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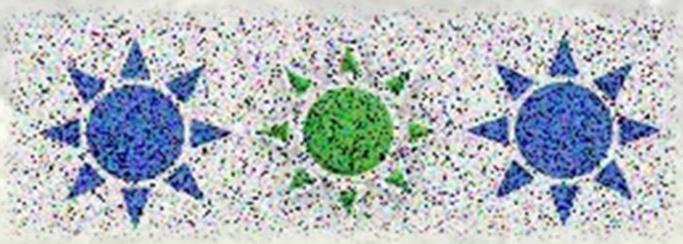

	COMPILED BY	REVIEWED BY	APPROVED BY
NAME	A.MHATU	O. JIBA	WB NOGOBELA
DESIGNATION	ENVIRONMENTAL CONSULTANT	ENVIRONMENTAL CONSULTANT	MANAGING DIRECTOR
DATE	21 January 2019		

REFERENCE NUMBERS AND DUE DATES

EAP DOC REF	MANT-001bar
CA REFERENCE FILE	DC24/0016/2018
NEAS REF FILE	KZN/EIA/0001038/2018
DBAR DEADLINE(COMMENTING)	28 February 2019
CA DEADLINE FBAR	27 March 2019

EAP UNDERTAKING AND DECLARATION

I,……..hereby approve that the drafted report as in terms of EIA Regulations, 2014 as prescribed in terms of S22(2) in relation to conduct and eligibility, hereby acknowledge that the information hereby presented as in terms prescribed in the said regulations is at all cost correct and is aligned to proposed development as per proposal by the applicant (often referred to as client). The presentation presented in this document is by no means compromise the site physical aspect of the environmental features so to make the proposed development approvable. However, our assessment is based on true ground assessment and literature review, and practical consultation with all stakeholders as prescribed in the process procedure as in Chapter 6, S40 (1) (2) and or S41.

The Competent Authority (CA) has by law vested interest in the protection of the environmental aspect hence the decision is always based on the provided information and if all has been aligned to EIA Regulations, 2014 inclusive of other relevant legislation as contained in the latter pages of this document.

Signed at_____**on**_____**of**_____**20**_____

Signature:_____ **Capacity:**_____

OFFICIAL STAMP AFFIX HERE:

EXECUTIVE SUMMARY

Nquthu Local Municipality is a Category B Municipality and is one of the four Local Municipalities that make up the Umzinyathi District Municipality. The Municipality is mainly rural with expansive low-density rural settlements being one of the major features. Some of the key development challenges identified under the Integrated Development Plan (IDP) 2017/18 include service backlogs and poor access to public facilities such schools, clinics, and other government services. Nquthu consists of a large rural population (over 90%) with roads and storm water in these rural areas being in a poor condition which places enormous pressure on the delivery of services. Funds have therefore been allocated to develop roads within different areas within the Municipality. Nquthu Local Municipality has proposed the development of Mantuli Road Phase 2 which includes development of two portions of access/gravel roads and two vehicular watercourse crossing structures.

Isolendalo Environmental Consulting has been appointed as an Independent Environmental Assessment Practitioner (EAP) to provide guidance and undertake necessary works to ensure compliance with Environmental Impact Assessment (EIA) Regulations, 2014.

The proposed project includes the development of two portions of car tracks into formal gravel roads as well as the development of two crossing structures for vehicular and pedestrian crossing. Isolendalo Environmental Consulting has identified that the construction of the two crossings will trigger Listed Activities within the EIA Regulations Listing Notice 1 and therefore requires obtaining of Environmental Authorization from the Department of Economic Development, Tourism and Environmental Affairs, Umzinyathi Region prior to commencement of any activities/works on site.

Therefore, Isolendalo Environmental Consulting have been appointed by Msinga Local Municipality to conduct Environmental Impact Assessment (i.e. Basic Assessment) in accordance with the stipulated provisions indicated in Government Notice R 982 of the Environmental Impact Assessment (EIA) Regulations of 2014. There are a number of impacts, both environmental and social, that may result from the construction and operation of the proposed project. These impacts have been identified, assessed and ranked according to their significance during the Basic Assessment Process. Mitigation measures have been provided to ensure that the identified negative impacts are minimised, and positive impacts maximised, as well as to ensure that the proponent adheres to the applicable environmental legislations.

Contents

List of Figures

1 . PROJECT SETTINGS

1.1 ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

Trading name (if any):	Isolendalo Environmental Consulting		
Contact person:	Welcome Nogobela		
Postal address:	P O BOX 1503, MANABA BEACH		
Postal code:	4276	CELL	083 408 5737
Telephone:	039 315 0437	FAX	039 312 1208
E-mail:	wnogobela@isolendalo.co.za		

1.2 EAP EDUCATIONAL QUALIFICATIONS AND CV, AND EAP PROFESSIONAL TEAM

Name & Surname	QUALIFICATION	Professional affiliation(s)	EXPERIENCE
Welcome Nogobela	B. Hons Environmental Science	IAIASA 3333	15
Anelisa Mhatu	BSc Ecology and Geography	IAIASA	5

2 APPLICANT DETAILS

2.1 PROJECT APPLICANT

Trading name (if any):	Nquthu Local Municipality		
Contact person:	Mr. Bongi Paul Gumbi		
Physical address:	83 Mdlalose Street, Nquthu		
Postal address:	Private Bag X5521, Nquthu, 3135		
	3135	Cell:	N/A
Telephone:	034 271 6100	Fax:	034 271 6111

E-mail:	siyabongas@nquthu.gov.za		

3 SPECIALIST QUALIFICATIONS, PROFESSIONAL AFFILIATIONS AND CREDENTIALS

Name of specialist	Field of Expertise	Section/s /Annexures	Title of specialist report/ s as attached
The Biodiversity Company (Ndumiso Dlamini Pr Sci Nat, 116579)	Wetland Impact Assessment	Annexure F	Wetland Assessment for the proposed Mantuli Road Phase 2 Project

SECTION B

4 PROJECT DETAILS, DESCRIPTION, ACTIVITIES TRIGGERED AND LEGISLATIVE FRAMEWORK

4.1 PROJECT NAME:

Mantuli Road Phase 2

4.1. PROJECT DESCRIPTION:

The Nquthu Local Municipality is proposing to upgrade existing car tracks into a gravel road for the first section of the project with a crossing at 443m into the road. The proposed development of the road will be upgrading of a car track; which has been formed through regular vehicular use, into a formal gravel road with a width of 5m. After crossing the stream, the road goes through an open field, between houses and then joins a DoT formal gravel road L1175. The first crossing is over a tributary of the Sibiyela River. In some of the sections of the road, the road will follow the car tracks and in some small portions, it will be realigned and not follow the car tracks. The total length of the first section is 1.25km with about 250m to be realigned and these sections will be a development of a new road and not an upgrade as there is no existing road/track. The crossing to be constructed will be a concrete slab.

Figure 1: Google Earth image with layout of the proposed project components.

Orange: Existing gravel road portion
Blue : Existing car tracks
Red : New road development/deviation from existing tracks
Maroon: Existing DoT Road L1175

About 2km on the road L1175, a track branches off the road towards the south leading to the river. This forms Section 2 of the proposed development. The track will also be upgraded into a 5m wide gravel road. A crossing (Crossing 2) will be constructed over the river (Sibiyela River) with the road joining an existing road across the river. This section of the road will have a total length of 1.45km with realignment with a total length of 350m which will be realigned.

There will also be an installation of drainage pipes as part of the storm water management on the road for both Sections of the development. The pipes to be used will be pre-cast concrete pipes with a diameter of 700mm.

Summary of Structures to Be Constructed
Grave Road Section 1: 5m type 7A gravel road with length of 1.25km
Crossing 1: 50m x 5m = ***250m² Concrete Slab***
Gravel Road Section 2: 5m type 7A gravel road with length of 1.45km
Crossing 2: 51m x 6.6m = **336.6m² Concrete Causeway**

4.2 SPECIFICATION, AND SCOPE OF THE PROPOSED PROJECT

The proposed development will include construction of two crossing structures with Crossing 1 having an area of 250m^2 and Crossing 2 having an area of 336.6m^2. The proposed crossings will be constructed according to the Standard Detail from the Department of Transport. Concrete to be used will be ready mix concrete which will be delivered by the appointed supplier with cube crushing strength of 30MPA. Reinforcement will be with hot rolled steel bars which will comply with the Standard Specifications for Steel Bars for Concrete Reinforcement (SABS 920-1985, Welded Mesh to SABS 1024).

The proposed project will also include construction of two road sections which will be development of car tracks into formal Type 7A gravel road which will both have a width of 5m each. Stormwater drainage pipes will also be installed in some sections which will have a diameter of up to 700mm.

Drawings for the different components of the project are attached under Annexure C.

4.3 LEGISLATIVE FRAMEWORK AND AUTHORITY

Regulation	Authority	Relevancy in the Proposal	Compliancy
The Constitution of South Africa	National Constitutional Court	The Contractor will need to ensure that rights within different Sections of the constitution are not violated through his actions or actions of his staff and sub-contractors.	Contractor encouraged to have a channel of communication with the community and allow for their complaints to be raised which he must then address.
National Environmental Management Act (Act 107 of 1998) Environmental Impact Assessment Regulations (December 2014, as amended)	Department of Economic Development Tourism and Environmental Affairs (For this project) Department of Environmental Affairs (Nationally)	Some of the work to be done as part of the project, mainly construction of the crossings, will be within thresholds for some of the Activities Listed under the Regulations of this Act. An Environmental Authorization is therefore required for the project.	Pre-application meeting conducted Application for Environmental Authorization Lodged, Assessment documents compiled, and public participation process commenced as per regulations.
National Environmental Management: Biodiversity Act (Act 10 of 2004)	Department of Environmental Affairs	The proposed project will have an impact on the receiving environment including removal of vegetation and impact on watercourses. This Act is relevant as it serves the purpose of protection of South Africa's Biodiversity.	Mitigation Measures included in the Environmental Management for this project include measures for minimization of impacts and rehabilitation measures. These are aimed at ensuring that the project has minimized

			impacts on the Biodiversity of the receiving environment.
National Water Act (Act 36 of 1998) and associated Regulations	Department of Water and Sanitation	The construction of the causeways will be over/affect watercourses (rivers and wetland). Some of the Activities under Section 21 of the Act will therefore be triggered which requires that a Water Use License be applied for.	A Water Use License will be obtained for the project.
National Environmental Management: Waste Act (Act No.59 of 2008)	Department of Environmental Affairs	This Act is there to reform the law regulating waste management in order, to protect health and the Environment by providing reasonable measures for the prevention of pollution and ecological degradation. The Act is applicable as waste will be produced mainly during the construction phase with this waste to be managed according to the requirements of the Act.	Waste management recommendations included in the Environmental Management Programme formed for the proposed project which the Contractor must implement.

4.4 LISTED ACTIVITIES TRIGGERED IN TERMS OF EIA REGULATIONS, 2014

ACTIVITY TRIGGERED	LISTING NOTICE	HOW DOES IT TRIGGERED	MITIGATION
GNR 983: Listing Notice 1 (December 2014, as amended)	Activity 12	The project includes construction of Crossing 1 in Section 1 which has a total area of 250 square metres and Crossing 2 in Section 2 which has a total area of 336.6 square metres.	• Working area to be minimized. • Movement of vehicles and workers around site to be controlled to avoid excessive disturbance around site. • Areas disturbed around site to be rehabilitated.
GNR 983: Listing Notice 1 (December 2014, as amended)	Activity 19	Crossing 2 will include deposition of material of about 11 cubic metres deposited into the Sibiyela River.	• Structure designed in such that material deposited within the river will not disturb natural water flow within the river including during low flow periods.

SECTION C

5 SITE LOCATION (21 DIGIT SG CODE)

The site for the proposed project is located within Ward 8 of the Nquthu Local Municipality.

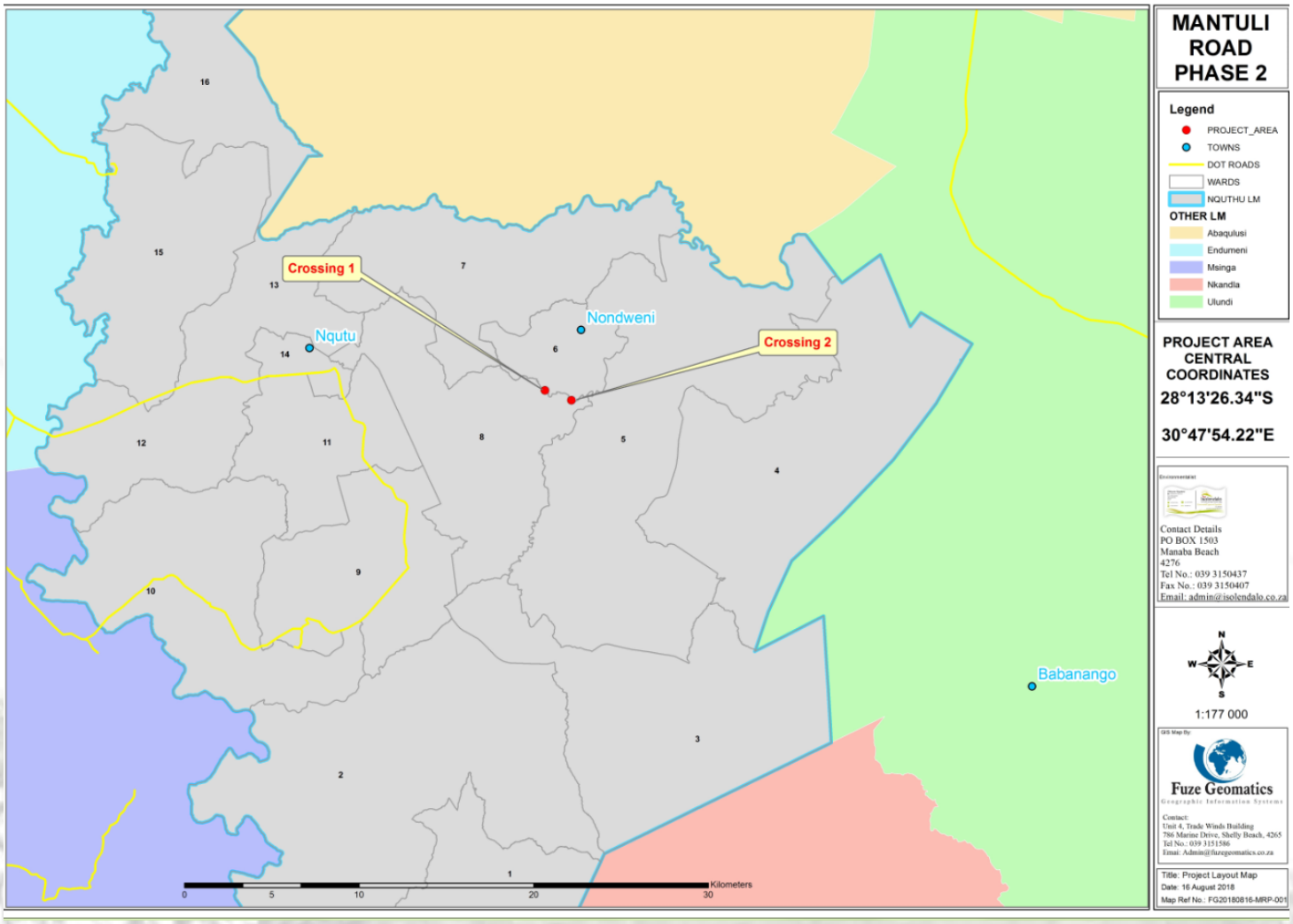

Figure 2: Locality Map for the site for the proposed project.

5.1 SITE COORDINATES

Latitude /Longitude	Degrees	Minutes	Seconds
Section 1			
Start: 28 13 24.38S 30 47 37.85E			
End: 28 13 6.86S 30 48 9.47E			
Crossing 1			
South	28	13	26.34
East	30	47	54.22
Section 2			
Start: 28 13 13.26S 30 49 7.19E			
End: 28 13 52.30S 30 48 58.05E			
Crossing 2			
South	28	13	44.91
East	30	48	49.80

5.2 SITE LOCATION: 21 DIGIT SURVEYOR GENERAL OF THE PROJECT STUDY AREA

N	O	G	T	0	0	0	0	0	0	0	1	5	8	3	8	0	0	0	0	0

5.2.1 Access to Site (Directions)

From Dundee, drive on the R68 for about 51km passing the town of Nquthu (Past Boxer and Police Station Area)

- Turn Right just before Maduladula Primary School
- Continue for about 3.8km then turn left
- Follow the road for 2.7km and then branch off the road following car tracks to the left. This is where Section 1 of the road starts.

6 BIOLOGICAL, PHYSICAL, SOCIAL, ECONOMIC, HERITAGE AND CULTURAL ASPECTS

6.1 BIOLOGICAL AND PHYSICAL ASPECTS

This section provides a description of different environmental characteristics pertaining to the site/area for the proposed development therefore providing a description of the receiving environment.

6.1.1 CLIMATIC CONDITIONS – AVERAGE TEMPERATURES ETC

Mean annual rainfall within the Nquthu area ranges between 919mm in the southeast and 646mm in the southwest with northern and central areas receiving mean annual rainfall of about 738mm. The man annual temperature is 16.7˚C with summers being warm to hot with mean maximum temperature of 23.2˚C but reaching 25.7˚C along the Buffalo River. Winters are cool with cold spells and moderate to light frosts.

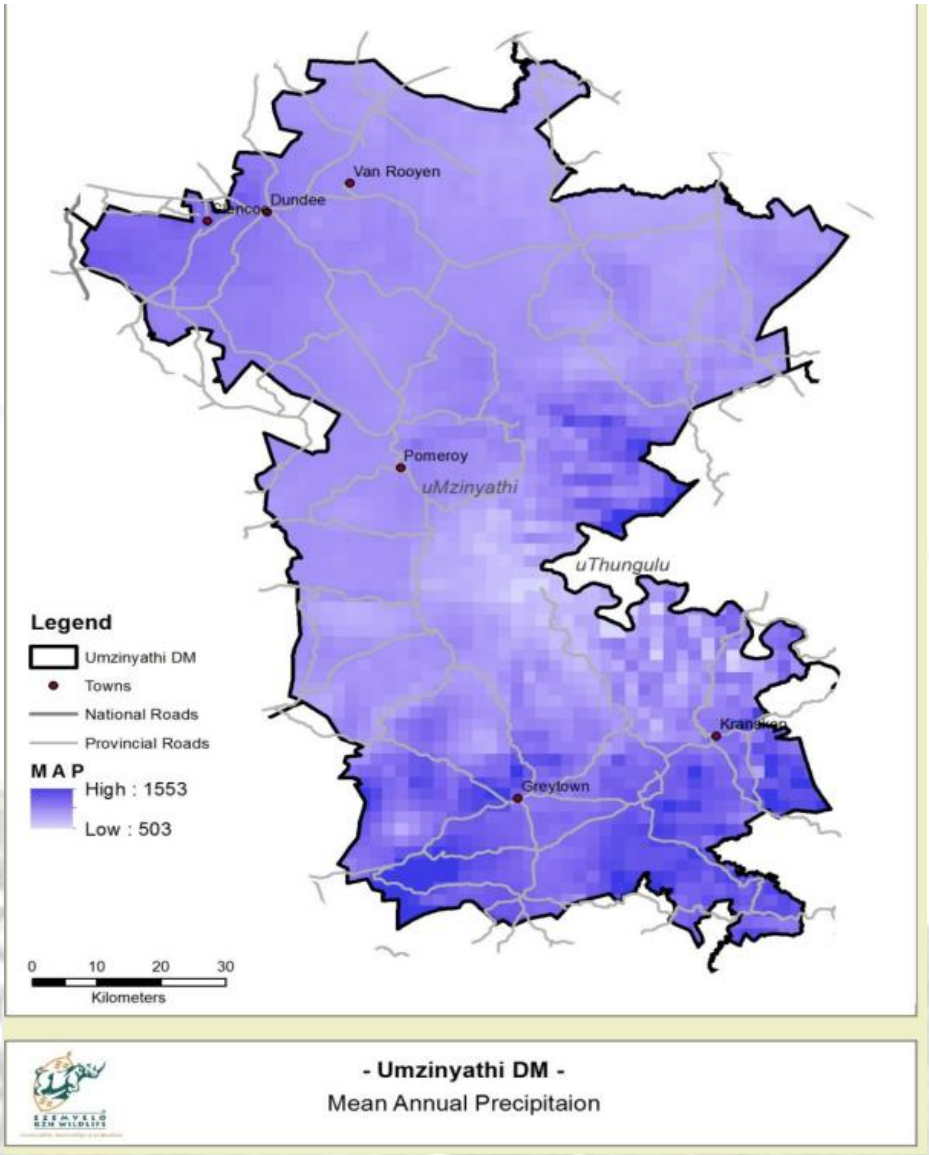

Figure 3: Map showing average yearly rainfall within the Umzinyathi District(Ezemvelo KZN Wildlife (2014), uMzinyathi Biodiversity Sector Plan,V1.0)

6.1.2 CRITICAL BIODIVERSITY

There are only 2 Conservation/Protected Areas within Nquthu. These are the Isandwana and Ntinini Training Centre which are identified reserves within the Municipality.

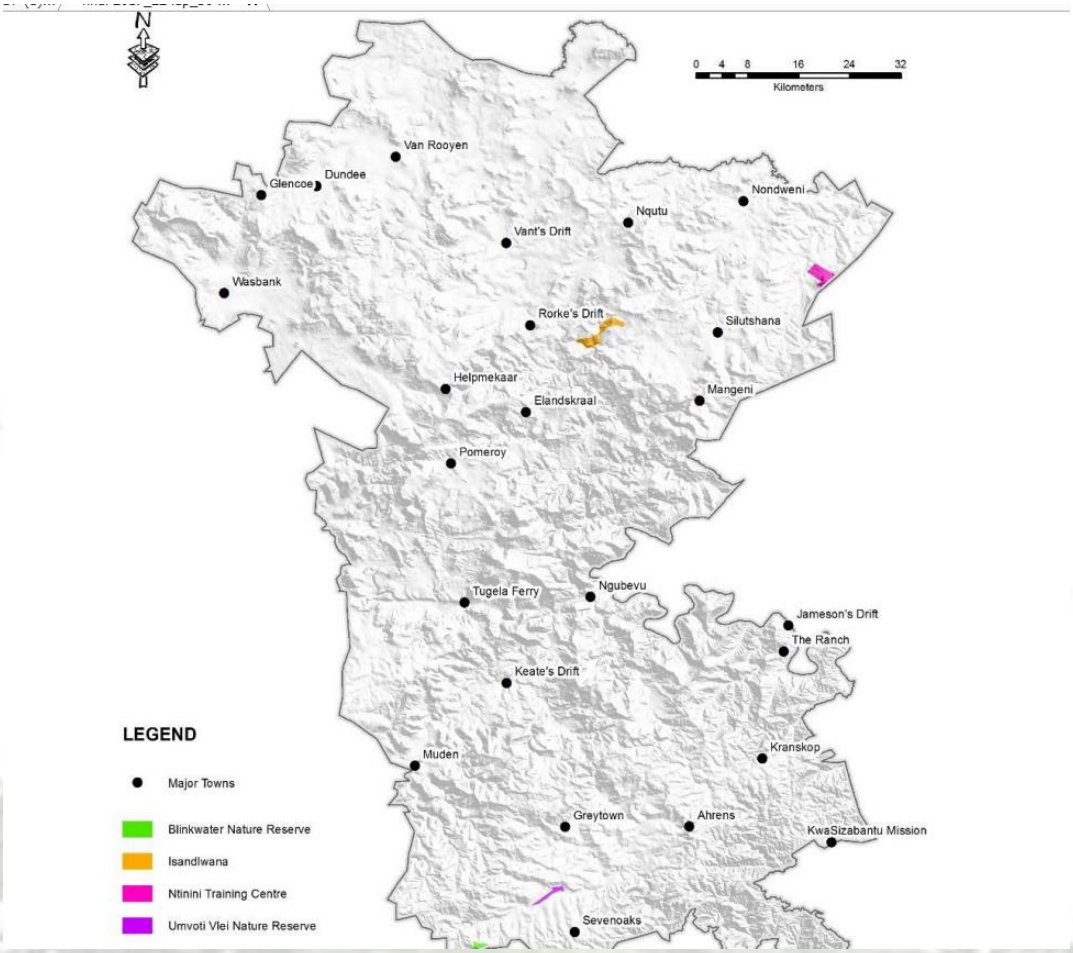

Figure 4: Identified Conservation Areas within the Umzinyathi District Municipality (Umzinyathi IDP).

There are no conservation areas critical to biodiversity of the Nquthu Local Municipality Located within the area where the two sites are located. However, there is a wetland area to be affected by the proposed development which carries biodiversity importance on a more local scale.

6.1.3 TOPOGRAPHY AND GEOLOGICAL TERRAIN

Nquthu lies inland of the relatively flat plain of Kwazulu Natal and lies between approximately 125 and 450 metres above mean sea level. The area is characterized by broken topography with plateaus comprised of rounded hilltops and bisected by gentle slopes incised river valleys in the East and a step escarpment falling into iSandlwane south. Nquthu Local Municipality is characterized mostly by Dolerite, Ecca group arenite and Shale.

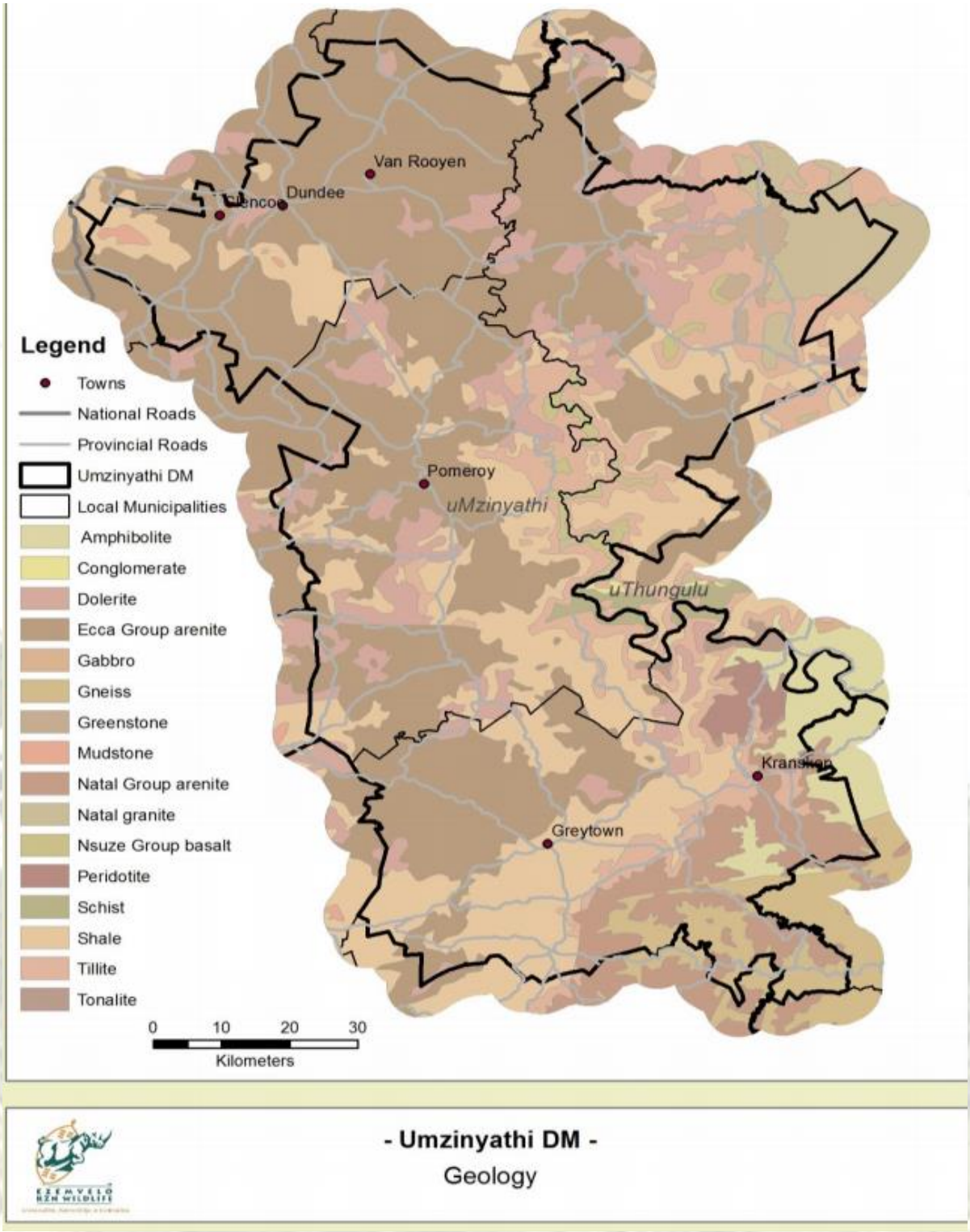

Figure 5: Geology of the Umzinyathi District Municipality (Ezemvelo KZN Wildlife (2014), uMzinyathi Biodiversity Sector Plan,V1.0)

6.1.4 VEGETATION

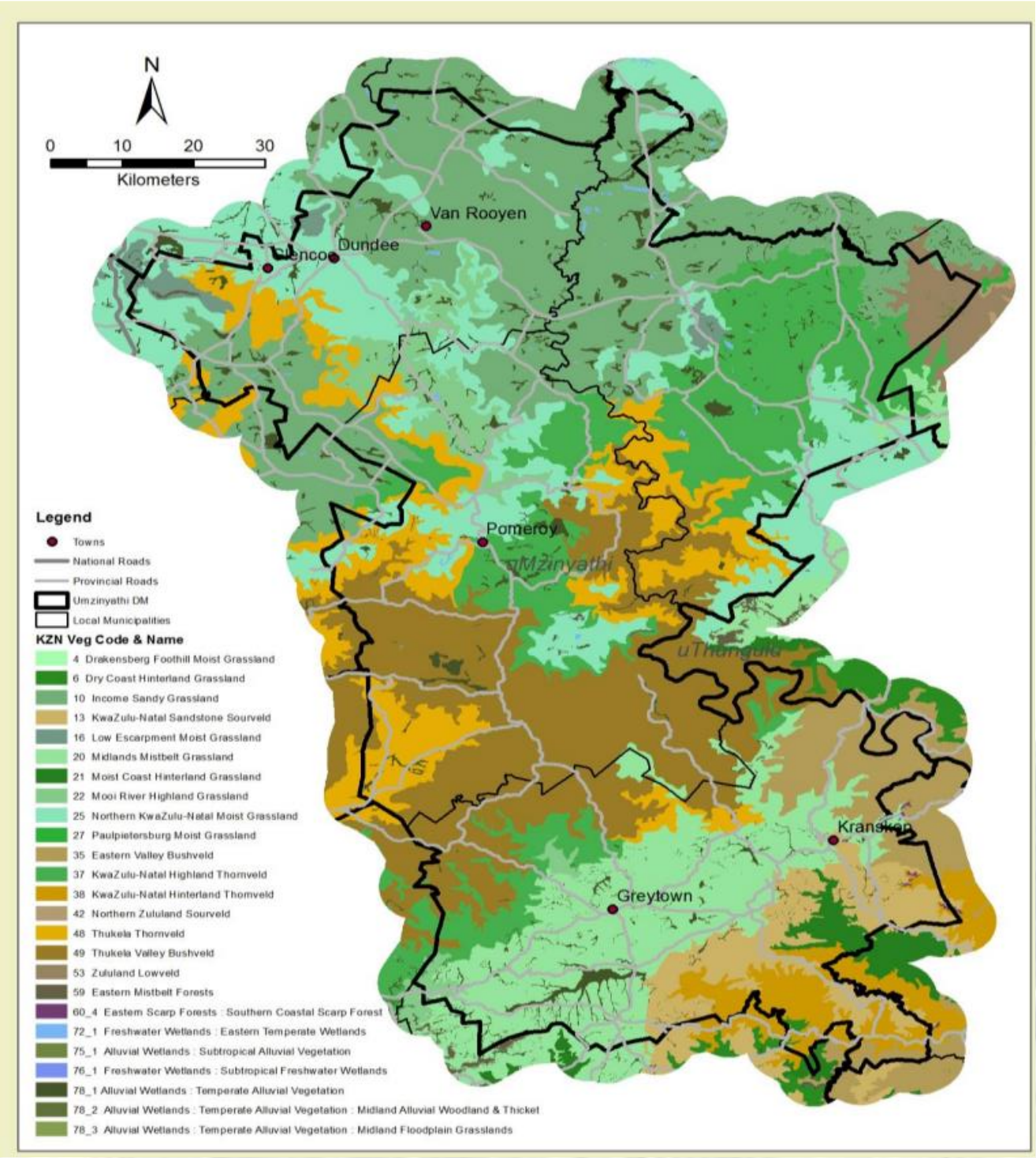

Figure 6: Ezemvelo KZN Wildlife. KZN 2008 land cover (Grid) [Raster] 2008.

The proposed project is situated within the KwaZulu-Natal Highland Thornveld vegetation unit which is restricted within the KwaZulu Natal Province. The unit occurs on both the dry valleys and the moist upland on a hilly and undulating landscape. The vegetation is dominated by tall grasses such as *Hyparrhenia hirta* with occasional intrusion of *Vechelia* woodlands.

The vegetation on site is no longer in its intrinsic state due to activities which have taken place including, sustenance farming, construction of houses, development of roads and use of crossing points.

Vegetation around the site is grassland with scattered Acacia tress with dominant grass type being the *Hyparrhenia hirta*. No sensitive vegetation area is located within the site(s) of the proposed development with grass being the only vegetation expected to be disturbed/removed during construction works.

Figure 7: An image showing a view of the project area which is dominated by grass with scattered trees.

6.2 SOCIO-ECONOMIC STATUS

6.2.1 Social

Nquthu Local Municipality is dominated by rural settlement areas with Zulu speaking people. The site is also located within a rural area where the unemployment rate is high. The area is dominated by medium density semi-formal housing. The area and many others within the Nquthu Local Municipality is led by Tribal Authority.

6.2.2 *Economic*

Employment levels are exceptionally low with only 9 946 of the economically active population being employed. Of the total population, 55 954 are not economic active as this include people with disability, school children and pensioners while 12 918 are discouraged work seekers and the rest of the potential labour force is not economically active (students, housewives etc). With such high unemployment the dependency levels are also very high, and it is estimated that for every employed person there are 28 unemployed people who are in need of support.

Socio-Economic Value of the project

Anticipated CAPEX value of the project on completion	R2.5 million
What is the expected annual turnover to be generated by or as a result of the project?	N/A
New skilled employment opportunities created in the construction phase of the project	None as skilled workers are already employed under different companies (Engineering and Construction)
New skilled employment opportunities created in the operational phase of the project	None as there will be no work done during the operation phase
New un-skilled employment opportunities created in the construction phase of the project	±10
New un-skilled employment opportunities created in the operational phase of the project	None as there is no work to be done during the operation phase.
What is the expected value of the employment opportunities during the operational and construction phase?	≈R420 000 for labour. Skilled workers paid by companies they are employed under

The above is mainly for the construction of the crossings only.

6.2.3 *Heritage and Cultural Aspects*

The site is located within a rural area with sustenance farming with the community mainly being Zulu speaking. There are some graves close to Section 1 of the proposed road Sections. These graves are not within a formal grave yard with the area they are located on not being fenced. The graves are not anticipated to be disturbed or affected by the proposed development.

7 NEEDS AND DESIRABILITY

7.1 Motivation of Activity (Needs and Desirability) of Preferred Option

Certain access roads are the responsibility of the Department of Transport and some local/access roads are the responsibility of the Local Municipality of the area. In some areas where road networks are not good, people have to use longer routes to reach desired destinations. With education and health amenities being located outside these areas, people often resort to using unsafe routes where they cross watercourses on foot with no crossing structures which is more of a risk during high rainfall season.

Where road networks are poor, it becomes difficult for affected communities to access emergency services such as emergency medical services and police. Poor road networks also affect service delivery as service providers struggle to access the areas where their services are needed as travelling to these areas becomes difficult even with vehicular travelling especial during wet weather conditions.

Figure 8: Crossing point on Section 2

The area within which the project is located has a poor road network. There is one formal access road within the area which is the L1175. Travelling through this route however; takes longer to reach most areas outside the affected community. There are no schools and clinics within the immediate area. Community members therefore mainly travel through informal routes both by car and by foot. This includes crossing of watercourses which poses a risk especially during rainfall season.

The Nquthu Local Municipality has therefore recognized the need to upgrade access roads that connect to the L1175 which can be safely used as alternative routes. This will provide safe shorter routes to be used by cars and pedestrians. The proposed development is anticipated to also aid improved service delivery to the affected communities and may also spark improved economic status as travelling costs may be reduced with more people able to travel to nearby areas to seek employment.

7.2 Motivation of the Preferred Site

The identified sites for the road segments to be upgraded already have car tracks which indicates them to be regularly used by the communities. Although the roads will not strictly follow the car tracks, they will mainly follow the car tracks which means that the area to be disturbed had already experienced disturbance to some degree. The proposed structures will be constructed on areas regularly crossed when using the said roads. The identified sites have therefore been viewed as the most desirable areas for the proposed development.

7.3 Activity

The proposed project will include construction of two vehicular crossings as part of the upgrade of Mantuli Access Road Phase 2. The following are some of the activity alternatives:

7.3.1 Construction of Pedestrian Bridge

- A pedestrian bridge would most likely have reduced impacts compared to the development of a vehicular bridge. Development of a pedestrian bridge would also cost less. However, this alternative will not be favorable as the route is needed for both vehicular and pedestrian travel which can be seen through the tracks observed on site.

7.3.2 Developing the road with no crossings

- The road could be developed without any crossings. This would not be a favorable alternative as there are watercourses to be crossed on both sections of the road to be upgraded. The road upgrade would not provide the communities with safer access as community members would still be at risk of being washed away during high rainfall periods when crossing the watercourses.

The development of the two crossings as part of the proposed road development is therefore an absolute necessity to fully serve the needs of the affected communities for safer, shorter routes.

7.4 Technology Alternative

Basic construction machinery will be used such as:

- TLB
- Roller
- Concrete Mixer Truck
- Walk Behind/Hand Compactor
- Heavy Load Trucks
- Construction vehicles such as vans
- Hand held equipment

All technology/machinery to be used is basic and therefore has generally low impacts on the environment. Contractor will need to monitor that all machinery is maintained in good working condition and does not leak hydrocarbons or release excessive emissions and also ensure that the set-out access routes are adhered to in order to avoid excessive trampling and damage of surrounding environment.

8 WASTE, EFFLUENT, EMISSION, NOISE MANAGEMENT AND ENERGY EFFICIENCY

8.1 Solid Waste Management

Waste to be produced during the construction phase of the proposed project will mainly include solid general waste and construction rubble. The Contractor will provide waste bins which have lids for the storage of such waste on the site. The waste will then be collected and disposed of at a waste dumping site in Nquthu. Where a large amount of waste is to be kept on site prior to disposal, such waste will be kept in a skip.

8.2 Liquid Effluent

The Contractor will appoint a service provider approved by the Nquthu Local Municipality to provide chemical toilets for use by workers and visitors. The same service provider will also be responsible for emptying/servicing of the chemical toilets. Day to day cleanliness will be the responsibility of the Contractor's delegated team member and toilets will be monitored by the appointed ECO including inspection of service receipts.

Due to the nature of the project, there is no liquid effluent for the operational phase.

8.3 Emissions into the Atmosphere

Emissions expected for the construction phase are limited to exhaust emissions and dust liberation which are expected to have minimal impacts on the ambient air quality within the affected area. These will be mitigated through regular servicing of vehicles and machinery and use of water cart to spray water on the road which will dampen the soil and reduce dust liberation.

8.4 Generation of Noise

Currently, there is no regular movement of vehicles on/around the site. The proposed project is expected to result in increased influx of vehicles within the area as well as increased movement of people as there will be construction workers. This is expected to significantly increase noise levels within the locality of the site.

All works will therefore need to be limited to working hours between 07:30am to 04: 30pm with community to be notified of any periods where construction works will result in excessive noise emissions through the use of an appointed CLO. A complaints register must also be kept to record community complaints and responses by the Contractor. Contractor is also to ensure that vehicles are serviced and that no loud music is played on/around the site by his workers.

8.5 Energy Efficiency

No energy will be required for both construction and operational phase. A generator will be used where required during the construction phase.

SECTION D

9 PUBLIC PARTICIPATION AND KEY STAKEHOLDER ENGAGEMENT PROCESS

9.1 Public Participation Process

The public participation process conducted included the following:

I. Posting of site notices around the site
II. Running an advertisement and
III. Circulating documents to the Identified I&APs /Stakeholders

9.1.1 Advertisement

An advert was run in the Ilanga, January 14-16, 2019. The advert was printed in IsiZulu which is the main language used in the project area.

9.1.2 Site Notices

Site Notices were put up near the two sites on the 13th of November 2018. These included information as stated in the regulations including:

- That the Application/ Assessment is a Basic Assessment Process
- Nature and location of the activity
- Where further information on the application or proposed application can be obtained
- The manner in which and the person to whom representations in respect of the application or proposed application may be made.

Item	Coordinates
Site Notice 1	28° 13' 53.17"S 30° 48' 58.21"E
Site Notice 2	28° 13' 24.11"S 30° 48' 53.33"E
Site Notice 3	28° 13' 06.19"S 30° 48' 08.76"E
Site Notice 4	28° 13' 17.96"S 30° 48' 05.63"E

9.1.3 Alternative Engagement with Community (if deemed Necessary)

Up to this point, publishing of the adverts and posting of notices around the sites has been viewed as sufficient by the EAP. However, further methods may be used if recommended/advised by any of the stakeholders.

9.1.4 Attendance Register

N/A

9.1.5 Minutes of Public Meeting

N/A

9.1.6 Proof of Stakeholder Engagement

This is a Draft Basic Assessment which is being circulated to I&APs and Stakeholders for the 30-day commenting period. Documents were posted to the relevant Department/people. Proof of circulation and other communication will be attached to the Final Basic Assessment Report under the Public Participation Appendix.

9.2 Notification of Interested and Affected Parties

At the point of the circulation of the DBAR, there were no Registered I&APs. Should there be any I&APs Registered by the finalization of the BAR, proof of communication and comments received will be attached to the relevant sections.

9.2.1 Issues Raised by IAP's

None thus far. Comments received will be recorded in the comments and responses report and received communication/letters will also be attached under Annexure D.

9.3 AUTHORITIES IDENTIFIED AS KEY STAKEHOLDERS

Name of Department	Contact person	Contact Details
Department of Economic Development, Tourism and Environmental Affairs	Mr Gerald Willis-Smith	P.O. Box 125 Dundee 3000 034 299 7908 Gerald.Willis-Smith@kznedtea.gov
Nquthu Local Municipality	Mr. Bongi Paul Gumbi	83 Mdlalose Street Nquthu 3135 034 271 6100 siyabongas@nquthu.gov.za
Ezemvelo KZN Wildlife	Mr Andy Blackmore	P.O. BOX 13053 CASCADES 320 033 845 1346
Department of Water & Sanitation	Ms. N. Mdlalose	Southern Life Building, 88 Joe Slovo Street Durban 4001

SECTION E

10 ENVIRONMENTAL IMPACT ASSESSMENT OF ALTERNATIVE SITE IDENTIFIED AND ASSESSED

The assessment of impacts must adhere to the requirements in the EIA Regulations, 2014, (As Amended) and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

10.1 Impacts and Risks Associated with each Alternative

10.1.1 Process Undertaken to Identify, Assess and Rank Impacts

The process undertaken to identify assess and rank impacts included the following steps/considerations:

- Consideration of the scope of works including the sizes of the different components of the project as well as activities that need to be undertaken to complete the proposed development. This includes activities such as removal of vegetation, excavation, removal and deposition of material within a stream/river, storage and use of materials such as diesel and oil and movement with large and small construction vehicles.
- Assessment of the receiving environment including the type of vegetation and identification of sensitive areas such as wetlands.
- Consideration of how the activities linked with the development will affect the receiving environment including how far the impact is anticipated to spread/be experienced, how long it will last and how long it is expected to last. Identified impacts were ranked as required by the EIA Regulations, 2014, as amended. The ranking of impacts is detailed below.

10.2 IMPACT ASSESSMENT RANKING METHODOLOGY

I. Nature of the Impact (S)

How will the environment be affected through that aspect?

STATUS		
(1) NEGATIVE	(2) POSITIVE	(3) NEAUTRAL

II. Extent of the Impact (E)

How far will the impact reach? This looks at the area/distance within which such impact will be experienced.

EXTENT		
(1) SITE	(2) LOCAL	(3) MUNICIPAL
(4) REGIONAL	(5) SOUTH AFRICA (NATIONAL)	(6) INTERNATIONAL

III. DURATION (D)

How long will the impact be experienced? For what period will the impact continue to be experienced?

DURATION		
(1) IMMEDIATE – 1 YEAR	(2) SHORT TERM – 1 - 5YRS	(3) MEDIUM – 6 – 15 YRS
(4) LONG TERM – TO CEASE WHEN OPERATION STOPS	(5) PERMANENT – NO MITIGATION WILL REDUCE	

IV. INTENSITY (I)

Measure of the intensity of the impact.

MAGNITUDE		
(0) NONE	(2) MINOR	(4) LOW
(6) MODERATE	(8) HIGH	(10) VERY HIGH

V. PROBABILITY (P)

Indicating the likelihood of the impact actually occurring.

PROBABILITY		
(0) NONE	(1) IMPROBABLE	(2) LOW
(3) MEDIUM	(4) HIGH	(5) DEFINITE

VI. SIGNIFICANCE

Significance = (Extent + Duration+ Intensity) *Probability

SIGNIFICANCE		
<30 – LOW	30 – 60 MEDIUM	> 60 HIGH

10.3 Anticipated Environmental and Socio-Economic Impacts

The table below provides a list of the identified impacts which can be anticipated to occur as a result of activities linked to the proposed project. The impacts have also been ranked with mitigation measures also included in the table. It should be noted that the mitigation measures provided in this table may not be all the mitigation measures provided for the impact and that full mitigation measures are provided within the Environmental Management Programme formulated for this project.

IMPACT	CONSEQUENCE	NATURE (-) / POSITIVE (+)	EXTENT	DURATION	PROBABILITY	INTENSITY	PRE-MITIGATION SIGNIFICANCE	MITIGATION MEASURE	POST MITIGATION SIGNIFICANCE
CONSTRUCTION PHASE									
Loss of natural grass area	• Increased runoff velocity • Loss and alteration of habitat • Loss of Biodiversity • Increase sedimentation downstream	-Ve	2	4	5	4	50 - Medium	• Limit movement of machinery and workers. • Re-vegetate post-construction. • Designate site access routes. • Manual removal of alien plants	35 - Medium

	• Spread of alien invasive plant species							establishing on open space.	
Loss of topsoil	• Loss of area for plants to grow. • Sedimentation downstream • Reduced biodiversity	-Ve	2	2	4	4	32 - Medium	Implement erosion measures including diversion of runoff away from sensitive areas and use of sand bags.	26 - Low
Soil Compaction and Erosion	• Increased runoff velocity • Scouring and creation of dongas • Increase in impermeable surface	-Ve	2	2	3	4	24 - Low	Movement of machinery and vehicles to be controlled around site. Runoff must be directed away from exposed/ erosion sensitive areas.	20 - Low
Alteration of Channel Flow	• Flooding on area that does not normally receive water • Disturbance of supply for downstream water users	-Ve	2	2	5	4	40 – Medium	The diversion of the watercourses must be done in such that there is no excessive damage/alteration of flow. Channel flow must be diverted in such that the water is channeled downstream the working area to ensure continued flow.	30 - Low

Creation of Temporary Employment	• Temporary increase income and relief of financial stress. • Improvement of skill and better chances of future employment.	+Ve	2	2	5	6	50 - Medium	Discuss employment and renumeration conditions with the workers before they commence work. Conduct worker inductions on site for awareness (environmental and safety awareness). Provide all workers with the necessary Protective Clothing	55 - Medium
Operation of plant/machinery and vehicles around the site	• Leak/spill of hydrocarbons resulting in soil and water contamination • Increase in ambient noise levels around the site. • Air pollution from exhaust emissions and dust liberation. • Hazard for workers and surrounding community	-	1	4	2	4	28 - Low	There must be a designated area for storage of hazardous substances which must be hardened/ impermeable. All plant and machinery must be kept in good condition and services regularly for leaks and excessive emissions. All workers must be provided with necessary PPE and use of such must be strictly enforced.	15 - Low

								Appropriate warning signage must be displayed around the site.	
Operational Phase									
Existence and use of road and crossings	Impedance of flow	-Ve	1	5	1	6	40 -Medium	The design of the causeways/crossings must allow for continued free channel flow including for low rainfall periods.	35 – Medium
	Improved access	+Ve	5	5	3	6	70 - High	All road users must practice the necessary caution when making use of the road and associated crossing structures. The road will need to be maintained in good condition to ensure that it continues to serve its purpose.	70 – High
	Alternative travel route	+Ve	5	4	3	6	56 – Medium		56 - Medium

	Impacts on downstream communities & waterborne diseases	-Ve	5	2	2	6	26 - Low	It will be the responsibility of the road users to ensure that vehicles do not leak and fuel or other hazardous substance and that the do not dump litter into the affected watercourses.	18 - Low
	Increased accidents	-Ve	5	2	2	8	30 - Low	Road signs must be displayed showing speed limits to which drivers must adhere. Should it be seen as necessary, speed humps may be installed on the road.	24 -Low

10.4 Summary Findings and Impact Management by Specialist Report

A single Specialist Assessment was conducted which as the Wetland Assessment and Delineation. Methods used for the assessment included both the Desktop Assessment and Fieldwork Assessment.

There was one (1) identified wetland within the 500m radius of Crossing 1 which is classified as a channeled valley bottom wetland (HGM 1). This wetland was determined to be in a Largely Modified State (D). Activities around the site including road crossing over a watercourse, agricultural activity on wetland edge, building of housing and other structures as well as the low wetland plant diversity have all contributed to the modification of the wetland.

Figure 9: Image showing the Valley Bottom Wetland (HGM1) identified upstream crossing 1.

Geomorphological, hydrological and vegetation components of the wetland were all assessed and determined to be modified to largely modified hence the overall rating of Largely Modified. Flow volumes and intensities have been altered due to surrounding activities and their impacts. Increased flow velocity and erosion of downstream

areas have resulted from erosion of soil within the wetland which has culminated from the current crossing method with the bedrock exposed within the wetland due to the resultant soil erosion.

In terms of Ecosystem Services, the wetland was identified to have an Intermediate level of service with elevated levels of indirect benefits such as flood attenuation, toxicant, nitrate, and phosphate assimilation, sediment trapping and erosion control. Ecological Importance and Sensitivity for the wetland was calculated to be Moderate.

10.4.1 Recommendations by Specialist

In terms of the Wetland Assessment and Delineation conducted, the main recommendations provided are for the buffer zones for the construction and operation phases of the project. The recommended buffer zones are indicated in the table below:

	Before Mitigation	With Mitigation
Construction Phase	24m	15m
Operational Phase	15m	15m

Further, the following was given for mitigation measure(s) for the project impacts:

"The upgrade of the road and culvert construction should take place in the dry season to avoid sediments being carried off by overland flow. Materials must be pre-fabricated and not fabricated on site. Any stripping should take place in a phased approach with silt traps being installed to decrease the extent of sedimentation of the watercourse. All wetland areas should be cordoned off. The abovementioned mitigation only accounts for cases where the proposed road impedes into the buffer zone. Post-construction rehab also has been recommended to decrease the operational impacts as much as possible and to decrease the rapid degradation in the future".

The specialist has recommended that the proposed project be favorably considered with all recommended mitigation measures to be implemented as identified risks will be low with mitigation measures implemented.

10.5 Description of Assumptions, Uncertainties, and Gaps

- It has been assumed that the community will continue to use the road to be upgraded as it is already being used therefore making the development a necessity.

- The EAP also assumes that the recommended mitigation measures for the anticipated impacts will be adhered to thereby reducing the anticipated impacts to an acceptable level.
- The assessment of the receiving environment is mainly based on observations made during a couple of visits to the site during a season that is generally dry. Conditions on site may therefore have not been a true reflection of the receiving environment especially in terms of channel flow on the affected watercourses.
- It can not be known how the dynamics of the surrounding communities may change in the future and how any changes may affect the sustainability of the proposed structures.
- It is assumed that the Contractor and Engineer will keep closely to the designs and project scope of works in a manner that the anticipated impacts are accurate and any changes to be done will not result in extensive change to the overall impacts anticipated to occur as a result of both the construction and operational phase.
- An information gap may be created by the continuous change in the environmental aspects. However, systems will generally be put in place to manage impacts which were not anticipated for including appointing an Environmental Control Officer to monitor on site activities and compliance with environmental requirements through regular visits to the site.

SECTION F

11 CONSTRUCTION METHOD STATEMENT, REHABILITATION AND CLOSURE

11.1 Contractor's Generic Method Statement

A generic Contractor's Method Statement has been attached to this document.

11.2 Rehabilitation

It is important that the slopes of the wetland are revegetated so as to mitigate impacts of erosion, sedimentation and establishment of alien plant

species. The post-construction rehabilitation should follow these steps:

1. Re-shape and contour the banks around the causeway structure;
2. Stabilize the embankments with necessary aids (gabions, geomats etc.);
3. Revegetate the embankments and channel areas with indigenous plants. It is recommended that these plants be salvaged from the area and re-planted, or a suitable (similar) seed mix be applied to the affected areas; and
4. Ensure that water flows through the channel are dispersed and that water flow is uninterrupted.

11.3 Closure and Decommissioning

The road and crossings proposed will not be decommissioned. However, the following are temporary structures and services decommissioning procedures/recommendations:

1. Any containers used for offices/storage must be removed from the site/site camp area;
2. Any and all other temporary structures must be removed from the area they were positioned on and must be taken away from the site/site camp;
3. The service provider that was appointed to provide and take care of chemical toilets must be informed to collect the toilets on a date agreed on with the Contractor. No chemical toilet is to be left on site;
4. All hardened surfaces which do not form part of the road or crossings must be ripped and ripped material is to be disposed with other construction rubble as agreed with the Engineer and ECO and
5. All working areas including site camp area, must be checked for spill of hazardous substances and where such are detected, they should be cleaned up and removed soil be disposed of as hazardous waste.

SECTION G

12 EAP RECOMMENDATIONS AND UNDERTAKING

12.1 Recommendations

Specialist Recommendations have been mentioned in the Section above.

Recommendations of the EAP include the following:

- An Environmental Control Officer must be appointed to monitor the Contractor's compliance to environmental requirements including mitigation measures set out in the approved EMPr and Conditions of the Environmental Authorization should it be granted.
- The Contractor must always ensure that they consult with the local leadership in cases where they need to recruit local labor.
- All terms and conditions of employment must be clearly explained to all those employed especially in terms of wages (amounts and pay dates, rotation of workers etc.).
- Extra precaution must be practiced around the wetland area and river and special attention must be paid to these areas and surroundings when rehabilitating.

12.2 Conclusion Statement/Remarks

Although the proposed project is anticipated to have negative impacts on the environment, the impacts resulting from the project are not anticipated to be excessive where mitigation measures are applied especially bearing in mind that the sites are already disturbed through current use of the road and crossing points. It is therefore the view of the EAP that the proposed project be approved. In the view of the EAP, upgrade of the car tracks and crossing structures may help ensure that the vehicles only move over one route and not haphazardly around the open area disturbing more vegetation. With the proposed crossings, some of the area beneath the crossings, within the watercourse, may naturally rehabilitate in time as it will no longer be directly crossed/disturbed.