**APPLICATION FOR ENVIRONMENTAL AUTHORISATION FOR PROPOSED CONSTRUCTION OF 5.3 KM GRAVEL ROAD IN KO-GABELA VILLAGE, MSINGA LOCAL MUNICIPALITY – REF. NUMBER:**

**DC24/0005/2017 KZN/EIA/0000 574/2017**

# 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: kgomotso@magalelas.co.za
Mobile: 072 278 1026
Contact Person: Kgomotso Motsepe

MAGALELA Associates

**01 JULY 2017**

| | |
|---|---|
| Project Title: | **CONSTRUCTION OF 5.3 KM GRAVEL ROAD IN KO-GABELA VILLAGE, MSINGA LOCAL MUNICIPALITY** |
| Report Title | **APPLICATION FOR ENVIRONMENTAL AUTHORISATION FOR PROPOSED CONSTRUCTION OF 5.3 KM GRAVEL ROAD IN KO-GABELA VILLAGE, MSINGA LOCAL MUNICIPALITY** |
| DETEA REFERENCE NUMBER | **DC24/0005/2017 KZN/EIA/0000574/2017** |
| EAP Author | K Motsepe, Pr. Nat.Sci |

| Revision | Date | Report Status |
|---|---|---|
| Draft 1 | 01/07/2017 | 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)

# TABLE OF CONTENTS

# LIST OF TABLES

# LIST OF APPENDICES

**APPENDIX 13: ISSUES AND RESPONSE REPORT**

**APPENDIX 14: MSINGA LOCAL MUNICIPALITY IN RELATION TO UMZINYATHI DISTRCT MUNICIPALITY**

**APPENDIX 15: THE ENVIRONMENTAL SIGNIFICANCE RATING TABLE OF ASPECTS**

**APPENDIX 16: PROPOSED ACTIVITY AND ITS ASSOCIATED INFRASTRUCTURE IN RELATION TO ENVIRONMENTAL SENSITIVITY OF THE SITE.**

**APPENDIX 17: ENVIRONMENTAL MANAGEMENT PROGRAMME**

**APPENDIX 18: SPECIALIST REPORT/S**

**APPENDIX 19: SITE PHOTOS**

**APPENDIX 20: COPY OF APPLICATION FORMS**

**Appendix 21: PROPOSED ENGINEERING DESIGN OF THE GRAVEL ROAD.**

# 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 Municpality
- 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.

_____ Date:_____

**Kgomotso Motsepe**

## B. The Location Description and Locality Map of 5.3km in Ko-Gabela Village, Msinga Local Municipality

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

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

**Table 1: Farm Names of Proposed Development**

| Farm Name | ERF | Portion |
|---|---|---|
| QAMU | 17486 | - |

**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 | 6 | 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**

| POSITION | LATITUDE | LONGITUDE |
|---|---|---|
| 0. Start Point | -28.612208 | 30.474885 |
| 1 | -28.618215 | 30.468486 |
| 2 | -28.622446 | 30.470458 |
| 3 | -28.626450 | 30.466392 |
| 4 | -28.629498 | 30.468908 |
| 5 | -28.633551 | 30.472202 |
| 6 | -28.636444 | 30.468266 |
| 7 | -28.638341 | 30.465013 |
| 8 | -28.642577 | 30.463515 |
| 9. End Point | -28.643163 | 30.457923 |

## C. Layout Plan of the Construction of Gravel Road

The layout plan for the proposed construction of 5.3km gravel road in Ko-Gabela Village is shown in **Appendix 3**.

## D. Description of the scope of the proposed construction of 5.3 km gravel road in Ko-Gabela Village

The project involves the construction of 5.3 km gravel road in Ko-Gabela Village area. The Ko-Gabela Village area falls within the Msinga Local Municipality in Umzinyathi District Municipality.

The gravel road will be constructed to a Standard Type 7A District Road in accordance with the Departament of Transport specifications. The final road carriageway width will be widened by five meters (5m) of the existing gravel road.

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), amended 4 April 2017, 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** | The development of—<br>(i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or<br>(ii) infrastructure or structures with a physical | During the construction of the 5.3 km gravel road in Ko-Gabela Village, two (2) concrete slabs at low lying river crossings position will be constructed to allow ease of acess of vehicle during rainy seasons. Approximately 6 Pipe culverts crossings are also planned to cross underneath the gravel road during construction at low |

| | | |
|---|---|---|
| | footprint of 100 square metres or more;<br><br>where such development occurs—<br>(a) within a watercourse;<br>(b) in front of a development setback; or<br>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; —<br><br>excluding—<br>(aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;<br>(bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing | points/water courses etc. All this crossings are on non-perennial water courses. The square meters of constructed concrete slab at crossing will be 150 $m^2$. |

| | | |
|---|---|---|
| | Notice 2 of 2014 applies;<br>(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;<br>(dd) where such development occurs within an urban area;<br>(ee) where such development occurs within existing roads, road reserves or railway line reserves; or<br>(ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared. | |
| **19** | The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres | During construction of the concrete slabs at different low lying river crossing position more than 10 $m^3$ of soil and concrete materials will be excavated and infilled respectively into the water course. |

| | | |
|---|---|---|
| | from a watercourse;<br><br>but excluding where such infilling, depositing, dredging, excavation, removal or moving—<br>(a) will occur behind a development setback;<br>(b) is for maintenance purposes undertaken in accordance with a maintenance management plan;<br>(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;<br>(d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or<br>where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies. | |
| **56** | The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre— | The gravel road will be constructed to a Standard Type 7A District Road in accordance with the Departament of Transport |

| | | |
|---|---|---|
| | (i) where the existing reserve is wider than 13,5 meters; or<br>(ii) where no reserve exists, where the existing road is wider than 8 metres;<br>excluding where widening or lengthening occur inside urban areas. | specifications. The final road carriageway width will be widen by five meters (5m) of the existing gravel road. |

## E. Description of the policy and legislative context within which construction of tar 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 |
| 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 | Department of Agriculture | 1983 |

| | | |
|---|---|---|
| Agricultural Resources Act | | |
| 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 | Andy Blackmore/ Dominic Weiners | 1 Peter Brown Drive Pietermaritzburg, 3201 | Yes | Yes |
| Amafa | Weziwe Tshabalala | P.O. Box 2685, Pietermaritzburg, 3200 Tel: 0333 946543 Fax: 0333 426097 | Yes | Yes |
| Department of Water and Sanitation | Yolanda Gwele | P O Box 1018 Durban, 4000 Tel: 031 336 2700 | Yes | Yes |
| 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 | Induna D Ximba | P O Box 2252 Pomeroy Tel: 073 807 0275 | Yes | No |
| | Cllr. Majosi | P O Box 49 Pomeroy | Yes | No |

| | | | | |
|---|---|---|---|---|
| Traditional Affairs | | Tel: 079 608 8712 | | |

# F. Motivation for the need and desirability for the proposed construction of 5.3km gravel road in Ko-Gabela 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 acess to the local community, therefore the region under consideration is the target delivery for the tar road acess 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 tar 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 acess road to the local community will not be undertaken. This will also haper service delivery interms 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 acess to the local community, therefore the region under consideration is the target delivery for the tar road acess 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 tar 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 acess road to the local community will not be undertaken. This will also haper service delivery interms police, health and socio-economic services.

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

The public participation process for the construction of construction of 5.3 km gravel road in Ko-Gabela Village entailed the following:

### H.2.1 Identification of stakeholders

Identification of stakeholders took place by way of contacting with local municipalities, Ward Councillor and State Department that development of the gravel road will trigger their particiaption. 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 Ko-Gabela Village, a decision was taken to advance the cause of the project with Ward Councillor. Therefore meeting was held on 24 June 2016 at Msinga Local Municpality with the with the community leaders Councillor Sokhela. The notes or discussion points covered will be 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 displyed on the notice board of the municpality 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 Libray 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.**

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

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

- 

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

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

Ko-Gabela Village is situated in the central busines district of the Msinga Local Municiaplity on the northern part of province of KwaZulu Natal. The town area host the seating of Municipal Offices and Pomeroy. The District Municipality is Umzinyathi District Municipality. The map showing the town of Tugela Ferry within Msinga Local Municipality in relation to Umzinyathi Distrct Municipality is shown in **Appendix 14.**

The environtal attribute associated with the constrution of the tar road is demonstrated and summarised in the **Table 7** below:-

**Table 7: Environmental Attributes associated with construction of tar 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 charecterised 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 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-mtigation measures. The environmental significance rating of each aspects pre and post mitigation measures is contained in **Appendix 15.**

**Table 8: 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** | ▪ Minimize vegetation destruction to minimum area | **None** |
| Soil Erosion | **None** | ▪ The tar 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** | ▪ The Stormwater Channels must be installed in the area where the tar road will intercept the drainage channel | **None** |
| Dust generation | **None** | ▪ TLB's to only be driven in area that is identified for road construction | **None** |
| Hazardous Substance contamination | **None** | ▪ The TLB's must be provided with drip trays when not in use | **None** |
| Noise generation | **None** | ▪ Avoid excessive revving and ignition of equipment. | **None** |
| Waste pollution | **None** | ▪ Dispose waste at registered waste disposal facility | **None** |
| Fire ignition | **None** | ▪ TLB's to always have fire extinguishers and have employees trained on their use | **None** |
| Damage to existing infrastructure e.g. | **None** | ▪ Infrastructure mapping and confirmation. | |

**DESIGN AND PLANNING PHASE**

| Potential impacts: | Significance rating of impacts: | Proposed mitigation: | Significance rating of impacts after mitigation: |
|---|---|---|---|
| sewage lines | | | |
| Injury to public and animals due to falling into workings | **None** | ▪ Prevent unauthorized entry to the working area | **None** |
| Traffic congestion | **None** | ▪ Avoid traffic jamming e.g. move machinery and plant outside of rush hour<br>▪ Plan work area to minimize traffic obstruction | **None** |
| Traffic incidents | **None** | ▪ Install illuminating warning lights, traffic calming structures, etc.<br>▪ Use flagman to slow and direct traffic | **None** |
| Pedestrian injuries and route closures | **None** | ▪ Redirect pedestrians away from working areas<br>▪ Use barricades and signage<br>▪ Prevent unauthorized access to working areas | **None** |
| Stormwater Management | **None** | ▪ The contractor will be advised to implement proper storm management plan | **None** |
| Cultural Heritage Resources | **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 9: Environmental Significance of Impacts during the Construction Phase**

**CONSTRUCTION PHASE**

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

**CONSTRUCTION PHASE**

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

**CONSTRUCTION PHASE**

| | | | |
|---|---|---|---|
| | | ▪ Close dig-up areas as soon as pipes have been laid. | |
| Traffic congestion | **Medium** | ▪ Avoid traffic jamming e.g. move machinery and plant outside of rush hour<br>▪ Move plant and machinery away from high traffic areas<br>▪ Plan work area to minimize traffic obstruction | **None** |
| Traffic incidents | **Medium** | ▪ Avoid traffic congestion (see above)<br>▪ Implement traffic safety measures<br>▪ Install illuminating warning lights, traffic calming structures, etc.<br>▪ Use flagman to slow and direct traffic | **None** |
| Pedestrian injuries and route closures | **Medium** | ▪ Redirect pedestrians away from working areas<br>▪ Use barricades and signage<br>▪ Prevent unauthorized access to working areas | **None** |
| Stormwater Management | **Low** | ▪ The contractor will be advised to implement proper storm management plan | **None** |
| Cultural Heritage Resources | **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** |

**Table 10: Environmental Significance of Impacts during Decommisioning Phase**

**DECOMMISIONING PHASE**

| | | | |
|---|---|---|---|
| Loss of vegetation | **None** | ▪ Topsoil removed must be used to level the area, in order to allow the seeds to regerminate<br>▪ Indigenous vegetation (if any) will need to be relocated and planted again | **None** |
| Soil Erosion | **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.<br>▪ The spacing between rows would be dependant on slope and the specific area. | **None** |
| Water pollution | **Low** | ▪ Waste Materials collected on site after decommisiong the site must not be diverted into nearby water courses | **None** |
| Dust generation | **Low** | ▪ Avoid over movement of plant on site<br>▪ Limit speed to 20km/hr. or less in the construction site | **None** |
| Hazardous Substance contamination | **Low** | ▪ Refueling to occur at designated areas and with drip trays installed<br>▪ All waste material generated on site must be disposed off at registererd hazardous landfill site.<br>▪ Proof of disposal must be made available to Site Engineer | **None** |
| Noise generation | **None** | ▪ Avoid excessive revving and ignition of equipment.<br>▪ Operational hours between 07h00 and 17h00 | **None** |
| Waste pollution | **None** | ▪ Use dedicated waste bins | **None** |

**DECOMMISIONING PHASE**

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

**DECOMMISIONING PHASE**

| | | | |
|---|---|---|---|
| | | outside of rush hour<br>▪ Move plant and machinery away from high traffic areas<br>▪ Plan work area to minimize traffic obstruction | |
| Traffic incidents | **Low** | ▪ Avoid traffic congestion (see above)<br>▪ Implement traffic safety measures<br>▪ Install illuminating warning lights, traffic calming structures, etc.<br>▪ Use flagman to slow and direct traffic | **None** |
| Pedestrian injuries and route closures | **Low** | ▪ Redirect pedestrians away from working areas<br>▪ Use barricades and signage<br>▪ Prevent unauthorized access to working areas | **None** |
| Stormwater Management | **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.<br>▪ 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** |

**Table 11: 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** | ▪ Implement the appropriate topsoil and stormwater runoff control management measures to prevent the loss of topsoil.<br>▪ The site should be graded well to permit drainage and to prevent ponding | **None** |
| Water pollution | **Low** | ▪ Dust suppression must be conducted to minimal level to avoiding flooding of tar road | **None** |
| Loss of fauna and Flora | **Low** | ▪ Trees and shrubs conserved shall be clearly introduced to the site under the supervision of the Project Enginner. | **None** |
| Damage to existing infrastructure e.g. sewage lines | **Low** | ▪ Infrastructure mapping and confirmation.<br>▪ Servitude applications<br>▪ Contingency and emergency measures | **None** |
| Traffic incidents | **Medium** | ▪ Dust suppression must be conducted to minimal level to avoiding flooding of tar road Install illuminating warning lights, traffic calming structures, etc. should flooding be the resultant impact<br>▪ Use flagman to slow and direct traffic | **None** |
| Pedestrian injuries and route closures | **Medium** | ▪ Redirect pedestrians away from pipe burst areas<br>▪ Use barricades and signage | **None** |

**OPERATION PHASE**

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

## H.6 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 12: Determination of Consequence**

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

### H.6.1 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.**

**Table 13: Severity Estimation**

| Rating | Description |
|---|---|
| 1 | Negliable / 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.6.2 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 14: 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.6.3 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 15: 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.

**Table 16: Determination of Likelihood**

| Determination of Likelihood (L) = | (Frequency + Probability) / 2 |
|---|---|

### H.6.4 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 17: Probability of Impact**

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

### H.6.5 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 18: Frequency of the Impact**

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

### H.6.6 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, exent, 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:

- 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 19: 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. |

## 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.

**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 tar road will follow the slope of the area. | **Positive**, as the tar 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 tar road will be following the land scape | **Positive**, as the tar will be following the land scape |
| Groundwater | Water table below 1.5m deep | **Positive,** No drilling will conducted for road survey of tar roads. | **Positive,** No drilling will conducted for road survey of tar roads. | **Positive,** No drilling will conducted for road survey of tar 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 tar road. | **Negative,** the excavated portion of the tar road will be permanent as it will be compacted to avoid regermiantion of vegatation on the road. |

| 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 conducted for road survey of tar roads. | **Positive**, the ground will only be excavated limited along the surveyed tar road route | **Negative,** the excavated portion of the tar 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 regerminate on the compacted surface |
| Land use character of surrounding area | The area is charecterised by vacant land, followed by rural | **Positive,** No excavations will be conducted during the survey | **Positive**, the tar road will be following the existing tar roads that are in bad condition and will now | **Positive**, the tar road will be following the existing tar roads that are in bad condition and will |

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

| Environmental Attributes | Description | Design and Planning (Positive / Negative Impact | During Construction – (Positive / Negative Impact) | Post Construction (Positive / Negative Impact) |
|---|---|---|---|---|
| | construction phase | there will now be acess to basic serives. | serives. | to basic serives. |

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.

**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 tar road will be permanent as it will be compacted to avoid regermiantion of vegatation 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 tar 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 regerminate successfully during the rehabilitation of construction |

| Environmental Attribute | Impact | Construction Stage | Mitigation Measures |
|---|---|---|---|
| | | | works |
| Groundcover | **Negative**, as the natural veldcover will not regerminate on the compacted surface | 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. |

## 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 acess to the local community, therefore the region under consideration is the target delivery for the tar road acess 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 tar 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 acess 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 acess road for basic services to reach the targeted community. The tar 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 tar 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.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 acess to the local community, therefore the region under consideration is the target delivery for the tar road acess 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 tar 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 acess 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 acess road for basic services to reach the targeted community. The tar 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 tar 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 acess to the local community, therefore the region under consideration is the target delivery for the tar road acess 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 tar 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 acess 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 acess road for basic services to reach the targeted community. The tar 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 tar 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 tar 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-mtigation measures.

**Table 22: Environmental Significance of Impacts of Prefered 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** | ▪ Minimize vegetation destruction to minimum area | **None** |
| Soil Erosion | **None** | ▪ The tar 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** | ▪ The Stormwater Channels must be installed in the area where the grave road will intercept the drainage channel | **None** |
| Dust generation | **None** | ▪ TLB's to only be driven in area that is identified for road construction | **None** |
| Hazardous Substance contamination | **None** | ▪ The TLB's must be provided with drip trays when not in use | **None** |
| Noise generation | **None** | ▪ Avoid excessive revving and ignition of equipment. | **None** |
| Waste pollution | **None** | ▪ Dispose waste at registered waste disposal facility | **None** |
| Fire ignition | **None** | ▪ TLB's to always have fire extinguishers and have employees trained on their use | **None** |
| Damage to existing | **None** | ▪ Infrastructure mapping and confirmation. | |

**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** | ▪ Prevent unauthorized entry to the working area | **None** |
| Traffic congestion | **None** | ▪ Avoid traffic jamming e.g. move machinery and plant outside of rush hour<br>▪ Plan work area to minimize traffic obstruction | **None** |
| Traffic incidents | **None** | ▪ Install illuminating warning lights, traffic calming structures, etc.<br>▪ Use flagman to slow and direct traffic | **None** |
| Pedestrian injuries and route closures | **None** | ▪ Redirect pedestrians away from working areas<br>▪ Use barricades and signage<br>▪ Prevent unauthorized access to working areas | **None** |
| Stormwater Management | **None** | ▪ The contractor will be advised to implement proper storm management plan | **None** |
| Cultural Heritage Resources | **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 Prefered Alternative during Construction Phase**

**CONSTRUCTION PHASE**

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

**CONSTRUCTION PHASE**

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

**CONSTRUCTION PHASE**

| Potential impacts: | Significance rating of impacts: | Proposed mitigation: | Significance rating of impacts after mitigation: |
|---|---|---|---|
| | | burying.<br>▪ Close dig-up areas as soon as pipes have been laid. | |
| Traffic congestion | **Medium** | ▪ Avoid traffic jamming e.g. move machinery and plant outside of rush hour<br>▪ Move plant and machinery away from high traffic areas<br>▪ Plan work area to minimize traffic obstruction | **None** |
| Traffic incidents | **Medium** | ▪ Avoid traffic congestion (see above)<br>▪ Implement traffic safety measures<br>▪ Install illuminating warning lights, traffic calming structures, etc.<br>▪ Use flagman to slow and direct traffic | **None** |
| Pedestrian injuries and route closures | **Medium** | ▪ Redirect pedestrians away from working areas<br>▪ Use barricades and signage<br>▪ Prevent unauthorized access to working areas | **None** |
| Stormwater Management | **Low** | ▪ The contractor will be advised to implement proper storm management plan | **None** |
| Cultural Heritage Resources | **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** |

**Table 24: Environmental SIgnificance of Impact on the Prefered Alternative during Decommisioning Phase**

**DECOMMISIONING PHASE**

| Potential impacts: | Significance rating of impacts: | Proposed rehabilitation measures | Significance rating of impacts after rehabilitation measures |
|---|---|---|---|
| Loss of vegetation | **None** | ▪ Topsoil removed must be used to level the area, in order to allow the seeds to regerminate<br>▪ Indigenous vegetation (if any) will need to be relocated and planted again | **None** |
| Soil Erosion | **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.<br>▪ The spacing between rows would be dependant on slope and the specific area. | **None** |
| Water pollution | **Low** | ▪ Waste Materials collected on site after decommisiong the site must not be diverted into nearby water courses | **None** |
| Dust generation | **Low** | ▪ Avoid over movement of plant on site<br>▪ Limit speed to 20km/hr. or less in the construction site | **None** |
| Hazardous Substance contamination | **Low** | ▪ Refueling to occur at designated areas and with drip trays installed<br>▪ All waste material generated on site must be disposed off at registererd hazardous landfill site.<br>▪ Proof of disposal must be made available to Site Engineer | **None** |
| Noise generation | **None** | ▪ Avoid excessive revving and ignition of equipment.<br>▪ Operational hours between 07h00 and 17h00 | **None** |
| Waste pollution | **None** | ▪ Use dedicated waste bins | **None** |

**DECOMMISIONING PHASE**

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

**DECOMMISIONING PHASE**

| Potential impacts: | Significance rating of impacts: | Proposed rehabilitation measures | Significance rating of impacts after rehabilitation measures |
|---|---|---|---|
| | | outside of rush hour<br>▪ Move plant and machinery away from high traffic areas<br>▪ Plan work area to minimize traffic obstruction | |
| Traffic incidents | **Low** | ▪ Avoid traffic congestion (see above)<br>▪ Implement traffic safety measures<br>▪ Install illuminating warning lights, traffic calming structures, etc.<br>▪ Use flagman to slow and direct traffic | **None** |
| Pedestrian injuries and route closures | **Low** | ▪ Redirect pedestrians away from working areas<br>▪ Use barricades and signage<br>▪ Prevent unauthorized access to working areas | **None** |
| Stormwater Management | **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.<br>▪ 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** |

**Table 25: Environmnetal Significance of Impact of Prefered 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** | ▪ Implement the appropriate topsoil and stormwater runoff control management measures to prevent the loss of topsoil.<br>▪ The site should be graded well to permit drainage and to prevent ponding | **None** |
| Water pollution | **Low** | ▪ A comprehensive water pressure management must be adhered to prevent pressure build ups resulting in pipe burst<br>▪ A use pressure reducing valves must be implemented | **None** |
| Loss of fauna and Flora | **Low** | ▪ Trees and shrubs conserved shall be clearly introduced to the site under the supervision of the Project Enginner.<br>▪ This trees cannot be planted directly on the pipeline, but appropriate planting site must be negotiated well with all interest and affected parties<br>▪ Pipeline crossing over the stream must always be freed of debris building up | **None** |
| Damage to existing infrastructure e.g. sewage lines | **Low** | ▪ Infrastructure mapping and confirmation.<br>▪ Servitude applications<br>▪ Contingency and emergency measures | **None** |
| Traffic incidents | **Medium** | ▪ A comprehensive water pressure management must | **None** |

**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<br>▪ A use pressure reducing valves must be implemented<br>▪ Implement traffic safety measures in case of pipe burst<br>▪ Install illuminating warning lights, traffic calming structures, etc. should flooding be the resultant impact<br>▪ Use flagman to slow and direct traffic | |
| Pedestrian injuries and route closures | **Medium** | ▪ Redirect pedestrians away from pipe burst areas<br>▪ Use barricades and signage<br>▪ Prevent unauthorized access to working areas | **None** |
| Stormwater Management | **Low** | ▪ Ensure effective storm water management will be exercised to limit negative impacts on the environment and enhance the positive impacts<br>▪ All contaminated standing water should be immediately removed and treated or disposed of appropriately.<br>▪ Surfaces and conduits should be constructed to drain the run off more efficiently | **None** |

**Table 26: Cumulative Impacts of Prefered 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** | ▪ Minimize vegetation destruction to minimum area where construction operations are.<br>▪ Divert stormwater away from the disturbed areas and loose soils<br>▪ Compact well after clearing the road<br>▪ | **None** | Creation of dongas along the road, which could lead to sinkholes in the area. |
| Water pollution | **Medium** | ▪ Avoid soil erosion (see above)<br>▪ Avoid loss of vegetation | **None** | Loss of water quality of the streams in the area. |
| Hazardous Substance contamination | **Medium** | ▪ Avoid refueling onsite<br>▪ Refueling to occur at designated areas and with drip trays installed<br>▪ Training of substance handlers for correct handling | **None** | Loss of land capability and groundwater pollution due to Oil and Grease contamination |
| Waste pollution | **Medium** | ▪ Use dedicated waste bins<br>▪ Practice waste separation (General and Hazardous)<br>▪ 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 |

**CONSTRUCTION PHASE**

| Potential impacts: | Significance rating of impacts: | Proposed mitigation: | Significance rating of impacts after mitigation: | Cumulative Impact |
|---|---|---|---|---|
| Traffic congestion | **Medium** | ▪ Avoid traffic jamming e.g. move machinery and plant outside of rush hour<br>▪ Move plant and machinery away from high traffic areas<br>▪ 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** | ▪ Avoid traffic congestion (see above)<br>▪ Implement traffic safety measures<br>▪ Install illuminating warning lights, traffic calming structures, etc.<br>▪ 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** | ▪ Redirect pedestrians away from working areas<br>▪ Use barricades and signage<br>▪ Prevent unauthorized access to working areas | **None** | Public injuries may lead to negativity by the communities against the project |

**Table 27: Cumalative Impact of Prefered Alternative during Decommisioning Phase**

**DECOMMISIONING 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 Prefered 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** | ▪ A comprehensive water pressure management must be adhered to prevent pressure build ups resulting in pipe burst<br>▪ A use pressure reducing valves must be implemented<br>▪ Implement traffic safety measures in case of pipe burst<br>▪ Install illuminating warning | **None** | ▪ Background leaking of pipelines, that leads unaccounted for water in the system |

**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<br>▪ Use flagman to slow and direct traffic | | |
| Pedestrian injuries and route closures | **Medium** | ▪ Redirect pedestrians away from pipe burst areas<br>▪ Use barricades and signage<br>▪ Prevent unauthorized access to working areas | **None** | ▪ Background leaking of pipelines, that leads unaccounted for water in the system |

## J. An assessment of each identified potentially significant impact and risk

The environmental significance rating of each aspects pre and post mitigation measures is contained in **Appendix 15**.

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

## K. 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

## L. An environmental impact statement

The impact associated with the construction of the gravel road in this area 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.

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 acess 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.

# M. 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.

## N. 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

## O. A description of any assumptions, uncertainities, gaps in knowledge which relate to the assessment and mitigation measures proposed

N/A

## P. 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

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 acess 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 5.3 km tar gravel road in Ko-Gabela Village and its desirable objectives, thus:-

**I can , soundly recommend to the KwaZulu Natal Department of Economic Development, Tourism and Environmental Affairs <u>to authorize</u> Construction of 5.3 km gravel road in Ko-Gabela 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 June 2017** and further management measures and conditions recommended by the responding Authority.

## Q. 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 requiremnts

N/A

# R. 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 (Act107 of 1998), regulations and any guidelines that have relevance to the proposed activity;
- will comply with the National Environmental Management Act, 1998 (Act107 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

- 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)**

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

**N/A**

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

N/A

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

N/A