Basic Assessment Report for:

The development of structures with a physical footprint of 100 square metres or more where such development occurs within 32 metres from the edge of a watercourse; and

the depositing of material and removal of soil of more than 10 cubic metres from a watercourse associated with the replacement of four culverts and development of two bridges within the Umtshezi Local Municipality

SEPTEMBER 2017

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COMPANY REGISTRATION NO: 1999/049452/23

DEPARTMENT REFERENCE NUMBER	**DC23/0019/2017**

PROJECT TITLE

Basic Assessment Report for the development of structures with a physical footprint of 100 square metres or more where such development occurs within 32 metres from the edge of a watercourse and the depositing of material and removal of soil of more than 5 cubic metres from a watercourse associated with the replacement of four culverts and development of two bridges within the Umtshezi Local Municipality

DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

2014 EIA REULATIONS: 3(1) (a) details of-(i) the EAP who prepared the report; and (ii) the expertise of the EAP, including a curriculum vita;

This Report was prepared by *KSEMS Environmental Consulting*

Kerry Stanton BSc (Hons) MSc, EAPSA and CGX certified, Pr.Sci.Nat. ***Director***

Tertiary Education:	University of Natal, Durban BSc (Hons) - Estuarine Ecology (Major), Urban Biogeography (Ecology) (Major) *MSc awarded cum laude* Environmental Management and Open Space Planning Thesis *"Developing an Open Space System for the Queensburgh Municipal Area"*
Work Experience:	1993-1994 Queensburgh Municipality - Unofficial Environmental Advisor for duration of MSc 1994-1995 IDEAS- Partner in Environmental Consultancy 1995-1998 Environment Branch, North and South Central Local Council- Professional Environmental Officer 1999 - Present; Director Kerry Seppings Environmental Management Specialists cc.
Certifications:	Certified by the Environmental Assessment Practitioners of South Africa (EAPSA) Certified Professional Natural Scientist (400167/12) Certified GCX Carbon Footprint Analyst (Level 1)

Patricia Nathaniel BSc (Hons) ***Technical Manager***

Tertiary Education:	UKZN, KZN BSc (Hons) – Environmental Science
Work Experience:	2010 – 2013; Environmental Consultant for ERM 2014 – Present; Environmental Scientist for KSEMS Environmental Consulting 2015-2016; Senior Environmental Consultant 2017; Technical Manager

COMPILED BY	DATE	SIGNATURE
Patricia Nathaniel Technical Manager	1 April 2017	

REVIEWED BY	DATE	SIGNATURE
Kerry Stanton Director		

SECTION A: ACTIVITY INFORMATION

1. PROJECT DESCRIPTION

A) DESCRIBE THE PROJECT ASSOCIATED WITH THE LISTED ACTIVITIES APPLIED FOR

2014 EIA Regulations 3(d) a description of the scope of the proposed activity, including all listed and specified activities triggered and being applied for; and a description of the activities to be undertaken including associated structures and infrastructure;

The KZN Department of Transport (KZNDoT) proposes to construct the Bloukrans River crossing, Qabango River crossing and replace four culverts along Road D489 within the Umtshezi Local and Uthukela District Municipalities. These river crossings and culverts are located along Road D489 which can be accessed approximately 3.1km and 7.9km from the R102/D483 Junction respectively.

The motivation for the replacement of the culverts are in accordance with KZNDoTs aim to replace all low-level structures that are overtopped and have become dilapidated during appreciable rainfall events with structures that can withstand these events without deteriorating. The existing structures are in a dilapidated condition to due low resistance to heavy flows of water. The replacement of the existing Bloukrans and Qabango River Bridges at the proposed locations arise from the KZNDoTs initiative to upgrade the existing concrete lintel bridge to dual lane rigid reinforced concrete bridge to improve durability. The existing Bloukrans River Bridge will be extended in height and width whereas the new Qabango River Bridge will be constructed 20m upstream from the existing one.

The entire development forms part of KZNDOT's ongoing strategy to improve rural mobility and provide safer and more efficient pedestrian movement in the rural areas.

The proposed development triggers Listing Notice 1 (GNR 983) under the 2014 NEMA Regulations. The proposed upgrade triggers Activities 12 and 19 of Listing Notice 1 as the structures covers an area of 100 square metres cumulatively and will be situated within 32 metres of a watercourse, there will also be depositing of material and removal of soil in excess of 5 cubic metres from a watercourse.

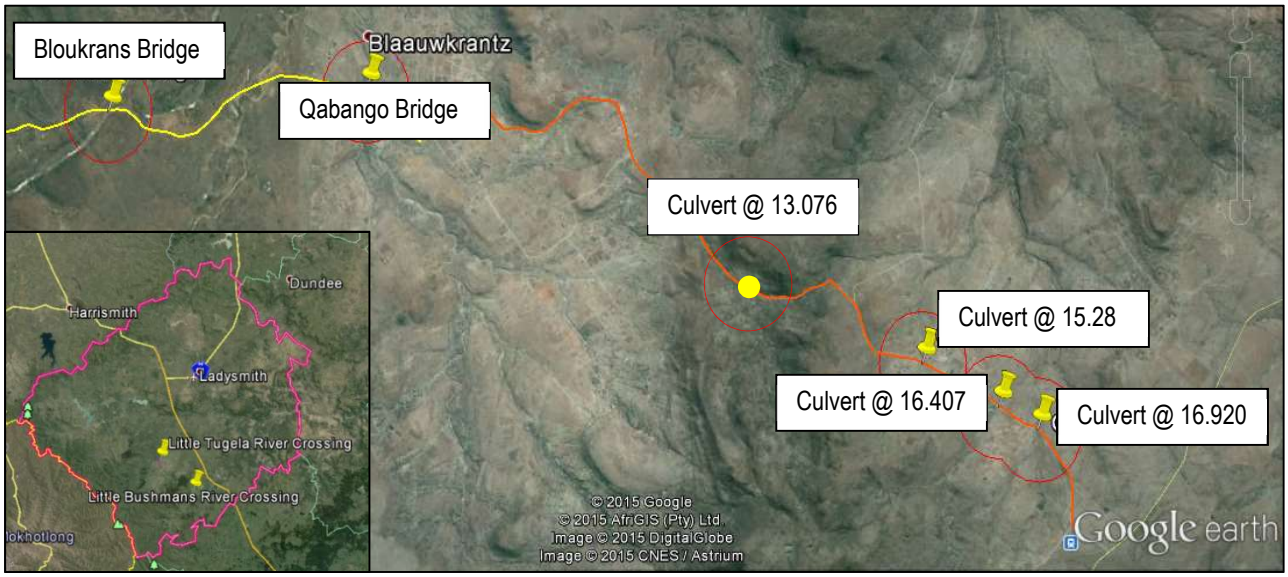


Figure 1: Location of the Bloukrans and Qabango River and four culvert crossings in relation to the towns of Estcourt and Weenen (insert) within the Umtshezi Local Municipality (Google Earth, 2016).

B) PROVIDE A DETAILED DESCRIPTION OF THE LISTED ACTIVITIES ASSOCIATED WITH THE PROJECT AS APPLIED FOR

Government Notice No.	Activity No(s)	Description
Listing Notice 1 Government Notice No. R 983		
Government Notice No. 983 of 08 December 2014	12	The development of: (xii) infrastructure or structures with a physical footprint of 100 square metres or more; Where such development occurs (c) if no development setback exists, within 32 metres of a watercourse measured from the edge of a watercourse. **The bridge structures cross the Bloukrans and Qabango Rivers and the culverts will cross the tributaries of the Sterkspruit River therefore triggering this activity.** **This activity may not be triggered for the culverts and the Bloukrans Bridge as these structures are within the existing road and road reserve and therefore excluded from this activity.**
Government Notice No. 983 of 08 December 2014	19	The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from- (i) a watercourse; excluding where such infilling, depositing, dredging, excavation, removal or moving- (a) will occur behind a development setback; (b) is for maintenance purposes undertaken in accordance with a maintenance management plan; or (c) falls within the ambit of activity 21 in this Notice, in which case that activity applies. **The replacement of the culverts and bridge structures will result in infilling and depositing of material within a watercourse as well as the removal of soil to install the new structures. It is likely that the cumulative amount of material will be in excess of 10 cubic metres.**

c) LOCATION OF THE ACTIVITY

2014 Regulations 3 (b) the location of the activity, including: (i) the 21digit Surveyor General code of each cadastral land parcel;(ii) where available, the physical address and farm name; (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;

Heading out of Estcourt in a South-westerly direction, merge onto the N3 towards Harrismith. Thereafter take Exit 194 for R74 toward the R103/Colenso and turn right onto the R74 then after approximately 4km a right turn leads to the start point of D489

PROPERTY DETAILS	
Property Details	KZNDoT Road Reserve for District Road D489
SG 21 Code	N/A
Local Municipality	Umtshezi Local Municipality
District Municipality	uThukela District Municipality

	Province	KwaZulu-Natal	

2. 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.

a) SITE ALTERNATIVES

The applicant has not considered any site alternatives due to the dilapidated condition of the existing structures that requires urgent replacement at its existing locations. All structures are situated within a KZNDoT Road Reserve. Site alternatives were not considered as new sites are not considered to be reasonable and feasible in terms of associated costs and the magnitude of the environmental impacts. Impacts associated with a new development are likely to be highly in comparison to development within an already disturbed area.

Preferred Site along District Road D489	Latitude	Longitude
Bloukrans River Bridge (km3,930)	S 28° 51' 25.9''	E 29° 49' 13.4''
Qabango River Bridge (km7,150)	S 28° 51' 18.24''	E 29° 50' 59.6''
Culvert at km 13.076	S 28° 52' 31.7''	E 29° 53' 44.0''
Culvert at km 16.407	S 28° 53' 9.42''	E 29° 55' 18.42''
Culvert at km 16.920	S 28° 53' 17.54''	E 29° 55' 34.71''
Culvert at km 15.28	S 28° 52' 54.06''	E 29° 54' 46.89''

In the case of linear activities:

2014 Regulation 3 (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or on land where the property has not been defined, the coordinates within which the activity is to be undertaken;

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment. N/A

(h) a full description of the process followed to reach the proposed preferred alternative within the site, including:

(I) details of all the alternatives considered;

b) LAY-OUT/ DESIGN /TECHNOLOGY ALTERNATIVES

PREFERRED LAYOUT	
Layout	The preferred layout alternative is the replacement of the four culverts and the Bloukrans River Bridge at the location of the existing structures whereas the Qabango River Bridge will be constructed approximately 20 metres upstream from the existing bridge. There were no other layout alternatives considered for the proposed development. Summary of the layout of the culverts and bridges within the landscape: • **Culvert at km 13.076 -** The culvert comprises of a cast in situ triple celled 3.0m x 3.0m box culvert. The length of the culvert is 17.37m. The culvert is 10.6m wide. The overall height of the culvert is 5.9m. • **Culvert at km 15.280 -** The culvert comprises of a cast in situ triple celled 1.8m x 1.8m box culvert. The length of the culvert is 22.286m. The culvert is 6.50m wide. The overall height of the culvert is 4.25m. • **Culvert at km 16.407 -** The culvert comprises of a cast in situ triple celled 2.4m x 2.4m box culvert. The length of the culvert is 24.200m. The culvert is 8.7m wide. The overall height of the culvert is 6.23m. • **Culvert at km 16.920 -** The culvert comprises of a cast in situ triple celled 1.8m x 1.8m box culvert. The length of the culvert is 15.78m. The culvert is 6.5m wide. The overall height of the culvert is 4.25m. • **Bloukrans River bridge -** The proposal is to extend the height and width of the existing bridge. The existing one land bridge will be upgraded to a two-lane bridge. A detour shall be constructed to be utilized during construction. The proposed bridge will be approximately 66m in length, 11m wide and 4.4m in height. • **Qabango River Bridge -** The proposal is to construct a new two lane bridge adjacent to the existing one which will be utilized as a detour during construction. The proposed bridge will be a total of 29m in length, 11m wide and 6m in height. The culverts are designed at a level for a 1:10 return flood to pass under the culvert soffit. The bases are founded directly on the rock or mass concrete fills or rock fills to. The proposal is to construct new two lane culverts on the existing alignment. The existing culverts shall be demolished. A detour will be constructed prior to the demolition of the existing culverts.
Technology	KNZNDoT has adopted the triple cell culvert as a preferred technology option in comparison to pipe and other culvert structures due to durability and ability to withstand appreciable rainfall events. No technology alternatives were considered for the bridges, due to the presence of the wetlands the preferred alternative of reinforced precast concrete road bridges have been adopted to replace the existing low level lintel bridges.

C) NO-GO ALTERNATIVE

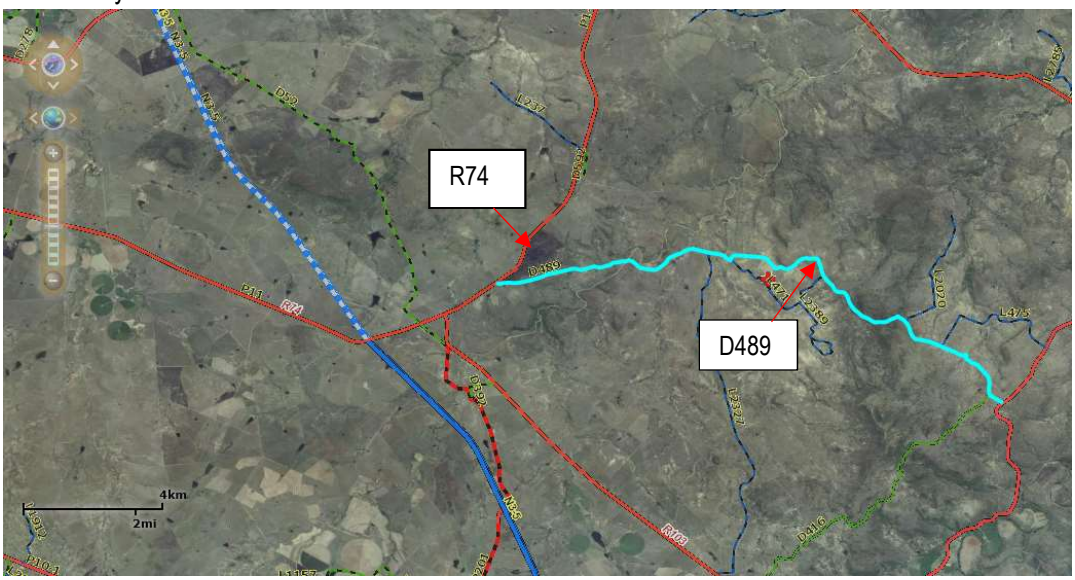
The no go alternative ie not replacing the existing four culverts and construction would result in further deterioration and eventual failure of the existing structures. In addition, the existing structures are not able to withstand appreciable rainfall events and there will be continual overtopping of the carriageways if these structures are not replaced. The positive impacts of the no go alternative are minimal in comparison to the negative impacts of not authorising and implementing the proposed development.

3. PHYSICAL SIZE OF THE ACTIVITY

PREFERRED LAYOUT

	Size of the Activity (m^2)	m^2
	Qabango Bridge	319
	Bloukrans Bridge	726
	Culvert@km13.076	184.12
	Culvert@km15.28	144.86
	Culvert@km16.407	210.54
	Culvert@16.920	102.57

4. SITE ACCESS

PREFERRED LAYOUT			
	Does ready access to the site exist?	**YES**	NO
	 Access to the site is via the N3 from Estcourt towards Harrismith. Thereafter after joining the R74 and after 4km a right turn leads to the start point of D489. A drive along D489 will provide direct access to each of the culverts and bridges.		
	If NO, what is the distance over which a new access road will be built	N/A	
	Describe the type of access road planned: N/A		

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

Please refer to Appendix A for a site plan indicating the existing access route to the proposed site.

5. LAYOUT/ROUTE PLAN

Please refer to Appendix A for:

- Locality Map- indicating the proposed activity in relation to towns/city as a reference point.
- Layout Alternative (Preferred) - indicating all aspects of the proposed development

6. SENSITIVITY OF THE RECEIVING ENVIRONMENT – this section was completed with reference to the wetland report completed by KSEMS Environmental Consulting (2016), the heritage report by Jean Beater (2016) and the vegetation report by Gavin MacDonald (2015)

Surrounding wetlands and riparian systems

The wetland specialist report compiled by KSEMS Environmental Consulting (2016) identified riparian areas and wetlands that will be directly impacted by each of the proposed structures. Below is a summary of these impacted water resources which were further assessed within the wetland report:

Table 1: A summary of the impacted water resources identified by the Wetland Specialist

WATER RESOURCE – HGM	WATER RESOURCE TYPE	RISK RATING	NEED FOR FURTHER ASSESSMENT
Bloukrans River			
Rip-Blou/01	Perennial 'C' Channel	High	Yes
Qabango River			
Seep-Qb/01	Seep	High	Yes
Rip-Qb/01	Non-perennial 'B' Channel	High	Yes
Culverts (C1-4)			
C1-UVB/01	Unchannelled Valley-bottom	High	Yes
C1-Seep/01	Seep	Moderate	Yes
C2-CVB/01	Channelled Valley-bottom	High	Yes
C3-UVB/01	Unchannelled Valley-bottom	High	Yes
C4- Rip/11	Non-perennial 'B' Channel	High	Yes

Following an assessment of the systems listed above, the specialist concluded that the riparian systems have undergone varying losses of natural habitat, biota and in basic ecosystem functioning. This results in the present state of the systems being classified as either largely or moderately modified. None of the systems identified are in its natural state. In addition, the wetlands have also undergone varying degrees of transformation and with only the seep associated with culvert@km15.28 having the least transformation. This suggests that any further impact may be a cumulative impact on the already transformed systems therefore the wetland specialist recommended that the management objective must be to maintain the current status quo of the ecosystems. This will be achieved by monitoring the development activities against a site specific EMPr amongst other recommendations discussed in further detail in the Specialist report within Appendix D of this BAR.

Ecology

The results of this survey indicate that there should be no objections raised to the proposed activity from a botanical and faunal point of view. The near absence of any indigenous vegetation of conservation significance for the greater part of the study area except for ruderal and early seral species means that impacts on the vegetation will be minimal. The following Specially Protected species were encountered: *Bulbine narcissifolia* and *Aloe marlothii* (ASPHODELACEAE), *Ledebouria ovatifolia* and/or *L. revoluta* (HYACINTHACEAE) and *Orbea lutea* (APOCYNACEAE). These will require the developers to apply to the relevant competent authority for permits to move or destroy such species, since they may potentially be encountered during construction.

No fauna of conservation significance is deemed to be found in the study area. The nature of the development will allow faunal species to relocate due to the anticipated disturbance during the construction phase and return after its completion.

Heritage and Palaeontology

During the site inspection, no cultural heritage and archaeological sites were found at any of the bridge and culvert sites. The SAHRA fossil sensitivity indicates that the site falls into a very high fossil sensitivity area interspersed with areas of moderate and insignificant sensitivity. The heritage specialist recommended that a Phase 1 PIA take place to assess the potential impact of the proposed upgrades on fossils in the project area.

The palaeontology study concluded that based on the geology of the area and the palaeontological record it can be assumed that the formation and distribution of the fossil plants in fine-grained mudstones is typical of the Estcourt Formation and vertebrates would be extremely rare, so no fossil animals will occur there. Plant impressions on the surface would be weathered from long exposure to the elements and would be of little scientific interest. Until the shallow excavations have begun and any fresh fossils are revealed and examined this remains an uncertainty, but a minor one. The specialist recommends that if fossil plant material is discovered during the road upgrade activities, then it is strongly recommended that a professional palaeontologist, preferably a palaeobotanist, be called to assess the importance and to rescue them if necessary (with the relevant Amafa permit).

If the fossil material is deemed to be of scientific interest, then further visits by a professional palaeontologist would be required to collect more material. As far as the palaeontology is concerned there is no objection to the proposed road upgrade. Any further palaeontological assessment would only be required after any excavations have commenced and if the geologist or environmental personnel find fossils.

It can be concluded that none of the specialist studies recommended that the development not proceed, all specialists provided recommendations for mitigation of the impacts and these will be consolidated and monitored against the site specific EMPr.

7. SITE PHOTOGRAPHS

Please refer to Appendix B for photographs of the proposed structures.

8. FACILITY ILLUSTRATION

Please refer to Appendix C for facility illustrations of the proposed structures.

9. NEED AND DESIRABILITY OF THE PROPOSED DEVELOPMENT

2014 Regulations 3(f) a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;

Motivate and explain the need and desirability of the activity (including demand for the activity):

Aspect	Yes	No	If, Yes. Please explain.
1. Will the activity be in line with the following?			
a) Provincial Spatial Development Framework (PSDF)	Yes		One of the principles highlighted in the KZN SDF and strategy is that of accessibility. This principle promotes the highest level of accessibility to resources, services, opportunities and other communities. The proposed development is in line with this principle as the proposed structures would result in improved accessibility of the local community members to surrounding areas and

			services. The existing dilapidated structures pose a safety hazard to the local community members who are forced to use alternate routes that are longer in order to reach their destination.
b) Urban edge / Edge of Built environment for the area		No	
c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local or District Municipality	Yes		According to the Umtshezi Local Municipality IDP (2015) one of the identified challenges in the area is ageing infrastructure. One of the ways in which this is being addressed by the municipality is by creating a technical and infrastructure forum to implement projects for the upgrade of existing infrastructure or replacement of structures that are dilapidated. The IDP was developed on the basis of the 12 National Outcomes. The SDP of the Umtshezi Municipality is neither a development nor a master plan, but a strategic guide for the spatial transformation of the area. It provides a framework for the formulation of more detailed and specific plans. The proposed development is a specific plan linked to one of the SDF planning principles which is related to sustainable development and equitable access to land, resources and services.
2. Does the community/area need the activity and the associated land use concerned (is it a societal priority	Yes		The existing structures pose a safety threat to those who use the road on a daily basis. If the structures are continually crossed then there is a high possibility of total failure of the existing structures resulting in overtopping of the road during appreciable rainfall events (culverts) and an absence of bridges over the Bloukrans and Qabango Rivers resulting in longer and time consuming alternate routes being used by the local community members to reach their destinations.
3. Is this project part of a national programme to address an issue of national concern or importance?	Yes		Outcome number 6 of the 12 outcomes of government identified in the 2030 National Development Plan relates to an efficient, competitive and responsive economic infrastructure network. This is directly related to ensuring the maintenance of the road network and associated structures and infrastructure.
4. Is the development the best practicable environmental option for this land/site?	Yes		The proposed sites are those of existing structures therefore these sites are better

			suited for an upgrade instead of choosing alternate sites with increased environmental disturbance.
5. Will there be benefits to society in general and to the local communities?	Yes		The proposed activity will allow for the safe passage of pedestrians over the Bloukrans and Qabango Rivers and will also contribute to safe travel on days of appreciable rainfall.
6. Does the project fit into the National Development Plan for 2030?	Yes		Outcome number 6 of the 12 outcomes of the National Development Plan 2030 relates to an efficient, competitive and responsive economic infrastructure network. This is directly related to ensuring the maintenance of the road network and associated structures and infrastructure

10. MOTIVATION FOR THE ACTIVITY

2014 EIA Regulations 3 (g) a motivation for the preferred site, activity and technology alternative;

The motivation for the replacement of the culverts are in accordance with KZNDoTs aim to replace all low-level structures (i.e structures that are overtopped and have become dilapidated during appreciable rainfall events) with structures that can withstand these events without severe deteriorating within the lifespan of the structures. The existing structures are in a dilapidated condition to due low resistance to heavy flows of water. The replacement of the existing Bloukrans and Qabango River Bridges at the proposed locations arise from the KZNDoTs initiative to upgrade the existing concrete lintel bridge to dual lane rigid reinforced concrete bridge to improve durability. The existing Bloukrans River Bridge will be extended in height and width whereas the new Qabango River Bridge will be constructed xxxm upstream from the existing one.

11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

2014 EIA Regulations (e) a description of the policy and legislative context within which the development is proposed including-
(i) an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and
(ii) how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments;

Description of the Policy and Legislative Framework

Relevant South African legislation and regulations that are considered applicable to, or have implications for, the proposed project have been assessed for their relevance to the project specifications. The following Legislation and Guidelines were considered. This section aims to provide an overview of the key legal requirements that apply to the proposed upgrades. Legislation will be addressed in terms of its relevance to environmental protection and conservation, water use and protection, health and safety, waste management, noise management, as well as the activities requiring an impact assessment under the NEMA regulations.

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable

Title of legislation, policy or guideline	Applicability to the project
The Constitution of South Africa (No. 108 of 1996)	The Constitution cannot manage environmental resources as a stand-alone piece of legislation hence additional legislation has been promulgated in order to manage the various spheres of both the social and natural environment. Each promulgated Act and associated Regulations are designed to focus on various industries or components of the environment to ensure that the objectives of the Constitution are effectively implemented and upheld on an on-going basis throughout the country. **The proposed development is in line with the Constitution of South Africa as it aims to provide a safe environment for the surrounding communities who use the D489 for daily commute.**
National Environmental Management Act, 1998	In terms of Section 24(2) of the NEMA the Minister may identify activities which may not commence without prior authorisation The Minister thus published GNR 983 (Listing Notice 1), 984 (Listing Notice 2) and 985 (Listing Notice 3) (4 December 2014) listing activities that may not commence prior to authorisation. The regulations outlining the procedures required for authorisation are published in GNR 982 (EIA Regulations) (4 December 2014). Listing Notice 1 identifies activities that require a Basic Assessment (BA) process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. Listing Notice 2 identifies activities that require an S&EIR process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. Listing Notice 3 identifies activities within specific areas that require a BA process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. This Act places an onus on all levels of government to ensure that risk to the environment is identified and where it cannot be avoided, is minimised and mitigated. Should there be any impact on the environment during or after construction, the applicant, have a duty to take measures to address these impacts and undertake the necessary clean up and mitigation measures (Section 28). **The proposed development triggers Activity 12 and 19 of Listing Notice 1 (refer to Section A (1b) of this report for a full explanation of the listed and specified activities associated with the proposed development.**
National Environmental Management Biodiversity Act (No. 10 of 2004)	Sections 52(1)(a) and 56(1) of the National Environmental Management Biodiversity Act (No. 10 of 2004) (NEM:BA) state that the Minister may publish national lists of species and ecosystems, respectively, that are threatened or are in need of protection. A list of species that are threatened or are in need of protection was published in GNR 151 (23 February 2007), with GNR 152 (23 February 2007) detailing the regulations relating to such species. These regulations are imposed where restricted activities involve specimens of listed threatened or protected species. GNR 152 defines the requirements of permitting and the process related thereto.

	An assessment considering the presence of any floral and faunal species of concern, as well as suitable habitat to support any such species was undertaken during the impact assessment phase conducted by the EAP and specialists in accordance with the NEMBA 10 of 2004. These reports can be found in Appendix D of this BAR.
National Water Act (No. 36 of 1998)	Section 22(1) of the NWA states that a person may only use water if the water use is authorised by a license under NWA or if the responsible authority has dispensed with a license requirement if it is satisfied that the purpose of the NWA will be met by the granting of a license, permit or other authorisation under any other law. A person may only use water without a license if the water use is permissible: • Under Schedule I of NWA; • As a continuation of an existing lawful use; and • In terms of a general authorisation issued under Section 39 of NWA. A water use license (WUL) is required in terms of Section 41 of the NWA for activities listed in Section 21 of the said Act. The water uses potentially applicable to the proposed activity include: • Section 21(c): Impeding or diverting the flow of water in a water course; Section 21(i): Altering the bed, bank, course or characteristics of a watercourse. **KSEMS has been appointed to apply for the Water Use License for the proposed development. Due to the low risk of the development it is likely to undergo a General Authorisation process for the Section 21c and i water uses being applied for.**
Occupational Health and Safety Act 1993	The main objective of this Act is to provide for the health and safety of persons at work, including aspects which are hazardous to health and safety. In terms of major hazardous installation, the regulations shall apply to employers, self-employed persons and users, who have on their premises, either permanently or temporarily, a major hazard installation or a quantity of a substance which may pose a risk that could affect the health and safety of employees and the public. **During the construction phase of this development all the requirements of Occupational Health and Safety Act 1993 should be adhered to. The site personnel (resident engineer, environmental officer and contractor) should implement aspects of this Act to minimise risk to the health and safety of all those who will be on site on a regular basis.**
Hazardous Chemical Substance Regulations 1995	These regulations stipulate requirements for storage and handling of hazardous chemical substances and provide guidelines for training of staff. Any hazardous chemical substances used during construction must be identified, stored used and disposed of in accordance with this legislation. **A Spill Contingency Plan should be compiled for managing spills during construction of the structures and this should be monitored using the site specific EMPr.**
Guideline on Environmental Management Plans (2005) and	This Guideline has been considered in the compilation of the EMPr attached to this Basic Assessment Report in Appendix F.

the Appendix 4 of the 2014 EIA Regulations on the EMPr	
Chapter 6 of the 2014 EIA Regulations	This chapter of the EIA Regulations pertain to the Public Participation Process and was considered when conducting the PP for this proposed development.
Integrated Environmental Management Information Series 5: Impact Significance (2002	Guideline considering during the identification and evaluation of potential impacts associated with the proposed activity, and the reporting thereof in this Basic Assessment Report
Integrated Environmental Management Information Series 7: Cumulative Effects Assessment (2004)	Guideline considering during the identification and evaluation of Cumulative Effects associated with the proposed development, and the reporting thereof in this Basic Assessment Report
Umtshezi Local Municipality Pollution Control By-Law No.86 of GNR 1180	According to Chapter 2 of this By-Law the Umtshezi Municipality can halt the construction phase of the proposed development if the related noise is unacceptable to the nearby community members. It is unlikely that the proposed development would result in unacceptable noise levels, the necessary steps will be taken to reduce the noise to a minimum. Chapter 3 of the By-Law relates to dumping of waste on any premises outside of a landfill site. The Contractor associated with the proposed development must ensure that all safe disposal slips are filed for review during the time of the ECO audit to prevent contravention of this By-Law.

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

12.1 WASTE

A) PREFFERED LAYOUT

Waste generation will be assessed for the proposed upgrade to the existing WTW and abstraction point

Will the activity produce solid construction waste during the construction/initiation phase?	**YES**	NO
If YES, what estimated quantity will be produced per month?		**12M^3**
How will the construction solid waste be disposed of (describe)? **All solid waste will be disposed at the registered Estcourt landfill site. This will be addressed in the EMPr. The ECO will audit the proposed activity against the EMPr.**		
Where will the construction solid waste be disposed of (describe)? **All solid waste will be disposed at the Estcourt Landfill site**		
Will the activity produce solid waste during its operational phase?	YES	**NO**
If YES, what estimated quantity will be produced per month?		**M^3**
How will the solid waste be disposed of (describe)?		
Where will the construction solid waste be disposed of (describe)? **All non-hazardous construction waste will be disposed at the registered Estcourt landfill site**		
If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used. **Estcourt landfill site**		
Where will the solid waste be disposed of if it does not feed into a municipal waste stream (describe)? **N/A**		

Can any part of the solid waste be classified as hazardous in terms of the NEM: WA?	YES	**NO**

If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM: WA must also be submitted with this application.

Is the activity that is being applied for a solid waste handling or treatment facility?	YES	**NO**

If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM: WA must also be submitted with this application.

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 whether it is necessary to change to an application for scoping and EIA.

12.2 Liquid effluent

a) PREFFERED

Waste generation will be assessed for the upgrade of the WTW and the abstraction point

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	YES	**NO**
If YES, what estimated quantity will be produced per month?		**M^3**
Will the activity produce any effluent that will be treated and/or disposed of on-site? **NO**		
Will the activity produce effluent that will be treated and/or disposed of at another facility?	YES	**NO**

12.3 Emissions into the atmosphere

PREFERRED

Will the activity release emissions into the atmosphere other that exhaust emissions and dust associated with construction phase activities?	YES	**NO**
If YES, is it controlled by any legislation of any sphere of government? Limited dust liberation and emissions during construction phase due to the off-loading of construction materials (such as sand and cement), movement of construction vehicles and other construction activities. Emissions generated will be in the form of dust, carbon dioxide and other vehicle emissions generated by diesel powered machinery and trucks during the construction process i.e. Tip trucks, tlb's, excavators and dust from the movement of the construction vehicles. These emissions will be composed primarily of CO^2 and will be of a low concentration. Dust generation can be mitigated by either water spraying and / or dust suppressants. The speed of construction vehicles and other vehicles should be strictly controlled to avoid excessive dust generation.		
If NO, describe the emissions in terms of type and concentration		

12.4 Waste permit

PREFFERED

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?	YES	**NO**
If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority N/A		

12.4 Generation of noise

PREFFERED

Will the activity generate noise?	**YES**	NO
Describe the noise in terms of type and level: Noise will only be generated during the construction phase (machinery, generator etc.) The level of the noise is likely to be low as there are no residents nearby. No noise will be generated during the operational phase; therefore, the impact is temporary in nature. During the construction phase noise associated with normal construction activities i.e. vehicles, generators and plant equipment will be used on the site. It is anticipated that there will be an increase in noise due to construction vehicles and machinery. Additional vehicle capacity on the roads as a result of the proposed development may result in increased noise levels. Noise levels are to be kept within the legislated limits for the area, in accordance with the requirements of the relevant national and local noise control statutes. Ambient noise levels are unlikely to exceed 75 db for extended periods. Other noise disruptions could potentially be experienced during the construction phase through activities such as drilling or jack-hammering. This will be a temporary disturbance and it the ambient noise generated is expected to be well below 85dBA (Occupational Health and Safety Act, 1993; Environmental Regulations for Workplaces, 1987, Noise and Hearing Conservation from SABS 083-1983) at potential receptor sites. Measures to minimise noise generation during construction are contained in the EMPr.		

12.5 WATER USE

	PREFFRED
Source(s) of water that will be used for the activity:	**Municipal**
	Water board
	Ground water
	River/stream
	Dam/lake
	Other
	The activity will not use water
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:	Litres
Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?	**YES**
If YES, please provide proof that the application has been submitted to the Department of Water Affairs.	The application is in the process of being submitted to the Department of Water and Sanitation for a Section 21c and i WUL.

12.6 ENERGY EFFICIENCY

	PREFERRED ALTERNATIVE
Describe the design measures, if any, which have been taken to ensure that the activity is energy efficient	N/A. the proposed development is not associated with any energy producing or distributing activities
Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:	N/A

SECTION B: SITE SELECTION

2014 EIA Regulations 3(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;

Since there are no site alternatives for the proposed development, the information provided below pertains specifically to the preferred sites.

PHYSICAL/GEOGRAPHICAL ASPECTS		
GRADIENT OF THE SITE	***PREFFERED***	
	Flat	1:10 – 1:7,5
	1:50 – 1:20	1:7,5 – 1:5
	1:20 – 1:15	Steeper than 1:5
	1:15 – 1:10	
LANDSCAPE	Ridgeline	
	Plateau	
	Side slope of hill/mountain	
	At sea	
	Closed valley	
	Open valley	
	Plain	
	Undulating plain / low hills	
LAND USE CHARACTER	Commercial agriculture	
	Small scale farming	
	Heavy Industry	
	Light industry	
	Residential	
	Informal housing	
SOIL AND GEOLOGY OF THE SITE	Shale	
	Sandstone	
	Tilite	
	Granite	
	Gnieiss	
	Basalt	
	Other	
SURFACE WATER	**Perennial river**	
	Non-perennial river	
	Permanent wetland	
	Seasonal wetland	
	Artificial wetland	
	Estuarine / lagoonal wetland	

BIOLOGICAL	
GROUNDCOVER	**PREFERRED LAYOUT**
	Natural veld - good condition
	Natural veld with scattered aliens
	Natural veld with heavy alien infestation
	Veld dominated by alien species
	Gardens
	Sport field
	Cultivated land
	Paved surface
	Building or other structure
	Bare soil

CULTURAL/HISTORICAL FEATURES		
	PREFERRED LAYOUT	
Culturally or historically significant sites on the site	YES	**NO**
	Buildings over 60 years	
	Archaeological sites	
	Palaeontological sites	
	Grave sites	
	Place of worship	
	Archaeological remains	
	Palaeontological remains	
Culturally or historically significant sites within 20 m of the site	YES	**NO**
	Buildings over 60 years	
	Archaeological sites	
	Palaeontological sites	
	Grave sites	
	Place of worship	
	Archaeological remains	
	Palaeontological remains	
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)? If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.	YES	**NO**

SOCIO-ECONOMIC CHARACTER	
	PREFERRED
What is the expected capital value of the activity on completion?	R22 000 000.00
What is the expected yearly income that will be generated by or as a result of the activity?	N/A
Will the activity contribute to service infrastructure?	Yes

Is the activity a public amenity?	Yes
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	40
What is the expected value of the employment opportunities during the development and construction phase?	R2,4 00 000.00
What percentage of this will accrue to previously disadvantaged individuals?	100%
How many permanent new employment opportunities will be created during the operational phase of the activity?	None
What is the expected current value of the employment opportunities during the first 10 years?	N/A
What percentage of this will accrue to previously disadvantaged individuals?	N/A

SECTION C: PUBLIC PARTICIPATION

2014 EIA Regulations(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; (iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;

1. ADVERTISEMENT AND NOTICE

PUBLICATION NAME	Estcourt and Midlands News and Isolezwe	
DATE PUBLISHED	22 May 2015 and 29 May 2015	
SITE NOTICE POSITION	**LATITUDE**	**LONGITUDE**
	Please refer to Appendix G for pictures and associated co-ordinates of the site notices	
DATE PLACED	24 November 2016	

Proof of the placement of the relevant advertisements and notices are found in Appendix G.

Key stakeholders identified in terms of Regulation 41(2)(b) of GN 733 Authority/Org an of State

TITLE, NAME AND SURNAME	AFFILIATION/ KEY STAKEHOLDER STATUS	CONTACT DETAILS (TEL NUMBER OR E-MAIL ADDRESS)
Dan Ramalingum	Uthukela District Municipality	dan@uthukeladm.co.za
Z.M Nlela	Umtshezi Local Municipality	municipalmanager@ilm.gov.za
Ayanda	DAFF	ayandamny@daff.gov.za
Lindiwe Dladla/Strini Govender	DWS	dladla@dwa.gov.za govenders@dwa.gov.za
Dinesree Thambu	KZN Wildlife Trust	Thambud@kznwildlife.com
Eugene Simon Ndumo	Ward 6 Councillor	cllresndumo@ilm.gov.za
Cllr. Bongumusa Tyrone Mngadi	Ward 8 Councillor	cllrbtmngadi@ilm.gov.za

Provide details of the measures taken to include all potential I&APs as required by Regulation 41(2) (e) and 41(6) of GN 983.

Proof of the PPP materials below is found in Appendix G of this BAR

1(a) A site notice was fixed along the District Road D489 and in the vicinity of each structure to be upgraded;

1(b) the ward councillor was informed (on 10th June 2015 and again on 3 April 2017) of the proposed activity and the intent to submit an application for environmental authorisation;

1(c); The Umtshezi Local and uThukela Municipality was informed (on 10th June 2016 and again on 3 April 2017) of the proposed activity.

1(d) The DWS, DAFF, and Ezemvelo KZN Wildlife were informed (on 10th June 2015 and again on 3 April 2017) of the proposed activity and the intent to submit an application for environmental authorisation.

2. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

ALTERNATIVES	SUMMARY OF MAIN ISSUES RAISED BY I&APS	SUMMARY OF RESPONSE FROM EAP
Preferred	N/A	N/A
	To date no issues were raised regarding the proposed activity.	

3. COMMENTS AND RESPONSE REPORT

To date no comments have been submitted on the proposed activity. Comments that are submitted following the release of the Draft BAR will be included in the Final BAR under Appendix G.

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014 and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A(2) of this report.

A) METHODOLOGY

2014 EIA Regulations, 3 (vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives; (i) a full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including- (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;

Environmental issues and potential impacts will be assessed using recognised qualitative impact assessment methodology. The objective of the assessment of impacts is to identify and assess all the significant impacts that may arise as a result of the proposed upgrading of the road. The process of assessing the impacts of the project encompasses the following four activities:

1. Identification and assessment of potential impacts
2. Prediction of the nature, magnitude, extent and duration of potentially significant impacts
3. Identification of mitigation measures that could be implemented to reduce the severity or significance of the impacts of the activity
4. Evaluation of the significance of the impact after the mitigation measures have been implemented i.e. the significance of the residual impact.

Impacts are assessed in terms of the following criteria:

Criteria	Indicator
The nature	A description of what causes the effect, what will be affected and how it will be affected

<table>
<tr><td>The physical extent</td><td>Wherein it is indicated whether:<table><tr><td>1.</td><td>The impact will be limited to the site</td></tr><tr><td>2.</td><td>The impact will be limited to the local area</td></tr><tr><td>3.</td><td>The impact will be limited to the region</td></tr><tr><td>4.</td><td>The impact will be national</td></tr><tr><td>5.</td><td>The impact will be international</td></tr></table></td></tr>
<tr><td>The duration</td><td>Wherein it is indicated whether the lifetime of the impact will be of:<table><tr><td>1</td><td>A very short duration (0–1 years)</td></tr><tr><td>2</td><td>A short duration (2-5 years)</td></tr><tr><td>3</td><td>Medium-term (5–15 years)</td></tr><tr><td>4</td><td>Long term (> 15 years)</td></tr><tr><td>5</td><td>Permanent</td></tr></table></td></tr>
<tr><td>The magnitude of impact on ecological processes</td><td>Impacts quantified on a scale from 0-10, where a score is assigned:<table><tr><td>0</td><td>Small and will have no effect on the environment</td></tr><tr><td>2</td><td>Minor and will not result in an impact on processes</td></tr><tr><td>4</td><td>Low and will cause a slight impact on processes</td></tr><tr><td>6</td><td>Moderate and will result in processes continuing but in a modified way</td></tr><tr><td>8</td><td>High (processes are altered to the extent that they temporarily cease)</td></tr><tr><td>10</td><td>Very high and results in complete destruction of patterns and permanent cessation of processes</td></tr></table></td></tr>
<tr><td>The probability of occurrence/ likelihood of the impact actually occurring</td><td>Probability is estimated on a scale where:<table><tr><td>1</td><td>Very improbable (probably will not happen)</td></tr><tr><td>2</td><td>Improbable (some possibility, but low likelihood)</td></tr><tr><td>3</td><td>Probable (distinct possibility)</td></tr><tr><td>4</td><td>Highly probable (most likely)</td></tr><tr><td>5</td><td>Definite (impact will occur regardless of any prevention measures)</td></tr></table></td></tr>
</table>

Significance is assessed in terms of:

- The significance, which is determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high
- The status, which is described as either positive, negative or neutral
- The degree to which the impact can be reversed
- The degree to which the impact may cause irreplaceable loss of resources
- The degree to which the impact can be mitigated

The significance is determined by combining the criteria in the following formula:
Significance Points = (Magnitude + Duration + Extent) x Probability. The maximum value is 100 Significance Points.

The significance weightings for each potential impact are outlined in the table below

Points	Significance Weighting	Description
< 30 points	**Low**	Where this impact would not have a direct influence on the decision to develop in the area
31-60 points	**Medium**	Where the impact could influence the decision to develop in the area unless it is effectively mitigated
> 60 points	**High**	Where the impact must have an influence on the decision process to develop in the area

The table below is a summary of the impacts associated with the proposed development, a full impact assessment is found in Appendix G of this BAR

Activity	Impact summary	Significance	Proposed mitigation	Significance Rating of Impacts After Mitigation
Alternative 1 (preferred alternative)				
Designing and repositioning of the Qabango Bridge	***Direct impacts:***			
	Alteration to the physio-chemical properties of the downstream water resources (the associated seep wetland) if the bridge is not correctly positioned	Medium	• Utilise the EMPr for guidance when conducting detrimental activities; Conduct all activities in a sustainable, least risk manner; • Rehabilitation plan implementation (e.g. reinstate the natural flow regime and habitat composition); • Cleared areas must be tilled and re-vegetated directly after the construction period	Medium
	Improper incorrect and inaccurate planning and design of stormwater infrastructures.	Medium	• The associated stormwater infrastructure along the propose D489 road must be positioned where concentrated stormwater flow is present at the lowest point of the topography. With the proposed upgrade of the D489 road comes the opportunity to utilise Sustainable Drainage Systems (SUDS) (e.g. swales, energy dissipaters, filtration strips and infiltration trenches). • The road upgrade must promote an unhindered longitudinal flow through all freshwater resources that it crosses, such as where the culverts will be constructed, to prevent preferential surface flow and confinement.	Low

Activity	Impact summary	Significance	Proposed mitigation	Significance Rating of Impacts After Mitigation
	Indirect impacts:			
	No indirect impacts are anticipated.			
	Cumulative impacts:			
	No cumulative impacts are anticipated.			
Temporary diversion of the Bloukrans and Quabango rivers, along with several tributaries, using berms and channels	***Direct impacts:***			
	• Impeding the flow of water. • Siltation of water course. • Erosion of water course. • Alteration of water resource flow sediment equilibrium. • Impeding the flow of water. Damage to banks. • Siltation of water course.	Medium	• The appropriate use of the Stormwater Management Plan and Erosion Control Plan; • Ensure that no stormwater flow is directed directly into any freshwater resource, but rather into an adjacent vegetated area. • Allowance of natural flow through the numerous freshwater resources must be made during the construction phase	Low
Reshaping/cutting of the river banks associated with the construction of the two bridges and four culverts	• Damage to banks. • Siltation of water course. • Erosion of watercourse. • Alteration of the sediment equilibrium of downstream water resources.	Medium	• All banks where there is exposed soil, with the potential for rill/gully erosion to take place, must be stabilised. Gabion structures or geotextiles must be implemented upslope of the proposed development where construction was observed to have caused instability of slopes or banks, which are situated adjacent to freshwater resources.	Low
Movement of vehicles and machinery	• erosion and eventual sedimentation of the watercourses	Medium	• Silt traps must be erected around all disturbed areas in close vicinity to the	Low

Activity	Impact summary	Significance	Proposed mitigation	Significance Rating of Impacts After Mitigation
			freshwater resources, which will be impacted on by the proposed upgrades and development. • Where necessary the appropriate erosion control measures (e.g. gabions, geotextiles) must be implemented to mitigate the potential impacts (e.g. siltation, habitat destruction, alterations to physico-chemical properties), which may occur during the construction phase.	
	Cumulative impacts:			
	• Dust generation and traffic impacts			

2. SIGNIFICANT IMPACTS

2014 EIA Regulations (j) an assessment of each identified potentially significant impact and risk, including-
(I) cumulative impacts;
(ii) the nature, significance and consequences of the impact and risk;
(iii) the extent and duration of the impact and risk;
(iv) the probability of the impact and risk occurring;
(v) the degree to which the impact and risk can be reversed;
(vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and
(vii) the degree to which the impact and risk can be avoided, managed or mitigated;

Majority of the impacts associated with the proposed development are low in significance following mitigation. However, the impacts on the riparian habitat associated with the new Qabango Bridge positioned upstream of the existing bridge is moderate following mitigation. These impacts will be closely monitored by the ECO on a monthly basis and all necessary steps will be taken to keep the impacts to an absolute minimum.

3. SUMMARY OF SPECIALIST FINDINGS

Summary of the Heritage and Palaeontology Specialist Studies

No cultural heritage or archaeological resources were identified at the bridges and culverts during the site inspection. However, the fossil sensitivity map was consulted and it was found that the project area falls within an area of very high fossil sensitivity interspersed with areas of moderate sensitivity and areas of insignificant fossil sensitivity. It is recommended that a Phase 1 Palaeontological Impact Assessment (PIA) be undertaken to ascertain whether there will be any impacts by the proposed upgrades on fossils in the project area.

It was recommended that the project only proceed from a heritage perspective, once the PIA has been undertaken dependent on the results of the PIA. In addition, the mitigation measures must be adhered to during the construction phase of the project.

The palaeontology report concluded that based on the geology of the area and the palaeontological record it can be assumed that the formation and distribution of the fossil plants in fine-grained mudstones is typical of the Estcourt Formation and vertebrates would be extremely rare, so no fossil animals will occur there. While it is possible that plant fossils occur in the proposed road upgrade sites they will not be detected until excavations begin. A site visit is therefore not feasible until such stage.

If fossil plant material is discovered during the road upgrade activities, then it is strongly recommended that a professional palaeontologist, preferably a palaeobotanist, be called to assess the importance and to rescue them if necessary (with the relevant Amafa permit).

If the fossil material is deemed to be of scientific interest, then further visits by a professional palaeontologist would be required to collect more material. As far as the palaeontology is concerned the proposed road upgrade can go ahead. Any further palaeontological assessment would only be required after any excavations have commenced and if fossils are found by the geologist or environmental personnel.

Summary of the Ecological Specialist Study

The results of this survey indicate that there should be no objections raised to the proposed activity from a botanical and faunal point of view. The near absence of any indigenous vegetation of conservation significance for the greater part of the study area except for ruderal and early seral species means that impacts on the vegetation will be minimal. Since this is an upgrade project, impacts are likely to be limited to disturbance and perhaps some habitat loss, however, given the highly-transformed nature of the sites and their depauperate biota there should be little impact from the proposed activity. The proposed crossings and culverts will pass almost entirely through areas of existing disturbance. The major impact of the proposed activity will be disturbance during construction with some habitat loss which will be inevitable, but the loss

is generally of poor quality habitat. Once the crossings and culverts are completed, the rehabilitation of the disturbed area will allow (as far as livestock will permit) natural vegetation to return, especially if the recommended alien plant control programme is instituted.

The following Specially Protected species were encountered: *Bulbine narcissifolia* and *Aloe marlothii* (ASPHODELACEAE), *Ledebouria ovatifolia* and/or *L. revoluta* (HYACINTHACEAE) and *Orbea lutea* (APOCYNACEAE). These will require the developers to apply to the relevant competent authority (eKZNw) for permits to move or destroy such species.

The faunal study revealed that no species of potential conservation significance have been recorded from the study site. The transformed nature of the vegetation is considered the reason for this lack of faunal diversity. However, the avifauna reported from the greater study area indicates 23 species of conservation significance from the general area, but most are very unlikely to occur at the site of the proposed activity or are unlikely to be impacted in the long term.

It was the opinion of the specialist that the development proceeds without an objection.

Freshwater Habitat Specialist Study

Following an assessment of the systems listed in Table 1 of this BAR (under the heading Sensitivity of the receiving environment), the specialist concluded that the riparian systems have undergone varying losses of natural habitat, biota and in basic ecosystem functioning. This results in the present state of the systems being classified as either largely or moderately modified. None of the systems identified are in its natural state. In addition, the wetlands have also undergone varying degrees of transformation and with only the seep associated with culvert@km15.28 having the least transformation. This suggests that any further impact may be a cumulative impact on the already transformed systems therefore the wetland specialist recommended that the management objective must be to maintain the current status quo of the ecosystems. This will be achieved by monitoring the development activities against a site specific EMPr amongst other recommendations discussed in further detail in the Specialist report within Appendix D of this BAR.

4. ENVIRONMENTAL IMPACT STATEMENT

2014 EIA Regulations3 (I) an environmental impact statement which contains-
(i) a summary of the key findings of the environmental impact assessment;
(ii) a map at an appropriate scale 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; and
(iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;

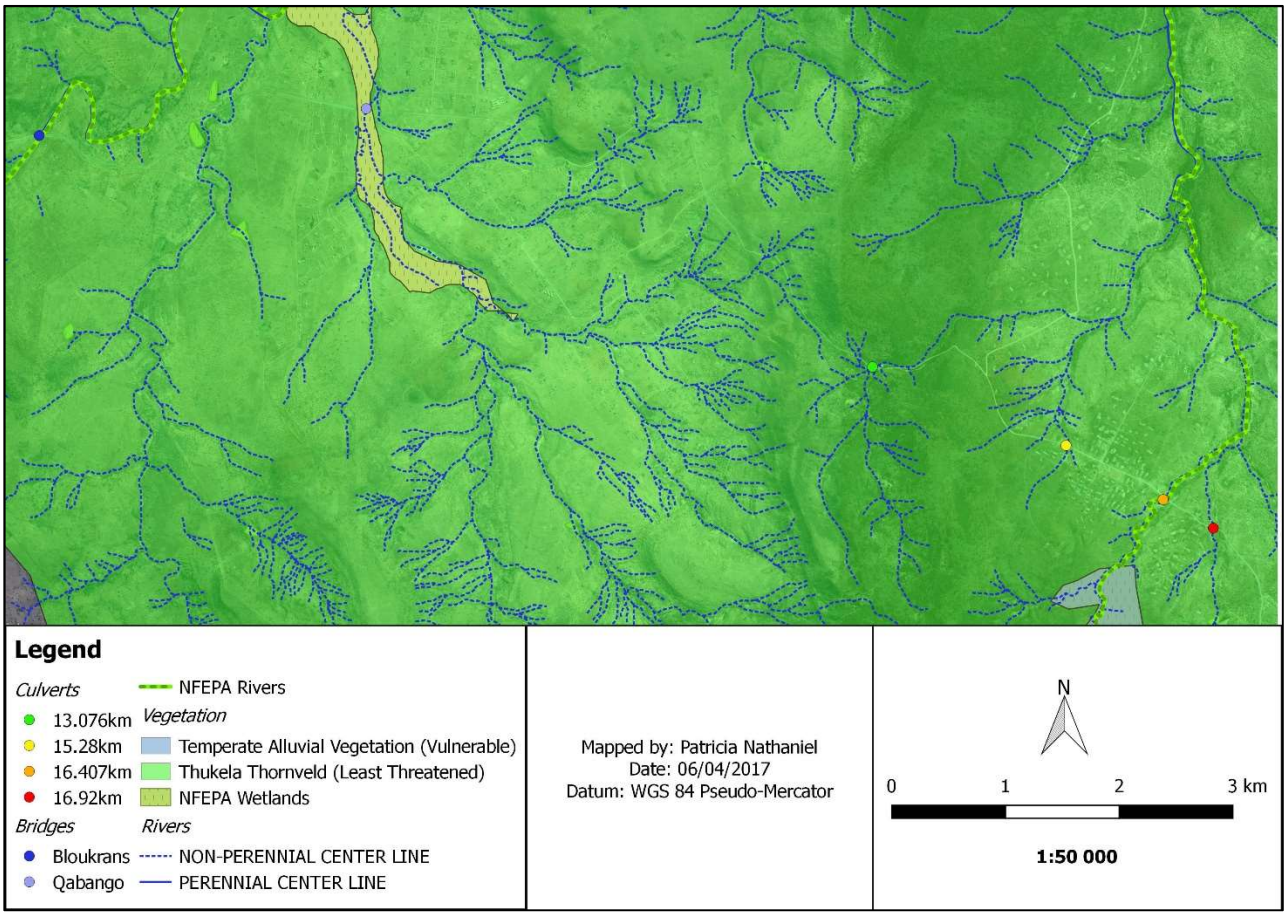
Summary of the key findings of the EIA

The information presented within this BAR consists of a compilation of findings and recommendations by the EAP as well as the various specialist studies (heritage, wetland and vegetation). The impacts range from medium to low post mitigation and only impacts associated with the Qabango River Bridge cannot be mitigated to low, these impacts will remain at moderate significance, however the necessary steps will be taken to ensure that construction is monitored closely to prevent further impacts outside the workable area of the proposed development. In addition, there will be no irreplaceable loss of natural resources. Proper rehabilitation will result in the status quo of the management objectives of the riparian systems being met i.e to maintain the present state of the system and to prevent further deterioration.

The heritage specialist study revealed concluded that there are no sites of archaeological importance within the vicinity of the proposed bridges and culverts therefore it was recommended that the development proceed from a heritage point of view. The ecological specialist also recommends that the development go ahead and that the mitigation measures presented in the report be adhered to to prevent excessive removal and loss of indigenous vegetation. Those species that have been noted on site that are of importance will require a permit for removal. These species are listed within the ecological specialist report. The wetland specialist investigated the impacts on the surrounding watercourses that would

be potentially impacted by the proposed development. Due to the four culverts and the Bloukrans Bridge being upgraded at its current location, the impacts associated with these structures are low following mitigation. The impacts associated with Qabango Bridge are moderate following mitigation due to its repositioning. These impacts will be closely monitored during the construction phase and all the necessary steps will be taken to prevent further impacts on the affected watercourses.

The EIA was concluded for the proposed development and it is the opinion of the EAP that the development proceeds and that recommendations for mitigation made by the specialists be considered during the construction phase of the development. The recommendation of the EAP is based on the results of the impact assessment and site visit which indicated that there is no reason for the development not to proceed.



Summary of the positive and negative impacts associated with the proposed development

The positive impacts are associated with the benefit that the proposed structures will have on the surrounding communities and the receiving environment in general. The existing structures are in a dilapidated state and continued use over a short period of time may result in complete failure of the structures and could result in injuries, damage to vehicle and fatalities of those crossing these structures at that time. The replacement of the four culverts and the bridges will allow for the local community members to travel safely and provide ease of access to the services, schools and places of business on the other side of the watercourses. In addition, all of the present structures are low level and are overtopped during appreciable rainfall events, the new structures will be high level and will be built to withstand these rainfall events. Lastly, there will also be positive impacts associated with the receiving environment particularly the surrounding watercourses. At present the existing structures are causing sedimentation of the watercourse due to structural damage.

The negative impacts can be summarised as follows:

- **Low impact significance post-mitigation for ecological aspects of the proposed development** – the ecological specialist identified impacts associated the flora and fauna of the site. According to the specialist, there are five mammals that are threatened, however these are found in the greater uThukela area and unlikely to be impacted

upon during the construction phase of this development. These species are listed on page 18 of the ecological report found in Appendix D. The nature of the development will allow faunal species to relocate due to the anticipated disturbance during the construction phase and return after its completion. The specialist added that the vegetation of the area has undergone substantial disturbance and the proposed structures are unlikely to cause additional disturbance. Although a fair number of indigenous species were recorded from the site, the list includes a number of earlier pioneer species and ruderal/weedy species which thrive in disturbed areas such as road verges and sites which have been cleared of vegetation due to overgrazing. The biodiversity in terms of indigenous vegetation is relatively low, but not unexpected for an area that is particularly arid and which is overstocked with goats. The following Specially Protected species were encountered: *Bulbine narcissifolia* and *Aloe marlothii* (ASPHODELACEAE), *Ledebouria ovatifolia* and/or *L. revoluta* (HYACINTHACEAE) and *Orbea lutea* (APOCYNACEAE). These will require the developers to apply to the relevant competent authority for permits to move or destroy such species, since they may potentially be encountered during construction.

- **Heritage related impacts** - The heritage study revealed that there are no sites within the study area that is of significance in terms of heritage. The area is well documented for fossil findings however these will only be discovered during the excavation phase of the development. If the fossil material is deemed to be of scientific interest, then further visits by a professional palaeontologist would be required to collect more material. As far as the palaeontology is concerned the proposed road upgrade can go ahead. Any further palaeontological assessment would only be required after any excavations have commenced and if fossils are found by the geologist or environmental personnel.
- **Impacts on the sensitive receiving environment i.e watercourses** - The impacts on the watercourses associated with the proposed development are likely to be medium to low in significance after mitigation. The impacts include:
    - direct habitat destruction and/or modification associated with the new Qabango Bridge
    - Catchment modifications relating to land cover and surface water runoff – the removal of vegetation across the sites may increase the potential for erosion and surface water runoff.
    - Water quality – there may be temporary changes to the physical, chemical and biological characteristics of the water during the construction phase. Sedimentation, spills of cement and other hazardous substances into the watercourses and leaks from machinery may cause further deterioration of the freshwater ecosystem.
    - General construction related impacts – stormwater management, soil erosion, soil compaction, excessive removal of vegetation outside the development footprint and waste disposal are all general impacts associated within the proposed development, these will be addressed in the site specific EMPr in Appendix F of this BAR.

5. IMPACT MANAGEMENT MEASURES

2014 EIA Regulations(m) based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr;

Construction Phase	
Physical	• Contractors must limit vegetation clearing to the demarcated workable corridor/site. • The demarcated area should be approved by the ECO. • The contractor should stabilise cleared areas to prevent and control erosion and/or sedimentation of the watercourses. • Prevent surface water or storm water to be concentrated, or to flow down cut or fill slopes without erosion protection measures being in place; • Berms, sand bags and hessian sheets should be used to contain all sediment whilst energy dissipaters must be constructed at all outflow points to prevent erosion.

	• Vegetation clearing should be undertaken as and when necessary. The entire construction area should not be stripped of vegetation prior to commencing construction activities.
Biological	• Care should be taken to keep soils stabilized when removing vegetation during construction and as part of alien plant eradication and strict on-site soil erosion measure must be implemented. • Topsoil, if still present, should be stockpiled for eventual return during rehabilitation. • Care should be taken to prevent the contamination of ground- and surface-water with accidental hydrocarbon spills from earth-moving and construction equipment and vehicles. • An alien plant eradication programme should be implemented to limit the establishment of exotic species during the rehabilitation of the disturbed areas. • Storm water control should be implemented during construction; this is a temporary impact of the proposal. • A drainage system should be established for the construction camp. Contaminated storm water should not be allowed to enter the surrounding waterbodies. This will be controlled by the EMPr. • Workers must be educated / trained on minimizing damage to vegetation during construction. • Only vegetation that must be removed for the construction of the pipeline should be removed and the footprint must be kept to a minimum. • The following Specially Protected species were encountered: *Bulbine narcissifolia* and *Aloe marlothii* (ASPHODELACEAE), *Ledebouria ovatifolia* and/or *L. revoluta* (HYACINTHACEAE) and *Orbea lutea* (APOCYNACEAE). These will require the developers to apply to the relevant competent authority for permits to move or destroy such species, since they may potentially be encountered during construction. • Rehabilitation of disturbed areas must be undertaken with locally indigenous species upon completion of construction activities. This must be controlled through the EMPr. • An alien invasive control plan must be implemented to eradicated existing alien plant infestation on and around the site. • Ongoing alien plant control must be undertaken after the construction phase and particularly in the disturbed areas. • Monitor all sites disturbed by construction activities for colonisation by exotics or invasive plants and control these as they emerge. • Areas cleared of alien invasive plants must be rehabilitated with indigenous plant species. • All waste generated during construction is to be disposed of at an accredited landfill site and no washing of paint brushes, containers, wheelbarrows, spades, picks or any other equipment in the watercourse is permitted. • Hazardous substances (hydrocarbons and chemicals) must be stored within a hazardous bunded area until collection by a reputable hazardous waste collection company. • No releases of any substance i.e. cement, oil, that could be toxic to fauna or faunal habitats within the watercourses is permitted. • Do not locate the construction camp or any depot for any substance which causes or is likely to cause pollution within a distance of 50m from the watercourses. • Spillages of fuels, oils and other potentially harmful chemicals must be cleaned up immediately and contaminants properly drained and disposed of using proper

	solid/hazardous waste facilities (not to be disposed of within the natural environment). Any contaminated soil must be removed and the affected area rehabilitated immediately. • Portable toilets must be placed outside the 1:100-year flood line or 50m away from the watercourse's edge, whichever is the greatest. • A site specific EMPr has been designed to manage pollution and is attached under Appendix F. • The only emissions that will be generated will be from construction vehicles which will be minimal and is not expected to significantly affect the surrounding communities or the environment. • Dust control measures (the use of a water cart / truck) must be used to wet exposed soil and thereby ensure that excessive dust levels are not experienced on site. The dust levels must be kept below the required SANBS standard to ensure minimal impact on the surrounding community and the environment. • Material Safety Data Sheets (MSDS's) must be readily available on site for all chemicals and hazardous substances to be used on site. MSDS's must include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases or escapes. • Refuelling areas, if required, must be bunded with an impermeable liner to prevent potential pollution from spillage. • Stockpiles must not be located within 50 metres of any rivers, wetlands and/or riparian channels or within the 1:100 year flood lines. The furthest threshold must be adhered to. • Erosion control measures including silt fences, low soil berms and/or shutter boards must be put in place around the stockpiles to limit sediment runoff from stockpiles. • Material Safety Data Sheets (MSDS's) must be readily available on site for all chemicals and hazardous substances to be used on site. MSDS's must include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases or escapes. • Refuelling areas, if required, must be bunded with an impermeable liner to prevent potential pollution from spillage. • Adequate chemical toilet facilities must be provided for all staff members as standard construction practice. These toilets must be regularly cleaned by a reputable company and maintained in a clean state. This must be monitored in an EMPr. • Chemical toilets must be placed within the construction camp and not in close proximity to the surrounding waterbodies. • The chemical toilets must be provided by a registered company and all effluent must be regularly disposed of at a licenses facility. • A safe disposal certificate must be obtained for all chemical toilets • Stockpiles must not be located within 50 metres of any rivers, wetlands and/or riparian channels or within the 1:100 year flood lines. The furthest threshold must be adhered to. • Erosion control measures including silt fences, low soil berms and/or shutter boards must be put in place around the stockpiles to limit sediment runoff from stockpiles. • A register of all waste removed from the construction camp must be complied and stored within the site office (Appendix 14). The register must indicate the type of waste (General, Hazardous, Construction, and Rubble) removed from site and to which landfill site that waste has been removed to.

	• Sufficient bins must be provided within the construction camp. • Recycling bins should be placed within the construction camp to encourage recycling and ensure the separation of waste. • Separation of waste and recycling of paper, glass etc. must be implemented. • Composting of organic waste is encouraged. • The waste containers must be appropriate to the waste type contained therein and where necessary should be lined and covered. • Refuse must be separated at source and disposed of in the appropriate bins, which must be emptied regularly. • A Method Statement will be required where crossings are to be developed and must be approved by the Project Manager and aquatic specialist before construction commences. • The water quality must be monitored to determine the baseline quality for operational comparisons. • Construction in the channel must be undertaken as quickly as possible, discussions between the specialists, engineer and the contractor must take place to determine a feasible timeframe and must be carefully monitored by the Environmental Compliance Officer (ECO). • Hunting, poaching or fishing is prohibited during construction. • Guidelines set out by the ECO must be followed to ensure no potential impacts occur and workers will be instructed that hunting and fishing is a non-compliance of the authorized activity. This must be controlled through the EMPr. • All fauna encountered during hand clearing must be rescued and relocated to suitable intact wetland habitat. • All materials must be obtained from a registered and sustainable source and all delivery notes and slips must be made available to the ECO e.g. mined material such as stone must only be obtained from permitted quarries.
Social	• All signage of safety risk should be present are clearly marked and cordoned off from the general public. • Excessive noise should be controlled on site. Workers will be trained regarding noise generation on site and construction hours will be kept to working hours (07h00 to 17h00). • The construction activities will be monitored by an ECO who will ensure compliance with the construction EMPr. All precautions must be taken to ensure that noise generation is kept to a minimum. If excessive noise is expected during certain stages of the construction, nearby residents must be notified prior to the event. • Speeding will be prohibited. Flagmen and other traffic control measures must be implemented if the need arises during the construction phase. An EMPr has been designed to manage construction activities and is attached as Appendix F.
Economic	• Ensure effective communication with all interested and affected parties, detailing the period of construction and alternative access routes if they are available. • Surrounding neighbours must be consulted prior to construction to discuss the construction process and potential impacts on nearby properties, as well as opportunities regarding employment. Properties are not expected to be severely impacted on as they are not in close proximity to the site, however, should unplanned impacts occur, the contractor will be responsible for the necessary repairs.

Heritage	• The KwaZulu-Natal Heritage Act requires that operations exposing archaeological and historical residues should cease immediately pending an evaluation by the heritage authorities.
Cultural	
Operational Phase	
Physical	• The condition of the banks around the development need to be checked by the ECO during operation and signed off if in a controlled state where no erosion has been observed for 1 year during operation. • Eroded areas must be managed, particularly in the channels and steep slope areas. • Placing sediment traps that will prevent wash down the channels and prevent any culverts from becoming blocked. • Plant a suitable grass that will assist in stabilizing the banks (such as Vetiver grass). • Consider geo-textiles to stabilize the banks of the channels and provide a suitable medium for locally indigenous vegetation to establish.
Biological	• Routine (every 3 months) water quality measurements must be undertaken to determine if the quality has changed from the baseline condition. • Storm water drains associated with the road must be in alignment with the storm water management plan. This will reduce the risk of petro-chemical entering the watercourse. • Refer to the freshwater habitat impact assessment for further recommendations relating to pollution. • Follow up assessments by the ECO, for six months' post construction, must be undertaken to determine the success of the re-vegetation process. • The success of the re-vegetation process needs to be signed off by a vegetation specialist or a qualified ECO. • The ECO must determine if further follow-up assessments are needed.
Social	N/A
Economic	• Regular maintenance of the pipeline is required to ensure the structural integrity is maintained and any potential damage can be mitigated. The cost of maintenance operations must be borne by the applicant.
Heritage	N/A
Cultural	N/A

6. ASSUMPTIONS AND LIMITATIONS

2014 EIA Regulations(o) a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;

- The information contained within this BAR was provided by the applicant and was used to complete the BAR.
- The recommendations made by KSEMS as the EAP was in based on professional opinion, site assessments and facility illustrations provided by the applicant.
- All the work for the proposed development will occur within the D489 Road Reserve

7. CONDITIONS TO AUTHORISATION

2014 EIA Regulations (p) a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;

Is the information contained in this report and the documentation attached hereto in the view of the EAP sufficient to make a decision in respect of this report?	**Yes**	No
If "NO", please contact the KZN Department of Economic Development, Tourism & Environmental Affairs regarding the further requirements for your report.		

The following may be considered for inclusion in the environmental authorisation:
The EMPr (see appendix F) and conditions thereto must be adhered to.
An ECO must be appointed and all contractor staff to be trained on the EMPr and Environmental Authorisation requirements prior to commencement of activities.
Environmental monitoring and auditing shall be undertaken by the ECO on a monthly basis during the construction phase, and re-vegetated areas should be monitored every 3 months for the first 12 months and twice a year thereafter.
Protected tree species are to be marked and they may not be disturbed during the process. Should cutting or removing of protected trees are required, a permit must be obtained from the EKZNWL.

9. DECOMMISSIONING OF THE PROPOSED ACTIVITY

2014 EIA Regulations (*q) where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised;*

The proposed structures are permanent and therefore unlikely to be decommissioned.

2014 EIA Regulations 3 (r) an undertaking under oath or affirmation by the EAP in relation to:
the correctness of the information provided in the reports;(ii) the inclusion of comments and inputs from stakeholders and I&APs;(iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties

I, ……Kerry Stanton……., declare under oath that

The following report has been:

- *Compiled with the correct information*
- *The inclusion of comments and inputs from stakeholders and I&aps have been included and captured*
- *Recommendations from the specialist reports have been included in the report and form part of the EMPr*

Signature of the EAP

Name of Company
KSEMS Environmental Consulting
Date
11 September 2017

10. FINANCIAL PROVISIONS

2014 EIA Regulations(s) where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;

Please refer to Appendix G: Financial Provisions letter.

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

Appendix E: Comments and responses report

Appendix F: Draft Environmental Management Programme (EMPr)

Appendix G: Other information