HANSLAB (PTY) Ltd
ENVIRONMENTAL AND GROUND ENGINEERING SPECIALIST

# SITE INVESTIGATION REPORT
## MPAMENI ROAD UPGRADE
## OKHAHLAMBA LOCAL MUNICIPALITY

**PREPARED ON BEHALF OF:**

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**11 June 2018**

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| **SIGNED** |  |
| **DATE** | 11th June 2018 |
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| **SIGNED** |  |
| **DATE** | 11th June 2018 |

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# 1. INTRODUCTION

A Site Investigation is the process of collecting information, assessment of data and reporting potential hazards within an unknown site (O'Brien & Gere, 2011). A site investigation/ assessment is an environmental management tool that highlights potential ecological issues or constraints in relation to a proposed development (Perry, 2011). A site investigation forms part of the screening phase of a project. Screening is defined by the Department of Environmental Affairs and Tourism as a decision-making process which determines whether a development/proposed activity requires an environmental assessment and if so, the level of assessment. According to Sadler (1996), screening is a process involving the determination of whether an individual proposal (project, programme, policy etc.) requires further environmental assessment.

# 2. METHODOLOGY

The methodology followed for conducting this site investigation report included:

1. The compilation of an environmental site-visit checklist:
    a. The site visit checklist included the basic information which was required to make the initial site visit.
    b. It also included information regarding the existing road/tracks and any watercourses which were observed.
    c. The purpose of the site-visit checklist was to record all observations and findings after the site visit/site walk-over.
2. A Site Visit/Site Walk-Over (which was conducted on the 01st of February 2018). This site visit/walkover was conducted with a Department of Transport (DOT) official. Refer to Appendix B – Site Register.
3. Photographing of the site for environmental evaluation. This will further be used in conjunction with the environmental management tools for the desktop analysis.
4. Desktop analysis using environmental management tools i.e. Google Earth, DOT GIS, SANBI BGIS & ARCGIS.

# 3. BACKGROUND INFORMATION

Rupee Consulting cc was appointed by the Okhahlamba Local Municipality to carry out the design and project management of the Mpameni Gravel Road. The proposed Mpameni Gravel Road is situated approximately 42kms away from the town of Bergville, off Provincial Road P288 (off District Road D1263), between Bergville and Harrismith. The total length of the road is 2.6km. The road encounters No.04 water crossing points at km0+700, km1+250, km1+700 and km2+100. There needs to be a full survey, hydrology and hydraulic designs to determine the appropriate structures to be installed at these water crossing points.

The No.04 water crossings were analyzed using four different methods to determine the 1:5-year flood volumes. As Mpameni Road is a local access road with limited traffic, the Standard Design Flood (SDF)method can be used. The existing road will be maintained, with only minor improvements where needed. Side drains will be constructed at appropriate portions of the road.

# 4. PROJECT LOCATION

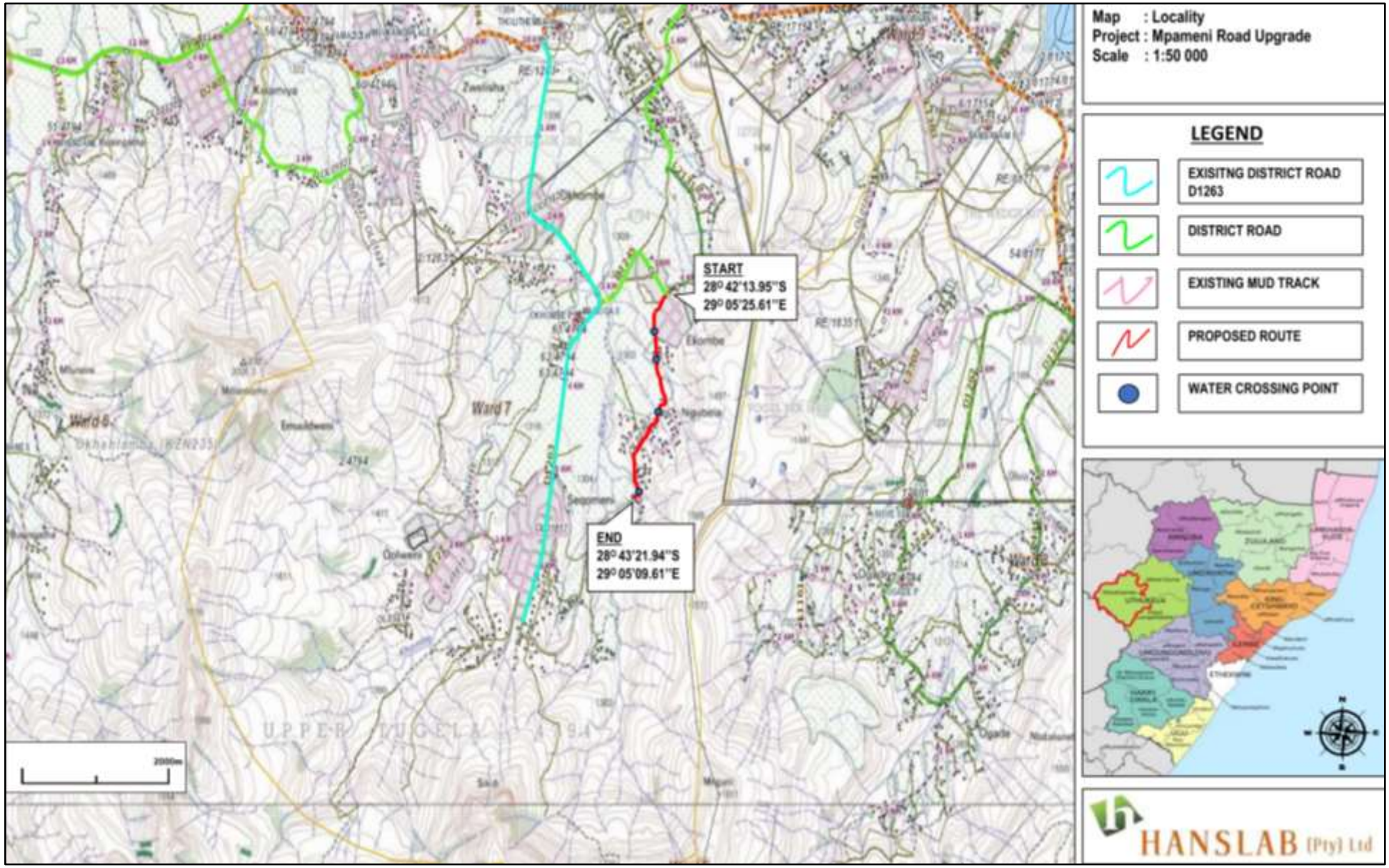


**Figure 1: Locality Map (*Source: DOTGIS, 2018*)**

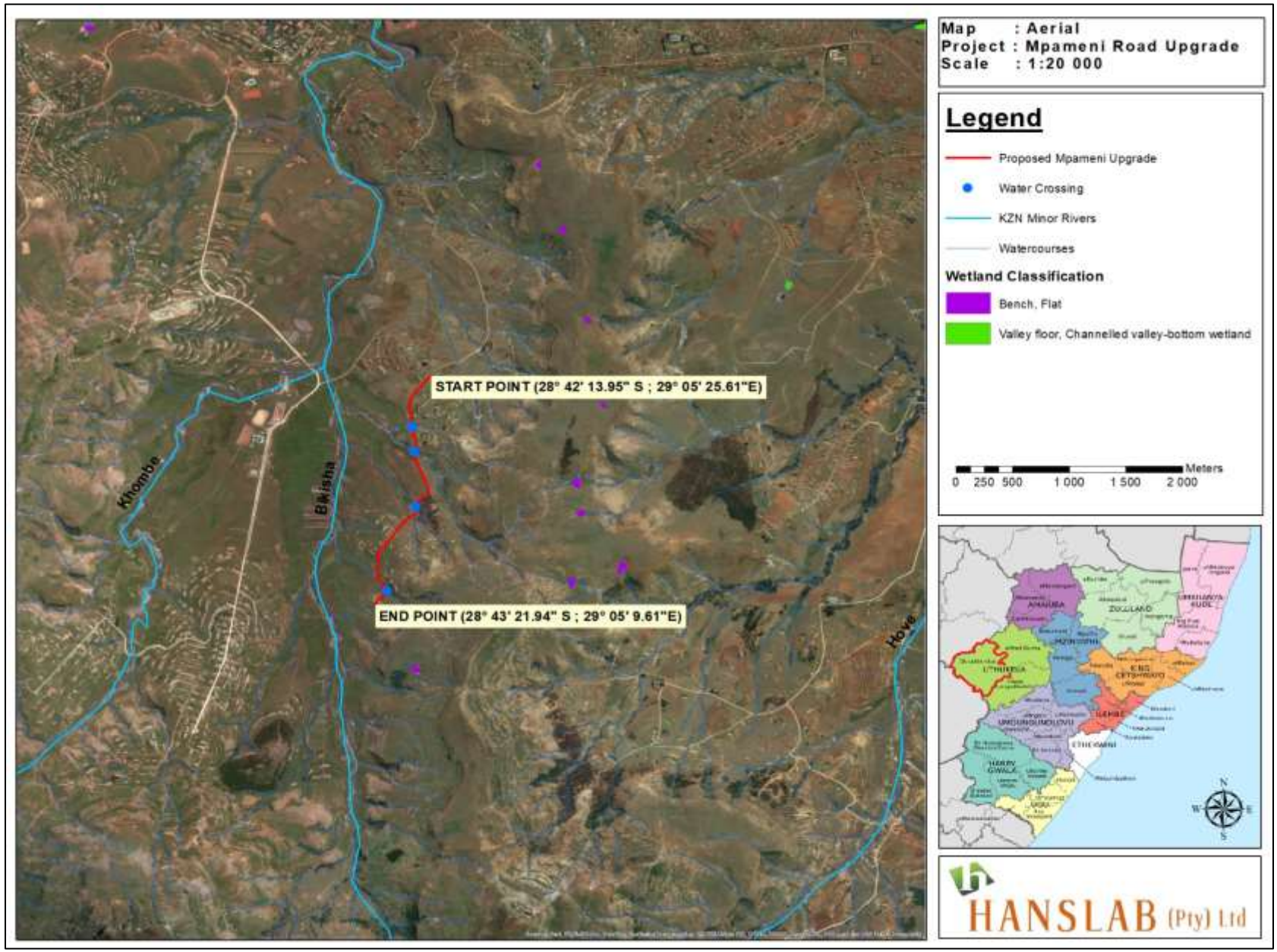


**Figure 2: Aerial Map (Source: *ArcGIS*, 2018)**

# 5. SITE DESCRIPTION

The site description is based on the observations made during the initial site-visit/ walk over. Thereafter, these findings are confirmed using a desktop analysis.

## 5.1. SITE VISIT

From the initial site visit, the following observations were made:

### 5.1.1. Existing Road/ Routes

The Mpameni road can be accessed via District Road D1623. There are homesteads situated in close proximity to the road (**Refer to Photo 1 showing the close proximity of homesteads in relation to the road.** ). Furthermore, there are fence lines and electricity poles which lie within the existing road reserve. These would have to be moved and realigned in order to cater for the road upgrade.

Due to the insufficient drainage along the route, there are portions which are heavily eroded. This is more evident along the banks which run parallel to the route (as the undercutting can be clearly seen). Sufficient drainage systems will have to be installed at certain portions of the route to help reduce the effects of erosion. **Refer to Photo 2 showing erosion and undercutting of banks.** Furthermore, dense vegetation is present along the entire track. **Refer to Photo 3 showing the vegetation encountered along the track.**

### 5.1.2. Watercourses

The proposed route traverses No. 04 watercourses. There is an existing pipe culvert structure at water crossing No.01, however this is eroded. There are no structures present at water crossing points No. 02, 03 & 04. Watercourses No. 01 to No.04 were flowing and visible bedrock was observed at watercourses No. 03 & 04. **Refer to Photo 4 showing the watercourses which were encountered.** There is also specific riparian vegetation present along the identified watercourses. **Refer to Photo 5 showing the riparian vegetation.**

## 5.2. DESKOP ANALYSIS

### 5.2.1. Existing Road/ Routes

Google Earth, ArcGIS & DOTGIS confirmed that the existing route was located off D1623. Other tracks within the surrounding area was also observed using these GIS tools. Levels of erosion can also be seen on Google Earth. The portions of the route which require the installation of drainage systems can also be observed on Google Earth.

### 5.2.2. Watercourses

Google Earth Imagery and ArcGIS confirmed the presence of the No,04 watercourses which were encountered along the route. Dense vegetation can also be observed within the riparian zones of each watercourse.

**Refer to Table 1 below showing the co-ordinates of the road upgrade and Table 2 showing the co-ordinates of the identified watercourses.**

**Table 1: Showing the co-ordinates Mpameni Road.**

| PROPOSED ROUTE | LATITUDE | LONGITUDE |
|---|---|---|
| Start Point | 28°42'13.95"S | 29°05'25.61"E |
| End Point | 28°43'21.94"S | 29°05'09.61"E |

**Table 2: Showing the co-ordinates of the identified watercourses.**

| WATERCOURSE | LATITUDE | LONGITUDE |
|---|---|---|
| No.01 | 28° 42'29.18"S | 29°05'20.54"E |
| No.02 | 28°42'36.48"S | 29°05'21.25"E |
| No.03 | 28°42'52.93"S | 29°05'24.58"E |
| No.04 | 28°43'17.86"S | 29°05'13.11"E |

## 6. POSSIBLE LISTED ACTIVITIES TRIGGERED BY THE PROPOSED DEVELOPMENT

| GN NO. & ACTIVITY NUMBER | LISTED ACTIVITY | ACTIVITY DESCRIPTION |
|---|---|---|
| GNR 327, Activity 12 of Listing Notice 1 | ***The development of—***<br>*(i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square meters; or*<br>***(ii) infrastructure or structures with a physical footprint of 100 square meters 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>*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 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;* | The proposed route traverses No. 04 watercourses. The Applicant proposes to install brand new structures at each of these water crossing points. Further investigations have to be conducted to determine the type of structure, however, **based on the nature of the watercourses, it can be expected that the proposed structures will be greater than 100 square meters. Therefore, Activity 12 of GNR 327, Listing Notice 1 of the EIA Regulations, 2014 as amended (07 April 2017) will be triggered.** |

| GN NO. & ACTIVITY NUMBER | LISTED ACTIVITY | ACTIVITY DESCRIPTION |
|---|---|---|
| GNR 327, Activity 12 of Listing Notice 1 | ***(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. | The proposed development occurs within a rural area. |
| GNR327, Activity 19 of Listing Notice 1 | *The infilling or depositing of any material of more than 10 cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic meters from a watercourse;*<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 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.* | There is currently a No.01 x 600mm pipe culvert structure at water crossing No01. No structures currently exist at water crossing points No. 02, 03 & 04. The construction of the new structures at each crossing points require the temporary removal of soil. Based on the environmental conditions, **it is estimated that an average of 11 cubic meters of soil will be removed for the construction of each structure. Therefore, Activity 19 of GNR 327, Listing Notice 1 of the EIA Regulations,** |

| | | |
|---|---|---|
| | | **2014 as amended (07 April 2017) will be triggered.** |
| **GN NO. & ACTIVITY NUMBER** | **LISTED ACTIVITY** | **ACTIVITY DESCRIPTION** |
| GNR 327, Activity 24 of Listing Notice 1 | *The development of a road—*<br>*(i) for which an Environmental Authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or*<br>***(ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres;***<br>*but excluding a road—*<br>*(a) which is identified and included in activity 27 in Listing Notice 2 of 2014;*<br>*(b)* ***where the entire road falls within an urban area****; or*<br>*(c) which is 1 kilometre or shorter.*<br>. | There are portions of the route which require the installation of side drains/ relief drains. **The installation of these drainage systems along the road will increase the road width to greater than 8m, thus triggering Activity 24 of GNR 327, Listing Notice 1 of the EIA Regulations, 2014 as amended (07 April 2017).**<br><br>The proposed road falls within a rural area. |

# 7. NEED FOR DEVELOPMENT

**There is a need for the proposed development based on the following:**

- **Municipal History**

  Okhahlamba Municipality forms part of the uThukela District Municipality in the KwaZulu-Natal Province. It is located along the western boundary of uThukela District and is bounded by Maluti a Phuphong (Free State province) to the northwest, Emnambithi to the northeast, Umtshezi to the southeast and Imbabazane to the south. It covers an area of approximately 3541km$_2$ and has a population of about 132 068 people. The municipal area comprises of privately owned commercial farmland, smallholder settlements, urban areas of Bergville, Winterton, Cathkin Park, Geluksberg, and Traditional Councils. These include the Amazizi, and Amangwane Traditional Councils (Okhahlamba Municipality SDF, 2015). The proposed development is centred around improving the provision of basic needs and services within the community as well as creating a more sustainable network for the future development of the municipality. The Integrated Development Plan (IDP) and Spatial Development Framework (SDF) aims to promote sustainable growth whilst catering to all the needs within the community as a whole.

- **Social-Economic Needs and Desirability**

  The SDF is a primary spatial response to the development context, needs and development vision of the municipality. The Okhahlamba Municipality is dominated by dispersed rural settlements located in traditional areas. Settlements are influenced by population residing in different areas. In this case, most of the population reside in traditional areas and fewer in the respective urban areas.

  Impacts on society and the community as a whole can only be beneficial. The community will benefit directly as this upgrade will provide the basic access that the community needs. There is currently no formal road network/structure within the area, this makes daily activities difficult for community members. The lack of a proper road structure is the driver behind the lack of development within the area. The upgrade also focuses on the installation of structures at each of the No.04 major crossing points. The No.04 watercourses are non-perennial, however, they have flow throughout most of the year.

- **Economic Needs and Desirability**

  Besides socio-economic, environmental development also plays an important role within the municipality. Some of the objectives highlighted in the Integrated Development Plan for the municipality include the need to identify environmental and developmental opportunities and assess the economic and environmental potential of the area. The proposed development is in line with these

objectives therefore no environmental management priorities will be compromised. This development will also allow for future and further development within the community.

- **Existing infrastructure**

  There are currently no existing structures present at 3 of the 4 water crossing points. The proposed upgrade aims to install the relevant structures at the water crossing points. Water crossing point No.02 has an existing No.01 x 600mm pipe culvert structure, however, this has been severely eroded over time (**Refer to Photo 1**). Due to the presence of the watercourses, gaining access to the area is extremely difficult for individuals with motor vehicles. The upgrade aims to further facilitate the development of the area by providing a sustainable road/access network.

# 8. CONCLUSION

This site investigation report has indicated that the proposed route lies within an existing mudtrack that traverses No.04 watercourses. There is an urgent need for this upgrade as the existing route is highly inaccessible to the public and therefore, this upgrade is essential for the provision of basic services to the local community. The road upgrade and the construction of the relevant structures at water crossing points No.01 to No.04 will possibly trigger Listing Activities 12, 19 & 24 of the EIA Regulations 2014, as amended. Therefore, a Basic Assessment Application in terms of the EIA Regulations, 2014 & Water Use Application in terms of Section 21 of the National Water Act (NWA), 1998.

# 9. REFERENCES

O'Brian & Gere. (2011). Geophysical/Geotechnical Environmental Investigation: Restoration Project.

Perry, B. (2011). Environmental Investigation Report.

Sadler, B. (1996). Environmental Assessment in a Changing World: Evaluating Practice to improve Performance, Final report of the international study of the effectiveness of environmental assessment, International Association for Impact Assessment, Canadian Environmental Assessment Agency, Ottawa, Canada.

# APPENDIX A – SITE PHOTOS

**Photo 1: Showing the existing structure at Watercourse No.01**

**Photo 2: Showing the proximity of homesteads in relation to the road edge.**

**Photo 3: Showing the undercutting of slopes and the erosion along the existing route.**

**Photo 4: Showing the vegetation present along the route.**


**Photo 5: Showing the watercourses along the route.**

**Photo 6: Showing the riparian zone vegetation.**

# APPENDIX B – SITE REGISTER

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**Project Name** : Mpameni Road Upgrade

**Date** : 01 February 2018

**Site Attendance Register**

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