



Emvelo Quality and Environmental consultant (PTY) Ltd
Promenade Building, 1st Floor, Unit D2, 24 Lira Link CBD,
Richards Bay, 3900. P.O. Box 101672, Meerensee, 3901
Tel: 035 789 0632, Cell: (078) 2849 332 Fax: 086 577 5220,
email: info@emveloconsultants.co.za

DRAFT BASIC ASSESSMENT REPORT

The Proposed construction of Ethafeni Gravel Access Road and Culvert Causeway within the Umlalazi Local Municipality, King Cetshwayo District, Kwa-Zulu Natal.

November 2019

Prepared by:

**Emvelo Quality and Environmental Consultant
(PTY) Ltd**

On Behalf of



**uMlalazi
Local Municipality**

uMlalazi Local Municipality

Table of Contents

CONTENTS	PAGE
Table of Contents.....	2
LIST OF ACRONYMS	5
EXECUTIVE SUMMARY	11
1. INTRODUCTION	12
2. PROJECT TITTLE.....	12
3. PROJECT DESCRIPTION.....	12
4. PROJECT LOCALITY	13
5. SITE ACCESS	15
6. CONSTRUCTION METHODOLOGY	15
6.1. Horizontal Alignment	16
6.2. Vertical Alignment	16
6.4. Storm-Water Drainage	17
6.5. Causeway	18
7. DESIGN PARAMETERS	18
8. SITE ALTERNATIVE	19
9. ACTIVITY MOTIVATION	21
9.1. The Need.....	21
9.2. Desirability	21
10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES.....	21
11. A DESCRIPTION OF THE ENVIRONMENT THAT MAY BE AFFECTED BY THE ACTIVITY 24	
11.1. Climate.....	24
11.2. Topography.....	25
11.3. Geology	26
11.4. Flora.....	28
11.4.1. Biomes.....	29
11.4.2. Protected Areas	29
11.5. Fauna.....	31
11.6. Hydrological Features	31

11.7. Visual Environment and Land Use Character	33
11.8. Heritage and Cultural Aspects.....	33
11.9. SOCIAL AND ECONOMIC ASPECTS	34
12. WASTE, EFFLUENT, EMISSIONS AND NOISE MANAGEMENT	35
12.1. General Waste Management: Construction Phase.....	35
12.2. General Waste Management: OPERATIONAL PHASE.....	35
12.3. Effluent.....	35
12.4. EMISSIONS INTO THE ATMOSPHERE	35
12.5. Generation of Noise	36
12.6. Water Use	36
13. THE PUBLIC PARTICIPATION PROCESS.....	36
13.1. Background.....	36
13.2. Objectives of Public Participation	37
13.3. Notification of the Interested and Affected Parties (I&APs).....	37
13.4. Comments from the Registered Interested and Affected Parties (I&APs)	38
14. IMPACT ASSESSMENT AND MITIGATION MEASURES	43
15. CUMULATIVE IMPACT ASSESSMENT AND MITIGATION MEASURES	56
16. RECOMMENDATIONS FROM THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)	57
17. CONCLUSIONS.....	61

LIST OF TABLES

Document Road Map

Table 1: GPS Coordinates

Table 2: 21-digits Surveyor General Code

Table 3: Horizontal Alignment Design Parameters

Table 4: Vertical Alignment Design Parameters

Table 5: Environmental Statutory Framework

Table 6: Public Participation Process

Table 7: Comments and Response Report

Table 8: Impact Significance Ratings

Table 9: Cumulative Impact

LIST OF FIGURES

Figure 1: Geographical Context

Figure 2: Site Locality Map

Figure 3: Topography Map

Figure 4: Geology Map

Figure 5: Biomes Map

Figure 6; Protected Areas Map

Figure 7: Hydrological Features Map

APPENDICES

Appendix A: Declaration

Appendix B: Environmental Management Programme

Appendix C: Case Images/Site Photo graphs and Locality Maps

Appendix D: Layout Plans

Appendix E: Public Participation Process

Appendix F: EAP's CV(s)

Appendix G: Geotechnical Investigation Report

Appendix H: List of Expected Species

LIST OF ACRONYMS

DWS	Department of Water and Sanitation
DEDTEA	Department of Economic Development, Tourism and Environmental Affairs
EMPr	Environmental Management Programme
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
MSDS	Material Safety Data Sheet
NEMA	National Environmental Management Act
I&AP	Interested and Affected Parties
EAP	Environmental Assessment Practitioner
GA	General Authorisation

PROJECT DETAILS

Developer (DEV)

Name of the Developer	uMlalazi Local Municipality
Contact Person	Raymond Mnguni
Address	Hutchinson Street, Eshowe
Cell phone Number	035 473 3474
Email Address	N/A

Environmental Assessment Practitioner (EAP) Details

Name of Consultancy	Emvelo Quality and Environmental Consultant (PTY)Ltd
Professional affiliation body	IAIAsa
Name of EAP's	Phumzile Lembede (BSc Honours: Environmental Management) Selby Mabuza (BSocSc: Geography and Environmental Management)
Postal Address	P.O. Box 101672, Meerensee, 3901
Physical Address	Promenade Building, Lira Link, Unit D2, 1st Floor, Richards Bay CBD.
Telephone Number	035 789 0632
Cell Phone	081 218 9684
Fax Number	086 577 5220
Email Address	info@emveloconsultants.co.za

GLOSSARY OF ITEM

DEVELOPMENT: the building, erection or establishment of a facility, structure or infrastructure that is necessary for the undertaking of a listed or specified activity but excludes any modification, alteration or expansion of such a facility, structure or infrastructure and excluding the reconstruction of the same facility in the same location, with the same capacity and footprint.

BIODIVERSITY: The variety of life in an area, including the number of different species, the genetic wealth within each species, and the natural areas where they are found.

BASIC ASSESSMENT: The process of collecting, organizing, analyzing, interpreting and communicating information that is relevant to the consideration of the application.

DEVELOPMENT FOOTPRINT: any evidence of physical alteration because of the undertaking of any activity.

CONTRACTOR: companies and or individual persons appointed on behalf of the client to undertake activities, as well as their sub-contractors and suppliers.

ENVIRONMENTAL CONTROL OFFICER: an individual nominated through the client to be present on site to act on behalf of the client in matters concerning the implementation and day to day monitoring of the EMPr and conditions stipulated by the authorities as prescribed in NEMA.

ENVIRONMENT: in terms of the National Environmental Management Act (NEMA) (No 107 of 1998) (as amended), Environment means the surroundings within which humans exist and that are made up of:

- the land, water and atmosphere of the earth;
- micro-organisms, plants and animal life;
- any part or combination of (i) of (ii) and the interrelationships among and between them;
- the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence;
- Human health and wellbeing.

ENVIRONMENTAL IMPACT: the change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, products or services.

MITIGATION: the measures designed to avoid reduce or remedy adverse impacts.

ENVIRONMENTAL MANAGEMENT PROGRAMME: a detailed plan of action prepared to ensure that recommendations for enhancing or ensuring positive environmental impacts and limiting or preventing negative environmental impacts are implemented during the life-cycle of the project. This EMP focuses on the construction phase, operation (maintenance) phase and decommissioning phase of the proposed project.

POLLUTION: the National Environmental Management Act, No. 107 of 1998 defined pollution to mean any change in the environment caused by the substances; radioactive or other waves; or noise, odors, dust or heat emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future.

WATER POLLUTION: the National Water Act, 36 of 1998 defined water pollution to be the direct or indirect alteration of the physical, chemical or biological properties of a water resource so as to make it less fit for any beneficial purpose for which it may reasonably be expected to be used; or harmful or potentially harmful (a) to the welfare, health or safety of human beings; (b) to any aquatic or non-aquatic organisms; (c) to the resource quality; or (d) to property.

REHABILITATION: rehabilitation is defined as the return of a disturbed area to a state which approximates the state (wherever possible) which it was before disruption.

WATERCOURSE: can be a) a river or spring; b) a natural channel or depression in which water flows regularly or intermittently; c) a wetland, lake or dam into which, or from which, water flows; and/or d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse as defined in the National Water

Act, 1998 (Act No. 36 of 1998) and a reference to a watercourse includes, where relevant, its bed and banks.

WETLAND: land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

INDIGENOUS VEGETATION: refers to vegetation consisting of indigenous plant species occurring naturally in an area, regardless of the level of alien infestation and where the topsoil has not been lawfully disturbed during the preceding ten years.

GENERAL WASTE: waste that does not pose an immediate hazard or threat to health or the environment, and includes -

- Domestic waste;
- Building and demolition waste;
- Business waste; and
- Inert waste.

HAZARDOUS WASTE: hazardous waste means any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste have a detrimental impact on health and the environment.

GENERAL WASTE LANDFILL SITE: a waste disposal site that is designed, managed, permitted and registered to allow for the disposal of general waste.

ARCHAEOLOGICAL RESOURCES: includes (a) material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artifacts, human and hominid remains and artificial features and structures; (b) rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation; wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artifacts found or associated therewith, which is older

than 60 years or which SAHRA considers to be worthy of conservation; features, structures and artifacts associated with military history which are older than 75 years and the site on which they are found.

INTERESTED AND AFFECTED PARTY: for the purposes of Chapter 5 of the NEMA and in relation to the assessment of the environmental impact of a listed activity or related activity, an interested and affected party contemplated in Section 24(4) (a) (v), and which includes (a) any person, group of persons or organization interested in or affected by such operation or activity; and (b) any organ of state that may have jurisdiction over any aspect of the operation or activity.

EXECUTIVE SUMMARY

The uMlalazi Local Municipality proposes to construct the Ethafeni gravel access road and a culvert causeway over an unnamed stream, in ward 18, within the jurisdiction of the King Cetshwayo District Municipality, KwaZulu-Natal. The proposed road is approximately 3.5 km long x 5m wide and the causeway is approximately 15m long x 3m wide x 3m in height. Grassed lined drains are to be constructed on both sides of the road. The objective of the project is to provide the community with an 'all-weather' usage of the road, as most parts of the area are inaccessible during rainy periods.

Emvelo Quality and Environmental Consultant have been appointed by FMA Engineers on behalf of uMlalazi Local Municipality (the applicant), as the independent Environmental Assessment Practitioner (EAP), to facilitate the Basic Assessment Processes required in terms of the National Environmental Management Act (NEMA, Act 107 of 1998) for this application.

The National Environmental Management Act (107 of 1998), and the Environmental Impact Assessment Regulations (2014) as amended in 2017 govern the process of applying for environmental authorization for certain developments. A provision in the EIA Regulations is made for two forms of assessment: Basic Assessment and Scoping and EIA. The EIA regulations specify that: Activities identified in Listing Notice 1 and 3 (GNR 327 and 324 of 2017) requires a Basic Assessment while activities identified in Listing Notice 2 (GNR 325 of 2017) are subject to a Scoping and EIA. This application will follow a Basic Assessment. The listed activity associated with the proposed development is Listing Notice 12 Activity 19.

The Public Participation Process (PPP) as to date included: conducting a public meeting with the affected community, displaying onsite notices, placing of an advertisement on the Ilanga Newspaper (local newspaper), distribution of Background Information Documents (BIDs) to the relevant Government Stakeholders and other Interested and Affected Parties (I&APS). The draft BAR would be circulated as part of the PPP and all the comments/concerns from the I&APs will addressed in this Final BAR.

1. INTRODUCTION

Emvelo Consultant has been appointed by FMA Engineers, on behalf of uMlalazi Local Municipality, to undertake the Environmental Impact Assessment (EIA) for the proposed construction of Ethafeni Gravel Access Road and Culvert Causeway in ward 18 of the municipality.

This will include the facilitation of the Basic Assessment Processes required in terms of the National Environmental Management Act (NEMA, Act 107 of 1998) for this application.

2. PROJECT TITTLE

The proposed construction of the Ethafeni Gravel Access Road and Culvert Causeway within the jurisdiction of the uMlalazi Local Municipality, King Cetshwayo District, Kwa-Zulu Natal.

3. PROJECT DESCRIPTION

The project entails the construction of a 3.5km long x 5m wide road and a culvert causeway that is approximately 15m long x 3m wide x 3m in height. This also includes the upgrading of the micro drainage infrastructure which consists of side drains and grassed lined drains.

The scope of works to be done for the proposed project includes the following;

The road;

- The pavement (road) will consist of 150mm gravel wearing course and 150mm subbase.
- The road alignments were designed to match the existing alignment as close as possible, to minimize the impact on the sugar cane crop and properties along the road.

The causeway;

- Consists of four (4) pre-cast portal culverts/cells with 2x2 wingwalls on either side of a culvert and a foundation slab made up of concrete.
- Each portal culvert cell will be 2.1m long x 3.4m wide and 2.1m in height.
- Wingwalls will be constructed on separate foundation using in-situ material and compacted using fills between the wings, each having a length of 2m, a width of 2m and a height of 3m.
- The foundation will be equipped with 200mm base slab dowelled/fasten into rock bed.

Side drainage;

- Micro drainage infrastructure which consist all side drains (that includes toe drains and 1000V-drains) and grassed lined drains will also be upgraded.
- The erosion protection has been provided for inlet and outlet structures of the drainage.
- 600mm and 900mm diameter pipe culverts will be used to discharge storm water from v-drains and channels.
- Catch pits will be located at low points and outlets/ headwalls will be in positions where there are no restrictions in discharging the storm water.

4. PROJECT LOCALITY

The Ethafeni road is located within ward 18 of the uMlalazi Local Municipality, which is found on the south-western part of the King Cetshwayo District. The site is approximately 17 km away from KwaGingindlovu and 9km from Amatikulu. KwaGingindlovu is the nearest town to the proposed site. West of the road, flowing to the south east, is the Matigulu River, located at approximately 1.2km away.

Figure 1 below, provides the geographical context or location of the proposed development site, in relation to major towns and cities within the municipality.

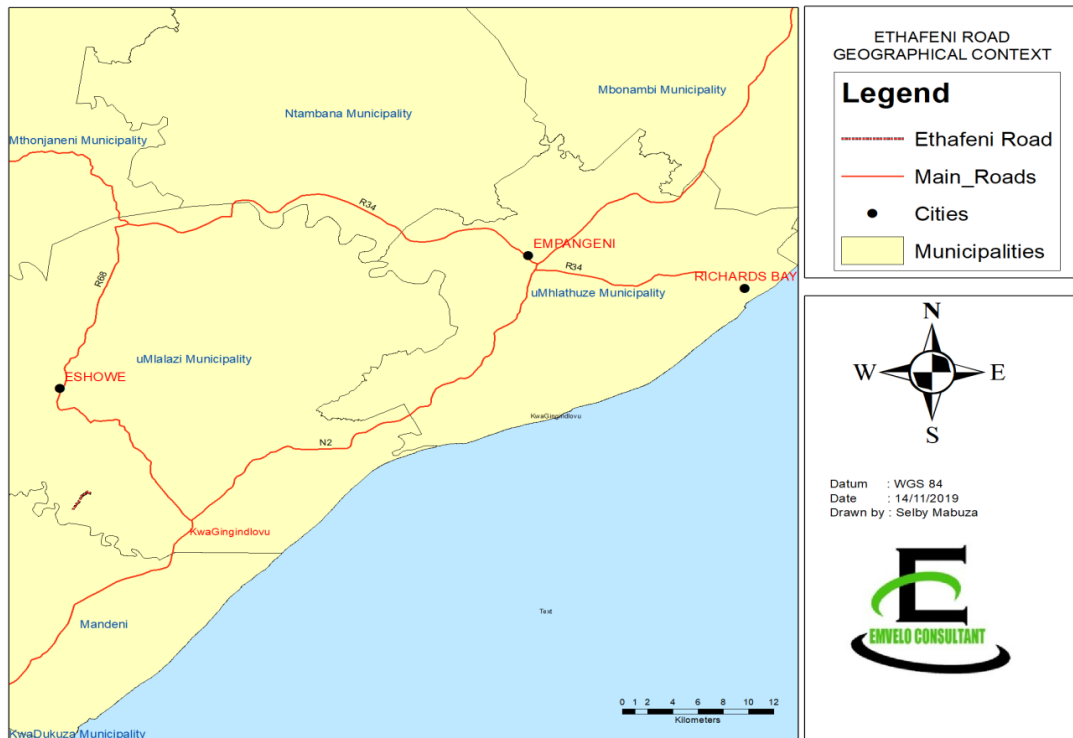


Figure 1: Geographical context of Ethafeni Road

Table 1 below provides Global Positioning System (GPS) coordinates for the proposed development site.

Table 1: Coordinates

ETHAFENI GRAVEL ACCESS ROAD AND CULVERT CAUSEWAY			
Latitude & Longitude	Degrees	Minute	Seconds
Start			
South	28°	0'	38.69''
East	31°	29'	4.16''
Causeway			
South	28°	59'	37.05''
East	31°	29'	45.90''
End			
South	28°	59'	38.03''
East	31°	30'	2.31''

Table 2 below provides the 21-digits Surveyor General Code (SGC)

Table 2: 21-digits Surveyor General Code

N	0	F	U	0	0	0	0	0	0	0	1	5	8	4	1	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Figure 2 below is the locality map for the development. The map also depicts the Matigulu river flowing on the west of the road.

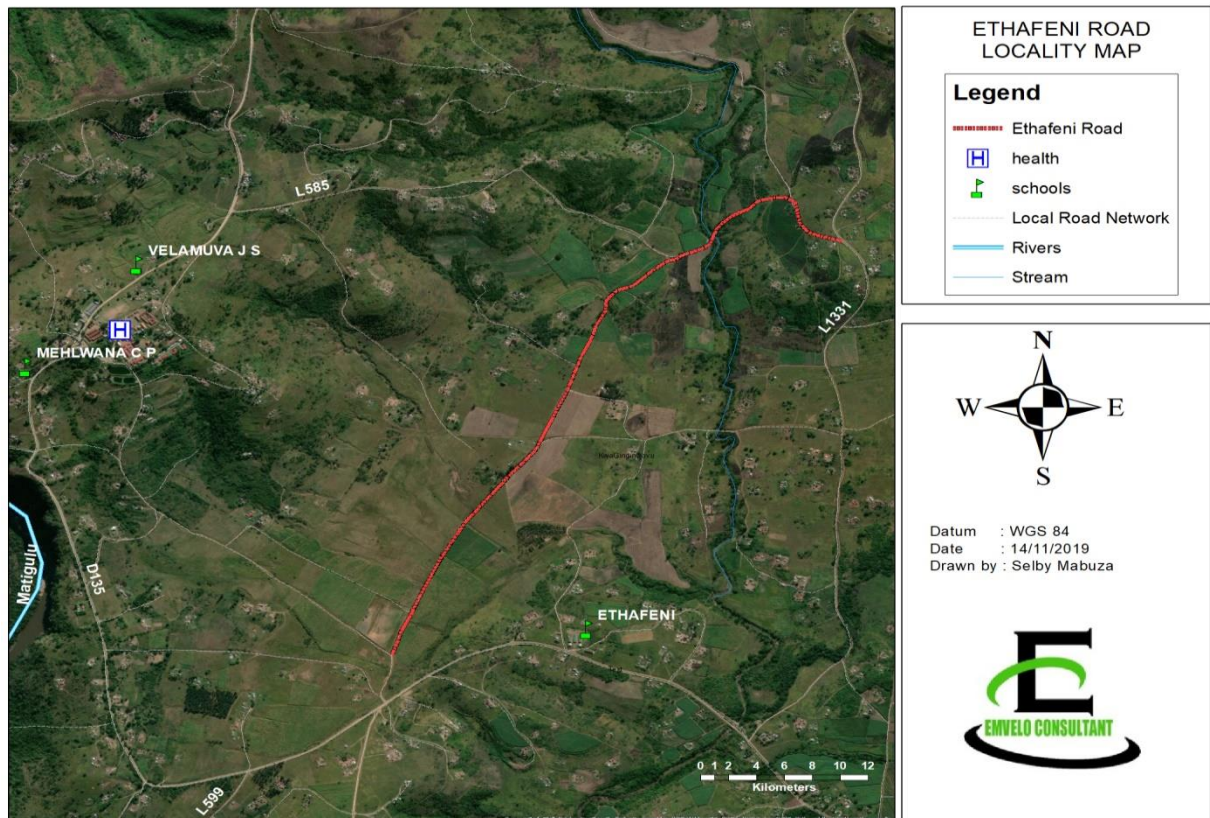


Figure 2: Locality Map

5. SITE ACCESS

Site can be accessed via R102 from KwaGingindlovu, then turn unto road P266 and continue for about 5km to Amatikulu. At Amatikulu, take a right turn to road D135 which is going to Izingwenya (Ethafeni), and continue for about 4km, passing the Ethafeni Primary school. The Ethafeni road starts on the right side of D135, approximately 750m from the Ethafeni Primary school.

6. CONSTRUCTION METHODOLOGY

The following steps are going to be adopted during the construction phase.

6.1. HORIZONTAL ALIGNMENT

The horizontal alignment parameters used to check the minimum design are as indicated below and the evaluation of horizontal alignment was conducted in terms of TRH17. Super elevation $e(\max) = 4\%$ as a guide from KZN DOT standard detail for a type 7B local gravel road. The parameters are discussed in TABLE 3, below.

TABLE 3: Horizontal Alignment Design Parameters

SPEED	CURVE RADIUS		CURVE LENGTH		SUPERELEVATION	
	Min.	Desirable	Min.	Desirable	Max.	Desirable
40	50	80	150	300	4%	4%

Majority of the curve lengths for Ethafeni Access Road are still of a substandard nature. However, due care has been taken and length have been designed to at least match the design speed (40km/h) to eliminate the presence of current existing visible kinks. The cost implications with regards to compensation to property owners and relocation of services associated with correcting the horizontal alignment has been taken into consideration.

These curves are of a sub-standard nature due to properties and services being in close proximity to the existing road edge. Realignment of the entire road is not feasible as it would require the Umlalazi Local Municipality to compensate the local farmers of both lost crop and land and as well as properties, fence lines and services in order to satisfy the accepted requirements. Extensive earthworks are also anticipated should this realignment be considered.

6.2. VERTICAL ALIGNMENT

The horizontal alignment parameters used to check the minimum design are as indicated below and the evaluation of horizontal alignment was conducted in terms of TRH17. The parameters are discussed in TABLE 4, below.

TABLE 4: Vertical Alignment Design Parameters

SPEED	CURVE LENGTH	MIN. K VALUES		GRADIENT	
	Min.	CREST	SAG	Max.	Absolute Max.
40	60	6	8	8%	10%

The proposed vertical alignment was dictated by the existing alignment. The alignment was designed to meet the minimum requirements of the design speed based on the design parameters.

Due to a difficult topography of the existing alignment as prescribed in the approved feasibility report, initially the recommended and desire maximum grade was 8%. However, this is not achievable, as the road was designed to closely follow the existing alignment.

High construction costs will be incurred should Ethafeni Gravel Access Road be corrected to fulfil all the design parameters of TRH17 in terms of the vertical alignment. To design the road to the standards would be both expensive and impractical. In light of the abovementioned factors the vertical alignment has been designed to best meet the design parameters outlined in TRH17 where possible.

6.3. STORM-WATER DRAINAGE

The SANRAL Drainage Manual (6th Edition) and Drainage Utilities were used for the calculation of all drainage.

The method used in the calculation of the macro drainage was the rational method of flood calculations. A 1:20 and 1:50 year flood frequency was used in the calculation. Arial photograph and visual inspections were used in the determination of the ground conditions.

The co-efficient used in the calculation of the drainage have been obtained from the SANRAL Drainage Manual and the Water Resource Commission (Surface Water Resources of South Africa). During the design process care was taken to ensure that

outlet structures do not discharge in an uncontrolled manner into properties alongside the road.

The micro drainage consists of all side drains, which include toe drains and 1000V-drains. Micro drainage also includes grassed lined drains. Erosion protection has been provided for the inlet and outlet structures of the drainage. 600mm and 900mm diameter pipe culverts will be used to discharge storm water from v-drains and channels. Catchpits will be located at all low points and outlets/ headwalls will be in positions where there are no restrictions in discharging the storm water. A 2100mm x 2100mm box culvert has been proposed for a single vehicular access.

From the visual inspection, rock outcrops were visible across the tributary at the proposed location, indicating the structure would probably make use of shallow foundations. A detailed geotechnical investigation will have to be undertaken to determine the founding level with appropriate founding material to yield a maximum allowable pressure of 200kPa.

6.5. CAUSEWAY

The Standards from KZN Department of Transport were utilized in designing culvert causeway. The causeway will be constructed from a rectangular portal culvert and will be 15m long, 3m high and 3m wide. The causeway will consist of foundation slab with keys, portal culvert, and top wing-walls; and is to be equipped with bollards.

7. DESIGN PARAMETERS

The existing road was reviewed using KwaZulu-Natal Department and current industry standards as listed below:

- Urban Transport Guidelines: UTG 3 Structural Design of Rural Roads,
- Technical Recommendation for Highway, TRH14: Guidelines for Road Construction Materials,
- Chapter 7 of CISR Red book,
- Southern African Development Community: Road Traffic Signs Manual series and South African Road Traffic Signs Manual (SARTSM – Volume 2) were used for Road-markings and Traffic Signage Design, and
- Model and Road Maker were used for the design of the road and AutoCAD 2012 was used for to prepare working drawings.

Based on these standards, safety measures and speed reductions were proposed where minimum design standard could not be achieved. The full achievement of these design standards was hindered by the designer's efforts to match the existing alignment as close as possible. Matching the existing alignment was imperative to minimize the impact on the sugar cane crop along the road.

The existing alignment of the road was matched both horizontally and vertically to determine the geometric conditions and also to establish the maximum possible speed on the current alignment. A design speed of 40km/hr is prescribed for these conditions. However, the topography necessitates a reduction in the design speed to 20km/hr on a certain section of the road.

8. SITE ALTERNATIVE

The DEA 2006 guidelines on 'assessment of alternatives and impacts' outlines four types of alternatives that need to be considered namely, the no-go, location, activity, and design alternatives. It is, however, important to note that the regulation and guidelines specifically state that only 'feasible' and 'reasonable' alternatives should be explored. It also recognizes that the consideration of alternatives is an iterative process of feedback between the applicant and EAP, which in some instances culminates in a single preferred project proposal. For this development the following spatial design alternatives were considered.

8.1 Alternative A

Proposes that the road must be constructed from point A to point C, with a total length of 3.5km, as per the preliminary design.

The National Web Based Environmental Screening Tool indicated that approximately, the first 350m of the proposed development site has rock units with a high paleontological sensitivity. (see figure 3 below).

Taking into consideration the above-mentioned information, should this alternative be authorized, it on the condition of that a palaeontology study is conducted prior to construction activities taking place.

8.2 Alternative B

Proposes that the construction of the road start from point B to point C, which excludes the portion of the road that has been indicated as having rock units with a high paleontological sensitivity rating. The impacted portion of the road is approximately 350m, and this means the new length of the proposed road will be 3.25km. (see figure 3 below).

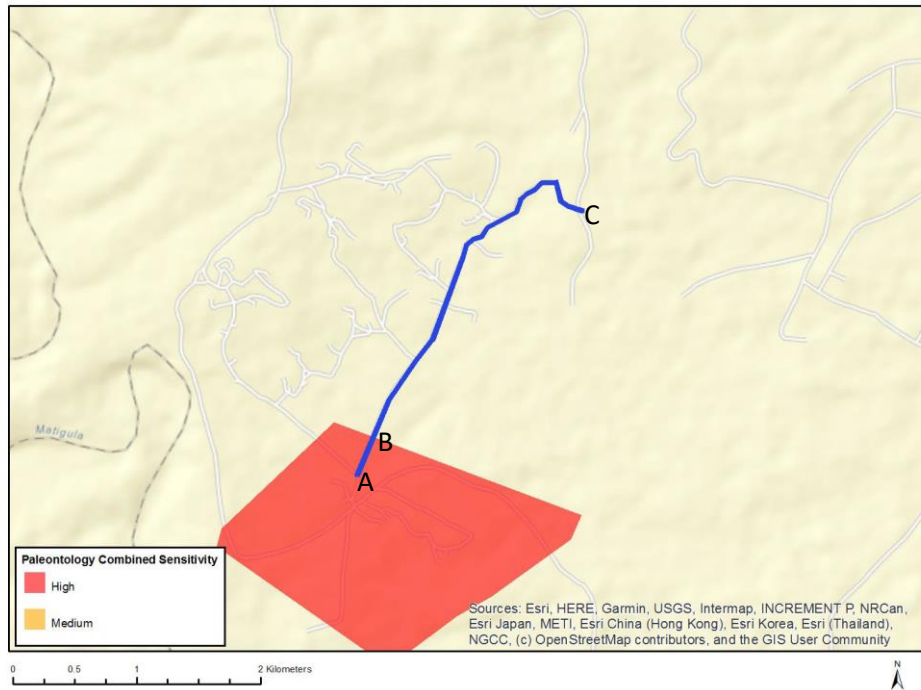


Figure 3: Locality Map

8.3 No Go

In the absence of the proposed development community members will continue to experience disruptions, with regards to gaining access to other parts of the village in the events of rainy weather conditions and floods. The difficulty will be experienced when river/causeway is frequently overtopped by floodwater, making access impossible at times of high flow. According to a community member, during heavy rainfalls, the river is flooded in a way that people and cars cannot cross to the other side of the river (Refer to table 5). Therefore, the EAP is of the view that the NO-GO option is undesirable in the face of social and economic needs of this community.

9. ACTIVITY MOTIVATION

9.1 THE NEED

During a public meeting held on the 28th of October 2019, a community member mentioned that “during rainy seasons when the causeway is overtopped by water vehicles, especially public transport vehicles are unable to cross to the other side of the river, and they have to drop people far from their homes. It becomes unsafe for them as they are forced to cross the stream on foot.

Based on the above-mentioned factor, the proposed development is needed by affected community. The construction of the Ethafeni Gravel Access Road and Culvert Causeway will provide road users with an improved road access and river crossing condition regardless of any climatic adverse conditions i.e. intense rainfall. The construction of a culvert causeway will also improve road network and village connectivity.

9.2 DESIRABILITY

The site is situated within a rural settlement and the majority of the population relies on agriculture as main source of livelihood or employment. This project will temporarily help limited number of unemployed, semi-skilled and unskilled groups to participate in making the project a success.

10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

In terms of the Environmental Regulations promulgated under the National Environmental Management Act (NEMA), an EIA must be conducted for any development or activity that requires an Environmental Authorisation. The listed activities in the NEMA, relevant to this project, that trigger the need for Environmental Authorisation are listed below;

Table 5: Environmental Statutory Framework

Legislation	Relevance
Constitution of the Republic of South	<ul style="list-style-type: none">➤ Chapter 2 – Bill of Rights.➤ Section 24 – Environmental Rights.

Africa, (No. 108 of 1996)	
National Environmental Management Act (NEMA) (No. 107 of 1998)	<ul style="list-style-type: none"> ➤ Section 24 – Environmental Authorisation (control of activities which may have a detrimental effect on the environment). ➤ Section 28 – Duty of care and remediation of environmental damage. ➤ Environmental management principles. ➤ Authorities – Department of Environmental Affairs (DEA) (national) and Department of Economic Development Tourism and Environmental Affairs (provincial).
GN No. 326 (7 April 2017)	<ul style="list-style-type: none"> ➤ Purpose - regulate the procedure and criteria as contemplated in Chapter 5 of NEMA relating to the preparation, evaluation, submission, processing and consideration of, and decision on, applications for environmental authorisations for the commencement of activities, subjected to EIA, in order to avoid or mitigate detrimental impacts on the environment, and to optimise positive environmental impacts, and for matters pertaining thereto.
GN No. 327 (7 April 2017) (Listing Notice 1)	<ul style="list-style-type: none"> ➤ Purpose - identify activities that would require environmental authorizations prior to commencement of that activity and to identify competent authorities in terms of sections 24(2) and 24D of NEMA. ➤ The investigation, assessment, and communication of the potential impact of activities must follow the procedure as prescribed in regulations 19 and 20 of the EIA Regulations published in terms of section 24(5) of the Act. However, according to Regulation 15(3) of GN No. 327, S&EIR must be applied to an application if the application is for two or more activities as part of the same development for which S&EIR must already be applied in respect of any of the activities. ➤ Activities under Listing Notice 1 that are relevant to this project are as follows;

	<p>Listed activity 12: The development of-</p> <p>xii) infrastructure or structures with a physical footprint of 100 square metres or more;</p> <p>where such development occurs-</p> <p>(a) within a watercourse;</p> <p>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;</p> <p>Listed activity 19: The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from –</p> <p>(i) a watercourse</p>	<p>The proposed construction of the Access Road is within 32m of a water course and the construction of the causeway will take place within the watercourse.</p> <p>The construction of the road will require infilling or depositing of material that is more than 10 cubic metres or the dredging, excavation, removal or moving of soil, sand or rock more than 10 cubic metres from the watercourse.</p>
<p>National Water Act (Act No. 36 of 1998)</p>	<ul style="list-style-type: none"> ➤ Chapter 3 – Protection of water resources. ➤ Section 19 – Prevention and remedying effects of pollution. ➤ Section 20 – Control of emergency incidents. ➤ Chapter 4 – Water use. ➤ Authority – Department of Water and Sanitation (DWS). 	
<p>National Environmental</p>	<ul style="list-style-type: none"> ➤ Air quality management ➤ Section 32 – Dust control. ➤ Section 34 – Noise control. ➤ Authority – EDTEA. 	

Management Air Quality Act (Act No. 39 of 2004)	
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	<ul style="list-style-type: none"> ➤ Management and conservation of the country's biodiversity. ➤ Protection of species and ecosystems. ➤ Authority – EDTEA.
Occupational Health & Safety Act (Act No. 85 of 1993)	<ul style="list-style-type: none"> ➤ Provisions for Occupational Health & Safety ➤ Authority – Department of Labour.
National Heritage Resources Act (Act No. 25 of 1999)	<ul style="list-style-type: none"> ➤ Section 34 – protection of structure older than 60 years. ➤ Section 35 – protection of heritage resources. ➤ Section 36 – protection of graves and burial grounds. ➤ Authority – KwaZulu Natal Heritage Resources Authority (KZHRA)

11. A DESCRIPTION OF THE ENVIRONMENT THAT MAY BE AFFECTED BY THE ACTIVITY

This section provides a general description of the status quo of the receiving environment in the project area. This serves to provide the context within which the Basic Assessment exercise was conducted. It also allows for an appreciation and identification of sensitive environmental features and possible receptors of the effects of the proposed project.

11.1 CLIMATE

The Southern Africa is divided into three climatic regions; Wet dry and Moderate. The KwaGingindlovu area, falls under moderate climate. The area where the road is situated generally has cold winter and warm summer as per the data obtained from

South African Weather Services. Winter commences in May (at times it commences in late April) and runs up to August and sometimes it overlaps into September.

The area is in a summer rainfall region with an average annual rainfall at 944 mm per annum (Design Rainfall Estimation in South Africa). The rainfall season commences in October and runs up to April and recently it runs up to May due to recent changes in rainfall patterns that have been witnessed in KwaZulu-Natal province.

11.1.1 POTENTIAL IMPACT

There are no direct adverse impacts foreseen in terms of the project to climate. However, measures to reduce the project's carbon footprint will be considered further in the EMP. Climate change may impact on the project through extreme floods, which may pose a risk to the state of the road.

11.2 TOPOGRAPHY

The uMlalazi Local Municipality is characterised by an undulating topography causing a certain amount of difficulties in respect of the delivery of services. The project area under study can be characterized as having flat to gentle terrain.

Figure 4 below represents the topography and elevation above sea level of the land around the proposed development site.

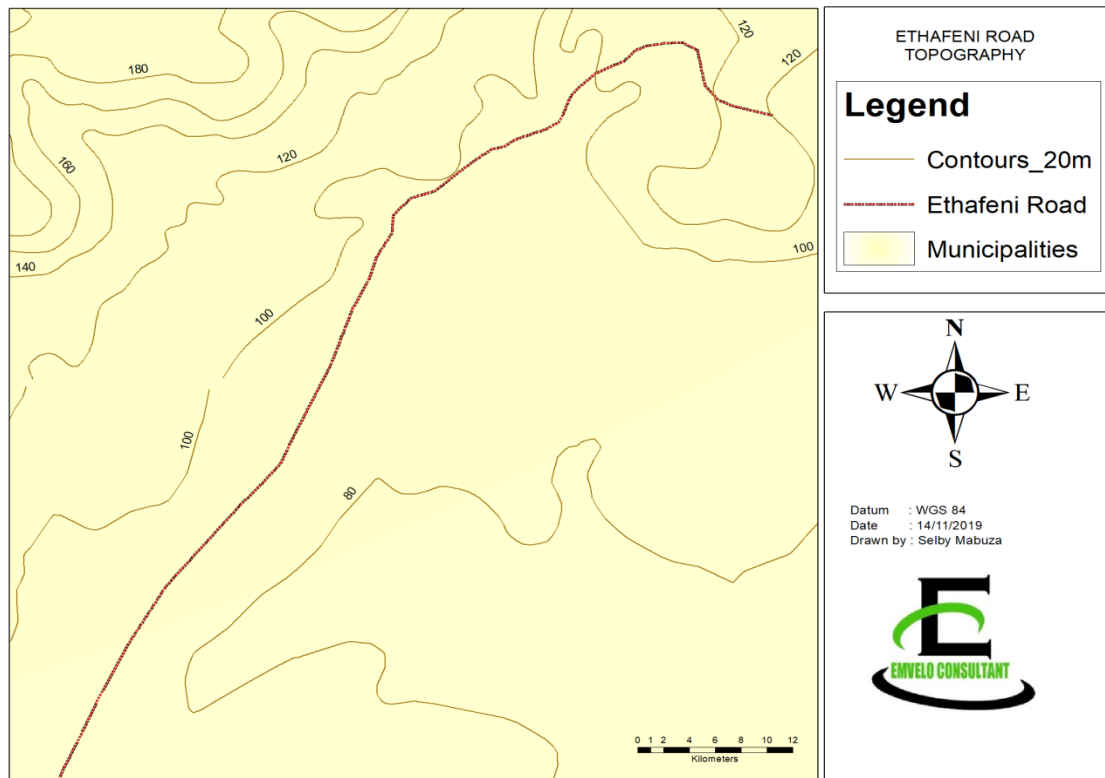


Figure 4: Topography

The topography of the southern 2.5km portion of the road from the start to before the causeway, is near level, after which it becomes moderately sloping toward the causeway and gently sloping from the causeway for approximately 600m to the end of the road in the northeast.

11.2.1 POTENTIAL IMPACTS

The proposed development will have minimal impacts on the overall topography of the area, as it will take place over an existing track road, which is already degraded on some parts of it. Also, the proposed road is to follow the alignment of the existing access road, both vertically and horizontally, with major excavations to be done during the removal of the rock on the unnamed stream, for the installation of the culvert causeway.

11.3 GEOLOGY AND SOILS

As per the regional geology the site is underlain by three types of geological formations; Arenite, Gneiss and shale. Refer to figure 5 below.

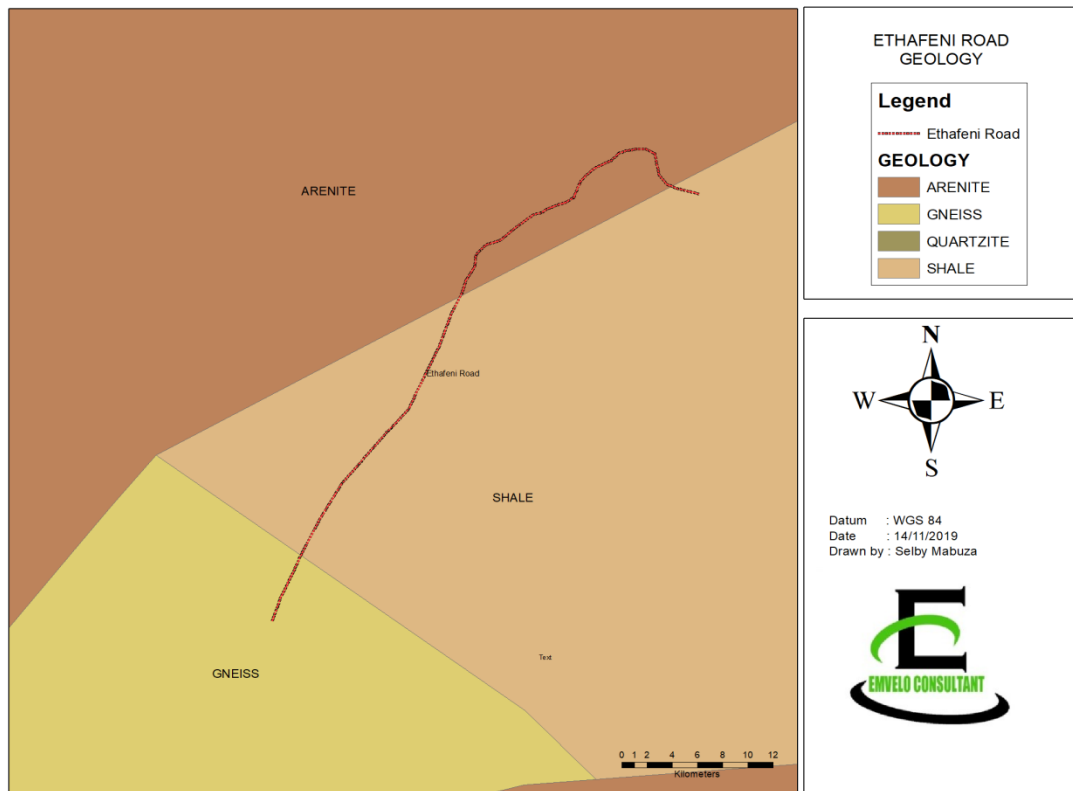


Figure 5: Geology

At the local level and according to the geological investigations, immediately south of the causeway Vryheid Formation overlies the Dwyka Group. Dwyka tillite bedrock underlies the area south of the stream crossing while Vryheid sandstone bedrock occurs from the stream crossing to the end of the road in the north.

The road comprises a gravel wearing course and / or fill material overlying the *in-situ* material. The drainage line at the causeway position is underlain by a thin mantle of transported (colluvium and alluvium) soils overlying Vryheid sandstone bedrock which is also exposed at surface within the stream bed.

11.3.1 POTENTIAL IMPACT

Major excavations are anticipated within a causeway, this due to the fact that, to make way for the proposed portal culvert, underling rocks (Refer to figure 6 below) within the stream would have to be removed.



Figure 6: Underlining rocks

As a result, the following impacts are envisaged;

- Destabilisation of surface geology as a result of excavations.
- Potential erosion, degradation and loss of topsoil due to construction activities as well as stormwater runoff.
- The inappropriate handling and storage of hazardous substances, spillages from equipment and plant and poor management waste, wastewater and cement mixing could cause soil contamination.

11.4 FLORA

The King Cetshwayo District Municipality area has large tracts of Biodiversity 1 and 3. These are designated areas with a large number of protected and environmentally sensitive features (KCDM IDP, 2019).

The uMlalazi Local Municipality occurs within one of the two biodiversity hotspots, the Maputaland Centre (of endemism), in the Pondoland-Maputaland Region. The natural vegetation of the municipality is generally comprised of grassland, bushland and forest, most of which consists critical biodiversity areas (CBA) that are irreplaceable, as indicated on figure 8 of protected areas.

11.4.1 BIOMES

The uMlalazi local Municipality has four types of biomes: Namely Forest, Savanna, Grasslands, and Thicket biome. Much of the land cover is largely dominated by the Savanna, followed by the thicket, then the grassland on the northwest and small regions of the forest biome, found mostly along the Indian Ocean Coastal belt.

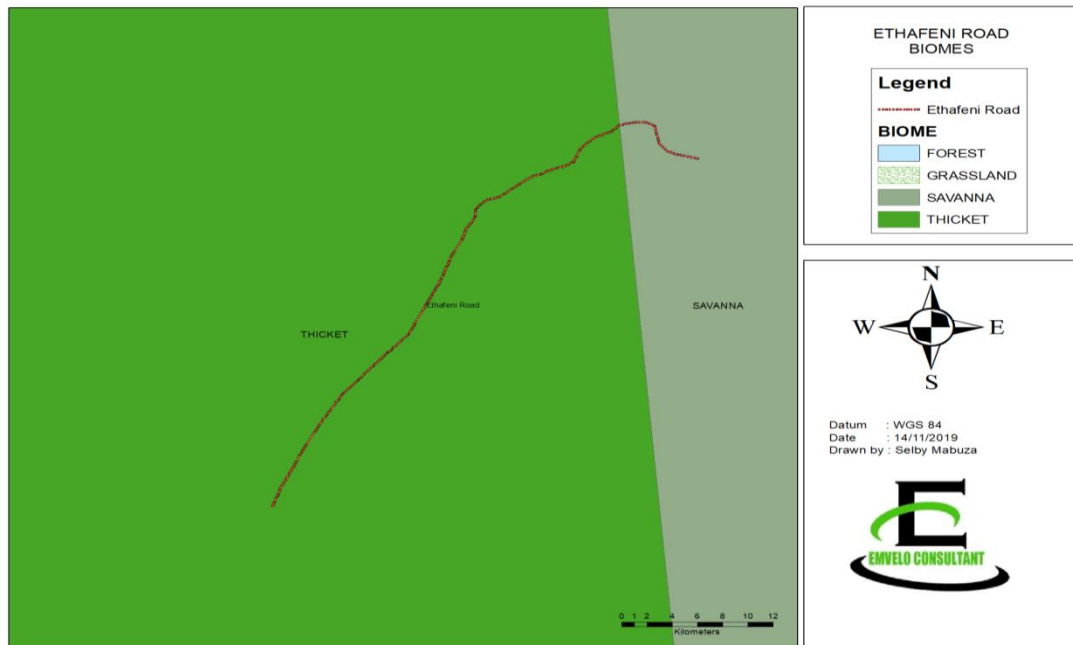


Figure 7: Biomes

The proposed development footprint covers two different biomes, namely; the thicket for the majority of its length, and the savanna towards the north end.

11.4.2 PROTECTED AREAS

The Umlalazi Local Municipality also has 4 proclaimed protected areas, which are; Entumeni forest, Ongoye forest, the Umlalazi Coastal Nature Reserve and the Dlinza forest. Dlinza is the nearest protected located approximately 11km north-west of the proposed site, see figure 8 below.

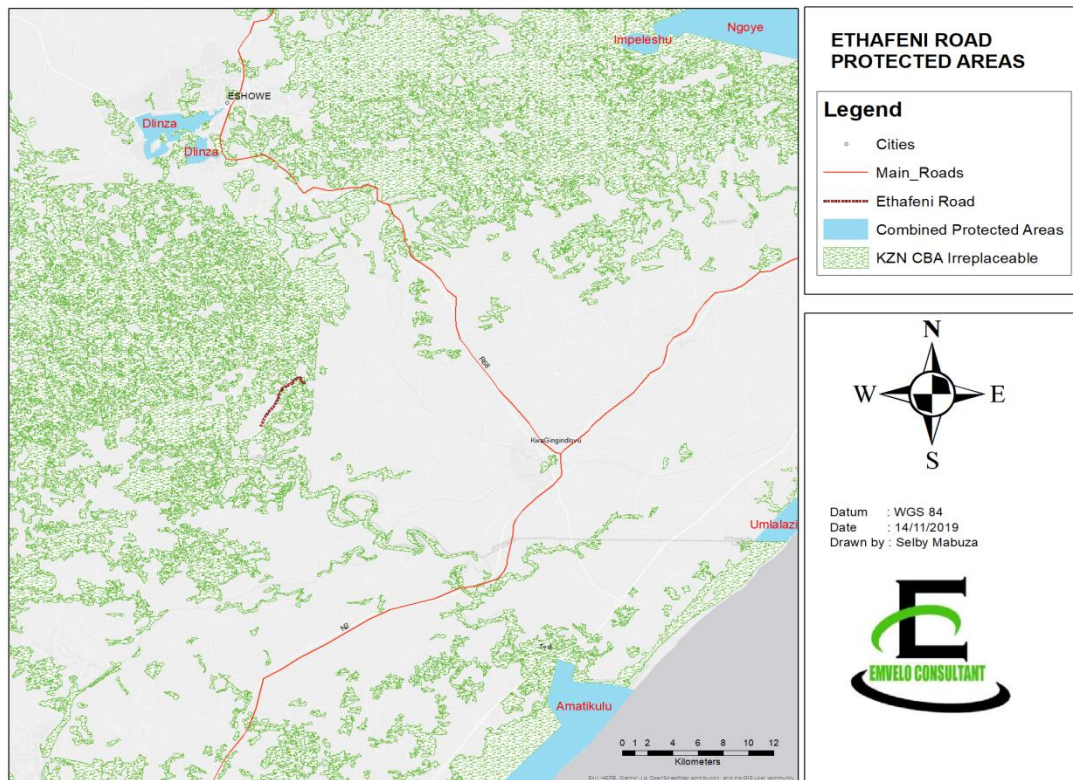


Figure 8: Protected Areas

There are a number of rare trees found within Ngoye Reserve, including the Giant Umzimbeet, Giant Pock Ironwood, Zulu Bead-string, Natal Krantz Ash, Forest Mangosteen, Forest Water Berry and the Pondo Fig (KCDM 2017/18 IDP).

The uMlalazi Reserve, controlled by Ezemvelo KwaZulu-Natal Wildlife, covers 1 028 hectares, and together with the Amatikulu Reserve, they form the Siyayi Coastal Reserve, which stretches from the uMlalazi River in the north, in a narrow band along the coast southwards almost to the Thukela (Tugela) River. There are 5 different ecosystems within the reserve, namely estuarine, dune scrub, dune forest, coastal riverine and coastal forest.

11.4.3 POTENTIAL IMPACT

Potential impacts to vegetation resulting from the construction of the proposed development include the clearance of vegetation in accordance with the design report and a possible proliferation of alien invasive species on disturbed areas.

11.5 FAUNA

The nearest protected area to the proposed site, shown in figure 8 above, the Dlinza forest is best known for its birds, two species in particular, namely the Spotted Thrush and Delagorgues Pigeon, which are sought after by birdwatchers in the forest. Numerous other beautiful species such as Green Coucal, Grey Cuckoo Shrike, Narina Trogon, Trumpeter Hornbill, Redbacked Mannikin and Green Twinspot are found in the forest.

Within the Ongoye forest, rare and endemic fauna is highlighted by the presence of red squirrel, green barbet, yellow-streaked bulbul and the green butterfly. Also, Ongoye and Dlinza Forests are regarded as amongst the most important birding destinations in the country (Pritchard, 2007). Amongst the most sought-after birds are the following: Spotted Ground Thrush, Green Barbet, Eastern Bronze-naped Pigeon, Green Twinspot, Mangrove Kingfisher and Palmnut Vulture which is an obligate predator of the nuts of the Raffia Palm (*Raphia australis*), a palm indigenous to the Maputaland Coastal Plain, a number of which have been planted in the Mtunzini area.

To determine the fauna likely to occur on-site, the lists for the Quarter Degree Square (2931BA) within which the proposed site is located was obtained from the FitzPatrick Institute of African Ornithology virtual museum. Two reptile species of conservation concern were recorded namely; the KwaZulu Dwarf Chameleon (*Bradypodion melanocephalum*), and the Variable Hinged Terrapin (*Pelusios rhodesianus*) both classified as 'Vulnerabe'. (Refer to appendix H)

11.5.1 POTENTIAL IMPACT

Vegetation clearance can lead to fragmentation, reduction, and loss of habitat as well as the migration of animals away from the area, in particular the palmnut vulture, whose food is indigenous to the area. Another threat to the fauna around the site can be the poaching and wilful harming of animals by the construction workers.

11.6 HYDROLOGICAL FEATURES

The municipality has two key hydrological features namely; the Mlalazi estuary which lies below the Mtunzini Village and the Mbongolwane Wetlands, which is a prime example of a reed marsh and it remains wet even through the dry season.

The Mlalazi estuary is easily accessible by road and lies below the Mtunzini Village. It is approximately 54 km long with a catchment area of 492 sq. km, of which approximately 46% is agriculture and consists mainly subsistence farming, sugar cane and commercial forestry. The catchment does not appear to be degraded and about 53% of the catchment is natural. This natural vegetation is comprised of grassland, bushland and forest.

There is an unnamed, non-perennial stream that crosses the road, where the construction of the culvert will take place. According to the geotechnical survey conducted, the stream usually has a low water flow during winter, and floods during the heavy rainfall periods in summer. At approximately 1.2km down to the south west runs the Matigulu River, which is a perennial stream. East of the site, at approximately 3.6km away flows the Nyezane River, which is a tributary of the Matigulu River. The Matigulu river then joins with the Nyoni river to form the MatiguluNyoni estuary, see figure 9 below.

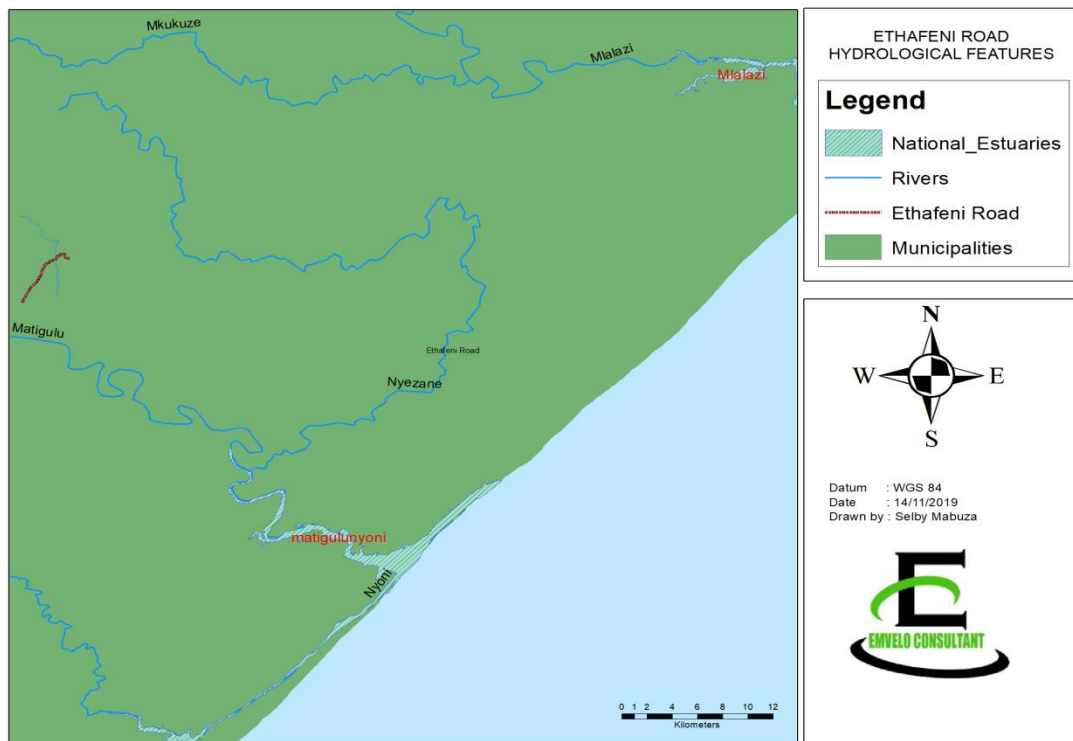


Figure 9: Hydrological features

The Mbongolwane wetlands exist within the municipality and many of these wetlands have been drained to make land available for commercial agriculture and as such this wetland system is particularly critical. This wetland is a prime example of a read marsh and remains wet even through the dry season.

11.6.1 POTENTIAL IMPACT

The construction of a culvert causeway over the unnamed stream can pose major threats with regards to spillages, which may result in the contamination of the water. Also, concrete mix done on bare soil and adjacent to the water source might cause water pollution if not contained on site. A possible pollution of the river caused by contaminated run-off can also be anticipated.

11.7 VISUAL ENVIRONMENT AND LAND USE CHARACTER

The uMlalazi Area is dominated by a band of commercial farms (mostly sugar cane plantations), covering an area from the west of Eshowe and along the R68 to Gingindlovu (ULM SDF). The proposed road runs along homes and sugarcane plantations that are mostly privately owned, see appendix C.

The largest portion of the municipal area is covered by land in the ownership of the Ingonyama Trust and farming activities are extensive. This area is also characterized by poor land management practices and presents a challenge in respect to the unlocking of the agricultural potential that exists. This area also accommodates scattered residential settlements posing considerable pressures in respect to the provision of basic services.

11.7.1 POTENTIAL IMPACT

This development is more of an upgrade of the already existing track road which is being used by the community of Ethafeni. On both sides along the road there are sugarcane plantations, which are privately owned. Minimal disturbance on the sugarcane as well as the adjacent properties can be expected, despite the fact that, the proposed alignment will try by all means to align with the existing width.

11.8 HERITAGE AND CULTURAL ASPECTS

Eshowe, a town within the uMlalazi municipality offers a window on history as it is the oldest town in Zululand. King Cetshwayo was born and died here and it was King Mpande who first invited the Norwegian missionary, the Reverend Ommund Oftebro to settle his mission station here in 1861, thereby forever changing the face of Eshowe (ULM IDP).

During site visit there were no graves or cultural aspects that were identified. Nonetheless road construction activities can cause an impact to cultural resources that might be buried underground. Therefore, precautionary measures must be practiced during construction activities, like excavations.

The inquiry has been lodged with AMAFA to ascertain whether there are any cultural and heritage sites within the study area. Findings will be incorporated into the final Basic Assessment Report.

11.8.1 POTENTIAL IMPACT

During the clearing of vegetation and excavation activities, heritage places that might be buried on the ground may be affected.

11.9 SOCIAL AND ECONOMIC ASPECTS

The uMlalazi Municipality is reliant on the Agricultural Sector for its economic well-being. This sector contributes 33% of the gross geographic product of the area and employs majority of the workforce (ULM IDP 2010/11). Part of the reason for the dominance of this sector can be attributed to low levels of education for the adult population in the Municipality

The census data obtained by StatsSA indicate that there has been a noticeable improvement in the employment status within uMlalazi Municipality. Census 2011 data indicated that the unemployment rate was 35.2% and this has positively declined further to 26.2%. This indicates not, only that the employable population is more active, but also that local economic development within the municipality is increasing favorably over the years. (ULM IDP, 2018/2019).

19.1.1 POTENTIAL IMPACT

The construction of the Ethafeni gravel access road and the culvert causeway will help in creating employment opportunities for unemployed semi-skilled and unskilled members of the community, and will also improve the standard of the road for transport, even during rainy seasons or floods.

The proposed development will also improve the standard of the road for it to be used as a transportation route, for people and the agricultural produce, to major towns and cities. This might also improve the micro-local economy of the area as some local businesses will grow during this construction.

12. WASTE, EFFLUENT, EMISSIONS AND NOISE MANAGEMENT

12.1 GENERAL WASTE MANAGEMENT: CONSTRUCTION PHASE

Weather and vermin proof bins in and around the site will be provided for the disposal of solid/construction waste and emptied out regularly. The general waste during the construction phase will be sorted into recyclable and non-recyclable waste. Non-recyclable waste will have to be disposed of at a registered Landfill Site.

Suitable portable sanitation/ablution systems for all construction workers will be provided and maintained on-site for the duration of construction. One ablution facility per 20 workers must be provided on-site each labelled male/female. All suitable excavated material from site levelling and landscaping activities will be used as far as possible on-site as fill material.

12.2 GENERAL WASTE MANAGEMENT: OPERATIONAL PHASE

Operational phase waste will be managed by the municipality. Domestic Waste collection and disposal services, non-recyclable waste along with hazardous waste that will be generated during the operation of the development will be disposed of at the Newcastle registered and licensed landfill site.

12.3 EFFLUENT

No effluent will be generated during the construction phase of the project. Proper measures will be put in place to contain any spillages (i.e. diesel or spills) occurring during construction before it reaches the near-by streams or drainages.

12.4 EMISSIONS INTO THE ATMOSPHERE

The activity itself will not contribute directly to emissions released into the atmosphere except possible short-term dust emissions during construction. However, the

construction of a road and causeway will increase the capacity of vehicles that utilize the road and in turn will cause an increase in noxious gas emissions from cars into the atmosphere and for those living adjacent to the proposed construction.

The activity will therefore have an indirect effect on the release of emissions. The release of emissions from vehicles is controlled under the Air Quality Act (Act No 39 of 1998).

12.5 GENERATION OF NOISE

During the construction phase, it is anticipated that there will be noise generated from the construction vehicles, earthworks and machinery. The mitigation measures to reduce the level of noise will be implemented during construction.

12.6 WATER USE

Water to be used during construction will be supplied by the Municipality.

13. THE PUBLIC PARTICIPATION PROCESS

12.7 BACKGROUND

Public participation is part of the EIA process which is governed under the principles of NEMA as well as the EIA regulations. It is defined as the process by which an organization consults with all interested or affected parties (I&APs) which include organizations, government entities, community, NGOs, etc., before deciding. It is a two-way communication and collaborative problem solving with the goal of achieving better and more acceptable decisions.

It provides all the stakeholders including the community with a platform to raise their concerns before the Competent Authority can make a final decision about the environmental authorization. This prevents and minimizes disputes before they become unsolvable. Chapter 6 of the EIA regulations emphasize that the information related to the proposed project must be made available to I&APs, prior to a final decision. Therefore, this process will allow I&APs to have access to the information relating to this project. The Application was conducted according to Chapter 6 of the EIA Regulations 2017.

12.8 OBJECTIVES OF PUBLIC PARTICIPATION

- To inform and involve the community and the stakeholders about the development happening in Ethafeni.
- To identify and address the community and stakeholder's concerns regarding this activity.
- To provide opportunities for the community, relevant government departments, surrounding businesses, the residents and other stakeholders to raise their concerns, suggest solutions and identify priorities or issues.

12.9 NOTIFICATION OF THE INTERESTED AND AFFECTED PARTIES (I&APS)

Section 41 of Chapter 6 of the EIA regulations have listed the following options, to be used when notifying the interested and affected parties (I&APs):

Table 6: Public Participation Processes

<i>All the Interested and Affected parties were notified of the application by-</i>		
Fixing a notice board at the place conspicuous to and accessible by the public at the boundary, on the fence, or along the corridor of any alternative sites.	YES	NO
Any alternative site also mentioned in the application	YES	NO
<i>Has a written notice been given to-</i>		
Landowner or person in control if the applicant is not in control of the land	YES	NO
The municipal councillor of the Ward in which the site and alternative site of the proposed activity.	YES	NO
The municipality which has jurisdiction in the area and other organs of state	YES	NO
<i>Placing an advertisement in-</i>		
One local newspaper	YES	NO
Any official Gazette that is published specifically for providing public notice of applications	YES	NO
One* provincial newspaper, any official Gazette that is published with the purpose of providing public notice of applications.	YES	NO

12.10 COMMENTS FROM THE REGISTERED INTERESTED AND AFFECTED PARTIES (I&APS)

Section 43 of Chapter 6 indicates that all interested and affected parties are entitled to comment in writing on all reports produced by the applicant during the EIA process. This will bring the concerns raised to the attention of the applicant.

The Public Meeting for the Ethafeni road project was held on the 28th of October 2019, at the Ethafeni Community Hall. All comments received were acknowledged and have been addressed in Table 7 below and are indicated by means of communication.

Table 7: Comments and Response Report (CRR) for The Ethafeni Gravel Access Road

NO	NAME OF I&AP	MEANS OF COMMUNICATION	COMMENT	RESPONSE BY EAP
1.	Sipho Mpunzana	Public Meeting	Mr Mpunzana emphasized that he is happy with the development that will be brought by the construction of the gravel access road, but more importantly the construction of a culvert. He mentioned that during rainy periods, it becomes very difficult for people to actually cross the stream to the other side as sometimes it overtopped is overtopped flood water. He asked as to whether a survey has been conducted to check whose property will mostly likely be affected by the realignment of the road. .	The EAP acknowledged this comment, and other community members mentioned, on behalf of EAP that a survey has been done.
2.	Ncamisile	Public Meeting	Ncamisile was very happy about the proposed development and stated that it will ensure the safety of the local people during heavy rainfall. He asked as to how the people who have farms and plantations along the road are going to be affected during the construction of the road.	An EIA a study is currently underway, all potential impacts will be assessed including the impact of road realignment of the adjacent properties. Recommendation will be made on how to mitigate those impacts.

NO	NAME OF I&AP	MEANS OF COMMUNICATION	COMMENT	RESPONSE BY EAP
3.	Khayelihle Dladla	Public Meeting	Khayelihle was delighted about the proposed development. He had a concern though, that most construction companies do not finish the construction of roads in rural areas. He went further to request that we make sure that this road is completed, as it is of highly importance to the local people.	The EAP acknowledged this comment and mentioned that an EIA is one of the first stages of the development, and other personnel's will be responsible for the next stages up to the completion of the project.
4.	Ntombi Zulu	Public Meeting	Ntombi reiterated that, this project was much needed by the community, because during heavy rainfalls cars are unable to cross to the other side, and they have to drop people far from their homes, even during unfavourable conditions.	The EAP acknowledged this comment.

NO	NAME OF I&AP	MEANS OF COMMUNICATION	COMMENT	RESPONSE BY EAP
5.	Bhekizenzo Ndlela	Public Meeting	Mr Bhekizenzo was happy about the meeting and that the road is to be upgraded, He raised a concern of that they have been promised that the road will be upgraded a multiple of times, but up until today, nothing has been done or said about it. He said that he is very worried as there is no bridge, in a way that during rainy seasons, those who are on the side remain there and cannot cross.	The EAP acknowledged this comment.
6.	Thandiwe Velisiwe	Public Meeting	Thandiwe greeted the community and leadership. She was happy with the road development, but also emphasized that she needed to talk with the ward counsellor about the way they are going to hire people during the construction.	The EAP acknowledged this comment. A ward committee member addressed the issue, on behalf of the councillor, stating that the employment process is being discussed with the local chief, and that everyone will be invited during the process.

NO	NAME OF I&AP	MEANS OF COMMUNICATION	COMMENT	RESPONSE BY EAP
7.	Mbongeleni Makhaye	Public Meeting	Mr Makhaye was happy with the road development project, and said he now understands that the meeting is for environmental awareness. He though mentioned that he is concerned about the operational activities, as the soil compaction machines used sometimes damage their fencing, especially where they have used concrete, including houses that are left cracked. He concluded by mentioning that he is happy that the road is going to be upgraded.	The EAP acknowledged this comment.
8.	Kenneth Gumede	Public Meeting	Mr Gumede said he is happy with development of the road and thanked everyone involved in the project.	The EAP acknowledged this comment.

13. IMPACT ASSESSMENT AND MITIGATION MEASURES

Table 7 below shows the Environmental Impact Assessment (EIA) conducted for the construction phase and the operational phase for the site.

Each impact identified is assessed in terms of probability (Likelihood of occurring), scale (spatial scale), magnitude (severity) and duration (temporal scale). To effectively implement the adopted scientific approach in determining the significance of the environmental impact, a numerical value was linked to each rating scale.

The following criteria will be applied to the impact assessment for the proposed development:

Occurrence

- ✚ Probability- The probability of the impact describes the likelihood of the impact actually occurring.
- ✚ Impact Duration- the Duration of the impact describes the period of time during which an environmental system or component is changed by the impact.

Severity

- ✚ Magnitude –refers to the ‘Degree of Disturbance’ to biophysical systems and components expresses the change in the health, functioning and/or role of the system or component as a result of an activity
- ✚ Scale/extent - The Extent of the impact generally expresses the spatial influence of the effects produced by a disturbance to an environmental system or component.

The following ranking scales were used:

<i>Probability: =P</i>	<i>Duration: =D</i>
5 – Definite (More than 80 % chance of occurrence)	5 – Permanent- The only class of impact that will be non-transitory (Indefinite)
4 – Probable (Between 60-80% chance of occurrence)	4 - Long-term-: The impact and its effects will continue or last for the entire operational life of the development (15- 50years)
3 – Possible (Between 40-60% chance of occurrence)	
2 – Fairly Unlikely (Between 20-40% chance of occurrence)	

<p>1 – Unlikely (Less than 20% chance of occurrence)</p>	<p>3 - Medium-term-: The impact and its effects will continue or last for some time after the construction phase (5-15 years)</p> <p>2 – Medium-short- The impact and its effects will continue or last for the period of a relatively long construction period and/or limited recovery time after this construction period (2-5 years)</p> <p>1 – Short Term- Likely to disappear with mitigation measures or through natural processes span shorter than construction phase (0-2 years)</p>
<p><i>Scale: =S</i></p> <p>5 – International (beyond 200km)</p> <p>4 – Regional (50-200km radius)</p> <p>3 – Local (2-50km radius)</p> <p>2 – Surrounding Area (within 2km)</p> <p>1 – Site (within100m)</p>	<p><i>Magnitude: =M</i></p> <p>5 - High</p> <p>4– Medium High</p> <p>3 – Medium</p> <p>2 – Medium Low</p> <p>1 – Low</p>

Status of Impact

+ Positive / -Negative or 0-Neutral

The overall impact significance score/points (**SP**) for each identified impact is calculated by multiplying magnitude, duration, and scale by the probability of all this happening.

The range of possible significance scores is classified into seven rating classes as shown in Table 1 below.

$$\mathbf{SP = (Magnitude +Duration +Scale) x Probability}$$

The impacts status can either be positive, negative or neutral as depicted in table 1.1

Table 8: Impact significance Ratings

Significance	Environmental Significance Points	Colour Code
High (+)	60-100	H
Medium (+)	31-59	M
Low (+)	0-30	L
Neutral	0	N
Low (-)	0-30	L
Medium (-)	31 – 59	M
High (-)	60 – 100	H

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Construction Phase (Negative)			
<p>Removal of vegetation:</p> <p>(a) Although the construction of the road and causeways will occur on the existing track road, where the vegetation has already been disturbed. The Excavation and site preparation will result in the removal of vegetation on the adjacent parts of the road. Disturbance of indigenous vegetation may lead to encroachment of alien plant species on-site and into the surrounding areas; and an increase in alien invasive species could lead to a possible loss of local biodiversity.</p> <p>(b) Cutting and relocation of vegetation for the construction</p>	Low (12)	<ul style="list-style-type: none"> ➤ Ensure that the Engineer, the Contractor, and the employees are trained on the preservation of the environment. ➤ Clearing of adjacent vegetation within the identified watercourse should take place immediately before construction, to ensure that bare soil is not left exposed for a prolonged period of time. ➤ The vegetation found on site must not be removed for the purpose of making fire. ➤ Vegetation must only be removed on the site demarcated and authorized for construction. ➤ Where necessary the disturbed areas should be re-vegetated using a specific seed mix or indigenous trees. ➤ All exposed earth should be rehabilitated promptly with suitable vegetation to protect the soil. ➤ Alien plant encroachment must be monitored and prevented ➤ Where necessary the disturbed areas should be re-vegetated with plants that attract seed eating and nectar-feeding birds, for the purpose of pollination and re-vegetation. 	Low (6)

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Construction Phase (Negative)			
of a road and causeway could lead to a loss of vulnerable vegetation communities.			
<p>Impact on agricultural plantations</p> <p>During the widening of the road, there plantations long the majority of the proposed road may be impacted / affected.</p>	Low (24)	<ul style="list-style-type: none"> ➤ All construction activities must take place within an area demarcated for the development. ➤ The public must be notified prior to any construction process that may affect their lives and / or personal property. ➤ If any farms are to be affected, there must be a formal agreement between the relevant parties granting permission. 	Low (15)
<p>Disturbance of Fauna</p> <p>The proposed construction activities might result in a loss of animal species that could be found on site. One particular example is that of palmtree which is an obligate predator of the nuts of the Raffia Palm (<i>Raphia australis</i>), a palm indigenous to the region.</p>	Low (15)	<ul style="list-style-type: none"> ➤ All workers must be trained to recognize threatened species on site. ➤ During site preparation, special care must be taken during the clearing of the works area in order to minimize damage or disturbance of roosting and nesting sites. ➤ No faunal species are to be disturbed, trapped, hunted or killed during the construction phase. ➤ Animals found on-site must not be removed or tampered with. The disturbed areas must be re-vegetated to attract animals. ➤ Construction areas must be kept clean to attract animals; there must be proper solid waste management system in place. 	Low(12)

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Construction Phase (Negative)			
		<ul style="list-style-type: none"> ➤ There should be no killing of animals found on site. ➤ No fires should be allowed at the site. ➤ No dogs or other pets should be allowed at the site. ➤ The stream crossing culverts and pipes must be designed in a way that it won't block the movement of aquatic habitats. ➤ Blasting and earth moving activities must be scheduled to occur at the same time to avoid repeating noisy activities that might have an impact on animals. ➤ All construction and maintenance vehicles must stick to properly demarcated and prepared roads. Off-road driving should be strictly prohibited. 	
<p>Loss and Fragmentation of Habitats; Habitat fragmentation has been recognized as the leading factor in species loss, on both a local and global level (Wilcove et al. 1986; Wilcox and Murphy 1985). birds and large mammals are often the first to be affected by</p>	Low (15)	<ul style="list-style-type: none"> ➤ All construction activities must take place within an area demarcated for the development. 	Low(6)

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Construction Phase (Negative)			
habitat fragmentation due to its effects on population viability. Reptiles and small mammals with limited mobility may be separated into distinct populations.			
Encroachment of Alien Invasive Species: Disturbed areas are most likely to be infested by alien vegetation	Medium (32)	<ul style="list-style-type: none"> ➤ An on-going proper alien invasive management plan must be developed and applied to prevent the spreading and new invasions by alien species. ➤ All sites disturbed by construction activities should be monitored for colonization by exotics or invasive plants and should be controlled as they emerge. ➤ The clearing/eradication of alien species must be undertaken during both the construction and rehabilitation phases of the development. 	Low (10)
Degradation of soil quality: The most significant impact will be the changes in the soil structure and degradation of soil quality as a result of erosion and	Low (20)	<ul style="list-style-type: none"> ➤ Illegal sand mining is strictly prohibited on-site or in adjacent areas. ➤ Digging of foundations must be limited to areas demarcated for constructing only. ➤ All vehicles, machinery, and delivery trucks must be in good working conditions to avoid any possible leakages. 	Low (6)

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Construction Phase (Negative)			
<p>compaction. Additionally, spills and leaks may also occur from vehicles and heavy equipment used during the construction operations, which may result in soil contamination</p>		<ul style="list-style-type: none"> ➤ Heavy machinery operating onsite must be routinely checked for fuel leaks or malfunctions to minimize the risk of a pollutant spill. ➤ All stationery plants containing hazardous substances (e.g. generators) must be placed on bunded area. ➤ Concrete/Cement mixing must be done on hard surfaces or mixing mats to avoid soil contamination. ➤ Cleaning of cement mixing and handling equipment must be done using proper cleaning trays ➤ All excess cement and concrete must be contained properly and be disposed of at a suitable approved landfill site. 	
<p>Groundwater Contamination: The main impacts on groundwater quality associated with construction activities include the following; Potential chemicals/fuel spills or leaks, and improper mixing of cement, as well as the improper disposal of concrete washout.</p>	Low (24)	<ul style="list-style-type: none"> ➤ Suitable storage facilities for handling and storage of oils, paints, grease, fuels, chemicals, and any hazardous materials to be used, must be provided to prevent the migration of spillage into the ground and possible ingress into the groundwater regime. ➤ All visible remains of excess concrete must be physically removed on completion of the plaster or concrete pour section and disposed of. Washing the remains into the ground is not acceptable as groundwater contamination could occur. ➤ Machinery used on site should be placed on an impermeable layer to avoid groundwater contamination. 	Low (12)

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Construction Phase (Negative)			
<p>Impacts on the Watercourse</p> <p>During the construction of the culvert causeway over the unnamed stream, spills or leaks, and improper mixing of cement, as well as the improper disposal of concrete washout may pollute the water. Also, the upgrading of the drainage system of the road will also impact on the drainage density of the stream.</p>	Medium (55)	<ul style="list-style-type: none"> ➤ The construction of the culvert causeway and drainage system must strictly follow to the recommendations of the geotechnical impact assessment study, and preliminary design report. ➤ Machinery used on site should be placed on an impermeable layer to avoid groundwater contamination. ➤ Mixing of cement or concrete must not be done within erosive sensitive areas to avoid contaminated run-off during rainfall period. ➤ The installation of pipes below culvert structure must be of suitable diameter so to maintain the original transportation of sediments. ➤ After the concrete causeway has been constructed, the disturbed areas must be engineered to coincide as close as possible to the original river contour. This will reduce the potential for in-river erosion and river bank failure. 	Low (24)
<p>River Banks Disturbance</p> <p>Construction activities within 32m of the edges of a watercourse will loosen sedimentary material resulting in an increase in sediment load and bank failure.</p>	Medium (45)	<ul style="list-style-type: none"> ➤ Ideally the construction of the causeway should be carried out in the dry winter months during low flow, to reduce the risk of mass erosion from within the channel and exposed riverbanks ➤ Unnecessary movement of construction vehicles should be limited to non-sensitive areas, preferably 100m away from the stream. ➤ Immediately after constructing causeway crossing disturbed areas should be re-vegetated to avoid bank failure and stream erosion. 	Low (15)

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Construction Phase (Negative)			
<p>Noise pollution;</p> <p>The main sources of noise associated with the proposed construction activities include the following; Construction activities and equipment delivery. Construction activities are likely to be confined to daytime and the noise levels will only affect the adjacent areas for a relatively short period of time, while the spread passes through.</p>	Low (35)	<ul style="list-style-type: none"> ➤ All construction activities, as far as possible must not be undertaken during night hours. If it is not possible to avoid carrying out construction work during night hours, this will be subject to approval by relevant authorities, as well as by the engineer and every effort should be made to comply with noise standards. ➤ Noise dampening mechanisms must be installed on the moving machinery. ➤ No delivery of working equipment is allowed after working hours. ➤ Unnecessary movement of vehicles and trucks must be prohibited ➤ All vehicles must be maintained in accordance with manufactures specifications and manuals to avoid excessive noise. ➤ All vehicles not in use must be turned off. 	(20)
<p>Air pollution: Dust</p> <p>Dust generated during construction will result from clearing and earthworks. The major dust sources will be from the movement of vehicles over the cleared working area and</p>	Low (24)	<ul style="list-style-type: none"> ➤ Remove the vegetation cover as it becomes necessary for work to proceed. ➤ Limit on-site vehicle speed to 15-20 km/ph. ➤ Apply dust suppressant during to unpaved or cleared areas. ➤ Water exposed areas before high winds ➤ Prohibit activities during windy conditions 	Low (15)

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Construction Phase (Negative)			
from vehicles transporting material and equipment to the working areas. The occurrence and significance of the dust, generation will depend upon meteorological conditions at the time. However, under normal meteorological conditions, dust impacts will be limited to within several hundred meters of the construction area.			
Paleontology: In an event that fossils do exist underneath the surface, they could be potentially destroyed during excavations.	Low (18)	<ul style="list-style-type: none"> ➤ Should any artifact or heritage resource be encountered, the contractor is advised to stop the operation immediately and report the matter to the municipality. ➤ Should discoveries be made, those fossils must be protected if possible, in situ and the appointed EO must report the matter to SAHRA. 	Low (16)
Aesthetic Impact; During the construction phase, residents who live in close	Low (25)	<ul style="list-style-type: none"> ➤ The contractor should maintain good housekeeping on-site to avoid litter and minimize waste ➤ Dust suppression is important as dust will raise the visibility of the. 	Low (14)

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Construction Phase (Negative)			
<p>proximity to or overlook the proposed project site will experience a change in their existing views. During construction, this view will be altered significantly as residents will have a view of a construction site characterized by exposed earth, construction materials, and machinery.</p>		<p>Development</p>	
<p>Traffic Impact The transportation of materials and machinery will necessitate the use of heavy-duty vehicles. In addition, there will also be an increase in construction vehicles in and around the proposed site. This impact will, however, be of temporary duration as it will only last for the construction duration</p>	Low (28)	<ul style="list-style-type: none"> ➤ Construction activities must comply with the recommendations of the compliance statement and EMPr.. ➤ Prior to construction, engage with the relevant road authorities (KZN Department of Transport, and any other relevant road authority) to jointly monitor road conditions during the construction period. ➤ Establish a set route that will be used by heavy-duty vehicles so as to limit potential damages. ➤ Visible signs must be installed to guide all movement of vehicles in and around the construction site. 	Low (15)

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Operational Phase (Positive and Negative)			
<p>The road - Positive impact: Construction of the road will provide the community with an easy access to service delivery and safe stream crossing.</p>	Low (65)	<ul style="list-style-type: none"> ➤ N/A 	Low (65)
<p>Fauna – Negative Impact Creating road barriers can impact animal's population, because some animals can be reluctant to cross the large open spaces, with no vegetation.</p> <p>Animals found adjacent to the road may be struck by the vehicles traveling on the road. Excessive noise from the cars can have a detrimental impact on birds, which might decline the bird's population in the proximity areas of the road.</p>	Low (55)	<ul style="list-style-type: none"> ➤ During rehabilitation, the sides of the road must be re-vegetated to attract animals. ➤ Strict speed limits must be implemented to avoid killings of habitats and domestic animals from the nearby community. ➤ Debris must be removed from the road and oils or chemicals that might be spilled from the cars must be contained to avoid harm to animals. ➤ Traffic signs to alert the road users of animals crossings must be displayed along the road 	Low (50)

14. CUMULATIVE IMPACT ASSESSMENT AND MITIGATION MEASURES

In terms of the EIA regulations, the cumulative impact is considered from the holistic point of view. It means that the impacts of an activity are considered from the past, present and foreseeable future together with the impact of activities associated with that activity. The activity itself may not be significant, but when combined with the existing and reasonably foreseeable impacts eventuating from similar or diverse activities may result in a significant change. “Cumulative impacts can be: Additive, synergistic, time crowding, neutralizing and space crowding” (DEA, 2017;14).

Impact	Description	Mitigation
Alien Invasive plant species	Clearing of the land for road construction often encourages the spread of invasive species. Several invasive species may also infiltrate the habitats using the roads.	A plan for the removal of the weeds and alien vegetation must be implemented to prevent the spreading.

Table 9: Cumulative Impacts

15. RECOMMENDATIONS BY SPECIALISTS

15.1 RECOMMENDATIONS BY GEOTECHNICAL SPECIALIST

The Geo-technical study for the Ethafeni Road Construction and Culvert Causeway was conducted by Drennan Maud (Pty) Ltd and the following recommendations were made:

15.1.1 Earthworks

General

a) The proposed road is to follow the alignment of the existing access road and to comprise the following:

- Lower horizon / subgrade: Rip and recompact to 150mm depth of in situ material (at least G10 quality) or import suitable granular material.
- Upper horizon / gravel wearing course: Place 150mm thick G7 quality material from a local borrow pit or commercial source and compact to 97% Mod AASHTO density.

b) Based on the laboratory test results and field observations, the sandy wearing course, fill, colluvial and alluvial materials (G7 to G10) encountered at subgrade level will provide an adequate in situ subgrade for ripping and recompaction on which to build up the pavement layerworks. However, these horizons were observed to range in thickness and horizontal extent. Conversely, should the clayey colluvial or residual soils (worse than G10) or the completely weathered sandstone bedrock (at the discretion of the Engineer) be encountered at subgrade level, it should be removed to a required design depth and replaced with suitable material or layerworks should be thickened. Therefore, additional material in places may be required.

c) Notwithstanding this, general recommendations for earthworks are provided below:

Cuts

A) All temporary excavations deeper than 1m should be suitably shored/shuttered or cut back to a safe working batter of 1:1.5 (33E) to prevent sidewall collapse. Permanent cut embankments in the soils should be restricted to a batter of 1:2 (26E) and increased to a batter of 1:1.5 (33E) in the weathered sandstone bedrock provided the bedding planes are not

adversely dipping out the slope or significant seepage is encountered. Cut embankments should not exceed a height of 3m.

Fills

a) Fill embankments should be constructed in layers of 300mm maximum loose thickness and each layer compacted to a minimum of 95% of the materials maximum Mod AASHTO dry density prior to placement of the next layer. Engineered fill should be constructed using suitable granular material (G10 or better). Particles exceeding b of the compacted layer thickness must be removed to spoil.

b) Prior to placement of any fill, the in situ material should be ripped and recompact to 95% Mod AASHTO dry density. Fills should be restricted to a working batter of 1:2 (26E).

15.1.2 Drainage

a) Road platforms should be graded to ensure they are free draining and side drainage is installed as per the Engineers specifications to prevent gullies forming along them (as observed along the existing road). All cut and fill embankments should be adequately vegetated post-construction to reduce possible erosion.

b) Should seepage be encountered either as groundwater or surface water, especially where the road crosses the drainage line, it should be dealt with by either raising the level of the road, introducing a pioneer drainage layer, installing cut off drains to prevent seepage affecting the layerworks, or a combination of the above.

16.1.3. Founding of the Causeway

a) As previously mentioned, the proposed new single lane, vehicular causeway is to comprise Portal culverts with reinforced concrete wing-walls. The causeway will total 14.9m long x 3.6m wide x 3.0m high.

b) Based on the field investigation, highly weathered, soft rock sandstone bedrock is located directly at existing ground level of the stream bed and between 0.30 and 0.60m along the flanks of the stream channel. Therefore, it is recommended the structure be found into this sandstone bedrock. The maximum allowable bearing pressure on soft rock sandstone bedrock requiring hard hand picking for excavation should be restricted to 150kPa but increase to 400kPa should the use of pneumatic tools be required. It is important that the sandy material

of the banks and gravel and rock fragments within the stream bed be removed to the depth where bedrock is exposed so that the bridge can be securely fixed to the bedrock face.

c) Ideally construction of the causeway should be carried out in the dry winter months during low flow; however, should it be constructed in summer or during times of heavy or prolonged rainfall, provision should be made to re-route the stream flow around the construction site providing protection to construction activity and better observation to ensure that the foundation base is placed on bedrock.

16. RECOMMENDATIONS FROM THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

The need and desirability for the proposed road development is of highly importance as, as it will provide the community with an improved road access and culvert causeway that can be used even during extreme climatic conditions.

The National Web Based Environmental Screening Tool (NWBEST) was used to generate the environmental sensitivity report of the proposed development site. The appointed EAP then conducted an Initial Site Sensitivity Verification study, so to confirm or dispute the environmental sensitivity as identified by the NWBEST.

Therefore, the EAP recommends the authorization of this application: However, the following conditions and mitigation measures are recommended and should be considered in any authorization that may be granted by the competent authority in respect of the application.

The EAP is of the view that Environmental Authorization should be granted on certain conditions which are outline on this section. After an Authorization has been granted, it is the applicants' responsibility to ensure that all recommendations outlined in this report as well as on the EMPr are properly implemented.

15.1.3 Minimizing impacts on Agricultural Plantations

The proposed development site runs along the agricultural plantations that are privately owned. It is important that construction activities are kept within the proposed development footprint, and that all designs are adhered to as per the design report. Should any of the farms or any other property be affected, the owner/s must be notified and compensated before proceeding with any construction activities.

15.1.4 Minimizing Impacts on Paleontological Resources

As per the environmental sensitivity report, a portion of the road (approximately 350m) lies on an area which has rock units with high paleontological sensitivity. Therefore, the EAP recommends that the road length be reduced by the length of the affected portion. However, should the project applicant wish to continue with the proposed length, a paleontology study must be commissioned prior to construction activities take place

15.1.5 Recommendations During Construction

- ✚ Appoint an Environmental Control Officer (ECO) to oversee and advise on site-specific environmental management requirements when needed.
- ✚ Mitigation measures for Carbon footprint reduction must be considered to reduce risks of climate change.
- ✚ All reasonable precautions must be taken to minimize noise generated on-site.
- ✚ Delivery trucks and vehicles must be kept in good working order so as not to generate excessive noise.
- ✚ Maintenance done on vehicles coming in and out of the site must be done in such a manner to maintain good transportation of raw materials to the site.
- ✚ Storage areas must be managed properly by applying the suggested mitigation measures in this document.
- ✚ Non-recyclable material should be removed on-site to private recycles who utilize it or be disposed of at the local Municipal Landfill site.
- ✚ If excessive spillage of diesel and fuel etc. should occur due to accidents, it should be cleaned up immediately.
- ✚ All employees must be trained about the Spill Management, Waste management, Emergency Procedures and Evacuation Procedures in place.
- ✚ Stormwater management must be drawn to separate clean water from dirty water.
- ✚ No workers are permitted to be accommodated overnight in the site except for skeleton security personnel.
- ✚ Re-vegetate and rehabilitate after day a day's work if any vegetation is removed.
- ✚ Where possible limit the removal of existing trees or shrubs.
- ✚ Only indigenous vegetation should be used during rehabilitation.
- ✚ Rehabilitation success should be monitored.

17. CONCLUSIONS

The above report provides a detailed Basic Assessment Report (BA) for the proposed construction of the Ethafeni access road project. This report and documentation attached are sufficient to decide in respect of the activity applied for in the view of the EAP.

The EIA process was conducted according to Appendix 1 of the EIA regulations, December 2014 and the NEMA as amended in 2017. The assessment was based on the information provided, the site inspection conducted by the EAP, as well as the comments by the Stakeholders.

This draft report will also provide the Interested and Affected Parties (comments from stakeholders) (I&APs) with an opportunity to comment, their comments will be reviewed and will be incorporated in the final Basic Assessment Report.

The Competent Authority (CA) is required to assess the report based on the information currently provided and take a final decision once the information submitted is complete. Enviro Consultant will continue to liaise with all the I&APs during the process.

APPENDIX A:

DECLARATION OF INFORMATION

I, the undersigned **Phumzile Lembede**, on behalf of **Emvelo Quality and Environmental Consultant**, hereby declare that the information provided in this application is correct and true.

Signature

Date

Position

Company

**APPENDIX B:
ENVIRONMENTAL MANAGEMENT PLAN(EMPr)**

**APPENDIX C:
SITE PHOTOGRAPHS AND LOCALITY MAPS**

A: Images of the proposed site



B: Locality map showing the proposed site.

**APPENDIX D:
LAYOUT PLANS**

APPENDIX E PUBLIC PARTICIPATION PROCESS

The images below show the onsite-notices displayed on the fence of a primary school and the advertisement placed in the Ilanga News Paper



APPENDIX F: EAP'S CV(S)

**APPENDIX G:
GEOTECHNICAL ASSESSMENT**

