. With the increase in traffic flow towards Mozambique, it has become imperative to look at alternatives to accommodate the increase in traffic and ensure the road safety of residents within Malalane. It is believed that the traffic flow along the Maputo Corridor will continue to increase, and therefore the option of not constructing the N4 Malalane Bypass, would have a negative impact on the flow of traffic and safety of residents.

## **(ii) A description of the aspects to be assessed as part of the environmental impact assessment process;**

During the screening process various potential impacts on the biophysical and socio-economic environment were identified by the EAP. These include:

- Impact on terrestrial biodiversity, comprising fauna and flora;
- Impact on the nearby water resources;
- Impact on heritage resources, including archaeological and palaeontological (including the world heritage site);
- Visual impacts;
- Social impacts;
- Noise impacts;
- Traffic impact and
- Dust impacts.

## **(iii) Aspects to be assessed by specialists;**

An Ecological Assessment and Wetland Delineation will be conducted and will include the following:

- Assessment of the terrestrial ecology of the proposed development area;
- Delineating all wetlands within the proposed project site;
- Identifying the ecological sensitivity of the proposed area;
- Providing recommendations and mitigation measures for the construction activities proposed;

An Aquatic Assessment will be undertaken for the determination of the baseline aquatic assessment:

- The use of the Integrated habitat assessment (IHAS), Site Habitat Integrity (SHI), Fish assemblage integrity (FAII), the South African Scoring System version 5 (SASS5) protocols;
- Implementing aquatic indices such as the Macroinvertebrate Response Assessment Index (MIRAI) and the Fish Response Assessment Index (FRAI) and Habitat Cover Rating (HCR);

- Establishing the Present Ecological State and Ecological Importance and Sensitivity of the associated wetlands and rivers;
- Calculation of Ecostatus – if data allows;
- *In situ* water quality analysis related to the target water quality guidelines as set out by the Department of Water and Sanitation (DWS) for aquatic ecosystems (1996);
- Section 21 (c) & (i) impact assessment; and
- Recommendation of mitigation if proposed project is to proceed.

A Heritage assessment will also be conducted by a Heritage Specialist to assess the following:

- Assessment of the site proposed for the Malalane Ring Road;
- Identifying any possible heritage or archaeological sensitivities and providing recommendations with regards to the preservation of any possible findings

**(iv) A description of the proposed method of assessing the environmental aspects, including aspects to be assessed by specialists;**

The methodology used to assess the impacts is summarised below.

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 2. 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.

Criteria	Category	Description
Extent or spatial influence of impact	<b>Regional</b>	Beyond a 30km radius of the candidate site.
	<b>Local</b>	Within a 30km radius of the candidate site.
	<b>Site-specific</b>	On site or within 100 m of the candidate site.
Magnitude of impact (at the indicated spatial scale)	<b>High</b>	Natural and/ or social functions and/ or processes are <i>severely</i> altered
	<b>Medium</b>	Natural and/ or social functions and/ or processes are <i>notably</i> altered
	<b>Low</b>	Natural and/ or social functions and/ or processes are <i>slightly</i> altered
	<b>Very low</b>	Natural and/ or social functions and/ or processes are <i>negligibly</i> altered
	<b>Zero</b>	Natural and/ or social functions and/ or processes remain <i>unaltered</i>

Duration of impact	<b>Long-term</b>	More than 10 years after construction
	<b>Medium-term</b>	Up to 5 years after construction
	<b>Construction-term</b>	Up to 3 years

**TABLE 2: ASSESSMENT CRITERIA FOR THE EVALUATION OF IMPACTS**

**(v) A description of the proposed method of assessing duration and significance;**

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 3.

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

Very low	<ul style="list-style-type: none"> <li>• Low magnitude with a site-specific extent and construction period duration</li> <li>• Very low magnitude with any combination of extent and duration except regional and long term</li> </ul>
Neutral	<ul style="list-style-type: none"> <li>• Zero magnitude with any combination of extent and duration</li> </ul>

**TABLE 3: DEFINITION OF SIGNIFICANCE RATINGS**

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 4 and Table 5. 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 6.

**TABLE 4: DEFINITION OF PROBABILITY 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 5: DEFINITION OF CONFIDENCE 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 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.

**(vi) An indication of the stages at which the competent authority will be consulted;**

**Consultation with Competent Authority:**

**Comment on DSR:** The DFFE will be requested to provide comments on the Draft Scoping Report (DSR) in terms of Regulation 7(5) of GN R982 of 2014, when the DSR is made available for public comment. This is to ensure that the Final Scoping Report (FSR) contains sufficient information for the DFFE to make an informed decision and to ensure these reports satisfy the content requirements listed in the 2014 EIA

Regulations. In terms of these regulations, the DFFE is required to submit comments within 30 days of the request for comment.

Once the 30-day PPP of the DSR has been completed, a Comment and Response Report (CRR) will be compiled and will incorporate any comments received and responses thereto. The DSR will be finalised, taking cognisance of any comments received. The FSR, including the CRR, will be submitted to the DFFE for review. This CRR will be continuously updated throughout the project, until the Final EIR is submitted.

**Comment and decision on FSR:** In terms of Regulation 22 of GN R 982, the Competent Authority (DFFE) must, within 43 days of receipt of the FSR, consider it, and in writing – Accept the report and advise the EAP to proceed with the tasks contemplated in the Plan of Study for EIA. Refuse Environmental Authorisation if the proposed activity is in conflict with a prohibition contained in legislation. Or if the Scoping Report does not substantially comply with the objectives and content requirements for scoping reports in terms of the 2014 EIA Regulations and the applicant cannot ensure compliance with these regulations within the prescribed timeframe.

**Comment on Draft EIAR:** Should the FSR and Plan of Study for the EIA phase be accepted by the competent authority, the Draft EIR will be compiled. The DFFE will be requested to provide comments on the Draft EIR in terms of Regulation 7(5) of GN R982 of 2014 when it is made available for public comment. This is to ensure that the that the Final EIR contains sufficient information for the DFFE to make an informed decision and to ensure these reports satisfy the content requirements listed in the 2014 EIA Regulations. The DFFE will be required to submit comments within 30 days of the request for comment.

**Comment and decision on the Final EIR:** In terms of Regulation 24 of GN R982, the DFFE must within 107 days of receipt of the EIR and EMPr, in writing – Grant environmental authorisation in respect of all or part of the activity applied for, or refuse environmental authorisation.

The above consultation opportunities with the DFFE are based on the requirements of the EIA Regulations. However, additional consultation with the DFFE may be required, depending on the outcome of the PPP.

**(vii) Particulars of the public participation process that will be conducted during the environmental impact assessment process; and**

In total three opportunities for public participation during the EIA process have been and will be provided, namely:

**Initial comment period:** Background Information Documents (BIDs) and notification letters were provided to affected and neighbouring landowners and other stakeholders. Site notices were placed on the site perimeter as well as the surrounding area on 18 May 2022, and a newspaper advertisement was placed in the Lowvelder on 26 May 2022.

**Scoping Phase comment period (30 days):** The DSR will be released for comment for an official 30-day public comment period. I&APs will be given the opportunity to submit comments on the DSR and the Plan of Study for EIA. The DSR will be placed on Core Environmental Services' website during this period.

**EIA Phase comment period (30 days):** Similar to the DSR, the Draft EIR will be subjected to a 30-day public comment period, during which all I&APs will be offered an opportunity to comment on the proposed project

Throughout the EIA process, I&APs have the opportunity to contact the EAP to discuss the project and raise any issues or concerns they might have.

**(viii) A description of the tasks that will be undertaken as part of the environmental impact assessment process;**

The following tasks are proposed to be undertaken during the EIA Process:

**Appointment of specialists:** Should additional specialist studies be required as a result of comments and information received from I&APs, organs of state, commenting authorities and/or the Competent Authority, the relevant specialists will be appointed to undertake these studies.

**Compilation of Draft EIR:** The compilation of the Draft EIR will take cognisance of any comments received from I&APs, organs of state, commenting authorities, and/or the Competent Authority during the Scoping Phase. The Draft EIR will incorporate these comments and the necessary changes will be made to the report, where applicable. The Draft EIR will also incorporate the findings from any additional specialist assessments undertaken.

All comments received during public comment period on the Draft EIR will be compiled into a CRR. Responses to comments received will also be included.

A Draft EMPr will incorporate mitigation measures identified and obtained during the Scoping and EIA Phases, with the proviso that non-feasible mitigation measures will be discussed but will be clearly identified as being non-feasible. The EMPr will be used to enforce the mitigation measures and ensure that the impacts of all phases of the proposed project are properly managed and addressed. The EMPr will meet all the requirements of Appendix 4 of GN R982 of 2014.

**30-day PPP on the Draft EIR:** As mentioned in (viii) above, the Draft EIR will be subjected to a 30-day public comment period, during which all registered I&APs will be offered an opportunity to comment on the proposed project.

**Compilation of Final EIR for submission:** The compilation of the Final EIR will take cognisance of any comments received from interested and affected parties, organs of state, commenting authorities, and/or the Competent Authority. The Final EIR will incorporate these comments and the necessary changes (if any) will be made to the report. All comments received will be compiled into a CRR.

The Draft EMPr will be finalised to include any comments received during the PPP and submitted to the Competent Authority for consideration and decision.

**(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.**

Suitable mitigation measures that can be adopted to reduce or avoid negative impacts and improve positive impacts for the project will be identified in detail during the EIA-phase. These mitigation measures will be included in the EIR and will be incorporated into the EMPr during the EIA Phase. Some high-level mitigation measures have been identified in the Scoping phase:

**1. Impact on Fauna and Flora**

It must be ensured that vegetation removal is restricted to the proposed construction area. Operational activities shall be restricted to the development footprint. An alien and invasive vegetation control plan should be developed and implemented to inhibit alien plant establishment and proliferation. Vegetation removed may not be pushed into drainage lines or watercourses.

Care should be taken with the choice of herbicide to ensure that no additional impact and loss of indigenous plant species occurs due to the herbicide used; and footprint areas should be kept as small as possible when removing alien plant species. Should any protected plant species be encountered within the subject property in the future, the following should be ensured: ensure effective relocation of individuals to suitable offset areas; and all rescue and relocation plans should be overseen by a suitably qualified specialist. Ensure that operational related activities are kept strictly within the footprint area.

**2. Impact on Surface Water**

Any area where active erosion is observed must be immediately rehabilitated in such a way as to ensure that the hydrology of the area is re-instated to conditions which are as natural as possible. Ensure that operational activities do not affect watercourses on the site. Wetland areas must be protected and a buffer

area must be imposed on such areas. Water consumption are to be regulated as per the requirements of the Water Use License.

### **3. Social Impacts**

Continue to recruit local labour and contractors as far as feasible. Employ labour-intensive methods where feasible.

### **4. Visual Impacts**

The visibility analyses consider worst-case scenarios, using line-of-sight, based on topography. Within the receiving environment, specific viewers (visual receptors) experience different views of the visual resource, and value it differently. Viewers will be affected because of the alterations of the views as a result of the proposed development

### **5. Dust Impacts**

Dust will mostly be generated during the removal of vegetation as well as the construction of the ring road and therefore measures must be taken to reduce this impact during this phase of development.

### **6. Impacts of Hazardous Substances**

The management and protection of the environment would be achieved through the implementation of the EMPr, which, specifies the storage details of hazardous compounds and the emergency procedures to follow in the event of a spillage.

Typical mitigation measures include storage of the material in a bunded area, with a volume of 110% of the largest single storage container or 25% of the total storage containers whichever is greater, refuelling of vehicles in designated areas that have a protective surface covering and utilisation of drip trays for stationary plant.

For each impact assessed, mitigation measures will be proposed to reduce and / or avoid negative impacts and enhance positive impacts. The mitigation measures identified will be incorporated into the EMPr during the EIA Phase to ensure that they are implemented throughout the lifecycle of the proposed project. The EMPr would become a legally binding document should this project receive EA.

## 9. REFERENCES

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*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*

*National Water Act 36, 1998*

*Mpumalanga Spatial Development Framework, 2019*

*Nkomazi Local Municipality Integrated Development Plan, 2018 - 2022*