

Terms of Reference for the Freshwater Impact Assessment

Royal HaskoningDHV have been appointed by the GM Turner and Associates to perform feasibility studies and to investigate, design and manage the construction, and conduct the necessary environmental assessments for the proposed Bhudlu bridge crossing with associated road access across the Umtamvuna River, to link the uMuziwabantu (of the Ugu District within KwaZulu-Natal - KZN) and the Mbizane (of the Alfred Nzo District within the Eastern Cape - EC) municipalities.

There have been negotiations between uMuziwabantu Municipality (KZN) and Mbizana Municipality (EC) to provide a direct link between the municipalities and link up the communities of Nyandeni (KZN) and Nomganya (EC).

The position of the proposed bridge is at an existing informal crossing which can only be crossed by tractors when the river is low enough. Access to the site from the KZN side is off the District Road D1100 onto a municipal gravel road then onto an informal 4x4 track leading to the crossing. From the EC side access is similarly off a district road onto a municipal gravel road then onto an informal 4x4 track. Accesses to the bridge from both sides KZN and EC will have to be upgraded to the nearest district roads respectively.

uMuziwabantu Municipality will construct the Bridge, KZN portion of the Access Road and a 100m approach road on the EC side of the New bridge. The remainder of the access road on the EC side will be constructed by Mbizana Municipality.

The scope of work and deliverables is detailed below:

The Basic Assessment is currently being undertaken by the Consultant in terms of the Environmental Impact Assessment (EIA) Regulations (2014) promulgated under the National Environmental Management Act (Act No. 107 of 1998) (as amended).

The sub-consultant is required to conduct the Ecological Assessment as per the quotation provided to the Consultant and dated 27 January 2015. The assessment must include the following tasks and / or deliverables:

- (a) Review of existing databases and literature;
- (b) Field surveys;
- (c) GIS Mapping;
- (d) Impact identification, description and assessment using the significance rating provided by the Consultant appended as Appendix A to this Sub-consultant Agreement;**
- (e) Provide recommendations for the avoidance and mitigation of impacts;
- (f) Ensure all deliverables and methodologies and appropriately reviewed and vetted by internal procedures prior to submission to the Consultant;
- (g) The assessments **must** cover each of the three alternatives and assess at a minimum a 20 m buffer around the proposed positioning of the access bridge;
- (h) Reports must be provided electronically to the Consultant and all shapefiles provided.

As per the quotation dated 27 January 2015, the following must be complete to ensure that this agreement is honoured:

- Provide a basic description of the vegetation and faunal composition (mammals, birds, reptiles and amphibians) and available habitat for fauna occurring along the proposed Bhudlu bridge site.
- Provide a thorough desktop survey of published literature.

- Identify species of conservation importance that could possibly utilise the proposed site and immediate surrounding areas.
- The scope of study must include:
 - A preliminary ecological and wetland survey focusing on remaining natural/wetland habitats and vegetation as well as associated fauna (mammals, birds, amphibians and reptiles) occurring within Bhudlu bridge site.
 - An assessment of the ecological habitats, evaluating conservation importance and significance; with special emphasis on the current status of threatened plant and faunal species (mammal, bird, reptile and amphibian species (Red Data Species), within and in close proximity of the habitats within Bhudlu bridge site. Identification of current and potential environmental impacts and measures which should be implemented in order to mitigate or reduce current and potential impacts of the proposed Bhudlu bridge development.
 - Literature investigations, personal records and published data heavily augment the brief field survey.
 - Documentation of the findings of the study in a report.
- The following methodology is to be employed:

A preliminary ecological survey of the proposed Bhudlu bridge site must be undertaken. The site is to be visited predominantly during daylight hours. Data will be heavily supplemented by literature investigations; personal records, historic data and previous surveys conducted in the area. Different habitats will be explored to identify any sensitive or specialised plant and animal species which could possibly occur within the site. The faunal survey will focus mainly on the vegetation as well as faunal component mammals, birds, reptiles and amphibians of the proposed Bhudlu bridge site. The survey will focus on the current status of threatened animal species occurring, or likely to occur within the study area, describing the available and sensitive habitats, identifying potential impacts resulting from the development of the site and providing mitigation measures for the identified impacts of the pipeline developments.

Faunal data will be obtained during a single site visit of the proposed Bhudlu bridge site. All animals (mammals (larger), birds, reptiles and amphibians) seen or heard will be recorded. Use will also be made of indirect evidence such as nests, feathers and animal tracks (footprints, droppings) to identify animals.

The vegetation literature search will be undertaken utilising *The Vegetation of South Africa, Lesotho and Swaziland* (Mucina & Rutherford 2006) for the vegetation description as well as *National Red List of Threatened Plants of South Africa* (Raimondo *et al*, 2009). Mammal names are as used by Skinner and Chimimba (2005), Bird names by Hockey, Dean & Ryan (2006); Reptile names by Branch (1998) and Amphibian names by Carruthers & Du Preez (2009).

Appendix A

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.

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

Score		Elaboration
		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.

Score		Elaboration
+ (13 - 16 points)	POSITIVE VERY HIGH	<p>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.</p>