SECTION A

PROJECT APPLICANT, ENVIRONMENTAL ASSESSMENT PRACTITIONERS AND SPECIALISTS INVOLVED IN THE REPORT

1. PROJECT APPLICANT

Project applicant:

Trading name (if any):	Department of Transport (KZN)		
Contact person:	Mrs Khumbu Sibiya		
Physical address:	172 Burger Street, Pietermaritzburg		
Postal address:	172 Burger Street, Pietermaritzburg		
Postal code:	3201	Cell:	079 871 3983
Telephone:	033 355 0594	Fax:	033-345 7537
E-mail:	Khumbu.Sibiya@kzntransport.gov.za		

2. ENVIRONMENTAL ASSESSMENT PRACTITIONER

Environmental assessment practitioner (EAP):

Trading name (if any):	Isolendalo Environmental Consulting		
Contact person:	Welcome Nogobela		
Postal address:	P O BOX 1503, MANABA BEACH		
Postal code:	4276	CELL	0834085737
Telephone:	039 315 0437	FAX	039 315 0407
E-mail:	wnogobela@isolendalo.co.za		
Education Qualifications:	B. Hons Environmental Science		
Professional affiliation(s) (if any)	IAIAA 3333		

3. EAP QUALIFICATIONS, PROFESSIONAL AFFILIATIONS AND CREDENTIALS

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

Name of representative of the EAP	Education qualifications	Professional affiliations	Experience at environmental assessments (yrs)
Welcome Nogobela	**B. Hons Environ. Sc.**	**IAIA**	**15 Years**
Simone Bridglal	**B. Environ Sc.**		**1 Year**

4. SPECIALISTS UTILISED IN REPORT/STUDY

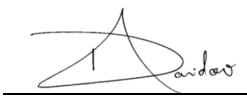
1. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Has a specialist been consulted for the completion of this section?	**YES**

If YES, please complete the following:

Name of the specialist:	Mr. Deven Naidoo - Geosure (PTY) Ltd		
Qualification(s) of the specialist:	BSc Hon Geology And BSc Hon Geotechnical		
Postal address:	P.O.BOX 1461, Westville		
Postal code:	3630		
Telephone:	0312660450	Cell:	0827840544
E-mail:	deven@geosure.co.za	Fax:	0866895506

Are there any rare or endangered flora or fauna species (including red data species) present on any of the alternative sites?		NO
If YES, specify and explain:		
Are their any special or sensitive habitats or other natural features present on any of the alternative sites?		NO
If YES, specify and explain:		
Are any further specialist studies recommended by the specialist?		NO
If YES, specify:		
If YES, is such a report(s) attached in Appendix E?		NO

Signature of specialist:		Date:	30/09/2015

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

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

2. GROUNDCOVER

Has a specialist been consulted for the completion of this section?			NO
If YES, please complete the following:			
Name of the specialist:			
Qualification(s) of the specialist:			
Postal address:			
Postal code:			
Telephone:		Cell:	
E-mail:		Fax:	
Are there any rare or endangered flora or fauna species (including red data species) present on any of the alternative sites?			NO
If YES, specify and explain:			
Are their any special or sensitive habitats or other natural features present on any of the alternative sites?			NO
If YES, specify and explain:			
Are any further specialist studies recommended by the specialist?			NO
If YES, specify:			
If YES, is such a report(s) attached in **Appendix E**?			NO

Signature of specialist: _____ Date:

The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

			Gardens
	Cultivated land	Building or other structure	Bare soil

SECTION B

ACTIVITY INFORMATION

(DESCRIPTION, LOCATION, SPECIFIC AND GENERAL INFORMATION FOR STUDY)

1. Project Name

Construction of Tugela (Khomfini) River Vehicular Bridge

2. Project Description

Department of Transport (KZN) through their processes has identified the need to construct a new vehicular bridge linking the communities along each side of the river, Tugela River within Msinga Local Municipality.

As such DoT is proposing the following activities:
The construction of new Khomfini River Vehicular Bridge. The specifications of the construction is as follows:

- Total length - 222m
- Total width - 8,5m
- Total columns - 16
- Distance between columns – 13,9m

The proposed construction will see the construction of a vehicular bridge which crosses over the Tugela River and proceeds to meet road L661. This proposed bridge consists of 16 concrete columns extending from the outer edge of each side of the river bank to the centre of the river.

The vertical columns constructed as support structure for the bridge will be equally spaced with each column being 13,9m apart. The proposed bridge columns will be equal in relation to the current impedance found in the watercourse.

At this moment, there is no bridge that could assist the community and during heavy rains the area crossing becomes blocked making it difficult for communities and general public to cross

the river. Some reports have even indicated that the communities are utilising their own means to cross the river, which is a dangerous and potentially life-threatening situation.

During the initial excavations in preparation of the columns, the initial step would be to divert one side of the river and as such water will be pumped out from one side of the riverbank to the other side using a generator. This generator will be placed on top of the firm drip tray to allow for any unforeseen circumstance such as oil spill.

This diversion will minimally affect the flow or turbidity of the water but not so that it will cause significant erosion or disturbance to the river bed or banks. The pumping of the water will be consistent and at a rate that will be similar to that of the river system so as not to drastically change the energy of the system. The location of the generator will be on disturbed portions of the site and banks accommodating the pipes will be rehabilitated including any riparian vegetation lost. Construction will be carried out during the dry winter months where water flow will be reduced thus lessening the impact on the river system.

It stands to be noted that during construction there is very little vegetation expected to be uprooted/ disturbed. However it must be noted that post construction there will be rehabilitation of the area through the use of indigenous vegetation. This is expected to be undertaken on either side of the bridge and around the foot of the bridge columns.

The expected water use on site will be minimal as all material will be transported ready for use by the contractor. Water use will be limited to no more than 1000 litres per month and this water is expected to be used for the cleaning of steel equipment and tools. However, washing of tools especially the machinery that is used for transporting mixed concrete will not be allowed as this will affect aquatic species downstream.

To ensure that there is no negative impact of the construction of the bridge on the river, the contractor will be expected to appoint a suitable service provider to take water samples for testing on each side of the bridge (from top of the river to downstream).

3. PROJECT LOCATION

A. COORDINATES

LATITUDE (S)			LONGITUDE (E)		
28	44	33.487	30	39	26.62

B. SITE LOCATION

21 DIGIT SURVEYOR GENERAL PROJECT STUDY AREA

N	**0**	**G**	**T**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**6**	**7**	**4**	**0**	**0**	**0**	**0**	**0**

C. DIRECTIONS TO SITE

IF you are coming from Greytown side.

- From R74 road towards Greytown (from Kranskop), about 5km to Gerytown
- Take road P17 heading North (towards) Msinga/Tugela River.
- On this road P17 you travel for about 35km until about 3km to Tugela River.
- From this point take road from the right of P17, road L1864.
- On this road (L1864) you drive for about 6km until you reach the propose site as per locality and site layout plan.

If you are coming from Tugela Ferry (Msinga):

- From R33 in town (Msinga) take D1271 heading North East of town.
- On D1271 drive for about 20km until your cross new bridge over Tugela River
- Once you cross Tugela River, you join road P17 and drive for about 3km
- From this point take L1864 from the left of P17
- From this point (L1864) drive for about 6km until you reach the project site.

4. Specification of Infrastructure and Activities Applied for in terms of EIA Regulations, 2014

Description of each listed activity in Listing Notice 1 (GNR 983, 8 December 2014), which is being applied for as per the project description.

The proposed development triggers activities 12 and 19 of GNR 983 of the EIA Regulations, 2014

Listed Activity 12

The construction of:

(i) canals;
(ii) channels;
(iii) bridges;
(iv) dams;
(v) weirs;
(vi) bulk storm water outlet structures;
(vii) marinas;
(viii) jetties exceeding 50 square meters in size;
(ix) slipways exceeding 50 meters in size;
(x) buildings exceeding 50 square meters in size; or
(xi) infrastructure or structures covering 50 square meters or more

Where such construction occurs within a watercourse or within 32 meters of a watercourse, measured from edge of watercourse, excluding where such construction will occur behind the development set back line.

The proposed sports field will be located within 32m of a watercourse. It will include associated storm water infrastructure but which do not trigger a listed activity in terms of the EIA Regulations, 2014.

Listed activity 19

As such, 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;

(ii) the sea;

(iii) the seashore;

(iv) the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is the greater-

Excluding

where such infilling, depositing, dredging, excavation, removal or moving;

(i) is for maintenance purposes undertaken in accordance with a management plan agreed to by the relevant environmental authority; or
(ii) Occurs behind the development setback line.

The proposed construction of both bridges and the road upgrade requires the removal or moving of soil from the watercourse for the footprint of the bridge/columns and support structures of which it will be more than 5 cubic metres

1. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative:	**Size of the activity:**
Alternative A1[1] (preferred activity alternative)	1887m^2
Alternative A2 (if any)	m^2
Alternative A3 (if any)	m^2

or, for linear activities:

Alternative:	**Length of the activity:**
Alternative A1 (preferred activity alternative)	222m long X 8.5m wide
Alternative A2 (if any)	M
Alternative A3 (if any)	M

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

Alternative:	**Size of the site/servitude:**
Alternative A1 (preferred activity alternative)	1887m²
Alternative A2 (if any)	m^2
Alternative A3 (if any)	m^2

2. SITE ACCESS

Does ready access to the site exist?	**NO**
If NO, what is the distance over which a new access road will be built	3000m

Describe the type of access road planned:

[1] "Alternative A.." refer to activity, process, technology or other alternatives.

Currently, where the bridge is proposed is a complete new area and this bridge is to be linked to L1864, with a distance of approximately 400m to the start of the new bridge (Khomfini); and linked to L877, with a distance of 2,6km to the edge of the proposed bridge.

The area where the new access is proposed (to be linking with the existing roads – L1864 and L877) is not environmental sensitive and as such there is no bidiversity species categorised in terms of EIA Regulations, 2014 and or any other relevant legislation that requies specialist studies.

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.

3. SITE OR ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this report.

The site or route plans must indicate the following:

3.1. the scale of the plan which must be at least a scale of 1:500;
3.2. the property boundaries and numbers/ erf/ farm numbers of all adjoining properties of the site;
3.3. the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
3.4. the exact position of each element of the application as well as any other structures on the site;
3.5. 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;
3.6. walls and fencing including details of the height and construction material;
3.7. servitudes indicating the purpose of the servitude;
3.8. 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);
3.9. 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
3.10. the positions from where photographs of the site were taken.

4. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this report**.** It must be supplemented with additional photographs of relevant features on the site, if applicable.

5. FACILITY ILLUSTRATION

A detailed illustration of the facility must be provided at a scale of 1:200 and attached to this report as **Appendix C**. The illustrations must be to scale and must represent a realistic image of the planned activity/ies.

6. ACTIVITY MOTIVATION

6.1. Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R20 000, 000.00
What is the expected yearly income that will be generated by or as a result of the activity?	R
Will the activity contribute to service infrastructure?	NO
Is the activity a public amenity?	NO
How many new employment opportunities will be created in the development phase of the activity?	10
What is the expected value of the employment opportunities during the development phase?	R500, 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?	0
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?	%

7. Relevant Regulations Affected by the Activities Applied For

Title of legislation, policy or guideline:	**Administering authority:**	**Date:**
NEMA	EDTEA	Nov 1998 as amended
EIA Regulations, 2014	EDTEA	2014
National Water Act, 1963	DW&S	1963
National Heritage Act	Amafa KZN	1999

8. Motivation of Needs and Desirability of Preferred Site

NEEDS AND DESIRABILITY

There is a great demand for the department (DOT) to construct the bridge as at the moment the school children from either side struggle to cross the river especially after rains. There is unrecorded incidence where school kids and community member get drowned when trying to cross the river when it is flooded. This bridge will form an integral part of the community as it will be a safe, accessible connection point for the communities especially during peak rainfall periods. It will not hinder the children from gaining access to the schools during the rainy days and also for emergency services to access the community during this time.

As such, this bridge is needed not only by the school but also by the community at large from the either side of the river, including most basic services such as health services, crime prevention etc. which ultimately will increase their standard of living.

The provision of safe, better access to services allows the community members to increase their standard of education in the nearby cities and utilising this to uplift the community i.e. teachers, nurses.

The provision of a good road network with safe bridges will allow for governmental bodies to be able to provide various services on a daily basis such as healthcare, policing/ security, education, agricultural assistance etc. to a disadvantaged community.

BENEFITS OF THE PROPOSED

This proposed bridge will form an integral part of the community as it will be a safe, accessible connection point for the communities especially during peak rainfall periods. It will not hinder the children from gaining access to the schools during the rainy days and also for emergency services to access the community during this time.

As such, this bridge is needed not only by the school but also by the community at large from

either side of the river, including most basic services such as health services, crime prevention etc.

At present the existing low lying bridge is more a safety hazard than a bridge as it compromises the safety of its users with it being low lying, and a single carriage with limited space for pedestrians to utilize. The new bridge will allow safe access for pedestrians and vehicle users

9. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

9.1. Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	YES ■
If yes, what estimated quantity will be produced per month?	<100m^3

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

It will be stored in bins and disposed of by a registered waste disposal company and therefore will adhere to their standards and legislation in place

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

Dundee Disposal Site or Greytown Disposal Site

Will the activity produce solid waste during its operational phase?	No ■
If yes, what estimated quantity will be produced per month?	

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

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

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?	■ NO

If yes, contact the KZN Department of Economic Development, Tourism & Environmental Affairs to obtain clarity regarding the process requirements for your application.

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

If yes, contact the KZN Department of Economic Development, Tourism & Environmental Affairs to obtain clarity regarding the process requirements for your application.

9.2. Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	■ 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

If yes, contact the KZN Department of Economic Development, Tourism & Environmental Affairs to obtain clarity regarding the process requirements for your application.

Will the activity produce effluent that will be treated and/or disposed of at another facility?	NO

If yes, provide the particulars of the facility:

Facility name:			
Contact person:			
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:

9.3. Emissions into the atmosphere

Will the activity release emissions into the atmosphere?	NO
If yes, is it controlled by any legislation of any sphere of government?	NO

If yes, contact the KZN Department of Economic Development, Tourism & Environmental Affairs to obtain clarity regarding the process requirements for your application.

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

9.4. Generation of noise

Will the activity generate noise?	YES
If yes, is it controlled by any legislation of any sphere of government?	NO

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.

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

Noise generated will emerge from construction vehicles but will be limited to construction times. This will be no different than when the road users were utilising the existing bridge. Also, it is anticipated that the other noise will be due to drilling into some hard rocks if required and also blasting of some rocks, also if needed; but all this will be reported to community through ward councillor and community representative officer (CLO) 1 week advance.

Noise from the generator will be negligible and within construction hours, 7:30am to 4:30pm

10. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es):

	river, stream, dam or 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:	< 1000litres
Does the activity require a water use permit from the Department of Water Affairs?	NO This use will be associated with use by the personnel on site for cooling of vehicles (if necessary). Should be noted that all material including concrete etc will be transported to site already prepared and ready to use

If YES, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this report.

11. ENERGY EFFICIENCY

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

This bridge will not need the use of energy during operation as it is a rural bridge and there is no plan to provide light at night. Only the reflector plates and signs will be used to guide drivers at night.

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

Not necessary as this activity does not need electricity.

12. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site **(Please cross the appropriate box)**.
Alternative S1 (preferred site):

	Side slope of hill/mountain		Open valley		

3. LAND USE CHARACTER OF SURROUNDING AREA

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:

Land use character			Description
Natural area		NO	The area surrounding the bridge is transformed with grazing animals and scattered homesteads
Low density residential	YES		The site is surrounded by low density residential housing. They are located about 500m away from the river bridge proposed.
Medium density residential		NO	
High density residential		NO	
Informal residential		NO	
Retail commercial & warehousing		NO	
Light industrial		NO	
Medium industrial		NO	
Heavy industrial		NO	
Power station		NO	
Office/consulting room		NO	
Military or police base/station/compound		NO	
Spoil heap or slimes dam		NO	
Quarry, sand or borrow pit		NO	
Dam or reservoir		NO	
Hospital/medical centre		NO	
School/ creche		NO	
Tertiary education facility		NO	
Church		NO	
Old age home		NO	
Sewage treatment plant		NO	
Train station or shunting yard		NO	
Railway line		NO	
Major road (4 lanes or more)		NO	
Airport		NO	
Harbour		NO	
Sport facilities		NO	
Golf course		NO	

Polo fields		NO	
Filling station		NO	
Landfill or waste treatment site		NO	
Plantation		NO	
Agriculture		NO	
River, stream or wetland	YES		The bridge will be constructed over a water course (Ntinini River)
Nature conservation area		NO	
Mountain, hill or ridge		NO	
Museum		NO	
Historical building		NO	
Protected Area		NO	
Graveyard		NO	
Archaeological site		NO	
Other land uses (describe)		NO	

4. CULTURAL/ HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or within 20m of the site?		NO
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:		
Will any building or structure older than 60 years be affected in any way?		NO
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?		NO
If YES, please submit the necessary application to AMAFA and attach proof thereof to this report.		

SECTION C

PUBLIC PARTICIPATION PROCESS

1. Project Advertisement

   Advert was done as per attachment. No comments received from Interested and affected parties.

2. Consultation with main Stakeholders

   This stage includes consultation with stakeholders. The draft report was sent to the following stakeholders:
   1) Department of Water and Sanitation (DWS)
   2) Ezemvelo KZN Wildlife
   3) Amafa KZN

   Only the Department of Water and Sanitation responded as per comments attached as Annexure ?

3. Comments from Interested and Affected Parties

   As per above, no comments were received from Interested and Affected Parties (I&APS) as a result of advert on Ilanga newspaper.

4. Issues raised by all Stakeholders

   DWS is in support of the proposed vehicular bridge but reminded us that Water Use Licence should be done. As such Enviropro is undertaking this process. Once the Environmental Authorisation is obtained, it will form part of the final application to be sent to Water Affairs for approval.

5. EAP Responses to issues raised by Stakeholders

   An annexure is attached to this report responding to issues raised by DWS.

SECTION D

ENVIRONMENTAL IMPACT ASSESSMENT

The assessment of impacts must adhere to the 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. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

No comments obtained from Interested and Affected Parties.

Response from the practitioner to the issues raised by the interested and affected parties (A full response must be given in the Comments and Response Report that must be attached as **Appendix D** to this report):

Only DWS responded as such the response is attached as annexure D of this report.

2. 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

2.1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN PHASE

a. Site alternatives

List the potential impacts associated with site alternatives that are likely to occur during the planning and design phase:

Alternative S1 (preferred alternative)

Direct impacts:
There are no anticipated significant impacts identified during this phase. Impacts would be negligible and associated with investigation of site to determine potential impacts associated with construction and operation of the proposed development.

The engineer must survey the location of the proposed ridge. Planning involves identifying the best site for the bridge and associated design.

As such the preferred site entails minimal environmental degradation as it is disturbed by current road-users and the existing bridge and road. The chosen design of the bridge is pertinent to the terrain and status quo of the sites and takes into account the constraints of the topography and also the watercourse. The surrounding areas of the river must be viewed to ascertain the best and environmentally sound preferred site. It must be viable in terms of socio, economic and environmental impacts and also in terms of the terrain and constraints associated thereto.

Identification of disturbed areas for the construction camp must be undertaken. Also identification of the areas within the watercourse and river banks where construction activities occur must be restricted to those areas only so as to ensure minimal degradation to the environment.

The planning and design will ensure an improvement to the road network and access to public transport for the community.

Indirect impacts:
Loss of capital already invested in project should it not be authorised

Cumulative impacts:
Loss of capital already invested in project should it not be authorised

No-go alternative (compulsory)

Direct impacts:
Should the bridge not be approved it would render the community vulnerable to unsafe conditions when utilising the bridge in peak rainfall periods. It would also contribute to a great loss of capital as money has been spent in designing this bridge. The local community will not have safe access to goods and services.

Indirect impacts:
There are no impacts identified during the planning and design phase

Cumulative impacts:
No significant impacts identified during the planning and design stages

Indicate mitigation measures to manage the potential impacts listed above:

Alternative S1

The preferred alternative is designed so as to take into account the terrain and environmental constraints of the site. Disturbed areas within the footprint can be used for the movement of construction vehicles. All disturbed areas post construction will be rehabilitated.

b. Process, technology, layout or other alternatives

List the impacts associated with any process, technology, layout or other alternatives that are likely to occur during the planning and design phase (please list impacts associated with each alternative separately):

Alternative A1 (preferred alternative)

Direct impacts:
The layout proposed incorporates the environmental constraints of the site. The design of the bridge is such that it will have minimal impacts to its environment and those impacts will be mitigated for. The impacts anticipated during this phase will be mitigated for.

Erosion control measures will be applied and will form part of the EMPr. Soft engineering for reinforcement and stabilizing of banks will be used as opposed to hard engineering practices such as geo-textiles or gabions.

Indirect impacts:
The community will benefit socio economically and have safe transportation access to services offered in the larger towns and cities.

Cumulative impacts:
The bridge will be maintained by the Department of Transport so as to protect their investment in the bridge. The bridge will allow for the potential of development within the community.

No-go alternative (compulsory)

Direct impacts:
Should the bridge not be approved, it will result in a loss of capital invested already. The community will continue to live with a bridge that is unsafe during rainy weather and hazardous to their livelihood. Development potential will be nil and access to goods and services will be limited and dependant on weather.

Indirect impacts*:*
n/a

Cumulative impacts:
This bridge will improve socio economic development and access to goods and services

Indicate mitigation measures to manage the potential impacts listed above:

Alternative A1:

The layout and design has taken into account the terrain of the site. The environmental constraints have also been accounted for and the location is the best as it is within the same footprint as the existing bridge and road. No re-alignment of the road is required therefore less impact to the receiving environment.

2.2. IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE

a. Site alternatives

List the potential impacts associated with site alternatives that are likely to occur during the construction phase:

Alternative S1 (preferred site)

Direct impacts:

- Possibility of water contamination with oils from the machines during construction, however, this will be monitored strictly by the ECO to ensure that measures are in place to prevent any contamination.
- Erosion control measures to avoid or minimize erosion on the river banks must be put in place
- Energy of the watercourse, this is negligible as the construction of the bridge is located on a flat terrain and the flow of water will be fairly constant. It should also be noted that the construction activities will commence in the dry winter months so the impacts are minimized.
- The morphology of the river should not be negatively impacted by the construction of the bridge or diversion of water
- Riparian vegetation and disturbed grassland vegetation will be removed to allow access to the development site
- Less riparian vegetation may exacerbate fluctuations in the water temperature and reduce the concentration of oxygen by reducing shade.
- Degradation of stream and water quality: excavating or removal of sand can increase sediment load and turbidity downstream which may degrade the quality of domestic and live stock water supply.
- Flooding of river and banks due to new bridge
- Impacts of the activity on the characteristics of the river
- Construction related incidents such as spillages of fuel

Indirect impacts:

- Noise from construction workers and working machines, to be addressed to the community and only to be limited to accepted working hours
- Injuries by communities as the result of unsafe keeping of working implements. This to be addressed before construction could take place
- Waste material to be kept within working site and within waste bins.

Cumulative impacts:

- Reduced risk of further damages and degradation to environment
- Uncontrolled runoff and erosion from sites
- Proper rehabilitation measures to be used to prevent degradation of the areas affected by construction.

No-go alternative (compulsory)

Direct Impacts

- No proposed bridge will imply that the status quo remains
- No safe access to goods and surfaces
- The flow of the river will continually be impacted on by the low lying causeway

constructed by the community
- This bridge is vulnerable to flooding which creates a dangerous access for road users.

Indirect impacts:
- Effect of vegetation as the result of working outside demarcated site area.
- Continued sand mining activities will cause the banks to be de-stabilized and riparian vegetation removed

Cumulative impacts:
- Socio –economic status of the community will remain as is and there would be no opportunities for businesses.

Indicate mitigation measures to manage the potential impacts listed above:

Alternative S1

- Monitoring contamination/ pollution of the water resource will include conducting monthly water quality tests upstream, at source and downstream of the construction activity. This will be done on a monthly basis and 3 months post construction. This will ensure that the increase in sediment load and turbidity downstream does not affect the quality of the water.
- Erosion can be minimized by ensuring that construction activities are confined to disturbed areas of the river banks
- Post construction phase, the disturbed areas must be rehabilitated by stabilizing the banks with gabions or geotextiles to ensure regrowth of riparian vegetation. On-going monitoring is required.
- Energy of the water course can be mitigated by conducting the constructing activity in phases i.e. work on a particular segment of the river whilst diverting the water to the active part of the river. The flow of the water must be similar to that of the river current so as not to cause deposition of sediment.
- It is imperative that the construction occur during the dry season to lessen the impacts.
- The flow of water in the river will be diverted to within the river so that downstream users have access to water for sustenance. The flow of water must be diverted into a properly designed and constructed channel that has been stabilised.
- Due to construction occurring in the dry season, the turbidity of the river system should be able to accommodate the diverted water with minimum impact to the river bed and the aquatic environment or cause erosion to the banks.
- The river is overlain with rock so it is anticipated that the impact of the flow from the diverted water or the construction of the bridge will be negligible. This will ensure that the morphology of the river and its associated features will not be significantly/ negatively impacted on.
- The gradient of the area surrounding the proposed footprint for development is fairly flat and as such the stream power will be negligible during the dry season which would not cause significant changes to the morphology of the river or its aquatic habitat.
- The physical characteristics of the river will not be significantly altered except

for the sight of a larger bridge.

- Fluvial processes in the river are crucial to the distribution of vital gases, nutrients and small organisms so the flow of the river to downstream users must not be stopped.
- Rivers are dynamic systems in that they are continuously adjusting to changes in discharge and sediment load.
- The river will revert to its natural function post construction and fulfil its intended role.
- Vegetation removed will be replaced post construction phase.
- The planning and design for the proposed development has taken into account the receiving environment in ensuring the preservation and protection of the ecosystem and or biodiversity features.
- Rehabilitation strategy of the site especially areas not to be affected by the development.
- Proper storm water management plan to address the issue of storm water and how it is going to be disposed or and managed.
- Close monitoring of the site by qualified Environmental Control Officer to ensure that the proposed development has a minimal impact on the receiving environment.
- Use of soft engineering solutions in connection with surfacing of the arrears not developed for vehicle parking. This will allow percolation and seepage of water into the ground without being contaminated with any oils or other negative effects.
- Evaluation of designs and provide recommendations to limit and reduce environmental, social and economic impacts associated with the proposed activities.
- The disturbed areas must be planted with deep rooted vegetation to stabilise the banks, provide shade to control the water temperature and provide habitat and food.
- The flooding of the river will also be dependent on the gradient of the area and since it is fairly flat, the flood waters may move onto the land and remain there for days. The proposed bridge will not contribute to flooding of the river banks as it will be constructed higher than the existing bridge and will span the width of the river thus not impeding the flow of the water or causing it to dam and cause flash floods downstream.
- The construction of the bridge will not significantly impact on the biotic and abiotic environment of the river but will enhance the river aesthetically and environmentally as the degraded areas of the banks will be re-vegetated.
- To avoid soil and water contamination in cases where the machine being used are faulty, the contractor will have to make sure of the following:
- Provision of drip trays all the time onsite
- Placing of generators over the drip tray
- Avoid soil erosion by ensuring that rehabilitation/landscaping in all areas where construction is taking place.
- Provision of waste bins to avoid pollution by means of waste
- Use of chemical ablution facilities to avoid air pollution

b. Process, technology, layout or other alternatives

List the impacts associated with process, technology, layout or other alternatives that are likely to occur during the construction phase (please list impacts associated with each alternative separately):

Alternative A1 (preferred alternative)

Direct impacts:

- The noise, vehicle and people movement might be considered a priority and have to be managed accordingly.
- Pollution of immediate area surrounding the site will take place, this being in the form of construction rubble, dust and material stockpiles.
- Litter created by workers/ contractors would be required to be managed.
- Excavation activities with removal of vegetation and exposure of soils

Indirect impacts:

- Litter through the property as temporal storage for building material such as building sand, bricks etc.
- These might lead indirectly into air pollution or dust.
- Traffic interference by means of construction vehicles parking their cars in the road side might be of nuisance to the public. This will be controlled and managed by the site manager or contractor.
- Increased strain on natural resources
- Continued employment for contractors completing work within the surrounding area.

Cumulative impacts:

- Establishment costs increased
- Reduced risk to criminal activity
- Improved socio-economic benefits for the communities.

No-go alternative (compulsory)

Direct Impacts

- Money invested will not be recovered and the proposed bridge will not be constructed rendering the existing bridge as the only means for crossing the river.
- The design of the existing bridge is low and prone to flooding and a hazard to the community

Indirect impacts:

n/a

Cumulative impacts:

- Long term impacts as a result of unemployment, which undermines the economic status of the area.
- Socio- economic status negatively affected

Indicate mitigation measures to manage the potential impacts listed above:

Alternative A1:

- The design must take into account the dynamics of the river system and its associated processes.
- The bridge must span the river system so as to cause minimal impact to the river and to alleviate further flooding.

2.3. IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE

a. Site alternatives

List the potential impacts associated with site alternatives that are likely to occur during the operational phase:

Alternative S1 (preferred alternative)

Direct impacts:

- Water contamination as a result of road use by vehicles, which are not roadworthy, that leaks oils, which could be washed down to the river during rainy days.
- Destabilization of banks by cattle near river, as this area may be prone to an increase in residents for accessibility to transport.
- Lack of maintenance of the proposed bridge
- Safe access to a bridge that is not prone to flooding
- Safe access to goods and services and public transport in rainy weather

Indirect impacts:

- Human health from communities downstream might be negatively affected.

Cumulative impacts:

- Increased chances of diseases relating to water contamination as the result of oil leaks into the road washed to the river.

No-go alternative (compulsory)

Direct impacts:

- Degradation of receiving environment due to poor management and or care taken during construction and which affects the functionality or operation of the bridge
- The status quo remains and the community have to utilise an unsafe bridge.

Indirect impacts:

- Economic loss for applicants

Cumulative impacts:

- Exposure of human health to degraded environment especially communities

that totally depends on very basic environment's resources
- Risks such as injuries that community especially school children might be exposed due improper rehabilitation especially along the banks of the river in the vicinity where the bridge begins from either side of the river bank.
- Lack of on-going maintenance of the bridge and monitoring of rehabilitation of banks and degraded areas
- Increased financial costs to remedy environmental and social impacts
- No contribution to local businesses and economy

Indicate mitigation measures to manage the potential impacts listed above:

Alternative S1

- Awareness campaign during construction by Environmental Control Officer of the site by raising awareness of the risk that the completed bridge might have.
- Monitoring the rehabilitated area to ensure that vegetation grows and the area rehabilitated is compact, and cannot any stage collapse.
- Stabilization of banks is carried out with soft engineering practices.
- Ongoing maintenance of the bridge to ensure it is safe

b. Process, technology, layout or other alternatives

List the impacts associated with process, technology, layout or other alternatives that are likely to occur during the operational phase (please list impacts associated with each alternative separately):

Alternative A1 (preferred alternative)

Direct impacts:
- The layout and design must be complied with and the bridge managed and maintained on a regular basis

Indirect impacts:
- Not anticipated during this phase

Cumulative impacts:
- Not anticipated during this phase

No-go alternative (compulsory)

Direct impacts:
- Not anticipated during this phase

Indirect impacts:
- Not anticipated during this phase

Cumulative impacts:
- Not anticipated during this phase

Indicate mitigation measures to manage the potential impacts listed above:

Alternative A1

- Ongoing maintenance of the bridge to ensure that it is safe

2.4. IMPACTS THAT MAY RESULT FROM THE DECOMISSIONING OR CLOSURE PHASE

a. Site alternatives

List the potential impacts associated with site alternatives that are likely to occur during the decommissioning or closure phase:

Alternative S1 (preferred alternative)

Direct impacts:
- Closure or decommissioning is not envisaged however should this occur to the existing bridge, it will imply that it would not contribute to being a flood hazard and pedestrians will not be tempted to utilise this bridge and risk their lives during rainy weather
- The closure of the proposed bridge would imply that road users would have limited or no access to the communities across or access to goods and services.

Indirect impacts:
- The bridge will become in managed and maintained and an eyesore.
- Should it be demolished it would create a significant amount of waste which may be unusable.

Cumulative impacts:
- Socio economic advantages will be reduced with the decommissioning of the bridge.

No-go alternative (compulsory)

Direct impacts:
- Decommissioning of the proposed bridge with render the status quo and the norm and its associated disadvantages of poor public transport and access to good s and services.

Indirect impacts:
- Not applicable

Cumulative impacts:
- Not applicable

Indicate mitigation measures to manage the potential impacts listed above:

Alternative S1

1. To avoid soil and water contamination in cases where the machine being used are faulty, the contractor will have to make sure of the following:

a) Provision of drip trays all the time onsite
b) Placing of generators over the drip tray

2. Avoid soil erosion by ensuring that rehabilitation/landscaping in all areas where construction is taking place.
3. Provision of waste bins to avoid pollution by means of waste
4. Use of chemical ablution facilities to avoid air pollution

b. Process, technology, layout or other alternatives

List the impacts associated with process, technology, layout or other alternatives that are likely to occur during the decommissioning or closure phase (please list impacts associated with each alternative separately):

Alternative A1 (preferred alternative)

Direct impacts:

- The current negative impacts of a low level bridge being prone to flooding will continue. This will continue to be a hazard to road users.

Indirect impacts:

- Development potential will be reduced

Cumulative impacts:

- Socio economic status of community will remain the same

No-go alternative (compulsory)

Direct impacts:

- Not applicable

Indirect impacts:

- Not applicable

Cumulative impacts:

- Not applicable

Indicate mitigation measures to manage the potential impacts listed above:

Alternative A1

- Ensure new bridge is built and managed in an environmentally viable manner.

2.5. PROPOSED MONITORING AND AUDITING

For each phase of the project and for each alternative, please indicate how identified impacts and mitigation will be monitored and/or audited.

Alternative S1 (preferred site)

- Develop Environmental Management Programme (EMPr)
- Appointment of Environmental Control Officer for the project
- ECO to review proposed project scope against Environmental Authorisation by EDTEA

The following to be monitored by ECO during construction:

- Environmental scan of the site prior any excavations in preparation for construction
- Induction to all construction personnel on contents of EMPr and environmental authorisation and compliance and penalties associated there to.
- Advice the contractors areas suitable for contractor's temporal mobile site offices
- Advice on what to do with waste being produced on site by allowing such waste to be disposed of at a registered landfill sites
- Control of dust especially in areas that are in close proximity to residential areas
- Cleaning of spillages immediately'
- Demarcation of sites for no go areas
- Demarcation of construction sites and prevent public access to these areas
- Implement fines as part of the contract for unlawful activities
- Monitor complaints, investigate and implement rectifying measures
- Monitor areas for pollution and degradation.
- Rehabilitation of any damage to sensitive areas, including potential erosion from construction activities.
- Implement a process to capture and address public recommendations, complaints and or requests.
- Monthly audit report to be produced.

Alternative A1 (preferred alternative)

There is no other alternative as the area proposed for this bridge is the same as the area where there is an existing unfirm structure (low level bridge).

3. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the 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.

Alternative S1 (preferred site)

The community surrounding Tugela River (Khomfini area) is in dire need of the bridge to assist them undertake their normal daily activities. At present (and as indicated) these communities find it hard to access other areas especially during and after heavy rains as the river are full of water and very difficult if not possible to cross the river.

Despite the environmental impacts as indicated in this report, the proposed vehicle bridge is necessary and from the socio-economic point of view it is needed that the authorisation be granted by department of agriculture and environmental affairs to the department of transport to start the construction process.

However, the proposed development will have a minimal impact on the environment as pointed out above. This impacts include:

1) Water contamination with oils
2) Soil contamination with oils
3) Dangers on the living species within the river system
4) River system characteristics and associated degradation

These impacts are vital if left unattended. It therefore requires that strong and strict measures need to be in place to avoid this from happening. In doing this there will be a need to ensure that the contractor understands fully the impacts that might affect the receiving environment and the impact these might have especially on the river that carries possible other living organisms.

The application of strict environmental principles in ensuring safe keeping of the environment is vital and adherence to the approved EMPr

Alternative A1 (preferred alternative)

The approval of the proposed development as proposed by Department of Transport is of vital importance for the socio-economic status of the communities surrounding the Tugela river. Despite the environmental impacts potential onsite during construction phase, the approval of this proposed development is of vital importance in improving the lives of the communities' especially young school kids crossing the river.

No-go alternative (compulsory)

The disapproval of this proposed development will not only affect the department's target of service delivery but will affect economically and socially the lives of the communities within this area.
The loss of lives will increase during flood periods and access to goods and services in an effort for a better standard of living will be diminished.

SECTION F

APPENDICES

ANNEXURE A

SITE LAYOUT MAP – 1: 50 000 SCALE

ANNEXURE B

FACILITY DRAWINGS

ANNEXURE C

SITE PHOTOS

ANNEXURE D

PUBLIC PARTICIPATION PROCESS

ANNEXURE E

ENGINEERING REPORTS AND DESIGNS

The following specialists report are being developed:

- Geotechnical Assessment of the site

ANNEXURE G

FINAL
ENVIRONMENTAL MANAGEMENT PROGRAMME