



**DRAFT BASIC ASSESSMENT REPORT (BAR) FOR THE
PROPOSED UPGRADE OF P710 ROAD BRIDGE AND
CULVERT PROJECT WITHIN UMLALAZI LOCAL
MUNICIPALITY, KWAZULU-NATAL**

October 2016

Tel: +27 (0) 82 49 52176
Email: info@gedezar.co.za
2 Portsmouth Rd, Pinetown, 3610



transport
Department:
Transport
Province of KwaZulu-Natal

DOCUMENT DESCRIPTION

Client:

KwaZulu - Natal Department of Transport

Proposal Name:

Draft Basic Assessment Report (Bar) For The Proposed Upgrade of P710 Road Bridge and Culvert Project Within Umlalazi Local Municipality, Kwazulu-Natal

At Gedezar Consulting Reference Number:

BA01-02-16

EDTEA Ref No:

N/A

Compiled by:

Kuda M Zhandire

Date:

10 October 2016

Location:

Durban

Review:

Andile Mnyandu

PUBLIC REVIEW OF THE DRAFT BAR

This draft Basic Assessment Report (dBAR) is available for a mandatory commenting period of 30 days from 10th October 2016 to 10th November 2016. The comments received on the draft Basic Assessment Report have been used to inform this final Basic Assessment Report.

Copies of the dBAR are available at strategic public places in the project area (see below) and upon request from At Gedezar Consulting.

- Mandeni Municipal Library; and
- Issued a copy to Counsellor Mtengu to share with I&APs

OPPORTUNITIES FOR PUBLIC REVIEW

The following methods of public review of the dBAR are available:

- Completing the comment sheet enclosed with the Background Information Document (BID);
- Written submissions by e-mail or fax; and
- Telephonic submissions.

SUBMIT COMMENTS AND QUERIES TO:

Mr Andile Mnyandu

At Gedezar Consulting

64 Paige Place, 2 Portsmouth Road,

Pinetown, 3600

082 495 2176

086 723 4520

andilemn@gedezar.co.za

Project Background and Introduction

The KwaZulu-Natal Department of Transport has appointed At Gedezar Consulting as the independent Environmental Assessment Practitioner (EAP) to ensure that the proposed upgrade of P710 road bridge and culvert project is in compliance with the EIA Regulations of 2014 as promulgated under the National Environmental Management Act (NEMA) (Act. 107 of 1998) (as amended).

The project will consist of;

- The widening of the existing road;
- Construction of a bridge over the Nembe River;
- Construction of a culvert over the Mbohlisi stream; and
- Associated storm water drainage channels
-

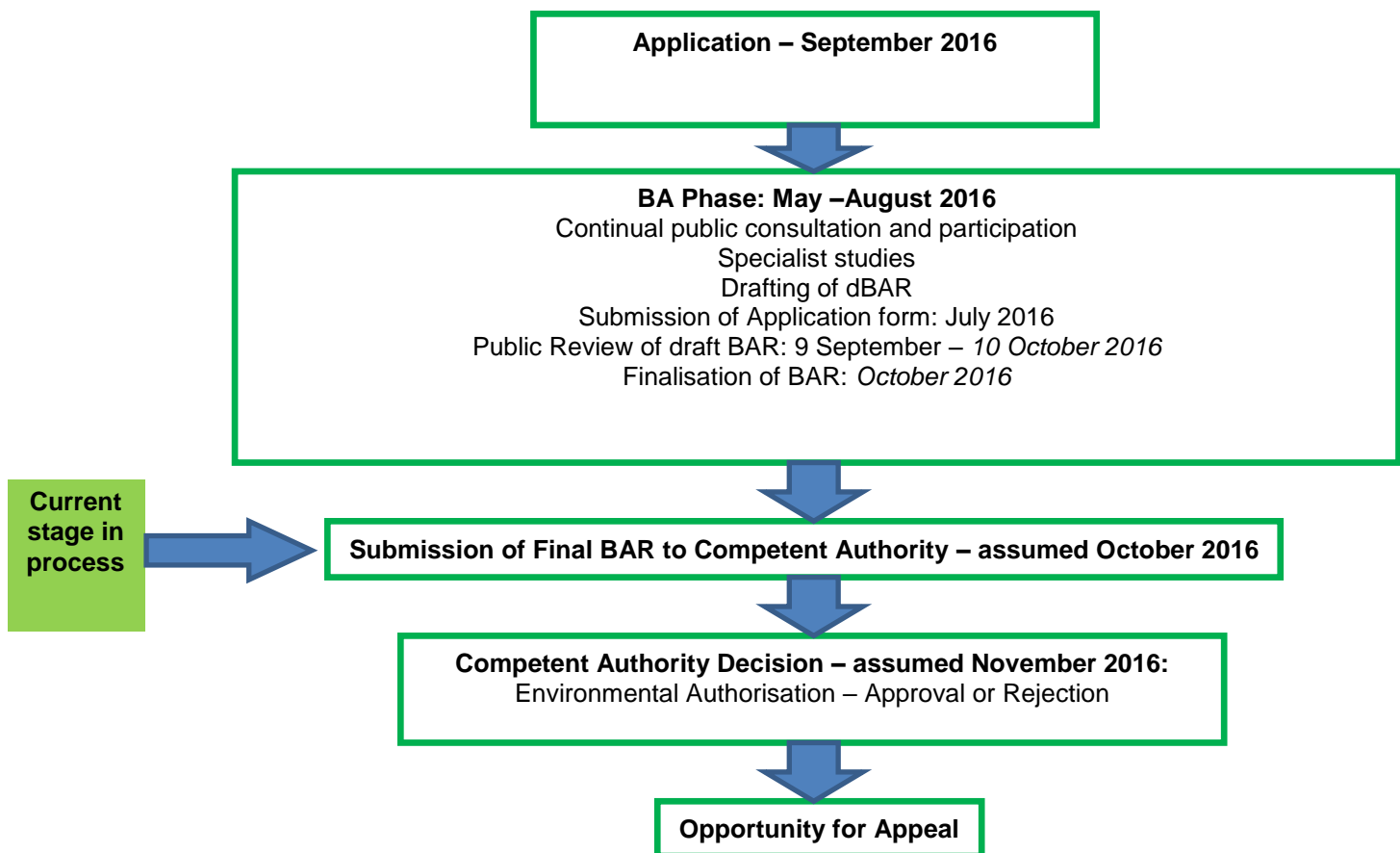
The proposed infrastructure capacities and dimensions are as follows:

- Widening of existing road by a total of 1.5m from 7m to 8.5m
- bridge 8.5m x +/- 30m
- culvert 8.5m x +/- 15m

Site and activity alternatives are not an option as this is enhancement and upgrading of existing road infrastructure in an area that requires improved road infrastructure. It appears that the proposed infrastructure is situated within 32 m of a watercourse, which thus triggers the need for an Environmental Authorisation via a Basic Assessment Process.

The Basic Assessment (BA)

This BA follows the legislative process prescribed in the EIA Regulations of 2014, as this application is lodged under the 2014 EIA Regulations. The process is simplified in the diagram below.



Principal Objective of Report

This report constitutes the **draft Basic Assessment Report (dBAR)** which details the environmental outcomes, impacts and residual risks of the proposed activity. The report aims to assess the key environmental issues and impacts associated with the development, and to document Interested and Affected Parties (I&AP) issues and concerns. Furthermore, it provides background motivation, details of the proposed project, and describes the public participation undertaken to date.

The objective of this report, therefore, is to provide the project's I&APs, stakeholders, commenting authorities, and the competent authority, with a thorough project description and BA process description. The outcome being to engender productive comment / input, based on all information generated to date and presented herein. The document concludes by proposing what is believed to be a sound and environmentally risk calculated decision. In order to protect the environment and ensure that the development is undertaken in an environmentally responsible manner, there are a number of significant pieces of environmental legislation that were taken into account during this study and are elaborated on in this report.

Technical Project Description of the Project

The proposed infrastructure will consist of a culvert over the Mbohli stream, a bridge over the Nembe River, storm water drainage structures within the road reserve. The existing road is currently 7m wide, with the water course crossings only allowing for traffic in one direction at a time. The proposed upgrades will involve the demolition of both water crossing structures, and reconstruction of new structures higher above the ground to prevent flooding. The road will be widened by 1.5m to provide for lanes 3.25m wide, one in either direction

Regulatory Environmental Requirements

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

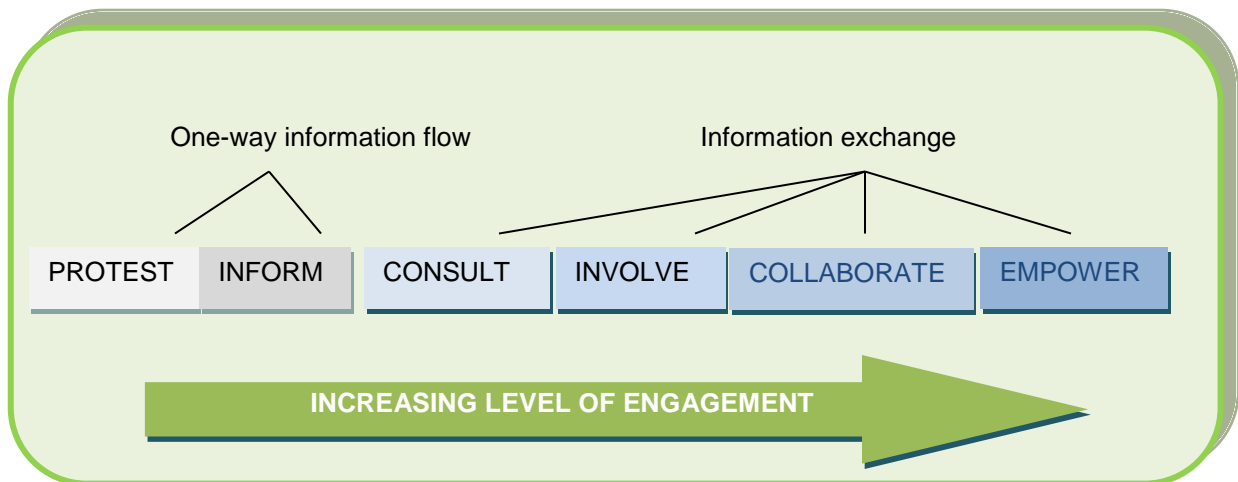
The Environmental Impact Assessment (EIA) Regulations under the NEMA consist of three (3) categories of activities namely: Listing Notice 1 Activities (Government Notice Regulation - GNR. 983 of 2014) which require a BA Process, Listing Notice 2 Activities (GNR. 984 of 2014) which require Scoping and EIA for authorisation and Listing Notice 3 Activities (GNR 985 of 2014) which requires a BA process for specific activities in identified sensitive geographical areas.

Public Participation Process

At Gedezar Consulting as the EAP is undertaking the Public Participation Process (PPP) for this project as professional facilitators.

Input from the community is essential for a complete assessment of the impacts and benefits associated with the proposed development. As such as an EAP; one is reliant on the indigenous knowledge which will optimistically be forthcoming by the community.

The figure below depicts the PPP approach taken by At Gedezar Consulting to ensure an all-inclusive engagement with the community as the beneficiaries of the proposed project.



KEY FINDINGS OF THE SPECIALIST STUDIES

Wetland Delineation

The delineation of the watercourse areas on the site identified the following features of major significance in the proposed bridge and culvert upgrade:

Eleven wetlands were identified and delineated that were classified hydrogeomorphically as;

- channelled valley-bottom wetlands,
- a hillslope seep
- floodplain wetlands
- unchannelled valley-bottom wetlands; and
- an exoreic depression

Potential negative ecological impacts resulting from the proposed upgrade of the P710 include physical damage to the habitats of the watercourses and wetlands in the study area together with alien plant invader establishment, siltation, and pollution by liquid and solid waste, dumping of solid and liquid waste and negative impacts on biodiversity. Most of the watercourses and wetlands lie at a safe distance from the proposed upgrade and are unlikely to be affected. Potential negative ecological impacts for the Nembe River bridge range from low to moderate significance without mitigation and low to low-moderate significance with mitigation. Potential negative ecological impacts for refurbishment or replacement of the culvert range from low-moderate to moderate significance without mitigation and low significance with mitigation.

A rehabilitation plan addresses all of the potential negative ecological impacts. If the mitigation measures provided in the study are implemented meticulously, the impacts can be reduced considerably and their significance lowered.

Ecological Assessment

The ecological assessment identified that the study area consists of two vegetation types namely the KwaZulu-Natal Coastal Belt Thornveld occurring in over half of the study area while KwaZulu-Natal Hinterland Thornveld is present in just under half of the area. The KwaZulu-Natal Coastal Belt Thornveld has a Vulnerable conservation status, while the KwaZulu-Natal Hinterland Thornveld type is Least Threatened. Houses dominate the area along the first half of the footprint, together with sugar cane fields, and hence very little KwaZulu-Natal Coastal Belt Thornveld remains other than highly disturbed roadside vegetation, comprising mainly grasses and alien plant invaders. In contrast, the study area in the second half of the upgrade footprint is characterised by indigenous trees and grassland.

Parts of the study area fall within irreplaceable Critical Biodiversity Areas. These areas of very high conservation value are considered critical for meeting biodiversity targets and thresholds which are required to ensure viable populations of species and the functioning of ecosystems.

The impacts of the proposed developments range from low-moderate to high significance. A rehabilitation plan addresses all of the potential negative ecological impacts

Heritage Impact Assessment

The Enkanyezini ZCC Informal Temple is located on the side of the road which has cultural significance is the only feature of significance identified. No sites of heritage significance were observed.

The construction of the existing road has resulted in damage to any possible previous sites of heritage significance. It is not anticipated that any further sites will be affected.

No fatal flaws were identified.

Way Forward

The impacts identified and assessed by way of risk ratings, have been extensively reported herein.

This report is a culmination of scientific specialist studies' findings, public contribution via formal comment, comment made at meetings held, and the drawing of conclusions by the EAP as the environmental specialist. This final BAR will, together with a comprehensive issues trail and all addenda as referred to, be submitted to the CA, DEDTEA, for decision making.

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Activity (Development) – an action either planned or existing that may result in environmental impacts through pollution or resource use. For the purpose of this report, the terms ‘activity’ and ‘development’ are freely interchanged.

Alternative – a possible course of action, in place of another, of achieving the same desired goal of the proposed project. Alternatives can refer to any of the following but are not limited to: site alternatives, site layout alternatives, design or technology alternatives, process alternatives or a no-go alternative.

Applicant – the **project** proponent or developer responsible for submitting an environmental application to the relevant environmental authority for environmental authorisation.

Biodiversity – the diversity of animals, plants and other organisms found within and between ecosystems, habitats, and the ecological complexes.

Construction – means the building, erection or establishment of a facility, structure or infrastructure that is necessary for the undertaking of a listed or specified activity but excludes any modification, alteration or expansion of such a facility, structure or infrastructure and excluding the reconstruction of the same facility in the same location, with the same capacity and footprint.

Cumulative Impacts – impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities to produce a greater impact or different impacts.

Direct impacts – impacts that are caused directly by the activity and generally occur at the same time and at the same place of the activity. These impacts are usually associated with the construction, operation or maintenance of an activity and are generally quantifiable.

Ecological Reserve – the water that is necessary to protect the water ecosystems of the water resource. It must be safeguarded and not used for other purposes. The Ecological Reserve specifies both the quantity and quality of water that must be left in the national water resource. The Ecological Reserve is determined for all major water resources in the different water management areas to ensure sustainable development.

Ecosystem – a dynamic system of plant, animal (including humans) and micro-organism communities and their non-living physical environment interacting as a functional unit. The basic structural unit of the biosphere, ecosystems are characterised by interdependent interaction between the component species and their physical surroundings. Each ecosystem occupies a space in which macro-scale conditions and interactions are relatively homogenous.

Environment – In terms of the National Environmental Management Act (NEMA) (Act No 107 of 1998) (as amended), “Environment” means the surroundings within which humans exist and that are made up of:

- a) the land, water and atmosphere of the earth;
- b) micro-organisms, plants and animal life;
- c) any part or combination of (a) or (b) and the interrelationships among and between them; and
- d) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

Environmental Assessment (EA) – the generic term for all forms of environmental assessment for projects, plans, programmes or policies and includes methodologies or tools such as environmental impact assessments, strategic environmental assessments and risk assessments.

Environmental Authorisation – an authorisation issued by the competent authority in respect of a listed activity, or an activity which takes place within a sensitive environment.

Environmental Assessment Practitioner – the individual responsible for planning, management and coordination of environmental impact assessments, strategic environmental assessments, environmental management programmes or any other appropriate environmental instrument introduced through the EIA Regulations.

Environmental Impact – a change to the environment (biophysical, social and/ or economic), whether adverse or beneficial, wholly or partially, resulting from an organisation's activities, products or services.

Environmental Impact Assessment (EIA) – the process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made.

Environmental Issue – a concern raised by a stakeholder, interested or affected parties about an existing or perceived environmental impact of an activity.

Environmental Management – ensuring that environmental concerns are included in all stages of development, so that development is sustainable and does not exceed the carrying capacity of the environment.

Environmental Management Programme – A detailed plan of action prepared to ensure that recommendations for enhancing or ensuring positive impacts and limiting or preventing negative environmental impacts are implemented during the life cycle of a project. This EMP focuses on the construction phase, operation (maintenance) phase and decommissioning phase of the proposed project.

Expansion – means the modification, extension, alteration or upgrading of a facility, structure or infrastructure at which an activity takes place in such a manner that the capacity of the facility or the footprint of the activity is increased.

Fatal Flaw – issue or conflict (real or perceived) that could result in developments being rejected or stopped.

General Waste – household water, construction rubble, garden waste and certain dry industrial and commercial waste which does not pose an immediate threat to man or the environment.

Hazardous Waste – waste that may cause ill health or increase mortality in humans, flora and fauna.

Indirect impacts – indirect or induced changes that may occur as a result of the activity. These types of impacts include all of the potential impacts that do not manifest immediately when the activity is undertaken or which occur at a different place as a result of the activity.

Integrated Environmental Management – a philosophy that prescribes a code of practice for ensuring that environmental considerations are fully integrated into all stages of the development and decision-making process. The IEM philosophy (and principles) is interpreted as applying to the planning, assessment, implementation and management of any proposal (project, plan, programme or policy) or activity – at local, national and international level – that has a potentially significant effect on the environment. Implementation of this philosophy relies on the selection and application of appropriate tools for a particular proposal or activity. These may include environmental assessment tools (such as strategic environmental assessment and risk assessment), environmental management tools (such as monitoring, auditing and reporting) and decision-making tools (such as multi-criteria decision support systems or advisory councils).

Interested and Affected Party – for the purposes of Chapter 5 of the NEMA and in relation to the assessment of the environmental impact of a listed activity or related activity, means an interested and affected party contemplated in Section 24(4)(a)(v), and which includes – (a) any person, group of persons or organisation interested in or affected by such operation or activity; and (b) any organ of state that may have jurisdiction over any aspect of the operation or activity.

Mitigate – the implementation of practical measures designed to avoid, reduce or remedy adverse impacts or enhance beneficial impacts of an action.

No-Go Option – in this instance the proposed activity would not take place, and the resulting environmental effects from taking no action are compared with the effects of permitting the proposed activity to go forward.

Rehabilitation – a measure aimed at reinstating an ecosystem to its original function and state (or as close as possible to its original function and state) following activities that have disrupted those functions.

Sensitive environment – any environment identified as being sensitive to the impacts of the development.

Significance – significance can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. magnitude, intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of significance and acceptability). It is an anthropocentric concept, which makes use of value judgements and science-based criteria (i.e. biophysical, social and economic).

Stakeholder engagement – the process of engagement between stakeholders (the proponent, authorities and I&APs) during the planning, assessment, implementation and/or management of proposals or activities.

Sustainable Development – development which meets the needs of current generations without hindering future generations from meeting their own needs.

Watercourse – means:

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

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

Abbreviations and Acronyms

C-PLAN	Conservation Plan
DAEA	Department of Agriculture and Environmental Affairs
EDTEA	Economic Development, Tourism and Environmental Affairs
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EKZNW	Ezemvelo KwaZulu-Natal Wildlife
I&AP	Interested and Affected Parties
IDP	Integrated Development Plan
IWRM	Integrated Water Resource Management
KZN DoT	KwaZulu-Natal Department of Transport
NDP	National Development Plan
NEMA	National Environmental Management Act
NEM: WA	National Environmental Management Waste Act
NEM: AQA	National Environmental Management Air Quality Act
NWRS	National Water Resource Strategy
PoS	Plan of Study
PPP	Public Participation Process
SANBI	South African National Biodiversity Institute
SEA	Strategic Environmental Assessment
SIA	Social Impact Assessment
SWMP	Storm water Management Plan

1 INTRODUCTION

1.1 Background

The upgrade of the P710 road project was initiated to improve road infrastructure by upgrading the road from gravel to a black top road in the Umlalazi Municipality and Mandeni areas.

Impumelelo Consulting Engineers have appointed At Gedezar Consulting as the independent Environmental Assessment practitioner to conduct the environmental authorisation process for the proposed development of the P710 Road Bridge and Culvert.

TABLE 1: SURVEYOR GENERAL NUMBERS:

N	0	G	U	0	0	0	0	0	0	0	1	5	8	4	1	0	0	0	0	0
N	0	F	U	0	0	0	0	0	0	0	1	6	8	8	2	0	0	0	0	0

PROPERTY DESCRIPTIONS:

- Reserve Number 21 of Farm Number 15841
- Reserve Number 21 of Farm Number 16882

TABLE 2: LAND USE ZONING:

The site is zoned	Agriculture
Is a change of land-use or a consent use application required?	No
Must a building plan be submitted to the local authority?	No

TABLE 3: ROUTE COORDINATES:

Point	South (DMS)	East (DMS)
Culvert	29°5'14.29"	31°21'16.99"
Bridge	29°4'56.15"	31°21'9.71"

TABLE 4: DIRECTIONS TO THE PHYSICAL ADDRESS:

From Mandeni, drive towards Sundumbili in a North Westerly direction for approximately 11.5km. The culvert will be located approximately 11,5km over the Mbohlisi stream. The bridge will be located 600m further over the Nembe River.

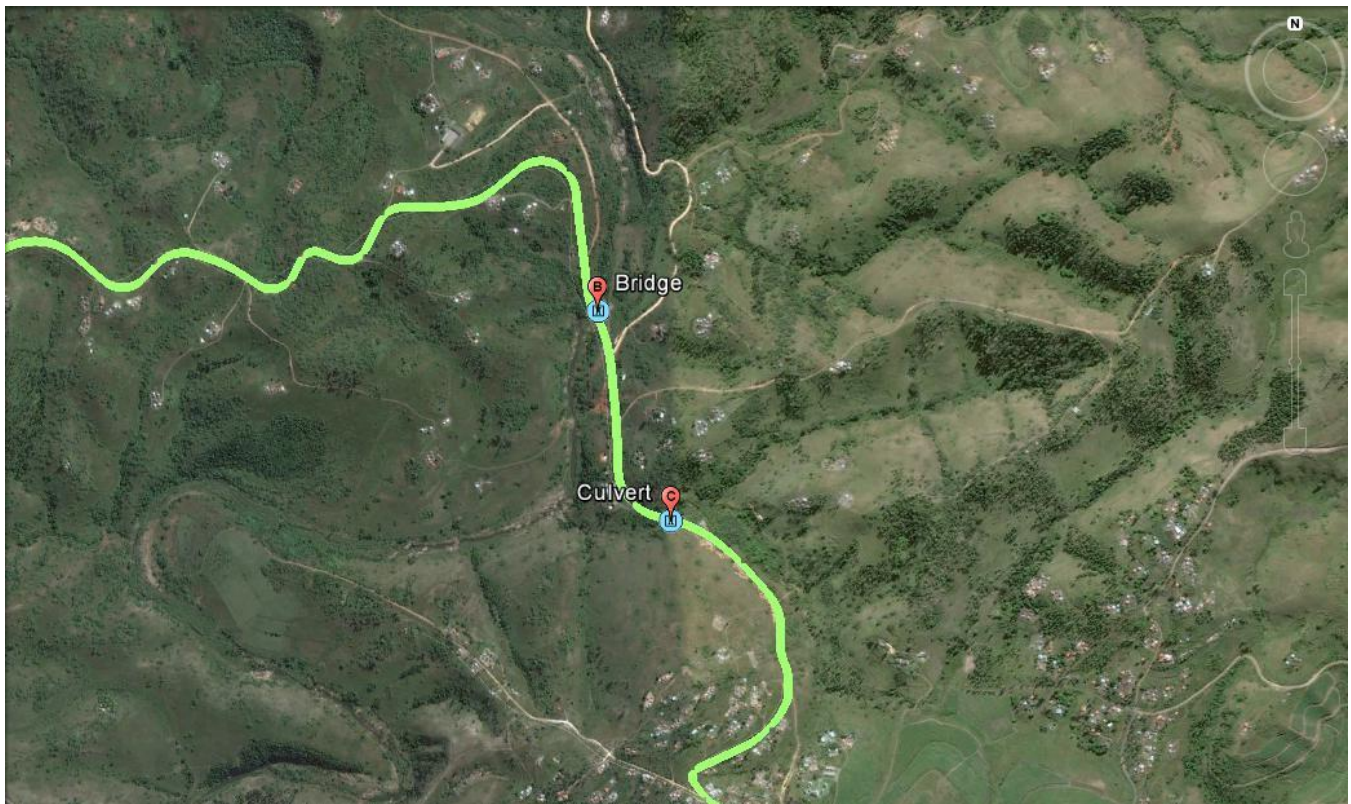


Figure 1: Plan / layout (map)

TABLE 5: SURROUNDING LAND USES

Natural area	Y	Light industrial	N
Low density residential	N	Medium industrial	N
Medium density residential	N	Heavy industrial	N
High density residential	N	Power station	N
Informal residential	N	Military or police base/station/compound	N
Retail commercial & warehousing	N	Spoil heap or slimes dam	N
Office/consulting room	N	Dam or reservoir	N
Quarry, sand or borrow pit	N	Hospital/medical centre	N
School	Y	Tertiary education facility	N
Church	Y	Old age home	N
Sewage treatment plant	N	Train station or shunting yard	N
Railway line	N	Major road (4 lanes or more)	N
Harbour	N	Plantation	N
Sport facilities	N	Agriculture	Y
Golf course	N	River, stream or wetland	Y

Polo fields	N	Nature conservation area	Y
Filling station	N	Mountain, kopje or ridge	N
Landfill or waste treatment site	N	Museum	N
Historical building	N	Protected Area	Y
Graveyard	P	Archaeological site	N
Airport	N	Other:	N

Key: Y = Yes P = Possibly N = No

1.2 Approach to the Basic Assessment (BA) Study

The study for this BA adopts an approach which meets the stipulated requirements in GNR 983, Appendix 1 which outlines the legislative BA process and requirements for assessment of outcomes, impacts and residual risks of the proposed development.

1.2.1 OBJECTIVES OF THE STUDY

The BA has aimed to achieve the following:

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

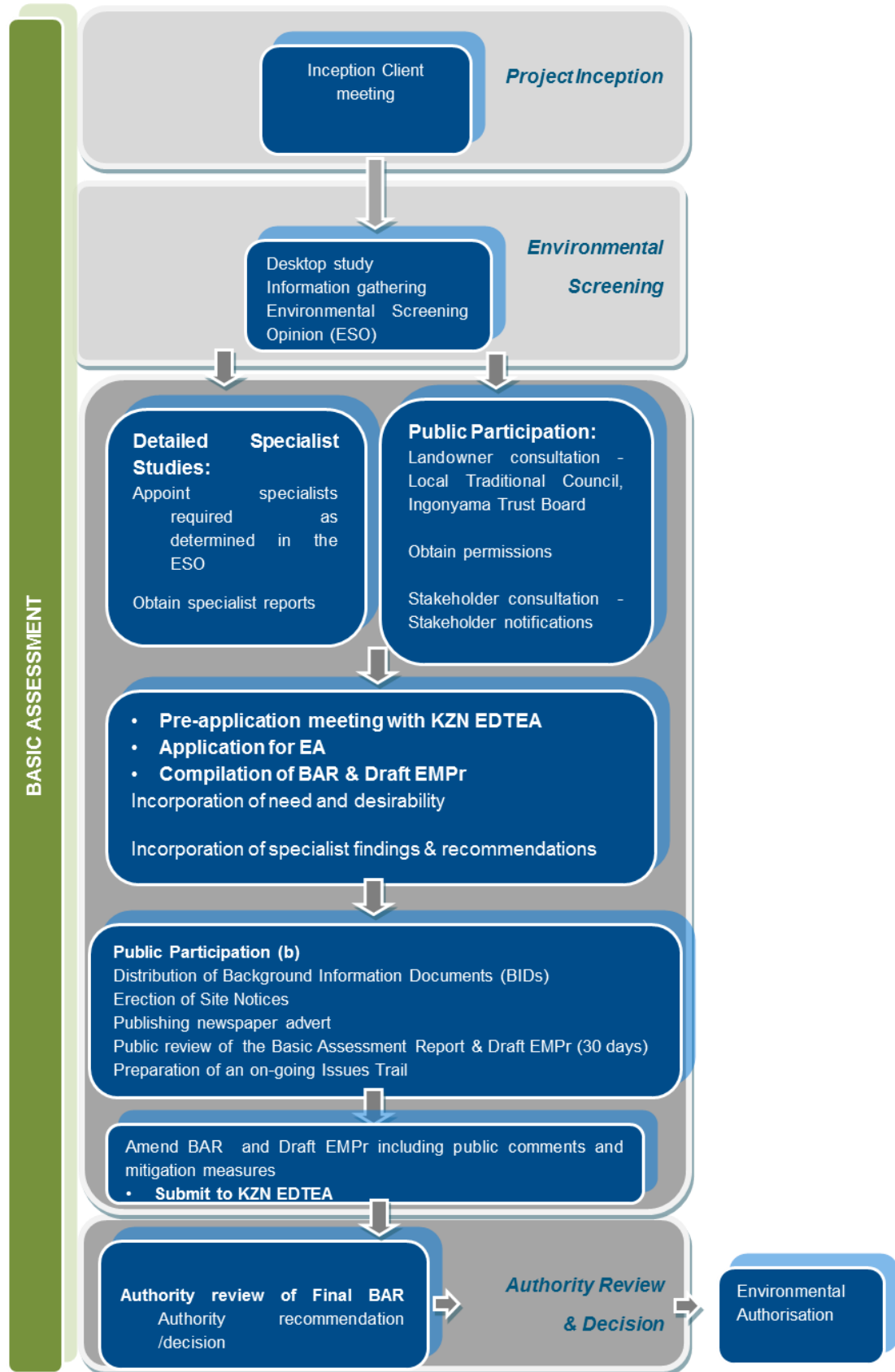


Figure 2: Approach to the Basic Assessment Studies

1.2.2 DETAILS OF THE PROJECT PROPONENT

The project applicant is the KwaZulu-Natal Department of Transport. The details of the project applicants are as follows:

TABLE 6: APPLICANT DETAILS

Applicant:			
Representative			
Physical address:			
Postal address:			
Postal code:		Fax:	
Telephone:			
E-mail:			

1.2.3 DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

The professional team of At Gedezar Consulting has considerable experience in the environmental management and EIA fields. At Gedezar Consulting has been involved in and/or managed several of the largest Environmental Impact Assessments undertaken in South Africa to date. The particulars of the EAP are presented in Table 1 and 2 below:

TABLE 7: DETAILS OF CONSULTANT

Business name of EAP:	At Gedezar Consulting		
Physical address:	64 Paige Place, 2 Portsmouth Road, Pinetown		
Postal address:	64 Paige Place, 2 Portsmouth Road, Pinetown		
Postal code:	3600	Fax:	086 723 4520
Telephone:	082 495 2176		
E-mail:	info@gedezar.co.za		

TABLE 8: DETAILS OF THE PROJECT TEAM

Name	Organisation	Qualification	Telephone	Email
Mr Andile Mnyandu	At Gedezar Consulting	BA Environmental & Development Studies	082 4952176	andilemn@gedezar.co.za
Ms. Kuda M Zhandire	At Gedezar Consulting	BA Geography & Environmental Science	082 4952176	kudazh@gedezar.co.za

1.3 Structure of this Report

TABLE 9: REPORT STRUCTURE

CHAPTER	CONTENT
Chapter 1 - Introduction	Introduction and background to the project.
Chapter 2 - Terms of Reference	Terms of reference of the study and listed activities.
Chapter 3 - Legal Framework	Includes an explanation on all applicable legislation.
Chapter 4 - Project Description and Motivation	Includes the project justification and a description of the proposed activities.
Chapter 5 - Project Alternatives	Consideration of alternatives (design/layout, site and no-go) for the project.
Chapter 6 - Description of Study Area	A description of the biophysical and social environment.
Chapter 7 - Public Participation Process	Overview of the public participation process conducted to date.
Chapter 8 Specialist Assessments	The section highlights the key findings of the specialist studies conducted.
Chapter 9 - Environmental Impact Assessment	The impacts identified are rated by significance.
Chapter 10 - Environmental Impact Statement	Conclusions and recommendations of the Environmental Impact Assessment.

2 LEGAL FRAMEWORK AND REQUIREMENTS

In order to protect the environment and ensure that the development is undertaken in an environmentally responsible manner, there are a number of significant pieces of environmental legislation that need to be taken into account during this study. These include:

- The Constitution of South Africa
- Section 24 of the Constitution of South Africa (No. 108 of 1996) states that:

“...everyone has the right - ... (a) to an environment that is not harmful to their health or well-being; and ... (b) to have the environment protected, for the benefit of present and future generations through reasonable legislative and other measures that ... (c) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”

This protection encompasses preventing pollution and promoting conservation and environmentally sustainable development. These principles are embraced in the National Environmental Management Act (Act No. 107 of 1998) (as amended) and given further expression.

2.1 National Environmental Management Act (Act No. 107 of 1998)

The National Environmental Management Act (Act No. 107 of 1998)(as amended), or otherwise known as NEMA, is South Africa’s overarching environmental legislation and has, as its primary objective to provide for co-operative, environmental governance by establishing principles for decision–making on matters affecting the environment, institutions that will promote co-operative governance and procedures for co-ordinating environmental functions exercised by organs of state, and to provide for matters connected therewith.

The principles of the Act are following:

- Environmental Management must place people and their needs at the forefront of its concern;

- Development must be socially, environmentally and economically sustainable;
- Environmental Management must be integrated, acknowledging that all elements of the environment are linked and interrelated;
- Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person;
- Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human well-being must be pursued;
- Responsibility for the environmental health and safety consequences of a policy, programme, project or activity exists throughout its life cycle.
- The participation of all interested and affected parties in environmental governance must be promoted;
- Decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognizing all forms of knowledge including traditional and ordinary knowledge;
- Community well-being and empowerment must be promoted through environmental education, the raising of environmental awareness;
- The social, economic and environmental impacts of activities including disadvantages and benefits, must be considered, assessed and evaluated and decisions must be appropriate in the light of such consideration and assessment;
- The right of workers to refuse work that is harmful to human health or the environment;
- Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law;
- There must be intergovernmental co-ordination and harmonisation of policies, legislation and actions relating to the environment;
- The environment is held in public trust for the people, the beneficial use of the environment resources must serve the public interest and the environment must be protected as the people's common heritage;
- The cost of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment; and
- The vital role of women and youth in environmental management and development must be recognised and their full participation therein must be promoted.

2.1.1 EIA REGULATIONS (2014)

The nature of the proposed project includes activities listed in the following Listing Notices – GNR 983 (Listing Notice 1), GNR 984 (Listing Notice 2) and GNR 985 (Listing Notice 3) of the EIA Regulations (2014) – refer to Table 10 below:

TABLE 10: TRIGGERED EIA ACTIVITIES

Name and Date of Government Notice	Activity Number	Project Description
Government Notice Regulation (GNR) No. 983 of 2014 Listing Notice 1	12	The existing infrastructure to be developed exceeds 100 m ² in size and the bridge and culvert be within 32 m of watercourses.
Government Notice Regulation (GNR) No. 983 of 2014 Listing Notice 1	19	The proposed infrastructure will cross watercourses and will thus require infilling or depositing of material of more than 5 m ³ or the dredging, excavation, removal or moving of soil, sand or rock of more than 5 m ³ from / into a watercourse.

Government Notice Regulation (GNR) No. 985 of 2014

Listing Notice 3

14

The project will entail the development of infrastructure of 10 m² or more; within a watercourse; or within 32 m of a watercourse, measured from the edge of a watercourse within a CBA in KwaZulu-Natal.

2.2 National Water Act (Act No. 36 of 1998) (as amended)

The National Water Act (NWA) is a legal framework for the effective and sustainable management of water resources in South Africa. Central to the NWA is recognition that water is a scarce resource in the country which belongs to all the people of South Africa and needs to be managed in a sustainable manner to benefit all members of society. The NWA places a strong emphasis on the protection of water resources in South Africa, especially against its exploitation, and the insurance that there is water for social and economic development in the country for present and future generations.

Water use in South Africa is managed through a water use authorisation process, which requires that every water use is authorised by the Department of Water and Sanitation (DWS, previously known as the Department of Water Affairs) or an established Catchment Management Agency (CMA, if applicable for that region), once the water requirements for the Reserve have been determined.

A water use must be licensed unless it (a) is listed in Schedule 1, (b) is an existing lawful use, (c) is permissible under a general authorisation (GA), or (d) if a responsible authority waives the need for a licence. If none of these are relevant a so-called water use licence (WUL) must be applied for and obtained prior to the commencement of such listed activity. In terms of such a WUL the Minister may choose to limit the amount of water which a responsible authority (e.g. CMA, water board, municipality) may allocate. In making regulations and determining items such as GAs, the Minister may differentiate between different water resources, classes of water resources, and geographical areas.

The NWA defines a water resource to be a watercourse, surface water, estuary, or groundwater (aquifer). Included under surface water are manmade water channels, estuaries and watercourses.

As the proposed development involves the abstraction of groundwater as well as the crossing of watercourses, a WUL application will be submitted to the DWS for both consumptive and non-consumptive water uses. The NWA, as applicable to the proposed development (see comment in brackets after each item), defines the identified water uses which are potentially applicable under Section 21 as follows:

The following water uses of Section 21 of the NWA are being applied for the WUL:

- (c) *Impeding or diverting the flow of water in a watercourse* (applicable for the construction within watercourses); and
- (i) *Altering the bed, banks, course or characteristics of a watercourse* (applicable for the construction within watercourses).

2.3 National Environmental Management: Biodiversity Act (No 10 of 2004)

The project needs to comply with the National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (NEM: BA) in providing the cooperative governance in biodiversity management and conservation.

NEM: BA provides for the Minister to publish a notice in the Government Gazette that issues norms and standards, and indicators for monitoring progress for the achievement of any of the objectives of the Act.

The NEM: BA also provides for:

- The National Biodiversity Framework;
- Bioregional Plans;
- Biodiversity Management Plans;
- Biodiversity Management Agreements;
- The identification, listing and promotion of threatened or protected ecosystems; and

- Alien invasive species control and enforcement.

2.4 National Biodiversity Strategy and Action Plans (2005)

The National Biodiversity Strategy and Action Plans (NBSAP) aims to conserve and manage terrestrial and aquatic biodiversity to ensure sustainable and equitable benefits to the people of South Africa, now and in the future.

In South Africa, terrestrial, inland water, coastal and marine ecosystems and their associated species are widely used for commercial, semi-commercial and subsistence purposes through both formal and informal markets. While some of this use is well managed and/or is at levels within the capacity of the resource for renewal, much is thought to be unsustainable. "Use" in this case refers to direct use, such as collecting, harvesting, hunting, fishing, etc. for human consumption and production, as well as more indirect use such as ecotourism.

2.5 PROTECTED AREAS

Protected areas a fundamental tool for achieving biodiversity objectives and protecting essential natural heritage areas and ecosystems services, since these often provide greater security for conservation- worthy land than the agreements or land use limitations provided for in the National Environmental Management: Biodiversity Act.

The National Environmental Management: Protected Areas Act (Act No 57 of 2003) (NEM: PAA) creates a legal framework and management system for all protected areas in South Africa as well as establishing the South African National Parks (SANParks) as a statutory board. Each conservation area will have its own set of land use restrictions or regulations that stem either from generic restrictions under NEM: PAA, or customized regulations for individual protected areas.

2.5.1 NATIONAL ENVIRONMENTAL MANAGEMENT: PROTECTED AREAS ACT (ACT NO. 57 OF 2003)

This Act (NEM: PAA) aims to provide for a national system of protected areas in South Africa as a part of a strategy to manage and conserve its biodiversity. The Protected Areas Act tries to ensure protection of the entire range of biodiversity, referring to natural landscapes and seascapes.

The Act makes express reference to the need to move towards Community Based Natural Resource Management (CBNRM) as its objectives include promoting the participation of local communities in the management of protected areas.

The purpose of the Act is:

- To protect ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes and their ecological integrity;
- To conserve biodiversity in those areas;
- To protect South Africa's rare species;
- To protect vulnerable or ecologically sensitive areas;
- To assist in ensuring the sustained supply of environmental goods and services;
- To provide for the sustainable use of natural and biological resources;
- To create or augment destinations for nature-based tourism;
- To manage the interrelationship between natural environmental biodiversity, human settlement and economic development;
- To contribute to human, social, cultural, spiritual and economic development; and
- To rehabilitate and restore degraded ecosystems and promote the recovery of endangered and vulnerable species.

This Act further stipulates various criteria which must be met before an area can be declared as a special nature reserve, national park, nature reserve and protected environment. It also prescribes a range of procedures, including consultation and public participation procedures, which must be followed before any of the kinds of protected areas are declared.

2.6 National Environmental Management Biodiversity Act (Act No. 10 of 2004)

The Biodiversity Act (NEM: BA) regulates South Africa's laws relating to biodiversity. The overall purpose of the act is:

- The management and conservation of South Africa's biodiversity and its components;
- The protection of species and ecosystems that warrant national protection;
- The sustainable use of indigenous biological resources;
- The fair and equitable sharing of benefits arising from bioprospecting including indigenous biological resources; and
- The establishment of a South African National Biodiversity Institute.

2.7 National Heritage Resources Act (Act No. 25 of 1999)

In terms of section 38 of the NHRA (subject to the provisions of subsections (7), (8) and (9) of the Act), any person who intends to undertake a development categorised as:

- The construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;
- Any development or other activity which will change the character of a site:
- Exceeding 5,000 m² in extent;
- Involving three or more existing erven or subdivisions thereof; or
- Involving three or more erven or divisions thereof which have been consolidated within the past five years; or
- The costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- The re-zoning of a site exceeding 10,000 m² in extent; or
- Any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

2.8 Sustainable Development

The principle of Sustainable Development has been established in the Constitution of the Republic of South Africa (Act No. 108 of 1996) and given effect by NEMA. Section 1(29) of NEMA states that sustainable development means the integration of social, economic and environmental factors into the planning, implementation and decision-making process so as to ensure that development serves present and future generations.

Therefore, Sustainable Development requires that:

- The disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied;
- That pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;
- The disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;
- Waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner;
- A risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions; and
- Negative impacts on the environment and on people's environmental rights be anticipated; and, prevented and where they cannot altogether be prevented, are minimised and remedied.

3 PROJECT MOTIVATION AND NEED AND DESIRABILITY

TABLE 11: PROPOSED PROJECT NEED, DESIRABILITY AND BENEFITS

Desirability		YES	NO
1.	<p>Does the proposed land use / development fit the surrounding area?</p> <p>The development will serve as crossing structures aligned with the existing road.</p>	YES	
2.	<p>Does the proposed land use / development conform to the relevant structure plans, SDF and planning visions for the area?</p> <p>The proposed developments tie in with the ongoing plans to upgrade the road to a provincial road in the area between Mandeni and Eshowe.</p>	YES	
3.	<p>Will the benefits of the proposed land use / development outweigh the negative impacts of it?</p> <p>The developments will provide better infrastructure for the area as the current crossing structures are low lying and prone to flooding. All potential negative impacts will be fairly mitigated so as not to cause undue burden or inconvenience during the full project implementation.</p>	YES	
4.	<p>If the answer to any of the questions 1-3 was NO, please provide further motivation / Explanation – N/A.</p>		
5.	<p>Will the proposed land use / development impact on the sense of place?</p> <p>The structures will be upgrade of the existing structures and will not impact on the sense of place as they tie in to the road upgrade.</p>		NO
6.	<p>Will the proposed land use / development set a precedent?</p> <p>The KZN DoT is upgrading the P710 road and all associated infrastructure will be improved as part of this upgrade.</p>		NO
7.	<p>Will any person’s rights be affected by the proposed land use / development?</p> <p>The land is owned by the Ingonyama Trust under the Traditional Leadership of Inkosi Biyela and because the proposed development is a road upgrade, there are no permanently directly affected people that will suffer a contravention of their rights.</p>		NO
8.	<p>Will the proposed land use / development compromise the “urban edge”?</p> <p>The area is completely rural in nature. It is surrounded by other communities that are deemed ‘villages.’</p>		NO
9.	<p>If the answer to any of the question 5-8 was YES, please provide further motivation / explanation – N/A.</p>		
Benefits			
1.	<p>Will the land use / development have any benefits for society in general?</p>	YES	
2.	<p>Explain:</p> <p>The proposed structures will provide improved access to the area even during periods of heavy rain as they will no longer be prone to flooding like the existing structures.</p>		
3.	<p>Will the land use / development have any benefits for the local communities where it will be located?</p>	YES	
4.	<p>Explain:</p> <p>The proposed structures will provide improved access to the area even during periods of heavy rain as</p>		

3.1 Socio-economic value of the activity

TABLE 12: SOCIO-ECONOMIC VALUE OF THE ACTIVITY

What is the expected capital value of the activity on completion?	R
Will the activity contribute to service infrastructure?	Yes
Is the activity a public amenity?	Yes
New skilled employment opportunities created in the construction phase of the project.	
New skilled employment opportunities created in the operational phase of the project	
How many new unskilled employment opportunities will be created in the construction phase of the project	
New unskilled employment opportunities created in the operational phase of the project	
What is the expected value of the employment opportunities during the development phase?	R

4 PROJECT ALTERNATIVES

In terms of the EIA Regulations feasible alternatives are required to be considered as part of the environmental investigations. In addition, the obligation that alternatives are investigated is also a requirement of Section 24(4) of the National Environmental Management Act (Act No. 107 of 1998) (as amended).

An alternative in relation to a proposed activity refers to the different means of meeting the general purpose and requirements of the activity which may include alternatives to:

- the property on which or location where it is proposed to undertake the activity;
- the type of activity to be undertaken;
- the design or layout of the activity;
- the technology to be used in the activity;
- the operational aspects of the activity; and
- the option of not implementing the activity.

In this instance, however, the bridge over the Nembe River will be demolished and rebuilt a few metres upstream with two piers in the channel as opposed to five piers on the existing bridge as detailed below.

4.1 Activity & Route Alternatives

4.1.1 PREFERRED ALTERNATIVE

The project began is an upgrade of the P710 to a Provincial Road. The upgrade involves resurfacing the existing asphalt and gravel surface of the P710 with asphalt and increasing the 7 m road width to 8.5 m, which includes a 3.25 m wide lane in both directions and a 1 m wide shoulder on either side of the road. The road probably will have to be realigned in places. The servitude on either side of the P710 is 15 m. The proposed upgrade also includes the construction of a new two lane bridge with pedestrian side-walk over the Nembe River to replace the existing one lane bridge. The proposed new bridge will have less obstruction on the flow of the channel compared to the existing structure.

4.1.2 No-go Alternative

No improvement to infrastructure will result in lack of service delivery continuing, which in turn, may lead to accidents in the area due to the narrow low lying structures which are prone to flooding.

5 DESCRIPTION OF THE STUDY AREA

The study area falls within the Umlalazi Local Municipality (ULM), one of five local municipalities within the uThungulu District Municipality in KwaZulu-Natal Province of South Africa.

5.1 Biophysical factors

5.1.1 CLIMATE

The study area has a warm subtropical climate. Rain falls mainly during the summer months of October to March, with a maximum mean monthly precipitation of 112 mm in October compared to 12 mm in June. Mean annual precipitation is 890 mm. Summers are warm to hot with a mean daily maximum temperature of 29°C in December, January, February and March, while winters are warm with a mean daily maximum temperature of 24°C in June and July.

5.1.2 GEOLOGY, TOPOGRAPHY AND GRADIENT

From the start of the proposed upgrade, the P710 passes over a wide band of igneous dolerite which is interrupted by a small island of the Pietermaritzburg Formation with its sedimentary shales, siltstones and sandstones. The upgrade then passes over a band of the Pietermaritzburg Formation which is intruded by a small island of dolerite, followed by a band of the Dwyka Formation with its sedimentary tillites, shales and sandstones. The study area is characterised by steep valley sides and rolling and hilly landscape, mainly associated with drier larger river valleys in the rain shadow of the rain bearing frontal weather systems from the east coast.

5.1.3 ECOLOGICAL SIGNIFICANCE OF THE STUDY AREA

The original natural terrestrial vegetation types occurring in the study area are the KwaZulu-Natal Coastal Belt Thornveld from the start of the upgrade to east of the Nembe River and KwaZulu-Natal Hinterland Thornveld to the end of the upgrade. Much of the KwaZulu-Natal Coastal Belt Thornveld has been obliterated by housing and sugar cane fields, leaving only highly disturbed roadside vegetation, comprising mainly grasses and alien plant invaders. The KwaZulu-Natal Coastal Belt Thornveld is present and is characterised by indigenous trees and grassland, with open woodland and thicket. Plant species sampled in this vegetation type, comprising grasses Cover and abundance of grasses in this vegetation type ranged from 40% to 80%.

5.1.4 FLORA AND FAUNA

This site is found within the KwaZulu-Natal Coastal Belt Thornveld which is characterised by bushed grassland, bushland and bushland thicket and open woodland and has a Vulnerable conservation status. The conservation target is far from being met and hence developments in this vegetation type have to minimize or preferably avoid impacts, especially considering its Vulnerable conservation status. KwaZulu-Natal Hinterland Thornveld has a Least Threatened conservation status and is characterised by *Acacia* species on undulating plains found on upper margins of river valley. The conservation target is far from being met and hence developments in this vegetation type have to minimize or preferably avoid impacts. The central and eastern parts of the study area, notably the Nembe River Valley, fall within irreplaceable Critical Biodiversity Areas. These areas of very high conservation value are considered critical for meeting biodiversity targets and thresholds which are required to ensure viable populations of species and the functioning of ecosystems (EKZMW, 2016).

5.1.5 HYDROLOGY

The delineation of the watercourse areas on the site identified the following features of major significance in the proposed bridge and culvert upgrade:

Eleven wetlands were identified and delineated that were classified hydrogeomorphically as;

- channelled valley-bottom wetlands,
- a hillslope seep
- floodplain wetlands
- unchannelled valley-bottom wetlands; and
- an exoreic depression

5.2 Socio-economic factors

5.2.1 HERITAGE AND CULTURAL VALUE

The area is predominantly rural comprising mostly of communal land which falls under the administration of the Biyela Traditional Authority. The footprint is situated in a rural area and there will be no major changes in the alignment of the project anticipated to affect heritage and cultural resources.

5.2.2 SOCIO-ECONOMIC PROFILE OF THE RECEIVING ENVIRONMENT

There is no economic, commercial, manufacturing or industrial activities around the development footprint as there are no changes in land use anticipated for this project.

5.2.3 NOISE GENERATION

Noise generated during construction activities is not expected to be significant, although noise nuisance will be monitored closely. No blasting activities are expected, however, should these be required all legislated measures will be implemented and monitored.

5.2.4 POLLUTION AND EMISSIONS

5.2.4.1 Waste Management

Waste skips / bins will be provided throughout the construction site with separate skips / bins made available for debris and solid waste. Solid waste that is unsuitable for re-use for construction will be transported to a registered landfill site to avoid the pollution of surrounding areas and roads, as well as to minimize nuisance impacts such as dust and odours.

All waste will be collected and disposed of at an approved waste disposal and/or recycling facilities.

5.2.4.2 Influent and Effluent

The activity will not produce any influent or effluent.

5.2.4.3 Air Emissions

It is not expected that an Air Quality Emissions License will be required for this activity as there will only be limited dust liberation.

6 PUBLIC PARTICIPATION PROCESS

Public participation is a process that is designed to enable all interested and affected parties (I&APs) to voice their opinion and/ or concerns which enables the practitioner to evaluate all aspects of the proposed development, with the objective of improving the project by maximising its benefits while minimising its adverse effects.

I&APs include all interested stakeholders, technical specialists, and the various relevant organs of state who work together to produce better decisions.

The primary aims of the public participation process are:

- to inform interested and affected parties (I&APs) and key stakeholders of the proposed application and environmental studies;
- to initiate meaningful and timeous participation of I&APs;
- to identify issues and concerns of key stakeholders and I&APs with regards to the application for the development (i.e. focus on important issues);
- to promote transparency and an understanding of the project and its potential environmental (social and biophysical) impacts (both positive and negative);
- to provide information used for decision-making;
- to provide a structure for liaison and communication with I&APs and key stakeholders;
- to ensure inclusivity (the needs, interests and values of I&APs must be considered in the decision-making process);
- to focus on issues relevant to the project, and issues considered important by I&APs and key stakeholders; and
- to provide responses to I&AP queries.
- The public participation process must adhere to the requirements specified in Chapter 6 of Regulations (GNR 982) under the NEMA. The public participation process will be undertaken according to the stages outlined below.

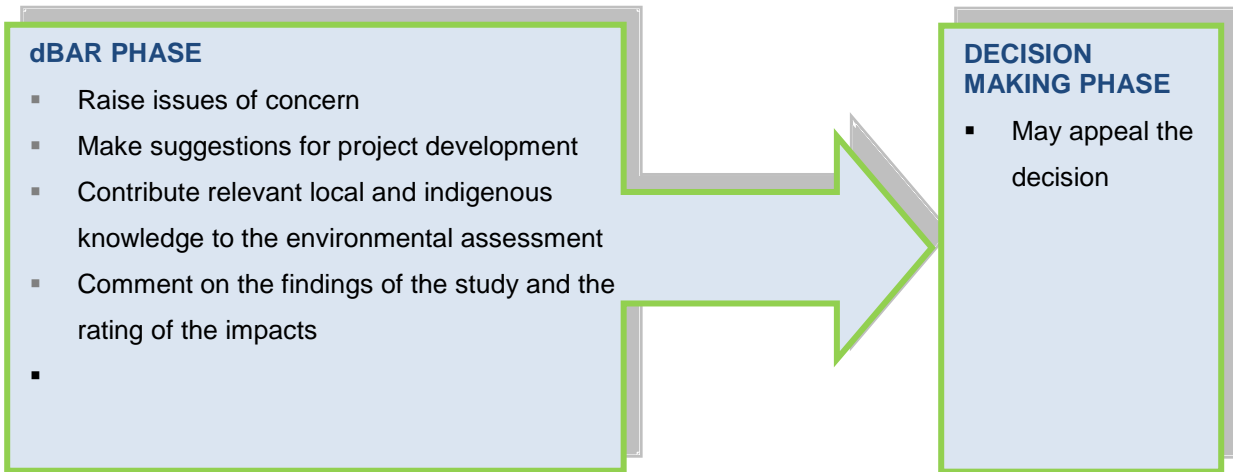


Figure 3: Responsibilities of I&APs in the different PPP stages

Figure 4 below depicts the approach taken by At Gedezar Consulting, where one-way information flow is avoided and information exchange is promoted, thereby enabling a higher level of engagement.

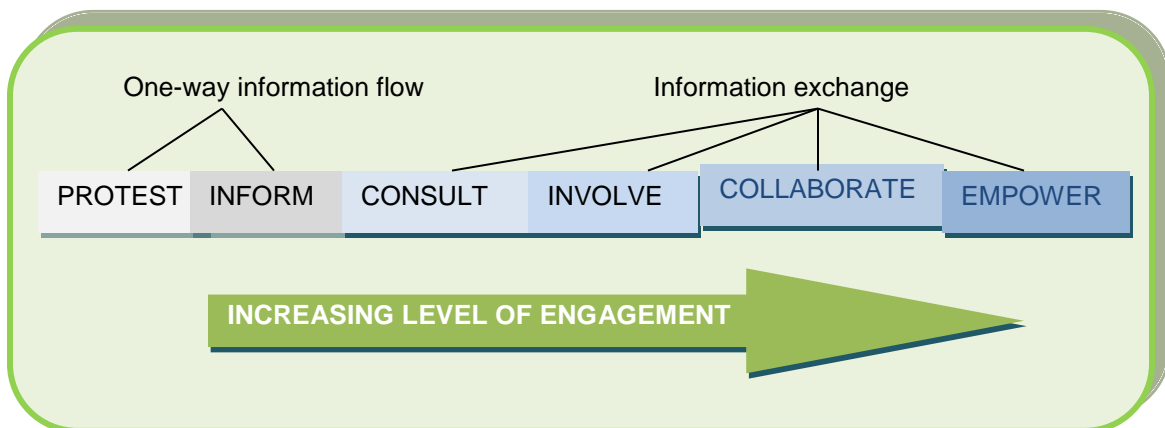


Figure 4: The stakeholder engagement spectrum (DEAT, 2002).

The PPP aim of the draft basic assessment phase is to ensure that the full range of stakeholders is informed about project scope.

In order to achieve this, a number of key activities have taken place and will continue to take place.

These included the following:

- The identification of stakeholders is a key deliverable at the outset, and it is noted that there are different categories of stakeholders that must be engaged, from the different levels and categories of government, to the communities of wards of residential dwellings which surround the works;
- The development of a living and dynamic database that captures details of stakeholders from all sectors;
- The engagement of public leaders to whom the public generally turn for information, keeping such individuals well informed about process and progress;
- The fielding of queries from I&APs and others, and providing appropriate information;
- The convening of specific stakeholder groupings/forums as the need arises;
- The preparation of reports (both baseline and impact assessment) based on information gathered via the PPP and feeding that into the relevant decision-makers;
- The PPP includes distribution of pamphlets or Background Information Documents (BIDs) and other information packs; and
- Where appropriate site visits may be organised, as well as targeted coverage by the media.

Specifically, the PPP for the P710 Road Bridge and Culvert development has entailed the following activities.

6.1 Authority Consultation

The competent authority which is the KZN EDTEA is required to provide an environmental authorisation (whether positive or negative) for the project. The KZN EDTEA was consulted from the outset of this study, and has been engaged throughout the project process.

Authority consultation included the following activities:

- Consultation in the form of upfront meetings with **Mr Muzi Mdamba** of uThungulu District KZN DEDTEA
- Submission of an application for environmental authorisation
- Site visit and assessment by the KZN DEDTEA,

6.2 Consultation with Other Relevant Stakeholders

Consultation with other relevant key stakeholders were and will continue to be undertaken through telephone calls and written correspondence in order to actively engage these stakeholders from the outset and to provide background information about the project during the EIA Phase.

The identified stakeholders of this project include:

TABLE 13: KEY STAKEHOLDERS CONTACTED

OWNERS AND OCCUPIERS OF LAND ADJACENT TO THE SITE	
Refer to detailed database in Appendix E-Sec.5	
LOCAL AUTHORITY	
PROVINCIAL AUTHORITY	
Bernadet Pawandiwa	Amafa aKwaZulu-Natali
Dominic Wieners	Ezemvelo KwaZulu- Natal Wildlife

Muzi Mdamba	KwaZulu-Natal Department of Economic Development Tourism and Environmental Affairs
STATE DEPARTMENTS	
Ms. Thuso Ndou	National Department of Water and Sanitation

6.3 Site Notification

The NEMA EIA Regulations require that a site notice be fixed at a place conspicuous to the public at the boundary or on the fence of the site where the activity to which the application relates and at points of access or high through traffic. The purpose of this is to notify the public of the project and to invite the public to register as stakeholders and inform them of the PP Process.

At Gedezar Consulting erected 6 site notices at various noticeable locations around the perimeter of the site.

6.4 Advertising

In compliance with the EIA Regulations (2014), notification of the commencement of the EIA process for the project was advertised in a provincial newspaper as follows:

(Refer to Appendix E-Sec.2). Interested and affected parties (I&APs) were requested to register their interest in the project and become involved in the EIA process. The primary aim of these advertisements was to ensure that the widest group of I&APs possible was informed and invited to provide input and questions and comments on the project.

6.5 Identification of Interested and Affected Parties

I&APs were identified primarily through an existing database as well as from responses received from the notices mentioned above. E-mails were sent to key stakeholders and other I&APs on the existing database, informing them of the application for the project, the availability of the draft basic assessment report for review and indicating how they could become involved in the project.

The contact details of all identified I&APs are updated on the project database, which is included in Appendix E-Sec.5.

This database will be updated on an on-going basis throughout the EIA process.

6.6 Briefing Paper

A briefing paper or Background Information Document (BID) was compiled in English and Zulu (refer to Appendix E-Sec.1)

The aim of this document is to provide a brief outline of the application and the nature of the development. It is also aimed at providing preliminary details regarding the BA process, and explains how I&APs could become involved in the project.

The briefing paper was distributed to all identified I&APs and stakeholders, together with a registration / comment sheet inviting I&APs to submit details of any issues, concerns or inputs they might have with regards to the project.

6.7 Public Meeting

A public meeting was held on 31st March 2016 at the Mgebisa Community Hall (refer to Appendix E-Sec.4). The outcomes of the public meeting are provided as minutes attached as Appendix E-Sec.4 to this report.

6.8 Issues Trail

Issues and concerns raised in the public participation process during the BA process have been and will continue to be compiled into an Issues Trail.

The Issues Trail is attached as Appendix E-Sec.6, in which all comments received and responses provided have been captured.

6.9 Public Review of Reports

All registered I&APs were notified of the availability of the report at the meetings and electronically.

The draft BAR was made available for authority and public review for a total of 30 days from 9 September to 10 October 2016.

The report was made available at the following public locations within the study area, which are all readily accessible to I&APs:

- Mandeni Municipal Library; and
- Issued a copy to Councillor Mtengu to share with I&APs

6.10 Final BAR

The final stage in the BA process entails the capturing of responses and comments from I&APs on the draft BAR in order to refine the BAR, and ensure that all issues of significance are addressed.

The final Basic Assessment Report is the product of all comment and studies and will be submitted to KZN DEDTEA for review and decision-making as detailed above.

7 SPECIALIST ASSESSMENTS SUMMARY

7.1 Vegetation Ecological Impact Assessment

This study has been undertaken by an independent specialist: **The Ecological Partnership**.

The grasslands, wetlands and riparian and aquatic areas in the footprint of the proposed bridge and culvert structures are sensitive, threatened ecological areas which need to be protected and where negative ecological impacts resulting from construction must be prevented or minimised. These areas have high ecological and conservation importance as the KwaZulu-Natal Coastal Belt Thornveld has a vulnerable conservation status and the KwaZulu-Natal Hinterland Thornveld is least threatened but still warrants maximum conservation. Two species of conservation concern were revealed within a 50m radius of the project area. The central and eastern parts of the study area, notably the Nembe River Valley, fall within irreplaceable Critical Biodiversity Areas. These areas of very high conservation value are considered critical for meeting biodiversity targets and thresholds which are required to ensure viable populations of species and the functioning of ecosystems (EKZNW, 2016).

The proposed bridge development may have significant negative ecological impacts which must be prevented by the implementation of recommended mitigation measures. Significant negative ecological impacts include the loss of vital topsoil, soil erosion, the loss and damage of Threatened and vulnerable natural vegetation and natural habitat, the loss of biodiversity and colonisation by alien plant invaders. Solid waste and particularly toxic liquid waste may have significant negative impacts especially on the wetland and aquatic ecosystems.

Refer to Appendix D1 for full report

7.2 Wetland Assessment

This study has been undertaken by an independent specialist: **The Ecological Partnership**.

7.2.1 Findings

Many of the streams in the study area are intermittent or seasonal non-perennial streams that do not have well defined active channels and they function as drainage lines. The perennial Nembe River forms an aquatic feature in the study area has a well-defined active channel and active channel banks. Most of the perennial and non-perennial streams in the study area flow into the Nembe River. Several different wetland types were identified in the study area namely;

- 4 Channelled valley-bottom wetlands;
- 1 hillslope seep;
- 2 floodplain wetlands
- 3 Unchannelled valley-bottom wetlands; and
- 1 exoreic depression

A total of eleven (11) wetlands occur within the study area and only (2) are assessed as they relate directly to the proposed structures. These are identified in the table below.

TABLE 14: SUMMARY OF WATERCOURSE CROSSINGS RELATED TO THE PROJECT

Site	Feature	Length of crossing	South	East
Culvert	Mbohlisi Stream	16	29°5'14.29"	31°21'16.99"
Bridge Crossing	Nembe River	30	29°4'56.15"	31°21'9.71"

The following general conclusions were drawn upon completion of the riparian and wetland assessment:

Numerous perennial drainage lines with riparian and wetland characteristics and the Nembe River and its associated unnamed tributaries were identified. Channelled valley-bottom wetlands, a hillslope seep, floodplain wetlands, unchannelled valley-bottom wetlands and an exoreic depression were identified. These features were assessed during the field assessment and the relevant assessment protocols applied.

7.2.2 Habitat Integrity (HI)

The Habitat Integrity (HI) of all the identified wetlands, perennial and non-perennial streams and the Nembe River is similar and falls in category B, which describes largely natural habitat with few modifications resulting in small changes in habitat and biota, but ecosystem functions remain essentially unchanged.

7.2.3 Present Ecological Status

The Present Ecological State (PES) of all the perennial and non-perennial streams, Nembe River and all the identified wetlands is also similar and falls in category B, which describes largely natural watercourses and wetlands with few modifications resulting in a slight change in ecosystem processes and some loss of natural habitats and biota. The results of the Eco-Services assessment are as follows:

- Flood attenuation
- Streamflow regulation
- Erosion control

- Nitrate removal
- Toxicant removal

7.2.4 Ecological Importance & Sensitivity Assessment

The Ecological Importance and Sensitivity (EIS) of all the identified wetlands, perennial and non-perennial streams and the Nembe River is similar and has a moderate value of 2 due to moderate levels of biodiversity, ecological functioning, sensitivity or ability to resist disturbance and capability to recover from disturbance.

It is possible that the wetlands, perennial and non-perennial streams and the Nembe River can be improved ecologically from their category B PES to category A, which describes unmodified, natural watercourses and wetlands, but this improvement is highly unlikely due to the permanent presence of negative anthropogenic ecological impacts in the study area. Hence their Recommended Ecological Category falls in category B, which describes largely natural watercourses and wetlands with few modifications where a small change in natural habitats and biota may have taken place, but where ecosystem functions remain essentially unchanged

Refer to Appendix D2 for full report

7.3 Heritage Impact Assessment

This study has been undertaken by an independent specialist: **G & A Heritage**

The impact of the proposed development on the items of heritage and cultural development will have a *high negative impact rating*, which can be reduced to low negative with the implementation of mitigation measures. The recommendation is that the *existing alignment of the road should be kept to ensure that no damage is done to the Temple and construction workers should be made aware of its location.*

Due to the limited footprint of the proposed development the impact on the ground is anticipated to be very low. For this reason, it was easy to avoid any areas of high heritage potential. Where there is clear conflict between the location of unidentified heritage sites and the proposed development it is recommended that the alignment of the road be altered to ensure the safety of the sites.

Refer to Appendix D3 for full report

8 IMPACTS AND RESIDUAL RISKS ASSESSMENT

8.1 Introduction

Impact assessment must take account of the nature, scale and duration of effects on the environment, whether such effects are positive (beneficial) or negative (detrimental). It is also imperative that each issue/impact is also assessed according to the project stages from planning, through construction and operation to the decommissioning phase. Where necessary, the proposal for mitigation or optimisation of an impact is noted.

A brief discussion of the impact and the rationale behind the assessment of its significance is provided in this Section. The basic assessment is focused on the following phases of the project namely: Pre and Construction Phase; and Operational Phase. As the project entails upgrades and development of new infrastructure which will be permanent, decommissioning is not applicable to this project.

This EIA is undertaken to determine the effects of the proposed project on the environment and hence comprises the following:

- An assessment of the environment likely to be affected by the proposed project, including cumulative environmental impacts;
- An assessment of the environment likely to be affected by the identified alternative land use or developments, including cumulative environmental impacts (if applicable);
- An assessment of the extent, duration, intensity, probability and significance of the identified potential environmental, social and cultural impacts of the proposed development, including cumulative impacts;
- A comparative assessment of the identified land use and development alternatives and their potential environmental, social and cultural impacts (if applicable); and
- Inclusion of technical and supporting information as appendices.

The BAR contains the following:

- Details of the EAP who compiled the report and their expertise to carry out an EIA;
- Detailed description of the activity(ies);
- A description of the environment that might be affected by the activity and the manner in which the physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity;
- Details of the public participation process conducted during the Scoping Phase and the on-going consultation during the EIA phase;
- Description of the need and desirability of the activity including advantages and disadvantages that the activity may have on the environment and the community that may be affected by the activity;
- An indication of the methodology used in determining the significance of potential environmental impacts;
- A summary of the findings and recommendations of any specialist report or report on a specialised process;
- A description of all environmental issues that were identified during the environmental impact assessment process, an assessment of the significance of each issue and an indication of the extent to which the issue could be addressed by the adoption of mitigation measures;
- An assessment of each identified potentially significant impact, including cumulative impacts, the nature of the impact, the extent and duration of the impact, the probability of the impact occurring, the degree to which the impact can be reversed, the degree to which the impact may cause irreplaceable loss of resources and the degree to which the impact can be mitigated;
- A description of any assumptions, uncertainties and gaps in knowledge;
- An opinion as to whether the 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;
- An environmental impact statement which contains a summary of the key findings of the environmental impact assessment; and a comparative assessment of the positive and negative implications of the activity.
- A draft Environmental Management Programme (EMPr); and
- Copies of any specialist reports and reports on specialised processes.

9 METHODOLOGY

The potential environmental impacts associated with the project are evaluated according nature, extent, duration, intensity, probability and significance of the impacts, whereby:

TABLE 15: IMPACT RATINGS

Impact Ratings

The following parameters are used to describe the impact / issues in this assessment:

1. Nature

This is a brief written statement of the environmental aspect being impacted upon by a particular action or activity.

2. Extent (E)

Extent refers to the area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales and as such bracketing ranges are often required. This is often useful during the detailed assessment phase of a project in terms of further defining the determined significance or intensity of an impact.

- Site (1) – Within the construction site.
- Local (2) – Within a radius of 2 km of the construction site.
- Regional (3) – the scale applies to impacts on a provincial level and parts of neighbouring provinces.

- National (4) – the scale applies to impacts that will affect the whole South Africa.

3. Duration (D)

Duration indicates what the lifetime of the impact will be.

- Short-term (1) – less than 5 years.
- Medium-term (2) – between 5 and 15 years.
- Long-term (3) – between 15 and 30 years.
- Permanent (4) – over 30 years and resulting in a permanent and lasting change that will always be there.

4. Intensity (I)

Intensity describes whether an impact is destructive or benign.

- Very High (4) - Natural, cultural and social functions and processes are altered to extent that they permanently cease.
- High (3) - Natural, cultural and social functions and processes are altered to extent that they temporarily cease.
- Moderate (2) - Affected environment is altered, but natural, cultural and social functions and processes continue albeit in a modified way.
- Low (1) - Impact affects the environment in such a way that natural, cultural and social functions and processes are not affected.

5. Probability (P)

Probability describes the likelihood of an impact actually occurring.

- Improbable (1) - Likelihood of the impact materialising is very low.
- Possible (2) - The impact may occur.
- Highly Probable (3) - Most likely that the impact will occur.
- Definite (4) - Impact will certainly occur.

6. Cumulative (C)

In relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

7. Significance (S)

Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

Refer below for an explanation of the risk assessment methodology.

TABLE 16: SIGNIFICANCE RATING OF CLASSIFIED IMPACTS

Score	Elaboration
- (13 - 16) points NEGATIVE VERY HIGH	Permanent and important impacts. The design of the site may be affected. Intensive remediation is needed during construction and/or operational phases. Any activity which results in a “very high impact” is likely to be a fatal flaw.
- (10 - 12) points NEGATIVE HIGH	These are impacts which individually or combined pose a significantly high negative risk to the environment. These impacts pose a high risk to the quality of the receiving environment. The design of the site may be affected. Mitigation and possible remediation are needed during the construction and/or operational phases. The effects of the impact may affect the broader environment.

- (7 - 9 points)	NEGATIVE MODERATE	These are impacts which individually or combined pose a moderate negative risk to the quality of health of the receiving environment. These systems would not generally require immediate action but the deficiencies should be rectified to avoid future problems and associated cost to rectify once in HIGH risk. Aesthetically and/or physically non-compliance can be expected over a medium term. In this case the impact is medium term, moderate in extent, mildly intense in its effect and probable. Mitigation is possible with additional design and construction inputs.
- (4 - 6 points)	NEGATIVE LOW	These are impacts which individually or combined pose a deleterious or adverse impact and low negative risk to the quality of the receiving environment, and may lead to potential health, safety and environmental concerns. Aesthetically and/or physical non-compliance can be expected for short periods. In this case the impact is short term, local in extent, not intense in its effect and may not be likely to occur. A low impact has no permanent impact of significance. Mitigation measures are feasible and are readily instituted as part of a standing design, construction or operating procedure.
0	NEUTRAL	Impact is neither beneficial nor adverse. These are impacts which cannot be classified as either positive or negative or classified and null and void in the case of a negative impact being adequately mitigated to a state where it no longer renders a risk.
+(4 - 6 points)	POSITIVE LOW	These are impacts which individually or combined pose a low positive impact to the quality of the receiving environment and health, and may lead to potential health, safety and environmental benefits. In this case the impact is short term, local in extent, not intense in its effect and may not be likely to occur. A low impact has no permanent impact of significance.
+(7 - 9 points)	POSITIVE MODERATE	These are impacts which individually or combined pose a moderate positive effect to the quality of health of the receiving environment. In this case the impact is medium term, moderate in extent, mildly intense in its effect and probable.
+(10 - 12 points)	POSITIVE HIGH	These are impacts which individually or combined pose a significantly high positive impact on the environment. These impacts pose a high benefit to the quality of the receiving environment and health, and may lead to potential health, safety and environmental benefits. In this case the impact is longer term, greater in extent, intense in its effect and highly likely to occur. The effects of the impact may affect the broader environment.
+(13 - 16 points)	POSITIVE VERY HIGH	These are permanent and important beneficial impacts which may arise. Individually or combined, these pose a significantly high positive impact on the environment. These impacts pose a very high benefit to the quality of the receiving environment and health, and may lead to potential health, safety and environmental benefits. In this case the impact is long term, greater in extent, intense in its effect and highly likely or definite to occur. The effects of the impact may affect the broader environment.

Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

The suitability and feasibility of all proposed mitigation measures will be included in the assessment of significant impacts. This will be achieved through the comparison of the significance of the impact before and after the proposed mitigation measure is implemented. Mitigation measures identified as necessary will be included in an EMPr. The EMPr forms part of this final BA Report, please refer to Appendix F.

10 RATING OF POTENTIAL IMPACTS

The potential impacts identified are explained per phase of the project and mitigation measures are provided. The impacts are explained per pre-construction, construction and operational phases. There is no decommissioning phase for this project.

10.1. Impacts of the proposed development

10.1.1 BIODIVERSITY

TABLE 17: BIODIVERSITY IMPACTS

Theme	Biodiversity		
Impact Focal Point	Negative ecological impacts on vegetation and habitat		
	Pre Mitigation	Post Mitigation	No Go
Nature and Status	loss of indigenous trees, grassland and habitat for birds, reptiles and invertebrates	Implementation of and adherence to all mitigation measures throughout the lifetime of the project.	No Change in status
Confidence	High	High	High
Calculation	85	4	0
Level of Significance	High	Low	None
Mitigation Measures Loss of indigenous trees, grassland and habitat for birds, reptiles and invertebrates	<ul style="list-style-type: none"> Restricting all construction activities to the construction area; Preventing damage and disturbance to trees and grassland outside the construction area; Removing alien plant invaders which are present in the vicinity of the construction area; Checking the area regularly for new growth of alien plant invaders during the upgrade and once the upgrade is completed. 		None
Mitigation Measures Ecological impacts on the trees, grassland and associated biodiversity along the route of the upgrade due to colonisation by alien plant invaders resulting from damaged and disturbed habitat near the side of the road.	<ul style="list-style-type: none"> Restricting all construction activities for the new bridge and demolition and removal activities for the adjacent old bridge to the construction and demolition areas respectively Restricting all construction activities for the road and culvert to the construction area; Rehabilitating any damaged areas outside the construction footprint according to the Rehabilitation Plan 		
Mitigation Measures Soil erosion on slopes next to the road resulting in loss of topsoil, indigenous plants,	<ul style="list-style-type: none"> Restricting all construction activities to the construction area; preventing damage and disturbance to trees and grassland outside the construction area, especially on steep slopes; rehabilitating any damaged areas outside the construction footprint according to the Rehabilitation Plan provided for in 		

<p>natural habitat and associated biodiversity.</p>	<p>Section 5 of the Ecological Report.</p> <ul style="list-style-type: none"> ▪ Alien plant invaders must be removed from disturbed or damaged areas or from the vicinity of these areas regularly during the construction phase and once the upgrade project has been completed. ▪ The indigenous vegetation which is removed must be offset and be watered regularly to keep it alive. 	
<p>Mitigation Measures Ecological impacts due to pollution by liquid and solid waste</p>	<ul style="list-style-type: none"> • Cleaning up liquid and solid waste as soon as they occur, especially toxic liquid waste, which if left will cause more damage; liquid waste, contaminated soil and solid waste should be taken to the authorised waste centre in Mandeni; • Restricting all construction activities to the construction area; preventing damage and disturbance to trees and grassland outside the construction area, especially on steep slopes; • Rehabilitating any damaged areas outside the construction footprint according to the Rehabilitation Plan provided for in Section 5 of the Ecological Report. 	
<p>Mitigation Measures Ecological impacts on natural vegetation, habitat and associated biodiversity</p>	<ul style="list-style-type: none"> • Preventing illegal dumping and thereby preventing the significant negative ecological impacts on the natural environment; • Taking liquid waste, contaminated soil and solid waste to the authorised waste centre in Mandeni; • Rehabilitating any damaged areas outside the construction footprint according to the Rehabilitation Plan provided for in Section 5 of the Ecological Report. 	
<p>Mitigation Measures Cumulative negative ecological impacts on the Vulnerable KwaZulu-Natal Coastal Belt Thornveld and Least Threatened KwaZulu-Natal Hinterland Thornveld vegetation, habitat and associated biodiversity</p>	<ul style="list-style-type: none"> • Moderately steep and steep slopes should be covered with wide mesh hessian to prevent soil erosion and allow the planted grass seeds to germinate and develop. Cats tail Drop seed is effective in preventing soil erosion, while Gongoni Three-awn offers excellent ground cover • Alien plant invaders must be removed from disturbed or damaged areas or from the vicinity of these areas regularly during the construction phase and once the upgrade project has been completed. If plant invaders cannot be removed physically, they must be cut just above ground level and then poisoned with the specific poison for the particular plant invader. 	

10.1.2 WETLAND AND RIPARIAN ASSESSMENT

TABLE 188: WETLAND AND RIPARIAN IMPACTS

Theme	Rivers and Wetlands		
Impact Focal Point	Impact of development on watercourses		
Phase	Pre-Mitigation	Post Mitigation	No Go
Nature and Status	<ul style="list-style-type: none"> Enhanced erosion potential Sedimentation of rivers and watercourses Water quality Spread of alien invasive species Disturbance of the linear channel flow and channel bed 	Implementation of and adherence to all mitigation measures throughout the lifetime of the project.	No change in present status.
Confidence	High	High	High
Calculation	68	8	0
Level of Significance	Moderate- High	Low	None
Mitigation Measures Sedimentation & Erosion	<ul style="list-style-type: none"> To prevent erosion and sedimentation, construction activities should be undertaken during the dry season when flows will be substantially reduced. Sediment controls measures (e.g. hay bales, silt fences, sedimentation ponds, etc.) should be put in place should stockpiles show potential to wash away Solid waste must be removed from the aquatic, wetland and riparian environments and damaged, smothered vegetation will have to be replaced. 		There will be no impact on any water resources in the area if the proposed bridge and culvert are not developed.
Mitigation Measures Water Quality & Pollution	<ul style="list-style-type: none"> The EMPr should include a Spill Management Plan for the construction phase that addresses measures to prevent and mitigate the spillage of hazardous materials in the construction site (oil, petrol, diesel, detergents, etc.), as even small spills and leakages can have major impacts when incorporated with water. A key issue comprises detergents, which have significant impacts on amphibians and fish; detergents interfere with their membranes, causing mortality. Regular vehicle and machinery maintenance must be carried out to ensure that accidental spills are avoided. No washing of construction equipment and vehicles should be allowed near the watercourses. To prevent spillages, no fuel or oil should be kept onsite or within the demarcated watercourse boundaries. Absorbent materials such as “Drizit” must be readily available in the event of any accidental spills, and all contaminated material including soil must be disposed of at a registered waste disposal site. In locations where cement is required to be used, cement must be 		

	<p>mixed in lined containers to prevent contamination.</p> <ul style="list-style-type: none"> ▪ All chemicals should be appropriately stored and handled. Storerooms must be more than 100m from watercourse zones and have appropriate concrete flooring and bunding. ▪ Any remnant rubbish, spoil, machinery and contaminants need to be removed from the development area. ▪ Vehicles or machinery must not be serviced or re-fuelled within 100m of the watercourse zones. ▪ Pumping from the river needs to be done from a controlled point in the river to prevent the disruption to aquatic species. Furthermore, the pump needs to be placed above a drip tray. ▪ Appropriate ablution facilities need to be put in place more than 100m from a watercourse, with no effluent released into the soil or the river. ▪ Rubbish bins need to be placed on site so that no litter or food waste is left around the development. 	
<p>Mitigation Measures Change in the linear channel flow and channel bed Soil wash</p>	<ul style="list-style-type: none"> ▪ Following completion of the construction activities and replacement of the stockpiled soil, removal of excess soil and re-vegetation of any bare areas must be undertaken. ▪ Compacted soil must be ripped or scarified and seeded with an appropriate vegetation species to stabilize the soil. ▪ if the alien species have become established during the construction period then these must be removed and indigenous species planted. 	
<p>Mitigation Measures Spread of alien invasive vegetation species</p>	<ul style="list-style-type: none"> ▪ An alien plant removal program should be instituted to eradicate alien plants within the development footprint. Removal would have to coincide with planting of indigenous species to replace alien plants, and ensure a healthy plant cover – especially on embankments. ▪ Wetland vegetation must be planted where any wetland areas were located previously. ▪ Stockpiles and spoil sites must be clearly demarcated and be kept free of weeds and compaction. ▪ Bank areas need to be stabilized before re-vegetation occurs. Bare, exposed areas need to be stabilized by geo-textiles in order to give the vegetation a chance to establish. ▪ Areas for re-vegetation/alien clearing should be demarcated in order to prevent further disturbance. Furthermore, access roads for machinery should avoid any of the vegetation focus areas and areas with existing natural vegetation. ▪ All riparian and wetland areas disturbed during the construction phase must be rehabilitated and re-vegetated according to a construction phase rehabilitation plan compiled by an aquatic specialist in conjunction with a vegetation specialist. ▪ Follow up assessments should be undertaken to prevent alien re-growth in alignment with time frames identified by a re-vegetation plan/vegetation specialist. 	

10.1.3 HERITAGE IMPACT ASSESSMENT

TABLE 19: HERITAGE IMPACTS

Theme	Heritage		
Heritage Component	Buildings and sites of a historic nature.		
Phase	Pre-Mitigation	Post Mitigation	No Go
Nature and Status	Negative	Preservation of Heritage resources by implementing and adhering to buffer zones.	No change in present status.
Confidence	High	High	High
Score	51	8	0
Level of Significance	High	Low	None
Mitigation Measures	<ul style="list-style-type: none"> ▪ No sites of heritage significance were observed. ▪ Should any additional finds of heritage importance be found, construction activities will stop immediately at the site of discovery. The area will be fenced off with a radius of at least 20m around the unearthed item, demarcated as a no-go area and access will be prohibited. ▪ Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on site. ▪ The Contractor and workers, during construction, shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or paleontological artefacts, as set out in the NHRA. <p>A qualified heritage practitioner should monitor excavations for any sub-surface sites. The project engineer should monitor the effects of increased vibrations and dust pollution during the construction phase.</p>		If the proposed water supply scheme is not developed, there will be no impact on any heritage resources that exist on the site.

10.1.4 VISUAL IMPACT ASSESSMENT

TABLE 20: VISUAL IMPACT

Theme	Visual	
Impact Focal Point	Reducing the visual quality of the landscape	
Phase	Preferred alternative	No Go
Nature and Status	Change in visual landscape due to development of bridge and culvert associated activities	Maintenance of the status quo
Confidence	High	High
Calculation	40	0
Level of Significance	Medium	No Impact

Mitigation Measures

Disturbed areas that are no longer in use will be rehabilitated. Rehabilitation will be conducted in a progressive manner (i.e. once phased activity in an area has been completed the area will be rehabilitated). The rehabilitation of the area with indigenous vegetation must coincide with the rainfall events and all alien vegetation shall be removed.

After construction, the site needs to be inspected by the ECO to ensure that the rehabilitation activities have been successful and to monitor alien vegetation re-growth. The ECO will report the condition of rehabilitation to the Applicant.

If the structures and associated infrastructure is not developed, there will be no impact on any the present state of visual landscape.

10.1.5 TRAFFIC IMPACT ASSESSMENT

TABLE 21: TRAFFIC IMPACT

Theme	Traffic	
Impact Focal Point	Increased traffic in greater area	
Phase	Preferred alternative	No Go
Nature and Status	Increased traffic on local roads; Negative	No change in Status
Confidence	High	
Calculation	21	
Level of Significance	Low	None
Mitigation Measures	<p>The Contractor during construction shall provide safe points for pedestrian and vehicular crossing at designated points. These points will be “stop and go” systems manned by flag persons passing through the site.</p> <p>Orange safety fencing / netting must be utilised by the Contractor to keep pedestrians away from the construction work area. Danger tape must not be used, as this breaks easily and could litter the surrounding environment.</p> <p>Appropriate notification signs shall be erected by the Contractor at entrances to the construction site to warn visitors and pedestrians about the hazards around the construction site and the presence of heavy vehicles, where appropriate.</p> <p>Construction vehicles are to keep to the speed limits (25km/h on the construction site).</p> <p>Proactive warning signs shall be erected in the case of traffic disruption or diversion and along access roads.</p>	None

10.1.6 SOCIO ECONOMIC

TABLE 22: IMPACT OF SOCIO ECONOMIC ENVIRONMENT

Theme	Socio-Economic	
Impact Focal Point	Impact on Local community	
Phase	Preferred alternative	No Go
Nature and Status	Impacts of the development on the local residents	
Confidence	High	High
Calculation	60	0
Level of Significance	Medium to high (positive)	None

Mitigation Measures	<p>The biggest socio - economic benefit by far will be employment</p> <p>Due to the large number of machinery and activities in the construction site there is potential for construction workers to be at risk from physical injury.</p> <p>The health and safety of workers must be protected and ensure that construction work is conducted in a manner that will not put any worker in a risk. Personal Protective Equipment must be used at all times.</p>	None
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10.1.7 AIR QUALITY

TABLE 23: AIR QUALITY IMPACT ASSESSMENT

Theme	Air Quality	
Impact Focal Point	Impact on air quality of study area	
Phase	Preferred alternative	No Go
Nature and Status	Construction of crossing structures and associated infrastructure (dust); Negative	
Confidence	High	High
Calculation	32	0
Level of Significance	Medium	None
Mitigation Measures	<p>All dust generating surfaces to be routinely sprayed with water, a dust suppressing agent or similar substance to prevent dust generation. Portable and contaminated water will not be used as a dust suppressing agent and only recycled and/or rain water is to be used, when available.</p> <p>The construction activity will impact on the air quality of the area and there will be a lot of dust particles in the air also emissions from construction vehicles and mobile plant/machinery on site.</p> <p>All vehicles must be properly serviced to reduce the gaseous emissions to the atmosphere. A water carter must be used on all bare areas on site as a dust suppression system. No burning of waste allowed on site.</p>	None

11 ENVIRONMENTAL IMPACT STATEMENT

11.1 Introduction

Potential environmental impacts (biophysical and social) associated with the proposed upgrade of the bridge and culvert, have been identified herein. This assessment assesses and addresses all potentially significant environmental issues in order to provide the KwaZulu-Natal Department of Economic Development, Tourism and

Environmental Affairs (KZN DEDTEA) with sufficient information to make an informed decision regarding the proposed project.

11.2 Comparative analysis of Alternatives

The following table provides an average of the alternatives against each other, for the pre and construction phase as well as for the operational phase.

TABLE 24: COMPARATIVE ANALYSIS OF ALTERNATIVES

Pre and Construction Phase Scores		Operational Phase Scores	
Average for Alternative 1 before mitigation	Negative Moderate	Average for Alternative 1 before mitigation	Negative Moderate
Average for Alternative 1 after mitigation	Negative low	Average for Alternative 1 after mitigation	Negative low

The table above indicates that after mitigation the impacts associated with both alternatives can be described as having a significance of “negative low.” This indicates that overall the project will not have a significant impact. The reasoning behind is substantiated by the findings of each respective specialist study conducted.

The above analysis yields alternative 1 as the preferred alternative. The reasons for this are highlighted in the impact assessment (section 8) and are reiterated from section here:

Whereas the **No-Go** alternative will ensure that none of the negative impacts associated with the construction phase of the proposed development will occur, (presented as the advantages), the disadvantage means that the positive impacts will also not occur.

11.3 Description of the process followed to reach the proposed preferred alternative

- Design considerations during prelim planning / design (i.e. geology, topography)
- Specialist studies recommendations / findings
- Consultative processes – pre-design councillor consultation
- Impact risk rating.

TABLE 25: ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE ALTERNATIVES

Attribute	Preferred Alternative	No-Go Alternative
Geographical	Similar geographical area	Similar geographical area
Physical	As per specialist / engineering design	As per specialist / engineering design
Biological	As per specialist	As per specialist
Social	Equally beneficial	Equally beneficial
Economic	Equally beneficial	Equally beneficial
Heritage	As per specialist	As per specialist
Cultural	As per specialist	As per specialist

11.4 Key Findings of the Study

Overall, the results of the BA emerge as having a “negative low” significance after mitigation. The following are key findings of the impact assessment, where those rated “very high” (either negative or positive) are highlighted.

11.4.1 FINDINGS OF THE SPECIALIST STUDIES ARE

While the proposed upgrade to the bridge and culvert structures will have negative impacts on the wetland and ecological aspects of the environment, the recommended mitigation measures are a sure way to ensure that the identified potential impacts are reduced to more acceptable levels which will mean minimal damage to the environment.

11.4.2 EAP OPINION

The Basic Assessment for the proposed upgrade of the P710 bridge and culvert has holistically assessed the perceived and envisaged impacts associated with the proposed development. Impacts were identified through the commissioning and conducting of key specialist studies which were identified through the following processes:

- Development of the proposal to undertake the EIA to the applicant;
- Engaging with key I&APs and stakeholders who recommended required studies or highlighted key issues;
- Engaging with the public through meetings;
- Developing an in-depth understanding of the project scope and the receiving environment.

These processes have enabled a holistic scientific assessment of the impacts which will affect the environment should the upgrades be authorised and undertaken.

The results indicate that there is a negligent impact associated with the project, which is particularly negated by the benefits it will bring. **It is therefore the opinion of the EAP that the project should be positively authorised** for the following key reasons:

- When considered in the triple bottom line, the project results in an overall “negative low” environmental, economic and social impact. If this is considered against the no-go alternative, there is no substantial reason why this project should not be authorised provided all mitigation methods are applied;
- There were no fatal flaws identified in the study;
- The findings of the biodiversity study show the ecological impact of the project is negligible if all mitigation measures are implemented;
- The findings of the heritage impact assessment were that there were no artefacts of cultural or historical value on the project site or in direct danger from the proposed development;
- The study involved the input of key stakeholders throughout the process; and
- Transparency and integrity was ensured by affording all internal specialists an external review.

12 RECOMMENDATIONS

12.1 Recommendations to the CA

It is advised that the application be assessed holistically, taking into consideration the study area and the fact that the development is proposed on undeveloped land.

The project, in the EAP’s opinion, does not pose a detrimental impact on the receiving environment and its inhabitants and can be mitigated significantly. The Applicant should be bound to stringent conditions to maintain compliance and a responsible execution of the project.

12.2 Recommendations to the Applicant

The Applicant must adhere to the recommendations provided by the specialist and the EAP. The EMPr summarises these recommendations.

The Applicant must take full responsibility for the execution of the project in a manner which does not negatively impact on the environment by ensuring that responsible decisions are made.

13 CONCLUSION

This study provided a quantified scientific analysis of the impacts associated with the proposed development. The reasons why the EAP is of the opinion that the project should be positively authorised, outlining the key findings of the study have been detailed in the previous section.

The EIA process and report complies with the EIA Regulations of 2014, under which this project has applied and therefore meets all relevant requirements.

The project is envisaged to have a “negative low” significance rating post application of mitigations proposed by the relevant specialists.

14 ASSUMPTIONS, UNCERTAINTIES & GAPS IN KNOWLEDGE

The following assumptions, uncertainties and gaps in knowledge were identified for this process:

14.1 EIA Process

The EIA process is multi-disciplinary, which was informed by the EAP project team and the specialists engaged in the process. It is thus necessary to presume that the information as provided to the project team to date by external sources is accurate, appropriate and correct.

Data shown in the maps was supplied by various sources and was used after it was reviewed and verified where considered necessary. Verification was, however, restricted to available sources of information only.

14.2 Public Participation Process

Every effort was made to contact all stakeholders and adjacent landowners within the study area. Written notification was provided to the landowner, traditional authorities, and occupiers of the land, adjacent landowners, the ward councillors and the project applicant. Information presented by the stakeholders is presumed to be accurate and presented timeously with respect to the process at hand.

14.3 Visual

The assessment does not consider the supplementary project infrastructure and components such as the construction camp site. The assessment is based on assumed data. A detailed study was not done to determine accurate data on potential viewers of the project components. The location and extent of the construction camp site, which due to the infrastructure required at inception and construction of the bridge and culvert is likely to be small, as well as material lay-down areas will only be determined during the design and construction phases. These, however, have a relatively temporary nature and can effectively be controlled through the Site Specific EMPr Attached as Appendix F.

14.4 Environmental Authorisation

Given the minimal impacts envisaged for the proposed development, it is the opinion of the EAP that environmental authorisation should be granted for the proposed project. This subject to the assessment of the site and a comprehensive report submitted regularly concerning activities on site for the entire duration of the construction period by the ECO.

14.5 Affirmation of Information in Reports

The information contained in this report has been compiled meticulously and is supported by information collected during site visits, consultation with relevant stakeholders privy to the proposed development. As much input and recommendations as could be obtained from the relevant parties, including but not limited to community members, municipal authorities and specialists has been included as part of this report to aid with decision making. The project is therefore an acceptable development as the identified impacts will be negligible after the mitigation measures have been implemented at appropriate stages of the development.