

**APPLICATION FOR ENVIRONMENTAL
AUTHORISATION FOR PROPOSED
CONSTRUCTION OF 5.4 KM GRAVEL
ROAD IN MAMBENI VILLAGE,
MSINGA LOCAL MUNICIPALITY –
REF. NUMBER:**

**DC24/0010/2016_KZN/EIA/0000
349/2016**



MSINGA LOCAL MUNICIPALITY



BASIC ASSESSMENT REPORT

**SUBMITTED TO:
PROVINCE OF KWAZULU NATAL
DEPARTMENT OF ECONOMIC
DEVELOPMENT, TOURISM AND
ENVIRONMENTAL AFFAIRS**



edtea

Department :
Economic Development, Tourism and
Environmental Affairs

PROVINCE OF KWAZULU-NATAL

Private Bag X1048
Richardsbay
3900

SUBMITTED BY:

Magalela and Associates

Tel: 031 535 7094

Fax: 086 556 5646

E-Mail: info@magalelas.co.za

Mobile: 071 307 2675

Contact Person: Simphiwe Mtshali

MAGALELA
Associates

30 OCTOBER 2016

Project Title: **CONSTRUCTION OF 5.4 KM GRAVEL ROAD IN MAMBENI VILLAGE, MSINGA LOCAL MUNICIPALITY**

Report Title **APPLICATION FOR ENVIRONMENTAL AUTHORISATION FOR PROPOSED CONSTRUCTION OF 5.4 KM GRAVEL ROAD IN MAMBENI VILLAGE, MSINGA LOCAL MUNICIPALITY**

DETEA REFERENCE NUMBER **DC24/0010/2016_KZN/EIA/0000349/2016**

EAP Author K Motsepe, Pr. Nat.Sci

Revision	Date	Report Status
Draft 1	26/09/2016	First draft for comments by stakeholders

Consultants: Magalela & Associates

Approved for Consultants by:

.....

Mr. S Mtshali, Pr. Nat. Sci.
Technical Study Specialist

Client: Msinga Local Municipality

Approved for
MSINGA LOCAL MUNICIPALITY:

.....

Mr. S Sokhela

BASIC ASSESSMENT REPORT

Submitted in requirements of the Environmental Impact Assessment Regulations, December 2014 promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998)

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A. Details and Expertise of Environmental Assessment Practitioner (EAP)

PERSONAL PARTICULARS (EAP)

Name and Surname: Mr. Kgomotso Motsepe

Years of experience: 17 of working experience environmental sector and 9 years as independent water and environmental resources consultant

EDUCATION

- Management Development Programme, University of South Africa, 2006,
 - Certificate in Business Management, University of South Africa , 2004,
 - B Tech Chemistry, Pretoria Technikon 2003,
 - N Diploma: Analytical Chemistry, Pretoria Technikon 1998
-

MEMBERSHIP OF PROFESSIONAL INSTITUTIONS

- South African Council for Scientific Professions – Pr.Sci.Nat.
 - International Association of Impact Assessments – MIAIA.
 - Water Institute of South Africa – MWISA
 - Institute of Waste Management in South Africa – MIWMSA
-

KEY RELEVANT EXPERIENCE

- 2014, Environmental Impact Assessment for continuation of mining through wetlands for Optimum Colliery in Hendrina
 - 2014, Environmental Impact Assessment for Construction of Bridges in Edenvale for Ekurhuleni Metropolitan Municipality
 - 2014, Environmental Impact Assessment for construction of bulkwater pipeline in Garankua and Mabopane Township for Tshwane Metropolitan Municipality
 - 2014, Application for Water Use Licence Application for Wescoal – Elandspruit Colliery Project
 - 2013, Application for Water Use License Application for Optimum – Kwagga North and Tweefontein
-

CERTIFICATION

I, the undersigned, certify that to the best of my knowledge and belief, this data correctly describes me, my qualifications, and my experience. I hereby confirm my involvement in the proposed project.

Kgomotso Motsepe

Date: _____

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B. The Location Description and Locality Map of 5.4 km gravel road in Mambeni Village, Msinga Local Municipality

The site is located in the Mambeni Village area and falls under the jurisdiction of the Msinga Local Municipality and Umzinyathi District Municipality. The map showing the Mambeni Village within Msinga Local Municipality and Umzinyathi District Municipality is attached herewith in **Appendix 1**.

The development of the gravel road occurs on the following property as tabulated in **Table 1**:

Table 1: Farm Names of Proposed Development

Farm Name	ERF	Portion
MTHEMBU	17484	-

Table 2 contains the Surveyor-General 21 digit site reference numbers for the farms shown in **Table 1**.

Table 2: Surveyor-General 21 digit of Farm Portions

N	0	G	T	0	0	0	0	0	0	0	1	7	4	8	4	0	0	0	0	0

The farm is shown on map in **Appendix 2**.

The start and end of each of the phases of the pipeline is shown in **Table 3**.

Table 3: Coordinates of Gravel Road Construction

DRAINAGE CROSSING POINTS				
MAMBENI ROAD				
ID	Lat (S)	Long(E)	Latitude	Longitude
1	28.716825°S	30.343878°E	28°43'0.57"S	30°20'37.961"E
2	28.716463°S	30.344681°E	28°42'59.267"S	30°20'40.852"E
3	28.717085°S	30.348876°E	28°43'1.506"S	30°20'55.954"E
4	28.71669°S	30.351595°E	28°43'0.084"S	30°21'5.742"E
5	28.717526°S	30.355449°E	28°43'3.094"S	30°21'19.616"E

C. Layout Plan of the Construction of Gravel Road

The layout plan for the proposed construction of 5.4 km gravel road in Mambeni Village is shown in **Appendix 3**.

D. Description of the scope of the proposed construction of 5.4 km gravel road in Mambeni Village

The project involves the construction of 5.4 km Gravel Road in Mambeni Village. The Mambeni Village area falls within the Msinga Local Municipality in Umzinyathi District Municipality.

The gravel road will be constructed as Standard Type 7A District Road in accordance with the Department of Transport specifications. The final road carriageway width will be twelve (12m) meters.

The scope of work is also shown in the map attached herewith in **Appendix 3**. The above activities triggered environmental authorization in terms of the Environmental Impact Assessment Regulations, December 2014 promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), hence the compilation of this Basic Assessment Report. The listed activity and its description is described in **Table 4**.

Table 4: Proposed Activity Listing interms 2014 EIA Regulations

Government Notice R983 Activity No:	Describe the relevant Scoping and EIA Activity(ies) in writing as per Listing Notice 1 (GN No. R983)	Describe the portion of the development as per the project description that relates to the applicable listed activity
12	<p>The development of –</p> <ul style="list-style-type: none"> i. Canals exceeding 100 square meters in size ii. Channels exceeding 100 square meters in size iii. Bridges exceeding 100 square meters in size iv. Dams, where the dam, including infrastructure and water surface area, exceeds 100 square meters in size v. Weirs, where the weir, including infrastructure and water surface area, 	<p>The project involves the construction of 5.4 km Gravel Road in Mambeni Village. The Mambeni Village area falls within the Msinga Local Municipality in Umzinyathi District Municipality.</p> <p>The gravel road will be constructed as Standard Type 7A District Road in accordance with the Department of Transport specifications. The final road carriageway width will be twelve (12m) meters.</p>

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Government Notice R983 Activity No:	Describe the relevant Scoping and EIA Activity(ies) in writing as per Listing Notice 1 (GN No. R983)	Describe the portion of the development as per the project description that relates to the applicable listed activity
	<p>exceeds 100 square meters in size</p> <ul style="list-style-type: none"> vi. Bulk stormwater outlet structures exceeding 100 square meters in size vii. Marinas exceeding 100 square meters in size viii. Jetties exceeding 100 square meters in size ix. Spillways exceeding 100 square meters in size x. Buildings exceeding 100 square meters in size xi. Boardwalkings exceeding 100 square meters in size xii. Infrastructure or structures with a physical footprint of 100 square meters or more; <p>Where such development occurs –</p> <ul style="list-style-type: none"> a) Within a watercourse b) In front of a development setback; or c) If no development setback exist, within 32 metres of a watercourse, measured from the edge of a watercourse <p>Excluding</p> <ul style="list-style-type: none"> (aa) The development of infrastructure or structure within existing ports or harbours that will not increase the development footprint of the port or harbor (bb) Where such development activities are related to the development of a port or harbor, in which case activity 26 in Listing 	

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Government Notice R983 Activity No:	Describe the relevant Scoping and EIA Activity(ies) in writing as per Listing Notice 1 (GN No. R983)	Describe the portion of the development as per the project description that relates to the applicable listed activity
19	<p>Notice 2 of 2014</p> <p>(cc) Activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which activity applies;</p> <p>(dd) Where such development occurs within an urban area; or</p> <p>(ee) Where such development occurs within existing roads or road reserve.</p> <p>The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from-</p> <p>(i) a watercourse;</p> <p>(ii) the seashore; or</p> <p>(iii) the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is the greater but excluding where such infilling, depositing, dredging, excavation, removal or moving-</p> <p>(a) will occur behind a development setback;</p> <p>(b) is for maintenance purposes undertaken in accordance with a maintenance management plan; or</p> <p>(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies.</p>	<p>The project involves the construction of 5.4 km Gravel Road in Mambeni Village. The Mambeni Village area falls within the Msinga Local Municipality in Umzinyathi District Municipality.</p> <p>The gravel road will be constructed as Standard Type 7A District Road in accordance with the Department of Transport specifications. The final road carriageway width will be twelve (12m) meters.</p>

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Government Notice R983 Activity No:	Describe the relevant Scoping and EIA Activity(ies) in writing as per Listing Notice 1 (GN No. R983)	Describe the portion of the development as per the project description that relates to the applicable listed activity
24	<p>The development of –</p> <ul style="list-style-type: none"> i. A road for which an environmental authorization was obtained for the route determination in terms of activity 5 in Government Notice 545 of 2010; or ii. A road with a reserve wider than 13,5 meters, or where no reserve exists where the road the is wider than 5 meters; <p>But excluding –</p> <ul style="list-style-type: none"> a) Roads which are identified and included in activity 27 in Listing Notice 2 of 2014; or b) Roads where the entire road falls within an urban area 	<p>The project involves the construction of 5.4 km Gravel Road in Mambeni Village. The Mambeni Village area falls within the Msinga Local Municipality in Umzinyathi District Municipality.</p> <p>The gravel road will be constructed as Standard Type 7A District Road in accordance with the Departament of Transport specifications. The final road carriageway width will be twelve (12m) meters.</p>

E. Description of the policy and legislative context within which construction of gravel road falls

The list all legislation, policies and/or guidelines of any sphere of government that are relevant to the application as contemplated in the EIA regulations, where applicable are contained in the following **Table 5**:

Table 5: List of Legislation relevant to application

Title of legislation, policy or guideline	Administering authority	Date of Promulgation
The Constitution of the Republic of South Africa	The 3 spheres of National Government	1996 August
The National Water Act	Department of Water and Sanitation	1998

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Water Services Act	The municipalities	1997
The National Environmental Management Act	National and Provincial Environmental Affairs Department	1998
Environmental Impact Assessment Regulations	National and Provincial Environmental Affairs Department	2014
The National Health Act	Department of Health	2004
National Heritage Resources Act	Amafa and Dept. of Arts and Culture	1999
Conservation of Agricultural Resources Act	Department of Agriculture	1983
KwaZulu Land Affairs Act	Department of Local Government and Traditional Affairs	1992
Department of Transport	National Road Traffic Act	1996

In the context of the above legislations having direct or indirect impact on the development, the following state departments in **Table 6** are listed as interest and affected parties. This basic assessment report has been circulated to the respective department to solicit comments and inputs in terms of the report. The records of submission is contained in **Appendix 4**. The comments or response received from the interest and affected state department is included in the issues and response report under **Section H** of this report. The proof written comments or report is attached in **Appendix 5**.

Table 6: List of State Department Stakeholders

Name of Department	Contact person	Address	Document Submitted for Comments (Yes/No)	Comments (Yes/No)
Ezemvelo KZN Wildlife	Musa Mntambo	1 Peter Brown Drive Pietermaritzburg, 3201	Yes	No
Amafa	Weziwe Tshabalala	P.O. Box 2685, Pietermaritzburg, 3200 Tel: 0333 946543 Fax: 0333 426097	Yes	No
Department of Water and Sanitation	Lindiwe Dladla	P O Box 1018 Durban, 4000	Yes	No

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		Tel: 031 336 2700		
Department of Agriculture, Forestry and Fisheries	Khwazi Hlongwane	P O Box 345 Pietermarisburg, 3200 Tel: 033 345 3515	Yes	No
Department of Cooperative Governance and Traditional Affairs	Induna D Ximba	P O Box 2252 Pomeroy Tel: 073 807 0275	Yes	Yes
	Cllr. Majosi	P O Box 49 Pomeroy Tel: 079 608 8712	Yes	Yes
uMzinyathi District Municipality	David Mvelase	P.O. Box 1965, 3000, South Africa 034-219 1500	Yes	No

F. Motivation for the need and desirability for the proposed construction of Construction of 5.4 km gravel road in Mambeni Village including the need and desirability of the activity in the context of the preferred location

As per Msinga Local Municipality IDP 2015/2016, and uMzinyathi Backlog Study (2007) determined road backlogs based on hut count data in the Traditional Authority areas indicates that 58% of households have inadequate access to roads.

The Road Infrastructure Strategic Framework for South Africa (RIFSA) classifications indicates a major dependency on lower order access roads for most of the residents within Msinga Local Municipality. With the high dependency on the lower order nodes, it is necessary to ensure proper transport infrastructure exist, especially with the view of creating economic growth in the municipality, which positively affects everybody. Should the residents not have proper access to opportunities; the initiatives will not be successful.

G. Motivation for the preferred site, activity and technology alternative

PLEASE NOTE THAT THERE ARE NO SITE ALTERNATIVES FOR THE PROPOSED DEVELOPMENT

There are no site alternatives as the purpose of this development is to provide road access to the local community, therefore the region under consideration is the target delivery for the gravel road access and an alternate site is counterproductive. In addition there are no significant route alternatives as the linear development will be aligned adjacent to existing topography for the majority of the route. It is also deemed most appropriate / reasonable to locate the gravel road along the flat topography to minimize the cost of construction as well as maintenance.

The “no-go” alternative is for the proposed development not go ahead, the site will continue with its current activities and the provision of access road to the local community will not be undertaken. This will also hamper service delivery in terms of police, health and socio-economic services.

H. A full description of the process followed to reach the proposed preferred alternative within the site

H.1 Details of all the alternative considered

PLEASE NOTE THAT THERE ARE NO SITE ALTERNATIVES FOR THE PROPOSED DEVELOPMENT

There are no site alternatives as the purpose of this development is to provide road access to the local community, therefore the region under consideration is the target delivery for the gravel road access and an alternate site is counterproductive. In addition there are no significant route alternatives as the linear development will be aligned adjacent to existing topography for the majority of the route. It is also deemed most appropriate / reasonable to locate the gravel road along the flat topography to minimize the cost of construction as well as maintenance.

The “no-go” alternative is for the proposed development not go ahead, the site will continue with its current activities and the provision of access road to the local community will not be undertaken. This will also hamper service delivery in terms of police, health and socio-economic services.

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H.2 Details of the Public Participation Process (PPP) undertaken in terms of regulation 41 including copies of the supporting documents and inputs

The public participation process for the construction of construction of 5.4 km gravel road in Mambeni Village entailed the following:

H.2.1 Identification of stakeholders

Identification of stakeholders took place by way of contacting with local municipalities, the Tribal Authority and Induna of the communities Mambeni Village, Ward Councillor and State Department that development of the gravel road will trigger their participation. The stakeholder identified are listed in **Table 6**, above.

H.2.2 Announcement of the project

A Background Information Document (BID) was prepared as a basis for discussion with stakeholders about the project. The proof of distribution of the BID during the meeting with stakeholders is attached in **Appendix 6**. The BID in the main contained the following among others:

- Background to the project (who, why, where) and the motivation thereof;
- Description of the project;
- Process that will be followed (who can participate in the process, how and when);
- Information about the independent consultants (experience of technical and public participation processes and local experience in the study area).

The copy of the BID is attached herewith in **Annexure 7**.

H.2.3 Meetings

In anticipation of the desirability of the project within the community of the Mambeni Village, a decision was taken to advance the cause of the project with the Tribal Authority, Induna of the Area and Ward Councillor. Therefore meeting was held on **28 September 2016** at Msinga Local Municipality with the

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community leaders, [Induna D Ximba](#) and [Councillor Majosi](#). The notes or discussion points covered in the separate meetings are contained in **Annexure 8**. The comments sheet issued was discussed with the attendees in order to record issues or comments they could have with regards to the project development. The copy of the comments sheet is attached in **Annexure 9**.

H.2.4 Site Notice

A site notice was displayed on the notice board of the municipality as well as public library. The public was given 30-days to comment on the Draft Basic Assessment Report, in which they were invited to express interest if they need the copy of the report. The report was also made available for reading at the Public Library near Msingal Local Municipality Head Office. The copy of the site notice and advertisement is attached in **Annexure 10**. The proof of site notice displayed on site is contained in **Annexure 11**.

H.2.5 Newspaper Advertisement

The project was advertised in Greytown Gazette Newspaper. The public was given 30-days to comment on the Draft Basic Assessment Report, in which they were invited to express interest if they need the copy of the report. The report was also made available for comments at the Public Library in Msinga Public Library in Tugela Ferry. The copy of the advertisement in the Greytown Gazette Newspaper is attached in **Annexure 12**.

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H.3 Summary of Issues raised by Interested and Affected Parties (I&AP's)

The summary of issues raised during the public participation process are as follows:-

The Issues and Response Report is contained in **Annexure 13**.

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H.4 Environmental Attributes associated with Alternatives focusing on the Geographical, Physical, Biological, Social, Economic, Heritage and Cultural Aspects

Mambeni Village is one of the settlements of the Msinga Local Municipality situated in the rural area of the northern part of province of KwaZulu Natal. The town in the area as part of the municipality is Tugela Ferry, which host the seating of Municipal Offices and Pomeroy. The District Municipality is Umzinyathi District Municipality. The map showing the town of Mambeni within Msinga Local Municipality in relation to Umzinyathi District Municipality is shown in **Appendix 14**.

The environmental attribute associated with the construction of the gravel road is demonstrated and summarised in the **Table 7** below:-

Table 7: Environmental Attributes associated with construction of gravel road

Environmental Attribute	Description
Gradient of the site	1.5 -1.2 m
Location in Landscape	Undulating plain/low hills
Groundwater	Water table below 1.5m deep
Soil	Often Dry hard soil in the area
Geological Stability	The geology is rocky but stable
Groundcover	Natural veld with heavy alien infestation
Land use character of surrounding area	The area is characterised by vacant land, followed by rural community settlement. The pipeline crosses streams along distribution network
Cultural and Historical Features	There are cultural/historical features affected by the pipeline
Social and Economic aspect	The project will create employment opportunities during construction phase

H.5 The methodology used in determining and ranking the nature/severity, significance, consequence, extent, duration and probability of potential environmental impacts and risk associated with alternatives

The risk assessment methodology was used for the ranking of the impacts. The severity/intensity of the potential environmental impacts were evaluated according to their severity (how bad the impact is), duration (how long the environment will take to recover from the impact), extent (the area that is effected by the impact), probability (the probability of the impact actually happening), frequency of occurrence (how often the aspect happens) and finally the environmental significance of the impact. All the above was rated on a scale of 5 with 1 being the least impacted.

This system derives environmental significance on the basis of the consequence of the impact on the environment and the likelihood of the impact occurring. Consequence is calculated as the average of the sum of the ratings of severity, duration and extent of the environmental impact. Likelihood considers the frequency of the activity together with the probability of an environmental impact occurring. The following tables (**Table 8 to Table 15**) describe the process in detail:

A. CONSEQUENCE

Consequence (**Table 8**) is calculated as the average of the sum of the ratings of severity (**Table 9**), duration (**Table 10**) and extent (**Table 11**) of the environmental impact.

Table 8: Determination of Consequence

Determination of Consequence (C) (Severity + Duration + Extent) / 3

H.5.1 Severity

This is an appraisal of the type of effect the activity would have on the affected environment. This description including what is being affected and how is shown in **Table 9**.

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Table 9: Severity Estimation

Rating	Description
1	Negligible / non-harmful / minimal deterioration (0 – 20%)
2	Minor / potentially harmful / measurable deterioration (20 – 40%)
3	Moderate / harmful / moderate deterioration (40 – 60%)
4	Significant / very harmful / substantial deterioration (60 – 80%)
5	Irreversible / permanent / death (80 – 100%)

H.5.2 Extent

This indicates the spatial area that may be affected by the impact and further describes the possibility that adjoining areas may be impacted upon. This includes four classes that are listed as follows in **Table 10**:

Table 10: Extent of Activity Estimation

Rating	Description
1	Within immediate area of activity
2	Surrounding area within project boundary
3	Beyond project boundary
4	Regional / provincial
5	National / international

H.5.3 Duration

This refers to the period of time that the impact may be operative for (i.e. the lifetime of the impact). This includes the following classes that are listed as follows **Table 11**:

Table 11: Duration of the Impact

Rating	Description
1	Less than 1 month / quickly reversible
2	Less than 1 year / quickly reversible
3	More than 1 year / reversible over time
4	More than 10 years / reversible over time / life of project or facility
5	Beyond life of project of facility / permanent

B. LIKELIHOOD

Likelihood (**Table 12**) considers the frequency of the activity together with the probability of the environmental impact associated with that activity occurring.

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Table 12: Determination of Likelihood

$$\text{Determination of Likelihood (L)} = \frac{(\text{Frequency} + \text{Probability})}{2}$$

H.5.4 Probability

This refers to the probability of the impact actually occurring. The following classes in **Table 13** are used to describe the probability of the impact:

Table 13: Probability of Impact

Rating	Description
1	Almost impossible
2	Unlikely
3	Probable
4	Highly likely
5	Definite

H.5.5 Frequency

This refers to the frequency of the impact actually occurring. The following classes of rating in **Table 14** are used to describe the frequency of the impact occurring:

Table 14: Frequency of the Impact

Rating	Description
1	Less than once a year
2	Once in a year
3	Quarterly
4	Weekly
5	Daily

H.5.6 Environmental Significance

The significance of the impact (i.e. whether it will lead to a marked change in the environment or not) is determined through a synthesis of the aspects produced in terms of their severity, extent, duration, probability and frequency. Therefore, Environmental significance is the product of the consequence and likelihood values. Four classes of environmental significance are tabulated in **Table 15** as follows:

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- None (the impact will not have an influence on the decision and requires no mitigation)
- Low (the impact will have a limited influence on the decision and requires mitigation to manage the environment)
- Medium (it is likely that to have an influence on the decision and requires mitigation)
- High (mitigation is required and this may not be sufficient to ensure that the environment is not detrimentally affected by the proposed development)

Table 15: Environmental Significance of Impact

Environmental Significance (Impact) = C × L	Description
N (1 – 4.9)	None environmental significance
L (5 – 9.9)	Low environmental significance
M (10 – 14.99)	Medium environmental significance
H (15 – 25)	High environmental significance. Likely to be a fatal flaw.

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H.6 Impacts and Risk identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these aspects can be reversed, may cause irreplaceable loss of resources and can be avoided, managed or mitigated

Table 16 to **Table 19** shows the environmental significance of impacts and risk identified for the identified alternative (preferred option) both pre-mitigation measures and post-mitigation measures. The environmental significance rating of each aspects pre and post mitigation measures is contained in **Appendix 15**.

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Table 16: Environmental Significance of Impacts during Design and Planning Phase

DESIGN AND PLANNING PHASE			
Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
Loss of vegetation	None	<ul style="list-style-type: none"> Minimize vegetation destruction to minimum area 	None
Soil Erosion	None	<ul style="list-style-type: none"> The gravel road must be constructed along the topography and channeled properly in the drainage lines using storm water channel and erosion gullies. 	None
Water pollution	None	<ul style="list-style-type: none"> The Stormwater Channels must be installed in the area where the gravel road will intercept the drainage channel 	None
Dust generation	None	<ul style="list-style-type: none"> TLB's to only be driven in area that is identified for road construction 	None
Hazardous Substance contamination	None	<ul style="list-style-type: none"> The TLB's must be provided with drip trays when not in use 	None
Noise generation	None	<ul style="list-style-type: none"> Avoid excessive revving and ignition of equipment. 	None
Waste pollution	None	<ul style="list-style-type: none"> Dispose waste at registered waste disposal facility 	None
Fire ignition	None	<ul style="list-style-type: none"> TLB's to always have fire extinguishers and have employees trained on their use 	None
Damage to existing	None	<ul style="list-style-type: none"> Infrastructure mapping and confirmation. 	

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DESIGN AND PLANNING PHASE

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
infrastructure e.g. sewage lines			
Injury to public and animals due to falling into workings	None	<ul style="list-style-type: none"> ▪ Prevent unauthorized entry to the working area 	None
Traffic congestion	None	<ul style="list-style-type: none"> ▪ Avoid traffic jamming e.g. move machinery and plant outside of rush hour ▪ Plan work area to minimize traffic obstruction 	None
Traffic incidents	None	<ul style="list-style-type: none"> ▪ Install illuminating warning lights, traffic calming structures, etc. ▪ Use flagman to slow and direct traffic 	None
Pedestrian injuries and route closures	None	<ul style="list-style-type: none"> ▪ Redirect pedestrians away from working areas ▪ Use barricades and signage ▪ Prevent unauthorized access to working areas 	None
Stormwater Management	None	<ul style="list-style-type: none"> ▪ The contractor will be advised to implement proper storm management plan 	None
Cultural Heritage Resources	None	<ul style="list-style-type: none"> ▪ If any cultural and heritage resources can be discovered on the proposed site the construction will have to be halted and the case be reported to AMAFA and SAPS. 	None

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Table 17: Environmental Significance of Impacts during the Construction Phase

CONSTRUCTION PHASE

Loss of vegetation	None	<ul style="list-style-type: none"> ▪ Minimize vegetation destruction to minimum area where construction operations are. 	None
Soil Erosion	Medium	<ul style="list-style-type: none"> ▪ Minimize vegetation destruction to minimum area where construction operations are. ▪ Divert stormwater away from the disturbed areas and loose soils ▪ Compact well after clearing the road 	None
Water pollution	Medium	<ul style="list-style-type: none"> ▪ Avoid soil erosion (see above) ▪ Avoid loss of vegetation (see above) 	None
Dust generation	None	<ul style="list-style-type: none"> ▪ Limit loss of vegetation (see above) ▪ Avoid over movement of plant on site ▪ Limit speed to 20km/hr. or less in the construction site ▪ Apply dust suppression regularly and as required ▪ Cover soil heaps 	None
Hazardous Substance contamination	Medium	<ul style="list-style-type: none"> ▪ Avoid refueling onsite ▪ Refueling to occur at designated areas and with drip trays installed ▪ Training of substance handlers for correct handling 	None

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CONSTRUCTION PHASE

Noise generation	None	<ul style="list-style-type: none"> ▪ Proper plant, machinery and motor maintenance ▪ Use noise reduction apparatus where applicable ▪ Avoid excessive revving and ignition of equipment. ▪ Operational hours between 07h00 and 17h00 	None
Waste pollution	Medium	<ul style="list-style-type: none"> ▪ Use dedicated waste bins ▪ Practice waste separation (General and Hazardous) ▪ Dispose waste at registered waste disposal facility 	None
Fire ignition	Low	<ul style="list-style-type: none"> ▪ Avoid lighting fires on site ▪ Ban smoking near flammable substances ▪ Ensure correct handling of flammable substances ▪ Have fire extinguishers and have employees trained on their use 	None
Loss of fauna and Flora	Low	<ul style="list-style-type: none"> ▪ Avoid vegetation loss (see above) ▪ Avoid fires (see above) ▪ Avoid hazardous substance contamination of soil and water (see above) ▪ Prevent collection/capture of fauna by employees 	None
Damage to existing infrastructure e.g. sewage lines	None	<ul style="list-style-type: none"> ▪ Infrastructure mapping and confirmation. ▪ Servitude applications ▪ Contingency and emergency measures 	None
Injury to public and animals due to falling into workings	None	<ul style="list-style-type: none"> ▪ Prevent unauthorized entry to the working area ▪ Barricade all works with barricade fence ▪ NO ENTRY and DANGER signs erected and maintained ▪ Smallest lead times between trenching and pipe burying. 	None

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CONSTRUCTION PHASE

CONSTRUCTION PHASE			
		<ul style="list-style-type: none"> ▪ Close dig-up areas as soon as pipes have been laid. 	
Traffic congestion	Medium	<ul style="list-style-type: none"> ▪ Avoid traffic jamming e.g. move machinery and plant outside of rush hour ▪ Move plant and machinery away from high traffic areas ▪ Plan work area to minimize traffic obstruction 	None
Traffic incidents	Medium	<ul style="list-style-type: none"> ▪ Avoid traffic congestion (see above) ▪ Implement traffic safety measures ▪ Install illuminating warning lights, traffic calming structures, etc. ▪ Use flagman to slow and direct traffic 	None
Pedestrian injuries and route closures	Medium	<ul style="list-style-type: none"> ▪ Redirect pedestrians away from working areas ▪ Use barricades and signage ▪ Prevent unauthorized access to working areas 	None
Stormwater Management	Low	<ul style="list-style-type: none"> ▪ The contractor will be advised to implement proper storm management plan 	None
Cultural Heritage Resources	None	<ul style="list-style-type: none"> ▪ If any cultural and heritage resources can be discovered on the proposed site the construction will have to be halted and the case be reported to SAPS. 	None

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Table 18: Environmental Significance of Impacts during Decommissioning Phase

DECOMMISSIONING PHASE

DECOMMISSIONING PHASE			
Loss of vegetation	None	<ul style="list-style-type: none"> ▪ Topsoil removed must be used to level the area, in order to allow the seeds to regerminate ▪ Indigenous vegetation (if any) will need to be relocated and planted again 	None
Soil Erosion	None	<ul style="list-style-type: none"> ▪ Rows of straw, hay or bundles of cut vegetation may also be used. In this instance, the hay, straw or vegetation is dug into the soil in contours, in order to help slow surface wash and capture eroded soil. ▪ The spacing between rows would be dependant on slope and the specific area. 	None
Water pollution	Low	<ul style="list-style-type: none"> ▪ Waste Materials collected on site after decommissioning the site must not be diverted into nearby water courses 	None
Dust generation	Low	<ul style="list-style-type: none"> ▪ Avoid over movement of plant on site ▪ Limit speed to 20km/hr. or less in the construction site 	None
Hazardous Substance contamination	Low	<ul style="list-style-type: none"> ▪ Refueling to occur at designated areas and with drip trays installed ▪ All waste material generated on site must be disposed off at registererd hazardous landfill site. ▪ Proof of disposal must be made available to Site Engineer 	None
Noise generation	None	<ul style="list-style-type: none"> ▪ Avoid excessive revving and ignition of equipment. ▪ Operational hours between 07h00 and 17h00 	None
Waste pollution	None	<ul style="list-style-type: none"> ▪ Use dedicated waste bins 	None

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DECOMMISSIONING PHASE

		<ul style="list-style-type: none"> ▪ Practice waste separation (General and Hazardous) ▪ Dispose waste at registered waste disposal facility 	
Fire ignition	None	<ul style="list-style-type: none"> ▪ Avoid lighting fires on site ▪ Ban smoking near flammable substances ▪ Ensure correct handling of flammable substances ▪ Have fire extinguishers and have employees trained on their use 	None
Loss of fauna and Flora	None	<ul style="list-style-type: none"> ▪ Rehabilitate the area workings within the water course to allow natural flows ▪ Remove structures that can impede natural flow in the water ▪ Use Gabion baskets and Rhino mattress to stabilize river banks 	None
Damage to existing infrastructure e.g. sewage lines	None	<ul style="list-style-type: none"> ▪ Infrastructure mapping and confirmation. ▪ Servitude applications ▪ Contingency and emergency measures 	None
Injury to public and animals due to falling into workings	None	<ul style="list-style-type: none"> ▪ Prevent unauthorized entry to the working area ▪ Barricade all works with barricade fence ▪ NO ENTRY and DANGER signs erected and maintained ▪ Smallest lead times between trenching and pipe burying. ▪ Close dig-up areas as soon as pipes have been laid. 	None
Traffic congestion	Low	<ul style="list-style-type: none"> ▪ Avoid traffic jamming e.g. move machinery and plant 	None

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DECOMMISSIONING PHASE

		outside of rush hour <ul style="list-style-type: none"> ▪ Move plant and machinery away from high traffic areas ▪ Plan work area to minimize traffic obstruction 	
Traffic incidents	Low	<ul style="list-style-type: none"> ▪ Avoid traffic congestion (see above) ▪ Implement traffic safety measures ▪ Install illuminating warning lights, traffic calming structures, etc. ▪ Use flagman to slow and direct traffic 	None
Pedestrian injuries and route closures	Low	<ul style="list-style-type: none"> ▪ Redirect pedestrians away from working areas ▪ Use barricades and signage ▪ Prevent unauthorized access to working areas 	None
Stormwater Management	None	<ul style="list-style-type: none"> ▪ The design of drainage and stormwater pipes should be to reduce flow velocity and avoid soil erosion. This can be achieved through the construction of water velocity dissipators below the pipe head wall. ▪ Rocks, boulders or concrete blocks may be utilised for these purposes, and they are set into the concrete pron below the headwall. Stone pitching may also be utilised. 	None

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Table 19: Environmental Significance of Impacts during Operational Phase

OPERATION PHASE			
Potential impacts:	Significance rating of impacts:	Proposed mitigation measures	Significance rating of impacts after rehabilitation measures
Soil Erosion	Low	<ul style="list-style-type: none"> ▪ Implement the appropriate topsoil and stormwater runoff control management measures to prevent the loss of topsoil. ▪ The site should be graded well to permit drainage and to prevent ponding 	None
Water pollution	Low	<ul style="list-style-type: none"> ▪ Dust suppression must be conducted to minimal level to avoiding flooding of gravel road 	None
Loss of fauna and Flora	Low	<ul style="list-style-type: none"> ▪ Trees and shrubs conserved shall be clearly introduced to the site under the supervision of the Project Engineer. 	None
Damage to existing infrastructure e.g. sewage lines	Low	<ul style="list-style-type: none"> ▪ Infrastructure mapping and confirmation. ▪ Servitude applications ▪ Contingency and emergency measures 	None
Traffic incidents	Medium	<ul style="list-style-type: none"> ▪ Dust suppression must be conducted to minimal level to avoiding flooding of gravel road Install illuminating warning lights, traffic calming structures, etc. should flooding be the resultant impact ▪ Use flagman to slow and direct traffic 	None
Pedestrian injuries and route closures	Medium	<ul style="list-style-type: none"> ▪ Redirect pedestrians away from pipe burst areas ▪ Use barricades and signage 	None

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OPERATION PHASE

Potential impacts:	Significance rating of impacts:	Proposed mitigation measures	Significance rating of impacts after rehabilitation measures
Stormwater Management	Low	<ul style="list-style-type: none"> ▪ Prevent unauthorized access to working areas ▪ Ensure effective storm water management will be exercised to limit negative impacts on the environment and enhance the positive impacts ▪ All contaminated standing water should be immediately removed and treated or disposed of appropriately. ▪ Surfaces and conduits should be constructed to drain the run off more efficiently 	None

H.7 Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects

Table 20 shows the positive and negative impacts the proposed activity will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects.

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Table 20: Positive and Negative Impacts on the Environmental Attributes

Environmental Attributes	Description	Design and Planning (Positive / Negative Impact)	During Construction – (Positive / Negative Impact)	Post Construction (Positive / Negative Impact)
Gradient of the site	1.5 -1.2 m	Positive , no change to the gradient of the site	Positive , as the gravel road will follow the slope of the area.	Positive , as the gravel road will follow the slope of the area.
Location in Landscape	Undulating plain/low hills	Positive , there will be no change in Landscape	Positive , as the gravel road will be following the land scape	Positive , as the gravel will be following the land scape
Groundwater	Water table below 1.5m deep	Positive , No drilling will conducted for road survey of gravel roads.	Positive , No drilling will conducted for road survey of gravel roads.	Positive , No drilling will conducted for road survey of gravel roads.
Soil	Often Dry hard soil in the area	Positive , No soil will be removed during the road survey.	Positive , minimal soil will be removed, as top soil will also be used to compact the gravel road.	Negative , the excavated portion of the gravel road will be permanent as it will be compacted to avoid regermiantion of vegetation on the road.

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Environmental Attributes	Description	Design and Planning (Positive / Negative Impact)	During Construction – (Positive / Negative Impact)	Post Construction (Positive / Negative Impact)
Geological Stability	The geology is rocky but stable	Positive, No drilling will be conducted for road survey of gravel roads.	Positive, the ground will only be excavated limited along the surveyed gravel road route	Negative, the excavated portion of the gravel road will be soft and dry during backfilling process and will take longer to harden to pre-soil condition structural properties
Groundcover	Natural veld with heavy alien infestation	Positive, No excavations will be conducted during the survey	Negative, as the natural veld cover will be lost during the excavations	Negative, as the natural veldcover will not regeminate on the compacted surface
Land use character of surrounding area	The area is characterised by vacant land, followed by rural	Positive, No excavations will be conducted during the survey	Positive, the gravel road will be following the existing gravel roads that are in bad condition and	Positive, the gravel road will be following the existing gravel roads that are in bad

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Environmental Attributes	Description	Design and Planning (Positive / Negative Impact)	During Construction – (Positive / Negative Impact)	Post Construction (Positive / Negative Impact)
	community settlement. The gravel road crosses non-perennial streams to reach other sites of the settlements		will now be accessible for use in terms of basic services.	condition and will now be accessible for use in terms of basic services.
Cultural and Historical Features	There are no cultural/historical features affected by the gravel road	<u>Positive</u> , as there are no cultural and historical features affected by the gravel road.	<u>Positive</u> , as there are no cultural and historical features affected by the gravel road.	<u>Positive</u> , as there are no cultural and historical features affected by the gravel road.
Social and Economic aspect	The project will create employment opportunities	<u>Positive</u> , as the project will be creating jobs and improving the lives	<u>Positive</u> , as the project will be creating jobs and improving the lives of the community as there will	<u>Positive</u> , as the project will be creating jobs and improving the lives of the community as

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Environmental Attributes	Description	Design and Planning (Positive / Negative Impact)	During Construction – (Positive / Negative Impact)	Post Construction (Positive / Negative Impact)
	during construction phase	of the community as there will now be access to basic services.	now be access to basic services.	there will now be access to basic services.

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H.8 The possible mitigation measures that could be applied and level of residual risk

Table 21 demonstrate mitigation measures to negate negative impacts on the environmental attributes.

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Table 21: Mitigation Measures to negate Negative Impacts on the Environmental Attributes

Environmental Attribute	Impact	Construction Stage	Mitigation Measures
Soil	Negative, the excavated portion of the gravel road will be permanent as it will be compacted to avoid regermiantion of vegetation on the road.	Post Construction	The road compaction process must be supervised by the profeesional engineer, to avoid soil erosion that can lead to dongas creasing the road.
Geological Stability	Negative, the excavated portion of the gravel road will be soft and dry during backfilling process and will take longer to harden to pre-soil condition structural properties	Post Construction	The road compaction process must be supervised by the profeesional engineer, to avoid soil erosion that can lead to dongas creasing the road.
Groundcover	Negative, as the natural veld cover will be lost during the excavations	During Construction	Top soil stock piling must be well protected and cordoned off from other soil material generated on site, so as to allow natural seeds to regermenate successfully during the

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Environmental Attribute	Impact	Construction Stage	Mitigation Measures
			rehabilitation of construction works
Groundcover	Negative , as the natural veldcover will not regeminate on the compacted surface	Post Construction	The road compaction process must be supervised by the profesional engineer, to avoid soil erosion that can lead to dongas creasing the road.

H.9 The outcome of the site selection matrix

PLEASE NOTE THAT THERE ARE NO SITE ALTERNATIVES FOR THE PROPOSED DEVELOPMENT

There are no site alternatives as the purpose of this development is to provide road access to the local community, therefore the region under consideration is the target delivery for the gravel road access and an alternate site is counterproductive. In addition there are no significant route alternatives as the linear development will be aligned adjacent to existing topography for the majority of the route. It is also deemed most appropriate / reasonable to locate the gravel road along the flat topography to minimize the cost of construction as well as maintenance.

The “no-go” alternative is for the proposed development not go ahead, the site will continue with its current activities and the provision of access road to the local community will not be undertaken. This will also haper service delivery interms police, health and socio-economic services.

The village currently does not have proper access road for basic services to reach the targeted community. The gravel road will be aligned to existing landscape of the area in order to minimize the environmental impacts in the area. Therefore in deciding the least cost option of the gravel road, the environmental consideration matrix of the following was utilized:

- existing landscape of the area
- existing infrastructure, like telecoms and powerlines
- existing dead roads in the area.

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H.10 If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such.

PLEASE NOTE THAT THERE ARE NO SITE ALTERNATIVES FOR THE PROPOSED DEVELOPMENT

There are no site alternatives as the purpose of this development is to provide road access to the local community, therefore the region under consideration is the target delivery for the gravel road access and an alternate site is counterproductive. In addition there are no significant route alternatives as the linear development will be aligned adjacent to existing topography for the majority of the route. It is also deemed most appropriate / reasonable to locate the gravel road along the flat topography to minimize the cost of construction as well as maintenance.

The “no-go” alternative is for the proposed development not go ahead, the site will continue with its current activities and the provision of access road to the local community will not be undertaken. This will also hamper service delivery in terms of police, health and socio-economic services.

The village currently does not have proper access road for basic services to reach the targeted community. The gravel road will be aligned to existing landscape of the area in order to minimize the environmental impacts in the area. Therefore in deciding the least cost option of the gravel road, the environmental consideration matrix of the following was utilized:

- existing landscape of the area
- existing infrastructure, like telecoms and powerlines
- existing dead roads in the area.

H.11 A concluding statement indicating the preferred alternatives, including preferred location of the activity

PLEASE NOTE THAT THERE ARE NO SITE ALTERNATIVES FOR THE PROPOSED DEVELOPMENT

There are no site alternatives as the purpose of this development is to provide road access to the local community, therefore the region under consideration is the target delivery for the gravel road access and an alternate site is counterproductive. In addition there are no significant route alternatives as the linear development will be aligned adjacent to existing topography for the majority of the route. It is also deemed most appropriate / reasonable to locate the gravel road along the flat topography to minimize the cost of construction as well as maintenance.

The “no-go” alternative is for the proposed development not go ahead, the site will continue with its current activities and the provision of access road to the local community will not be undertaken. This will also hamper service delivery in terms of police, health and socio-economic services.

The village currently does not have proper access road for basic services to reach the targeted community. The gravel road will be aligned to existing landscape of the area in order to minimize the environmental impacts in the area. Therefore in deciding the least cost option of the gravel road, the environmental consideration matrix of the following was utilized:

- existing landscape of the area
- existing infrastructure, like telecoms and powerlines
- existing dead roads in the area.

As a result the community will now be able to benefit from the gravel road construction as the basic services, such as ambulance, police vehicles and municipal services.

I. Full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of activity.

Table 22 to Table 25 shows the environmental significance of impacts and risk identified for the identified alternative (preferred option) both pre-mitigation measures and post-mitigation measures. The environmental significance rating of each aspects pre and post mitigation measures is contained in **Appendix 15**.

The cumulative impacts associated with the project life cycle is demonstrated in **Table 26 to Table 28**.

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Table 22: Environmental Significance of Impacts of Preferred Alternative during Design and Planning Phase

DESIGN AND PLANNING PHASE			
Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
Loss of vegetation	None	<ul style="list-style-type: none"> Minimize vegetation destruction to minimum area 	None
Soil Erosion	None	<ul style="list-style-type: none"> The gravel road must be constructed along the topography and channeled properly in the drainage lines using storm water channel and erosion gullies. 	None
Water pollution	None	<ul style="list-style-type: none"> The Stormwater Channels must be installed in the area where the gravel road will intercept the drainage channel 	None
Dust generation	None	<ul style="list-style-type: none"> TLB's to only be driven in area that is identified for road construction 	None
Hazardous Substance contamination	None	<ul style="list-style-type: none"> The TLB's must be provided with drip trays when not in use 	None
Noise generation	None	<ul style="list-style-type: none"> Avoid excessive revving and ignition of equipment. 	None
Waste pollution	None	<ul style="list-style-type: none"> Dispose waste at registered waste disposal facility 	None
Fire ignition	None	<ul style="list-style-type: none"> TLB's to always have fire extinguishers and have employees trained on their use 	None
Damage to existing	None	<ul style="list-style-type: none"> Infrastructure mapping and confirmation. 	

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DESIGN AND PLANNING PHASE

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
infrastructure e.g. sewage lines			
Injury to public and animals due to falling into workings	None	<ul style="list-style-type: none"> ▪ Prevent unauthorized entry to the working area 	None
Traffic congestion	None	<ul style="list-style-type: none"> ▪ Avoid traffic jamming e.g. move machinery and plant outside of rush hour ▪ Plan work area to minimize traffic obstruction 	None
Traffic incidents	None	<ul style="list-style-type: none"> ▪ Install illuminating warning lights, traffic calming structures, etc. ▪ Use flagman to slow and direct traffic 	None
Pedestrian injuries and route closures	None	<ul style="list-style-type: none"> ▪ Redirect pedestrians away from working areas ▪ Use barricades and signage ▪ Prevent unauthorized access to working areas 	None
Stormwater Management	None	<ul style="list-style-type: none"> ▪ The contractor will be advised to implement proper storm management plan 	None
Cultural Heritage Resources	None	<ul style="list-style-type: none"> ▪ If any cultural and heritage resources can be discovered on the proposed site the construction will have to be halted and the case be reported to AMAFA and SAPS. 	None

Table 23: Environmental Significance of Impact of the Preferred Alternative during Construction Phase

CONSTRUCTION PHASE			
Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
Loss of vegetation	None	<ul style="list-style-type: none"> ▪ Minimize vegetation destruction to minimum area where construction operations are. 	None
Soil Erosion	Medium	<ul style="list-style-type: none"> ▪ Minimize vegetation destruction to minimum area where construction operations are. ▪ Divert stormwater away from the disturbed areas and loose soils ▪ Compact well after clearing the road 	None
Water pollution	Medium	<ul style="list-style-type: none"> ▪ Avoid soil erosion (see above) ▪ Avoid loss of vegetation (see above) 	None
Dust generation	None	<ul style="list-style-type: none"> ▪ Limit loss of vegetation (see above) ▪ Avoid over movement of plant on site ▪ Limit speed to 20km/hr. or less in the construction site ▪ Apply dust suppression regularly and as required ▪ Cover soil heaps 	None
Hazardous Substance contamination	Medium	<ul style="list-style-type: none"> ▪ Avoid refueling onsite ▪ Refueling to occur at designated areas and with drip trays installed 	None

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CONSTRUCTION PHASE

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
		<ul style="list-style-type: none"> ▪ Training of substance handlers for correct handling 	
Noise generation	None	<ul style="list-style-type: none"> ▪ Proper plant, machinery and motor maintenance ▪ Use noise reduction apparatus where applicable ▪ Avoid excessive revving and ignition of equipment. ▪ Operational hours between 07h00 and 17h00 	None
Waste pollution	Medium	<ul style="list-style-type: none"> ▪ Use dedicated waste bins ▪ Practice waste separation (General and Hazardous) ▪ Dispose waste at registered waste disposal facility 	None
Fire ignition	Low	<ul style="list-style-type: none"> ▪ Avoid lighting fires on site ▪ Ban smoking near flammable substances ▪ Ensure correct handling of flammable substances ▪ Have fire extinguishers and have employees trained on their use 	None
Loss of fauna and Flora	Low	<ul style="list-style-type: none"> ▪ Avoid vegetation loss (see above) ▪ Avoid fires (see above) ▪ Avoid hazardous substance contamination of soil and water (see above) ▪ Prevent collection/capture of fauna by employees 	None
Damage to existing infrastructure e.g. sewage lines	None	<ul style="list-style-type: none"> ▪ Infrastructure mapping and confirmation. ▪ Servitude applications ▪ Contingency and emergency measures 	None
Injury to public and animals due to falling into workings	None	<ul style="list-style-type: none"> ▪ Prevent unauthorized entry to the working area ▪ Barricade all works with barricade fence ▪ NO ENTRY and DANGER signs erected and maintained ▪ Smallest lead times between trenching and pipe 	None

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CONSTRUCTION PHASE

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
		burying. <ul style="list-style-type: none"> Close dig-up areas as soon as pipes have been laid. 	
Traffic congestion	Medium	<ul style="list-style-type: none"> Avoid traffic jamming e.g. move machinery and plant outside of rush hour Move plant and machinery away from high traffic areas Plan work area to minimize traffic obstruction 	None
Traffic incidents	Medium	<ul style="list-style-type: none"> Avoid traffic congestion (see above) Implement traffic safety measures Install illuminating warning lights, traffic calming structures, etc. Use flagman to slow and direct traffic 	None
Pedestrian injuries and route closures	Medium	<ul style="list-style-type: none"> Redirect pedestrians away from working areas Use barricades and signage Prevent unauthorized access to working areas 	None
Stormwater Management	Low	<ul style="list-style-type: none"> The contractor will be advised to implement proper storm management plan 	None
Cultural Heritage Resources	None	<ul style="list-style-type: none"> If any cultural and heritage resources can be discovered on the proposed site the construction will have to be halted and the case be reported to SAPS. 	None

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Table 24: Environmental Significance of Impact on the Preferred Alternative during Decommissioning Phase

DECOMMISSIONING PHASE			
Potential impacts:	Significance rating of impacts:	Proposed rehabilitation measures	Significance rating of impacts after rehabilitation measures
Loss of vegetation	None	<ul style="list-style-type: none"> ▪ Topsoil removed must be used to level the area, in order to allow the seeds to regerminate ▪ Indigenous vegetation (if any) will need to be relocated and planted again 	None
Soil Erosion	None	<ul style="list-style-type: none"> ▪ Rows of straw, hay or bundles of cut vegetation may also be used. In this instance, the hay, straw or vegetation is dug into the soil in contours, in order to help slow surface wash and capture eroded soil. ▪ The spacing between rows would be dependant on slope and the specific area. 	None
Water pollution	Low	<ul style="list-style-type: none"> ▪ Waste Materials collected on site after decommissioning the site must not be diverted into nearby water courses 	None
Dust generation	Low	<ul style="list-style-type: none"> ▪ Avoid over movement of plant on site ▪ Limit speed to 20km/hr. or less in the construction site 	None
Hazardous Substance contamination	Low	<ul style="list-style-type: none"> ▪ Refueling to occur at designated areas and with drip trays installed ▪ All waste material generated on site must be disposed off at registererd hazardous landfill site. ▪ Proof of disposal must be made available to Site Engineer 	None
Noise generation	None	<ul style="list-style-type: none"> ▪ Avoid excessive revving and ignition of equipment. ▪ Operational hours between 07h00 and 17h00 	None
Waste pollution	None	<ul style="list-style-type: none"> ▪ Use dedicated waste bins 	None

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DECOMMISSIONING PHASE

Potential impacts:	Significance rating of impacts:	Proposed rehabilitation measures	Significance rating of impacts after rehabilitation measures
		<ul style="list-style-type: none"> ▪ Practice waste separation (General and Hazardous) ▪ Dispose waste at registered waste disposal facility 	
Fire ignition	None	<ul style="list-style-type: none"> ▪ Avoid lighting fires on site ▪ Ban smoking near flammable substances ▪ Ensure correct handling of flammable substances ▪ Have fire extinguishers and have employees trained on their use 	None
Loss of fauna and Flora	None	<ul style="list-style-type: none"> ▪ Rehabilitate the area workings within the water course to allow natural flows ▪ Remove structures that can impede natural flow in the water ▪ Use Gabion baskets and Rhino mattress to stabilize river banks 	None
Damage to existing infrastructure e.g. sewage lines	None	<ul style="list-style-type: none"> ▪ Infrastructure mapping and confirmation. ▪ Servitude applications ▪ Contingency and emergency measures 	None
Injury to public and animals due to falling into workings	None	<ul style="list-style-type: none"> ▪ Prevent unauthorized entry to the working area ▪ Barricade all works with barricade fence ▪ NO ENTRY and DANGER signs erected and maintained ▪ Smallest lead times between trenching and pipe burying. ▪ Close dig-up areas as soon as pipes have been laid. 	None
Traffic congestion	Low	<ul style="list-style-type: none"> ▪ Avoid traffic jamming e.g. move machinery and plant 	None

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DECOMMISSIONING PHASE

Potential impacts:	Significance rating of impacts:	Proposed rehabilitation measures	Significance rating of impacts after rehabilitation measures
		outside of rush hour <ul style="list-style-type: none"> ▪ Move plant and machinery away from high traffic areas ▪ Plan work area to minimize traffic obstruction 	
Traffic incidents	Low	<ul style="list-style-type: none"> ▪ Avoid traffic congestion (see above) ▪ Implement traffic safety measures ▪ Install illuminating warning lights, traffic calming structures, etc. ▪ Use flagman to slow and direct traffic 	None
Pedestrian injuries and route closures	Low	<ul style="list-style-type: none"> ▪ Redirect pedestrians away from working areas ▪ Use barricades and signage ▪ Prevent unauthorized access to working areas 	None
Stormwater Management	None	<ul style="list-style-type: none"> ▪ The design of drainage and stormwater pipes should be to reduce flow velocity and avoid soil erosion. This can be achieved through the construction of water velocity dissipators below the pipe head wall. ▪ Rocks, boulders or concrete blocks may be utilised for these purposes, and they are set into the concrete pron below the headwall. Stone pitching may also be utilised. 	None

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Table 25: Environmental Significance of Impact of Preferred Alternative during Operation Phase

OPERATION PHASE			
Potential impacts:	Significance rating of impacts:	Proposed mitigation measures	Significance rating of impacts after rehabilitation measures
Soil Erosion	Low	<ul style="list-style-type: none"> ▪ Implement the appropriate topsoil and stormwater runoff control management measures to prevent the loss of topsoil. ▪ The site should be graded well to permit drainage and to prevent ponding 	None
Water pollution	Low	<ul style="list-style-type: none"> ▪ A comprehensive water pressure management must be adhered to prevent pressure build ups resulting in pipe burst ▪ A use pressure reducing valves must be implemented 	None
Loss of fauna and Flora	Low	<ul style="list-style-type: none"> ▪ Trees and shrubs conserved shall be clearly introduced to the site under the supervision of the Project Engineer. ▪ This trees cannot be planted directly on the pipeline, but appropriate planting site must be negotiated well with all interest and affected parties ▪ Pipeline crossing over the stream must always be freed of debris building up 	None
Damage to existing infrastructure e.g. sewage lines	Low	<ul style="list-style-type: none"> ▪ Infrastructure mapping and confirmation. ▪ Servitude applications ▪ Contingency and emergency measures 	None
Traffic incidents	Medium	<ul style="list-style-type: none"> ▪ A comprehensive water pressure management must 	None

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OPERATION PHASE

Potential impacts:	Significance rating of impacts:	Proposed mitigation measures	Significance rating of impacts after rehabilitation measures
		be adhered to prevent pressure build ups resulting in pipe burst <ul style="list-style-type: none"> ▪ A use pressure reducing valves must be implemented ▪ Implement traffic safety measures in case of pipe burst ▪ Install illuminating warning lights, traffic calming structures, etc. should flooding be the resultant impact ▪ Use flagman to slow and direct traffic 	
Pedestrian injuries and route closures	Medium	<ul style="list-style-type: none"> ▪ Redirect pedestrians away from pipe burst areas ▪ Use barricades and signage ▪ Prevent unauthorized access to working areas 	None
Stormwater Management	Low	<ul style="list-style-type: none"> ▪ Ensure effective storm water management will be exercised to limit negative impacts on the environment and enhance the positive impacts ▪ All contaminated standing water should be immediately removed and treated or disposed of appropriately. ▪ Surfaces and conduits should be constructed to drain the run off more efficiently 	None

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Table 26: Cumulative Impacts of Preferred Alternative during Construction Phase

CONSTRUCTION PHASE				
Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:	Cumulative Impact
Soil Erosion	Medium	<ul style="list-style-type: none"> ▪ Minimize vegetation destruction to minimum area where construction operations are. ▪ Divert stormwater away from the disturbed areas and loose soils ▪ Compact well after clearing the road ▪ 	None	Creation of dongas along the road, which could lead to sinkholes in the area.
Water pollution	Medium	<ul style="list-style-type: none"> ▪ Avoid soil erosion (see above) ▪ Avoid loss of vegetation 	None	Loss of water quality of the streams in the area.
Hazardous Substance contamination	Medium	<ul style="list-style-type: none"> ▪ Avoid refueling onsite ▪ Refueling to occur at designated areas and with drip trays installed ▪ Training of substance handlers for correct handling 	None	Loss of land capability and groundwater pollution due to Oil and Grease contamination
Waste pollution	Medium	<ul style="list-style-type: none"> ▪ Use dedicated waste bins ▪ Practice waste separation (General and Hazardous) ▪ Dispose waste at registered waste disposal facility 	None	Creation of illegal dumping site and could cause significant health hazard to the surrounding community and living animals

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CONSTRUCTION PHASE

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:	Cumulative Impact
Traffic congestion	Medium	<ul style="list-style-type: none"> ▪ Avoid traffic jamming e.g. move machinery and plant outside of rush hour ▪ Move plant and machinery away from high traffic areas ▪ Plan work area to minimize traffic obstruction 	None	Traffic Congestions may lead to illegal driving and creation of alternative routes around the works leading to damage of the surrounding environments, and infrastructure.
Traffic incidents	Medium	<ul style="list-style-type: none"> ▪ Avoid traffic congestion (see above) ▪ Implement traffic safety measures ▪ Install illuminating warning lights, traffic calming structures, etc. ▪ Use flagman to slow and direct traffic 	None	Road closures my lead to road rages by motorist to fellow motorists or pedestrians
Pedestrian injuries and route closures	Medium	<ul style="list-style-type: none"> ▪ Redirect pedestrians away from working areas ▪ Use barricades and signage ▪ Prevent unauthorized access to working areas 	None	Public injuries may lead to negativity by the communities against the project

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Table 27: Cumulative Impact of Preferred Alternative during Decommissioning Phase

DECOMMISSIONING PHASE				
Potential impacts:	Significance rating of impacts:	Proposed rehabilitation measures	Significance rating of impacts after rehabilitation measures	Cumulative Impact
N/A	N/A	N/A	N/A	N/A

Table 28: Cumulative Impact of Preferred Alternative during the Operation Phase

OPERATION PHASE				
Potential impacts:	Significance rating of impacts:	Proposed mitigation measures	Significance rating of impacts after rehabilitation measures	Cumulative Impact
Traffic incidents	Medium	<ul style="list-style-type: none"> ▪ A comprehensive water pressure management must be adhered to prevent pressure build ups resulting in pipe burst ▪ A use pressure reducing valves must be implemented ▪ Implement traffic safety measures in case of pipe burst ▪ Install illuminating warning 	None	<ul style="list-style-type: none"> ▪ Background leaking of pipelines, that leads unaccounted for water in the system

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OPERATION PHASE

Potential impacts:	Significance rating of impacts:	Proposed mitigation measures	Significance rating of impacts after rehabilitation measures	Cumulative Impact
		lights, traffic calming structures, etc. should flooding be the resultant impact ▪ Use flagman to slow and direct traffic		
Pedestrian injuries and route closures	Medium	▪ Redirect pedestrians away from pipe burst areas ▪ Use barricades and signage ▪ Prevent unauthorized access to working areas	None	▪ Background leaking of pipelines, that leads unaccounted for water in the system

- J. A summary of the findings and impact management measures identified in any of specialist report complying with Appendix 6 to these regulations and a indication as to how these finding and recommendations have been included in the final report**

N/A

K. An environmental impact statement

The impact associated with the construction of the gravel road in this village have been adequately assessed in this report at different phase of the life of activity of the project i.e planning and design phase, construction phase, decommissioning phase and operational phase.

A map is attached herewith in **Appendix 16** showing the proposed activity and its associated infrastructure in relation to environmental sensitivity of the site. The objective here is delineate where feasible the areas that are sensitive and proper care and due diligence must be activated during the construction, rehabilitation and operation of the project. **Appendix 21** details the proposed Engineering Design of the Gravel Road.

There will be less environmental significance during the planning and design phase, as much of the work is designed around ground trothing and review of the information in the general public domain.

During the construction phase, there are aspects of construction that needs to managed accordingly to reduce the environmental significance of the impacts. The Environmental Management Programme (EMPr) to manage and monitor mitigation of this impacts by the contractor.

Although an aspect might have a rating of none or low environmental significance, that aspect might have cumulative impact if not properly managed. In this case some of issues such as management of soil generated on site as well as loss of vegetation, noise of construction machinery and traffic management if not properly mitigated can have high environmental significance and makes the whole project undesirable to the environment.

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Aspect such as, refueling at dedicated fuel storage, improper waste management practices and insufficient traffic management practice have a medium environmental significance. If the aspects are not monitored as per the recommended mitigation measures, they will also trigger high environmental significance, and thus the desirable objective of the will not be realized. This will have negative consequences as the community will continue without access to basic service guaranteed by the Constitution of the Republic of South Africa.

It is therefore desirable that the Project Manager appoint the Environmental Control Officer whom's primary responsibility is to ensure compliance by the Contractor with all the mitigation measures contained in the EMPr.

The negative environmtal impact of the project on the environmental attributes are far outweighed by the sole delivery of the basic services of aces road provision to the people. Therefore, although there will be such negative effect on the environment, the mititigation measures recommended must be adhered to as will be outlined in the EMPr.

It is therefore imperative that EMPr is well versed with the contractor during the construction and rehabilitation phase.

- L. Environmental Management Programme including where applicable impact management measures from specialist report, the recording of the proposed impact management objectives, and the impact management outcomes for the development**

The Environmental Management Programme is attached herewith in **Appendix 17** of this report.

M. Any aspects which were conditional to the finding of the assessment either by the EAP or specialist which are to be included as conditions of authorization

N/A

N. A description of any assumptions, uncertainties, gaps in knowledge which relate to the assessment and mitigation measures proposed

N/A

O. A reasoned opinion as to whether the proposed activity should or should not be authorized, and if the opinion is that it should be authorized, any conditions that should be made in respect of that authorization

The government's Integrated Sustainable Rural Development Strategy (ISRDS) as incepted in October 2001 gave birth to a programme that focussed to achieve integrated sustainable development in the rural areas. This programme selected nodes based on identified local development problems and opportunities. Its aim is to respond to indicators of poverty and economic opportunities.

The current access road provides a thoroughfare for the local villagers and farm workers. There is virtually no public transport facility available. The proposed access is currently a clayey loamy gravel track road approximately 3,5m wide traversing over rolling mountainous terrain with steep inclines and side cuts. There are rock (Shale) outcrops in several isolated areas making road condition harsh and difficult and sometimes inaccessible especially during the frequent rainy periods.

As per Msinga Local Municipality IDP 2015/2016, and uMzinyathi Backlog Study (2007) determined road backlogs based on hut count data in the Traditional Authority areas indicates that 58% of households have inadequate access to roads.

The Road Infrastructure Strategic Framework for South Africa (RIFSA) classifications indicates a major dependency on lower order access roads for most of the residents within Msinga Local Municipality. With the high dependency on the lower order nodes, it is necessary to ensure proper transport infrastructure exist, especially with the view of creating economic growth in the municipality, which positively affects everybody. Should the

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residents not have proper access to opportunities; the initiatives will not be successful.

The environmental impact assessment concluded that, yes, during implementation of magnitude of this project there will be temporal loss of certain environmental attributes along the route of target delivery community. Thus, we have appreciated that and acknowledge the loss. However the profound nature of this access road negates the temporal environmental losses we are going to lose. We still have to protect same by the way. But the mitigation measures we recommend to be put in place to manage this less environmental significance impacts, should allow us to restore the environment to its close pristine conditions albeit not equivalent.

It is against this background that, I have assessed and processed all the possible environmental impacts within my knowledge that could be associated with the construction of 5.4 km gravel road in Mambeni Village and its desirable objectives, thus:-

I can , soundly recommend to the KwaZulu Natal Department of Economic Development, Tourism and Environmental Affairs to authorize Construction of 5.4 km gravel road in Mambeni Village as proposed by Msinga Local Municipality.

This recommendation has the following bearing on to Municipality implementing in its entirety the mitigation measures and conditions suggested elsewhere in this report, contained in the **Environmental Management Programme (EMPr) dated September 2016** and further management measures and conditions recommended by the responding Authority.

- P. Where the proposed activity does not include operational aspects, the period for which the environmental authorization is required, the date on which the activity will be concluded, and the post construction monitoring requirements**

N/A

Q. An undertaking under oath or affirmation by the EAP in relation to:

I, **KGOMOTSO MOTSEPE** declare that I

- am the independent environmental practitioner in this application;
- will comply with the requirements for an EAP as stipulated in Regulation 13 of the EIA Regulations, 2014;
- do not have and will not have any vested interest (either business, financial, personal or other) in the undertaking of the proposed activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014;
- will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- declare that there are no circumstances that may compromise my objectivity in performing such work;
- have expertise in conducting environmental impact assessments, including knowledge of the National Environmental Management Act, 1998 (Act 107 of 1998), regulations and any guidelines that have relevance to the proposed activity;
- will comply with the National Environmental Management Act, 1998 (Act 107 of 1998), regulations and all other applicable legislation;
- undertake to disclose to the applicant and the KZN Department of Economic Development, Tourism & Environmental Affairs all material information in my possession that reasonably has or may have the potential of influencing its decision with respect to this application;
- will ensure that information containing all reports in respect of this application is distributed or made available to interested and affected parties and that their participation is facilitated in such a manner that they will be provided with a reasonable opportunity to participate and provide comments on the reports;
- will provide the competent authority with access to all information at my disposal regarding this application, whether such information is favourable to the applicant or not;
- declare that all the particulars furnished by me in this form are true and correct;
- I am aware that a person is guilty of an offence in terms of Regulation 48 (1) of the EIA Regulations, 2014, if that person provides incorrect or misleading information. A person who is convicted of an offence in terms of sub-regulation 48(1) (a)-(e) is liable to the penalties as contemplated in section 49B(1) of the National Environmental Management Act, 1998 (Act 107 of 1998); and

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- I will comply with all the requirements as indicated in the National Environmental Management Act, 1998 (Act 107 of 1998) and Environmental Impact Assessment Regulations, 2014.

Name of the Environmental Assessment Practitioner

Signature of the Environmental Assessment Practitioner

Name of company

Date

Name of Commissioner of Oaths

Signature of Commissioner of Oaths

Date

Designation

Official stamp (below)

R. Where applicable, details of any financial provisions for rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts

N/A

S. Any specific information that may be required by the competent authority

N/A

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T. Any other matters required in terms of section 24(4)(a) and (b) of the Act

N/A