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# PROPOSED CONSTRUCTION OF GUMEDE BRIDGE, UMDONI LOCAL MUNICIPALITY

## DRAFT BASIC ASSESSMENT REPORT: FOR PUBLIC & AUTHORITY REVIEW

COMPILED FOR: VUBA IMAGINEERS, on behalf of Umdoni Local Municipality

Compiled by: *Urvassi Hurburun Pr.Sci.Nat Reg EAP: 2019/1754*  
EnAq Consulting cc

**JULY 2021**

**EIA REFERENCE NUMBER: DC21/0020/2021**  
**NEAS: KZN/EIA/0001607/2021**

**PROJECT APPLICANT/CONTACT PERSON:** Umdoni Local Municipality: Mr Sandile Xulu

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# BASIC ASSESSMENT REPORT-DRAFT

Submitted in terms of the Environmental Impact Assessment Regulations, 2014,  
amended 07 April 2017, promulgated in terms of the National Environmental  
Management Act, 1998  
(Act No. 107 of 1998)

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## THE OBJECTIVES OF THE BASIC ASSESSMENT PROCESS IS TO; THROUGH A CONSULTATIVE PROCESS:

- Determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context.
- Identify the alternatives considered, including the activity, location, and technology alternatives;
- Describe the need and desirability of the proposed alternatives,
- Through the undertaking of an impact and risk assessment process inclusive of cumulative which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and the degree to which these impacts-
  - can be reversed
  - may cause irreplaceable loss of resources; and
  - can be avoided, managed or mitigated;
- Through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to-
  - identify and motivate a preferred site, activity and technology alternative;
  - identify suitable measures to avoid, manage or mitigate identified impacts;
  - Identify residual risks that need to be managed or monitored.

## EXECUTIVE SUMMARY:

### Introduction:

#### Principal Objective of Report:

This report constitutes the DRAFT Basic Assessment Report for comment by registered IAP's and relevant government authorities. It details the environmental outcomes, impacts and risks of the proposed activity.

The report aims to identify the significant environmental issues and impacts for this proposed development, and to highlight Interested and Affected Parties' (I&APs) issues and concerns. Information of the proposed project, need, and the public participation undertaken to date is also included.

This report has been made available for public and authority comment. The deadline for all comments is the 16 AUGUST 2021. All comments and issues received will be reviewed, assessed and included in this fBAR where appropriate (which will include cognisance of the comprehensive issues trail ensuing from the public participation process, recommendations and guidelines from the relevant specialist studies, assessment of the negative and positive impacts ), together with the EMP, supporting addenda.

All comments and issues received will be assessed and included in the final BAR, which will be submitted to competent authority viz. Department of Economic Development, Tourism and Environmental Affairs (EDTEA) for review and decision making.

#### Proposed Project Description and Scope:

To comply with South Africa's environmental legislation, EnAq Consulting cc was appointed by Vuba Imagineers cc, herein referred to as the client, to carry out a BASIC ASSESSMENT for the above-cited project. The project involved entails re-construction of existing storm damaged bridge and approaches to accommodate light to medium weight traffic across Gumede River.

The project is situated within Ugu District Municipality under the administration of Umdoni Municipality in Scottburgh. The project site can be accessed by proceeding from Scottburgh take Dududu road and head north west for about 7.5km and taking the right turn onto a gravel road for about 1.6km to arrive at the bridge. The respective site coordinates are as follows: 30°14'00.59"S; 30°43'59.66"E.

#### Gumede Bridge Project will entail:

- Demolishing of existing collapsed portal culvert bridge and construction of a new portal culvert bridge that measures approximately 7.12m long and 6.1m wide.
- Construction Bridge approaches with a total length of about 240m and width matching a standard 5m wide road with a gravel wearing course finish.
- Adequate storm water management system and earth retaining structures in the form of gabions are to be provided as necessary. Specialist support services such as topographical survey also form part of the works.

#### Based upon the design developed, the works can be summarized as follows:

- The bridge to measure 6.1m wide x 7.12m long x 1.8m high.
- To comprise: 2no. x 6.1m long x 1.8m high x 1.8m wide portals + 1no. x 6.1m long x 1.8m high x 2.4m wide portals, 200mm thick deck slab and 200mm thick base slab on micro piles, Gabion wing walls, 200mm thick approach slabs and 300mm high x 1m long guide block.
- 5m wide x 0.24km long approach road finished by 150mm layer of Gravel wearing course on at least 150mm layer of G7 selected subgrade/fill material.

- Associated storm water management by means of side drains, mitre drains and culverts.
- Fill protection and slope stability mechanisms by use of gabions baskets.

### **Alternatives:**

**Location: No alternative location** could be considered at this stage for the following reasons:

- *The construction of the new bridge has to occur at the location where the existing portal culvert bridge was damaged and then collapsed.*

### **Design/layout: The bridge design (portal culvert bridge)**

*A portal culvert bridge at river bed level supported on a pile raft foundation and finished with a reinforced concrete top slab has been evaluated and adopted for this design.*

### **The objectives of the project are:**

- *To address public safety concerns in the village, the Umdoni Municipality intends to construct an appropriate river crossing in the form of a bridge.*
- *To construct a new bridge to enable easy, safe, adequate access to the either side of the stream in all weather conditions.*
- *To choose and design a bridge structure that underpins the factors of durability, safety, economy, constructability and aesthetics.*
- *To accommodate light-medium traffic across Gumede River.*

### **AS PER ECOLOGICAL REPORT:**

The development footprint is situated within the KwaZulu-Natal Coastal Belt Grassland. The KwaZulu-Natal Coastal Belt Grassland threat status is 'Critically Endangered' and protection status is 'Normally Protected'. The proposed activity footprint overlaps with transformed land-cover and is regarded as possessing low sensitivity, albeit the surrounding landscape comprises of sensitive habitats, including Irreplaceable Critical Biodiversity Areas. These sensitive habitats possess flora SCC, as well as provide an array of ecosystem services. *Sideroxylon inerme* specimen adjacent to the road within the wetland must be relocated as prescribed.

It is the opinion of the specialists that the rebuilding of the Gumede bridge is feasible. However, the impacts associated with the proposed development activities must be mitigated against to ensure the maintenance of ecological processes, and the concomitant delivery of ecosystem services, of nearby habitats. Careful consideration must be afforded to each of the recommendations provided herein and proven ecological (or environmental) controls and mitigation measures must be entrenched in the management framework.

### **AS PER GEOTECHNICAL REPORT:**

It is imperative that the well-developed groundwater condition and risk of inundation be taken into account during design and construction of the proposed structure. In this regard, it is considered that temporary dewatering of excavations and/or the use of a coffer dam will be required during construction. It is considered that the following foundation types will be suited to the proposed developments and underlying founding conditions:

- i. Spread/Pad Footing;
- ii. Caissons; and/or
- iii. Piled Foundation

Taking into consideration the shallow groundwater table, it is considered that a piled foundation solution may prove to be the more practical solution for this site. In this regard, the auger pile and rotapile are likely to be suitable pile types for the site conditions. Spread footing and caissons can be considered along the southern abutment provided the surface and groundwater can be controlled. All earthworks should be carried out in a manner to promote stable development of the site. It is recommended that earthworks be carried out along the guidelines given in SANS 1200 (current version).

**Based on the results of the fieldwork undertaken during this investigation, it is considered that this site is generally stable and suitable for the proposed development, provided that the recommendations given in this report are adhered to.**

**Please refer to Appendix A for the layout plan that details the proposed preferred alignment**

**Environmental Requirements as per the EIA Regulations 2014 (amended 07 April 2017) and Public participation**

The KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (EDTEA) is the competent authority for this BA process and the development needs to be authorised by this Department in accordance with the National Environmental Management Act, 1998(Act No. 107 of 1998).

The Environmental Impact Assessment (EIA) Regulations 2014 (as amended 07 April 2017) under NEMA identify categories of activities viz: Listing Notice 1, 2 and 3. Activities triggered as per Listing Notice 1 (GNR 327 OF 2017) and 3, specific activities in identified sensitive geographical areas.

(GNR 324 of 2017) require a BA Process .Listing Notice 2 Activities (GNR 325 of 2017) require Scoping and Environmental Impact Report (S&EIR) process. Activities as per LN1 and LN3 have been triggered for this proposed project, and therefore a Basic assessment process will apply.

In terms sections 24(2) and 24D of the National Environmental Management Act 1998 (Act 107 of 1998), as per Government Notice No R326 of April 2017, Listing Notice 1 and Listing Notice 3, GNR 327 and GNR 324, respectively. A Basic Assessment Study is required for the following listed activities:

Legislation	Listed Activity Reference	Description as per Regulation	Relevance/Applicability to this Project		
Listing Notice 1 of 2014 (GNR 327)	31 (i)	the decommissioning of existing facilities, structures or infrastructure for: any development and related operation activity or activities listed in this notice, listing notice 2 of 2014 or listing notice 3 if 2014	<p><i>The existing damaged bridge structure will be decommissioned.</i></p> <p><b>geographical co-ordinates for triggered area:</b></p> <p>start:</p> <table border="1" style="margin-left: 20px;"> <tr> <td>30°14'00.65" S</td> <td>30°43'59.67" E</td> </tr> </table> <p>end:</p>	30°14'00.65" S	30°43'59.67" E
30°14'00.65" S	30°43'59.67" E				

			30°14'00.43" S	30°43'59.62" E				
Listing Notice 1 of 2014 (GNR 327)	12(ii)(a)	The development of- (ii) infrastructure or structures with a physical footprint of 100 square meters or more; Where such development occurs- (a) Within a watercourse	<ul style="list-style-type: none"> <li>- Construction Bridge approaches with a total length of 240m.</li> <li>- There is an existing stream crossing where the existing Gumede Bridge is located.</li> <li>- Therefore, a system of concrete portal culverts shall be used to construct a new low level bridge at the river crossing. (tributary of Mahlongwa River passes through here)</li> </ul> <p><b>geographical co-ordinates for triggered area:</b></p> <p>start:</p> <table border="1" style="width: 100%;"> <tr> <td>30°14'00.65" S</td> <td>30°43'59.67" E</td> </tr> </table> <p>end:</p> <table border="1" style="width: 100%;"> <tr> <td>30°14'00.43" S</td> <td>30°43'59.62" E</td> </tr> </table>		30°14'00.65" S	30°43'59.67" E	30°14'00.43" S	30°43'59.62" E
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30°14'00.43" S	30°43'59.62" E							
Listing Notice 1 of 2014 (GNR 327)	19(i)	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- (i) a watercourse	<ul style="list-style-type: none"> <li>- There is a stream where the existing Gumede Bridge is located. (Tributary Mahlongwa River passes through here).</li> <li>- Approximately 25m3 will be excavated</li> </ul> <p><b>geographical co-ordinates for triggered area:</b></p> <p>start:</p> <table border="1" style="width: 100%;"> <tr> <td>30°14'00.65" S</td> <td>30°43'59.67" E</td> </tr> </table> <p>end:</p> <table border="1" style="width: 100%;"> <tr> <td>30°14'00.43" S</td> <td>30°43'59.62" E</td> </tr> </table>		30°14'00.65" S	30°43'59.67" E	30°14'00.43" S	30°43'59.62" E
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30°14'00.43" S	30°43'59.62" E							
Listing Notice 3 of 2014 (GNR 324)	14(ii)(a)(d)(vii)	The development of- (iii) bridges exceeding 10 square meters in size; (xii) infrastructure or structures with a physical footprint of 10 square meters or more; Where such development occurs- (a) within a watercourse	<ul style="list-style-type: none"> <li>- The area is a classified as a CBA area. Bridge will exceed 10m2, and will occur within the watercourse</li> </ul> <p><b>geographical co-ordinates for triggered area:</b></p> <p>start:</p> <table border="1" style="width: 100%;"> <tr> <td>30°14'00.65" S</td> <td>30°43'59.67" E</td> </tr> </table> <p>end:</p> <table border="1" style="width: 100%;"> <tr> <td>30°14'00.43" S</td> <td>30°43'59.62" E</td> </tr> </table>		30°14'00.65" S	30°43'59.67" E	30°14'00.43" S	30°43'59.62" E
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30°14'00.43" S	30°43'59.62" E							
Listing Notice 3 of 2014	23 (ii) (a)(d)(vii)	the expansion of infrastructure...where	The footprint of the new portal bridge structure MAY be expanded by more					

(GNR 324):		the physical footprint is expanded by 10m2 or more...where such expansion occurs in a watercourse	<p>than 10m2. The structure is within a watercourse.</p> <p>start:</p> <table border="1" data-bbox="975 293 1461 338"> <tr> <td>30°14'00.65" S</td> <td>30°43'59.67" E</td> </tr> </table> <p>end:</p> <table border="1" data-bbox="975 394 1461 439"> <tr> <td>30°14'00.43" S</td> <td>30°43'59.62" E</td> </tr> </table>	30°14'00.65" S	30°43'59.67" E	30°14'00.43" S	30°43'59.62" E
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30°14'00.43" S	30°43'59.62" E						
Listing Notice 3 of 2014 (GNR 324):	23 (ii) (a)(d)(x)(aa)	the expansion of infrastructure...where the physical footprint is expanded by 10m2 or more...where such expansion occurs in a watercourse...outside urban areas...	<p>The footprint of the new portal bridge structure MAY be expanded by more than 10m2.</p> <p>The project site occurs within a "normal" protected area, as per ecological report.</p> <p>start:</p> <table border="1" data-bbox="975 701 1461 745"> <tr> <td>30°14'00.65" S</td> <td>30°43'59.67" E</td> </tr> </table> <p>end:</p> <table border="1" data-bbox="975 801 1461 846"> <tr> <td>30°14'00.43" S</td> <td>30°43'59.62" E</td> </tr> </table>	30°14'00.65" S	30°43'59.67" E	30°14'00.43" S	30°43'59.62" E
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Furthermore, this application complies with the National Water Act (NWA) (Act No. 36 of 1998) and applies for water uses under Section 21 of the NWA. The Water Use Licence (WUL) Application will be undertaken by MBB Consulting Engineers.

### Key Findings and recommendations

Overall, the results of the impacts assessment emerge as having "negative low" significance after mitigation.

This BAR provides an assessment of both the benefits and potential negative impacts anticipated as a result of this proposed infrastructure project. Potential impacts were identified by professional judgement, project information, specialist information, experience of similar projects, a review of available literature, site visits, and consultation with relevant authorities and IAP's. Works of this nature can pose significant impacts on the environment which can include:

- *Ecological: The development footprint is situated within the KwaZulu-Natal Coastal Belt Grassland. The KwaZulu-Natal Coastal Belt Grassland threat status is 'Critically Endangered' and protection status is 'Normally Protected'. The proposed activity footprint overlaps with transformed land-cover and is regarded as possessing low sensitivity, albeit the surrounding landscape comprises of sensitive habitats, including Irreplaceable Critical Biodiversity Areas Soil Erosion/sedimentation*
- *Vegetation disturbance and alien/exotic vegetation invasion Spread and/or establishment of invasive alien species*
- *Surface water, Increase in sediment inputs & turbidity. Wetland types identified, were channelled valley bottoms and unchannelled valley bottoms.*
- *Erosion of surrounding vegetation types due to ineffective stormwater management measures*
- *Soil compaction and disturbance*
- *Soil disturbance*

➤ *Geotechnical aspects*

Having assessed the impacts of the proposal, there is unlikely to be any significant negative environmental impacts, provided the alignment is maintained as per the proposed preferred layout plan, and as per the recommendations of the specialist **Ecological, geotechnical and stormwater assessments**.

The findings preclude that there are no environmental fatal flaws that could prevent the proposed development, provided that the recommended mitigation and management measures contained within the Environmental Management Programme (EMPr) are implemented.

**Should this project be denied the following will be inevitable:**

- *Public safety concerns in the village will be an ongoing issue and concern*
- *Safe, adequate access to the either side of the stream in all weather conditions, will not be possible.*
- *No accessibility for light-medium traffic across Gumede River.*



## LIST OF ABBREVIATIONS USED IN THIS REPORT

BAR	BASIC ASSESSMENT REPORT
BID	BACKGROUND INFORMATION DOCUMENT
CA	COMPETENT AUTHORITY
CBA	CRITICAL BIODIVERSITY AREA
DFFE	DEPARTMENT FORESTRY, FISHERIES AND ENVIRONMENT
DWS	DEPARTMENT OF WATER AND SANITATION
EKZNW	EZEMVELO KWAZULU-NATAL WILDLIFE
EAP	ENVIRONMENTAL ASSESSMENT PRACTITIONER
EDTEA AFFAIRS	DEPARTMENT OF ECONOMIC DEVELOPMENT TOURISM & ENVIRONMENTAL
EIA	ENVIRONMENTAL IMPACT ASSESSMENT
EMPR	ENVIRONMENTAL MANAGEMENT PROGRAMME
I&AP'S	INTERESTED AND AFFECTED PARTIES
IDP	INTEGRATED DEVELOPMENT PLAN
NEMA	NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO.107 OF 1998)
NWA	NATIONAL WATER ACT
NGO	NON-GOVERNMENTAL ORGANISATION
PES	PRESENT ECOLOGICAL STATE
PPP	PUBLIC PARTICIPATION PROCESS
SANBI	SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE
VELD TYPE	VEGETATION OR HABITAT FORM
WETLAND ENVIRONMENTS	AN AREA OF LAND INTERMEDIATE BETWEEN AQUATIC AND MESIC
WUL	WATER USE LICENSE

**DEFINITIONS:** (relevant to this project: cited from the EIA Regulations 2014, amended document)

**“associated structures, infrastructure and earthworks”** means any structures, infrastructure or earthworks, including borrow pits, that is necessary for the development and functioning of a facility or activity;

**“canal”** means an open structure, that is lined or reinforced, for the conveying of a liquid or that serves as an artificial watercourse;

**“channel”** means an excavated hollow bed for running water or an artificial underwater depression to make a water body navigable in a natural watercourse, river or the sea;

**“decommissioning”** means to take out of active service permanently or dismantle partly or wholly, or closure of a facility to the extent that it cannot be readily recommissioned;

**“development”** means the building, erection, construction or establishment of a facility, structure or infrastructure, including associated earthworks or borrow pits, that is necessary for the undertaking of a listed or specified activity, [including any **“development footprint”** means any evidence of physical alteration as a result of the undertaking of any activity;

**“development setback”** means a setback line defined or adopted by the competent authority;

**“indigenous vegetation”** refers to vegetation consisting of indigenous plant species occurring naturally in an area, regardless of the level of alien infestation and where the topsoil has not been lawfully disturbed during the preceding ten years;

**“linear activit[ies]y”** means an activity that is arranged in or extending along one or more properties and which affects the environment or any aspect of the environment along the course of the activity, and includes railways, roads, canals, channels, funiculars, pipelines, conveyor belts, cableways, power lines, fences, runways, aircraft landing strips, firebreaks and telecommunication lines;

**“maintenance”** means actions performed to keep a structure or system functioning or in service on the same location, capacity and footprint;

**“maintenance management plan”** means a management plan for maintenance purposes defined or adopted by the competent authority;

**“the Act”** means the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended;

**“urban areas”** means areas situated within the urban edge (as defined or adopted by the competent authority), or in instances where no urban edge or boundary has been defined or adopted, it refers to areas situated within the edge of built-up areas;

**“watercourse”** means –

- (a) a river or spring;
- (b) a natural channel in which water flows regularly or intermittently;
- (c) a wetland, pan, lake or dam into which, or from which, water flows; and any collection of water which the Minister may, by notice in the *Gazette*, declare to be a watercourse as defined in the National Water Act, 1998 (Act No. 36 of 1998); and

a reference to a watercourse includes, where relevant, its bed and banks; and

**“wetland”** means land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

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**APPENDIX D: SPECIALIST REPORTS**

**Appendix E: DETAILS OF PUBLIC PARTICIPATION PROCESS UNDERTAKEN:**

- ***COPY OF BID SUBMITTED,***
- ***COPY OF CORRESPONDENCE TO/FROM AUTHORITIES/IAP'S,***
- ***COMMENTS/RESPONSES REPORT;***
- ***COPY OF ON-SITE NOTICES/PROOF,***
- ***PROOF OF ADVERTS,***
- ***I&AP REGISTER***
- ***PUBLIC MEETING DETAILS/MINUTES/PHOTOGRAPHS (IF APPLICABLE);***

**APPENDIX F: DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)**

**APPENDIX G: CV-EAP, EAP AND SPECIALIST: DECLARATION OF INTEREST**

## DEPARTMENTAL REFERENCE NUMBER(S)

File reference number (EIA):	<b>DC21/0020/2021</b> <b>NEAS: KZN/EIA/0001607/2021</b>
File reference number (Waste Management Licence):	N/A

## SECTION A: DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP) AND SPECIALISTS

### 1. Name, contact details and expertise of Environmental Assessment Practitioner (EAP)

Name and contact details of the EAP who prepared this report:

Business name of EAP:	<b>EnAq Consulting cc</b>		
Physical address:	<b>23 Dawn Crescent, Westville</b>		
Postal address:			
Postal code:	<b>3629</b>	Cell:	<b>082 8753710</b>
Telephone:	<b>(031) 262 3171</b>	Fax:	<b>031-262 2279</b>
E-mail:	<b>urvassi@enaq.co.za</b>		

Table 1: EAP QUALIFICATIONS/EXPERIENCE (CV & DECLARATION OF INTEREST: APPENDIX G)

	Education qualifications	Professional affiliations	Experience at environmental assessments (yrs)
<b>URVASSI HURBURUN Reg EAP, Pr.Sci.Nat</b>	<b>B.Sc (Hons)</b>	- <b>Registered EAP (2019/1754)</b> - <b>Member of SACNASP (400388/04)</b> - <b>Member of IAIA</b>	<b>24</b>
		- <b>Member of SAIOSH</b>	

### 2. Names and Expertise of Representatives of the EAP

Names and details of the expertise of each representative of the EAP involved in the preparation of this report:

Table 2: NAMES/EXPERTISE: REPS OF EAP

Name of representative of the EAP	Education qualifications	Professional affiliations	Experience at environmental assessments (yrs)
<b>DAVINITA NAIDOO</b>	<b>BSSGEM (Geography and Environmental</b>	-	<b>1</b>

	<b>Management)</b>		
<b>TALIA PILLAY</b>	<b>Bachelor of Environmental Science</b>	-	<b>6 Months</b>
<b>SELINA NIRMAN</b>	BSc Environmental Science  BSc Honours Environmental Management, Cum Laude	-	<b>1</b>

### 3. Names and Expertise of Specialists (Declaration of Interest: Appendix G)

Table 3: Names and details of the expertise of each specialist that has contributed to this report:

Name of specialist	Education qualifications	Field of expertise	Section/ s contributed to in this basic assessment report	Title of specialist report/ s as attached in Appendix D
Mr. A. Husted	Freshwater Ecologist	Flora Assessment, Wetland Report	B, C, D and E	Vegetation and Wetland Baseline & Risk Assessment for the proposed Gumedede Bridge Upgrade Project Umdoni, KwaZulu-Natal
Miss E. Angath	Engineering Geologist	Geotechnical Report	B, C, D and E	Report to Vuba Imagineers on the Results of a Geotechnical Investigation for the Proposed Gumedede Bridge Located in Ward 16 within the Umdoni Municipality, KwaZulu-Natal

## SECTION B: ACTIVITY INFORMATION

### 1. Project Title

**PROPOSED CONSTRUCTION OF GUMEDE BRIDGE,  
UMDONI LOCAL MUNICIPALITY**

## 2. Project Description

### Detailed description of the project:

The project involved entails re-construction of existing storm damaged bridge and approaches to accommodate light to medium weight traffic across Gumede River.

The project is situated within Ugu District Municipality under the administration of Umdoni Municipality in Scottburgh. The project site can be accessed by proceeding from Scottburgh take Dududu road and head north west for about 7.5km and taking the right turn onto a gravel road for about 1.6km to arrive at the bridge. The respective site co-ordinates are as follows: 30°14'00.59"S; 30°43'59.66"E. The site falls within sparsely built up communal lands.

The Umdoni Local Municipality is located within Ugu District Municipality about 50km from the city of Durban and 65km from Port Shepstone along the South Coast. Umdoni Municipality is strategically located along major route N2, R612 and R102. It serves as the gateway of Ugu District Municipality from the North. The Umdoni Local Municipality is a Category B (which refers to a local municipality that shares municipal executive and legislative authority in its area with a Category C municipality within whose area it falls in i.e. Ugu District Municipality). It is the smallest of four municipalities in the district, accounting for just under a quarter of its geographical area.

### Gumede Bridge Project will entail:

- Demolishing of existing collapsed portal culvert bridge and construction of a new portal culvert bridge that measures approximately 7.12m long and 6.1m wide.
- Construction Bridge approaches with a total length of about 240m and width matching a standard 5m wide road with gravel wearing course finish.
- Adequate storm water management system and earth retaining structures in the form of gabions are to be provided as necessary. Specialist support services such as topographical survey also form part of the works.

### Based upon the design developed, the works can be summarized as follows:

- The bridge to measure 6.1m wide x 7.12m long x 1.8m high.
- To comprise: 2no. x 6.1m long x 1.8m high x 1.8m wide portals + 1no. x 6.1m long x 1.8m high x 2.4m wide portals, 200mm thick deck slab and 200mm thick base slab on micro piles, Gabion wing walls, 200mm thick approach slabs and 300mm high x 1m long guide block.
- 5m wide x 0.24km long approach road finished by 150mm layer of Gravel wearing course on at least 150mm layer of G7 selected subgrade/fill material.
- Associated storm water management by means of side drains, mitre drains and culverts.
- Fill protection and slope stability mechanisms by use of gabions baskets.

### Earthwork volumes:

Road	Cut Available For Fill (m <sup>3</sup> )	Excess Cut (m <sup>3</sup> )	Fill Shortfall (m <sup>3</sup> )	Top Soil to be Removed (m <sup>3</sup> )
Gumede Approaches	202	-	60	276

**Material quantities required:**

Element	Unit	Quantity
Blinding	m <sup>3</sup>	4
Raft foundation	m <sup>3</sup>	10
1800 x 1800 Class 75 S Portals	no.	10
2400 x 1800 Class 75 S Portals	no.	5
Top Slab	m <sup>3</sup>	10
Wearing Aprons	m <sup>3</sup>	28
Gabion Wing Walls	m <sup>3</sup>	56
Reinforcement	Tonnes	6
Ø300 mm Piles	m	42

**Alternatives:**

**Location:** No alternative location could be considered at this stage for the following reasons:

- *The construction of the new bridge has to occur at the location where the existing portal culvert bridge was damaged and then collapsed.*

**Design/layout: The bridge design (portal culvert bridge)**

- *A portal culvert bridge at river bed level supported on a pile raft foundation and finished with a reinforced concrete top slab has been evaluated and adopted for this design. It was found to be structurally and economically viable for this particular site.*

**As per ECOLOGICAL REPORT:** It is clear from field observations that the landscape possesses vegetation types altered by anthropogenic activities, as well as natural features.

The development footprint is situated within the KwaZulu-Natal Coastal Belt Grassland. The KwaZulu-Natal Coastal Belt Grassland threat status is 'Critically Endangered' and protection status is 'Normally Protected'. The proposed activity footprint overlaps with transformed land-cover and is regarded as possessing low sensitivity, albeit the surrounding landscape comprises of sensitive habitats, including Irreplaceable Critical Biodiversity Areas. These sensitive habitats possess flora SCC, as well as provide an array of ecosystem services. *Sideroxylon inerme* specimen adjacent to the road within the wetland must be relocated as prescribed.

There are potential risks to the surrounding sensitive habitat arising from the construction of the proposed activity. It is therefore imperative that all habitats not within the development footprint regarded as possessing 'high' sensitivity be avoided and declared as 'no-go' areas.

It is the opinion of the specialists that the rebuilding of the Gumede bridge is feasible. However, the impacts associated with the proposed development activities must be mitigated against to ensure the maintenance of ecological processes, and the concomitant delivery of ecosystem services, of nearby habitats. Careful consideration must be afforded to each of the recommendations provided herein and proven ecological (or environmental) controls and mitigation measures must be entrenched in the management framework.



## AS PER GEOTECHNICAL REPORT:

It is imperative that the well-developed groundwater condition and risk of inundation be taken into account during design and construction of the proposed structure. In this regard, it is considered that temporary dewatering of excavations and/or the use of a coffer dam will be required during construction. It is considered that the following foundation types will be suited to the proposed developments and underlying founding conditions:

- iii. Spread/Pad Footing;
- iv. Caissons; and/or
- iii Piled Foundation

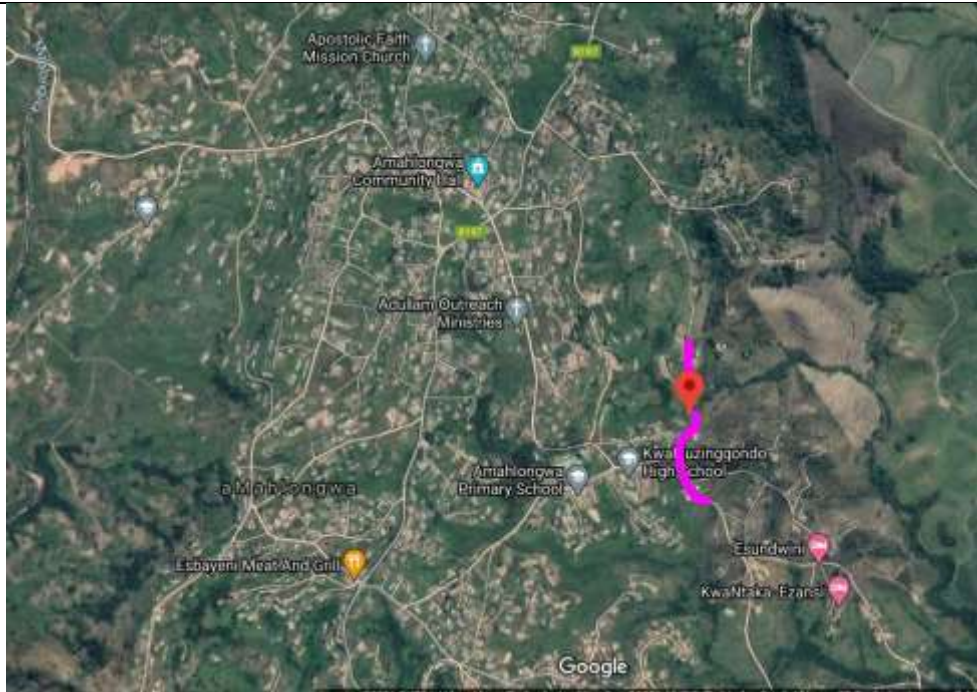
Taking into consideration the shallow groundwater table, it is considered that a piled foundation solution may prove to be the more practical solution for this site. In this regard, the auger pile and rotapile are likely to be suitable pile types for the site conditions. Spread footing and caissons can be considered along the southern abutment provided the surface and groundwater can be controlled. All earthworks should be carried out in a manner to promote stable development of the site. It is recommended that earthworks be carried out along the guidelines given in SANS 1200 (current version).

Earthworks and drainage measures should be designed, by an Engineer, in such a way as to prevent ponding of, or high concentrations of, stormwater or groundwater anywhere on the site, both during and after the development. Suitable measures to engineer's detail are required to manage potential hydraulic flood scour

**Based on the results of the fieldwork undertaken during this investigation, it is considered that this site is generally stable and suitable for the proposed development, provided that the recommendations given in this report are adhered to.**

**Table 4: coordinates for the proposed PREFERRED site (as per Layout Plan, Refer Appendix A). Please refer to the layout plan that details the proposed preferred site for the bridge reconstruction**

<i>Local Municipality</i>	<i>Ward</i>	<i>Catchments</i>	<i>Co-ordinates</i>
<i>Umdoni Local Municipality (KZN212)</i>	<b>16</b>	<i>Mvoti-Mzimkhuku water management area.</i>  <i>Amhlongwa Catchment</i>	30°14'31.09S 30°42'58.53E



**LOCALITY IMAGES**

(PLEASE REFER TRIGGERED ACTIVITIES AS PER LN1 and LN3 (details of the triggers are as per table 5).

**Bridge specifications**

Upvc pipe		trench	
diameter	length	width	depth
110mm	260m	1.2m	Range from 2-5m
160mm	1640m	1.2m	
200mm	655m	1.2m	
250mm	1280m	1.2m	
315mm	570m	1.2m	

Steel pipe		trench	
diameter	length	width	depth
150mm	35m	1.2m	Range from 2-5m
315mm	25m	1.2m	

During the site visit, it was observed that there is an existing portal culvert bridge structure that has been damaged and collapsed due to floods at Gumede River crossing. The stream is currently impassable by vehicular traffic and the villagers are currently using alternative routes to access their homes. It is therefore proposed to construct a new bridge to enable easy access to the either side of the stream in all weather conditions.

#### The objectives of the project are:

- To address public safety concerns in the village, the Umdoni Municipality intends to construct an appropriate river crossing in the form of a bridge.
- To construct a new bridge to enable easy, safe, adequate access to the either side of the stream in all weather conditions.
- To choose and design a bridge structure that underpins the factors of durability, safety, economy, constructability and aesthetics.
- To accommodate light-medium traffic across Gumede River.

#### BENEFITS:

- ✓ To provide a new bridge to enable easy, safe, adequate access to the either side of the stream in all weather conditions.
- ✓ To create temporary employment during the construction of the works.  
Community participation and governance in the provision of the improved infrastructure
- ✓ Progressive developments of this nature serve to address social responsibilities, generating societal pride that is derived from the enhancement of the lives of communities from the roots upward
- ✓ There will be a significant requirement for unskilled labor from the community.
- ✓ It is a requirement in the contract documents that maximum use be made of local labor and sub-contractors.
- ✓ It will also be a requirement that more experienced and established contractors train and mentor labor and emerging subcontractors, during implementation.
- ✓ This project supports the employment of women.

The project is therefore subjected to a Basic assessment process and environmental authorisation is required from the competent authority being the Department of Economic Development, Tourism and Environmental Affairs (EDTEA). EnAq Consulting cc has been appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the Basic assessment process for this proposed project.

### 3. Activity Description

Describe each listed activity as per Listing Notice 1 (GNR 983, 4 December 2014), Listing Notice 2 (GNR 984, 4 December 2014) or Listing Notice 3 (GNR 985, 4 December 2014).

Table 5

Legislation	Listed Activity Reference	Description as per Regulation	Relevance/Applicability to this Project				
Listing Notice 1 of 2014 (GNR 327)	31 (i)	the decommissioning of existing facilities, structures or infrastructure for: any development and related operation activity or activities listed in this notice, listing notice 2 of 2014 or listing notice 3 if 2014	<p><i>The existing damaged bridge structure will be decommissioned.</i></p> <p><b>geographical co-ordinates for triggered area:</b></p> <p>start:</p> <table border="1"> <tr> <td>30°14'00.65" S</td> <td>30°43'59.67" E</td> </tr> </table> <p>end:</p> <table border="1"> <tr> <td>30°14'00.43" S</td> <td>30°43'59.62" E</td> </tr> </table>	30°14'00.65" S	30°43'59.67" E	30°14'00.43" S	30°43'59.62" E
30°14'00.65" S	30°43'59.67" E						
30°14'00.43" S	30°43'59.62" E						
Listing Notice 1 of 2014 (GNR 327)	12(ii)(a)	<p>The development of- (ii) infrastructure or structures with a physical footprint of 100 square meters or more;</p> <p>Where such development occurs-</p> <p>(b) Within a watercourse</p>	<ul style="list-style-type: none"> <li>- <i>Construction Bridge approaches with a total length of 240m.</i></li> <li>- <i>There is an existing stream crossing where the existing Gumede Bridge is located.</i></li> <li>- <i>Therefore, a system of concrete portal culverts shall be used to construct a new low level bridge at the river crossing. (Tributary of Mahlongwa River passes through here)</i></li> </ul> <p><b>geographical co-ordinates for triggered area:</b></p> <p>start:</p> <table border="1"> <tr> <td>30°14'00.65" S</td> <td>30°43'59.67" E</td> </tr> </table> <p>end:</p> <table border="1"> <tr> <td>30°14'00.43" S</td> <td>30°43'59.62" E</td> </tr> </table>	30°14'00.65" S	30°43'59.67" E	30°14'00.43" S	30°43'59.62" E
30°14'00.65" S	30°43'59.67" E						
30°14'00.43" S	30°43'59.62" E						
Listing Notice 1 of 2014 (GNR 327)	19(i)	The infilling or depositing of any material of more than <u>10</u> cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than <u>10</u> cubic meters from-	<ul style="list-style-type: none"> <li>- <i>There is a stream where the existing Gumede Bridge is located. (Tributary of Mahlongwa River passes through here).</i></li> <li>- <i>Approximately 25m3 will be excavated</i></li> </ul> <p><b>geographical co-ordinates for triggered area:</b></p>				

		(ii) a watercourse	<p>start:</p> <table border="1"> <tr> <td>30°14'00.65" S</td> <td>30°43'59.67" E</td> </tr> </table> <p>end:</p> <table border="1"> <tr> <td>30°14'00.43" S</td> <td>30°43'59.62" E</td> </tr> </table>	30°14'00.65" S	30°43'59.67" E	30°14'00.43" S	30°43'59.62" E
30°14'00.65" S	30°43'59.67" E						
30°14'00.43" S	30°43'59.62" E						
Listing Notice 3 of 2014 (GNR 324)	14(ii)(a)(d)(vii)	<p>The development of- (iii) bridges exceeding 10 square meters in size;</p> <p>(xii) infrastructure or structures with a physical footprint of 10 square meters or more;</p> <p>Where such development occurs- (b) within a watercourse</p>	<p>- the area is classified as a CBA area. Bridge will exceed 10m<sup>2</sup>, and will occur within the watercourse</p> <p><b>geographical co-ordinates for triggered area:</b></p> <p>start:</p> <table border="1"> <tr> <td>30°14'00.65" S</td> <td>30°43'59.67" E</td> </tr> </table> <p>end:</p> <table border="1"> <tr> <td>30°14'00.43" S</td> <td>30°43'59.62" E</td> </tr> </table>	30°14'00.65" S	30°43'59.67" E	30°14'00.43" S	30°43'59.62" E
30°14'00.65" S	30°43'59.67" E						
30°14'00.43" S	30°43'59.62" E						
Listing Notice 3 of 2014 (GNR 324):	23 (ii) (a)(d)(vii)	the expansion of infrastructure...where the physical footprint is expanded by 10m <sup>2</sup> or more...where such expansion occurs in a watercourse	<p>The footprint of the new portal bridge structure MAY be expanded by more than 10m<sup>2</sup>. The structure is within a watercourse.</p> <p>start:</p> <table border="1"> <tr> <td>30°14'00.65" S</td> <td>30°43'59.67" E</td> </tr> </table> <p>end:</p> <table border="1"> <tr> <td>30°14'00.43" S</td> <td>30°43'59.62" E</td> </tr> </table>	30°14'00.65" S	30°43'59.67" E	30°14'00.43" S	30°43'59.62" E
30°14'00.65" S	30°43'59.67" E						
30°14'00.43" S	30°43'59.62" E						
Listing Notice 3 of 2014 (GNR 324):	23 (ii) (a)(d)(x)(aa)	the expansion of infrastructure...where the physical footprint is expanded by 10m <sup>2</sup> or more...where such expansion occurs in a watercourse...outside urban areas...	<p>The footprint of the new portal bridge structure MAY be expanded by more than 10m<sup>2</sup>.</p> <p>The project site occurs within a "normal" protected area, as per ecological report.</p> <p>start:</p> <table border="1"> <tr> <td>30°14'00.65" S</td> <td>30°43'59.67" E</td> </tr> </table> <p>end:</p> <table border="1"> <tr> <td>30°14'00.43" S</td> <td>30°43'59.62" E</td> </tr> </table>	30°14'00.65" S	30°43'59.67" E	30°14'00.43" S	30°43'59.62" E
30°14'00.65" S	30°43'59.67" E						
30°14'00.43" S	30°43'59.62" E						

## 4. Feasible and Reasonable Alternatives

**“Alternatives”**, in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

- (a) the property on which or location where it is proposed to undertake the activity;
- (b) the type of activity to be undertaken;
- (c) the design or layout of the activity;
- (d) the technology to be used in the activity;
- (e) the operational aspects of the activity; and
- (f) the option of not implementing the activity.

Alternatives that were considered are included in this report. Alternatives include a consideration of all possible means by which the purpose and need of the proposed activity can be accomplished in the specific instance taking account of the interest of the proponent/applicant in the activity. The no-go alternative has also been included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.

## 5. Activity Position

The position of the activity is as per latitude and longitude. The co-ordinates are recorded in degrees, minutes and seconds.

Table 6: Details of the relevant property details affected by this proposed reticulation are detailed as below

DESCRIPTION-FARM TOWN	21 DIGIT SURVEYOR GENERAL CODE:
Farm 8317, Portion 0, Portion 1	NOE00000000831700000

- **Process followed to reach the proposed PREFERRED ALTERNATIVE WITHIN THE SITE: i.e. site, layout, process etc.**

To consider layout iterations and options, these would be considered on a desktop level as well as during site inspections in consultation with the Engineers, and ecologist.

In this case **No alternative location** could be considered at this stage for the following reasons:

*The construction of the new bridge has to occur **at the location** where the existing portal culvert bridge was damaged and then collapsed.*

**NO ALTERNATIVE layout:** for the design option of the proposed Gumede Bridge was considered as a portal culvert bridge at river bed level supported on a pile raft foundation was found to be the structurally and economically viable option for this particular site

The triggered areas include the following:

Proposed portal culvert bridge 7.12m long and 6.1m wide. (start:

30°14'00.65" S	30°43'59.67" E
----------------	----------------

end:

30°14'00.43" S	30°43'59.62" E
----------------	----------------

–refer layout plan, APP A)

**SITE ALTERNATIVES**

Alternative : preferred alternative				
<p>Proposed portal culvert bridge 7.12m long and 6.1m wide:  <b>REASONS FOR BEING PREFERRED:</b>                      - structurally and economically viable for this particular site</p>				
Description	Co-ordinates			
Proposed portal culvert bridge 7.12m long and 6.1m wide	start:			
	<table border="1"> <tr> <td>30°14'00.65" S</td> <td>30°43'59.67" E</td> </tr> </table>	30°14'00.65" S	30°43'59.67" E	
30°14'00.65" S	30°43'59.67" E			
	end:			
	<table border="1"> <tr> <td>30°14'00.43" S</td> <td>30°43'59.62" E</td> </tr> </table>	30°14'00.43" S	30°43'59.62" E	
30°14'00.43" S	30°43'59.62" E			
Alternative Site: N/A				
Description	Lat (DDMMSS)	Long (DDMMSS)		

**In the case of linear activities:**

**Alternative:**

Alternative S1 (preferred or only route alternative): **Not applicable for linear activities**

**Latitude (S):**

**Longitude (E):**

- Starting point of the activity
- Middle point of the activity
- End point of the activity


For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 500m along the route for each alternative alignment. **N/A**

**2. PREFERRED DESIGN alternatives for the proposed BRIDGE**

Description and reasons for being the "preferred option"	Latitude (DDMMSS) Longitude (DDMMSS)		
➤ Proposed PORTAL Culvert ( - A portal culvert bridge at river bed level supported on a pile raft	start: <table border="1"> <tr> <td>30°14'00.65" S</td> <td>30°43'59.67" E</td> </tr> </table> end:	30°14'00.65" S	30°43'59.67" E
30°14'00.65" S	30°43'59.67" E		

<p><i>foundation and finished with a reinforced concrete top slab has been evaluated and adopted for this design. It was found to be structurally and economically viable for this particular site</i></p> <p><b>Alternative A1:</b> no practical or feasible options TO CONSIDER FURTHER (based on technical, biophysical and socio-economic aspects).</p>	30°14'00.43" S	30°43'59.62" E

**c) Technology alternatives**

<ul style="list-style-type: none"> <li>• <b>Alternative T1 (preferred alternative):</b> The technology alternative that was considered was to have a reinforced concrete bridge but it was found not economically viable due to the small size of the crossing.</li> </ul>
<p><b>Alternative T2: N/A technology to be used is already considered as the most appropriate technology</b></p>

**d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives): N/A**

<b>Alternative 1 (preferred alternative)</b>		
<b>Alternative 2</b>		
<b>Alternative 3</b>		

**e) No-go alternative**

<p><b>The Objectives of the Project Are:</b></p> <ul style="list-style-type: none"> <li>➤ <i>To address public safety concerns in the village, the Umdoni Municipality intends to construct an appropriate river crossing in the form of a bridge.</i></li> <li>➤ <i>To construct a new bridge to enable easy, safe, adequate access to the either side of the stream in all weather conditions.</i></li> <li>➤ <i>To choose and design a bridge structure that underpins the factors of durability, safety, economy, constructability and aesthetics.</i></li> <li>➤ <i>To accommodate light-medium traffic across Gumede River</i></li> </ul> <p><b>SHOULD THIS PROJECT NOT BE AUTHORISED THEN THE FOLLOWING WILL BE INEVITABLE:</b></p> <ul style="list-style-type: none"> <li>➤ <i>Safety issues to pedestrians and livestock will still prevail regarding access across the stream</i></li> <li>➤ <i>Safety issues to lights and medium traffic will still continue</i></li> <li>➤ <i>Local employment during the construction of the works will not materialise</i></li> </ul>
--



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Paragraphs 3 – 13 below should be completed for each alternative.

## 6. Physical Size of the Activity

Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

**Alternative:**

(preferred activity alternative):

Alternative A2 (if any)n/a

Alternative A3 (if any)

or, for linear activities:

**Alternative:**

**Size of the activity:**

	m <sup>2</sup>
	m <sup>2</sup>
	m <sup>2</sup>

**Preferred activity alternative:**

- *Proposed GUMEDE bridge(co-ords )*

Alternative A1 (if any): **N/A**

**Length of the activity:**

7.12m long
N/A

Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

<p><b>Preferred activity Alternative:</b></p> <ul style="list-style-type: none"> <li>➤ <i>Proposed Gumede Bridge</i></li> </ul> <p>start:</p> <table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">30°14'00.65" S</td> <td style="text-align: center;">30°43'59.67" E</td> </tr> </table> <p>end:</p> <table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">30°14'00.43" S</td> <td style="text-align: center;">30°43'59.62" E</td> </tr> </table>	30°14'00.65" S	30°43'59.67" E	30°14'00.43" S	30°43'59.62" E	<p><b>Size of the site/servitude:</b> 7.12m long and 6.1m wide.</p>
30°14'00.65" S	30°43'59.67" E				
30°14'00.43" S	30°43'59.62" E				
Alternative A1 (if any): <b>N/A</b>	N/A				

**Alternative: N/A**

**Length of the**

**activity:**

	m
	m

Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

**Size of the site/servitude:**

	m <sup>2</sup>
	m <sup>2</sup>

## 7. Site or Route Plan (refer Appendix A)

A detailed site or route plan(s) has been prepared for each **alternative site** or alternative activity where applicable.

**The site or route plans indicates the following:**

- 1.1. the scale of the plan is;
- 1.2. the property boundaries and numbers/ erf/ farm numbers of all adjoining properties of the site;
- 1.3. the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
- 1.4. the exact position of each element of the application as well as any other structures on the site;
- 1.5. the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
- 1.6. walls and fencing including details of the height and construction material;
- 1.7. servitudes indicating the purpose of the servitude;
- 1.8. sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):
  - rivers, streams, drainage lines or wetlands;
  - the 1:100 year flood line (where available or where it is required by DWA);
  - ridges;
  - cultural and historical features;
  - areas with indigenous vegetation including protected plant species (even if it is degraded or infested with alien species);
- 1.9. for gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
- 1.10. Positions from where photographs of the site were taken.

## 8. Site Photographs (Appendix B)

Colour photographs from the centre of the site were taken in the eight major compass directions and includes a description. Photographs have been attached under Appendix B to this report. Additional photographs of relevant features on the site, have also been included.

## 9. Facility Illustration (Appendix C): N/A

A detailed illustration of the facility must be provided at a scale of 1:200 where applicable. The illustrations must be to scale and must represent a realistic image of the planned activity/ies.

## 10. Activity Motivation

### 10.1 Socio-economic value of the activity

What is the expected capital value of the activity on completion?  
 What is the expected yearly income that will be generated by or as a result of the activity?  
 Will the activity contribute to service infrastructure?  
 Is the activity a public amenity?  
 How many new employment opportunities will be created in the development phase of the activity?  
 What is the expected value of the employment opportunities during the development phase?  
 What percentage of this will accrue to previously disadvantaged individuals?  
 How many permanent new employment opportunities will be created during the operational phase of the activity?  
 What is the expected current value of the employment opportunities during the first 10 years?  
 What percentage of this will accrue to previously disadvantaged individuals?

?		
N/A		
✓ YES		NO
YES ✓		NO
R		
%		
R0.00		
%		

### 10.2 Need and desirability of the activity, motivation for preferred site

**Motivate and explain the need and desirability of the activity (including demand for the activity) and motivation for the preferred site:**

**Gumede Bridge Project will entail:** Demolishing of existing collapsed portal culvert bridge and construction of a new portal culvert bridge that measures approximately 7.12m long and 6.1m wide. During the site visit, it was observed that there is an existing portal culvert bridge structure that has been damaged and collapsed due to floods at Gumede River crossing. The stream is currently impassable by vehicular traffic and the villagers are currently using alternative routes to access their homes. It is therefore proposed to construct a new bridge to enable easy access to the either side of the stream in all weather conditions.

**objectives of the project are:**

- *To address public safety concerns in the village, the Umdoni Municipality intends to construct an appropriate river crossing in the form of a bridge.*
- *To construct a new bridge to enable easy, safe, adequate access to the either side of the stream in all weather conditions.*
- *To choose and design a bridge structure that underpins the factors of durability, safety, economy, constructability and aesthetics.*
- *To accommodate light-medium traffic across Gumede River.*

**Indicate any benefits that the activity will have for society in general:**

- ✓ *To create temporary employment during the construction of the works. Community participation and governance in the provision of the improved infrastructure*
- ✓ *Progressive developments of this nature serve to address social responsibilities, generating societal pride that is derived from the enhancement of the lives of communities from the roots upward*
- ✓ *There will be a significant requirement for unskilled labor from the community.*
- ✓ *It is a requirement in the contract documents that maximum use be made of local labor and sub-contractors.*
- ✓ *It will also be a requirement that more experienced and established contractors train and mentor labor and emerging subcontractors, during implementation.*
- ✓ *This project supports the employment of women.*

**Indicate any benefits that the activity will have for the local communities where the activity will be located:**

- ✓ *To provide a new bridge to enable easy, safe, adequate access to the either side of the stream in all weather conditions.*

<b>Is the activity permitted in terms of the property's existing land use rights?</b>	YES	<input type="checkbox"/>	<b>Please explain</b>
There is currently a bridge on the site.			
<b>Will the activity be in line with the following?</b>			
<b>(a) Provincial Spatial Development Framework (PSDF)</b>	YES	<input type="checkbox"/>	<b>Please explain</b>
<p><b>AS per the umdoni municipality spatial development framework 2020/2021</b>, The objectives of SPLUMA as defined in the Act, are to:</p> <ul style="list-style-type: none"> <li>• Provide for uniform, effective and comprehensive system of spatial planning and land use management in the Republic</li> <li>• Ensure that the system of spatial planning promotes social and economic inclusion</li> <li>• Spatial efficiency, whereby land development optimises the use of existing resources and infrastructure and decision-making procedures minimise negative social, economic and environmental impacts.</li> </ul> <p>• <b>The PROPOSED PROJECT is in line with these and will lead to improved and safe infrastructure, economic opportunities and an improved quality of life for its beneficiaries. The project is also subject to an environmental assessment process, and the measures as per the EMPr will ensure mitigation of negative social, economic and environmental impacts.</b></p>			
<b>(b) Urban edge / Edge of Built environment for the area</b>	YES	<input type="checkbox"/>	<b>Please explain</b>
the project lies within a rural area			

<p><b>(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).</b></p>	<p>YES</p>	<p><input checked="" type="checkbox"/></p>	<p>Please explain</p>
<p>The integrity of the IDP/SDF will not be compromised. 2020/2021 IDP:</p>			
<p><b>THE PROPOSED PROJECT HAS BEEN INCLUDED IN THE LIST “PRIORITY PROJECTS” for WARD 16.</b></p>			
<p><b>(d) Approved Structure Plan of the Municipality</b></p>	<p>YES</p>	<p><input checked="" type="checkbox"/></p>	<p>Please explain</p>
<p>The proposed project is a reconstruction of collapsed, damaged infrastructure, so it is in line with the approved structure plan</p>			
<p><b>(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)</b></p>	<p>YES</p>	<p><input checked="" type="checkbox"/></p>	<p>Please explain</p>
<p>It would not compromise existing env. Management priorities, as this is a justified and much needed reconstruction.</p>			
<p><b>(f) Any other Plans (e.g. Guide Plan) n/a</b></p>	<p>YES</p>	<p><input checked="" type="checkbox"/></p>	<p>Please explain</p>
<p>THE PROPOSED project is in line with the IDP. IT is assumed that it will in effect be in line with all other relevant plans.</p>			
<p><b>Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?</b></p>	<p>YES</p>	<p><input checked="" type="checkbox"/></p>	<p>Please explain</p>
<p><b>Yes:</b> The project has been considered a priority by the municipality. The project is included in the IDP.</p>			

<p><b>Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)</b></p>	YES	<input checked="" type="checkbox"/>	Please explain
<p>The existing portal culvert bridge structure has been damaged and collapsed due to floods at Gumede River crossing. The stream is currently impassable by vehicular traffic and the villagers are currently using alternative routes to access their homes. It is therefore proposed to construct a new bridge to enable easy access to the either side of the stream in all weather conditions. . Therefore, IT IS A SOCIETAL priority.</p>			
<p><b>Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development?</b></p>	YES	<input checked="" type="checkbox"/>	Please explain
<p>ADDITIONAL capacity in the form of the bridge and road infrastructure will need to be provided. The project was provided for in the municipality infrastructure planning. The project was prioritized, the budget was allocated and approved.</p>			
<p><b>Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</b></p>	YES	<input checked="" type="checkbox"/>	Please explain
<p>The project was provided for in the municipality infrastructure planning. The project was prioritized, the budget was allocated and approved.</p>			
<p><b>Is this project part of a national programme to address an issue of national concern or importance?</b></p>	YES	<input checked="" type="checkbox"/>	Please explain
<p>The national development plan 2030 identifies 'expanding infrastructure' as a priority.</p>			
<p><b>Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)</b></p>	YES	<input checked="" type="checkbox"/>	Please explain
<p><b>Advantages of the proposed location:</b></p> <ul style="list-style-type: none"> <li>- <i>Already impacted environment : the collapsed structure is at the same location where reconstruction will occur</i></li> <li>- <i>The site does not contain cultural or historical elements</i></li> <li>- <i>The development will not result in the removal of traditional access used by local communities</i></li> </ul>			

<b>Is the development the best practicable environmental option for this land/site?</b>	<b>YES</b>	<input checked="" type="checkbox"/>	<b>Please explain</b>
there is an existing portal culvert bridge structure that has been damaged and collapsed due to floods at Gumede River crossing. Therefore this reconstruction at this location will enable easy access to the either side of the stream in all weather conditions. It is the best practicable environmental option. The reconstruction will occur within the existing footprint.			
<b>Will the benefits of the proposed land use/development outweigh the negative impacts of it?</b>	<b>YES</b>	<input checked="" type="checkbox"/>	<b>Please explain</b>
<ul style="list-style-type: none"> <li>✓ <i>To provide a new bridge to enable easy, safe, adequate access to the either side of the stream in all weather conditions.</i></li> <li>✓ <i>To create temporary employment during the construction of the works.</i></li> <li>✓ <i>Community participation and governance in the provision of the improved infrastructure</i></li> <li>✓ <i>Progressive developments of this nature serve to address social responsibilities, generating societal pride that is derived from the enhancement of the lives of communities from the roots upward</i></li> <li>✓ <i>There will be a significant requirement for unskilled labor from the community.</i></li> <li>✓ <i>It is a requirement in the contract documents that maximum use be made of local labor and sub-contractors.</i></li> <li>✓ <i>It will also be a requirement that more experienced and established contractors train and mentor labor and emerging subcontractors, during implementation.</i></li> <li>✓ <i>This project supports the employment of women.</i></li> </ul>			
<b>Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?</b>	<b>YES</b>	<input checked="" type="checkbox"/>	<b>Please explain</b>
It will set a precedent, as the upgrade will be in line with the EIA regulations 2014, and all applicable specialist studies will be undertaken. An EMPr will be drawn up, which will guide the, construction and post-construction phases. a rehabilitation programme will, also be utilised for the post-construction phase rehab.			
<b>Will any person's rights be negatively affected by the proposed activity/ies?</b>	<input checked="" type="checkbox"/>	<b>NO</b>	<b>Please explain</b>
The project is a, reconstruction and will BENEFIT all residents within the area.			
<b>Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?</b>	<input checked="" type="checkbox"/>	<b>NO</b>	<b>Please explain</b>
THE urban edge will not be compromised. The reconstruction is within a rural area.			

<b>Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?</b>	<b>YES</b>	<input type="checkbox"/>	<b>Please explain</b>
<p>The South African Government adopted the National Infrastructure Plan (NIP) in 2012. It seeks to transform the national economic landscape through the maximization of job creation and improved basic service delivery. The central premise includes upgrading existing and building new infrastructure. It calls for investments in: healthcare and education facilities; housing and electrification; sanitation facilities; road and railway infrastructure; construction of dams and ports.</p> <p>The plan is furnished with 18 Strategic Integrated Projects (SIPs) to help guide such investments. These catalytic projects align development and growth with cross-cutting areas. Some of these projects are relevant to Umdoni. Municipality, which the municipality takes cognizance of and seeks to align its development goals accordingly.</p> <p>THE PROJECT WILL CONTRIBUTE TO :</p> <p><b><i>SIP 18: Water and Sanitation Infrastructure: SIP 18 is a ten-year plan that seeks to address backlogs in water supply and basic sanitation to households. This will help serve social needs through efficient basic service delivery. It prioritizes on improving the management, rehabilitation and upgrading of existing infrastructure, the provision of new infrastructure</i></b></p>			
<b>What will the benefits be to society in general and to the local communities?</b>			<b>Please explain</b>
<ul style="list-style-type: none"> <li>➤ <i>To provide a new bridge to enable easy, safe, adequate access to the either side of the stream in all weather conditions.</i></li> <li>➤ <i>To create temporary employment during the construction of the works.</i></li> <li>➤ <i>Community participation and governance in the provision of the improved infrastructure</i></li> <li>➤ <i>Progressive developments of this nature serve to address social responsibilities, generating societal pride that is derived from the enhancement of the lives of communities from the roots upward</i></li> <li>➤ <i>There will be a significant requirement for unskilled labor from the community.</i></li> <li>➤ <i>It is a requirement in the contract documents that maximum use be made of local labor and sub-contractors.</i></li> <li>➤ <i>It will also be a requirement that more experienced and established contractors train and mentor labor and emerging subcontractors, during implementation.</i></li> <li>➤ <i>This project supports the employment of women.</i></li> </ul>			
<b>Any other need and desirability considerations related to the proposed activity?</b>			<b>Please explain</b>
<ul style="list-style-type: none"> <li>◆ <i>It will also be a requirement that more experienced and established contractors train and mentor labor and emerging subcontractors, during implementation.</i></li> <li>◆ <i>This project supports the employment of women.</i></li> </ul>			



<b>How does the project fit into the National Development Plan for 2030?</b>	<b>Please explain</b>
	<p>The National Planning Commission was established in 2009 under the leadership of former Minister Trevor Manuel. After extensive research and consultation with a wide range of stakeholders, a National Development Plan (NDP) commonly referred to as Vision 2030 has been drafted. It is quite evident that government places a high priority on the implementation of the plan and it can be expected that the NDP will be the compass by which the national government is going to steer the development path of South Africa into the future. The broad goal of this plan is to reduce unemployment, alleviate poverty and reduce inequality by 2030</p> <p>The Plan identifies the improvement of the quality of public services as critical to achieving transformation. This requires provinces to focus on identifying and overcoming the obstacles to achieving improved outcomes, including the need to strengthen the ability of local government to fulfil its developmental role.</p> <p>The proposed project aims to provide a safer and more resilient infrastructure, and in so doing improve the lives of the beneficiaries.</p>
	<p><b>Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.</b></p>
	<ul style="list-style-type: none"> <li>- The potential impact of the proposed development and the alternatives to lessen the impact on the environment has been investigated.</li> <li>- The potential impact on the environment, socio-economic conditions and cultural heritage has been taken into account during the planning phase as well as construction phase.</li> <li>- Identification, prediction and evaluation of actual and potential impacts and the risks, consequences and alternatives for mitigation of activities have been included in the BAR.</li> <li>- Public participation was adequately undertaken as per BAR.</li> </ul>
	<p><b>Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.</b></p>
	<p>Of the NEMA principles, the following are of particular relevance to these guidelines:</p> <ul style="list-style-type: none"> <li>- Development must be socially, environmentally, and economically sustainable.</li> <li>- That the negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented are minimized and remedied.</li> <li>- Equitable access to environmental resources benefits and services to meet basic human needs and to ensure human well-being must be pursued.</li> <li>- Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated.</li> <li>- The participation of all interested and affected parties must be promoted.</li> <li>- That negative impacts on the environment and on peoples environmental rights be anticipated and prevented and where they cannot be altogether avoided, is minimized and remedied</li> <li>- Decisions must be taken in an open and transparent manner, and access to information must be discharged in the national interest.</li> </ul>

Have any site alternatives been considered?: **NO**

YES	NO
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If "NO", alternatives, including alternative locations for the activity were investigated, motivate for not considering such

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- **No alternative locations were considered as** *The construction of the new bridge has to occur at the location where the existing portal culvert bridge was damaged and then collapsed. The bridge is required at that location for access requirements.*

## 11. Applicable Legislation, Policies and/or Guidelines

Below is a List all legislation, policies and/or guidelines of any sphere of government that are relevant to the application as contemplated in the EIA regulations 2014, where applicable:

Table 8: List of relevant Legislation /guidelines

Title of legislation, policy, plans or guideline, spatial tools, municipal development frameworks	Administering authority, and date:	How proposed activity complies with/responds to legislation & policy/plan/guidelines/tools/frameworks
South Africa's Constitution (No. 108 of 1996)	SA Government	<p>Chapter 2 of the Constitution contains the Bill of Rights and this includes an environmental right viz:</p> <ul style="list-style-type: none"> <li>o Everyone has the right to an environment that is not harmful to their health or well-being; and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that                             <ul style="list-style-type: none"> <li>i. prevent pollution and ecological degradation;</li> <li>ii. promote conservation; and</li> <li>iii. secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.</li> </ul> </li> </ul> <p><i>The proposed reticulation will be guided by the EMPr (legal document) during the construction phase so as to ensure that pollution and environmental degradation is avoided, thereby promoting conservation and ensuring the development will be ecologically, socially and environmentally sustainable.</i></p>
National Environmental Management Act (107 of 1998) Environmental Impact assessment Regulations, 2014 (Amended 07 April 2017)	Department of Environmental Affairs	The project triggers LN1 AND LN3 of the EIA regulations 2014. RELEVANCE OF THE listed activities was clarified in the report as per Table 5.

National Environmental Management Act (107 of 1998)	Department of Environmental Affairs	The National Environmental Management Act (NEMA) reinforces the constitutional imperative to protect, promote and fulfil the environmental right in the Bill of Rights. Section 24(1) of the act states that any proposed activity which requires authorisation or permission by law and which may significantly affect the environment must be considered, investigated and assessed before implementation.
<b>National Environmental Biodiversity Act</b> (10 of 2004):	Department of Environmental Affairs	The development footprint is situated within the KwaZulu-Natal Coastal Belt Grassland. The KwaZulu-Natal Coastal Belt Grassland threat status is 'Critically Endangered' and protection status is 'Normally Protected'. The proposed activity footprint overlaps with transformed land-cover and is regarded as possessing low sensitivity, albeit the surrounding landscape comprises of sensitive habitats, including Irreplaceable Critical Biodiversity Areas. These sensitive habitats possess flora SCC, as well as provide an array of ecosystem services. <i>Sideroxylon inerme</i> specimen adjacent to the road within the wetland must be relocated as prescribed.
<b>National Environmental Management Protected Areas Act</b> (57 of 2003, amended No. 31 of 2004)	Department of Environmental Affairs	The development footprint is situated within the KwaZulu-Natal Coastal Belt Grassland. The KwaZulu-Natal Coastal Belt Grassland threat status is 'Critically Endangered' and protection status is 'Normally Protected'
<b>Integrated Coastal Management Bill</b> (2008)	Department of Environmental Affairs	N/A
<b>Air Quality Act (39 of 2004)</b>	Department of Environmental Affairs	N/A
<b>National Waste Act</b> (59 of 2008):	Department of Environmental Affairs	N/A
<b>National Water Act</b> (36 of 1998)	Department of Water and Sanitation	The bridge demolition and reconstruction will occur in the watercourse, so Section 21 (c) and (i) apply. A water use licence or GA will be applied for depending on the risk assessment outcome. A riparian assessment has been done.
<b>National Forests Act</b> (84 of 1998)	Department of Agriculture Forestry and Fisheries	There are no forests that will be impacted on. <i>Sideroxylon inerme</i> specimen adjacent to the road within the wetland must be relocated as prescribed.
<b>Marine Living Resources Act</b> (18 of 1998)	Department of Agriculture Forestry and Fisheries	N/A
<b>Mineral and Petroleum Resources Development Act</b> (28 of 2002)	Department of Mineral Resources	N/A
<b>Environment Conservation Act</b> (73 of 1989)	Department of Environmental Affairs	N/A
<b>Conservation of Agricultural Resources Act</b> (43 of 1983) (CARA)	<i>Department of Agriculture Forestry and Fisheries</i>	N/A
<b>Sea-shore Act</b> (21 of 1935)	Department of Environmental Affairs	N/A
<b>Hazardous Substances Act</b> (15 of 1973)	Department of Mineral Resources	N/A
<b>Mountain Catchment Areas Act</b> (63 of 1970)	Department of Agriculture Forestry and Fisheries	N/A

<b>Fertilizers, Farm Feeds, Agricultural Remedies Act</b> (36 of 1947)	<i>Dept of Agriculture, Forestry and Fisheries</i>	N/A
<b>Agricultural Pests Act</b> (36 of 1983)	Department of Agriculture Forestry and Fisheries	N/A
<b>Development Facilitation Act</b> (67 of 1995)	Department of Rural Development and Land Reform	The Development Facilitation Act, contains provisions and general principles relating to land development and Land Development Objectives (LDOs).
<b>Genetically Modified Organisms Act</b> (15 of 1997)	Department of Agriculture Forestry and Fisheries	N/A
<b>Mine Health and Safety Act</b> (29 of 1996, amended 1997)	Department of Mineral Resources	N/A
<b>National Heritage Resources Act</b> (25 of 1999)	Department of Arts and Culture	Online application
<b>National Parks Act</b>	South African National Biodiversity Institute	N/A
<b>National Veld and Forest Fire Act</b> (101 of 1998)	Department of Agriculture Forestry and Fisheries	N/A
<b>Nuclear Energy Act</b> (46 of 1999)	Department of Energy	N/A
<b>Water Services Act</b> (108 of 1997)	Department of Water and Sanitation	

## SECTION C: PUBLIC PARTICIPATION (REFER ALL PROOF AND SUPPORTING DOCUMENTS AS PER APPENDIX E)

Public participation process has been undertaken as per section 41 of the EIA Regulations 2014, and has taken into account any guidelines applicable to public participation as contemplated in section 24J of the Act.

### Cognisance was taken of the following:

- *all information containing the relevant facts in respect of the application or proposed application was made available to potential interested and affected parties; and*
- *Participation by potential or registered interested and affected parties was facilitated such that all potential or registered interested and affected parties were provided with a reasonable opportunity to comment on the application or proposed application.*
- *Special attention was given to the involvement of local community structures such as Ward Committees, ratepayers associations and traditional authorities where appropriate.*

### 1. The Following Activities Were Undertaken As Part of The Public Participation Process: (Refer Appendix E for Proof)

**BID:** *An information package containing a description of the project and planned scope of work was compiled and distributed to relevant Authorities and Interested and*

<p><i>affected Parties that were identified at the project outset and occupiers of land adjacent to the reticulation. The background information document contained a description of the proposed project, proposed development options, explained the aims and objectives of the environmental assessment, etc and invited comment on the proposed development. This BID was submitted on 14 April 2021.</i></p>
<p><b>Linear activity:</b> give written notice to all occupiers of the land (registered mail or hand deliver with proof): There are no occupier's within <i>100m of the site</i>.</p>
<p><b>ADVERTISEMENT/S :</b></p>
<p>Newspaper title and date of placement: <i>PLACED IN THE Ilanga newspaper ON THE 06 MAY 2021</i></p>
<p><b>NOTICE BOARD/ON-SITE NOTICES:</b> (Nb: notices must also be placed at the ALTERNATIVE SITES where applicable): <i>on-site notices were put up on the 21 April 2021, at the ffg relevant locations</i></p>
<p>✓ <i>ON SITE</i></p>
<p>✓ <i>THENGEDUZE STORE -30 14'21.9"S, 30 43'12.3"E</i></p>
<p>✓ <i>PRICE SAVER-RETAIL WHOLESAL: -30 15'18.8"S, 30 43'08.6"E</i></p>
<p>✓ <i>UMDONI LOCAL MUNICIPAL OFFICES 30 17'09.2"S, 30 45'14.6"E</i></p>
<p>4 Notices were put up AT the above locations on the 21/04/2021; THE notices were in English and Zulu.</p>
<p><b>Pre Application meeting:</b> The competent authority which is the KZN EDTEA is required to provide an environmental authorisation (EA) (be it positive or negative) for the proposed project. Pre-application meeting: This occurred on the 21/04/2021 on site at 11am. – The draft BAR was also submitted to EDTEA ON the 14 JULY 2021.</p>
<p><b>DRAFT BAR:</b></p>
<p>- THE DRAFT BAR has been submitted to relevant AUTHORITIES and registered IAPS on the 14 JULY 2021</p>
<p><b>FINAL BAR:</b></p>
<p>- N/A: will be submitted after the DRAFT BAR has been amended (to include comments from registered IAP's and relevant authorities up to the period ending 16 August 2021 )</p>

Were any reasonable alternative methods utilised or required? (In those instances where a person is desirous of but unable to participate in the process) due to-

- (i) illiteracy;
- (ii) disability; or
- (iii) any other disadvantage.

## 2. Comments and Response Report (Appendix E)

All comments and responses during the public participation process have been included as per table below. The comments and responses have been captured in the comments and response report and is attached as [Appendix E](#) to this report. **REFER REGISTER OF IAP'S (AS PER APPENDIX E)**.

## 3. Participation by District, Local and Traditional Authorities

District, local and traditional authorities (where applicable) are all key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of this application and provided with an opportunity to comment.

Has any comment been received from the district municipality?  YES  NO  
 If "YES", briefly describe the feedback below (also attach any correspondence to and from this authority with regard to this application):  
 No

Has any comment been received from the local municipality?  YES  NO  
 If "YES", briefly describe the feedback below (also attach any correspondence to and from this authority with regard to this application):  
 The local municipality is the applicant

Has any comment been received from a traditional authority?  YES  NO  
 If "YES", briefly describe the feedback below (also attach any correspondence to and from this authority with regard to this application):  
 INGONYAMA TRUST IS THE LANDOWNER. Landowner Notification form was completed and signed.

## 4. Consultation with Other Stakeholders

Any stakeholder that has a direct interest in the site or property, such as servitude holders and service providers, should be informed of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders?  YES  NO  
 If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application): **REFER APPENDIX E-COMMENTS/RESPONSE TABLE**

STAKEHOLDER	COMMENTS ON BID	ENQA RESPONSE
Department: Agriculture, land reform and rural development (Mr.R.Baca)	Final BAR/EMPr to address: <ul style="list-style-type: none"> <li>- Current land use that will be affected and the impacts/mitigation</li> <li>- Extent of the activity/area to be affected by construction</li> </ul>	<ul style="list-style-type: none"> <li>- The dBAR/EMPR has addressed all those issues.</li> <li>- As per BAR</li> </ul>

	<ul style="list-style-type: none"> <li>- Impact on surrounding wetlands</li> <li>- Impact on nearby agricultural lands</li> <li>- Handling of the topsoil</li> <li>- Soil erosion and mitigation</li> <li>- Fauna and flora</li> <li>- Alien plant control</li> <li>- Alternative sites</li> <li>- Directions to property</li> <li>- Copy of final EMPr (full correspondence as per APPENDIX E)</li> </ul>	<ul style="list-style-type: none"> <li>- There are no wetlands</li> <li>- Development will not impact on agricultural land.</li> <li>- Detailed as per EMPr</li> </ul>
Dept of Environment, Forestry and Fisheries (Ms. K. Govender)	<ul style="list-style-type: none"> <li>- Concerns pertain to indigenous vegetation on site (natural forests, protected trees within project footprint)</li> <li>- Draft rep to be sent to DEFF (full correspondence as per APPENDIX E)</li> </ul>	<p><b>AN ECOLOGICAL assessment was undertaken.</b> The proposed activity footprint overlaps with transformed land-cover and is regarded as possessing low sensitivity, albeit the surrounding landscape comprises of sensitive habitats, including Irreplaceable Critical Biodiversity Areas. These sensitive habitats possess flora SCC, as well as provide an array of ecosystem services. <i>Sideroxylon inerme</i> specimen adjacent to the road within the wetland must be relocated as prescribed.</p> <ul style="list-style-type: none"> <li>- Noted, and has been sent</li> </ul>

**Comments received on dBAR: N/A: COMMENTS WILL BE INCLUDED ONCE THE 30 DAY COMMENTS PERIOD HAS LAPSED.**

STAKEHOLDER	COMMENTS ON dBAR	ENAQ RESPONSE
		-
		-


## SECTION D: BASELINE RISK ASSESSMENT

(INCLUDE ALTERNATIVE SITES where applicable):

### Important notes:

For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment.

Collection of baseline information was undertaken during site inspections conducted in order to establish the sensitivity of the environment to potential project impacts and to determine restrictions the environment may have on the project. Information on the biophysical and socio-economic parameters was gathered during the site inspections and desktop study. Information was also obtained from existing reports, aerial photography and the 1:50 000 topographical maps for the area.

### 1. Current and Surrounding Land Use, Location in Landscape, Access

**Location and access:** The project is situated within Ugu District Municipality under the administration of Umdoni Municipality in Scottburgh. The Umdoni Local Municipality is located within Ugu District Municipality about 50km from the city of Durban and 65km from Port Shepstone along the South Coast.

The project site can be accessed by proceeding from Scottburgh take Dududu road and head north west for about 7.5km and taking the right turn onto a gravel road for about 1.6km to arrive at the bridge.

The respective site co-ordinates are as follows: 30°14'00.59"S; 30°43'59.66"E.

### CURRENT AND SURROUNDING LANDUSE:

Current landuse includes open space, grazing and sparse informal residential.

The proposed bridge location crosses a river/stream that is approximately 5m wide. A collapsed concrete bridge which restricts bi-directional traffic flow occurs at the site along the existing gravel road alignment.

The Kwahluzingqondo Secondary School arises about some 450m to the west of the site.

The road and associated bridge is in the lower portion of the landscape which is predominantly the midslope to valley bottom landscape positions. The dominant hydrological response is generally runoff.

The land cover within the rural areas of Umdoni primarily contains sugar cane, bananas and commercial forestry. The majority of the remaining area is under formal and informal urban development. There are limited areas of indigenous vegetation interspersed in the commercial crop lands. The majority of the rural areas of Umdoni Municipality appear to be under sugar cane production. There are relatively small areas of commercial forestry or plantation, particularly in the south of the Municipality. Banana production also occupies a relatively small area of the municipality.

The majority of cultivable land in Umdoni, which is not under alternative forms of development, is already under commercial agricultural production. The majority of the



cultivable area is under sugar production relatively small areas of land are being used for commercial timber and banana production.

Indicate the landform(s) that best describes the site **(Please cross the appropriate box)**.

Ridgeline	Plateau	Side slope of hill/mountain	Closed valley	Open valley X	Plain	Undulating plain/low hills X	Dune	Sea-front
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**ACCESS:** VIA EXISTING GRAVEL FARM ROADS

**Cross the land uses and/or prominent features that currently occur within a 500m radius of the site and give a description of how this influences the application or may be impacted upon by the application:**

Table 9: Land uses within 500 m of site:

Land use character	YES	NO	Description
Natural area	YES	NO	There is a watercourse (tributary of the Mahlongwa River), The wetland types identified, were channelled valley bottoms and unchannelled valley bottoms.
Low density residential	YES	NO	
Medium density residential	YES	NO	
High density residential	YES	NO	
Informal residential	YES	NO	There are informal houses within the area
Retail commercial & warehousing	YES	NO	
Light industrial	YES	NO	
Medium industrial	YES	NO	
Heavy industrial	YES	NO	
Power station	YES	NO	
Office/consulting room	YES	NO	
Military or police base/station/compound	YES	NO	
Spoil heap or slimes dam	YES	NO	
Quarry, sand or borrow pit	YES	NO	
Dam or reservoir	YES	NO	
Hospital/medical centre	YES	NO	
School/ creche	YES	NO	A HIGH SCHOOL is located within 500m of the site
Tertiary education facility	YES	NO	
Church	YES	NO	
Old age home	YES	NO	
Sewage treatment plant	YES	NO	
Train station or shunting yard	YES	NO	
Railway line	YES	NO	
Major road (4 lanes or more)	YES	NO	
Airport	YES	NO	
Harbour	YES	NO	
Sport facilities	YES	NO	
Golf course	YES	NO	
Polo fields	YES	NO	

Filling station	YES	NO	
Landfill or waste treatment site	YES	NO	
Plantation	YES	NO	
Agriculture	YES	NO	SOME subsistence farming noted
River, stream or wetland	YES	NO	The bridge is within the tributary of the Mahlongwa river
Nature conservation area	YES	NO	
Mountain, hill or ridge	YES	NO	
Museum	YES	NO	
Historical building	YES	NO	
Protected Area	YES	NO	
Graveyard	YES	NO	
Archaeological site	YES	NO	
Other land uses (describe)	YES	NO	

### SITE ACCESS

Does ready access to the site exist?

*Access to the site is via an existing formal gravel road*

If NO, what is the distance over which a new access road will be built

Describe the type of access road planned:

✓ YES	NO
m	

**A 5m wide × 0.24km long approach road finished by 150mm layer of Gravel wearing course on at least 150mm layer of G7 selected subgrade/fill material is proposed.**

However it will not trigger any listed activities as per the EIA regulations per 2014 (as amended 7 April 2017).

#### Local/site description:

The site falls within a sparsely built up communal land. There is an existing portal culvert bridge structure that has been damaged and collapsed due to floods at Gumede river crossing. The stream is currently impassable by vehicular traffic and the villagers are currently using alternative routes to access their homes. road is currently servicing villages that lay adjacent to the road with some built up sites in the vicinity that require access. There is an existing stream crossing where the existing Gumede bridge is located.

## 2. Topography and Gradient of the Site

**Indicate the general gradient of the site.**

The proposed bridge lies within a low point, with gently undulating terrain with gentle to moderate gradients surrounding it. Generally, the site drains towards the east.

**Tie in (as identified by specialist)**

Flat	1:50 – 1:20	✓	1:20 – 1:15	–	1:15 – 1:10	1:10 – 1:7,5	–	1:7,5 – 1:5	Steeper than 1:5
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### 3. Groundwater, Soil and Geological Stability of the Site

Is the site(s) located on any of the following (cross the appropriate boxes)?

	Alternative S1:		Alternative S2 (if any): N/A		Alternative S3 (if any): N/A	
Shallow water table (less than 1.5m deep)	YES✓	NO	YES	NO	YES	NO
Dolomite, sinkhole or doline areas	YES	NO✓	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	YES✓	NO	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	YES✓	NO	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	YES	NO✓	YES	NO	YES	NO
Soils with high clay content (clay fraction more than 40%)	YES	NO✓	YES	NO	YES	NO
Any other unstable soil or geological feature	YES✓	NO	YES	NO	YES	NO
An area sensitive to erosion	YES✓	NO	YES	NO	YES	NO

According to the Council for Geoscience’s regional geological sheet “3030 Port Shepstone”, the general area of the site is underlain by tillite of the Dwyka Group, as shown below in Plate 5. The site was observed to be underlain by fill, colluvial and alluvial soils that overlie residual soils that grade with depth into weathered tillite rock.

The site traverses a stream and occurs in a low-lying area which appears to be periodically exposed to cycles of inundation. Hence, shallow groundwater conditions are anticipated with strong surface water flows during and after periods of rainfall. (Geotechnical report, Geosure Pty (ltd), June 2020)

### 4. Fauna, Vegetation and Groundcover

Are there any rare or endangered flora or fauna species (including red data species) present on any of the alternative sites?	YES ✓	NO
If YES, specify and explain:	At the Gumede bridge site the flora investigation identified <i>Sideroxylon inerme</i> . This species is protected under the South African National Tree list.	
Are there any special or sensitive habitats or other natural features present on any of the alternative sites?	YES ✓	NO
If YES, specify and explain:	Other than the wetlands recorded no further sensitive features were recorded	
Are any further specialist studies recommended by the specialist?	YES	NO ✓

If YES, specify:

Flora studies were adequately completed, a protected tree rescue and relocation program is suggested, due to the presence of SCC, as well as a Alien invasive plant management plan.

Natural veld - good condition <sup>E</sup>	Natural veld with scattered aliens <sup>E</sup> ✓	Natural veld with heavy alien infestation <sup>E</sup> ✓	Veld dominated by alien species <sup>E</sup>	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure ✓	Bare soil

It is clear from field observations that the landscape possesses vegetation types altered by anthropogenic activities, as well as natural features.

The development footprint is situated within the KwaZulu-Natal Coastal Belt Grassland. The KwaZulu-Natal Coastal Belt Grassland threat status is 'Critically Endangered' and protection status is 'Normally Protected'. The proposed activity footprint overlaps with transformed land-cover and is regarded as possessing low sensitivity, albeit the surrounding landscape comprises of sensitive habitats, including Irreplaceable Critical Biodiversity Areas. These sensitive habitats possess flora SCC, as well as provide an array of ecosystem services. *Sideroxylon inerme* specimen adjacent to the road within the wetland must be relocated as prescribed.

There are potential risks to the surrounding sensitive habitat arising from the construction of the proposed activity. It is therefore imperative that all habitats not within the development footprint regarded as possessing 'high' sensitivity be avoided and declared as 'no-go' areas.

It is the opinion of the specialists that the rebuilding of the Gumede bridge is feasible. However, the impacts associated with the proposed development activities must be mitigated against to ensure the maintenance of ecological processes, and the concomitant delivery of ecosystem services, of nearby habitats. Careful consideration must be afforded to each of the recommendations provided herein and proven ecological (or environmental) controls and mitigation measures must be entrenched in the management framework.

## 5. Visual Aspects

During construction phase, the demolition, and reconstruction of the portal bridge and the approach road will be visible to the local residents of the area. This will be a temporary intrusion during the course of the construction phase.

## 6. Waste, Effluent, Air Quality, and Noise Management

### Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase? **the removal of collapsed bridge and excess cut**

✓ YES	NO
-------	----

If yes, what estimated quantity will be produced per month? ±111 m<sup>3</sup>

How will the construction solid waste be disposed of? (describe)

Registered disposal services will be used to dispose of solid construction waste safely and appropriately.

Where will the construction solid waste be disposed of? (provide details of landfill site)

Nearest designated dumping site

Will the activity produce solid waste during its operational phase?	YES	✓ NO
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If yes, what estimated quantity will be produced per month? <span style="color: red;">N/A</span>	m <sup>3</sup>
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How will the solid waste be disposed of? (provide details of landfill site)

N/A

Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

N/A

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine the further requirements of the application.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?	YES	✓ NO
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Is the activity that is being applied for a solid waste handling or treatment facility?	YES	✓ NO
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**Liquid effluent**

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	YES	✓ NO
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If yes, what estimated quantity will be produced per month?	N/A m <sup>3</sup>
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Will the activity produce any effluent that will be treated and/or disposed of on-site?	Yes	✓ NO
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Will the activity produce effluent that will be treated and/or disposed of at another facility?	YES	✓ NO
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If yes, provide the particulars of the facility:

Facility name:	N/A		
Contact person:	N/A		
Postal address:			
Postal code:			
Telephone:		Cell:	

E-mail:  Fax:

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

N/A

**Emissions into the atmosphere**

Will the activity release emissions into the atmosphere?

YES	✓ NO
YES	NO

If yes, is it controlled by any legislation of any sphere of government? **N/A**

If no, describe the emissions in terms of type and concentration:

In terms of air quality, generation of dust during construction activities could occur. Increased dust pollution could arise during construction as a result of Demolition, and reconstruction, trench excavations. The levels of dust pollution generated by grading vehicles/machinery on the stripped areas would return to current levels once construction was complete. Should dust pollution become a problem during the construction phase, dust amelioration measures will have to be put in place to control dust generation. This will include periodic wetting of exposed surfaces by an established sprinkler system or mechanically.

**Generation of noise**

Noise levels around the project site are mainly as a result of the traffic and hive of activity around the site. The main source of noise in the area arises from general traffic within the affected residential areas as well as from the farming operations

Will the activity generate noise?

✓ YES	NO
YES	NO ✓

If yes, is it controlled by any legislation of any sphere of government?

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. **N/A**

If no, describe the noise in terms of type and level:

Noise from construction labourers, earthworks and machinery. Mitigation measures stipulated in the EMP to be adhered to.

**7. Surface Water and Water Use**

The table below indicates the source(s) of water that will be used for the activity:

municipal	water board	groundwater	river, stream, dam or lake X	other	the activity will not use water
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If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

Contractor to advise	
✓ YES	NO

Does the activity require a water use permit from the Department of Water Affairs?

If YES, please submit the necessary application to the Department

of Water Affairs and attach proof thereof to this report. **a WULA will be undertaken.**

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## 8. Energy Efficiency and Carbon Footprint

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

Simple construction methods and mostly labour based have been considered.

IN ADDITION:

- ✓ The use of biodegradable products wherever possible shall be encouraged.
- ✓ Reduce the amount of solid waste from the proposed development by buying in bulk; buying products with less packaging, using a minimum of throw away products.
- ✓ When buying building materials, try to source products made from natural materials.
- ✓ When looking for building materials, buying locally instead of ordering from afar has many advantages for the local community and the environment, this will be contributing to lowering carbon emission levels and saving resources by reducing the carbon km involved in transporting the goods and this should also save on packaging.
- ✓ Waste paper and cardboard products used in the proposed development should be stored separately and taken to a waste paper depot where it will be recycled to form new paper products resulting in large savings in raw materials.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

Some aspects that will be taken into consideration will include resource efficiency, energy efficiency, water conservation and affordability. This is discussed further in the Environmental Management Programme Report.(EMPr)

## 9. Socio-Economic Character of Area and Surrounding Area

As state in the integrated development plan of the Umdoni Local Municipality report (2020-2021), over the years there had been an influx of people into the urban areas especially Umzinto and the population of Umzinto has escalated. This form of migration from rural to urban areas is normal and is in keeping with national and international trends. Furthermore, there have been a significant increase in the number of people from other local municipalities and provinces who have migrated to Umdoni Municipality looking for economic opportunities.

The majority of people who are of working age in Umdoni are not economically active. This means that 54% are neither employed nor unemployed. The Municipality is dominated by young people, who are the main driving force behind economic activity in terms of the labour force composition.

## 10. Cultural/ Historical Features

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act,

YES	✓ NO
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1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or within 20m of the site?

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If YES, contact a specialist recommended by AMAFA to conduct a heritage impact assessment. The heritage impact assessment must be attached as an appendix to this report.

Briefly explain the recommendations of the specialist:

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Will any building or structure older than 60 years be affected in any way?

YES	✓ NO
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Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

YES	✓ NO
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If YES, please submit the necessary application to AMAFA and attach proof thereof to this report.

*It is unlikely the project will infringe on any cultural or heritage sites. An application on the SAHRA website will be made*

## 11. Safety and Security

Safety is a core human right and a necessary condition for people's well-being, quality of life and for economic development. Safety in public spaces is an essential ingredient to the creation of liveable and prosperous communities.

For the period 2008/2009 to 2018/2019 overall crime has decrease at an average annual rate of 2.91% within the Ugu District Municipality. Violent crime decreased by 3.34% since 2008/2009, while property crimes decreased by 0.87% between the 2008/2009 and 2018/2019 financial years.

The construction phase activities could result in activities that pose some risk to workers or the public; through equipment/building material and construction activities on site. A safety officer should be employed to handle all safety issues. All excavations will be marked as such, and barricaded appropriately and access to the public will be denied.



## SECTION E: IMPACT ASSESSMENT

The assessment of impacts is as per the requirements in the EIA Regulations, 2014, and has also taken applicable official guidelines into account. The issues raised by interested and affected parties have also been addressed and included in the assessment of impacts where applicable. Recommendations as per the relevant specialist studies have also been included where applicable and relevant.

### 1. Issues Raised by Interested and Affected Parties

The main issues raised by interested and affected parties have been included below in section 4.

PLEASE REFER SECTION 4 OF THIS REPORT-page 41

Indication of the manner in which the issues were incorporated, or the reasons for not including them in the IMPACT ASSESSMENT

The issues and comments from DFFE and dept of Agriculture were taken into consideration FOR THE ECOLOGICAL STUDY.

Response from the practitioner to the issues raised by the interested and affected parties (A full response has been included in the 'Comments and Response Report', attached as Appendix E to this report):

A full response has been included in the 'Comments and Response Report', (attached as Appendix E to this report):

### 2. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES WERE APPLICABLE, AND PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES.

The environmental impact assessment is focused on the following phases of the project viz: DEMOLITION/decommissioning, **Construction and operational**.

#### A) METHODOLOGY USED IN DETERMINING AND RANKING THE NATURE, SIGNIFICANCE, CONSEQUENCES, EXTENT, DURATION AND PROBABILITY OF POTENTIAL ENVIRONMENTAL IMPACTS AND RISKS ASSOCIATED WITH THE ALTERNATIVES

An impact assessment methodology as indicated below will be utilised. It has been adapted and modified from the “DEAT (2004) Cumulative effects Assessment, Integrated Environmental Management, Information Series 7, Department of Environmental Affairs and Tourism (DEAT), Pretoria.

A combined quantitative and qualitative methodology was used to describe impacts for each of the assessment criteria. A summary of each of the qualitative descriptors along with the equivalent quantitative rating scale for each of the aforementioned criteria is given below:

**TABLE 10: IMPACT ASSESSMENT METHODOLOGY**

<b>SIGNIFICANCE, magnitude and nature: refers to importance of impact</b>	<b>rating</b>	<b>description</b>
	0- No impact 1- VERY LOW	NO IMPACT
2- Low		Impact is of a low order and likely to have little real effect. In the case of adverse impacts: mitigation and/or remedial activity is either easily achieved or little will be required, or both. In the case of beneficial impacts, alternative means for achieving this benefit are likely to be easier, cheaper, more effective, less time consuming, or some combination of these.
3- MODERATE		Impact is real but not substantial in relation to other impacts, which might take effect within the bounds of those which could occur. In the case of adverse impacts: mitigation and/or remedial activity are both feasible and fairly easily possible. In the case of beneficial impacts: other means of achieving this benefit are about equal in time, cost, effort, etc.
4- HIGH		Impact is of substantial order within the bounds of impacts, which could occur. In the case of adverse impacts: mitigation and/or remedial activity is feasible but difficult, expensive, time-consuming or some combination of these. In the case of beneficial impacts,

		other means of achieving this benefit are feasible but they are more difficult, expensive, time-consuming or some combination of these.
	5- VERY HIGH	Of the highest order possible within the bounds of impacts which could occur. In the case of adverse impacts: there is no possible mitigation and/or remedial activity which could offset the impact. In the case of beneficial impacts, there is no real alternative to achieving this benefit.
<b>Extent</b>	1- Isolated Sites / proposed site	The impact will affect an area no bigger than the footprint.
	2- Study Area	The impact will affect an area not exceeding boundary of site
	3- Local	The impact will affect an area up to 5 km from the proposed site
	4- Regional/Provincial	The impact will occur at regional/provincial level
	5- Global/National	The maximum extent of any impact.
<b>Probability of potential environmental impacts</b>	1- Practically impossible	
	2- Unlikely	
	3- Could happen	
	4- Very Likely	
	5- It's going to happen / has occurred	
<b>DURATION OF IMPACTS: REFERS to impact timeframe. Reversibility is directly related to duration i.e. permanent impacts are irreversible</b>	1- Incidental: immediately reversible	The impact will be limited to isolated incidences that are expected to occur very sporadically.
	2- Short-term: quickly reversible	environmental impact identified will operate for the duration of the construction phase or a period of less than 5 years, whichever is the greater.
	3- Medium term: reversible over time	The environmental impact identified will operate for the duration of life of the project.
	4- Long term: reversible over the long term	The environmental impact identified will operate beyond the life of project.
	5- Permanent: irreversible	The environmental impact will be permanent.
<b>Degree to which the impact can cause irreplaceable loss of resources: (refers to intensity or severity of an impact)</b>	low	Disturbance of degraded areas, with little conservation value, minor change in species occurrence
	medium	Disturbance of areas that have potential conservation value. Complete change in species occurrence
	high	Disturbance of pristine areas having high conservation value, destruction of rare/endangered species
<b>Degree to which the impact can be avoided, managed or</b>	low	Little or no mechanism to mitigate



Potential impacts were identified by professional judgement, project information, experience of similar projects, a review of available literature, site visits, review of specialist reports and consultation with authorities and the public.

- C) ALL ENVIRONMENTAL ISSUES, AND RISKS that were identified during the EIA process, and significance of each issue and risk and indication of the extent to which the issue/risk could be avoided or addressed by adoption of mitigation measures is included in the tables to follow as per the relevant phase of the project.

### 3. Impacts that Result From the DEMOLITION/CONSTRUCTION/OPERATIONAL Phases:

#### DEMOLITION/DECOMMISSIONING PHASE

Proposed portal culvert bridge 7.12m long and 6.1m wide.								
Biophysical Impacts								
Impacts	Mitigation Status:	Extent:	Intensity:	Duration:	Consequence:	Probability:	Significance:	Risk and Rating Class:
Increased sediment loads and turbidity in stream due to dismantling activities	Without Mitigation	3	2	3	8	4	3	3,45 (Class 4)
	With Mitigation	1	1	1	3	2	1	0,4 (Class 1)
	Mitigation Measures	<p><b>General mitigation</b></p> <ul style="list-style-type: none"> <li>- Erosion controls must be implemented to prevent the expansion of existing gulleys or the formation of new erosion points where demolition has arisen.</li> <li>- Priority areas for erosion control are areas where there is an obvious gradient and the flow of water can be expected.</li> <li>- Measures must include at least, the use of sand bags and silt curtains.</li> <li>- Limit the extent of disturbance.</li> <li>- The proposed foot print should be limited to as proximal to existing footprint and road reserves.</li> </ul>						

		<p><b>specialist mitigation:</b></p> <ul style="list-style-type: none"> <li>- Trenching, earthworks and drainage measures should be designed in such a way as to prevent ponding of, or high concentrations of, stormwater or groundwater anywhere on the sites, during de-construction. All removed soil and material must not be stockpiled within the wetland/watercourse and associated buffer zone. Stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised and be surrounded by bunds.</li> <li>- Any topsoil that is removed during construction must be appropriately removed and stored according to the national and provincial guidelines. This includes on-going maintenance of such topsoil piles so that they can be utilised during decommissioning phases and re-vegetation</li> <li>- Areas that are denuded need to be re-vegetated with indigenous vegetation to prevent erosion during flood events. This will also reduce the likelihood of encroachment by alien invasive plant species;</li> </ul>						
Impacts:	Mitigation Status:	Extent:	Intensity:	Duration:	Consequence:	Probability:	Significance:	Risk and Rating Class:
Removal of riparian Vegetation for deconstruction	Without Mitigation	3	3	2	6	3	3	1,6 (Class 2)
	With Mitigation	1	2	1	4	2	2	0,53 (Class 1)
	Mitigation Measures	<p><b>Specialist mitigation</b></p> <ul style="list-style-type: none"> <li>- If the wetland that the <i>Sideroxylon inerme</i> specimens are located cannot be avoided, these trees must be relocated as per directive from the relevant authority. This will require permitting from the relevant authority.</li> <li>- The areas to be developed must be specifically demarcated to prevent movement of workers into sensitive surrounding</li> </ul>						

		<p>environments.</p> <ul style="list-style-type: none"> <li>- Areas that are denuded during construction need to be re-vegetated with indigenous vegetation. This will also reduce the likelihood of encroachment by alien invasive plant species</li> <li>- It should be made an offence for any staff to bring or plant any plant species into any portion of the project area, unless undertaken in line with the required/approved rehabilitation. No plant species whether indigenous or exotic should be brought into the project area, to prevent the spread of exotic or invasive species.</li> <li>- Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood events. This will also reduce the likelihood of encroachment by alien invasive plant species;</li> <li>- Areas of indigenous vegetation, even secondary communities, should under no circumstances be fragmented or disturbed further or used as an area for dumping of waste.</li> <li>- Fire management plan must be in place for the areas surrounding the project area and the road to restrict the impact from fire on the natural flora and fauna communities. A fire expert should be consulted for suitable guidelines for the area and project requirements</li> <li>- site plan of the area must be made available onsite for all contractors and personnel indicating parking &amp; storage areas, site offices and placement of ablution facilities</li> <li>- Any topsoil that is removed during construction must be appropriately removed and stored according to the national and provincial guidelines. This includes on-going maintenance of such topsoil piles so that they can be utilised during decommissioning phases and re-vegetation</li> <li>- All removed soil and material must not be stockpiled within the wetland/watercourse and associated buffer zone. Stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised and be surrounded by bunds</li> </ul>
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**Socioeconomic Impacts:**

Impacts:	Mitigation Status:	Extent:	Intensity:	Duration:	Consequence:	Probability:	Significance:	Risk and Rating Class:
Dust Creation due to excavation activity and trenching as well as activity of construction	Without Mitigation	2	3	2	5	3	2	1,2 (Class 2)
	With Mitigation	1	1	1	4	2	1	0,4 (Class 1)



vehicles	Mitigation Measures	<p><b>general mitigation</b></p> <ul style="list-style-type: none"> <li>- Dust amelioration methods need to be considered and implemented, where significant quantities of dust are anticipated, methods may be wetting of surfaces or wind screening and residents may need to be notified.</li> <li>- The stockpiles may be protected via use of a covering, such as Hessian mats.</li> <li>- Construction vehicles traveling along the access road must adhere to speed limits to avoid creating excessive dust, especially during dry and windy conditions.</li> <li>- Where dust nuisance is unavoidable, screening to be provided.</li> <li>- Stripping of vegetation and existing material will be limited to necessary working areas.</li> <li>- Camp construction / haulage road construction – areas that have been stripped of vegetation must be dampened periodically to avoid excessive dust.</li> <li>- Ash disposal areas are to be promptly rehabilitated to minimize potential for dust pollution.</li> </ul>						
Impacts:	Mitigation Status:	Extent:	Intensity:	Duration:	Consequence:	Probability:	Significance:	Risk and Rating Class:
Generating of noise from deconstruction activity	Without Mitigation	2	2	2	5	2	2	0,8 (Class 1)
	With Mitigation	1	1	1	4	1	1	0,2 (Class 1)
	Mitigation Measures	<p><b>general mitigation</b></p> <ul style="list-style-type: none"> <li>- Restriction of noisy activity as per Project Specifications or General Conditions of Contract, and notification of residents of the activities.</li> <li>- Equipping construction vehicles and machinery with silencers and ensuring their maintenance and that the construction vehicles adhere to speed limits at all times.</li> <li>- Make use of noise mufflers as required during removal of concreted surfaces.</li> <li>- In any instance Noise levels are not to exceed SABS 0130 specified noise thresholds.</li> <li>- Construction vehicles to adhere to speed limits, fitted with silencers if need be.</li> <li>- Equipment that is fitted with noise reduction facilities (e.g. Side flaps, silencers etc.) will be used as per operating instructions and maintained properly during site operations.</li> </ul>						

## CONSTRUCTION PHASE

Proposed portal culvert bridge 7.12m long and 6.1m wide.								
Biophysical Impacts:								
Impacts:	Mitigation Status:	Extent:	Intensity:	Duration:	Consequence:	Probability:	Significance:	Risk and Rating Class:
Increased sediment loads and turbidity due to construction, stockpiling, distribution of soils and surface run off	Without Mitigation	3	2	3	8	4	3	3.45 (Class 4)
	With Mitigation	1	1	1	3	2	1	0,4 (Class 1)
	Mitigation Measures	<p><b>general mitigation</b>                      Erosion controls must be implemented to prevent the expansion of existing gulleys or the formation of new erosion points where trench work has arisen.                      -Priority areas for erosion control are areas where there is an obvious gradient and the flow of water can be expected.                      -Measures must include at least, the use of sand bags and silt curtains.                      -Limit the extent of disturbance.                      -The proposed foot print should be limited to as proximal to existing road reserves.                      -All construction activities must be limited to points proximal to this area.                      -Where traverse of the riparian and channel bank has arisen consideration should be given to the stabilisation of these banks by the use of vegetation.                      -Use may be made of grass turf or geofabric over seeded with a suitable grass.                      -Once the grass cover is established, a once off removal of all alien invasive plants from the construction footprint should be undertaken.</p>						

		<p>-Consideration can also be given to using geotextiles to help with the prevention of erosion especially along the steep approaches along drainage lines.</p> <p><b>Specialist mitigation</b></p> <ul style="list-style-type: none"> <li>- Areas rated as Very High and High sensitivity in proximity to the development area, must be declared as ‘no-go’ areas during the construction phase, and all efforts must be made to prevent access to this area from construction workers and machinery. This excludes the bridge portion of the wetlands that the road currently traverses.</li> <li>- The areas to be developed must be specifically demarcated to prevent movement of workers into sensitive surrounding environments.</li> <li>- Areas that are denuded during construction need to be re-vegetated with indigenous vegetation. This will also reduce the likelihood of encroachment by alien invasive plant species</li> <li>- The development areas and access roads should be specifically demarcated so that during the construction phase, only the demarcated areas may be impacted upon</li> <li>- Any topsoil that is removed during construction must be appropriately removed and stored according to the national and provincial guidelines. This includes on-going maintenance of such topsoil piles so that they can be utilised during decommissioning phases and re-vegetation</li> <li>- All removed soil and material must not be stockpiled within the wetland/watercourse and associated buffer zone. Stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised and be surrounded by bunds</li> <li>- Effective and sustainable stormwater designs must be incorporated into the road design to prevent excessive runoff into the surrounding natural environment and thereby, causing erosion.</li> </ul>						
<b>Impacts:</b>	<b>Mitigation Status:</b>	<b>Extent:</b>	<b>Intensity:</b>	<b>Duration:</b>	<b>Consequence:</b>	<b>Probability:</b>	<b>Significance:</b>	<b>Risk and Rating Class:</b>
<ul style="list-style-type: none"> <li>- Road construction_ surface water flow, bridge construction – streamflow, drainage</li> </ul>	Without Mitigation	2	3	2	4	3	3	1,4 (Class 2)
	With Mitigation	1	2	1	3	2	2	0,53 (Class 1)
	Mitigation Measures	Specialist mitigation						

<p>patterns</p>		<ul style="list-style-type: none"> <li>- To minimise the impact on both surface water flow and interflow, portions of the road must include a coarse rock layer that has been specifically incorporated to increase the porosity and permeability of the sub-layers of the road;</li> <li>- Concrete pipes must be strategically positioned under the road to drain surface water, this will ensure the road prism does not act as a barrier to water flow;</li> <li>- The footprint area of the road should be kept at a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas;</li> <li>- All construction activities and access must make use of the existing dirt road; Exposed road surfaces awaiting gravel must be stabilised to prevent the erosion of these surfaces. Signs of erosion must be addressed immediately to prevent further erosion of the road;</li> <li>- Silt traps and fences must be placed in the preferential flow paths along the road to prevent sedimentation of the watercourse;</li> <li>- Temporary stormwater channels should be filled with aggregate and/or logs (branches included) to dissipate flows;</li> <li>- The contractors used for the project must have spill kits available to ensure that any fuel or oil spills are cleaned up and discarded correctly; and A suitable stormwater plan must be compiled for the road. This plan must attempt to displace and divert stormwater from the road and discharge the water into adjacent areas without eroding the receiving areas. It is preferable that run-off velocities be reduced with energy dissipators and flows discharged into the local watercourses.</li> <li>- It is critical to spread flows across the water resource, avoiding incisions in the landscape caused by concentrated flows. Temporary stormwater channels should be filled with aggregate and/or logs (branches included) to dissipate flows;</li> <li>- It is recommended that the material surrounding and holding the culverts in place include a coarse rock layer that has been specifically incorporated to increase the porosity and permeability to accommodate flooding and very low flows</li> <li>- The culverts used in the design should be as large as possible, partially sunken and energy dissipating material must be placed at the discharge area of each culvert to prevent erosion of these areas;</li> <li>- The use of larger culverts will prevent the build-up of debris by allowing the free movement of debris through the large culverts;</li> <li>- Culverts should avoid inundation (damming) of upstream areas by facilitating streamflow and catering properly for both low flows and high flows;</li> <li>- Surface run-off from the roads flowing down the embankments often scours the stream banks on the sides of the culvert causing sedimentation of the channel. This should be catered for with adequate concreted stormwater drainage depressions and channels with energy dissipaters that channel these flows into the river in a controlled manner;</li> <li>- The culvert installations should further consider the scouring action of high flows and gabion structures or similar should</li> </ul>
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		<p>be placed on both sides of the culvert on the embankments both upstream and downstream. This will serve as retention of the soils from scouring around and underneath the culvert structures aiding in the protection of the structure (Figure 4-3); and</p> <ul style="list-style-type: none"> <li>- Large aggregate outsourced or from the project area (if available) can be used for energy dissipation in the channel downstream of the culverts to reduce the likelihood of scouring the riverbed and sedimentation of the catchment. It is preferable that larger aggregate be used to avoid flows removing material from the site.</li> <li>- The downstream side of the culvert should be at the same level as the riverbed to allow for upstream migration of fish and other biota and not form a barrier to upstream migration. Alternatively, stacking rocks in layers to serve as a fish ladder may assist in this regard.</li> </ul>						
<b>Socioeconomic Impacts:</b>								
Impacts:	Mitigation Status:	Extent:	Intensity:	Duration:	Consequence:	Probability:	Significance:	Risk and Rating Class:
Dust Creation due to excavation activity and trenching as well as activity of construction vehicles	Without Mitigation	2	3	2	5	3	2	1,2 (Class 2)
	With Mitigation	1	1	1	4	2	1	0,4 (Class 1)
	Mitigation Measures	<p><b>General mitigation</b>                      Dust amelioration methods need to be considered and implemented, where significant quantities of dust are anticipated, methods may be wetting of surfaces or wind screening and residents may need to be notified.</p> <ul style="list-style-type: none"> <li>- The stockpiles may be protected via use of a covering, such as Hessian mats.</li> <li>- Construction vehicles traveling along the access road must adhere to speed limits to avoid creating excessive dust, especially during dry and windy conditions.</li> <li>- Where dust nuisance is unavoidable, screening to be provided.</li> <li>- Stripping of vegetation and existing material will be limited to necessary working areas.</li> <li>- Camp construction / haulage road construction – areas that have been stripped of vegetation must be dampened periodically to avoid excessive dust.</li> </ul>						

	- Ash disposal areas are to be promptly rehabilitated to minimize potential for dust pollution.							
Impacts:	Mitigation Status:	Extent:	Intensity:	Duration:	Consequence:	Probability:	Significance:	Risk and Rating Class:
Generating of noise from construction activity	Without Mitigation	2	2	2	5	2	3	0,93 (Class 1)
	With Mitigation	1	1	1	4	1	1	0,2 (Class 1)
	Mitigation Measures	<b>General mitigation</b> <ul style="list-style-type: none"> <li>- Restriction of noisy activity as per Project Specifications or General Conditions of Contract, and notification of residents of the activities.</li> <li>- Equipping construction vehicles and machinery with silencers and ensuring their maintenance and that the construction vehicles adhere to speed limits at all times.</li> <li>- Make use of noise mufflers as required during removal of concreted surfaces. In any instance</li> <li>- Noise levels are not to exceed SABS 0130 specified noise thresholds.</li> <li>- Construction vehicles to adhere to speed limits, fitted with silencers if need be.</li> <li>- Equipment that is fitted with noise reduction facilities (e.g. Side flaps, silencers etc.) will be used as per operating instructions and maintained properly during site operations.</li> </ul>						
<b>OPERATIONAL PHASE</b>								
Impacts:	Mitigation status	Extent(rating)	Intensity (rating)- <i>Degree to which the impact can cause irreplaceable loss</i>	Duration (rating) (- reversibility)	Consequence(rating)	probability	Significance(status i.e. + or -)	Risk rating and class
Increase in sediment inputs & turbidity								

Water leaks at pipeline joints	Without mitigation	2	Medium (2)	2	medium (6)	3	2	1.2 Class 2
	With mitigation	1	Low (1)	1	Very Low (3)	2	1	0.4 Class 1
	Mitigation measures	<p>Specialist/General mitigation</p> <ul style="list-style-type: none"> <li>- Based on the fact that this is a gravel road the risk is anticipated, however there is an existing track with no engineering designs, the engineered layout and mitigation measures will reduce the risks and improve the likelihood of controlling sedimentation and nutrient inputs.</li> <li>- Effective and sustainable stormwater designs must be incorporated into the road design to prevent excessive runoff into the surrounding natural environment and thereby, causing erosion.</li> <li>- Silt traps and fences must be placed in the preferential flow paths along the road to prevent sedimentation of the watercourse</li> <li>- It is recommended that the material surrounding and holding the culverts in place include a coarse rock layer that has been specifically incorporated to increase the porosity and permeability to accommodate flooding and very low flows</li> <li>- Surface run-off from the roads flowing down the embankments often scours the stream banks on the sides of the culvert causing sedimentation of the channel. This should be catered for with adequate concreted stormwater drainage depressions and channels with energy dissipaters that channel these flows into the river in a controlled manner</li> <li>- Ensure that breakage points in storm water pipe do not degrade or erode as a result of leaking pipes, spills, muddy conditions or wash aways. Rectify problems as soon as they arise.</li> <li>- Repair identified leaks as soon as these are identified.</li> <li>- Do not allow storm water to be concentrated or to flow down cut or fill slopes or along pipeline routes without erosion protection measures being in place.</li> <li>- Do not allow erosion to develop on a large scale before effecting repairs. When in doubt, seek advice from the Project Engineer.</li> <li>- The pipelines used in the project should be monitored and checked on a regular basis to ensure that there are no cracks resulting in subsequent leaks and spills.</li> <li>- Funding to be on hand in the event that spill and water body remediation is required.</li> </ul>						

Impacts: Weed control	Mitigation status	Extent(rating)	Intensity (rating)- <i>Degree to which the impact can cause irreplaceable loss</i>	Duration (rating) (- reversibility)	Consequence(rating)	probability	Significance(status i.e. + or -)	Risk rating and class
	Without mitigation	3	Medium (2)	2	medium(6)	3	2	1.4 Class 2
	With mitigation	2	Low (1)	1	Very Low (3)	2	1	0.53 Class 1
	Mitigation measures	Specialist mitigation <ul style="list-style-type: none"> <li>- Areas that are denuded during construction need to be re-vegetated with indigenous vegetation. This will also reduce the likelihood of encroachment by alien invasive plant species</li> <li>- It should be made an offence for any staff to bring or plant any plant species into any portion of the project area, unless undertaken in line with the required/approved rehabilitation. No plant species whether indigenous or exotic should be brought into the project area, to prevent the spread of exotic or invasive species</li> <li>- An extensive alien plant management plan will be compiled to remove the alien vegetation from within the project footprint. The use of herbicide needs to be monitored and only be used by a qualified person</li> <li>- Areas of indigenous vegetation, even secondary communities, should under no circumstances be fragmented or disturbed further or used as an area for dumping of waste</li> </ul>						



## 4. Cumulative Impacts:

The anticipated impacts resulting from the construction of the proposed project could potentially result in cumulative negative effects by considering the following:

- **Soil erosion;**

*Erosion is already evident along the damaged culvert and banks. The construction phase of the project has the ability to further exacerbate this problem. To achieve this, soil disturbance must be minimized and immediate erosion control measures taken to prevent sediment and other materials from entering the drainage lines. Measures must include at least, the use of sand bags and silt curtains.*

- **Alien invasive plants**

*Loss of some indigenous plant species will need to be cleared for placement of the new infrastructure in the vicinity of the stream crossings. These WILL BE replaced as part of the rehabilitation of the site. (as per the rehabilitation plan to be drawn up) . Where traverse of the riparian and channel bank has arisen consideration should be given to the stabilisation of these banks by the use of vegetation. Use may be made of grass turf or geofabric over seeded with a suitable grass. Once the grass cover is established, a once off removal of all alien invasive plants from the construction footprint should be undertaken*

- **changes to the drainage of the system:**

Areas rated as Very High and High sensitivity in proximity to the development area, must be declared as 'no-go' areas during the construction phase, and all efforts must be made to prevent access to this area from construction workers and machinery. This excludes the bridge portion of the wetlands that the road currently traverses. It is critical to spread flows across the water resource, avoiding incisions in the landscape caused by concentrated flows. Temporary stormwater channels should be filled with aggregate and/or logs (branches included) to dissipate flows

**Should the following mitigation as below be implemented then the significance of these impacts will be low.**

- Adherence to and application of recommendations as per ecological /wetland assessment. Buffering of wetland zones, protection, maintenance and reservation of indigenous species.
- Adherence to and application of recommendations as per Geotechnical Report

## SPECIALIST REPORTS: SUMMARY OF FINDINGS

5. **SPECIALIST REPORTS:** Table below indicates a summary of findings and impact management measures as per the specialist rep/s (complying to Appendix 6 of the EIA Regulations 2014) and how the findings/recommendations were included in final report.

**TABLE 11:**

Specialist report	Summary of findings	Impact management measures	How findings/recommendations have been included in FINAL rep
<p>A Vegetation and Wetland Baseline &amp; Risk Assessment for the proposed Gumedede Bridge Upgrade Project Umdoni, KwaZulu-Natal, Prepared by: The Biodiversity Company</p>	<ul style="list-style-type: none"> <li>- Increase in sediment inputs &amp; turbidity</li>   <li>- surface water flow and interflow</li> </ul>	<ul style="list-style-type: none"> <li>- There is an existing road over the watercourses and the proposed project will reduce the risk of sedimentation because of the improved designs. Dry season construction is preferable. Implement stormwater management measures, these include the deployment of silt traps and managed stockpiles. Minimise the disturbance to riparian areas. Prioritise the upgrade of crossing areas during the low flow period.</li>   <li>- minimise the impact on both surface water flow and interflow, portions of the road must include a coarse rock layer that has been specifically</li> </ul>	<p>➤ The findings have been included in this DRAFT BAR as per the impact assessment where applicable., as well as the EMPr.</p>

		<p>incorporated to increase the porosity and permeability of the sub-layers of the road;</p> <ul style="list-style-type: none"> <li>- Concrete pipes must be strategically positioned under the road to drain surface water, this will ensure the road prism does not act as a barrier to water flow;</li> <li>- The footprint area of the road should be kept at a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas;</li> <li>- All construction activities and access must make use of the existing dirt road;</li> <li>- Exposed road surfaces awaiting gravel must be stabilised to prevent the erosion of these surfaces. Signs of erosion must be addressed immediately to prevent further erosion of the road;</li> <li>- Silt traps and fences must be placed in the preferential flow paths along the road to prevent sedimentation of the watercourse;</li> <li>- Temporary stormwater channels should be filled with aggregate and/or logs (branches included) to dissipate flows;</li> <li>- The contractors used for the project must have spill kits</li> </ul>	
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	<ul style="list-style-type: none"> <li>- incisions in the landscape caused by concentrated flows</li> </ul>	<p>available to ensure that any fuel or oil spills are cleaned up and discarded correctly; and</p> <ul style="list-style-type: none"> <li>- A suitable stormwater plan must be compiled for the road. This plan must attempt to displace and divert stormwater from the road and discharge the water into adjacent areas without eroding the receiving areas. It is preferable that run-off velocities be reduced with energy dissipators and flows discharged into the local watercourses</li> <li>- It is critical to spread flows across the water resource, avoiding incisions in the landscape caused by concentrated flows. Temporary stormwater channels should be filled with aggregate and/or logs (branches included) to dissipate flows;</li> <li>- It is recommended that the material surrounding and holding the culverts in place include a coarse rock layer that has been specifically incorporated to increase the porosity and permeability to accommodate flooding and very</li> </ul>	
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		<p>low flows</p> <ul style="list-style-type: none"> <li>- The culverts used in the design should be as large as possible, partially sunken and energy dissipating material must be placed at the discharge area of each culvert to prevent erosion of these areas;</li> <li>- The use of larger culverts will prevent the build-up of debris by allowing the free movement of debris through the large culverts;</li> <li>- Culverts should avoid inundation (damming) of upstream areas by facilitating streamflow and catering properly for both low flows and high flows;</li> <li>- Surface run-off from the roads flowing down the embankments often scours the stream banks on the sides of the culvert causing sedimentation of the channel. This should be catered for with adequate concreted stormwater drainage depressions and channels with energy dissipaters that channel these flows into the river in a controlled manner;</li> <li>- The culvert installations should further consider the scouring action of high flows and gabion structures or similar should be</li> </ul>	
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		<p>placed on both sides of the culvert on the embankments both upstream and downstream. This will serve as retention of the soils from scouring around and underneath the culvert structures aiding in the protection of the structure (Figure 4-3); and</p> <ul style="list-style-type: none"><li>- Large aggregate outsourced or from the project area (if available) can be used for energy dissipation in the channel downstream of the culverts to reduce the likelihood of scouring the riverbed and sedimentation of the catchment. It is preferable that larger aggregate be used to avoid flows removing material from the site.</li><li>- The downstream side of the culvert should be at the same level as the riverbed to allow for upstream migration of fish and other biota and not form a barrier to upstream migration. Alternatively, stacking rocks in layers to serve as a fish ladder may assist in this regard</li></ul>	
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<p>Report to Vuba Imagineers on the Results of a Geotechnical Investigation for the Proposed Gumede Bridge Located in Ward 16 within the Umdoni Municipality, KwaZulu-Natal</p>	<ul style="list-style-type: none"> <li>- Based on the results of the fieldwork undertaken during this investigation, it is considered that this site is generally stable and suitable for the proposed development, provided that the recommendations given in this report are adhered to.</li> <li>- The site at the positions investigated is observed to be underlain by colluvium, fill, alluvium, residual tillite and weathered tillite rock. The tillite rock was observed at depths of 1.30m (IP1 refers) and 4.55m (IP2 refers) below EGL.</li> <li>- The site traverses a stream and occurs in a low-lying area which appears to be periodically exposed to cycles of inundation. Hence, shallow groundwater conditions are anticipated with strong surface water flows during and after periods of rainfall.</li> </ul> <p>It is imperative that the well-developed groundwater condition and risk of inundation be taken into account during design and construction of the proposed structure. In this regard, it is considered that temporary dewatering of excavations and/or the use of a coffer dam will be required during construction.</p>	<ul style="list-style-type: none"> <li>➤ <i>Limited “Intermediate” and “Boulder” excavations to the depths investigated cannot be discounted and it is recommended that a contingency amount be allowed for “Intermediate” and “Boulder – Class B” excavations at shallower depths due to likely geological variations.</i></li> <li>- It is recommended that earthworks be carried out along the guidelines given in SANS 1200 (current version).</li> <li>➤ <i>Containment of the anticipated surface water and sub-surface groundwater inflow is essential by means of a coffer dam to engineer’s detail or by dewatering.</i></li> <li>- Density control testing of placed fill material should be undertaken at regular intervals during fill construction.</li> <li>- Where natural ground slopes are steeper than 1 vertical to 6 horizontal (&gt; 9 °), the fill must be benched into the slope, to</li> </ul>	<ul style="list-style-type: none"> <li>➤ <i>The findings have been included in this DRAFT BAR as per the impact assessment where applicable, as well as site specific section of the EMPr.</i></li> </ul>
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	<p>It is considered that the following foundation types will be suited to the proposed developments and underlying founding conditions:</p> <ol style="list-style-type: none"> <li>i. Spread/Pad Footing;</li> <li>ii. Caissons; and/or</li> <li>iii. Piled Foundation.</li> </ol> <ul style="list-style-type: none"> <li>- Taking into consideration the shallow groundwater table, it is considered that a piled foundation solution may prove to be the more practical solution for this site. In this regard, the auger pile and rotapile are likely to be suitable pile types for the site conditions. Spread footing and caissons can be considered along the southern abutment provided the surface and groundwater can be controlled.</li> <li>- All earthworks should be carried out in a manner to promote stable development of the site. It is recommended that earthworks be carried out along the guidelines given in SANS 1200 (current version).</li> <li>- Earthworks and drainage measures</li> </ul>	<p>engineer's detail.</p> <ul style="list-style-type: none"> <li>- Placement of fill layers should be undertaken in layers not exceeding 200mm thick when placed loose and compacted using suitable compaction plant to achieve at least 93% of Modified AASHTO maximum dry density at within 1 – 2 percent (wet / dry) of OMC. Boulders larger than <math>\frac{2}{3}</math> of the layer thickness must not be included in the fill material.</li> <li>- For fill embankments, terraces should be graded to direct water to drainage channels away from the fill edges, and small earth bunds should be constructed along the crests of fills, to prevent overtopping and erosion of fill embankment slopes. These bunds should be a minimum 450mm wide and 300mm high.</li> <li>- All toes of fill embankments near the rivers will need to be protected against erosion from the rivers.</li> </ul>	
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	<p>should be designed, by an Engineer, in such a way as to prevent ponding of, or high concentrations of, stormwater or groundwater anywhere on the site, both during and after the development. Suitable measures to engineer's detail are required to manage potential hydraulic flood scour.</p> <ul style="list-style-type: none"> <li>- The ground conditions given in this report refer specifically to the field tests carried out on site. It is therefore, quite possible that conditions at variance with those given in this report could be encountered elsewhere on site during construction. It is also important that Geosure be appointed to carry out periodic inspections during construction. Any change from the anticipated ground conditions could then be taken into account to avoid unnecessary expense</li> </ul>	<ul style="list-style-type: none"> <li>- Cut slopes in soils should be formed to batters not exceeding 1 vertical to 2 horizontal (<math>\leq 26^\circ</math>) and to a height not greater than 3m where stabilizing solutions are not provided.</li> <li>- Cut slopes in competent weathered rock, where encountered, should be no steeper than 1v to 0.75h (<math>\leq 53^\circ</math>) and to a height not greater than 3.0m where retaining walls are not provided. Where joints or bedding planes are exposed during excavation it is recommended that a geotechnical specialist is appointed to assess their effects on the stability of the cutting and the global stability of the slope.</li> <li>- Where excavations intersect or approach the water table, the sidewalls will tend to become unstable and need to be drained and laterally supported or battered back at slopes of the order of 1v in 5h.</li> </ul>	
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		<ul style="list-style-type: none"><li>- Heights of cut and fill embankment greater than 3m should be inspected and approved by a geotechnical professional.</li><li>➤ <i>All cut slopes and fill embankments within the vicinity of the stream will need to be protected, against erosion from the stream, to engineer's detail</i></li><li>➤ <i>Temporary support for excavation sidewalls and de-watering will be required.</i></li><li>➤ <i>The footings must be founded on competent weathered bedrock of at least very soft rock strength, where a maximum allowable bearing pressure of 250kN/m<sup>2</sup> is considered applicable.</i></li><li>➤ <i>A detailed pile design will need to be carried out by the contractor. This design should be submitted to Geosure for comment.</i></li><li>➤ <i>Earthworks and drainage measures should be designed by an Engineer in such a way as to prevent ponding of, or high concentrations of, stormwater or groundwater anywhere on the site, both</i></li></ul>	
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		<p><i>during and after completion of the development.</i></p>	
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## 6. Environmental Impact Statement

- ❖ Taking the assessment of potential impacts into account, an environmental impact statement has been provided that summarises the impact that the proposed activity and its alternatives, may have on the receiving socio-economic and biophysical environment, after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.
- ❖ Positive and negative impacts and risks of the proposed activity and alternatives have also been taken into consideration and included where applicable.
- ❖ Impact management measures from the specialist reports have also been included.
- ❖ Map has been included which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers, where applicable.

In line with the National Environmental Management Act (No. 107 of 1998), the development must be socially, economically and environmentally sustainable with the implications that:

- *Pollution and degradation of the receiving environment are avoided.*
- *Waste is avoided/minimised and re-used or re-cycled where possible.*
- *Hazardous substances are handled and installed with extreme care and caution.*
- *Only the utilisation of indigenous plant species in the landscaping and rehabilitation of site be permitted.*
- *Environmental Negligence by construction staff is avoided wherever possible.*
- *Construction vehicles and machinery are in good working order meeting manufactures specifications for anthropogenic and environmental safety.*
- *Rehabilitation of all disturbed and buffer areas.*

Potential impacts were identified by professional judgement, project information, experience of similar projects, a review of available literature, site visits and consultation with Specialists Engineers, relevant authorities and the registered IAP's. Works of this nature can pose significant impacts on the environment as identified below:

Impacts of significance for the proposed project is identified as follows:

**DECOMMISSIONING PHASE**

**Proposed portal culvert bridge 7.12m long and 6.1m wide.**

**Biophysical Impacts**

Impacts	Mitigation Status:	Extent:	Intensity:	Duration:	Consequence:	Probability:	Significance:	Risk and Rating Class:
<b>Increased sediment loads and turbidity in stream due to dismantling activities</b>	Without Mitigation	3	2	3	8	4	3	3.45 (Class 4)
	With Mitigation	1	1	1	3	2	1	0,4 (Class 1)
	Mitigation Measures	<p><b>General mitigation</b></p> <ul style="list-style-type: none"> <li>- Erosion controls must be implemented to prevent the expansion of existing gulleys or the formation of new erosion points where demolition has arisen.</li> <li>- Priority areas for erosion control are areas where there is an obvious gradient and the flow of water can be expected.</li> <li>- Measures must include at least, the use of sand bags and silt curtains.</li> <li>- Limit the extent of disturbance.</li> <li>- The proposed foot print should be limited to as proximal to existing footprint and road reserves.</li> </ul>						

		<p><b>specialist mitigation:</b></p> <ul style="list-style-type: none"> <li>- Trenching, earthworks and drainage measures should be designed in such a way as to prevent ponding of, or high concentrations of, stormwater or groundwater anywhere on the sites, during de-construction. All removed soil and material must not be stockpiled within the wetland/watercourse and associated buffer zone. Stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised and be surrounded by bunds.</li> <li>- Any topsoil that is removed during construction must be appropriately removed and stored according to the national and provincial guidelines. This includes on-going maintenance of such topsoil piles so that they can be utilised during decommissioning phases and re-vegetation</li> <li>- Areas that are denuded need to be re-vegetated with indigenous vegetation to prevent erosion during flood events. This will also reduce the likelihood of encroachment by alien invasive plant species;</li> </ul>
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**CONSTRUCTION PHASE**

<b>Proposed portal culvert bridge 7.12m long and 6.1m wide.</b>								
<b>Biophysical Impacts:</b>								
Impacts:	Mitigation Status:	Extent:	Intensity:	Duration:	Consequence:	Probability:	Significance:	Risk and Rating Class:
Increased sediment loads and turbidity due to construction,	Without Mitigation	3	2	3	8	4	3	3.45 (Class 4)
	With Mitigation	1	1	1	3	2	1	0,4 (Class 1)
	Mitigation	<b>general mitigation</b>						

<p>stockpiling, distribution of soils and surface run off</p>	<p>Measures</p>	<p>Erosion controls must be implemented to prevent the expansion of existing gulleys or the formation of new erosion points where trench work has arisen.</p> <ul style="list-style-type: none"> <li>-Priority areas for erosion control are areas where there is an obvious gradient and the flow of water can be expected.</li> <li>-Measures must include at least, the use of sand bags and silt curtains.</li> <li>-Limit the extent of disturbance.</li> <li>-The proposed foot print should be limited to as proximal to existing road reserves.</li> <li>-All construction activities must be limited to points proximal to this area.</li> <li>-Where traverse of the riparian and channel bank has arisen consideration should be given to the stabilisation of these banks by the use of vegetation.</li> <li>-Use may be made of grass turf or geofabric over seeded with a suitable grass.</li> <li>-Once the grass cover is established, a once off removal of all alien invasive plants from the construction footprint should be undertaken.</li> </ul> <p>-Consideration can also be given to using geotextiles to help with the prevention of erosion especially along the steep approaches along drainage lines.</p> <p><b>Specialist mitigation</b></p> <ul style="list-style-type: none"> <li>- Areas rated as Very High and High sensitivity in proximity to the development area, must be declared as ‘no-go’ areas during the construction phase, and all efforts must be made to prevent access to this area from construction workers and machinery. This excludes the bridge portion of the wetlands that the road currently traverses.</li> <li>- The areas to be developed must be specifically demarcated to prevent movement of workers into sensitive surrounding environments.</li> <li>- Areas that are denuded during construction need to be re-vegetated with indigenous vegetation. This will also reduce the likelihood of encroachment by alien invasive plant species</li> <li>- The development areas and access roads should be specifically demarcated so that during the construction phase, only the demarcated areas may be impacted upon</li> <li>- Any topsoil that is removed during construction must be appropriately removed and stored according to the national and provincial guidelines. This includes on-going maintenance of such topsoil piles so that they can be utilised during decommissioning phases and re-vegetation</li> <li>- All removed soil and material must not be stockpiled within the wetland/watercourse and associated buffer zone. Stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised and be surrounded by bunds</li> </ul>
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		<ul style="list-style-type: none"><li>- Effective and sustainable stormwater designs must be incorporated into the road design to prevent excessive runoff into the surrounding natural environment and thereby, causing erosion.</li></ul>
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	<p>Revegetation</p>	<p><b>AVOIDANCE OF ALIEN INFESTATION</b></p>	<p>be used as borrow pits.</p> <ul style="list-style-type: none"> <li>- Areas that are denuded during construction need to be re-vegetated with indigenous vegetation. This will also reduce the likelihood of encroachment by alien invasive plant species.</li> <li>- It should be made an offence for any staff to bring or plant any plant species into any portion of the project area, unless undertaken in line with the required/approved rehabilitation. No plant species whether indigenous or exotic should be brought into the project area, to prevent the spread of exotic or invasive species.</li> </ul>
	<p>Alien vegetation</p>	<p><b>REMOVAL OF ALIEN VEGETATION</b></p>	<ul style="list-style-type: none"> <li>- An extensive alien plant management plan will be compiled to remove the alien vegetation from within the project footprint. The use of herbicide needs to be monitored and only be used by a qualified person</li> <li>- Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood events. This will also reduce the likelihood of encroachment by alien invasive plant species</li> <li>- The development areas and access roads should be specifically</li> </ul>

	<p>Fire management</p>	<p><b>PROTECTION OF FLORA/FAUNA AGAINST FIRE</b></p>	<p>demarcated so that during the construction phase, only the demarcated areas may be impacted upon</p> <ul style="list-style-type: none"> <li>- Areas of indigenous vegetation, even secondary communities, should under no circumstances be fragmented or disturbed further or used as an area for dumping of waste</li> <li>- Fire management plan must be in place for the areas surrounding the project area and the road to restrict the impact from fire on the natural flora and fauna communities. A fire expert should be consulted for suitable guidelines for the area and project requirements.</li> </ul>
	<p>SITE PLAN</p>	<p><b>INDICATION OF ACCESS/ABLUTION AREAS ETC</b></p>	<ul style="list-style-type: none"> <li>- A site plan of the area must be made available onsite for all contractors and personnel indicating parking &amp; storage areas, site offices and placement of ablation facilities.</li> <li>- The Contractor should inform all site staff to the use of supplied ablation facilities and under no circumstances shall indiscriminate excretion and urinating be allowed other than in supplied facilities. A minimum of one toilet must be provided per 10 persons.</li> <li>- The Contractor</li> </ul>

	Waste management	<b>SOILD WASTE</b>	<p>should supply sealable and properly marked domestic waste collection bins and all solid waste collected shall be disposed of at a licensed disposal facility.</p> <ul style="list-style-type: none"> <li>- Where a registered disposal facility is not available close to the site, the Contractor shall provide a method statement with regard to waste management. Under no circumstances may domestic waste be burned on site. Temporary storage of domestic waste shall be in covered waste skips</li> </ul>
	Topsoil	<b>STORAGE OF TOPSOIL</b>	<ul style="list-style-type: none"> <li>- Any topsoil that is removed during construction must be appropriately removed and stored according to the national and provincial guidelines. This includes on-going maintenance of such topsoil piles so that they can be utilised during decommissioning phases and re-vegetation</li> <li>- All livestock must always be kept out of the project area, especially areas that have been recently re-planted</li> </ul>
	Dust	<b>DUST CONTROL</b>	<ul style="list-style-type: none"> <li>- Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all roads and dumps especially. This includes wetting of exposed soft soil surfaces and not</li> </ul>

	<p>Excavated soil</p>	<p><b>WATERCOURSE , BUFFER ZONE PROTECTION</b></p>	<p>conducting activities on windy days which will increase the likelihood of dust being generated. No dust is allowed, whether intentionally or otherwise, to be blown across into the surrounding areas;</p> <ul style="list-style-type: none"> <li>- All removed soil and material must not be stockpiled within the wetland/watercourse and associated buffer zone. Stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised and be surrounded by bunds.</li> <li>- A pest control plan must be put in place and implemented. It is imperative that poisons not be used.</li> </ul>
	<p>Spillages</p>	<p><b>SPILLAGES INTO WATERCOURSE/ECOSYSTEM</b></p>	<ul style="list-style-type: none"> <li>- Construction activities and vehicles could cause spillages of lubricants, fuels and waste material potentially negatively affecting the functioning of the ecosystem. All vehicles and equipment must be maintained, and all re-fuelling and servicing of equipment is to take place in demarcated areas outside of the project area</li> <li>- Have action plans on site, and training for contractors and employees in the event of sewage spills, leaks and hazardous chemical spills to the surrounding</li> </ul>

	runoff	<b>SPILLAGES INTO WATERCOURSE</b>	<p>environment. A specialist Contractor shall be used for the bioremediation of contaminated soil where the required remediation material and expertise is not available on site</p> <ul style="list-style-type: none"> <li>- Effective and sustainable stormwater designs must be incorporated into the road design to prevent excessive runoff into the surrounding natural environment and thereby, causing erosion.</li> </ul>
<p>Report to Vuba Imagineers on the Results of a Geotechnical Investigation for the Proposed Gumede Bridge Located in Ward 16 within the Umdoni Municipality, KwaZulu-Natal</p>	<p>Containment of the anticipated surface water and sub-surface groundwater inflow</p> <p>Benching of fill</p> <p>Terracing of embankments</p>	<p>surface water and sub-surface groundwater inflow</p> <p>natural ground slopes</p> <p>Embankments</p>	<ul style="list-style-type: none"> <li>➤ <i>Containment of the anticipated surface water and sub-surface groundwater inflow is essential by means of a coffer dam to engineer's detail or by dewatering.</i></li> <li>- Where natural ground slopes are steeper than 1 vertical to 6 horizontal (&gt; 9 °), the fill must be benched into the slope, to engineer's detail.</li> <li>- For fill embankments, terraces should be graded to direct water to drainage channels away</li> </ul>

	<p>Battering of cut slopes</p>	<p>of Cut slopes</p>	<p>from the fill edges, and small earth bunds should be constructed along the crests of fills, to prevent overtopping and erosion of fill embankment slopes. These bunds should be a minimum 450mm wide and 300mm high.</p> <ul style="list-style-type: none"> <li>- All toes of fill embankments near the rivers will need to be protected against erosion from the rivers.</li> <li>- Cut slopes in soils should be formed to batters not exceeding 1 vertical to 2 horizontal (<math>\leq 26^\circ</math>) and to a height not greater than 3m where stabilizing solutions are not provided.</li> <li>- Cut slopes in competent weathered rock, where encountered, should be no steeper than 1v to 0.75h (<math>\leq 53^\circ</math>) and to a height not greater than 3.0m where retaining walls are not provided. Where joints or bedding planes are exposed</li> </ul>
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	<p>DRAINING OF SIDE WALLS</p>	<p>excavations</p>	<p>during excavation it is recommended that a geotechnical specialist is appointed to assess their effects on the stability of the cutting and the global stability of the slope.</p> <ul style="list-style-type: none"> <li>- Where excavations intersect or approach the water table, the sidewalls will tend to become unstable and need to be drained and laterally supported or battered back at slopes of the order of 1v in 5h.</li> <li>- Heights of cut and fill embankment greater than 3m should be inspected and approved by a geotechnical professional.</li> <li>➤ <i>All cut slopes and fill embankments within the vicinity of the stream will need to be protected, against erosion from the stream, to engineer's detail</i></li> <li>➤ <i>Temporary support for excavation sidewalls and de-watering will be required.</i></li> <li>➤ <i>The footings must be founded on competent weathered bedrock</i></li> </ul>
	<p>FOOTINGS TO BE FOUNDED-COMPETENT ROCK</p>	<p>Footings</p>	

			<p>of at least very soft rock strength, where a maximum allowable bearing pressure of 250kN/m<sup>2</sup> is considered applicable.</p> <p>➤ A detailed pile design will need to be carried out by the contractor. This design should be submitted to Geosure for comment.</p> <p>Earthworks and drainage measures should be designed by an Engineer in such a way as to prevent ponding of, or high concentrations of, stormwater or groundwater anywhere on the site, both during and after completion of the development.</p>
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### 8. The Following should be Included as Conditions of the Environmental Authorisation: (As Identified By EAP/Specialists)

- ✓ The EMPr (final) and conditions thereto must be adhered to;
- ✓ An independent Environmental Control Officer (ECO) must be appointed (frequency to be determined by CA) and all Contractor staff to be inducted on the EMPr requirements prior to commencement of activities; and any new staff to also be inducted. A preconstruction audit as well as 3 post-construction audits should be undertaken as well as a once off annual audit.
- ✓ If the wetland that the *Sideroxylon inerme* specimens are located cannot be avoided, these trees must be relocated as per directive from the relevant authority. This will require permitting from the relevant authority.
- ✓ Areas rated as Very High and High sensitivity in proximity to the development area, must be declared as 'no-go' areas during the construction phase, and all efforts must be made to prevent access to this area from construction workers and machinery. This excludes the bridge portion of the wetlands that the road currently traverses
- ✓ Borrow pits should be in areas that are regarded as transformed or wasteland. Under no circumstances should high sensitivity habitats be used as borrow pits.
- ✓ Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood events. This will also reduce the likelihood of encroachment by alien invasive plant species;
- ✓ The development areas and access roads should be specifically demarcated so that during the construction phase, only the demarcated areas may be impacted upon.
- ✓ Fire management plan must be in place for the areas surrounding the project area and the road to restrict the impact from fire on the natural flora and fauna communities. A fire expert should be consulted for suitable guidelines for the area and project requirements.
- ✓ All removed soil and material must not be stockpiled within the wetland/watercourse and



associated buffer zone. Stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised and be surrounded by bunds.

- ✓ The ground conditions given in this report refer specifically to the field tests carried out on site. It is therefore, quite possible that conditions at variance with those given in this report could be encountered elsewhere on site during construction. It is also important that Geosure be appointed to carry out periodic inspections during construction. Any change from the anticipated ground conditions could then be taken into account to avoid unnecessary expense.

## 9. Description of Assumptions, Uncertainties, Gaps in Knowledge Relating To Assessment and Mitigation Proposed

The basic assessment report and process thus far, followed the legislated process as per the EIA Regulations of 2014(amended 07 April 2017). Inevitably, when undertaking specific scientific specialist studies and reportings, challenges and limitations will be encountered. For this specific BAR, the following challenges were encountered:

The assessment of impacts and the mitigation thereof was informed by the specialist reports and also based on the EAPS knowledge and experience from working with projects of a similar nature and environmental setting.

### Vegetation and Wetland Baseline & Risk Assessment

- The assessment area was based on the location provided by the client and any alterations to the location and/or missing GIS information pertaining to the assessment area would have affected the area surveyed;
- The wetland/flora assessment was based on the results of a single survey only, due to time constraints, and information provided should be interpreted accordingly;  
Only wetlands that were likely to be impacted by proposed development activities were assessed in the field;
- As per the scope of work, the fieldwork component of the assessment comprised one assessment only and therefore, this study has not assessed any temporal trends.  
Comprehensive desktop data reviews, analysis and processing was undertaken to address this limitation;
  - o The field survey was undertaken in winter and therefore the probability of detection of certain species will be lowered as:
    - o Not all angiosperm species will be flowering, which is generally required for identifying certain geophytes, epiphytes and lithophytes; and
    - o Deciduous and annual species will be dormant.
    - o Consequently, this may negligibly affect the sensitivity rating of the habitats surveyed and delineated as part of this assessment.

### GEOTECHNICAL REPORT:

The ground conditions given in this report refer specifically to the field tests carried out on site. It is therefore, quite possible that conditions at variance with those given in this report could be encountered elsewhere on site during construction. It is also important that Geosure be appointed to carry out periodic inspections during construction. Any change from the anticipated ground conditions could then be taken into account to avoid unnecessary expense.

**10. REASONS FOR AUTHORISING OR NOT:**

It is advised that the application be assessed thoroughly and holistically, taking into consideration the study area and the fact that the proposed project is a priority.

The project, in the EAP's opinion, does not pose a detrimental negative impact on the receiving biophysical and socio-economic environments and we are confident that all identified negative impacts can be mitigated effectively with the proper cited mitigation.

**It is of the opinion that the PROPOSED CONSTRUCTION OF GUMEDE BRIDGE, UMDONI LOCAL MUNICIPALITY SHOULD BE AUTHORISED DUE TO THE FOLLOWING:**

- ✓ The proposed project will *address public safety concerns in the village, as an appropriate river crossing in the form of a new portal culvert bridge will now be provided.*
- ✓ *This portal culvert bridge will enable easy, safe, adequate access to the either side of the stream in all weather conditions.*
- ✓ *The bridge structure underpins the factors of durability, safety, economy, constructability and aesthetics.*
- ✓ *It will accommodate light-medium traffic across Gumede River.*
- ✓ *The proposed project will create temporary employment during the construction of the works.*
- ✓ *It will encourage Community participation and governance in the provision of the improved infrastructure and will enhance the lives of the community*
- ✓ *There will be a significant requirement for unskilled labor from the community.*
- ✓ *It is a requirement in the contract documents that maximum use be made of local labor and sub-contractors.*
- ✓ *This project supports the employment of women.*

**As per ECOLOGICAL REPORT:** It is clear from field observations that the landscape possesses vegetation types altered by anthropogenic activities, as well as natural features.

The development footprint is situated within the KwaZulu-Natal Coastal Belt Grassland. The KwaZulu-Natal Coastal Belt Grassland threat status is 'Critically Endangered' and protection status is 'Normally Protected'. The proposed activity footprint overlaps with transformed land-cover and is regarded as possessing low sensitivity, albeit the surrounding landscape comprises of sensitive habitats, including Irreplaceable Critical Biodiversity Areas. These sensitive habitats possess flora SCC, as well as provide an array of ecosystem services. *Sideroxylon inerme* specimen adjacent to the road within the wetland must be relocated as prescribed.

There are potential risks to the surrounding sensitive habitat arising from the construction of the proposed activity. It is therefore imperative that all habitats not within the development footprint regarded as possessing 'high' sensitivity be avoided and declared as 'no-go' areas.

It is the opinion of the specialists that the rebuilding of the Gumede bridge is feasible. However, the impacts associated with the proposed development activities must be mitigated against to ensure the maintenance of ecological processes, and the concomitant delivery of ecosystem services, of nearby habitats. Careful consideration must be afforded to each of the recommendations provided herein and proven ecological (or environmental) controls and mitigation measures must be entrenched in the management framework.

## AS PER GEOTECHNICAL REPORT:

It is imperative that the well-developed groundwater condition and risk of inundation be taken into account during design and construction of the proposed structure. In this regard, it is considered that temporary dewatering of excavations and/or the use of a coffer dam will be required during construction. It is considered that the following foundation types will be suited to the proposed developments and underlying founding conditions:

- i Spread/Pad Footing;
- ii Caissons; and/or
- iii Piled Foundation

Taking into consideration the shallow groundwater table, it is considered that a piled foundation solution may prove to be the more practical solution for this site. In this regard, the auger pile and rotapile are likely to be suitable pile types for the site conditions. Spread footing and caissons can be considered along the southern abutment provided the surface and groundwater can be controlled. All earthworks should be carried out in a manner to promote stable development of the site. It is recommended that earthworks be carried out along the guidelines given in SANS 1200 (current version).

Earthworks and drainage measures should be designed, by an Engineer, in such a way as to prevent ponding of, or high concentrations of, stormwater or groundwater anywhere on

the site, both during and after the development. Suitable measures to engineer's detail are required to manage potential hydraulic flood scour

**Based on the results of the fieldwork undertaken during this investigation, it is considered that this site is generally stable and suitable for the proposed development, provided that the recommendations given in this report are adhered to.**

- 11. *If no OPERATIONAL ASPECTS, PERIOD FOR WHICH EA is required, date on which activity will conclude and post-construction monitoring requirements finalised: WILL BE INCLUDED AS PER FINAL BAR.*

12. **THE FOLLOWING IS HEREBY an affirmation by the EAP for inclusion in the DRAFT BAR:**

- ✓ the correctness of the information provided in the reports;
- ✓ the inclusion of all comments and inputs from stakeholders and REGISTERED I&APs;
- ✓ the inclusion of all inputs and recommendations from the specialist reports where relevant; and
- ✓ Any information provided by the EAP to registered I&APs and any responses by the EAP to comments or issues of concern noted by registered IAP's.

13. **Details of financial provision** for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts.

Will be included when the FINAL rehabilitation plan has been done

14. Any matters required to S24(4)(a) and (b) of the Act: N/A