

Level 1
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HANSLAB (Pty) Ltd

Environmental and Ground Engineering Specialists

Proposed new structures on Provincial Road 311 (P176)

Inkosi Langalibalele Local Municipality

Site Investigation Report

Reference No.: P176/SIR/001



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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 (EDTEA) 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. Desktop analysis using environmental management tools i.e. Google Earth, DOT GIS, SANBI BGIS & ARCGIS v10.5.1.
2. A Site Visit/Site Walk-Over.
3. Photographing of the site for environmental evaluation. This will further be used in conjunction with the environmental management tools for the desktop analysis.

3. BACKGROUND INFORMATION

Hanslab (Pty) Ltd. was appointed via Nankhoo Engineers (Engineering Consultant) on behalf of the KwaZulu-Natal Department of Transport (Applicant) as the Environmental Consultant for the project. The project involves the construction of 3no. structural upgrades located along various portions of Provincial Road (P176).

There are existing structures located at each crossing point. The existing infrastructure is ineffective/ eroded and therefore needs to be upgraded to one that is more appropriate. Furthermore, due to the recent incidents that resulted in numerous deaths along the crossings, the applicant has decided to upgrade all structures as per the details below:

No.	Watercourse name	Project Name	Proposed Structure	Location
01	Mngwenya River	Proposed new low-level bridge structure on Main Road (P176): Kwasentombi at Km. 5.1	Low-level bridge structure (12no. 5m spans, 2no. abutments & 11no. piers)	28°53'58.04''S; 30°05'03.51''E
02	Mngwenya River	Proposed new low-level bridge structure on Main Road (P176): Kwamota at Km. 8.1	Low-level bridge structure (15no. 5m spans, 2no. abutments & 14no. piers)	28°55'07.47''S; 30°05'57.94''E
03	Mngwenya River	Proposed new low-level bridge structure on Main Road (P176): Kwabovu at Km. 10.6	18no. 2.4m x 2.4m box culverts	28°56'20.07''S; 30°06'24.56''E

4. PROJECT LOCATION

Structure	Project Location
Kwasentombi at Km. 5.1	The location for the proposed Low Level Bridge Structure site will fall under the jurisdiction of the Inkosi Langalibalele Local Municipality (KZN 237). The Low Level Bridge Structure location is over the Mngwenya River and the site can be accessed by driving from Weenen, onto P176. Travel along P176 for approximately 5.1Km to reach the site of works. Structure Co-ordinates are 28°53'58.04"S and 30° 5'3.51"E.
Kwamota at Km. 8.1	The Low Level Bridge Structure location is over the Mngwenya River and the site can be accessed by driving from Weenen, onto P176. Travel along P176 for approximately 8.0Km to reach the site of works. Structure Co-ordinates are 28°55'7.47"S and 30° 5'57.94"E.
Kwabovu at Km. 10.6	The Low Level Bridge Structure location is over the Mngwenya River and the site can be accessed by driving from Weenen, onto P176. Travel along P176 for approximately 10.6Km to reach the site of works. Structure Co-ordinates are 28°56'20.07"S and 30° 6'24.56"E.

Refer to Figure 1 and Figure 2 showing the Aerial and Locality Maps for the project.

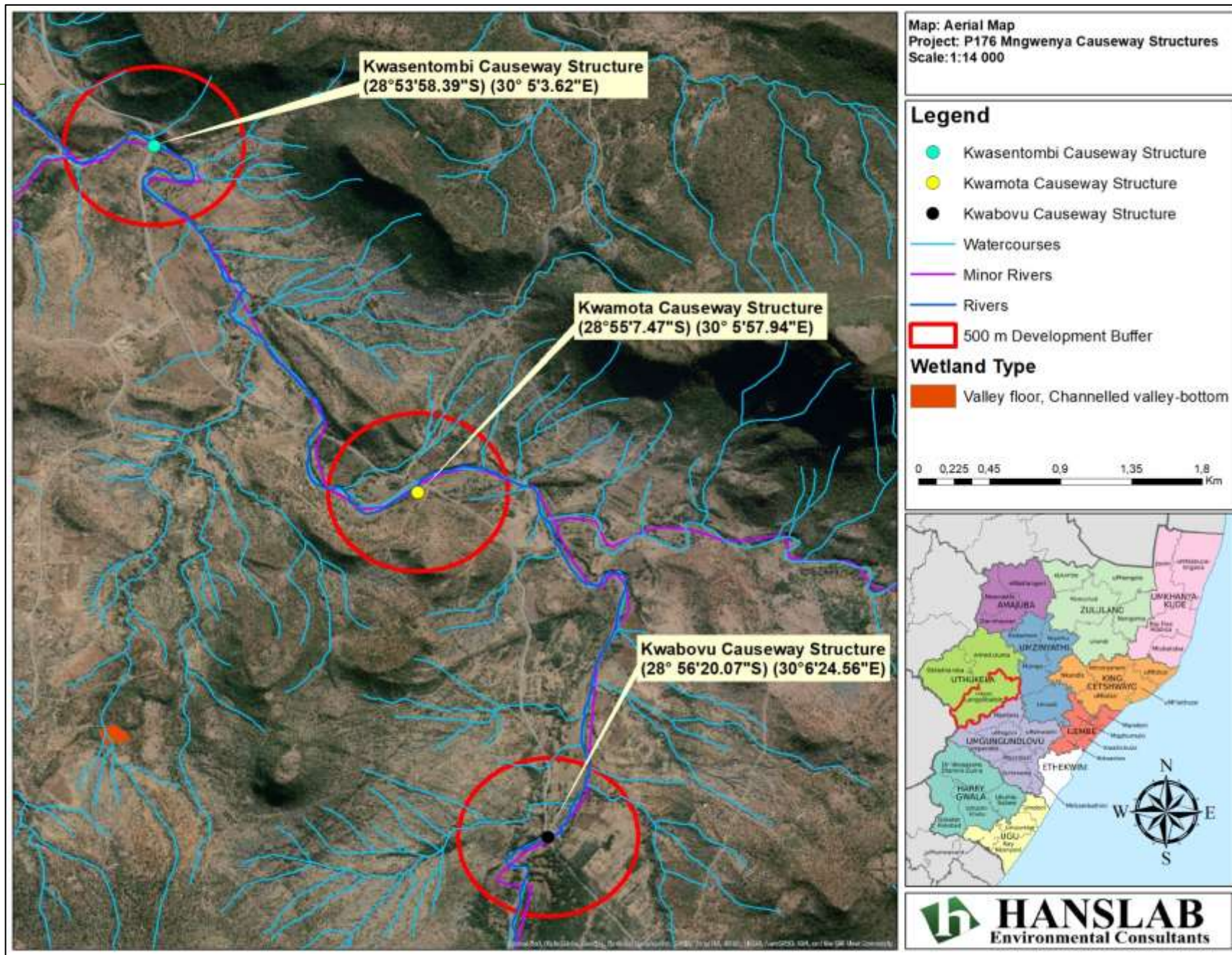


Figure 1: Aerial Map showing the proposed structures along P176 (Source: ArcGIS version. 10.5.1)

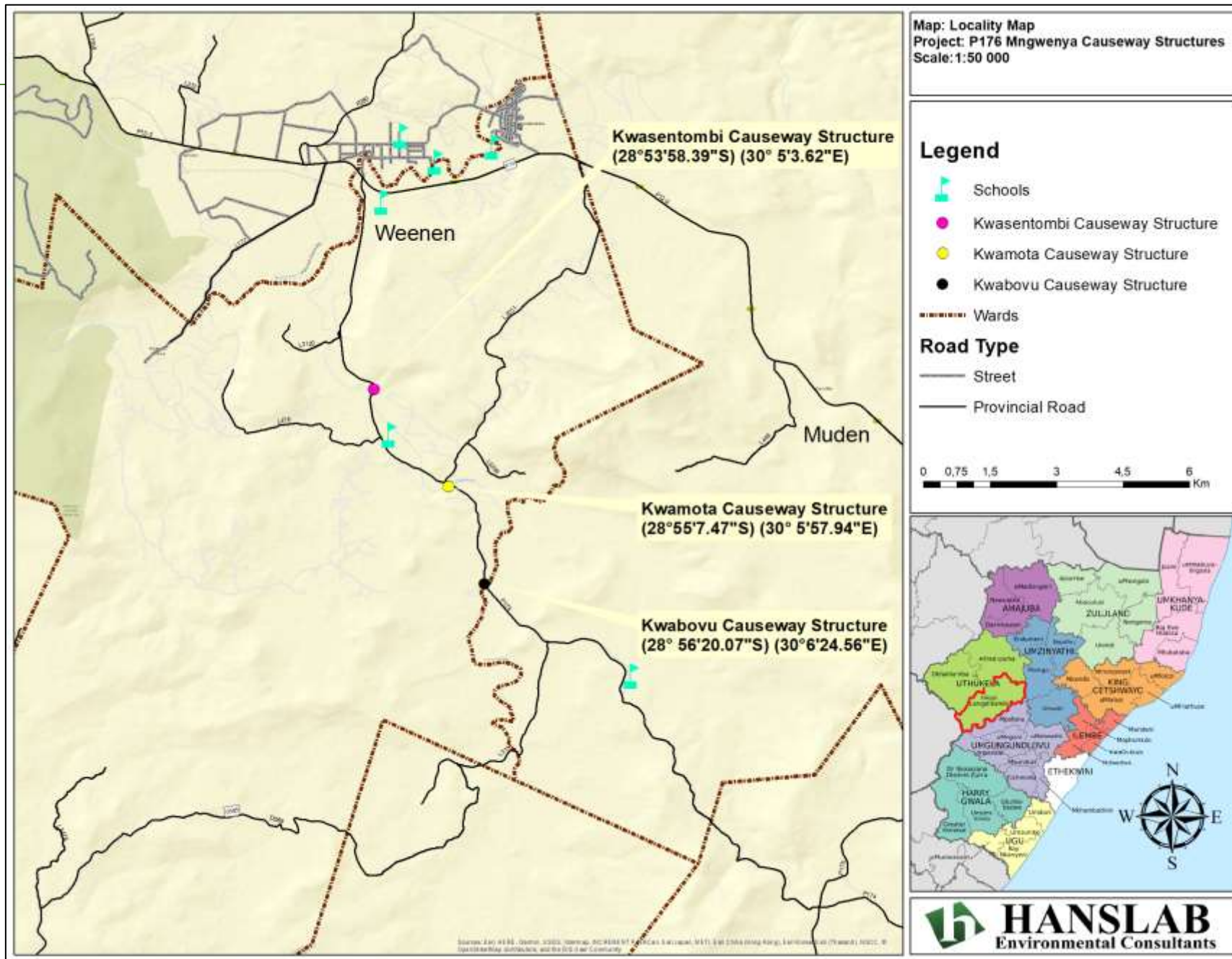


Figure 2: Locality Map showing the proposed structures along P176 (Source: ArcGIS version. 10.5.1)

5. SITE DESCRIPTION

5.1. DESKTOP ANALYSIS

5.1.1. Existing Roads/ Routes

Structure	Description
Kwasentombi at Km. 5.1	Google Earth and Arc GIS version 10.5.1. confirmed that the site can be accessed via P176. Using these various screening tools, other tracks were also observed in the area. The crossing point can be clearly seen on both Google Earth and ArcGIS.
Kwamota at Km. 8.1	Google Earth and Arc GIS version 10.5.1. confirmed that the site can be accessed via P176. Using these various screening tools, other tracks were also observed in the area. The crossing point can be clearly seen on both Google Earth and ArcGIS.
Kwabovu at Km. 10.6	Google Earth and Arc GIS version 10.5.1. confirmed that the site can be accessed via P176. Using these various screening tools, other tracks were also observed in the area. The crossing point can be clearly seen on both Google Earth and ArcGIS.

5.1.2. Watercourses

Structure	Description
Kwasentombi at Km. 5.1	Several drainage lines and watercourses were observed on Google Earth and Arc GIS. These watercourses form part of a dendritic structure.
Kwamota at Km. 8.1	Several drainage lines and watercourses were observed on Google Earth and Arc GIS. These watercourses form part of a dendritic structure.
Kwabovu at Km. 10.6	Several drainage lines and watercourses were observed on Google Earth and Arc GIS. These watercourses form part of a dendritic structure.

5.1.3. Vegetation

Structure	Description
Kwasentombi at Km. 5.1	The area surrounding the proposed structure is surrounded with both tree and grass species. Google Earth indicates growth in what can be understood to be a riparian area. No vegetation is proposed to be removed during the construction phase.
Kwamota at Km. 8.1	The area surrounding the proposed structure is surrounded with both tree and grass species. Google Earth indicates growth in what can be understood to be a riparian area. No vegetation is proposed to be removed during the construction phase.
Kwabovu at Km. 10.6	The area surrounding the proposed structure is surrounded with both tree and grass species. Google Earth indicates growth in what can be understood to be a riparian area. No vegetation is proposed to be removed during the construction phase.

5.2. SITE VISIT

5.2.1. Existing Roads/ Routes

Kwasentombi at Km. 5.1



Photograph 1: Showing the existing structure (North facing) located along P176 (Kwasentombi).



Photograph 2: Showing the existing structure (South facing) located along P176 (Kwasentombi).

The existing structures (Kwasentombi) appear to be degraded and lack sufficient storm water control. The existing inlet/ outlet pipes are blocked, causing excessive flooding during rainfall events.

Kwamota at Km. 8.1



Photograph 3: Showing the existing structure (North facing) located along P176 (Kwamota).



Photograph 4: Showing an existing track leading to the structure located along P176 (Kwamota).

The existing structures (Kwamota) lack bollards/guard rails. This makes crossing this structure extremely difficult during high rainfall events. The tie-ends to the existing structure needs to be replaced.

Kwabovu at Km. 10.6



Photograph 5: Showing the existing structure located along P176 (Kwabovu).



Photograph 6: Showing the existing road conditions associated with the Kwabovu structure located along P176.

The Kwabovu structure located along P176 lacks guardrails/ bollards and proper drainage infrastructure. The inlet/outlet pipes are blocked and cannot function at its optimum. The existing structure cannot cater to increasing flood levels during high rainfall events.

5.2.2. Watercourses

Kwasentombi at Km. 5.1



Photograph 7: Showing the upstream view of the existing slab structure along L311.



Photograph 8: Showing the downstream view of the existing slab structure along L311

Kwamota at Km. 8.1



Photograph 9: Showing the downstream view of the existing Kwamota structure.



Photograph 10: Showing the downstream view of the existing Kwamota structure.

Kwabovu at Km. 10.6



Photograph 11: Showing the upstream view of the Kwabovu structure.



Photograph 12: Showing the downstream view of the Kwabovu structure.

5.2.3. *Vegetation*

Kwasentombi at Km. 5.1



Photograph 13: Showing the vegetation associated with Kwasentombi.

Kwamota at Km. 8.1



Photograph 14: Showing the vegetation associated with Kwamota.

Kwabovu at Km. 10.6



Photograph 15: Showing the vegetation associated with Kwabovu.

6. PROPOSED ENVIRONMENTAL TRIGGERS

Table 1: Showing the details of Activity 12 (EIA Regulations, 2014 as amended).

No. & Date of Notice	Activity No. in terms of Notice	Activity Description
GNR 327, Listing Notice 1 of 2014, as amended	<p>Activity 12 as amended on the 07th April 2017.</p> <p>The development of –</p> <p>(i) <i>Dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or</i></p> <p>(ii) infrastructure or structures with a physical footprint of 100 square meters or more;</p> <p>where such development occurs—</p> <p>(a) within a watercourse</p> <p>(b) <i>in front of a development setback; or</i></p> <p>(c) <i>if no development setback exists, within 32m of a watercourse, excluding—</i></p> <p>(aa) <i>the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;</i></p> <p>(bb) <i>where such development activities are related to the development of a port or harbor, in which case activity 26 in Listing Notice 2 or 2014 applies;</i></p> <p>(cc) <i>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;</i></p> <p>(dd) where such development occurs within an urban area;</p> <p>(ee) <i>where such development occurs within existing roads, [or] road reserves or railway line reserves; or</i></p> <p>(ff) <i>the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6weeks of the commencement of development and where indigenous vegetation will not be cleared.</i></p>	<p>The Applicant proposes to construct new structures over the Mgwenya River located along Provincial Road (P176).</p> <p>Each structures will all have an approximate physical footprint of more than 100 square meters.</p> <p>The physical footprint of the structure is greater than 100 square meters, therefore triggering Activity 12. s</p> <p>Exclusions</p> <p>The proposed development does not:</p> <p>aa) occur within a port/ harbour;</p> <p>bb) is not related to an activity related to the development of a port/ harbour;</p> <p>cc) trigger activity 14 in Listing Notice 3 of 2014;</p> <p>dd) occur within an urban area;</p> <p>ee) occur within existing road / road reserves or railway line reserves;</p> <p>ff) form part of temporary infrastructure.</p>

Table 2: Showing the details of Activity 19 (EIA Regulations, 2014 as amended).

No. & Date of Notice	Activity No. in terms of Notice	Activity Description
GNR 327, Listing Notice 1 of 2014, as amended.	<p>Activity 19 as amended on the 07 April 2017.</p> <p><i>The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;</i></p> <p><i>but excluding where such infilling, depositing, dredging, excavation, removal or moving—</i></p> <ul style="list-style-type: none"> <i>(a) will occur behind a development setback;</i> <i>(b) is for maintenance purposes undertaken in accordance with a maintenance management plan;</i> <i>(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;</i> <i>(d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or</i> <i>(e) 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</i> 	<p>The Applicant proposes to construct new structures over the Mgwenya River located along Provincial Road (P176).</p> <p>The construction of the structures will require the removal of approximately 20 cubic meters of soil from the watercourse. The amount of soil removed is greater than 10 cubic meters, therefore triggering Activity 19.</p> <p>Exclusions</p> <p>The proposed development:</p> <ul style="list-style-type: none"> a) will not occur behind a development setback; b) is not for maintenance purposes; c) does not fall within the ambit of activity 21; d) does not occur within an existing port/ harbour; e) is not related to the development of a port or harbour.

7. NEED FOR DEVELOPMENT

The community will benefit from the proposed P176 Structures by providing a crucial link between communities in order to access the following necessary amenities:

Schools:

- Ferdinand Primary School
- Mthaniya Primary School
- Florence Booth Primary School
- Weenen Schools:
 - Weenen Primary School
 - Weenen Primere School
 - Weenen College (High School)

Health Facilities:

- AE Haviland Memorial Clinic

Building the Structures will provide the community with an easier route to their desired locations. Government officials have indicated that members of the community are left stranded during periods of high rainfall. The existing crossing point has no safe means of crossing during flooding. Therefore, community members wait a long period for the floods to subside before crossing. The proposed structures will also promote public transport and development in the surrounding areas. The construction process will also increase employment locally and provide skills development.

8. CONCLUSION

This Site Investigation Report has indicated that the proposed upgrades are located along a portion of Provincial Road (P176). The upgrade is essential for the provision of services to the local community. The construction of the new causeway structure will potentially trigger Activity No. 12 & 19 – Listing Notice No.01 (EIA Regulations, 2014 as amended).

Therefore, a Basic Assessment Application in terms of the EIA Regulations, 2014 and a Water Use License Application in terms of the National Water Act (NWA) will be required.

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.