

BASIC ASSESSMENT REPORT FOR MPONGO ACCESS ROAD AND 3 CAUSEWAY BRIDGES

Prepared for:

Nongoma Local Municipality



Prepared By:



06 Staffordshire Place

117 Marine Drive

Shelly Beach

4265

Notice

This basic assessment report has been prepared by Nzingwe Consultancy on behalf of Nongoma Local Municipality in connection with the construction of Mpongo causeway bridges under Nongoma Local Municipality. The information in this report has been compiled by Nzingwe with care and diligence normally required for projects of this nature and magnitude. The information in this report has been carefully supplied by Nongoma Local Municipality, Minathi Consulting Engineers and Nzingwe Consultancy, gathered from a variety of sources including investigations and assessments done during site visits, the proposed study area was analysed to outline all the necessary and important factors of the environment that need to be protected when the project is implemented. Information from Interested and Affected Parties (I&APS) has also been included as they also play a huge role in discovering the strengths and weaknesses of the environment. Neither Nzingwe Consultancy nor any of their respective directors, officers, agents, employees or advisors make any representation or warranty express or implied, or shall have any responsibility or liability whatsoever in respect of the achievement of projected results.

Contributing Authors:

Ms. Silindile Nqoko – Project Manager and EAP

Mr Lungelo Ncwane

Ms. Kuda Zhandire

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Executive Summary

The Nongoma Local Municipality has proposed the construction for the 3 causeway Bridges along the Mpongo access road. The land for the proposed causeway bridges has been identified within Nkungwini Area.

The locations of the proposed bridges are

Feature	Latitude	Longitude
Causeway 1	27°55'36.72"S	31°51'44.40"E
Causeway 2	27°55'15.20"S	31°51'9.20"E
Causeway 3	27°55'1.27"S	31°50'39.22"E

This draft Basic Assessment Report is being produced as part of the process of achieving a final Basic Assessment Report in relation to the Environmental Impact Assessment process. Basic Assessment reports are a key tool in effective environmental management. An important component of ensuring a healthy environment is to understand the impacts human activities have on the environment and the health and well-being of those who live in it and depend on the environment. This draft Basic Assessment report can be seen as a system of analysing and reporting on the impact of the construction of the 3 causeway bridges in the Nkungwini area to enable decision makers to decide if this activity is suitable for the environment or not and they also determine measures that should be taken to mitigate and manage the impacts of the activity.

The information contained in this report is a combination of primary data collection (onsite exercise) and secondary desktop research. The information contained in this report has been cited from different sources, analysed and synthesized into the basic assessment report. Where possible, sources have been cited, failure to do so in some instances is not intentional. In terms of the current status of Engineering status services supply, there is a baseline for the services essential for an efficient bridge that will allow the free flow of the stream water which

exists in the study area. The construction of these bridges is an integral part of the proposed development. This construction must be in line with the requirements of all legislation, outlining the activities that this development will trigger and ensuring that if the proposed bridges are given authorization that the mitigation process is adhere to.

The status of land ownership has been established that the land is privately owned, however the land owner is in support of the proposed development and has therefore provided a letter detailing his approval to the proposed development.

ACRONYMS & ABBREVIATIONS

BSc	: Bachelor of Science
EAP	: Environmental Assessment Practitioner
EIA	: Environmental Impact Assessment
FBAR	: final Basic Assessment Report
Hon	: Honours
IEM	: Integrated Environmental Management
I&APs	: Interested and Affected Parties
NEMA	: National Environmental Management Act

Introduction

Details of Applicant

Name of Consultant/Company	Nongoma Local Municipality
Contact Person (s)	Miss Julile Radebe
Physical Address	Lot 103 Main Street Nongoma 3950
Telephone	076 022 7133
Fax	+27 35 831 3152
Email	Julile.radebe@gmail.com

Details of Environmental Assessment Practitioner (s)

Name of Consultant/Company	Nzingwe Consultancy
Contact Person (s)	Silindile Nqoko
Physical Address	06 Staffordshire Place 117 Marine Drive Shelly Beach 4265
Telephone	033 315 7751
Fax	086 662 1789
Email	silindile@nzingwe.co.za

The EAP was appointed in accordance to the requirements of the National Environmental Management Act (Act No. 107 of 1998). Ms Silindile Nqoko heads the project team and acts as the project manager for all phases of the project. Silindile holds a BSc. Environmental Sciences (Hon.). She is an Environmental Scientist with 9 years of experience. Silindile specialises in Integrated Environmental Management (IEM), Environmental Impact

Assessments (EIAs), Rural Development, Land use issues and Socio-Economic surveys. Silindile has been a project scientist for various EIA's in KwaZulu Natal, Eastern Cape and Mpumalanga provinces in South Africa. Silindile is currently a Project Manager and Senior Environmental Scientist at Nzingwe Consultancy.

Names and Expertise of representatives of the EAP

Name of representatives of the EAP	Education Qualification	Professional Affiliations	Experience at Environmental Assessment
Ms. Silindile Nqoko	BSc Honours Environmental Sciences	IAIASA	9
Ms. Kudakwashe Zhandire	BA Global Geography & Environmental Science	N/A	5

Names and Expertise of Specialists

Name of specialist	Education qualifications	Field of expertise	Section/ s contributed to in this basic assessment report	Title of specialist report/ s as attached in Appendix D

Project Title

Mpongo Access Road and Causeway bridges

Background to the project

The South African Government is constantly faced with the challenge of bridging the gap between previously disadvantaged communities and developed areas. This is mainly with reference to service delivery. Previously disadvantaged communities, mainly rural areas, lack infrastructure such as roads which aid service delivery. As such, there are still communities within the country that lack access to clean water, electricity and easily accessible roads.

The Nongoma Local Municipality along with other local and district municipalities therefore have a mandate to constantly improve service delivery to communities within their jurisdiction. The Nkungwini area in Ward 7 is one of the rural communities located within the Nongoma Local Municipality. Access to this area is through a gravel road which is in itself not in a good state.

However, the main concern within the area has been the lack of watercourse crossing structures as the area has a number of areas where community members including children cross watercourse points to get to their desired destination. This has been brought to more attention by the threat to the life of community members posed by the current status which has had a fatal impact on one of the community members in the past.

The Nongoma Local Municipality is therefore proposing the construction of the Mpongo access road, a gravel road with 3 causeway bridges within Nkungwini Area in Ward 7. There are vehicle and human tracks that are currently clearly visible on the extreme ends of the road which shows current use of the route, hence the proposed development. Along with the proposed low level bridge construction, Nongoma Local Municipality is proposing to construct a road and three (3) Causeway bridges which will allow for safer access to the community.

In light of the National Environmental Management Act (Act No. 107 of 1998) (NEMA) and its Environmental Impact Assessment Regulations (4 December 2014) and Listing Notices 1-3 (GNR 983 – GNR 985 of 4 December 2014), the proposed activity triggers a Basic Assessment process as it triggers activities that are listed within Listing Notice 1 (GNR 983). Nzingwe Consultancy has been appointed as the Environmental Assessment Practitioner (EAP) according to Regulation 12 of the EIA Regulations (4 December 2014) and will therefore be responsible for carrying out the Basic Assessment with its associated processes.

This report serves as the draft Basic Assessment Report (dBAR) required in the Environmental Impact Assessment process. A basic assessment exercise entails the disclosure of all relevant information related to the proposed project and the identification of the nature of issues. Interested and Affected Parties (I&APs) are required to review and comment on the dBAR as per the comment period timeframes (30 days) stipulated within the Environmental Impact Assessment Regulations (4 December 2014).

Nzingwe Consultancy will facilitate the Basic Assessment process and undertake tasks in terms of an approved Project Implementation Plan (PIP) as follows:

- Conduct site visits for the preliminary physical observation of the site;
- Map generation
- Collect site information, including; inter alia
 - Identification of authorities to be involved in the process i.e. municipality and key personnel, government departments and any other authorising bodies;
 - Applicable development environmental statutory requirements and guidelines for the study area;
 - Location and size of the site (including an assessment of the existing size vs space norms);
 - access and accessibility;
 - Biophysical and social profile of the proposed site and surrounds;
 - Current land use of the site and surrounding areas and the potential impacts thereof;

- Site zoning and surrounding zonings;
- Preliminary environmental Assessment;
- Desktop information on the existing infrastructure and associated services;
- Ownership details and land negotiations (if required);
- Analyse the information and compile the site assessment report (with recommendations on the specialist input required and any other requirements, based on the findings);
- Investigate alternative sites or location (if required).

Description of the proposed activity

The proposed causeway bridges will be constructed over watercourses that community members have to cross on a daily basis which currently do not have any formal crossing structures. As the flow increases during the rainy season, it becomes more unsafe for community members to cross as they travel to different destinations.

The following are the project component;

The proposed causeway bridges construction will include removal of vegetation, temporary diversion of river flow, excavation within the river channel, establishment of bridge foundations, use of culverts, use of concrete/cement and steel as part of the bridge construction, redirection of diverted flow to normal route and rehabilitation of disturbed areas.

Feasible and reasonable alternatives

The proposed project is a practical and achievable development. Financial provision has been made within the Municipal budget for the proposed project. This will cover costs for the material and expertise needed for the proposed project to materialise. There will be environmental “costs” associated with the project however, with the planned mitigation measures, these impacts can be reduced to acceptable levels. Environmental costs associated

cannot be equated or compared to the value of human lives which may be lost should the existing conditions persist. Constructions of similar projects have been undertaken within the country and the municipality. The project is therefore technologically feasible as the machinery/plant needed to carry out associated activities exists. The appointment process for appointing engineers, contractor and other experts will ensure that the needed skills and experience is obtained for the proposed project to be achieved in alignment to the applicable regulations and norms and standards. The proposed site is located within the Nkungwini Area in Ward 7 area of Nongoma Local Municipality. Nkungwini is a small rural area and the proposed causeway bridges are proposed for the reasons that residents of the area have trouble crossing the rivers in times of peak floods. Therefore there is no alternative sites for the causeway bridges to be located as the causeways will be aligned with a road which is much needed by the community.

Alternatives

Activity to Be Undertaken

The proposal is to construct 3 causeway bridges with a width of 5m and variable lengths at different watercourses. The bridge structure design has been attached as Appendix 3. There is no alternative in terms of alternative activity as this project is aimed at creating safe crossing areas for the community. The only way for this to be achieved is through the construction of the proposed causeway bridges. These will improve access for pedestrians and vehicular access which the community to be serviced currently does not have access to.

Location

The proposed developments will be constructed within Ward 7 of Nongoma Local Municipality. The coordinates for the sites are:

Feature	Latitude	Longitude
Causeway 1	27°55'36.72"S	31°51'44.40"E
Causeway 2	27°55'15.20"S	31°51'9.20"E
Causeway 3	27°55'1.27"S	31°50'39.22"E

Refer to Locality Map attached as Appendix 1. This route was identified in consultation with the community leaders and as per the survey study done. Having the causeway bridges at these location will provide a link for the associated gravel road to run approximately straight which is the preferred as per the engineer's and surveyor's perspective. The proposed development is proposed for service to the community and therefore the choice of the location was also made as a result of an indication from the community.

Technology

The location of the proposed bridge is at an area that is relatively rocky. This can be an advantage in the sense that establishment of the causeway bridges bridge foundations will not require extensive excavation of the river bed. Technology to be used will include a TLB, Trucks including concrete mixer truck, small equipment and construction vehicles. Technology to be used will be selected as per the required tasks to be undertaken. Use of technology will also be influenced by the characteristics of the area where rock presence triggers more extensive use of technology.

No-go

In the absence of the proposed causeway bridges, community members will continue to cross the river as there is no alternative access to and from the targeted community. This will be a safety risk to the community members especially children who may fall into the river and drown or be injured. The affected community will also lack access to emergency services and public transport.

The environmental impacts "costs" associated with the proposed project will not occur. The river will continue to flow and function normally.

Description of property on which activity is to be undertaken

The land earmarked for the construction of the bridges is a rural residential area, with scattered homesteads. The area has a number of watercourses flowing through it with one of the rivers to be traversed by the proposed low level bridge. There is a gravel road that leads

up to the site for the proposed bridge which will be used to access the construction site. Vegetation around the site mainly consists of grass and small shrubs as well as scattered alien invasive plant species.

Description of Affected Environment

Vegetation

The vegetation type in the area is the Northern Zululand Sourveld. The dominant structural vegetation type is wooded grassland, in places pure sour grasslands and rarely also dense bushveld thickets.



Figure1: Image depicting the vegetation in Nkungwini area

Geology

The geology the region falls under the broader class called the Vryheid Formation comprising of Middle Ecca. However, the Beaufort Formation has also been reported in this area. Dolerite sills and dykes are common in the area and numerous faults occur as a result of the underlying geology of the region which is more susceptible to faulting than other geological formations.

Climate

Nongoma normally receives about 775mm of rain per year, with most rainfall occurring mainly during mid-summer. It receives the lowest rainfall (8mm) in July and the highest (124mm) in December. The monthly distribution of average daily maximum temperatures shows that the average midday temperatures for Nongoma range from 21.9°C in June to 29°C in January. The region is the coldest during June when the mercury drops to 7.4°C on average during the night.

Watercourse-River

The watercourses in the area are small tributaries of the Msunduzi River which flow in a North Westerly Direction from the project area towards the Msunduzi River.

Surrounding Community

Nkungwini is located south west of the Nongoma town in KwaZulu Natal. It is a rural area which uses Nongoma as its main towns for amenities such as stores, police stations etc. In terms of the residential settlement allocation, houses are distributed all over the Nkungwini area, a mixture of modern looking structures and traditional structures occupy the area.

Identification of all legislation and Guidelines

In order to protect the environment and ensure that this development is undertaken in an environmentally responsible manner, there are various significant pieces of environmental legislation that focuses on this assessment. The proposed development must conform *inter alia* to:

- I. The Constitution of South Africa Act, 1996 (Act No. 108 of 1996)
- II. National Environmental Management Act (107 of 1998) and its EIA Regulations
- III. KwaZulu-Natal Planning and Development Act (Act No.9 of 1997)
- IV. KwaZulu-Natal Heritage Act (Act No. 4 of 2008)
- V. National Environmental Management: Biodiversity Act (Act 10 of 2004)

- VI. National Heritage Resources Act (Act No. 25 of 1999)
- VII. National Development Plan (2010)
- VIII. National Water Act (1998)

Note that other legislative requirements may pertain to the proposed development, but identification and interpretation of these is beyond the brief of this study. As such, the list provided below is not intended to be definitive or exhaustive, and serves to highlight key environmental legislation and obligations only.

[The Constitution of South Africa Act, 1996 \(Act No.108 of 1996\)](#)

The Constitution is the supreme law of South Africa, against which all other laws are measured; any laws in conflict with it are therefore invalid. It protects certain fundamental rights which are, however, not absolute, and may be limited 'in terms of law of general application to the extent that the limitation is reasonable and justifiable in an open and democratic society based on human dignity, equality and freedom' (Section 36).

The Environmental Clause

One such fundamental right in Section 24 provides the basic framework for all environmental policy and legislation, and it states:

"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 –
 - i. Prevent pollution and ecological degradation;
 - ii. Promote conservation; and
 - iii. Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."

It is however important to note that though an activity may be allowed in terms of an Act of Parliament or a permit issued under a statute, **it may still be declared unlawful if it is harmful to human health or well-being.**

Access to Information

Section 32 provides that everyone has the right of access to any information held by the State or another juristic person and that is required for the exercise or protection of any rights.

Just Administrative Action

Section 33 of the Constitution entrenches the right to lawful, reasonable and procedurally fair administrative action, as well as written reasons for administrative actions that have adversely affected a person's right.

Enforcement of Rights

In terms of Section 38, if any rights in the Bill of Rights have been infringed or threatened, a court may be approached for assistance by a person acting individually; on behalf of another who is incapacitated; on behalf of a group or class of persons; in the public's interest, or as an association in the interests of its members.

[National Environmental Management Act, 1998 \(Act No. 107 of 1998\), as amended](#)

The National Environmental Management Act (NEMA) provides the legislative framework for Integrated Environmental Management (IEM) in South Africa. Section 24 provides that all activities that may significantly affect the environment and require authorisation by law must be assessed prior to approval. NEMA also provides 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 coordinating environmental functions exercised by organs of the State and to provide for matters connected therewith. Section 2 of NEMA establishes a set of principles that apply to the activities of all organs of state that may significantly affect the environment.

These include the following:

- Development must be sustainable;
- Pollution must be avoided or minimised and remedied;

- Waste must be avoided or minimised, reused or recycled;
- Negative impacts must be minimised; and
- Responsibility for the environmental health and safety consequences of a policy, project, product or service exists throughout its life cycle.

These principles are taken into consideration when a government department exercises its powers, for example during the granting of permits and the enforcement of existing legislation or conditions of approval.

Section 28(1) of NEMA states that “every person who causes, has caused may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring”. If such pollution cannot be prevented, then appropriate measures must be taken to minimise or rectify such pollution. These measures may include:

- Assessing the impact on the environment;
- Informing and educating employees about the environmental risks of their work and ways of minimising these risks;
- Ceasing, modifying or controlling actions which cause pollution/degradation;
- Containing pollutants or preventing movement of pollutants;
- Eliminating the source of pollution; and
- Remedying the impacts of the pollution.

The authorities may direct an industry to rectify or remedy a potential or actual pollution problem. If such a directive is not complied with, the authorities may undertake the work and recover the costs from the responsible industry.

National Development Plan (2010)

President Jacob Zuma appointed the National Planning Commission (NPC) in May 2010 to draft a vision and National Development Plan (NDP) for consideration by Cabinet and the country. The NPC is an advisory body consisting of 26 experts drawn largely from outside government.

As a long-term strategic plan, it serves four broad objectives:

- Providing overarching goals for what we want to achieve by 2030;
- Building consensus on the key obstacles to us achieving these goals and what needs to be done to overcome those obstacles;
- Providing a shared long-term strategic framework within which more detailed planning can take place in order to advance the long-term goals set out in the NDP; and
- Creating a basis for making choices about how best to use limited resources.

The Plan aims to ensure that all South Africans attain a decent standard of living through the elimination of poverty and reduction of inequality. It therefore defines a desired destination and identifies the role that different sectors of society need to play in reaching that goal.

The intention of the National Development Plan (NDP) is to make the most of South African citizens - their goodwill, skills and resources. It aims to step away from Business as usual and to spark a cycle of more sustainable, low emission development that will expand opportunities, build capabilities and raise living standards.

National government aims to create five million jobs by 2020 (which is approximately three million more than the anticipated growth rate which has been extrapolated from the years 2002 to 2009). Related to this is the New Growth Path, which is targeting opportunities for 300 000 households in agricultural smallholder schemes and 145 000 jobs in agro-processing by 2020, while there is potential to upgrade conditions for 660 000 farm workers. In terms of the green the economy, there is the national goal to create 300 000 additional direct 'green jobs' by 2020.

National Water Act 1998

The water resources in South Africa are limited making them critically important for the sustainable economic and social development of the country. As the custodian of water resources, the Department of Water Affairs (DWA) is responsible for the protection of the health of aquatic ecosystems, thus ensuring the ability of these systems to support utilisation for these systems to support utilisation for the benefits of current and future generations. The Nkungwini causeway bridges are anticipated to trigger a water use licence, the activities are it triggers are listed below.

Description of Environmental Issues and Potential Impacts

The construction of the 3 causeway Bridges along the Mpongo Access Road will have negative impacts on the river during construction, however, it is anticipated that the stream bed and flow will recover from the stresses caused during the construction phase. The implementers of the project have the mandate to demonstrate that the proposed bridge will have the least possible negative impact on and interference with natural surroundings, i.e. river and other flora and fauna in the immediate vicinity of the development footprint.

The table below outlines the listed activities and description of the project activities that trigger:

Indicate the number and date of the relevant notice:	Activity No (s) (in terms of the relevant or notice) :	Describe each listed activity as per the project description (and not as per wording of the relevant Government Notice)¹:
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NATIONAL ENVIRONMENTAL MANAGEMENT ACT REGULATIONS	PROJECT DESCRIPTION
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¹ Please note that this description should not be a repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description, i.e. describe the components of the desired development

GNR 983: Listing Notice 1 (December 2014)	Activity no: 12	The proposed development triggers this Activity as it involves construction of a low level bridge that has an area exceeding 100 square metres within a river.
GNR 983: Listing Notice 1 (December 2014)	Activity no: 19	Construction activities will include excavation and infilling of material from and into the river located on site. It is estimated that the material will be in excess of 5 cubic metres.
NATIONAL WATER USE		PROJECT DESCRIPTION
Section 21 Water uses requiring Authorization	S21 (c)	The proposed bridge will trigger this activity as it will involve the installation of pipes which will cause the impeding and diverting of the water flow.
Section 21 Water uses requiring Authorization	S21 (i)	The installation of the pipes which will range from 600mm to 900mm will cause a disturbance of the river bed, triggering this activity.

The risks associated with biodiversity such as soil erosion, loss of natural habitats will be evaluated and mitigation measures will be taken. These will be classified as direct, indirect or cumulative impacts depending on the nature, extent and forecasted stage of occurrence of impact.

Environmental Impact Assessment and Public Participation

As the appointed EAP for the proposed project, Nzingwe Consultancy conducted a site visit on the **08th July 2015**. This was to access the receiving environment in order to accurately predict impacts which may be associated with the proposed project. This included taking photos on and around the site.

A community meeting was conducted on the **04 August 2015** with the Ward Councillor and community members of the area. The members present were notified of the proposed development and their rights to participate and contribute to the decision making process. They were also informed on the Environmental Impact Assessment Process which was explained to them. This included meeting with the person who owns the property on which proposed bridge will be constructed. Minutes and register for the meeting have been attached as Appendix 5.

List of all Interested and Affected Parties (I&APs) identified

NAME OF DEPARTMENT	CONTACT PERSON	ADDRESS
Ezemvelo KZN Wildlife	Mr A Blackmore	EKZN Wildlife Head Integrated Environmental Planning P.O Box 13053 Cascade 3202
Department of Water Affairs	Ms. Lindiwe Dladla	P.O Box 1018 Durban 4000
Department of Transport	Mr A Ngcobo	Private Bag X9043 Pietermaritzburg 3200
Ingonyama Trust	Ms. Susan Ellis	P.O Box 601 Pietermaritzburg 3200

The Draft Basic Assessment Report was circulated to the above mentioned Interested and Affected parties.

Table 1: Assessment and Ranking of Impacts

Rating	Definition of Rating	Score
Extent – <i>The area over which the impact is experienced.</i>		
Local	Impact confined to project area or part of the project area.	1
Regional	Impact on region	2
National/international	Impact national and or beyond.	3
Intensity – <i>The magnitude of the impact in relation to sensitivity of the receiving environment, taking into account the degree to which the impact may cause irreplaceable loss of resources.</i>		
Low	Impact is site-specific with negligible alteration of the wider natural and or social functions and processes.	
Medium	Impact is site-specific and wider natural and or social functions and processes continue albeit in a modified way.	
High	Impact is site-specific and wider natural and or social functions and processes are severely altered.	
Duration – <i>The period over which the impact will be experienced and its reversibility.</i>		
Short-term	Impact experienced for up to 2 years	1
Medium-term	Impact experienced for a period between 2 and 15years	2
Long-term	Impact experienced for a period longer than 15years.	3

Scoring from the 3 categories will be totalled together to determine the overall rating of the impacts

Combined score	3 - 4	5	6	7	8-9
Combined consequence	Very low	Low	Medium	High	Very high

Table 2: Probability of the impact is determined using the following criteria:

Probability – the likelihood of the impact occurring	
Improbable	< 40% chance of the impact occurring
Possible	40% - 70% chance of the impact occurring
Probable	>70% - 90% chance of the impact occurring
Definite	>90% chance of the impact occurring

Significance of the impacts is determined using the combination of the consequence rating and probability of the impact occurring. This is indicated in the table below.

Table 3: Significance of the Impacts

Significance Rating	Possible Impacts Combination		
	Consequence		Probability
Insignificant	Very low	&	Possible
	Very low	&	Improbable
Very low	Very low	&	Definite
	Very low	&	Probable
	Low	&	Possible
	Low	&	Improbable
Low	Low	&	Definite
	Low	&	Probable
	Medium	&	Possible
	Medium	&	Improbable
Medium	Medium	&	Definite
	Medium	&	Probable
	High	&	Possible
	High	&	Improbable
High	High	&	Definite
	High	&	Probable

	Very high	&	Possible
	Very high	&	Improbable
Very high	Very High	&	Definite
	Very High	&	Probable

Anticipated Impacts

Vegetation removal

Site establishment will include removal of vegetation from around the site. The vegetation removal will mainly consist of grass as this is the dominant vegetation type on the site. This will be a negative impact which will occur on a local scale.

The vegetation must therefore be retained as far as is possible. Re-establishment of indigenous vegetation on the disturbed areas must also be ensured. No excessive erosion is to result from the proposed activity during and post construction.

Soil Erosion

Soil within the area will be exposed as a result of the removal of vegetation. The soil will further be loosened as a result of the earth works that will be part of the proposed project. Top soil from the disturbed areas will be removed and stockpiled. These factors will contribute to the occurrence of soil erosion on and around the working area.

Runoff management must be in such that no excessive erosion occurs during construction and operational phases. Vegetation must be used to ensure soil cohesion and reduce erosion susceptibility of the soil.

River Sedimentation

River sedimentation leads to water quality impairment, accelerated erosion and sediment deposition/inputs from hill slope and channel processes have impaired designated uses in rivers in many ways. River channel instability caused by excess deposition of sediment which

can severely impact on aquatic life including the food chain, spawning and rearing habitat, in-stream cover, water temperature extremes and other structural and functional components.

Impedance and Diversion of Flow

This is one of the unavoidable impacts of the proposed project it is associated with the main and necessary activities of the proposed project. Construction of the 3 causeway bridges within the river will require that stream flow be temporarily diverted. Channel flow will thereafter be re-directed to original route once construction has been completed. The constructed bridge structure may at this stage impede normal flow within the river especially in the case where the bridge design/layout fails to accommodate the channel characteristics. The diversion structure will need to be maintained in such that no water flows through the construction area. No materials or contaminants may be allowed to escape into the diverted channel flow. Channel diversion must allow for continued flow around the construction area. All works within the channel must be done in the shortest time period possible to reduce the period through which the diversion will remain. The construction area must be cleaned of all chemicals and or contaminants prior to release of the channel flow.

Pollution

Pollution is one of the main factors that characterises a site where construction is taking place. Road noise can be nuisance if it impinges on population centres especially for roads at higher operating speeds, near intersections and on uphill sections. Water pollution can be caused by water runoff, it is important that the contractor ensures that these factors are avoided everywhere possible.

Water Contamination

Dirty water is the world's biggest health risk and continues to threaten both quality of life and public's health. The construction of the proposed causeway bridges may lead to run off during the rainy season especially if construction takes place during this period, the run off may pick

up on the chemical or toxic construction material which will impact on the health of the river habitat and might also threaten the health of community people using the river water as their water supply.

Habitat Fragmentation

The proposed causeway bridges along the Mpongo access road, roads can act as barriers or filters to animal movement and lead to habitat fragmentation. Many animals/livestock will not cross the open space created by a road due to threat of predation, roads can also increase animal mortality from traffic.

Noise and Dust

Noise and dust is common during such a proposed development as it involves large machinery, however this is not a permanent impact. Noise and dust will occur during the construction phase and once construction has been completed this will no longer affect the community where the proposed development will take place.

Table 4: Impact Summary

Ecological Impacts	Nature	Extent	Duration	Significance before Mitigation	Proposed mitigation	Significance after mitigation
Vegetation Removal	Negative	Local	Permanent	Medium	Re-vegetation	High
Soil Erosion	Negative	Local	Temporary	Low	Removal topsoil before construction and replace post construction	High
River Sedimentation	Negative	Local	Temporary	Medium	River sedimentation will occur	Low

					during construction	
Impedence and diversion of flow	Negative	Local	Temporary	Medium	Remove infilling	High
Pollution	Negative	Local	Temporary	High	Remove all waste created during construction	High
Water Contamination	Negative	Local	Temporary	Medium	Water contaminated during construction	Low
Habitat fragmentation	Negative	Local	Temporary	Low	Fence off the site area to prevent animals entering the site.	Low
Noise and Dust	Negative	Local	Temporary	Low	During construction	Low

Monitoring and Auditing Recommendations

According to the comments received from the Interested and Affected Parties the recommendations with regards to audits that are going to be conducted by the Environmental Control Officer, storm water management the ECO has to ensure that during construction there is a storm water along the route. The EMPr provided by the ECO should ensure that the

contractor treats it as a living document on the proposed site area and ensure that all mitigation measures are undertaken before and after construction.

Conclusion

In line with the requirements of the NEMA EIA Regulations, this Basic Assessment Report has provided a brief description of the project and its associated activities, of the pre-development environmental specifically in terms of the biophysical and socio-economic environment of the study area. Basic Assessment Report also shed clarity to the proposed development for the Department to consider all the information that the Basic Assessment Report provides in order to make a decision based on what has been included in the report. This basic assessment report intends to facilitate informed and environmentally sound decision making and it also intends to play a role as an effective tool for decision making. The information provided above contains predicted and evaluated impacts on not only the environment, but also socio-economic conditions as well as cultural heritage.

Bridges are important to society as they create a sense of secure transportation for survival, it is known that the construction of the causeway bridges will improve travelling for the people of the Nkungwini area and the journeys that were previously unpleasant made pleasant. Without neglecting the importance of human needs for the bridge however we have to highlight the importance of water/rivers, as rivers are an important source of water for households and agriculture. They are also valued for recreational use and nature conservation. The natural features found in rivers and streams support a diverse range of plants, therefore the water and the species within the water source are equally important. Therefore it is important to take caution when such a construction will take place.