



SITE VERIFICATION ASSESSMENT

PROPOSED UPGRADE OF THE SCHOEMANSKLOOF
ROUTE R539, MPUMALANGA, SOUTH AFRICA



Proponent:
SANRAL

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Amendments to Document

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1 INTRODUCTION

The South African National Roads Agency SoC Limited (SANRAL) is proposing road upgrades and improvements to the existing Schoemanskloof Route (R539) which is an alternative route to the N4 national toll route between eNtokozeni (Machadodorp) in the west and the T-junction between these two roads at Montrose, situated approximately 30 km east of Mbombela (Nelspruit).

As part of continual upgrading of this road corridor between Pretoria in the west and Maputo, Mozambique in the east; a need has arisen to bring about such improvements to this section of road to:

- Improve traffic flow speeds; and
- Drastically improve the safety of motorists by allowing for improved overtaking opportunities amidst the presence of slow-moving traffic, creating vastly improved climbing off- and onto the R539 with the introduction of appropriately designed, constructed and marked intersections.

This will be achieved by:

- Lengthening existing overtaking lanes along certain sections in need of this improvement,
- Introducing new overtaking lanes along certain sections in need of this improvement,
- Re-aligning certain sections of road towards improved safety of traffic flow,
- Introducing road safety upgrades and features to the existing treacherous bend at Poplar Creek (synonymous with high number of vehicular accidents resulting in high numbers of injuries and fatalities), and
- Introducing formal and safer intersections to reduce the high number of informal accesses on- and off the R539.

Currently, a high number of road accidents – many resulting in fatalities, are experienced along the Schoemanskloof Route which can be attributed to a number of factors such as the higher number of trucks utilising the route and often contributing to frustration of passenger vehicle drivers who tend to take more risks in overtaking such slow-moving trucks; drivers having to climb-off the R539 route and often times around blind bends or sections where high traffic speed occurs with no dedicated turning lanes present; and drivers having to climb onto the R539 under similar circumstances.

For the upgrades, two different painted median scenarios are proposed for implementation on the road:

- 300 mm wide painted three-line system in cases where a two-lane facility or three-lane facility are applicable.
- 600 mm wide painted median with milled-out rumble strips in cases where a three-lane facility in both directions (“four-lane undivided carriageway”) is applicable.

In cases where passing/climbing lanes are proposed, i.e., the road is widened; the following gravel shoulder widths will be implemented where the road is in fill:

- 2,4 m wide gravel shoulders where the road is in fill of up to 3 m.

- 2,7 m wide gravel shoulders where the road is in fill of higher than 3 m. A guardrail will be implemented in this case, which will result in an effective functional gravel shoulder width of 1,9 m.

The existing gravel shoulders for the remainder of the road will be rehabilitated where feasible. The length of existing gravel shoulders to be rehabilitated amounts to $\pm 30\%$ of the length of the road, or ± 38 km in total length.

There are four main intersections situated along Schoemanskloof Road and these will be upgraded with protected turning lanes as well as acceleration and deceleration tapers:

- Road 796 (Goedewil at km 7,105)
- Road 792 (Elandshoogte at km 14,570)
- P8/1 (R36 to Mashishing known as “Bambi” at km 18,094)
- Weltevreden Road (at km 44,076)

Added to these upgrades; an *access management plan* has been developed. It reduces the number of direct access points along Schoemanskloof Road from approximately 130 accesses to 24 intersections. The proposed intersections will have protected turning lanes as well as acceleration and deceleration tapers. This will significantly improve the aforementioned safety concerns and create a much safer road for travellers and landowners along the route. Access management along the route will, however, have a phased implementation. Only prioritized intersections will be constructed as part of the road upgrade construction.

The proposed access consolidation and intersection upgrades will address safety concerns raised by I&APs by providing protected right-turning lanes at each intersection as well as acceleration and deceleration tapers. These intersections as proposed are also positioned at locations with sufficient horizontal and vertical sight distances to safely turn. The proposed *access management plan* also improves sight distances along the route where feasible by creating wider cuttings to improve the line of sight along bends.

All the proposed intersection positions meet the highest achievable design and safety standards and are an improvement from the status quo in most cases.

In addition, safety upgrades of what is known as Poplar Creek will also be undertaken.

Prism Environmental Management Services (Prism EMS) has been appointed to undertake the requisite Environmental Authorisation process.

In line with the recent Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of Section 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998 when applying for Environmental Authorisation (GN 320 of 20 March 2020), a Site

Sensitivity Verification is required prior to commencing with the specialist assessment and aims to confirm the sensitivity of the site identified by the National Screening Tool.

This Site Verification Report therefore aims to provide the findings of this Site Sensitivity Verification and will included as an appendix to the Basic Assessment Report.

2 REQUIREMENTS OF THE SITE SENSITIVITY VERIFICATION AND REPORT OUTLINE

In terms of GN 320 of 20 March 2020, the site sensitivity verification can be undertaken by an environmental assessment practitioner (EAP) or a specialist and should utilize the following methodology:

- A desk top analysis, using satellite imagery;
- A preliminary on-site inspection; and
- Any other available and relevant information.

Further, the outcome of the site sensitivity verification must be recorded in a report that-

- Confirms or disputes the current use of the land and the environmental sensitivity as identified by the screening tool, such as new developments or infrastructure, the change in vegetation cover or status etc.;
- Contains a motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity; and
- Is submitted together with the relevant assessment report prepared in accordance with the requirements of the Environmental Impact Assessment Regulations¹ (EIA Regulations, 2014).

In order to ensure these requirements are met, they are tabulated together with the associated chapter name in Table 2-1.

Table 2-1: Report Outline

Chapter Number	Chapter Name	Link to GN 320 of 20 March 2020
Chapter 1	Introduction	-
Chapter 2	Requirements of the Site Sensitivity Verification and Report Outline	-
Chapter 3	Details of Environmental Assessment Practitioner	-
Chapter 4	Desktop Assessment of Sensitivity	<ul style="list-style-type: none"> • Any other available and relevant information

Chapter 5	Satellite Imagery Assessment	<ul style="list-style-type: none"> A desk top analysis, using satellite imagery
Chapter 6	Site Verification	<ul style="list-style-type: none"> A preliminary on-site inspection Contains ... evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity
Chapter 7	Conclusion	<ul style="list-style-type: none"> Confirms or disputes the current use of the land and the environmental sensitivity as identified by the screening tool, such as new developments or infrastructure, the change in vegetation cover or status etc.; Contains a motivation ...of either the verified or different use of the land and environmental sensitivity

3 DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

Prism EMS have been appointed to undertake the required Environmental Authorisation Process in terms of the National Environmental Management Act (NEMA), 1998 (Act 108 of 1998) and the associated Environmental Impact Assessment (EIA) Regulations, 2014 (as amended). Details of the Environmental Assessment Practitioner who was responsible for the Site Verification is provided in Error! Reference source not found. and the relevant Curriculum Vitae is included in the Basic Assessment Report.

Table 3-1: Details of the EAP

EAP:	Ryan Nawn	Vanessa Stippel
Company:	Prism Environmental Management Services	Prism Environmental Management Services
Highest Qualification:	M.Sc. Environmental Management	M.Sc. Ecology, Environment and Conservation
Experience:	21 years	12 years
Affiliation/Registration	SAATCA Registered Lead Auditor Member of IAIAAsa	Professional Member of Southern African Institute of Ecologists and Environmental Scientists Member of IAIAAsa SACNASP: Pr.Sci.Nat. (116221) EAPASA: Registered EAP in terms of Section 24H of NEMA, 1998 (as amended) (2019/175)
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4 DESKTOP ASSESSMENT OF SENSITIVITY

4.1 Project Location

The Schoemanskloof R539 road is situated between eNtokozweni (Machadodorp) and Mbombela (Nelspruit) in the Mpumalanga Province of South Africa. It serves as an alternative route of road travel between these regions – the other being the existing N4 national toll route that is situated along the Elands River valley in the south passing Ngodwana. The whole length of the existing Schoemanskloof R539 road comprises 61 km. The road's furthest western end joins with the N4 national toll route situated 5,5 km east of eNtokozweni, whilst its furthest eastern end is a T-junction with the same N4 national toll route at Montrose situated approximately 30 km east of Mbombela (Figure 4-1).

The route and therefore its proposed upgrades fall within the:

- Ehlanzeni District Municipality
 - Ward 12 of the City of Mbombela Municipality
- Nkangala District Municipality
 - Ward 5 and Ward 7 of Emakhazeni Local Municipality

Figure 4-1 provides an overview of the project locality.

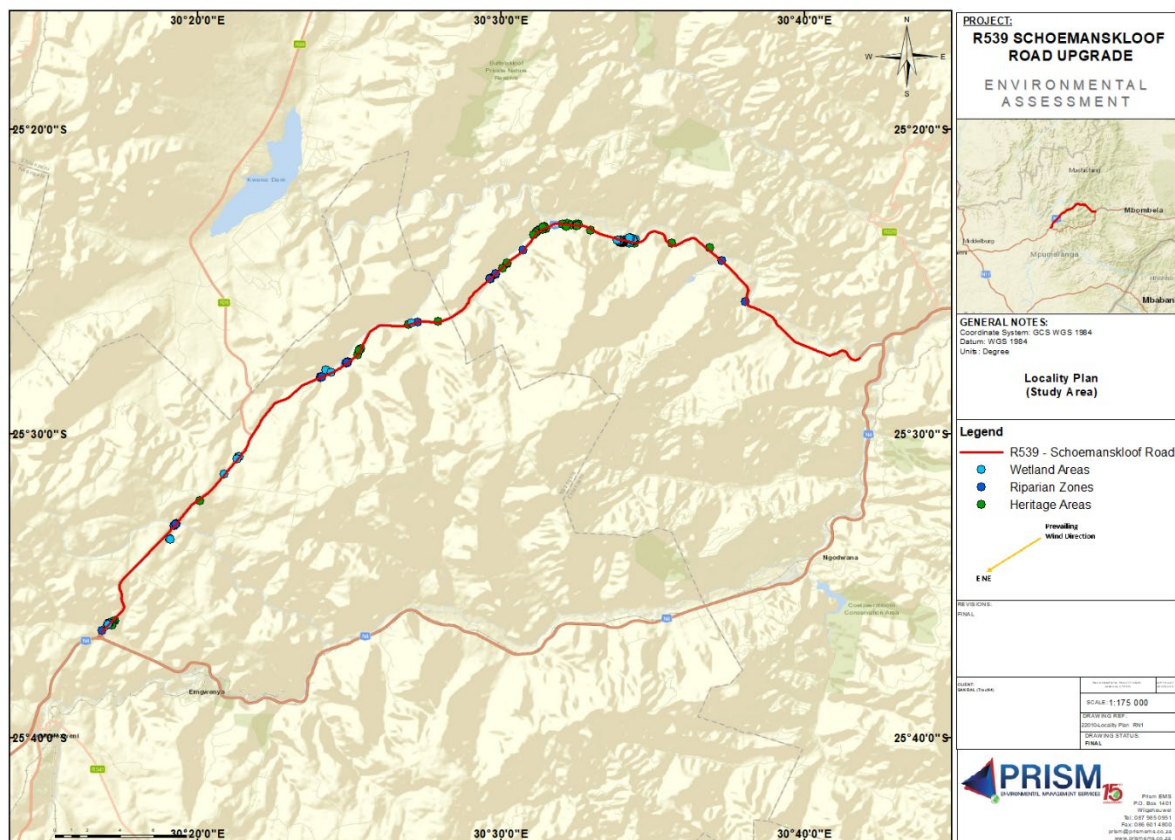


Figure 4-1: Locality Map

4.2 Summary of the Findings of the National Screening Tool

In terms of the Notice of the requirements to submit a report generated by the National Web Based Environmental Screening Tool in terms of Section 24(5)(h) of the National Environmental Management Act, 1998 and Regulation 18(1)(b)(v) of the EIA Regulations, 2014 (as amended) (GN 960 of 5 July 2019), a report generated on the National Screening tool must be submitted as part of the Application for Environmental Authorisation. It is also an important component of the site sensitivity verification, as the aim of the verification is to confirm/dispute the findings of the National Screening Tool Report.

As per the requirements, a Report has been generated and is included as Appendix 14.8.1. of the BAR. A summary of the findings of the report are included in Table 4-1.

Table 4-1: Desktop Sensitivity as identified by the National Screening Tool

Theme	Very High Sensitivity	High Sensitivity	Medium Sensitivity	Low Sensitivity
Agricultural				
Animal Species				
Aquatic Biodiversity				
Archaeological and Cultural Heritage				
Civil Aviation				
Defence				
Palaeontology				
Plant Species				
Terrestrial Biodiversity				

4.3 Additional Desktop Sensitivity Assessment

In addition, a Desktop assessment of sensitivity has been undertaken:

4.3.1 Topography

The westbound carriageway of Schoemanskloof follows a general uphill grade with localised downhill as a result of the rolling/mountainous terrain, and vice-versa for the eastbound carriageway. Due to the challenging terrain, deep cuts, high fills and in some instances high cliffs are present along the route. In addition, from \pm km 40,4 onwards, the Crocodile River is situated to the north of the Schoemanskloof road and often meanders in close proximity to the road. It is therefore seen that numerous tributaries to the Crocodile River flow from a southerly direction to a northerly direction to where the Crocodile River flows, meaning that these tributaries are crossed by the existing Schoemanskloof Road and its proposed upgrades.

Maximum longitudinal gradients are typically in excess of 6-8 % as a result of the steep terrain.

4.3.2 Geology and Soils

Figure 4-2 further below is a geological map of where the Schoemanskloof Road traverses. Most of the site is underlain by sedimentary and igneous extrusive rocks of the Pretoria Group, Transvaal Supergroup. Notably a section of the eastern part of the alignment is underlain by dolomitic bedrock. This section and adjacent areas may be underlain by dolomitic rock at depths of less than 100 m. Sections of the site are also underlain by igneous intrusive rocks and quaternary deposits of alluvium and scree.

The following key provides the type of geological features depicted by the map:

Name: Type of rock/Sequence/Group/Sub-group/Formation

- Vsi: Sedimentary and Volcanic Rock/Vaalian/Pretoria/Silverton/Lydenburg Member
- Vsm: Sedimentary and Volcanic Rock/Vaalian/Pretoria/Silverton/Machadodorp Member
- Vsb: Sedimentary and Volcanic Rock/Vaalian/Pretoria/Silverton/Boven Member
- Vdw: Sedimentary and Volcanic Rock/Vaalian/Pretoria/Dwaalheuwel
- Vt: Sedimentary and Volcanic Rock/Vaalian/Pretoria/Timeball Hill/Klaarperkop Member
- Vmd: Sedimentary and Volcanic Rock/Vaalian/Chuniespoort/Malmani
- Vdi: Intrusive Rock/Vaalian
- Q: Sedimentary and Volcanic Rock/Quaternary

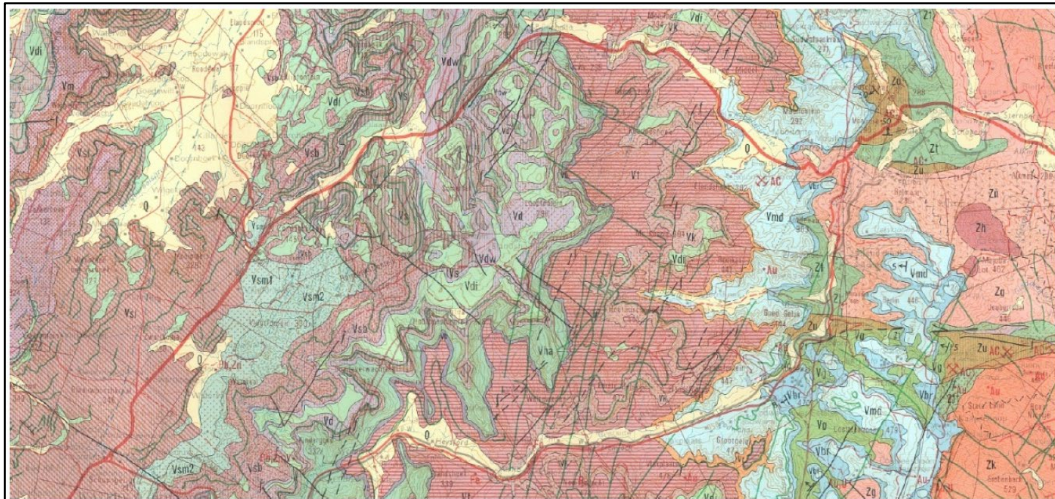


Figure 4-2: Geological map of the Schoemanskloof Road

4.3.3 Land Use

The whole length of the Schoemanskloof Road is currently mostly developed – either as plantations (**Figure 4-3**), grazing land, agricultural activities and commercial activities such as guest houses and similar accommodation and associated activities, holiday resorts, and a fuel station. The land use along Schoemanskloof mainly includes commercial and agricultural activities.

The commercial activities include (but not limited to) guest houses, holiday resorts, small shops such as the Joubert & Seuns citrus farmstall and a convenience store at the Viva Fuel Service Station. The areas along the road are mostly altered by anthropogenic activity. The areas along the road are characterised by cleared areas next to the existing R539/ Schoemanskloof road within the road servitude. Outside of these areas the physical environment is marked by the farming of citrus and vegetables (eastern section) while the western section is primarily used for Pine and Eucalyptus plantations.

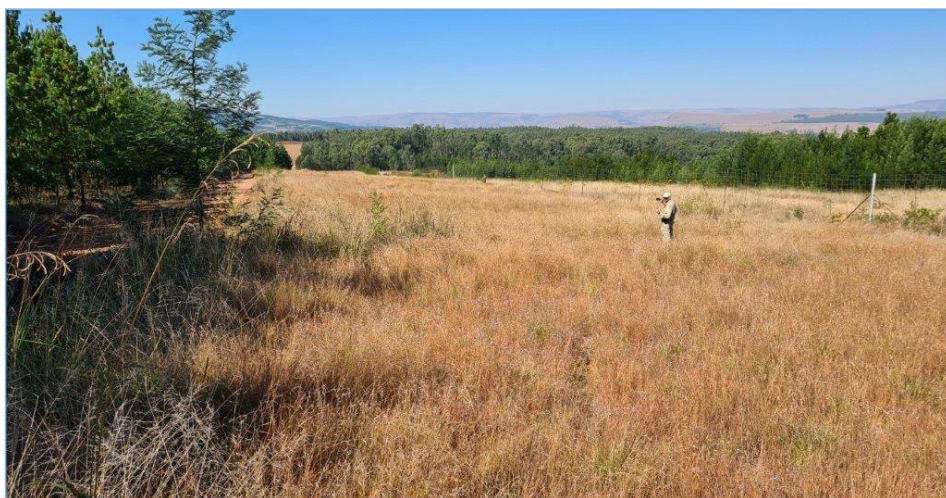


Figure 4-3: Forestry land use dominates the western section of the Schoemanskloof Route

4.3.4 Agricultural Land Capability

Agricultural land capability is the total suitability for use, in an ecologically sustainable way, for crops, for grazing, for woodland and for wildlife. The National screening tool (**Figure 4-4**) was used to better understand agricultural potential. According to the Land Capability data available from DFFE, the existing Schoemanskloof Road (and therefore associated upgrades), traverse areas that range from having a low to very high agricultural land capability.

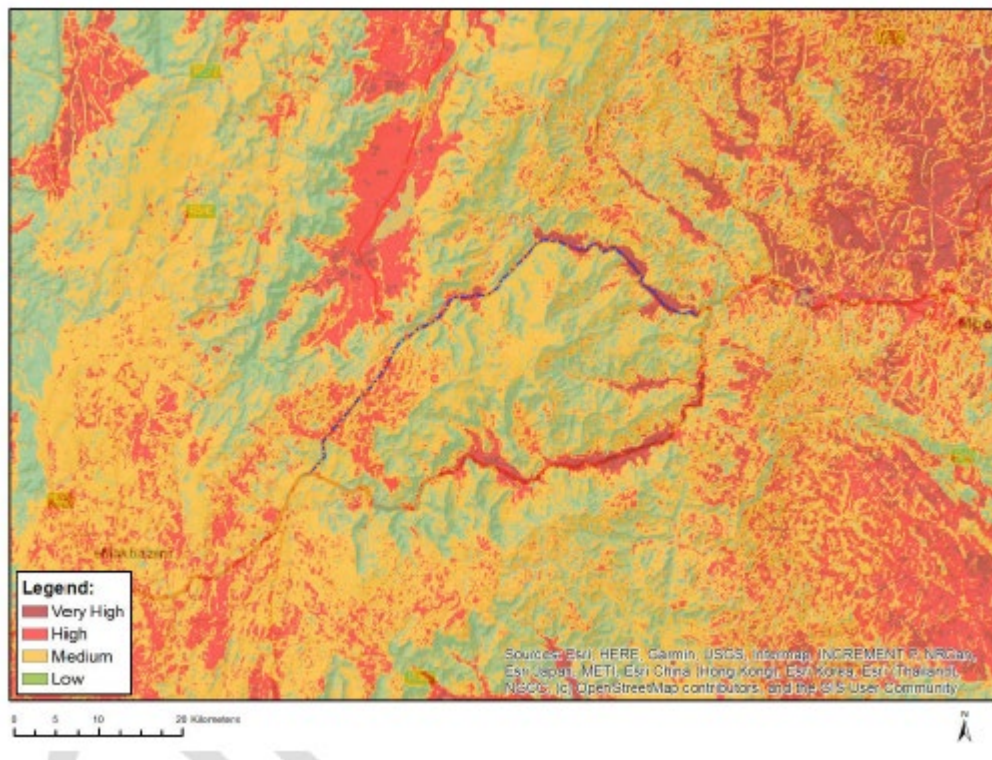


Figure 4-4: Agricultural Land Capability

It should be noted however that the proposed development is a linear development aimed at improving road safety and traffic. It will occur primarily within the existing road reserve and therefore does not impact land capability in the area.

4.3.5 Terrestrial Biodiversity, Plants and Animal Sensitivity

Due to the length of the Schoemanskloof road, the sections to be upgraded, transect three regional vegetation units representing three biomes, viz.:

- Lydenburg Montane Grassland – Grassland Biome (Vulnerable)
- Legogote Sour Bushveld – Savanna Biome (Endangered)
- Northern Misbelt Forest – Forest Biome (Least Concern)

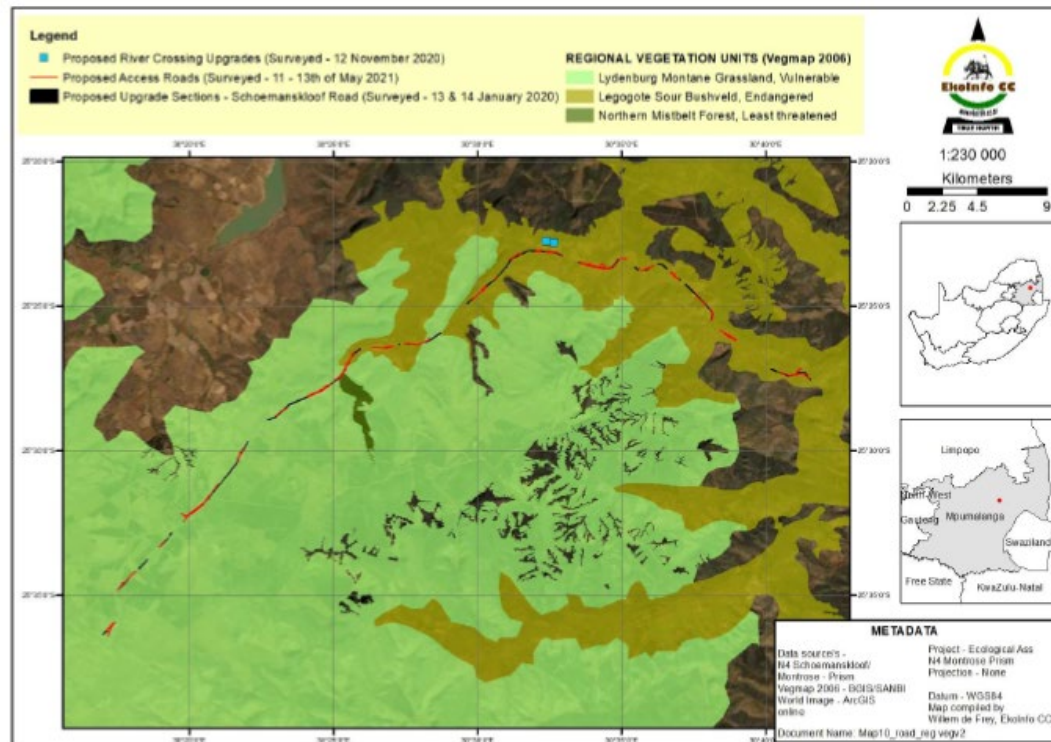


Figure 4-5: Regional vegetation units associated with the proposed road upgrade sections along the Schoemanskloof road

In addition, part of the road upgrade traverse areas that is categorized as 'CBA Irreplaceable' as well as 'CBA Optimal'.

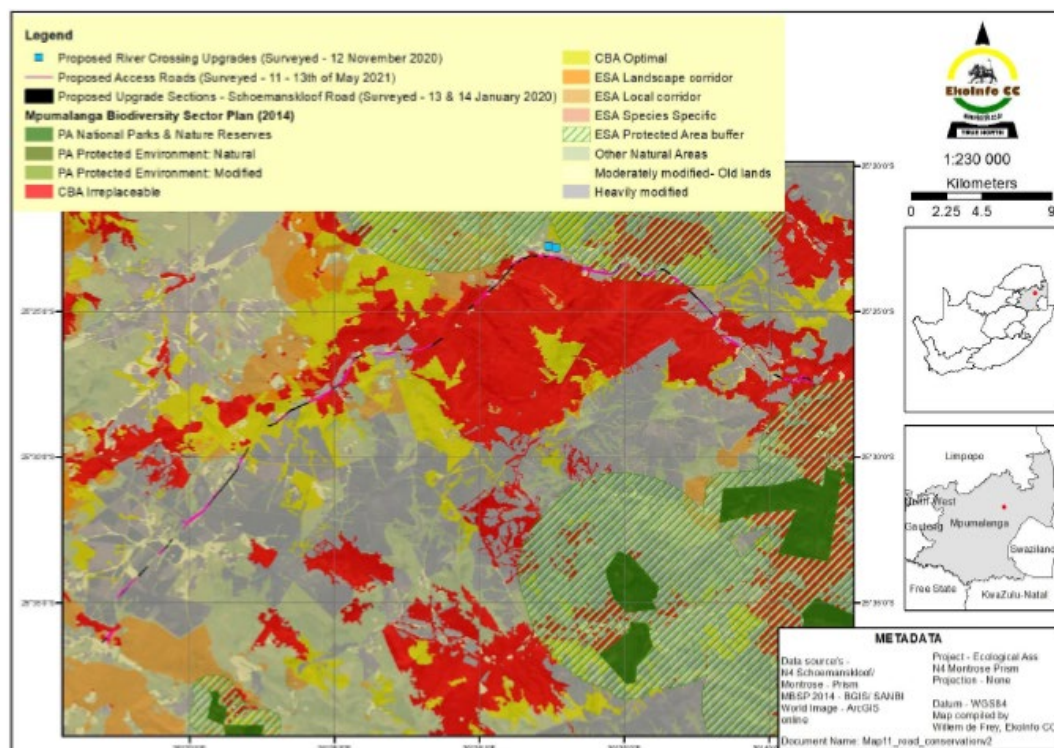


Figure 4-6: Distribution of Mpumalanga Biodiversity Sector Plan (2014) areas

4.3.6 Surface Water

The proposed Schoemanskloof Road upgrades located along the existing R539 Route between eMgwenya (Waterval Boven) and Mbombela (Nelspruit) measures just over 60 km in length, and is located in quaternary catchments X21E, X21D and X21G in the Inkomati-Usuthu Management Area (WMA 3) (**Figure 4-7**). According to the Mpumalanga Biodiversity Sector Plan, the some of the proposed activities are situated in or in proximity of Ecological Support Areas and/or Critical Biodiversity Areas (**Figure 4-8**).

The Crocodile River flows in an easterly direction along the northern side of the N4 Schoemanskloof (R539) Route. It is then crossed by the N4 toll route via Ngodwana approximately 250 m north of the existing N4 / R539 T-junction. Its 10,446 km² catchment area originates north of Dullstroom, Mpumalanga, in the Steenkampsberg Mountains. Downstream of Kweni Dam, the Crocodile River winds through the Schoemanskloof and down the Montrose Falls. It then flows eastwards past Mbombela (Nelspruit) where it forms the southern boundary of the Kruger National Park and joins the Komati River at Komatipoort before continuing through Mozambique to the Indian Ocean. At approximately 990 m downstream of the Montrose Falls that the Elands River confluences with the Crocodile River. The Elands River upper catchment is near the town of Machadodorp in the Highveld zone of Mpumalanga Province.

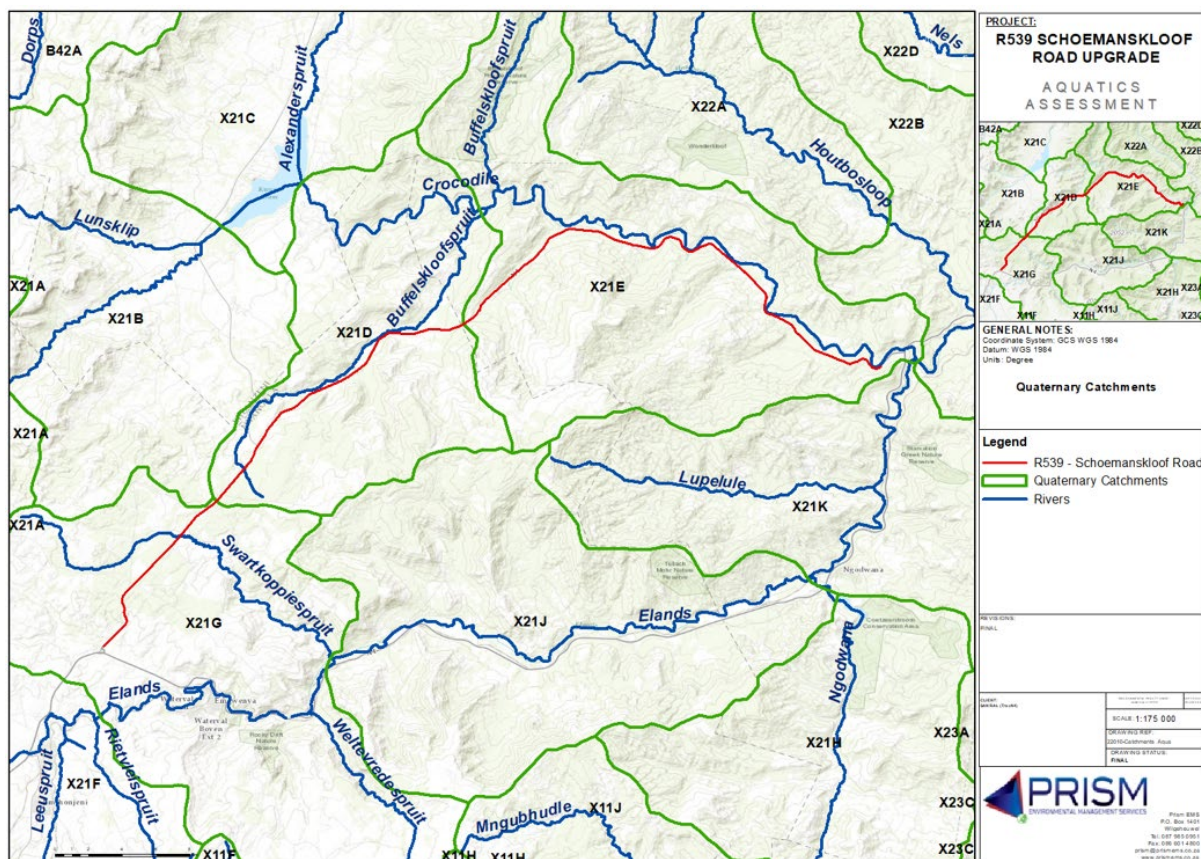


Figure 4-7: Locality of the Schoemanskloof Road upgrades within Quaternary Catchments X21G, X21D and X21E, Inkomati-Usuthu Water Management Area

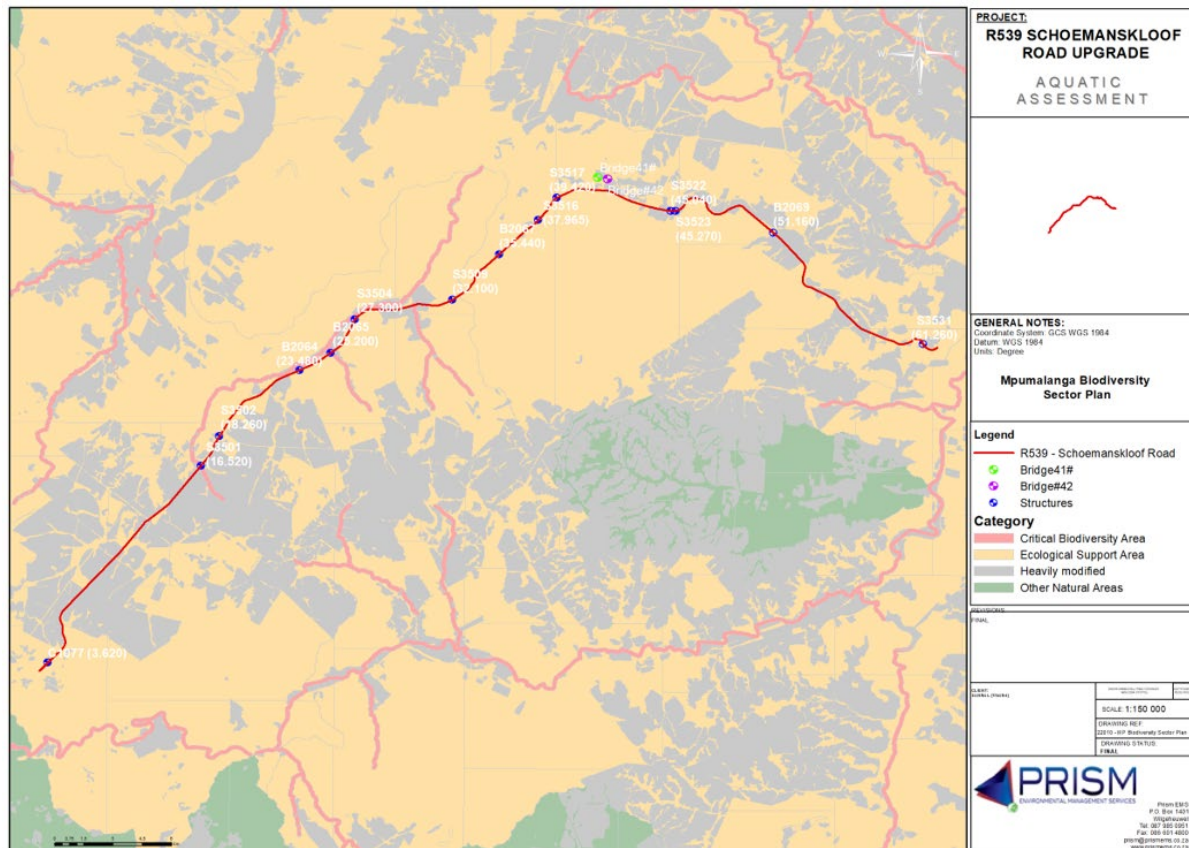


Figure 4-8: Location of the Study Site within the Mpumalanga Biodiversity Sector Plan

4.3.7 Heritage and Palaeontology

4.3.7.1 Archaeology and Cultural Heritage

The study area is altered to the extent that most surface indicators of heritage sites would have been affected by the Schoemanskloof Road, old quarries, old roads, farming infrastructure and especially cultivated lands and orchards present in the valley. The study area is characterised by cleared areas next to the existing R539/ Schoemanskloof road within the road servitude.

Outside of these areas the physical environment is marked by the farming of citrus and vegetables (eastern section) while the western section is primarily used for Pine and Eucalyptus plantations. Some of the archaeological sites within this area have been preserved such as Blaauboschkraal, however many of the stone walled settlements were probably lost during the original preparation of the plantations.

In terms of the Iron age, which represents the spread of Bantu speaking people and includes both the Pre-Historic and Historic periods, different types of sites can be identified. These sites can be divided into simple and complex ruins. Simple ruins are normally small in relation to more complex sites and have smaller central cattle byres and fewer huts. Complex ruins consist of a central cattle byre, which has two opposing entrances and several semi-circular enclosures surrounding it. The perimeter wall of

these sites is sometimes poorly visible. Huts are built between the central enclosure and the perimeter wall. These are all connected by track-ways referred to as cattle tracks. These tracks are made by building stone walls, which forms a walkway for cattle to the centrally located cattle byres. A combination of these features occurs on a few dispersed sites to the northwest of the study area.

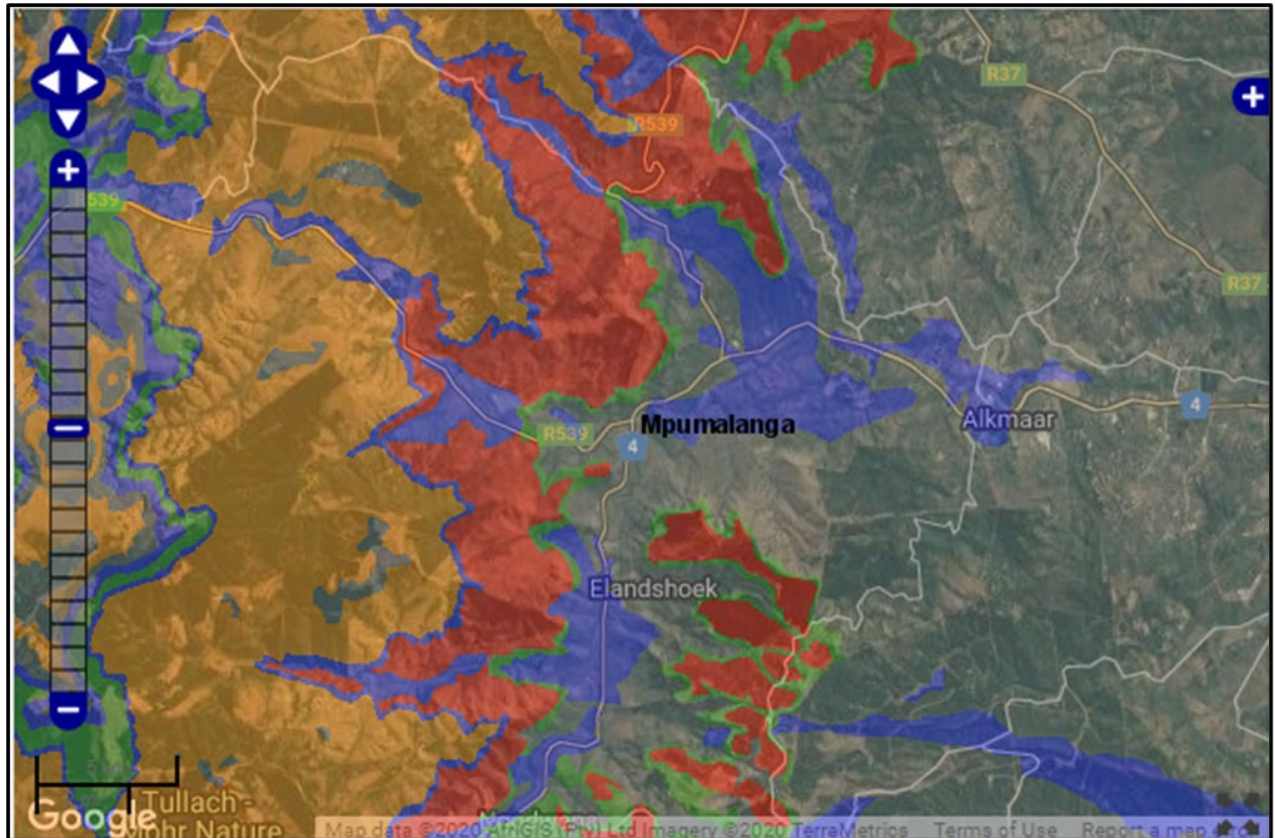
Individual sites range from simple enclosures, which consist of single or two concentric stonewalled circles found in small, isolated settlements, to complex sites with large central enclosures which have smaller enclosures attached to their outer walls. The walls are built with undressed, locally occurring, stone. Walls on average are 0.5 to approximately 1 meter high, although often only the foundation stones are left.

In terms of the cultural landscape, the area is characterized by the development of the R539/Schoemanskloof road, surrounding agricultural activity and is rural in character. The cultural landscape is layered by an extensive Iron Age stone walled component dating to the Bakoni period followed by a historical layer of early western farmers.

No known graves are indicated on databases consulted but graves and cemeteries are widely distributed across the landscape and can be expected anywhere.

4.3.7.2 Palaeontology

The Palaeontological (Fossil) Sensitivity Map developed by SAHRA was reviewed and shows that the proposed Schoemanskloof Road upgrades and access roads do not fall within an area with high fossil sensitivity. Instead, the site falls within an area of insignificant or zero sensitivity and no palaeontological studies are required (**Figure 4-9**).



Colour	Sensitivity	Required Action
RED	VERY HIGH	Field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	Desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	Desktop study is required
BLUE	LOW	No palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	No palaeontological studies are required
WHITE/CLEAR	UNKNOWN	These areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map

Figure 4-9: Palaeontological (Fossil) Sensitivity Map (obtained from South African Heritage Resources Information System (SAHRIS) - <https://sahris.sahra.org.za/map/palaeo>)

5 SATELLITE IMAGERY ASSESSMENT

5.1 Historical Imagery

An assessment of the available historic imagery of the site was undertaken. The earliest satellite imagery for the area was December 1984 and clearly shows that the road was developed at this stage. Due to the extent of the road upgrade, google earth imagery is provided in three sections (**Figure 5-1-Figure 5-3**).



Figure 5-1: Google Earth Imagery from December 1984 – Section 1

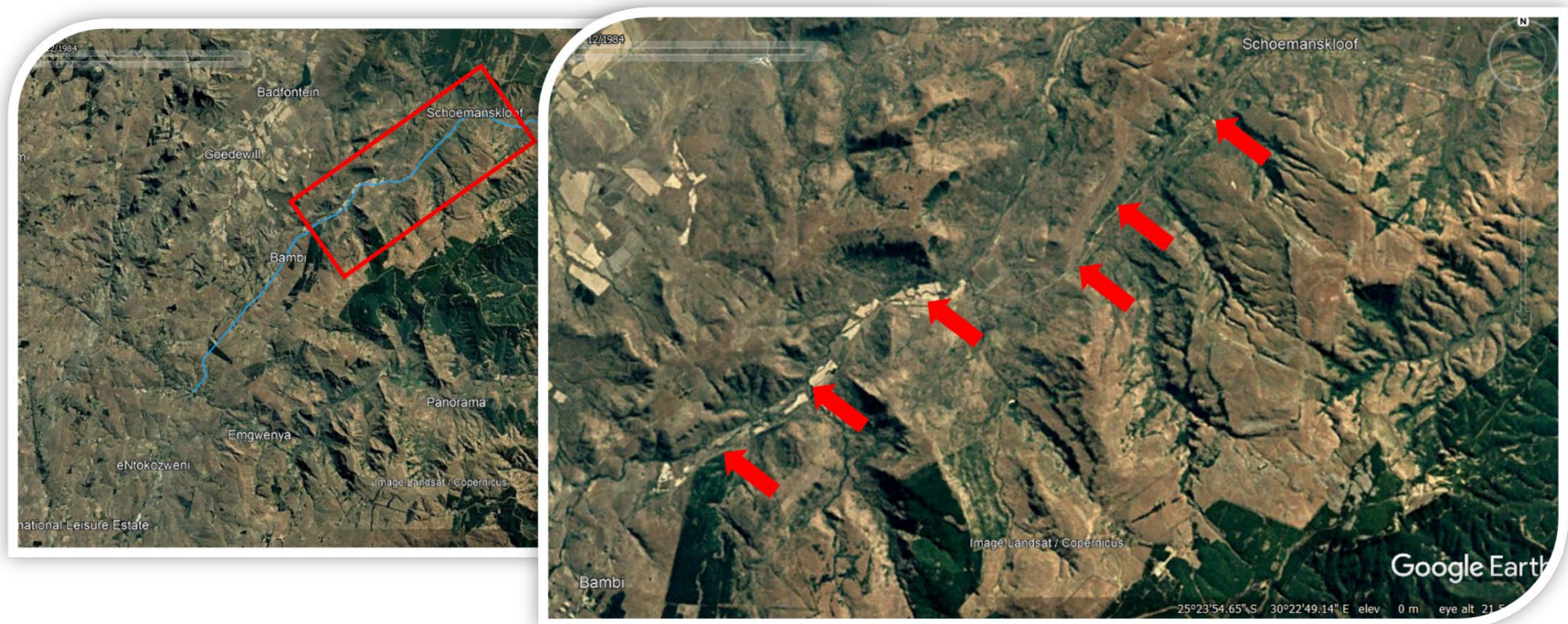


Figure 5-2: Google Earth Imagery from December 1984 – Section 2

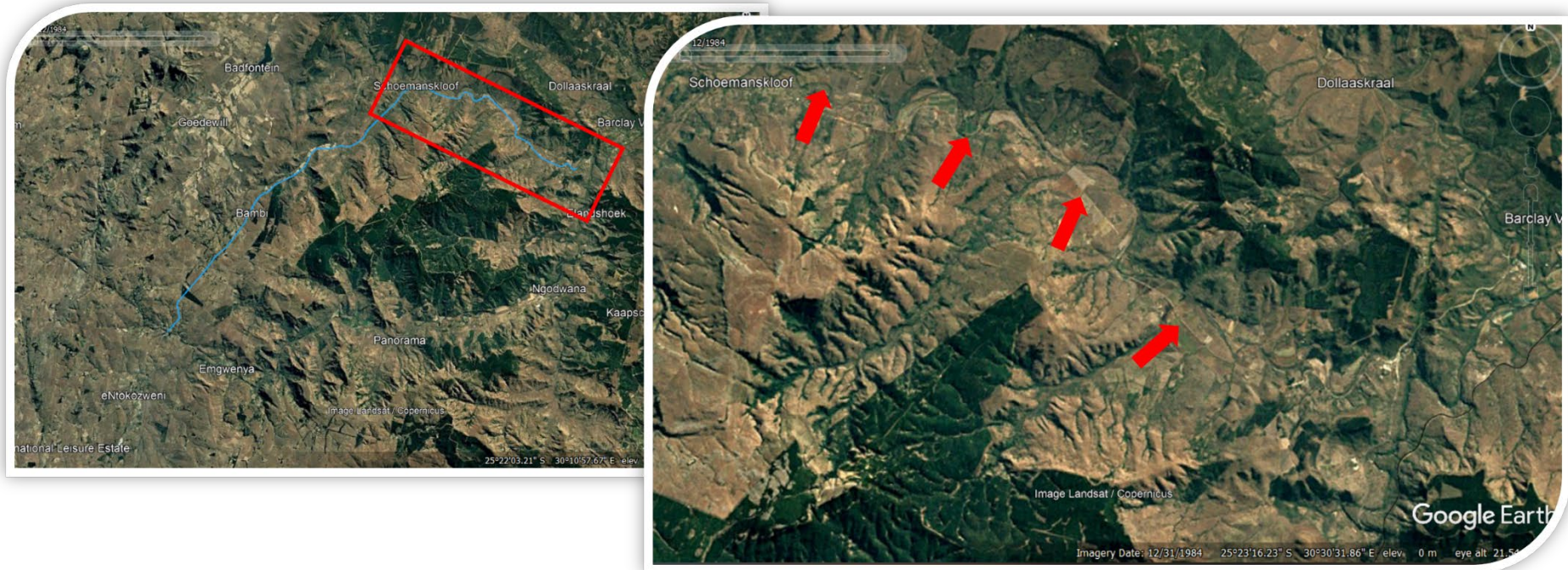


Figure 5-3: Google Earth Imagery from December 1984 – Section 3

5.2 Existing Status

Google Earth imagery from 2021 shows that the proposed upgrade occurs in an existing road which traverses farms and natural areas (**Figure 5-4**). Only some of the proposed access consolidation will extend outside the existing road reserve.



Figure 5-4: Google Earth Imagery – Current Status

5.3 Agriculture

The Google Earth assessment of agriculture corroborates both the desktop assessment as well as information on land use (**Figure 5-5**). The whole length of the Schoemanskloof Road is currently mostly developed – either as plantations, grazing land, agricultural activities such as the farming of citrus and vegetables (eastern section) while the western section is primarily used for Pine and Eucalyptus plantations. **It should be noted however that the proposed development is a linear development aimed at improving road safety and traffic. It will occur primarily within the existing road reserve and therefore does not impact agriculture in the area.**

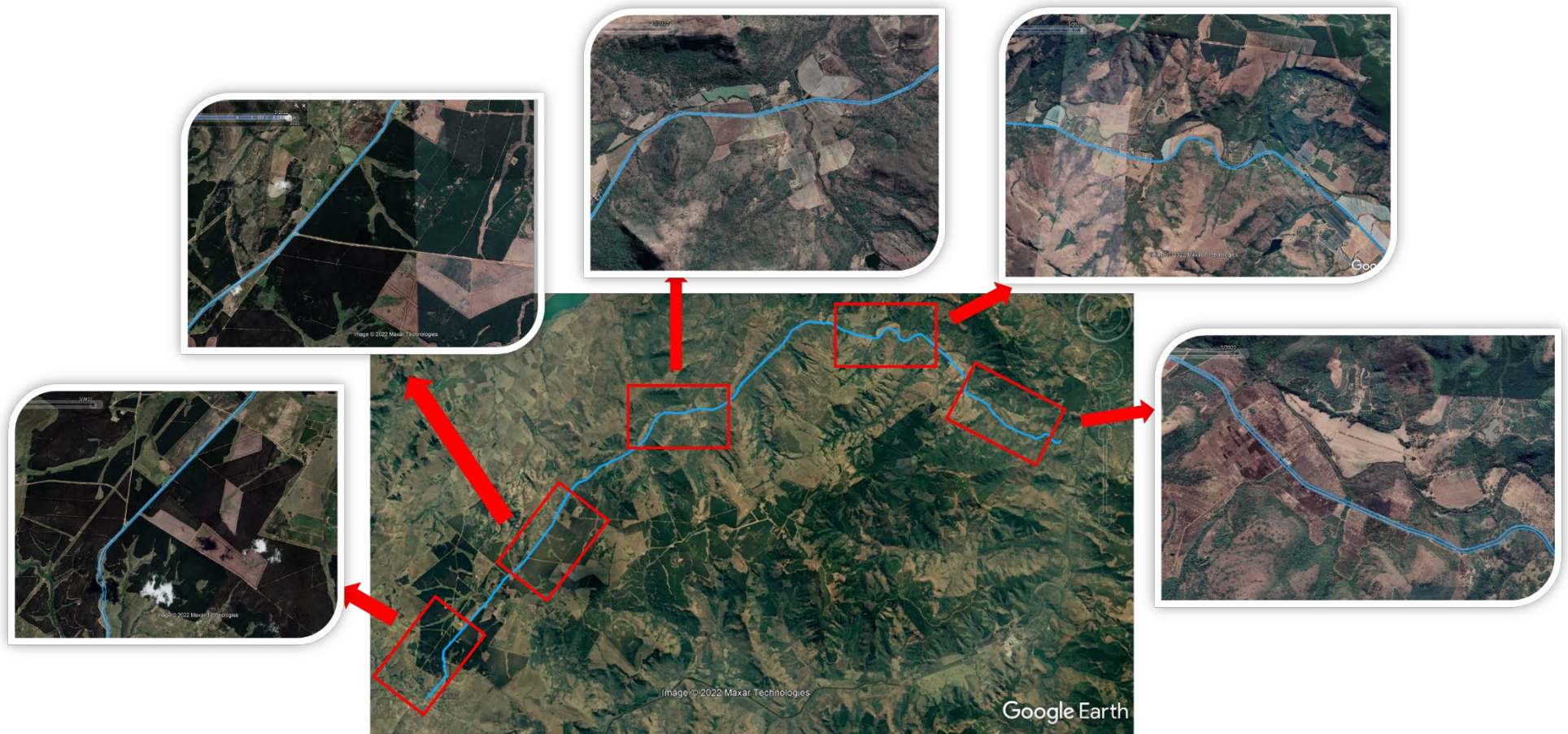


Figure 5-5: Agriculture along the route

5.4 Civil Aviation

According to the National Screening Tool, the site has a medium sensitivity in terms of civil aviation as a very small part of the south-western section of the road is within 8km and 15km of a civil aviation aerodrome.

However, based on Google Earth, the closest aviation feature to the site is the Belfast Aerodrome which is approximately 24 km away from the site (**Figure 5-6**). Other nearby airports include Lydenburg (31km away) and Kruger Mpumalanga International Airport (40km away).

Further, the proposed development is an upgrade of an existing road. It will thus have no impact on any aerodomes or airports.

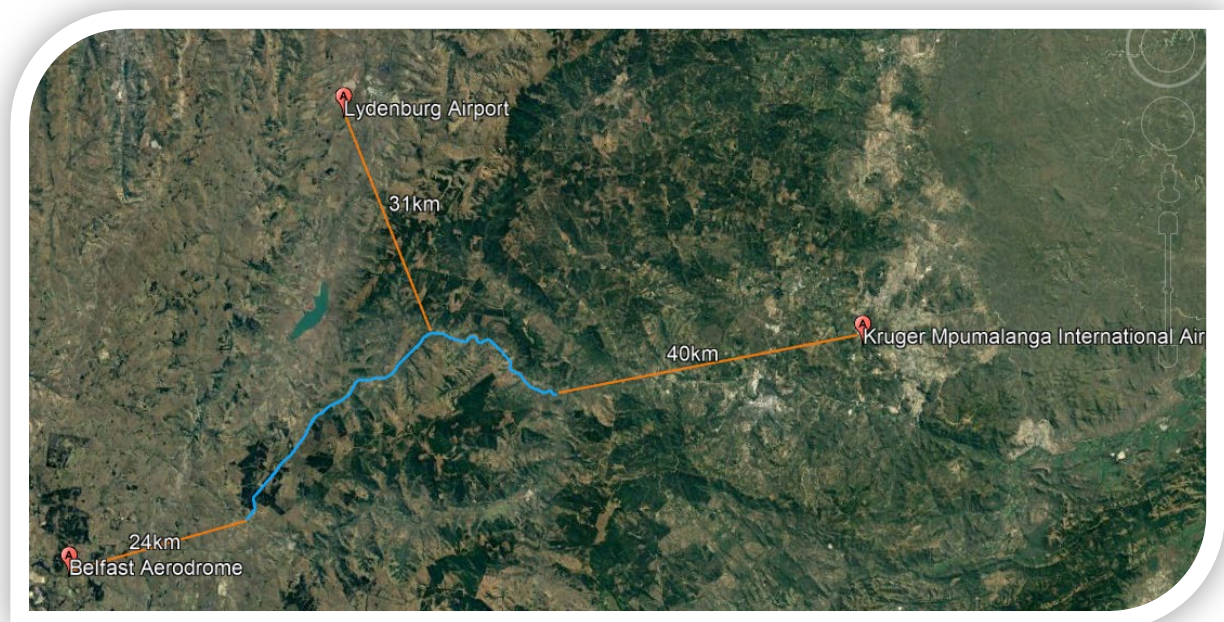


Figure 5-6: Distance to airports and aerodromes

6 SITE VERIFICATION




6.1 Site Conditions

A Site Verification Assessment took place between the **12 November 2020 and 13 November 2020** and was undertaken by Mr. Ryan Nawn. The following conditions were identified:

- The whole length of the Schoemanskloof Road is currently mostly developed – either as plantations, grazing land, agricultural activities and commercial activities such as guest houses and similar accommodation and associated activities, holiday resorts, and a fuel station.
- The areas along the road are mostly altered by anthropogenic activity. The areas along the road are characterised by cleared areas next to the existing R539/ Schoemanskloof road within the road servitude. Outside of these areas the physical environment is marked by the farming of citrus and vegetables (eastern section) while the western section is primarily used for Pine and Eucalyptus plantations.
- No civil aviation facilities were observed in the vicinity of the site.
- No defence facilities were observed in the vicinity of the site.
- Whilst agriculture is extensive in the area around the road, the Schoemanskloof Road is an existing road and upgrades will assist in approving safety. The road upgrades primarily occur in the existing road reserve.
- A number of properties currently get direct access to the national road network (there are approximately 130 accesses (most with poor horizontal and vertical alignment visibility and surface conditions) along the Schoemanskloof Road to adjacent properties.

Table 6-1 provides photographs from the site verification assessment.

Table 6-1: Site Photographs


<p><i>Existing Road with dangerous bends</i></p>

<p><i>View of Schoemanskloof Road westbound through citrus farming areas</i></p>

<p><i>Schoemanskloof Road adjacent to existing farming and access roads</i></p>



Evidence of historic disturbance of the environment (road development and/or farming)



Forestry land use dominates the western section of the Schoemanskloof Route












The existing road traverses a number of watercourses

6.2 Updated Sensitivity

Based on the site verification assessment, the desktop sensitivity table (Table 4 1) was updated to better explain the current conditions. Information on the required specialist studies and general comments are also provided (Table 6-2).

Table 6-2: Site Verification Sensitivity

Theme	Very High Sensitivity	High Sensitivity	Medium Sensitivity	Low Sensitivity	General Comments	Specialist Study Proposed by EAP
Agricultural					<ul style="list-style-type: none"> Existing road and road reserve traverses various types of agricultural land. The proposed activity, however, does not impact on agricultural land and does not reduce land capability. The proposed road is used heavily by the farming community and therefore safety upgrades will be a benefit. 	None
Animal Species					<ul style="list-style-type: none"> From a desktop perspective, the road and road reserve traverse a number of sensitive areas including: <ul style="list-style-type: none"> Vulnerable and endangered ecosystems such as Lydenburg Montane Grassland and Legogote Sour Bushveld. CBA Irreplaceable and CBA Optimal areas. Whilst most activities will take place in the road reserve, new overtaking lanes will be put in place as well as consolidated access. This may result in impacts to Animal, Plant and Terrestrial Biodiversity. 	Ecological Assessment
Plant Species						
Terrestrial Biodiversity						
Aquatic Biodiversity					<ul style="list-style-type: none"> The proposed upgrade occurs in close proximity to the Crocodile river and crosses a number of tributaries. A number of wetlands also occur along the route. 	Aquatic Impact Assessment And Wetland Assessment

Theme	Very High Sensitivity	High Sensitivity	Medium Sensitivity	Low Sensitivity	General Comments	Specialist Study Proposed by EAP
Archaeological and Cultural Heritage					<ul style="list-style-type: none"> Due to the extent of the upgrade and the potential for heritage resources to be identified, a Phase 1 Heritage Impact Assessment is required. Whilst the National Screening Tool identifies the site as having very high palaeontological sensitivity, this is not corroborated by the SAHRA PaleoMap which indicates that the site has low to no palaeontological sensitivity. It was thus requested that the Heritage Impact Assessment also confirm Palaeontological Sensitivity. This was undertaken and confirmed no desktop or field assessment for Palaeontology was required. 	Phase 1 Heritage Impact Assessment with information on Palaeontology
Palaeontology						
Civil Aviation					<ul style="list-style-type: none"> The closest airport is 24 km away. The site is in an existing road and occurs in an existing road reserve. No impacts to civil aviation are expected. 	None
Defence					<ul style="list-style-type: none"> The area was indicated as a low sensitivity in terms of defence. The site is in an existing road and occurs in an existing road reserve. No impacts to defence facilities are expected. 	None

7 CONCLUSION

Based on the findings of this verification assessment, the following environmental specialist studies have been undertaken and are included in the Basic Assessment Report:

- Ecological Assessment;
- Aquatic Assessment
- Wetland Assessment; and
- Phase 1 Heritage Impact Assessment.

No further sensitivities were identified that required specific specialist assessment and thus no further studies are deemed necessary.

8 ANNEXURES

8.1 National Screening Tool Report

SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION AS REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE ENVIRONMENTAL SENSITIVITY

EIA Reference number: TBC

Project name: Scoping & EIR

Project title: Proposed Road Upgrades of the Schoemanskloof Route R539 and new interchange at Montrose, Mpumalanga

Date screening report generated: 29/03/2022 09:01:35

Applicant: SANRAL

Compiler: Prism EMS | Ryan Nawn

Compiler signature: 

Application Category: Infrastructure | Transport Services | Roads | Public

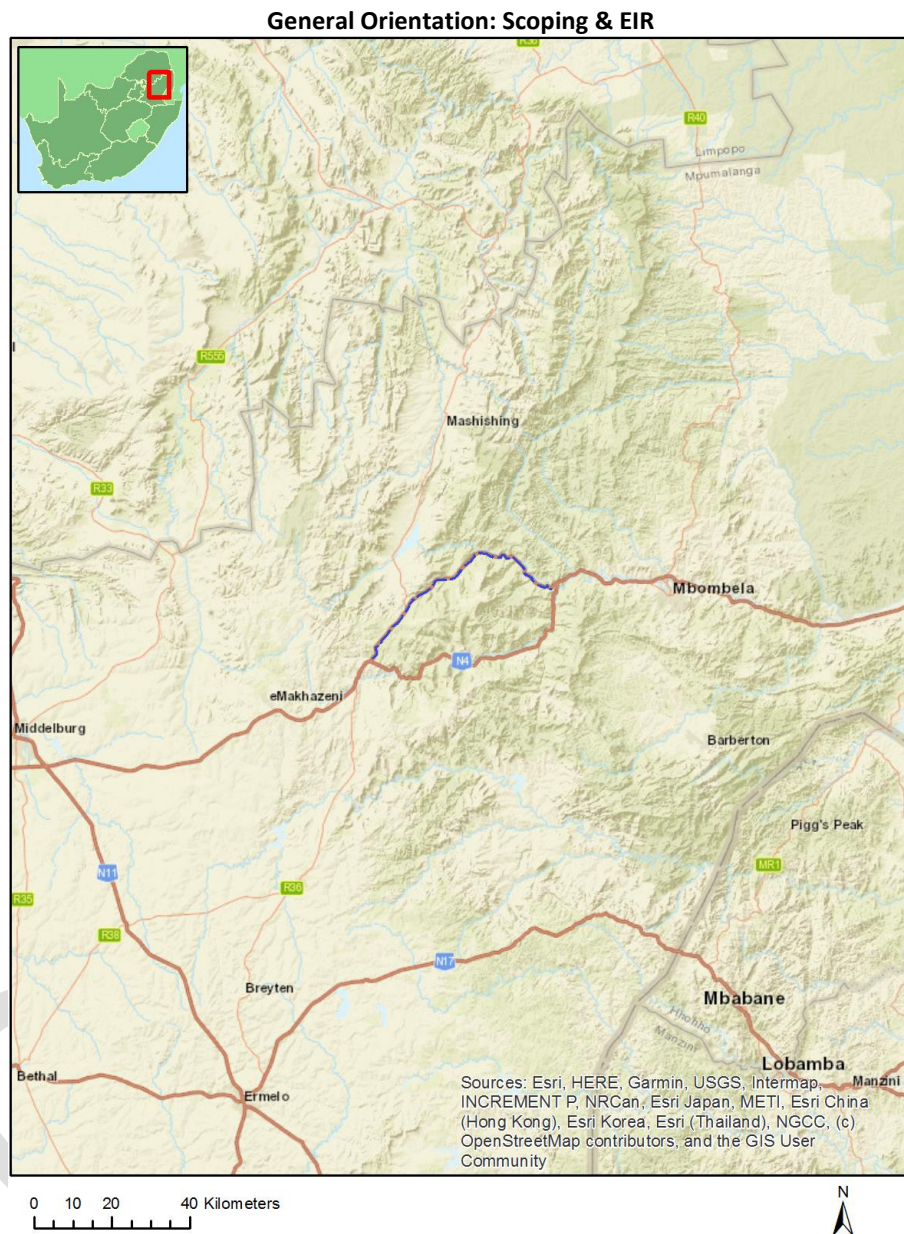


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Proposed Project Location

Orientation map 1: General location



Map of proposed site and relevant area(s)



Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	STERKSTROOM	118	0	25°23'0.39S	30°28'10.57E	Farm
2	STERKSTROOM	118	0	25°23'0.39S	30°28'10.57E	Farm
3	ZONDAGSKRAAL	145	0	25°29'13.91S	30°23'2.99E	Farm
4	MOOIPLAATS	147	0	25°27'44.7S	30°25'39.18E	Farm
5	MOOIPLAATS	328	0	25°30'24.99S	30°19'44.21E	Farm
6	STERKSPRUIT	296	0	25°22'25.15S	30°30'45.7E	Farm
7	KOEDOESHOEK	301	0	25°25'31.91S	30°37'19.43E	Farm
8	SOMERSET	150	0	25°27'30.14S	30°28'26.79E	Farm
9	STERKSPRUIT	1023	0	25°24'36.18S	30°29'29.47E	Farm
10	GELUK	299	0	25°24'7.36S	30°35'14.57E	Farm
11	ELANDSHOEK	302	0	25°27'42.33S	30°38'45.54E	Farm
12	MOOIPLAATS	300	0	25°25'45.69S	30°31'24.49E	Farm
13	BRUINT JIESLAAGTE	499	0	25°26'26.91S	30°33'29.05E	Farm
14	ZWARTKOP	329	0	25°32'51.21S	30°18'31.18E	Farm
15	VLUCHTFONTEIN	330	0	25°31'56.3S	30°22'31.37E	Farm
16	SCHOONGEZIGT	347	0	25°36'30.89S	30°16'6.27E	Farm
17	RIETVLY	295	0	25°23'7S	30°33'30.28E	Farm
18	STERKSPRUIT	1023	0	25°24'36.18S	30°29'29.47E	Farm
19	STERKSPRUIT	296	0	25°22'25.15S	30°30'45.7E	Farm
20	MOOIPLAATS	300	0	25°25'45.69S	30°31'24.49E	Farm
21	BLAAUWBOSCHKRAAL	346	0	25°34'33.46S	30°16'56.28E	Farm
22	STERKSTROOM	118	63	25°23'20.71S	30°28'16.81E	Farm Portion
23	STERKSTROOM	118	4	25°25'21.28S	30°29'6.26E	Farm Portion
24	ZONDAGSKRAAL	145	14	25°29'36.44S	30°23'52.57E	Farm Portion
25	ZONDAGSKRAAL	145	8	25°28'39.02S	30°23'3.88E	Farm Portion
26	ZONDAGSKRAAL	145	11	25°29'51.21S	30°21'43.43E	Farm Portion
27	SOMERSET	150	1	25°26'9.56S	30°27'48.24E	Farm Portion

28	MOOIPLAATS	147	2	25°26'56.09S	30°26'8.52E	Farm Portion
29	MOOIPLAATS	147	15	25°27'27.58S	30°24'59.59E	Farm Portion
30	MOOIPLAATS	147	23	25°28'5.47S	30°25'1.08E	Farm Portion
31	SOMERSET	150	9	25°25'32.08S	30°27'43.77E	Farm Portion
32	MOOIPLAATS	147	9	25°28'35.1S	30°24'49.26E	Farm Portion
33	ZONDAGSKRAAL	145	15	25°28'1.16S	30°23'39.58E	Farm Portion
34	MOOIPLAATS	147	17	25°27'52.84S	30°25'24.66E	Farm Portion
35	MOOIPLAATS	147	16	25°27'18.38S	30°25'13.46E	Farm Portion
36	SOMERSET	150	8	25°25'15.18S	30°27'5.61E	Farm Portion
37	MOOIPLAATS	147	6	25°26'25.21S	30°24'54.97E	Farm Portion
38	SOMERSET	150	7	25°25'39.02S	30°26'43.13E	Farm Portion
39	RIETVLY	295	8	25°23'52.6S	30°32'35.63E	Farm Portion
40	SOMERSET	150	13	25°26'49.73S	30°28'0.26E	Farm Portion
41	RIETVLY	295	51	25°23'12.13S	30°32'48.2E	Farm Portion
42	RIETVLY	295	50	25°23'9.21S	30°32'38.44E	Farm Portion
43	RIETVLY	295	46	25°23'7.42S	30°32'15.97E	Farm Portion
44	STERKSPRUIT	296	53	25°23'6.5S	30°31'42.85E	Farm Portion
45	KOEDOESHOEK	301	24	25°25'51.94S	30°38'28.89E	Farm Portion
46	ZONDAGSKRAAL	145	0	25°28'33.64S	30°22'47.41E	Farm Portion
47	ZONDAGSKRAAL	145	9	25°29'43.58S	30°22'22.39E	Farm Portion
48	RIETVLY	295	58	25°23'33.78S	30°33'42.77E	Farm Portion
49	RIETVLY	295	49	25°23'8.44S	30°32'27.39E	Farm Portion
50	RIETVLY	295	53	25°23'18.32S	30°33'1.08E	Farm Portion
51	STERKSPRUIT	296	50	25°24'18.14S	30°30'18.44E	Farm Portion
52	GELUK	299	7	25°23'29.14S	30°35'22.36E	Farm Portion
53	KOEDOESHOEK	301	8	25°25'46.7S	30°37'11.9E	Farm Portion
54	KOEDOESHOEK	301	16	25°25'8.93S	30°38'4.1E	Farm Portion
55	MOOIPLAATS	328	1	25°30'21.41S	30°21'7.93E	Farm Portion
56	ZWARTKOP	329	11	25°32'59.43S	30°19'8.03E	Farm Portion
57	VLUCHTFONTEIN	330	0	25°31'40.43S	30°21'29.27E	Farm Portion
58	RIETVLY	295	10	25°23'45.18S	30°33'16.41E	Farm Portion
59	RIETVLY	295	60	25°23'36.2S	30°33'51.19E	Farm Portion
60	STERKSPRUIT	296	64	25°23'22.34S	30°31'3.68E	Farm Portion
61	BLAAUWBOSCHKRAAL	346	5	25°34'50.29S	30°18'14.41E	Farm Portion
62	RIETVLY	295	52	25°23'14.21S	30°32'52.4E	Farm Portion
63	KOEDOESHOEK	301	13	25°24'29.07S	30°37'25.98E	Farm Portion
64	ELANDSHOEK	302	21	25°26'56.83S	30°39'38.84E	Farm Portion
65	ZWARTKOP	329	1	25°32'25.73S	30°19'19.22E	Farm Portion
66	RIETVLY	295	57	25°23'31.38S	30°33'35.71E	Farm Portion
67	RIETVLY	295	54	25°23'26.25S	30°33'18.04E	Farm Portion
68	STERKSPRUIT	296	1	25°23'41.87S	30°30'32.51E	Farm Portion
69	ZWARTKOP	329	8	25°32'28.8S	30°20'17.04E	Farm Portion
70	ZWARTKOP	329	12	25°32'24.23S	30°19'43.96E	Farm Portion
71	ZWARTKOP	329	9	25°33'14.8S	30°18'35.97E	Farm Portion
72	BLAAUWBOSCHKRAAL	346	6	25°35'42.38S	30°17'57.94E	Farm Portion
73	SCHOONGEZIGT	347	29	25°35'59.96S	30°17'20.62E	Farm Portion
74	KOEDOESHOEK	301	14	25°25'0.53S	30°37'56.25E	Farm Portion
75	ELANDSHOEK	302	25	25°27'22.03S	30°40'39.98E	Farm Portion
76	MIDDELPUNT	320	26	25°27'34.23S	30°41'39.77E	Farm Portion
77	MOOIPLAATS	328	10	25°31'48.49S	30°20'12.51E	Farm Portion
78	GELUK	299	1	25°23'50.79S	30°36'7.12E	Farm Portion
79	RIETVLY	295	63	25°23'39.33S	30°34'8.09E	Farm Portion
80	RIETVLY	295	48	25°23'8.22S	30°32'22.55E	Farm Portion
81	GELUK	299	9	25°23'57.15S	30°36'49.87E	Farm Portion
82	KOEDOESHOEK	301	15	25°25'3.69S	30°37'59.55E	Farm Portion
83	ELANDSHOEK	302	13	25°27'14.94S	30°40'39.88E	Farm Portion
84	ZWARTKOP	329	20	25°33'2S	30°19'13.18E	Farm Portion
85	STERKSPRUIT	296	48	25°24'8.36S	30°30'31.74E	Farm Portion
86	STERKSPRUIT	296	57	25°23'19.62S	30°31'16.92E	Farm Portion
87	GELUK	299	8	25°23'36.52S	30°36'8.18E	Farm Portion

88	KOEDOESHOEK	301	18	25°25'18.76S	30°38'7.61E	Farm Portion
89	BLAAUWBOSCHKRAAL	346	0	25°34'50.67S	30°17'0.71E	Farm Portion
90	BLAAUWBOSCHKRAAL	346	4	25°34'33.31S	30°17'35.87E	Farm Portion
91	GELUK	299	6	25°23'37.96S	30°34'40.08E	Farm Portion
92	MOOIPLAATS	300	0	25°25'50.13S	30°31'10.31E	Farm Portion
93	KOEDOESHOEK	301	21	25°25'48.23S	30°38'10.5E	Farm Portion
94	KOEDOESHOEK	301	22	25°25'58.01S	30°38'34.12E	Farm Portion
95	ELANDSHOEK	302	19	25°27'33.31S	30°41'5.81E	Farm Portion
96	BRUINT JIESLAAGTE	499	0	25°26'17.64S	30°34'25.11E	Farm Portion
97	ZWARTKOP	329	10	25°33'25.77S	30°19'21.4E	Farm Portion
98	SCHOONGEZIGT	347	27	25°36'41.63S	30°16'47.81E	Farm Portion
99	ELANDSHOEK	302	18	25°27'4.48S	30°38'22.17E	Farm Portion
100	STERKSPRUIT	1023	0	25°24'41.8S	30°29'26.7E	Farm Portion
101	RIETVLY	295	64	25°23'7.71S	30°32'20.25E	Farm Portion
102	RIETVLY	295	59	25°23'35.18S	30°33'47.09E	Farm Portion
103	KOEDOESHOEK	301	20	25°25'34.1S	30°38'3.86E	Farm Portion
104	SCHOONGEZIGT	347	30	25°36'16.56S	30°17'3.71E	Farm Portion

Development footprint¹ vertices:
No development footprint(s) specified.

Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No	EIA Reference No	Classification	Status of application	Distance from proposed area (km)
1	14/12/16/3/3/1/738	Solar PV	Approved	11.3

Environmental Management Frameworks relevant to the application

No intersections with EMF areas found.

Environmental screening results and assessment outcomes

The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development site as well as the most environmental sensitive features on the site based on the site sensitivity screening results for the application classification that was selected. The application classification selected for this report is:

Infrastructure | Transport Services | Roads | Public.

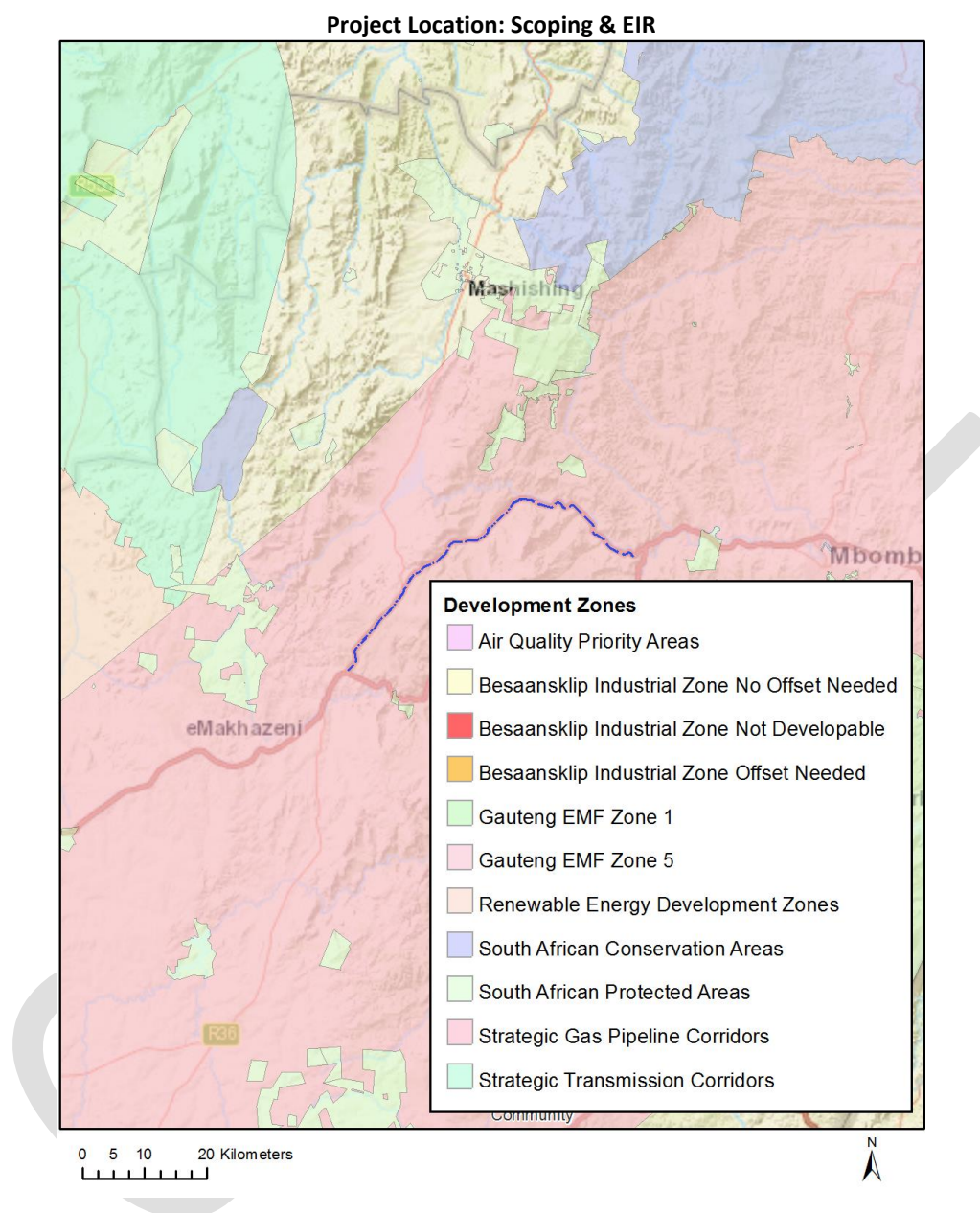
Relevant development incentives, restrictions, exclusions or prohibitions

The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this site are indicated below.

¹ "development footprint", means the area within the site on which the development will take place and includes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

Incentive , restrictio n or prohibiti on	Implication
Strategic Gas Pipeline Corridors- Phase 8: Rompc Pipeline Corridor	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Combined_GAS.pdf

Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones



Proposed Development Area Environmental Sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme	X			
Animal Species Theme		X		

Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme	X			
Civil Aviation Theme			X	
Defence Theme				X
Paleontology Theme	X			
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

Specialist assessments identified

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

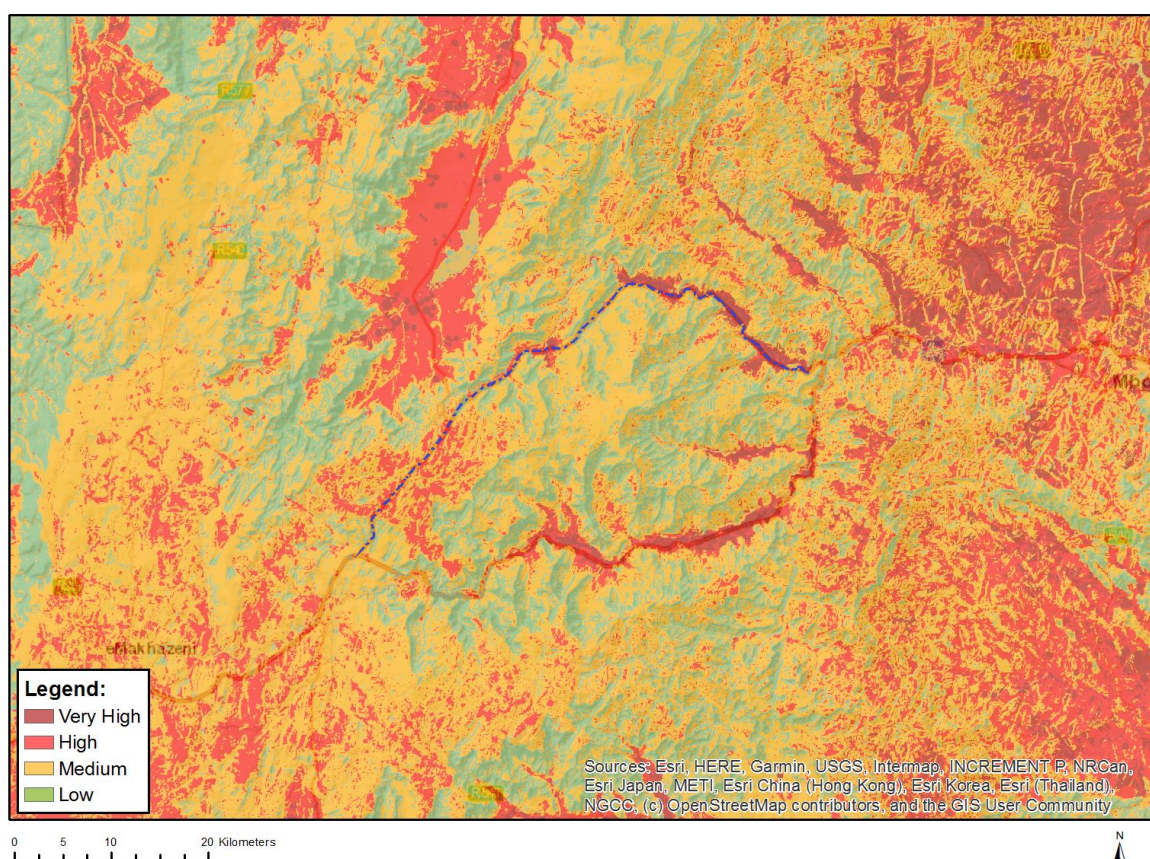
N o	Special ist assess ment	Assessment Protocol
1	Agricultural Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf
2	Landscape/Visual Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
3	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
4	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
5	Terrestrial Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf
6	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf
7	Noise Impact	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols

	Assessment	/Gazetted Noise Impacts Assessment Protocol.pdf
8	Traffic Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
9	Geotechnical Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
10	Socio-Economic Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
11	Ambient Air Quality Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
12	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf
13	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf

Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

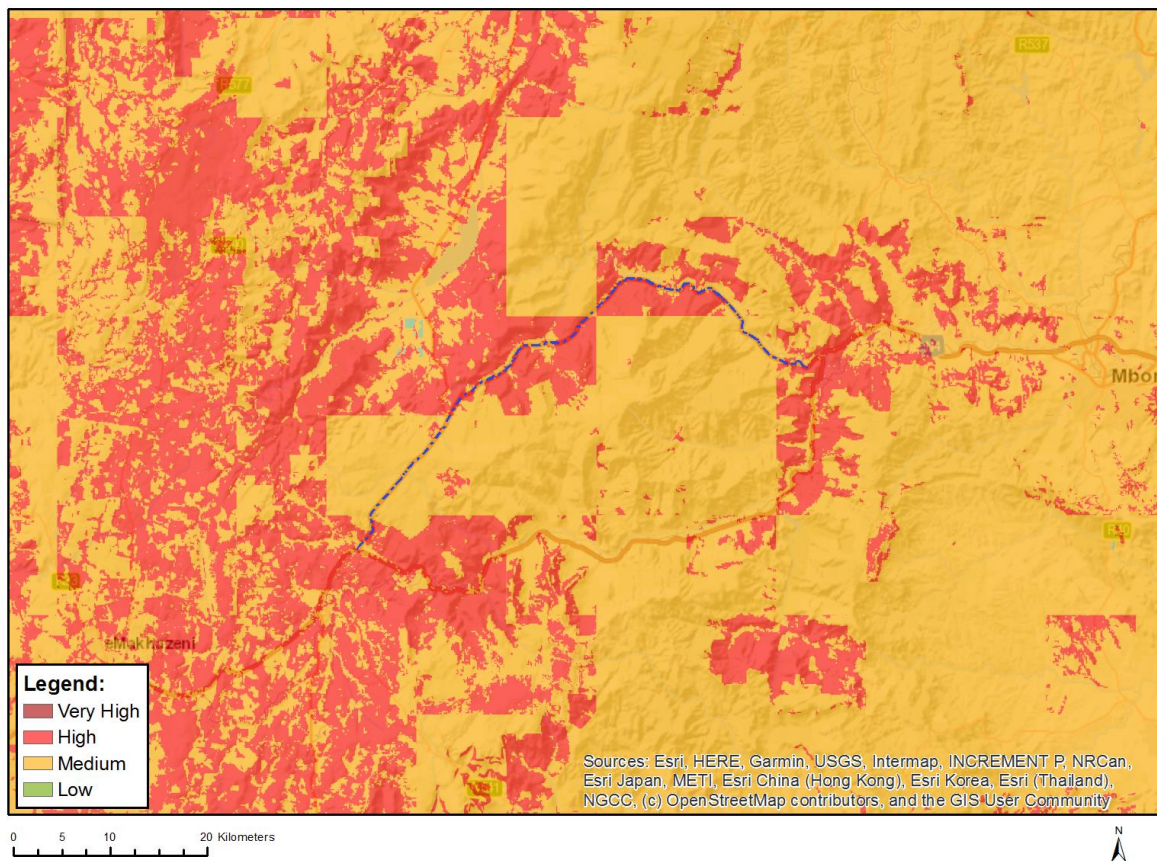


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
Low	Land capability;01. Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
Very High	Land capability;11. High/12. High-Very high/13. High-Very high/14. Very high/15. Very high
Very High	Horticulture / Viticulture;Land capability;09. Moderate-High/10. Moderate-High
Very High	Horticulture / Viticulture;Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

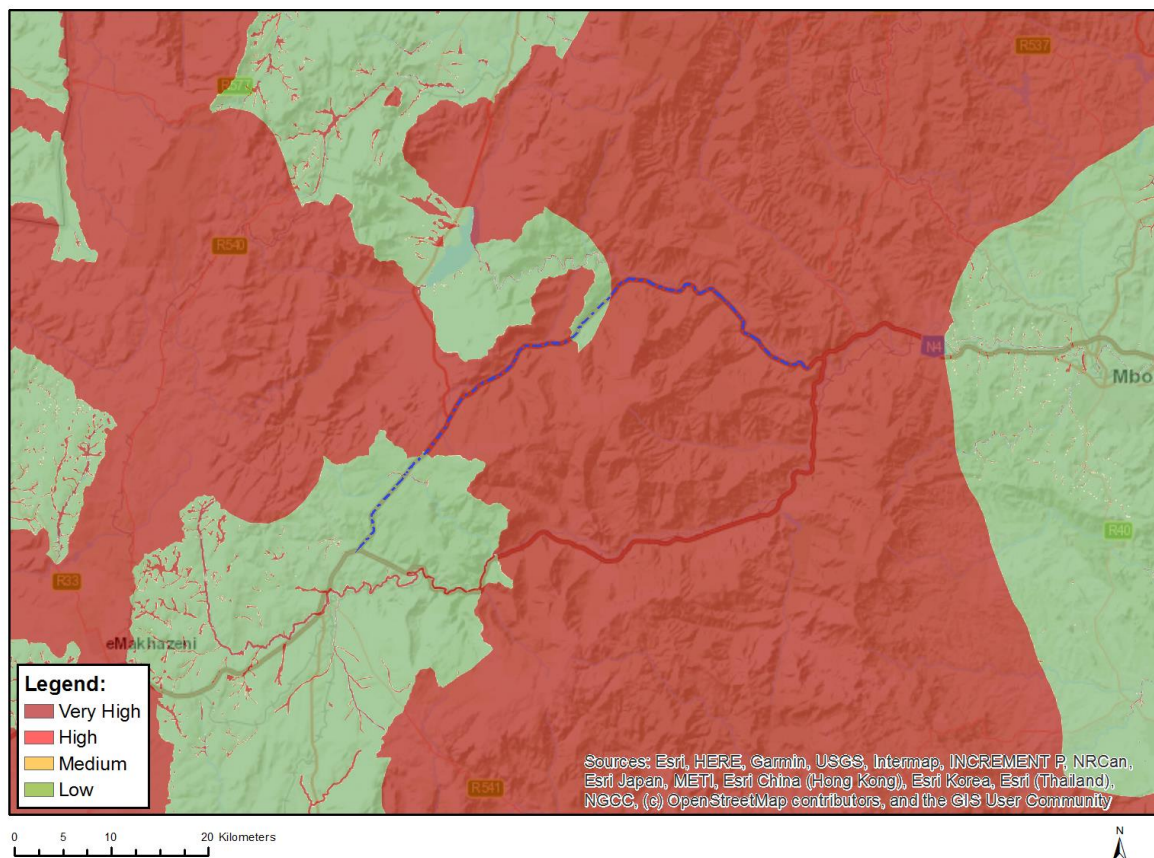
Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Aves-Ciconia nigra
High	Aves-Geronticus calvus
High	Mammalia-Lycaon pictus
Medium	Invertebrate-Thoracistus jambila
Medium	Invertebrate-Doratogonus praealtus
Medium	Aves-Sagittarius serpentarius
Medium	Aves-Geronticus calvus
Medium	Insecta-Lepidochrysops irvingi
Medium	Mammalia-Amblysomus robustus
Medium	Mammalia-Cercopithecus albogularis schwarzi
Medium	Mammalia-Chrysospalax villosus
Medium	Mammalia-Crociodura maquassiensis
Medium	Mammalia-Dasymys robertsii

Medium	Mammalia-Hydrictis maculicollis
Medium	Mammalia-Lycaon pictus
Medium	Mammalia-Ourebia ourebi ourebi

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

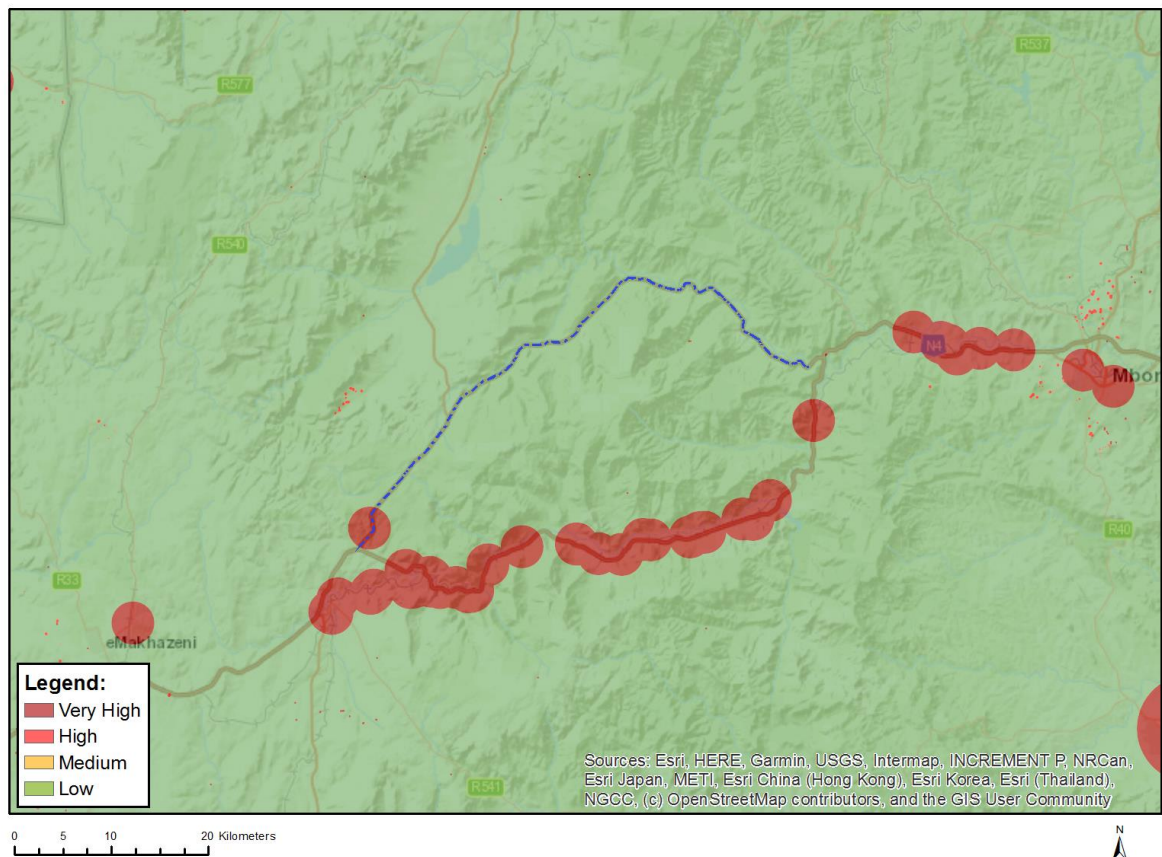


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity
Very High	Aquatic CBAs
Very High	Strategic water source area
Very High	Wetlands and Estuaries
Very High	Freshwater ecosystem priority area quinary catchments

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY

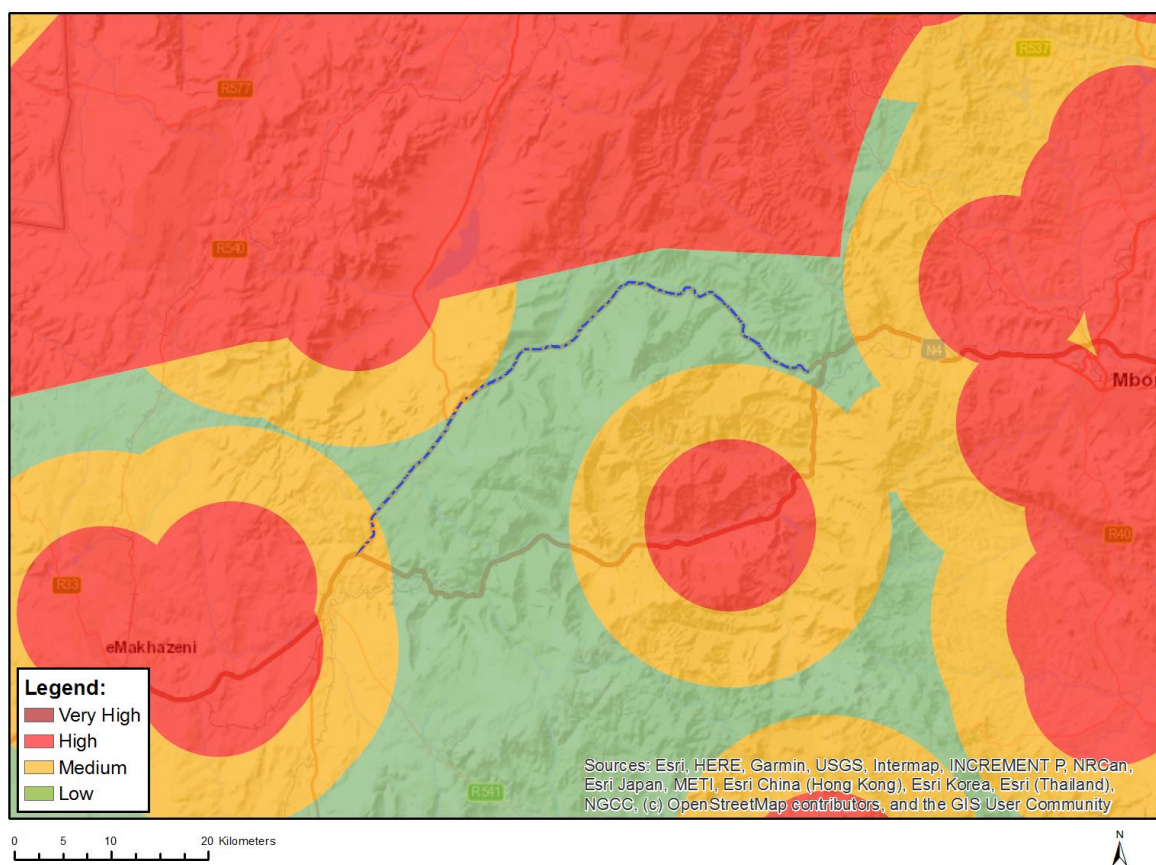


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity
Very High	Within 2km of a Grade II Heritage site

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

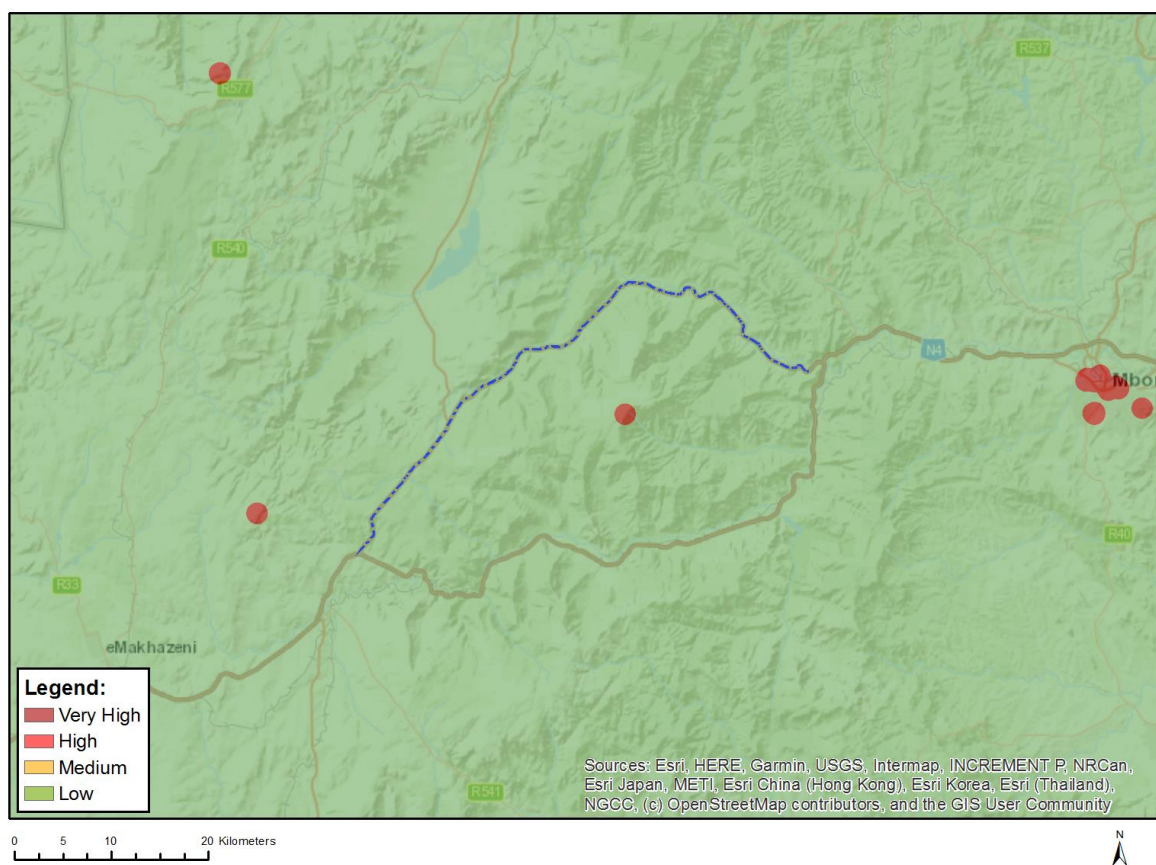


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity
Medium	Between 8 and 15 km of other civil aviation aerodrome

MAP OF RELATIVE DEFENCE THEME SENSITIVITY

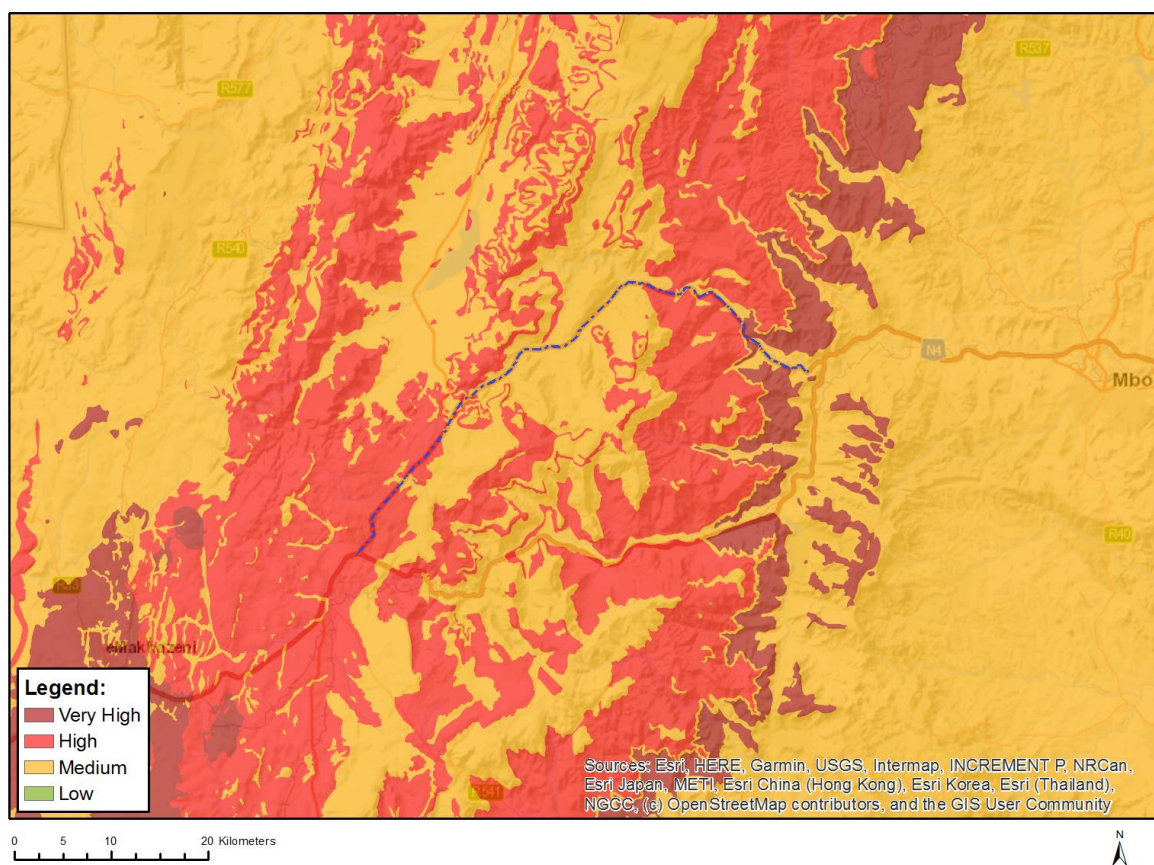


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY

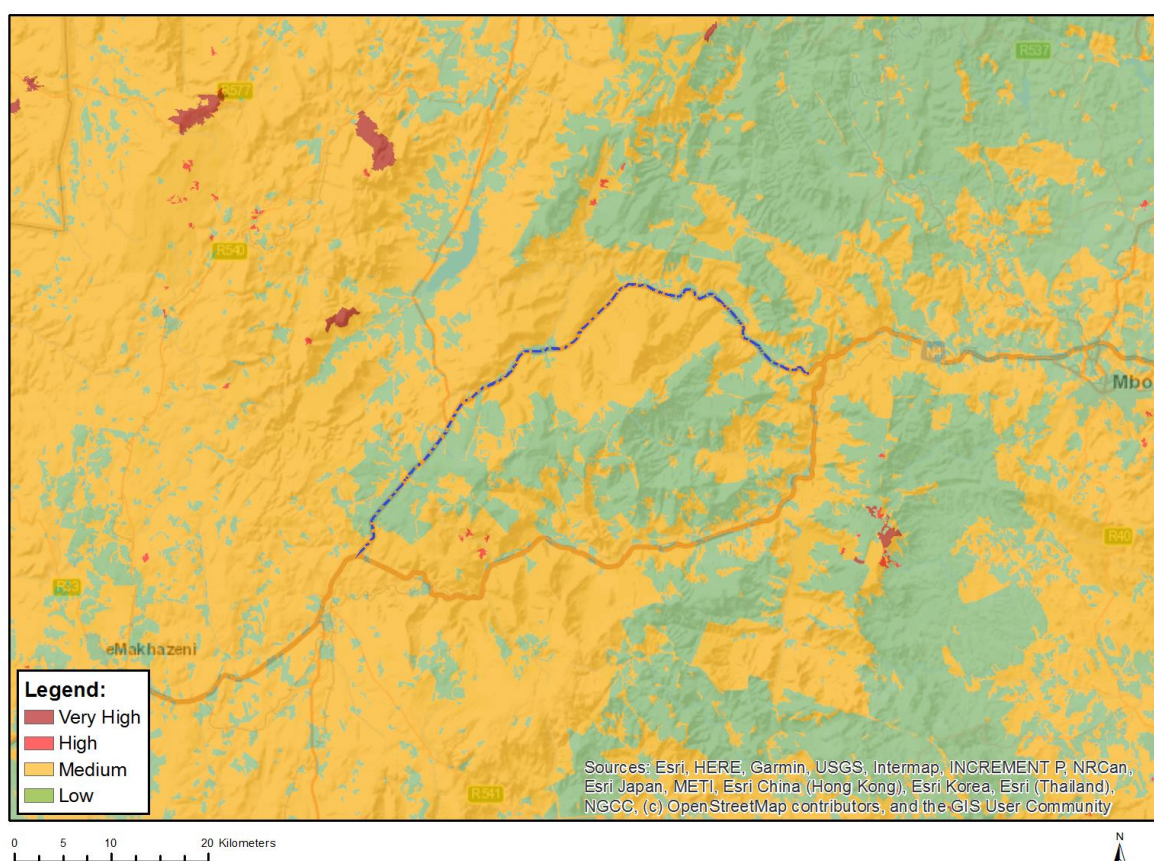


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
High	Features with a High paleontological sensitivity
Low	Features with a Low paleontological sensitivity
Medium	Features with a Medium paleontological sensitivity
Very High	Features with a Very High paleontological sensitivity

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

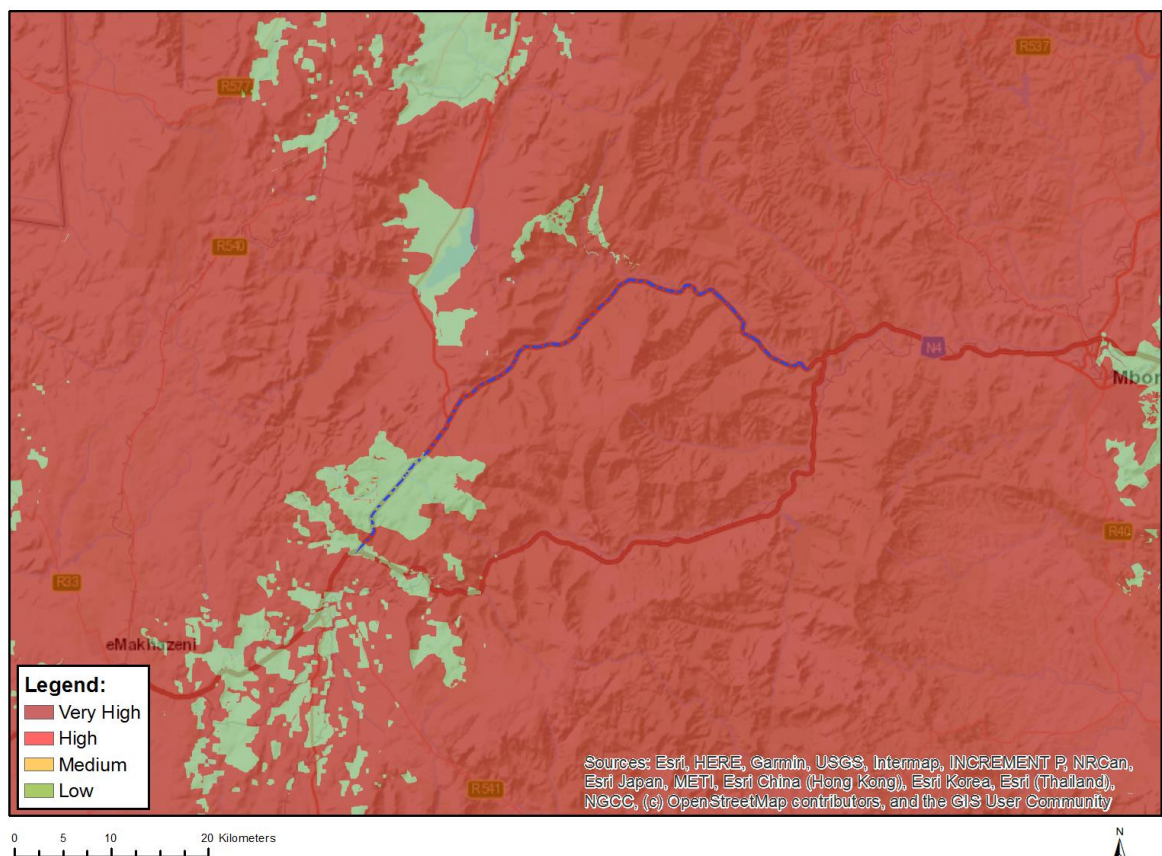
Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Medium	Faurea macnaughtonii
Medium	Ocotea bullata
Medium	Sensitive species 1252
Medium	Khadia carolinensis
Medium	Indigofera amitina
Medium	Sensitive species 870
Medium	Ocotea kenyensis
Medium	Sensitive species 1201
Medium	Asclepias dissona
Medium	Miraglossum davyi
Medium	Sensitive species 1237
Medium	Sensitive species 971

Medium	Schizochilus cecilia subsp. culveri
Medium	Gnidia variabilis
Medium	Helichrysum leslei
Medium	Cymbopappus piliferus
Medium	Sensitive species 1167
Medium	Streptocarpus cyaneus subsp. longi-tommii
Medium	Streptocarpus denticulatus
Medium	Khadia alticola
Medium	Sensitive species 738
Medium	Sensitive species 41
Medium	Sensitive species 575
Medium	Sensitive species 691
Medium	Sensitive species 1083
Medium	Sensitive species 998
Medium	Sensitive species 1219
Medium	Sensitive species 311
Medium	Pachycarpus suaveolens
Medium	Sensitive species 401
Medium	Sensitive species 321
Medium	Sensitive species 1248
Medium	Hesperantha bulbifera
Medium	Prunus africana

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Very High	Critical biodiversity area 1
Very High	Critical biodiversity area 2
Very High	Ecological support area: local corridor
Very High	FEPA Subcatchments
Very High	National Forestry Inventory
Very High	Protected Areas Expansion Strategy
Very High	Strategic Water Source Areas
Very High	Vulnerable ecosystem