




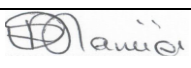
**DRAFT BASIC ASSESSMENT REPORT**  
**THE PROPOSED 'UPGRADING OF P263 ROAD AND BRIDGE**  
**CONSTRUCTION IN MATIWANE, LADYSMITH LOCAL**  
**MUNICIPALITY**

**EIA REF DC 23/0003/2016**



**PREPARED BY:**

**PREPARED FOR: KZN DEDTEA & KZN DEPARTMENT OF TRANSPORT**

 <b>HENWOOD &amp; NXUMALO</b> CONSULTING ENGINEERS		<b>THE PROPOSED UPGRADE OF P263 ROAD AND BRIDGE CONSTRUCTION IN MATIWANE, LADYSMITH LOCAL MUNICIPALITY – DC23/0003/2016</b>		
<b>Date:</b>		06 February 2016		
<b>Report Status:</b>		Draft - BAR		
<b>Author:</b>		Jenitha Girdary		
<b>Co-author:</b>		n/a		
<b>QUALITY VERIFICATION:</b> This report has been prepared under the controls established by a quality management system that meets the requirements of ISO9001: 2008 which has been independently certified. Registration Number LS 4729.				
				
© <b>COPYRIGHT:</b> Henwood & Nxumalo Consulting Engineers cc				
<b>VERIFICATION</b>	<b>CAPACITY</b>	<b>NAME</b>	<b>SIGNATURE</b>	<b>DATE</b>
<b>By Author:</b>	Senior Scientist	Ms. J. Girdary		February 2016
<b>Checked by:</b>	n/a	n/a		
<b>Authorized by:</b>	Project Director/Supervisor	Ms. P. Dlamini		February 2016

### KEY DETAILS

EAP DETAILS		PRROPONENT DETAILS	
Henwood & Nxumalo Consulting Engineers		KZN Department of Transport	
EAP and project director : Ms. Poppy Dlamini			
Representative consultant responsible for compiling report : Ms. Jenitha Girdary		Representative : Mr Lucky Thabethe	
Email	: jenitha@hn.co.za	Email	: Lucky.Thabethe@Kzntransport.gov.za
Telephone	: 031 764 2321 / 0820831691	Telephone	: 033 355 0594
Fax	: 031 764 2340	Fax	: 033 345 7537
Post	: P.O. Box 1616, Kloof, 3640	Post	: 172 Burger street , PMB



## environmental affairs

Department:  
Environmental Affairs  
**REPUBLIC OF SOUTH AFRICA**

(For official use only)

File Reference Number:

Application Number:

Date Received:


Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2014, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

### Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2014 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. This report format is current as of **08 December 2014**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority.
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.
14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.
15. Shape files (.shp) for maps must be included in the electronic copy of the report submitted to the competent authority.

## SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section? ☒ YES ☐ NO

If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

### 1. PROJECT DESCRIPTION

#### a) Describe the project associated with the listed activities applied for

The KZN Department of Transport proposes to undertake the upgrade of existing Road P263 and bridge construction, including culvert construction, in the area of Matiwane, Ladysmith.

There is an existing bridge at km 10.5, which will not be upgraded; however a new two lane bridge will be constructed in a new alignment and the existing bridge will be demolished once construction of the new bridge is complete. This new bridge will be 34.2m long and 10.96m wide and will consist of a pedestrian walkway on the upstream side.

The new bridge will be situated approximately 8 meters upstream of the existing bridge. Once construction of the new bridge is complete, it will have a two way traffic and pedestrian walkway on the upstream side.

The existing stream crossings will be demolished and new box culverts will be constructed at the same locations. The five culverts that will be constructed are found at these locations- 12.54km, 14.05km, 16.92km, 18.60km, 19.59km. The existing crossings will be demolished before commencement of construction of the culverts.

The road upgrade and layer works will be confined to the existing road within the existing road reserve, and will also possibly feature storm water control, curbs, bus bays and pavements. The upgrade comprises addition of 1.5m roadway in both directions.

The project comprises the development of a bridge that is 34.2m long and 10.96m wide, which will be constructed over the Cwembe river near the existing bridge and out of the road reserve. Other culverts will be constructed along the P236 road. Road works will occur within 32m of a watercourse but within the road reserve.

In order to allow for construction of the bridge and culverts, it will be necessary to excavate and remove material within the river bed and banks. This may also comprise removing and infilling material in the watercourse to create a platform or berm on which to work, depending on flow levels in the watercourses.

Road works will occur within 32m of a watercourse within the road reserve.

### DETAILED PROJECT DESCRIPTION

#### Cwembe River Bridge

The project comprises the construction of Cwembe River Bridge which is located at km 10.5 of Main Road P263. Listed below are the dimensions and positions of components on the bridge.

Length of Cwembe River Bridge:	34.2m
Width of Cwembe River Bridge:	10.96, measured from the top of the deck

<b>Height of Cwembe River Bridge: foundation</b>	<b>7.6m, measured from the bottom of the</b>
<b>Number of piers:</b>	<b>2 piers</b>
<b>Location of piers:</b>	<b>Pier 1 X: - 3 136 347.1663 and Y: 88 065.9919 Pier 2 X: - 3 136 339.1821 and Y: 88 057.8493</b>
<b>Type of bridge:</b>	<b>Elevated bridge, approximately 7.5m in height.</b>

### Stormwater and drainage

#### **Methodology**

The design methodology used for the stormwater is in accordance with the South African National Roads Limited (SANRAL) Drainage 6<sup>th</sup> Edition. The stormwater design is to comply with KZN DOT standard specifications and drawings.

The rational method ( SANRAL Drainage 6<sup>th</sup> Edition Section 3.5.1) will be used to calculate the flood peaks for stormwater design.

The design flow depth will be based on 1 in 5 year return period and shall not exceed 6mm.

The road is a Class 3 road and the design return period of 1 in 20 years shall be used.

#### Stormwater runoff

Flow depth of surface run off across the road and bridge surfaces is not a primary design variable because normal design standards ensure that this depth remains within acceptable limits. The bridge carriageway surface is at a gradient of 0.71% and varies on the road approaches, a normal acceptable design practice. The bridge deck will have 110mm diameter scupper pipes. These drainage pipes will be placed at regular intervals. The pipes will discharge water directly into the river main channel.

#### Approach roads

Embankment higher than 1.5m will be protected by retaining walls or gabion mattresses. Water will not be discharged directly on embankments greater than 1.5m high.

Kerb and channels will serve to channel both the traffic and stormwater. These will be designed for the flow depth to satisfy the SANRAL Drainage Manual 6<sup>th</sup> Edition. Approach road are approximately 500m on both ends of the bridge. No intermediate outlets are therefore required. The kerb and channel will discharge water at the drainage or chutes located along various positions of the road. The standard details for the kerb and channels are as per drawing IS 001 to IS 006. These include drop inlet standard drawings where required.

Drainage channels where required will be provided as per Standard Drawings SD0601 to SD0606.

Channel capacities and freeboard will be calculated in accordance with guidelines in the SANRAL Drainage Manual 6<sup>th</sup> Edition. All channels are to be protected against erosion by concrete lining, rip rap, stone pitching or prefabricated paving blocks. Gabions shall be provided where required. Scour protection shall be provided at all chute outlets as per standard detail drawings.

#### Method of construction and materials to be used

The bridge consists of reinforced concrete, therefore the materials to be used in construction includes concrete as well as reinforcement.

The extent of works involved in the construction of the bridge include:

**Establishment on site**



Provision of traffic accommodation  
Provision of drainage to divert the streambed  
Excavation and blasting , construction of foundation fill where necessary, and construction of the bridge pier bases and columns.  
Excavation, blasting and construction of foundation fill where necessary, and construction of the bridge abutments.  
Construction of the composite precast beam and cast insitu bridge deck.  
Construction of end blocks and parapet panel over the bridge deck.  
Construction of concrete sidewalks along the sides of the bridge.  
Construction of deck drainage facilities.  
Construction of roadworks  
Construction of embankment protection.  
Demolition of existing bridge.

### **DETAILED PROJECT DESCRIPTION OF THE BOX CULVERTS**

#### **3/3.0m x 3.0m Box Culvert at km 12.54**

The project comprises the construction of a cast in-situ Triple Celled 3.0m x 3.0m Box Culvert located at km 12.54 of Main Road P263. Listed below are the dimensions and positions of components on the culvert.

Length of the culvert:	33.13m
Width of culvert :	10.6m
Height of the culvert:	5.9m, measured from the bottom of the foundation
Number of cells:	3 Cells
Type of culvert:	Cast in-situ concrete box culvert

#### **Method of construction and materials to be used**

The box culvert consists of reinforced concrete, therefore the materials to be used in construction includes concrete as well as reinforcement.

The extent of works involved in the construction of the culvert include:

Establishment on site  
Provision of traffic accommodation  
Construction of detour routes  
Provision of drainage to divert the streambed  
Demolition of existing box culvert.  
Construction of the cast in-situ box culvert.  
Backfilling of material

#### **3/1.8m x 1.8m Box Culvert at km 14.05**

The project comprises the construction of a cast in-situ Triple Celled 1.8m x 1.8m Box Culvert located at km 14.05 of Main Road P263. Listed below are the dimensions and positions of components on the culvert.

Length of the culvert:	23.63m
Width of culvert :	6.50m
Height of the culvert:	4.25m, measured from the bottom of the foundation
Number of cells:	3 Cells
Type of culvert:	Cast in-situ concrete box culvert

#### **Method of construction and materials to be used**

The box culvert consists of reinforced concrete, therefore the materials to be used in

construction includes concrete as well as reinforcement.

The extent of works involved in the construction of the culvert include:

**Establishment on site**

**Provision of traffic accommodation and construction of detour route.**

**Provision of drainage to divert the streambed**

**Demolition of existing box culvert.**

**Construction of the cast in-situ box culvert.**

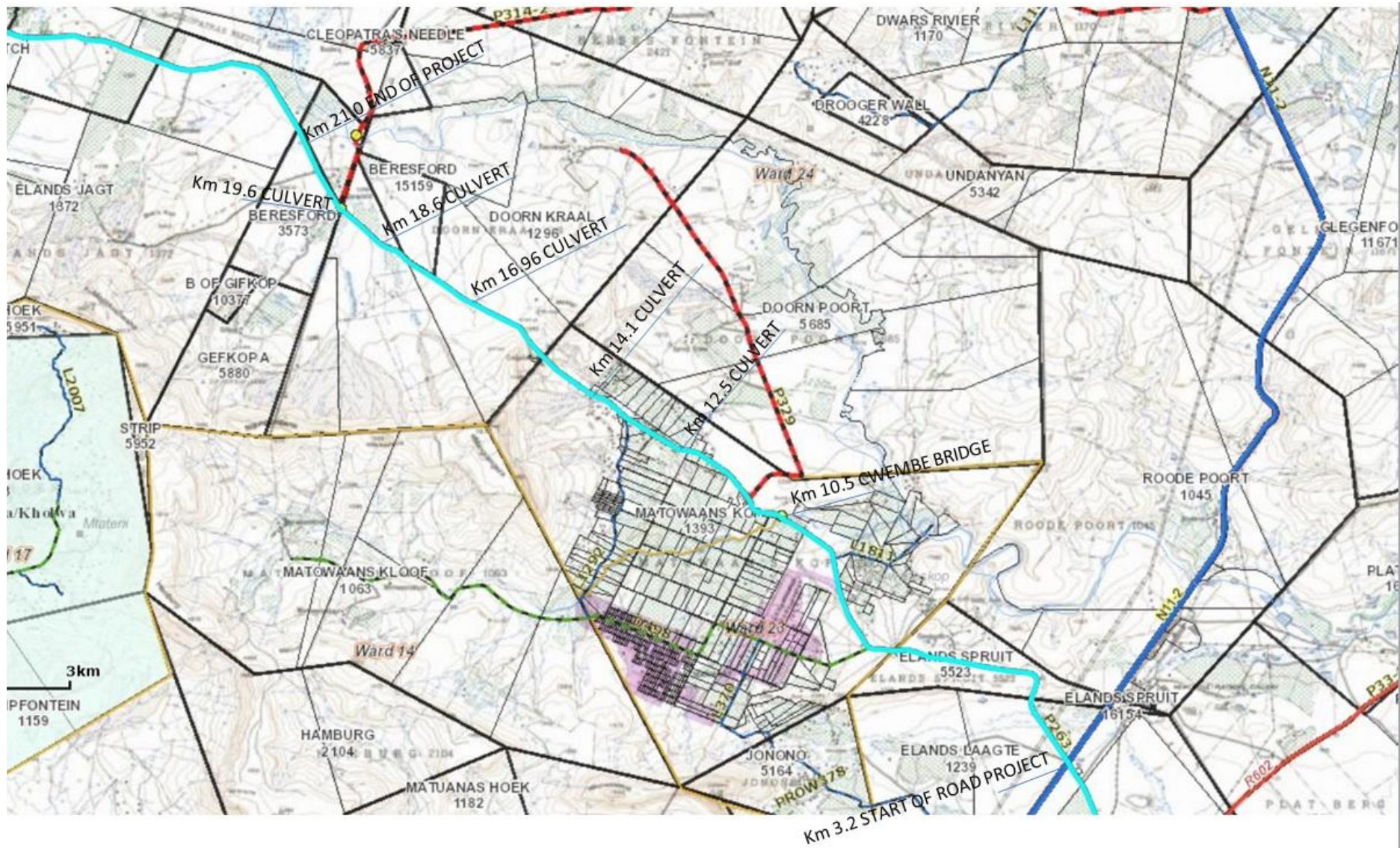
**Backfilling of material.**



Image-Cwembe River, bridge here which will not be replaced, rather a new bridge will be constructed. View of gravel road P231 which will be upgraded to tar



Image - Locality of road works and structures





**b) Provide a detailed description of the listed activities associated with the project as applied for**

Listed activity as described in GN 983, 984, 985 and 986	Description of project activity
<b><i>Listing Notice 1 activity 12 (iii) (a):</i></b> The development of bridges exceeding 100 square metres in size where such development occurs within a watercourse or within 32m of a watercourse.	The project comprises the development of a bridge that is 34.2m long and 10.96m wide, which will be constructed over the Cwembe river near the existing bridge and out of the road reserve. Other culverts will be constructed along the P236 road and the existing ones will be demolished. Road works will occur within 32m of a watercourse but within the road reserve.
<b><i>Listing Notice 1 activity 19 (i):</i></b> The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from a watercourse.	In order to allow for construction of the bridge and culverts, it will be necessary to excavate and remove material within the river bed and banks. This comprises removing and infilling material in the watercourse to create a platform or berm on which to work. Road works will occur within 32m of a watercourse within the road reserve

**2. FEASIBLE AND REASONABLE ALTERNATIVES**

**“alternatives”**, in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

- (a) the property on which or location where it is proposed to undertake the activity;
- (b) the type of activity to be undertaken;
- (c) the design or layout of the activity;
- (d) the technology to be used in the activity;
- (e) the operational aspects of the activity; and
- (f) the option of not implementing the activity.

Describe alternatives that are considered in this application as required by Appendix 1 (3)(h), Regulation 2014. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.

The determination of whether site or activity (including different processes, etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the, competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

The identification of alternatives should be in line with the Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004. Should the alternatives include different locations and lay-outs, the co-ordinates of the different alternatives must be provided. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

**a) Site alternatives**

<b>Alternative 1 (preferred alternative)</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
<p>The onsite topography along the road is generally flat to moderate. The vegetation prevalent along the road is predominantly grassland both disturbed and partially disturbed. In terms of the watercourses, the bridge/culvert sites were noted to lack riparian vegetation, apart from grassland, and erosion and scour was evident. Wetlands were noted to be lying within 500m of the site.</p> <p>This is the only site alternative as the existing bridge is located here and thus this structure needs to be removed and replaced by the proposed new bridge. The culverts cannot be located on any alternative site as they are needed to control and convey water through flow where needed along the road.</p>	<b>28 20 20.0S</b>	<b>29 53 53.9E</b>
<b>Alternative 2</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
N/A		
<b>Alternative 3</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
N/A		

In the case of linear activities:

**Start co-ordinates (Road):**

Latitude /Longitude	Degrees	Minutes	Seconds
South	28	24	18.11
East	29	57	25.88

**End co-ordinates (Road)**

Latitude /Longitude	Degrees	Minutes	Seconds
South	28	16	45.40
East	29	49	18.70

**Cwembe River Bridge co-ordinates at km 10.5**

Latitude /Longitude	Degrees	Minutes	Seconds
South	28	20	20.0
East	29	53	53.9

**Concrete Box Culvert at km 12.54**

Latitude /Longitude	Degrees	Minutes	Seconds
South	28	19	41.5
East	29	52	58.6

**Concrete Box Culvert at km 14.05**

Latitude /Longitude	Degrees	Minutes	Seconds
South	28	19	13.1
East	29	52	13.8

**Concrete Box Culvert at km 16.92**

Latitude /Longitude	Degrees	Minutes	Seconds
South	28	18	14.8
East	29	50	52.1

**Concrete Box Culvert at km 18.60**

Latitude /Longitude	Degrees	Minutes	Seconds
South	28	17	43.0
East	29	50	3.8

**Concrete Box Culvert at km 19.59**

Latitude /Longitude	Degrees	Minutes	Seconds
South	28	17	21.0
East	29	49	38.1

**SEE CO-ORDINATE LIST ABOVE**
**Alternative:**

Alternative S1 (preferred)

- Starting point of the activity (road)
- Middle/Additional point of the activity
- End point of the activity (road)

 Alternative S2 (if any) **N/A**

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

 Alternative S3 (if any) **N/A**

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

**Latitude (S):**
**Longitude (E):**




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

***The above coordinate requirement will be provided with the final bar***

In the case of an area being under application, please provide the co-ordinates of the corners of the site as indicated on the lay-out map provided in Appendix A of this form.

**b) Lay-out alternatives**

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
The preferred layout is that described above in this application. The current layout of the of the structures has been designed for increased hydrological and flooding regimes and increased traffic volumes, along the existing P263 road.	28 20 20.0S	29 53 53.9E
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
No further alternatives have been proposed.	28 20 20.0S	29 53 53.9E
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)



**c) Technology alternatives**

Alternative 1 (preferred alternative)
<b>No technology alternatives.</b>
Alternative 2
Alternative 3

**d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives)**

Alternative 1 (preferred alternative)
In terms of input alternatives, materials to be used during construction consist of concrete and reinforced steel, as well as various grades of tar and fill material for road works. No other alternatives are available at this stage. Design alternatives are considered as per layout alternatives.
Alternative 2
N/A
Alternative 3
N/A

**e) No-go alternative**

The need for the road upgrade, as well as a bridge and construction of culverts at these specified locations arises from the Department's initiatives to improve the old structures that are a safety hazard to the local community and to improve the road network.

Should the proposed project not be undertaken, then the current status quo will remain. The community will continue to use the existing old structures that pose a danger to the community.

Paragraphs 3 – 13 below should be completed for each alternative.

**3. PHYSICAL SIZE OF THE ACTIVITY**
**a) Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):**

*See above project description for details*

**Alternative:**

Alternative A1<sup>1</sup> (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

**Size of the activity:**

	m <sup>2</sup>
	m <sup>2</sup>
	m <sup>2</sup>

or, for linear activities:

**Alternative:**

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

**Length of the activity:**

<b>Length of bridge: 34.2m</b>
<b>Width of bridge: 10.96m</b>
m

<sup>1</sup> "Alternative A.." refer to activity, process, technology or other alternatives.

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

**Alternative:**

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

**Size of the site/servitude:**

	m <sup>2</sup>
	m <sup>2</sup>
	m <sup>2</sup>

#### 4. SITE ACCESS

Does ready access to the site exist?

If NO, what is the distance over which a new access road will be built **N/A**

X YES	NO
	<b>N/A m</b>

Describe the type of access road planned:

**The existing road (P263) to be upgraded will be used to access the sites.**

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

#### 5. LOCALITY MAP

**LOCALITY MAP IS ATTACHED AS APPENDIX A**

An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.). The map must indicate the following:

- an accurate indication of the project site position as well as the positions of the alternative sites, if any;
- indication of all the alternatives identified;
- closest town(s);
- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);
- all roads within a 1km radius of the site or alternative sites; and
- a north arrow;
- a legend; and
- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).

#### 6. LAYOUT/ROUTE PLAN

**LOCALITY MAP/LAYOUT PLAN IS ATTACHED AS APPENDIX A**

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

The site or route plans must indicate the following:

- the property boundaries and numbers of all the properties within 50 metres of the site;
- the current land use as well as the land use zoning of the site;

- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
- servitude(s) indicating the purpose of the servitude;
- a legend; and
- a north arrow.

## 7. SENSITIVITY MAP

### Refer to specialist study

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;
- the 1:100 year flood line (where available or where it is required by DWS);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
- critical biodiversity areas.

The sensitivity map must also cover areas within 100m of the site and must be attached in Appendix A.

## 8. SITE PHOTOGRAPHS

### PHOTOS ATTACHED AS APPENDIX B

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

## 9. FACILITY ILLUSTRATION

### THE LAYOUT/DESIGN PLAN WILL SERVE AS THE FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of at least 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

## 10. ACTIVITY MOTIVATION

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

<b>1. Is the activity permitted in terms of the property's existing land use rights?</b>	X YES	NO	Please explain
The existing land use rights will permit the bridge construction, since the current bridge will be replaced by a wider bridge. Road works will occur within the existing road/road reserve, so both current zonings are applicable.			
<b>2. Will the activity be in line with the following?</b>			
<b>(a) Provincial Spatial Development Framework (PSDF)</b>	X YES	NO	Please explain
This is a bridge infrastructure project thus it can be considered to be part of the psdf, by virtue of increasing commutability, safety and improving road network.			



<b>(b) Urban edge / Edge of Built environment for the area</b>	YES	X NO	Please explain
The activity is located in a rural area and does not lie within the urban edge.			
<b>(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).</b>	X YES	NO	Please explain
<p>According to the IDP of Emnambithi Local Municipality, Municipalities are authorised to take part in development activities that are within their jurisdiction thus participating in activities in which budgets and strategic decisions can be derived. Since this development is a bridge and culvert project, it required budgets and strategic decisions to be made.</p> <p>The approval of this application will not compromise the IDP or the SDF but will serve a key enabling support to these plan.</p>			
<b>(d) Approved Structure Plan of the Municipality</b>	X YES	NO	Please explain
As part of the stated goals in the IDP under Basic Infrastructure; development, improvement and maintenance of municipal roads and sidewalks are mentioned. So this project is in line with the plan.			
<b>(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)</b>	YES	X NO	Please explain
Construction of the bridge will not impact on the conservation priorities in Matiwane, since the road width will be widened by 1.5m on either side within the road reserve, converted to blacktop, and the construction of bridge/culverts will enable erosion control, improve water flow and enhance safety. The project does not lie within any conservancy and will not affect fauna.			
<b>(f) Any other Plans (e.g. Guide Plan)</b>	YES	X NO	Please explain
n/a			
<b>3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?</b>	X YES	NO	Please explain
According to the Emnambithi Ladysmith Municipality SDF the priority development issues include physical infrastructure and services, land reform, environment and land use management, social development and services and economic development to mention a few. The proposed project is in line with the SDF listed priorities as it will involve the development of a bridge and culverts and upgrade to the road.			
<b>4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)</b>	X YES	NO	Please explain
The local community will benefit from the bridge construction on a local scale and it will not affect national priorities at this stage.			

<b>5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</b>	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	Please explain
Since this is a bridge project, no capacity requirements are affected.			
<b>6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</b>	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	Please explain
This activity is located in the IDP of the Emnambithi local Municipality.			
<b>7. Is this project part of a national programme to address an issue of national concern or importance?</b>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	Please explain
This is a local bridge project, but it will not address an issue of national importance or concern. However, the NDP identifies road infrastructure as a priority.			
<b>8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)</b>	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	Please explain
In context, there is an existing crossing (which will be removed) and replaced by the new bridge			
<b>9. Is the development the best practicable environmental option for this land/site?</b>	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	Please explain
Yes, given that the bridge is currently not in a good condition, it is old and poses a threat to human life. The new bridge will lie in a new alignment which will reduce accidents as its current position (slight bend) has major influence in the accidents reported in the area. The bridge will provide as well as being a great initiative from the Department, pedestrian walkway.			
<b>10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?</b>	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	Please explain
The proposed development will have two way traffic and a pedestrian walkway as compared to the existing bridge which lacks on both aspects. The bridge will also make commuting to and from the area much easier. In that sense, yes, the development will outweigh the negative impacts.			

<b>11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?</b>	YES	<input checked="" type="checkbox"/> NO	Please explain
There are other bridges in this area, so a precedent for similar activities has already been set.			
<b>12. Will any person's rights be negatively affected by the proposed activity/ies?</b>	YES	<input checked="" type="checkbox"/> NO	Please explain
It is highly unlikely that people's right will be negatively affected by the proposed project as it brings about development for the community. People will commute easily from the local community to town. Such development will have a positive impact on people's lives.			
<b>13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?</b>	YES	<input checked="" type="checkbox"/> NO	Please explain
The development is not part of the urban edge.			
<b>14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?</b>	YES	<input checked="" type="checkbox"/> NO	Please explain
According to the Strategic Integrated Projects (SIPS) this project may possibly fall within the SIP6.			
<b>15. What will the benefits be to society in general and to the local communities?</b>	Please explain		
The bridge will allow improved mobility amongst adjoining areas. The local community will benefit directly from the improved infrastructure and temporary job creation.			
<b>16. Any other need and desirability considerations related to the proposed activity?</b>	Please explain		
There is a great need for the proposed project as a way of improving people's livelihood as well as human safety and mobility. The proposed development will have a positive impact on the area as this upgrade will provide an improved bridge structure. More development opportunities may arise in future as a result of this development. The proposed project will create temporary employment using local labour and gender equity during construction thus stimulating local economy.			



<b>17. How does the project fit into the National Development Plan for 2030?</b>	Please explain
<p>According to The National Development Plan 2030 (NDP), it aims to eliminate poverty and reduce inequality by 2030. As a plan for the whole country, some of its mentioned goals are; improving the quality of public services as critical to achieving transformation, increasing employment shaping budget allocation and growing the economy. The proposed project thus fits into the NDP as this project will entail the improvement of quality of public services for instance the construction of the Cwembe river bridge among several other structures that will be constructed simultaneously to it. Temporary employment will be created during construction thus contributing to the elimination of poverty and reducing inequality.</p>	
<b>18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.</b>	
<p><b>NEMA S23 general objectives have been considered as below:</b></p> <ul style="list-style-type: none"> <li>○ The affected communities, the general public, authorities and state Departments have been engaged and consulted with in the BA process from the onset.</li> <li>○ Potential environmental, cultural and socio-economic risks and impacts have been assessed and assigned significance ratings.</li> <li>○ Lodging of an application for environmental authorisation as required.</li> <li>○ The 'Duty of Care' principle is incorporated into the EMPr.</li> <li>○ Mitigation measures incorporated into the EMPr for all potential impacts.</li> </ul> <p>The project area has been assessed by a specialist and it has been identified that the proposed project will not affect any cultural heritage that might be present in the area. Public participation meeting has been held as a means of involving the public in decisions that might affect the environment.</p>	
<b>19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.</b>	
<p><b>According to section 2 of NEMA:</b></p> <p>Environmental principles guide stakeholders in the way in which they manage the environment. It is imperative that Environmental management put people and their needs first and also serve their cultural, social, physical, psychological and developmental interests fairly. NEMA section 2 talks about development in the sense that it must be environmentally, socially and economically sustainable.</p> <p><b>As per no 18 above:</b></p> <ul style="list-style-type: none"> <li>○ The affected communities, the general public, authorities and state departments have been engaged and consulted with in the BA process from the onset.</li> <li>○ Potential environmental, cultural and socio-economic risks and impacts have been assessed and assigned significance ratings.</li> <li>○ Lodging of an application for environmental authorisation as required.</li> <li>○ The 'polluter pays' principle is incorporated into the EMPr, and S24 NEMA.</li> <li>○ Mitigation measures incorporated into the EMPr for all potential impacts.</li> </ul>	

**11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES**

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

<b>Title of legislation, policy or guideline</b>	<b>Applicability to the project</b>	<b>Administering authority</b>	<b>Date</b>
National Environmental Management Act (No 107 of 1998; as amended)	The EIA Regulations are under NEMA and give rise to the need for an EIA for specific projects. The listed activities under here are subject to EIA	Provincial and National	1998
EIA Regulations of 2014	Listed activities herein are triggered.	National and Provincial	2014
NEMA Biodiversity Act (10 of 2004)	Protection of any chance biodiversity features, permitting requirements.	Provincial and National	1998
National Water Act (No. 36 of 1998)	protection of watercourses and permit/licence requirements before working in/near watercourses	Provincial and National	1998
National Heritage Resources act (Act 25 of 1999)	Excavations/drilling may occur which will expose substrates and possibly impact on heritage effects. Should archaeological artefacts be uncovered accidentally, then the contractor must stop work and inform Amafa, so that these may be preserved.	Provincial and National	1999
NEMA Waste Act (Act 59 of 2008 as amended)	Safe and correct, legal disposal of waste generated on site, by the generator of waste.	Provincial and National	2008
Conservation of Agricultural Resources Act (Act 43 of 1983)	The project must implement erosion controls to stabilize soil.	Provincial and National	1983
Hazardous Substances Act (Act 15 of 1973)	The contractor may be storing chemicals and fuel on site.	National and Provincial	1973
National Spatial Biodiversity Assessment (2011)	This assessment hopes to inform all private and public sector activities and provides tools for use in planning.	National (Sanbi)	2011
EMF and SDF for uThukela and Ladysmith	All projects to be guided by these documents.	Local	2012
All local and provincial regulations and by municipal by laws	The contract must identify, consider and adhere to all relevant laws (possibly via a legal register).	Local and Provincial	Current
Construction Regulations	The contractor will construct according to these laws.	Provincial and National	2003
Occupational Health and Safety Act	The contractor will comply with all requirements of the OHSACT.	Provincial and National	1993

**12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT**
**a) Solid waste management**

Will the activity produce solid construction waste during the construction/initiation phase?

XYES	NO
------	----

If YES, what estimated quantity will be produced per month?

m<sup>3</sup>

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

Solid waste will be produced during the construction phase and re-used on site for backfill. Other waste will be disposed via bins and then taken to municipal facilities for disposal.

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

Via nearest municipal facilities.

Will the activity produce solid waste during its operational phase?

YES	X NO
-----	------

If YES, what estimated quantity will be produced per month?

m<sup>3</sup>

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

N/A- no solid waste will be produced during the operational phase.

If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.

N/A

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

N/A

*If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.*

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA?

YES	X NO
-----	------

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

Is the activity that is being applied for a solid waste handling or treatment facility?

YES	X NO
-----	------

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

**b) Liquid effluent**

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

YES	X NO
-----	------

If YES, what estimated quantity will be produced per month?

m<sup>3</sup>

Will the activity produce any effluent that will be treated and/or disposed of on site?

YES	X NO
-----	------

If YES, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.



Will the activity produce effluent that will be treated and/or disposed of at another facility?

YES	X NO
-----	------

If YES, provide the particulars of the facility:

<b>Facility name:</b>	N/A		
<b>Contact person:</b>	N/A		
<b>Postal address:</b>	N/A		
<b>Postal code:</b>	N/A		
<b>Telephone:</b>	N/A	<b>Cell:</b>	N/A
<b>E-mail:</b>	N/A	<b>Fax:</b>	N/A

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

**Grey water will be re-used for dust suppression on site where applicable.**

### c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other than exhaust emissions and dust associated with construction phase activities?

X	NO
YES	

If YES, is it controlled by any legislation of any sphere of government?

YES	X NO
-----	------

If YES, the applicant must consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

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

**During construction, CO<sub>2</sub> emissions from construction vehicles will occur. Dust entrainment from construction vehicles and activities will also occur. The concentration will be low-moderate, and will be temporary and limited to the construction work area, for the duration of the construction phase.**

### d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?

YES	X NO
-----	------

If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority

### e) Generation of noise

Will the activity generate noise?

X	NO
YES	

If YES, is it controlled by any legislation of any sphere of government?

YES	X NO
-----	------

Describe the noise in terms of type and level:

**Low level noise will result from construction vehicles and machinery, and is not expected to exceed the occupational health and safety levels. Noise generated at the sites as a result of construction activity will be temporary.**

## 13. WATER USE

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

X Municipal	Water board	Groundwater	X River, stream, dam or lake	Other	The activity will not use water
-------------	-------------	-------------	------------------------------	-------	---------------------------------

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs? ***An application for a water use licence will be submitted once the EA is received.***

If YES, please provide proof that the application has been submitted to the Department of Water Affairs.

litres	
X YES	NO

#### 14. ENERGY EFFICIENCY

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

**The activity involves the construction of a bridge and pedestrian walkway, so in terms of design, energy efficiency is not required. During construction, generators can be used as an energy source. Further, construction will be confined to daylight hours to reduce the need for night time lighting.**

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

**Construction will be confined to daylight hours and generators will be used where feasible to serve as an energy source.**

**SECTION B: SITE/AREA/PROPERTY DESCRIPTION**
**Important notes:**

- For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section B and indicate the area, which is covered by each copy No. on the Site Plan.

Section B Copy No. (e.g. A):

1

- Paragraphs 1 - 6 below must be completed for each alternative.

- Has a specialist been consulted to assist with the completion of this section? ☐ YES ☒ NO

If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed and attach it in Appendix I. All specialist reports must be contained in Appendix D.

**Property description/physical address:**

<b>Province</b>	KwaZulu-Natal
<b>District Municipality</b>	uThukela District Municipality
<b>Local Municipality</b>	Ladysmith Local Municipality
<b>Ward Number(s)</b>	
<b>Farm name and number</b>	N/A
<b>Portion number</b>	N/A
<b>SG Code</b>	N/A

Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

**Current land-use zoning as per local municipality IDP/records:**

The road is zoned as road and road reserve

In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application.

Is a change of land-use or a consent use application required?

☐ YES ☒ NO

**1. GRADIENT OF THE SITE**

Indicate the general gradient of the site.

**Alternative S1:**

Flat	X	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
------	---	-------------	-------------	-------------	--------------	-------------	------------------

**Alternative S2 (if any):**

Flat		1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
------	--	-------------	-------------	-------------	--------------	-------------	------------------

**Alternative S3 (if any):**

Flat		1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
------	--	-------------	-------------	-------------	--------------	-------------	------------------

## 2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

2.1 Ridgeline	<input type="checkbox"/>	2.4 Closed valley	<input type="checkbox"/>	2.7 Undulating plain / low hills	<input checked="" type="checkbox"/>
2.2 Plateau	<input type="checkbox"/>	2.5 Open valley	<input checked="" type="checkbox"/>	2.8 Dune	<input type="checkbox"/>
2.3 Side slope of hill/mountain	<input type="checkbox"/>	2.6 Plain	<input type="checkbox"/>	2.9 Seafront	<input type="checkbox"/>
2.10 At sea	<input type="checkbox"/>				

## 3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

	Alternative S1:		Alternative S2 (if any): N/A		Alternative S3 (if any): N/A	
Shallow water table (less than 1.5m deep)	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	YES	NO	YES	NO
Dolomite, sinkhole or doline areas	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	YES	NO	YES	NO
Soils with high clay content (clay fraction more than 40%)	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	YES	NO	YES	NO
Any other unstable soil or geological feature	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	YES	NO	YES	NO
An area sensitive to erosion	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	YES	NO	YES	NO

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted.

## 4. GROUND COVER

### Please refer to Specialist Study

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

Natural veld - good condition <sup>E</sup>	<input checked="" type="checkbox"/> Natural veld with scattered aliens <sup>E</sup>	Natural veld with heavy alien infestation <sup>E</sup>	Veld dominated by alien species <sup>E</sup>	Gardens
Sport field	Cultivated land	<input checked="" type="checkbox"/> Paved surface	<input checked="" type="checkbox"/> Building or other structure	<input checked="" type="checkbox"/> Bare soil

If any of the boxes marked with an "E" is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn't have the necessary expertise.



According to Mucina and Rutherford (2006) the P263 is confined to one vegetation type, namely “Northern Kwazulu-Natal Moist Grassland”. This vegetation type usually comprises of tall grassland dominated by *Themeda triandra* and *Hyparrhenia hirta*. Woody vegetation often occurs in the valley areas, creating a savannah type effect. *Acacia sieberiana* is common.

The vegetation along the route was generally classified into three habitats, these being:

**1) Tall *H. hirta* dominated grassland with *A. sieberiana* encroachment (Eastern section)**

This vegetation group consisted primarily of tall *H. hirta*, with encroachment by woody species, predominantly *A. sieberiana*. Encroachment was generally limited to areas not disturbed by agricultural practices. These included rocky areas and slopes.

**2) Disturbed and secondary grassland dominated by *S. pyramidalis* (Central section)**

A heavily grazed secondary grassland vegetation that has been subjected to a high degree of human disturbance ranging from agriculture and fire to residential settlement. Erosion is prominent. *S. pyramidalis* was noted as the most common grass species. Exotic invasion is common in certain areas.

**3) “Short” pure grassland with *T. triandra* component (Western section)**

A grassland vegetation characterised by limited woody encroachment and more diverse grassland. The veld appears well managed, with *T. triandra* relatively common. Exotic invasion was minimal and obvious disturbances were minimal.

Of the three habitat types identified, the grassland associated with the western portion of the site was deemed to exhibit the greatest integrity. Vegetation within the road reserve was generally lacking throughout the route. None of the habitat types identified are considered to be sensitive.

Exotic invasion was limited, but present adjacent to the road way

Due to the road being an existing road with existing bridge crossings, the upgrade of the road and the crossings is considered to have an inherent LOW RISK as all activities will be taking place in an already altered environment.

The lack of regular flow within the streams and extent of existing damage caused by downstream scour suggests that the proposed new box culverts will have little additional influence of the functioning of the systems. The lack of any aquatic community negates any risk associated with the disturbance thereof.

## 5. SURFACE WATER

### Please refer to Specialist Study

Indicate the surface water present on and or adjacent to the site and alternative sites?

Perennial River	X YES	NO	UNSURE
Non-Perennial River	X YES	NO	UNSURE
Permanent Wetland	YES	X NO	UNSURE
Seasonal Wetland	X YES	NO	X UNSURE
Artificial Wetland	YES	X NO	UNSURE
Estuarine / Lagoonal wetland	YES	X NO	UNSURE

If any of the boxes marked YES or UNSURE is ticked, please provide a description of the relevant watercourse.

The streams over which the culverts for the road will be located are non perennial and also peak during heavy rains. Please see specialist study for details.

**The PES and EIS assessment sheets for the crossings are provided in the specialist study as Appendix C**

**All the watercourses (non wetlands) were considered to be of LOW ecological importance and sensitivity, primarily due to their ephemeral nature and lack of aquatic community. The PES values provided are believed to be over stated due to high ratings having been received for criteria such as “Introduced Stream Biota” – there are no introduced stream biota, but there is also no instream biota due to the lack of water. The systems are considered to be insignificant from an aquatic ecological perspective.**

## 6. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

<b>X Natural area</b>  The bridge sites are located over a watercourse with limited improvements and human habitation. Sections of the road way are located in the vicinity of grassland.	Dam or reservoir	Polo fields
<b>X Low density residential</b>  Few houses were noted in the area.	Hospital/medical centre	Filling station <sup>H</sup>
Medium density residential	School	Landfill or waste treatment site
High density residential	Tertiary education facility	Plantation

Informal residential <sup>A</sup>	Church	X Agriculture The existing road and road reserve, as well as bridge and culvert construction, lie at a majority in the vicinity of agricultural areas.
Retail commercial & warehousing	Old age home	X River, stream or wetland The bridges will be built in the river so the impacts of construction and operation will be direct viz, excavation/piling, foundations, formwork, etc. The application is to conduct work in the river. Impacts as per assessment below.
Light industrial	Sewage treatment plant <sup>A</sup>	Nature conservation area
Medium industrial <sup>AN</sup>	Train station or shunting yard <sup>N</sup>	Mountain, koppie or ridge
Heavy industrial <sup>AN</sup>	Railway line <sup>N</sup>	Museum
Power station	Major road (4 lanes or more) <sup>N</sup>	Historical building
Office/consulting room	Airport <sup>N</sup>	Protected Area
Military or police base/station/compound	Harbour	Graveyard
Spoil heap or slimes dam <sup>A</sup>	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	Other land uses (describe)

If any of the boxes marked with an "N" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

N/A

If any of the boxes marked with an "AN" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

N/A

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

N/A

Does the proposed site (including any alternative sites) fall within any of the following:

Critical Biodiversity Area (as per provincial conservation plan)	YES	X NO
Core area of a protected area?	YES	X NO
Buffer area of a protected area?	YES	X NO
Planned expansion area of an existing protected area?	YES	X NO
Existing offset area associated with a previous Environmental Authorisation?	YES	X NO
Buffer area of the SKA?	YES	X NO

If the answer to any of these questions was YES, a map indicating the affected area must be included in Appendix A.

## 7. CULTURAL/HISTORICAL FEATURES

### Please refer to specialist study

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999),	YES	X NO
---	-----	------

including Archaeological or paleontological sites, on or close (within 20m) to the site? If YES, explain:

Uncertain

**The heritage specialist study concluded that the 'bridge and culvert construction project revealed no cultural heritage resources. Therefore from a heritage point of view, the proposed road upgrade and associated activities can proceed.**

If uncertain, conduct a specialist investigation by a recognised specialist in the field (archaeology or palaeontology) to establish whether there is such a feature(s) present on or close to the site. Briefly explain the findings of the specialist:

**A specialist is attached.**

Will any building or structure older than 60 years be affected in any way?

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.

YES	X NO
YES	X NO

## 8. SOCIO-ECONOMIC CHARACTER

### a) Local Municipality

Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

Level of unemployment:

According to Emnambithi Local Municipality IDP 2015-2016 there are 60 598 registered households predominately within the urban areas. More than half of the population lives within the income bracket of less than R 100 000 per year. Out of the total population of Ladysmith only 24.96% are households that receive income which automatically result with the remaining 75.04 % being supported by social grants. Perpetrators of such are the youth as it stands at 43% unemployment rate.

Economic profile of local municipality:

According to the IDP, 2015/2016, Emnambithi/Ladysmith Local Municipality (ELM) socio-economic status indicates high levels of income inequality and resource distribution inconsistencies. These are associated with the differences between race groups in terms of living standards. The ELM socioeconomic framework also shows underdevelopment and a backlog in service delivery with focus to rural areas as well as the degradation of the CBD and lack of services to sustain and support new developments within the urban areas in Ladysmith. Through the years the Emnambithi Municipality has made provision for basic services to be delivered to rural areas as a result most community have access to sanitation ,water and households. With the adjustment of fund in the past concentrated mainly on provision of services to areas previously deprived the CBD has deteriorated in the maintenance and extension of the existing infrastructure for new developments which is a great foundation for economic growth for the Municipality.

According to the EMF Formal agriculture is mostly concentrated within Emnambithi, Umtshezi and Ukhahlamba Local Municipal areas, with the greatest concentration being located within the Thukela River valley, and the valleys of other major rivers where there is a reliable source of water. The local municipal areas of Imbabazane and Indaka are mostly Ngonyama Trust land, where subsistence farming dominates agronomy. Livestock grazing within these communal areas is commonplace. Inadequate veld management, however, within these areas means that erosion is a perpetual ecological impact, with the formation of deep gulleys being readily observed throughout the region.

**Level of education:**

According to the IDP 2015/2016 Illiterate individuals within Emnambithi Local Municipality have gradually decreased from 1996 to 2014 with less than 10% of the Ladysmith population that have not had the opportunity of receiving any schooling. As much as most of the population enrolls in educational facilities, only 16.2% of them are able to complete matric and only 5% enrol for higher education. This indicates a gap within the youth of Ladysmith as most fail to neither complete matric nor enrol for higher education. Statistics reveal that Ladysmith Municipality does not have enough skilled individuals to increase the productivity in Ladysmith and with these trends continuing Ladysmith will face a very high skills shortage to develop and sustain the town.

**b) Socio-economic value of the activity**

What is the expected capital value of the activity on completion?	R10m
What is the expected yearly income that will be generated by or as a result of the activity?	-
Will the activity contribute to service infrastructure?	X YES NO
Is the activity a public amenity?	YES X NO
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	50
What is the expected value of the employment opportunities during the development and construction phase?	R2m
What percentage of this will accrue to previously disadvantaged individuals?	70%
How many permanent new employment opportunities will be created during the operational phase of the activity?	-
What is the expected current value of the employment opportunities during the first 10 years?	-
What percentage of this will accrue to previously disadvantaged individuals?	-

**9. BIODIVERSITY**

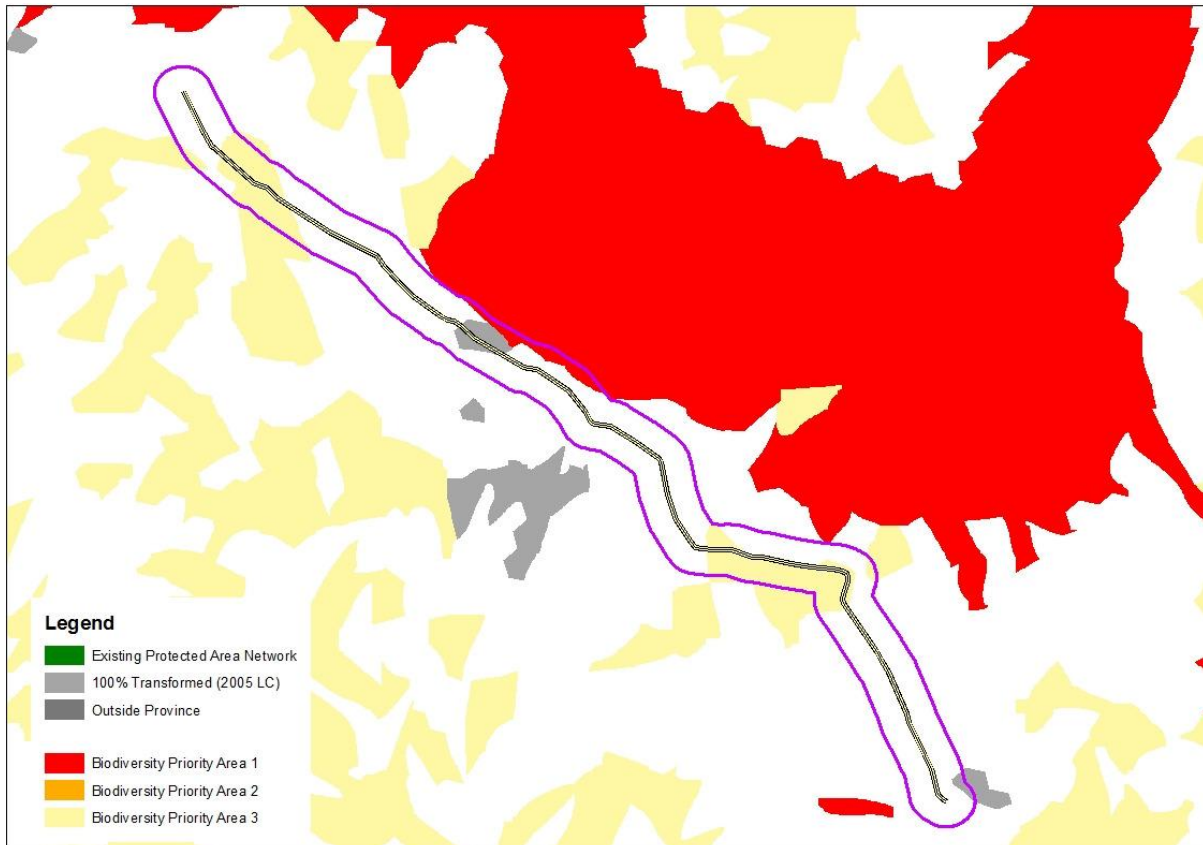
Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult <http://bgis.sanbi.org> or BGIShelp@sanbi.org. Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as Appendix D to this report.

**a) Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)**

Systematic Biodiversity Planning Category	If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
---	--



Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	X Other Natural Area (ONA)	X No Natural Area Remaining (NNR)	<p>According to the specialist study and B-GIS, the dominant vegetation type is 'Northern Kwazulu-Natal Moist Grassland' which is considered vulnerable by Mucina and Rutherford (2006). A number of NFEPA wetland areas fall within 500 m of the site. Both natural and artificial systems were noted. The affected area is of limited conservation importance with the majority of the area falling outside of biodiversity priority areas or considered "transformed". Note that the roadway itself is not considered to lie within the CBA but such areas exist within 500m of the roadway/structures.</p>



*Critical Biodiversity Areas within the study area, as shown in specialist study*

**b) Indicate and describe the habitat condition on site**

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	10%	The roadway, which is existing, is a disturbed structure as is the bridge/culverts sites. Most of the surrounding area is natural. Housing density is low.
Near Natural (includes areas with low to moderate level of alien invasive plants)	10%	Low level agriculture was observed along the road, mainly cattle grazing.
Degraded (includes areas heavily invaded by alien plants)	20%	Very little alien invasion area was observed on most of the sites. Erosion and scour is also noted on site.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	60%	The existing P263 gravel road and existing structures are the only features on site and within 100m of site. Agriculture is practised in the area and these have served to transform or disturb the ecological regime on site by way of cattle grazing.

**c) Complete the table to indicate:**

- (i) the type of vegetation, including its ecosystem status, present on the site; and
- (ii) whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems		Aquatic Ecosystems							
Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	Critical	Wetland (including rivers, depressions, channelled and unchannelled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline		
	Endangered								
	X Vulnerable								
	Least Threatened	X YES	NO	UNSURE	YES	X NO	YES	X NO	

**d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)**
**GENERAL OVERVIEW**

According to Strategic Environmental Planning Tool for Ladysmith Local Municipality, it is noted that the dominant vegetation types in the area include: the Northern KwaZulu Natal Shrubland; the Thukela Thornveld, KZN moist grassland, the KwaZulu Natal Highland Thornveld and Tugela Valley Bushveld. Smaller pockets of other vegetation types include: the Northern KwaZulu Natal Shrubland, the Northern Afrotropical Forest, Income Sandy Grassland, Eastern Temperate Freshwater Wetlands, Eastern Free State Clay Grassland and Basotho Montane Shrubland (Mucina & Rutherford, 2006).

According to the EMF of Ladysmith Local Municipality, the area is also characterised by KwaZulu Natal Highland Thornveld is found in KwaZulu-Natal Province and it occurs on both dry valleys and moist upland in a series of several patches in the central-northern regions of KwaZulu-Natal. The most extensive area is found in the region from Ladysmith, Winterton, Estcourt and Colenso, between Mooi River and Greytown, between Pomeroy and Babanago, and further north in a triangle between Vryheid, Paulpietersburg and Louwsburg as well as a large patch around Newcastle (Mucina and Rutherford, 2006).

The conservation status of this vegetation type indicates that KwaZulu Natal Highland Thornveld is classified as Least threatened with a national conservation target of 23%. Only about 2% is statutorily conserved in the Spioenkop, Weenen, Ntinini, Wagendrift, Moor Park and Tugela Drift Nature Reserves. More than 16% has been transformed for cultivation and by urban sprawl as well as by building of dams (Craigie Burn, Spioenkop, Wagendrift and Windsor). Alien plant species such as Opuntia, Eucalyptus, Populus, Acacia and Melia are becoming invasive in places, but probably the greatest threat to the remaining natural areas of this unit is bush encroachment (Mucina and Rutherford, 2006). The vegetation and landscape features comprise of Hilly and rolling landscapes supporting tall tussock grassland usually dominated by Themeda triandra and Hyparrhenia hirta. Open Acacia sieberiana var. woodii savannoid woodlands encroach up the valleys, usually on disturbed (strongly eroded) sites

The site falls within the KZN Moist Grassland vegetation type.

Northern and north-western regions of the Province, where it forms a discontinuous rim around the upper Thukela Basin and is situated almost entirely within the catchment of the Thukela River. It lies between the drier Gs 6 KwaZulu-Natal Highland Thornveld and the moist upland vegetation of mainly Gs 3 Low Escarpment Moist Grassland to the north and Gs 10 Drakensberg Foothill Moist Grassland to the west. The most extensive areas are in the vicinity of Winterton, Bergville, Fort Mistake, Dannhauser, Dundee, north of 30 | P a g e Ladysmith and west of Newcastle. At higher altitudes this unit is usually surrounded by Gs 3 Low Escarpment Moist Grassland in the north and Gs 10 Drakensberg Foothill Moist Grassland in the west and south. At lower altitudes Gs 6 KwaZulu-Natal Highland Thornveld and SVs 2 Thukela Thornveld usually occur to the east. Altitude 1 040–1 440 m. Vegetation and Landscape features: Hilly and rolling landscapes supporting tall tussock grassland usually dominated by Themeda triandra and Hyparrhenia hirta. Open Acacia sieberiana var. woodii savannoid woodlands encroach up the valleys, usually on disturbed (strongly eroded) sites.

**As per the site specific specialist study, the road upgrade falls within two quaternary catchments, both of which fall within the Sundays River catchment.**

**The dominant vegetation type is Northern Kwazulu-Natal Moist Grassland which is considered vulnerable by Mucina and Rutherford (2006). A number of NFEPA wetland areas fall within 500 m of the site. Both natural and artificial systems were noted. The affected area is of limited conservation importance with the majority of the area falling outside of biodiversity priority areas or considered “transformed”**

## SECTION C: PUBLIC PARTICIPATION

### 1. ADVERTISEMENT AND NOTICE

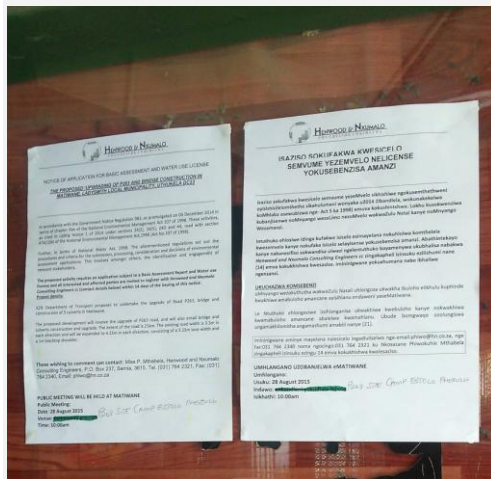
<b>Publication name</b>	The Mercury and Isolezwe	
<b>Date published</b>	21 August 2015	
<b>Site notice position</b>	Latitude	Longitude
	No latitude or longitude was obtained however, on site notices were placed at Matiwanekop Trading cc, local taxi rank, local tuck shop (Mac shop), local post box, shelter, 2 notices placed at the clinic and Vusumatiwane General Dealer shop and indicated the details of the project and meeting.	
<b>Date placed</b>	05 August 2015	

Include proof of the placement of the relevant advertisements and notices in Appendix E1.

Proof of newspaper adverts



Proof and examples of notices placed at project area



Notice at Matiwaneskop Trading



Notice at local shelter

Public Meeting pictures





## 2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 41(2)(e) and 41(6) of GN 733.

Key stakeholders (other than organs of state) identified in terms of Regulation 41(2)(b) of GN 733

**SEE COMPLETE CR TABLE ATTACHED**

Title, Name and Surname	Affiliation/ status	key stakeholder	Contact details (tel number or e-mail address)
-------------------------	------------------------	-----------------	---

Include proof that the key stakeholder received written notification of the proposed activities as Appendix E2. This proof may include any of the following:

- e-mail delivery reports;
- registered mail receipts;
- courier waybills;
- signed acknowledgements of receipt; and/or
- or any other proof as agreed upon by the competent authority.

## 3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

**SEE COMPLETE CR TABLE ATTACHED**

Summary of main issues raised by I&APs	Summary of response from EAP
--	------------------------------

## 4. COMMENTS AND RESPONSE REPORT

**SEE COMPLETE CR TABLE ATTACHED**

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to the Final BAR as Appendix E3.

## 5. AUTHORITY PARTICIPATION

**SEE COMPLETE CR TABLE ATTACHED**

Authorities and organs of state identified as key stakeholders:



<b>Authority/Organ of State</b>	<b>Contact person (Title, Name and Surname)</b>	<b>Tel No</b>	<b>Fax No</b>	<b>e-mail</b>	<b>Postal address</b>

Include proof that the Authorities and Organs of State received written notification of the proposed activities as appendix E4.

In the case of renewable energy projects, Eskom and the SKA Project Office must be included in the list of Organs of State.

## **6. CONSULTATION WITH OTHER STAKEHOLDERS**

### **SEE COMPLETE CR TABLE BELOW**

Note that, for any activities (linear or other) where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub-regulation to the extent and in the manner as may be agreed to by the competent authority.

Proof of any such agreement must be provided, where applicable. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of the public participation process.

A list of registered I&APs must be included as appendix E5.

Copies of any correspondence and minutes of any meetings held must be included in Appendix E6.

ROLEPLAYER	CONTACT	COMMENT	EAP RESPONSE
<b>Department of Agriculture, Forestry, and Fisheries</b>  <i>J. Maivha</i>	Tel: 033 392 7721 <a href="mailto:JeffreyMAI@daff.gov.za">JeffreyMAI@daff.gov.za</a>	<u>Comment on BID</u>  The vegetation summary provided in the BID indicates that the surrounding area mainly comprise of grasslands, woody species and sparse woodlands. Although it further indicates that no forests will be impacted upon by the project, the Department requests that a complete vegetation assessment report should be incorporated in the basic assessment report. This study will assist in determining the impact that the development may have on indigenous trees and/or protected trees in terms of the National Forests Act of 1998 (Act no. 84 of 1998). Further comments will be issued upon receipt and review of the DBAR.	-Noted ecological study done and is attached.
<b>Department of Water Affairs and Sanitation</b>  <i>C. Moonsamy</i>	Tel: 031 336 2700  PO Box 1018 Durban 4000  9 <sup>th</sup> Floor Southern Life 88 Joe Slovo Street Durban	<u>Comments on BID</u> -No comments received.	-Reminders sent.

	4001		
<b>Ezemvelo KZN Wildlife</b>  <i>Dominic Wieners</i>	Tel: 033 845 1999 Fax: 033 845 1499 <a href="mailto:Dominic.Wieners@kznwildlife.com">Dominic.Wieners@kznwildlife.com</a>  P.O Box 13053 Cascades, Pietermaritzburg 3202	<u>Comments on BID</u> - No comments received.	-Reminders sent.
<b>UThukela District Municipality</b>  <i>D. Ranalingum</i>	Tel 036 638 5100/ 036 368 2400 <a href="mailto:dan@uthukeladm.co.za">dan@uthukeladm.co.za</a>  36 Lyell Street P.O Box 116 Ladysmith 3370	<u>Comment on BID</u> -No comments received.	-Reminders sent.
<b>Ladysmith Local Municipality</b>  <i>T.P Ndlovu</i>	Tel: 036 637 2231 <a href="mailto:tpndlovu@ladysmith.co.za">tpndlovu@ladysmith.co.za</a>  PO Box 195 Ladysmith 3270	<u>Comment on BID</u> -No comments received.	-Reminders sent.
<b>Department of Cooperative Governance and Traditional Affairs</b>	Tel: 033 395 2831 <a href="mailto:Thulani.Bhengu@kzncogta.gov.za">Thulani.Bhengu@kzncogta.gov.za</a>	<u>Comment on BID</u> -No comments received.	-Reminders sent.

<i>T. Bhengu</i>			
<b>Department of Human Settlements</b>  <i>P. Woolf</i> <i>N. Pillay - PA</i>	Tel: 031 336 5416 <a href="mailto:Peter.woolf@kzndhs.gov.za">Peter.woolf@kzndhs.gov.za</a>  Private Bag X5467 Durban 4000	<u>Comment on BID</u>  Kindly be advised that the KZN Department of Human Settlements has no objections to this upgrade as there are no human settlement projects planned at this stage as per the comments received from the Ladysmith Local Municipality.	-Noted.
<b>Bianca Torre - IAP</b>	BiancaT@L2B.co.za	Requested that BID documents and any other informative documentation to be sent	Noted. Bid sent.
<b>Nicolette Lovett - IAP</b>		Requested that BID documents and any other informative documentation to be sent to them as part of their Environmental group assignment	Noted. Bid sent.

## PUBLIC MEETING

A meeting was conducted by the EAP and the local councillor on 28 August 2015, at Matiwane, site office. The public were invited to attend via an advertisement and facilitation by a CLO.

No objections were raised at the meeting, and the local community stipulated that they were in full support of the project and have been aware of the project for a while now, however, a member of the community did point out that the road has not been finished and it has taken a long time to finish thus they have had accidents due to this. They expressed that there is an urgent need for development in Matiwane especially the road.

The questions raised during the meeting are stated below-

Comments	Responses
The community asked whether road construction has finished or is it still going to continue.	The councilor, Mr Hlatshwayo, explained that Henwood and Nxumalo Consulting Engineers is currently not dealing with road construction, but rather dealing with the construction of Cwembe river bridge and culverts along the road. And also concerned about putting in an application for

	WULA. HN stated that road construction is now part of the application and construction has been put on hold until approvals are received.
A member of the community asked how long will the construction process take.	At this stage nothing can be confirmed as construction has not yet commenced. DEDTEA has stated that no work can continue without an EA.
The community asked what a culvert is and how many will be constructed.	In simpler terms a culvert is a smaller and a much lower level bridge as compared to the normal high level bridge.
There was a request from the community that road signs be placed along the construction corridor during construction to make it easier for the community to know which areas to avoid and what is to be expected as one drives along the road.	The response from the PLC was that during construction, the contractor does put up signs but sometimes these get stolen by the people from the community, which then makes it difficult for the contractor to keep on replacing them. The locals must discipline themselves in that regard.
The community had a complaint with regard to the road not being maintained, they said their cars are getting damaged and it is costing them lots of money to fix their cars. The requested that the road be maintained while construction is still on hold.	There was no comment from the PLC and EAP. The only comment made was that, that is a contractor's problem and no one can speak on their behalf or do anything. Also that an EA is required before road works can proceed.
The community was interested in finding out how many people will be employed once construction of culverts commences.	Mr Ntuthuko Mkhwanazi confirmed that at this stage nothing can be confirmed as construction has not yet commenced. Mr Hlatshwayo added onto what was said by the Ibhongo representative and supported his statement.



## SECTION D: IMPACT ASSESSMENT

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

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

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

A complete impact assessment in terms of Regulation 19(3) of GN 733 must be included as Appendix F

### DESCRIPTION OF IMPACT ASSESSMENT METHODOLOGY

Nature	Include a descriptive sentence	
Probability	Categories 1 – 5	
	1	Improbable (less than 24% chance of occurring)
	2	Probable (25 – 49%)
	3	Likely (50 – 69%)
	4	Very likely (70 – 89%)
	5	Definite (90 – 100%)
Frequency	Categories 1 – 5	
	1	Very rare to remote (once or twice a decade)
	2	Unusual to occasional (once or twice every 5 years)
	3	Frequent (a few times a month)
	4	Very frequent (a few times a week, to daily)
	5	Continuous (daily to a significant percentage of every day)
Extent	Categories 1 – 5	
	1	Footprint / site
	2	Local
	3	Regional
	4	National
	5	International (trans-boundary)
Duration	Categories 1 – 5	
	1	Short (few days to a few months, less than a phase)
	2	Short (few months, or less than a phase in total)
	3	Medium (a few years, significant part of a phase)
	4	Long (lifespan of development (i.e. all of operation))
	5	Permanent
Intensity	Categories 1 – 5	
	1	Very low – natural processes not affected
	2	Low – natural processes slightly affected
	3	Medium – natural processes continue but in a modified manner
	4	Medium-high – natural processes are modified significantly
	5	High – natural processes disturbed significantly so that they cease to occur (temporarily / permanently)
Significance	<b>Significance = P + F + E + D + I</b> Minimum value of 5, maximum of 25 Status determines if positive / negative	

	Any positive value	No impact 1. High to low consequence, probability not an issue as positive, <b>no mitigation required</b>
	1– 5	Low 2. Low consequence, probably, <b>minimal mitigation may be required</b>
	6 to 10	Medium 3. Medium consequence, probably, <b>mitigation is advised / preferred</b>
	11 to 15	Medium–high 4. Medium to high consequence, probably to very probable, <b>mitigation is necessary</b>
	16 to 20	High 5. High consequence, probably / definite, <b>mitigation is essential</b>
	21 to 25	Extreme 6. Very high consequence, definite, <b>fatal flaw!</b>

**IMPACT ASSESSMENT**

Please refer to draft EMPr for full mitigation measures:

**Preconstruction/planning and design phase impacts**
**Alternative A1**

Potential Impact	Description of impact	Mitigation
Climate change	<p>Slight changes in temperature and climate have major consequences on agricultural soil in relation to erosion, acidity and nutrition value. With climate change often resulting in an increase in flood and storm events, construction of a weak structure will lead to further impacts on the watercourse, since it will continuously erode and will need increased repair and maintenance interventions. This will also reduce the resiliency and adaptation of local communities who can be classified as poor in the area, since it will be difficult for them to access services and employment, when the river floods.</p> <p>Improving the road network will enhance adaptability.</p>	<p>The design/layout of the bridge/culverts will be able to withstand increased storm/flood events during peak rainfall periods and increasing traffic volume. It is also be a more elevated structure that will result in a slight decrease in the containment of upstream water flow. The road should be upgraded to tar with drainage</p>
Indirect impacts : N/A		
Cumulative Impacts : N/A		
No Go		
<p>The need for the road upgrade, as well as a bridge and construction of culverts at these specified locations arises from the Department's initiatives to improve the old structures that are a safety hazard to the local community and to improve the road network.</p> <p>Should the proposed project not be undertaken, then the current status quo will remain. The community will continue to use the existing old structures that pose a danger to the community.</p>		

## Construction and operational phase impacts

## Alternative A1

Potential Impact	Description of impact	Mitigation
<b>Direct Impacts</b>		
Construction related impacts	Impacts as a result of direct construction related activity, including site set up, will comprise the bulk of the impacts on the receiving environment. These will extend to movement of heavy vehicles and plant, supply of construction material, dust entrainment, diesel/fuel spills.	<ul style="list-style-type: none"> <li>-The camp site, parking and storage areas must be determined in conjunction with the Engineer and approved by the ECO. A camp site layout plan must be submitted to the ECO for review.</li> <li>-A detailed construction method statement must be compiled and submitted to the engineer and ECO for review, detailing method of working in the river and mitigation for this</li> <li>-All work is to be confined to pre-agreed demarcated working areas. No construction activity outside of designated working area/road reserve</li> <li>-Where vehicles are serviced on site, this must be done within a designated workshop area, lined by an impermeable material or hard surface, or done within a bund area. A service schedule must be maintained for all plant, to prove that they are roadworthy and do not cause undue spills.</li> <li>-Construction vehicles must comply with speed limits to reduce dust dispersion.</li> <li>-Fuel/diesel spills must be prevented in the first instance, minimized and cleaned immediately upon discovery. Spill kits must be available on site and drip trays must be used.</li> </ul>
Watercourse Impacts- Surface water	<p>Surface water impacts will be expected due to the bridge construction activities.</p> <p>Impact on the watercourse beds and water quality may occur due to excavations and foundations within the banks and bed of the river.</p> <p>Sedimentation/siltation and erosion of soils may occur due to dredged material and coffer dam/berm material being eroded by water flow as well as bare soil. Bank collapse/slope failure is also possible as a result of exposed soils after clearing and grubbing has occurred.</p>	<ul style="list-style-type: none"> <li>-It is strongly recommended that works take place in the dry season when flow velocities will be at their lowest, and thus more easily manageable.</li> <li>-Spill prevention measures must be put in place both up and down stream of the area where works are to be installed prior to any activities taking place.</li> <li>-Flow expected to be minimal during most of the year. Temporary measures such as sand bags should be used to protect against sudden flow changes due to localised rain fall.</li> <li>-Where there is flow in the streams, is recommended that river flow be diverted around the works on one side of the channel with the use of temporary (e.g. sand bags, coffer dam etc.) to keep the works dry. Once work is completed on the one side, the river flow should be diverted through the newly constructed bridge section and restored substrate to allow work to be completed on the opposite side. Thus no total obstruction</li> </ul>

		of flow must occur and construction will occur in half widths.
Heritage	During construction, subsurface artefacts may be uncovered from excavations.	<p>-If the size of the construction corridor is increased at a later stage, a heritage specialist should be involved in order to assess how the increase in the corridor width will affect heritage resources.</p> <p>-Archaeological material, by its very nature, occurs below ground. The developer should therefore keep in mind that archaeological sites might be exposed during the construction phase. If anything is noticed, work in that area should be stopped and the occurrence should immediately be reported to the KwaZulu Natal Provincial Heritage Resources Authority (Amafa) at 033 394 6543 and the author at 083 375 4270. The find should then be investigated and evaluated by the author, who will provide recommendations on when construction activities in the area where the discovery was made can resume</p>
<b>Indirect Impacts</b>		
Watercourse and Soil Impacts- Surface and ground water quality	<p>Surface water impacts can occur due to hydrocarbon spills, mixing of cement directly on the ground and on unprotected surfaces, cement/concrete spills, waste mismanagement.</p> <p>Movements into restricted areas, such as permanently wet zones can cause impacts on surface and groundwater.</p> <p>Spillage of cement/concrete, waste, litter into the watercourse can cause pollution of both surface and subsurface water and eventually pollute downstream areas.</p> <p>Deposition of sediment into the watercourse due to disturbed, exposed areas and banks, or fill material, can cause increased sedimentation on site and downstream.</p>	<p>-Spill prevention and emergency response plan is required from the relevant contractor.</p> <p>-Spill kits must be available on site.</p> <p>-Oil/hydrocarbon spills must be prevented in the first instance and cleaned immediately upon discovery.</p> <p>-Washing of vehicles will only be permitted further than 32m away from the watercourse, on an impermeable wash bay area.</p> <p>- Silt curtains should be positioned perpendicular to flow below the working area Only effective during low/normal flow. Potential for them to get washed away during localised heavy rainfall</p>
Fauna and flora (ecology and loss of habitat)	<p>The fauna that inhabits the ELM area comprises of various mammals; arachnids, various reptile species, insect species, amphibians and various bird species and thus construction activity will discourage habit for smaller sedentary species such as amphibians.</p> <p>Clearing of vegetation and grassland for work along the road will result in minimal loss of habitat at the disturbed site.</p>	<p>-The site must be inspected for smaller fauna or nesting/brooding activity prior to coffer/berm construction, any blasts or disturbance to river bed. Fauna that cannot relocate themselves must be rescued and relocated, including prior to any blast activity.</p> <p>-Should any chance finding of red data species occur, a permit must be obtained prior to disturbance/removal/relocation.</p> <p>-An alien plant removal and control plan is required for the site.</p> <p>-Construction must be done in half widths, preferably during the dry</p>

## BASIC ASSESSMENT REPORT

	The establishment and spread of alien species may occur on site during construction.	season, to avoid significant impacts on fish movements. An alien plant control program must be developed, approved by the ECO and implemented on an ongoing basis
Noise	Operation of construction plant, staff will generate a potential for increased noise at the work area, which is otherwise generally quiet.	- Should blasting be required, the community must be informed at least one week prior and again on the day of the blast. - Vehicles must adhere to speed limits and be serviced according to a service schedule.
Air quality	Dust entrainment and vehicular emissions (exhaust fumes) are expected during construction, from driving of vehicles on access and cleared surfaces, and operation of plant, stripped groundcover/soil/bare surfaces, stockpiles	- Vehicles must adhere to speed limits at all times. - Wetting of exposed surfaces must be undertaken to reduce dust emissions.
Waste	Waste will be generated by the construction activity. This includes waste rock/spoil, plastic, paper, steel, concrete rubble, recyclables etc.	- Solid waste must be controlled and managed on a daily basis, according to a waste management method statement. This method statement must be approved by the ECO and engineer and must be implemented on a daily basis.
Traffic	An increase in traffic volumes will be expected, arising from all plant to be used on site during construction. Slow moving construction vehicles on the roads can be expected. There may be damage to existing access due to the volume of heavy traffic.	- Appropriate temporary traffic control and warning signage must be erected and implemented on the affected roads - Construction workers/construction vehicles must take notice of normal road safety regulations. A courteous and respectful driving manner should be enforced and maintained so as not to cause harm to any individual; and - Any damage to surrounding roads should be repaired as soon as possible to prevent further deterioration to the road surface.
Safety and security	During construction, opportunities may be presented for crime to occur. Safety risks to staff and community members via excavations can occur.	- The site camp must be fenced and access controlled. - Contractor to adhere to the OHSACT.
<b>Operational phase</b>		
Rehabilitation	Once construction is complete and then just before the bridges/roads is ready for use, all disturbed areas must be rehabilitated to avoid erosion impacts and damage to road surface and surrounding environment	- A rehab plan or method statement that includes erosion controls, alien plant removal and maintenance of rehab, must be prepared by the contractor and submitted to the engineer and ECO for approval. - No specific "rehabilitation" is recommended however revegetation of disturbed areas through grassing and basic management is recommended. The aim being to stabilise the soil and allow natural forces to dictate the return of suitable species. The site must be stabilized using suitable environmental (grassing/gabion) and engineered solutions for scour/erosion protection
<b>Cumulative impacts</b>		



## BASIC ASSESSMENT REPORT

Impact of bridges on water flow during operation	Possibly reduced surface area for flow; upstream/backwater accumulation, increase in erosive capacity of the watercourse, and destabilizing sediment transport, concrete enrichment is also possible, as well, but only during flow periods.	The bridge must allow for the existing hydraulic regimes as far as possible.
Socio-economic (+)	The bridge/culvert construction and road works will provide temporary employment for locals. In the long term, an enhanced road network will enable social development and economic activities.	Local labour must be given preference for job opportunities.
<b>No Go</b>		
<p>The need for the road upgrade, as well as a bridge and construction of culverts at these specified locations arises from the Department's initiatives to improve the old structures that are a safety hazard to the local community and to improve the road network.</p> <p>Should the proposed project not be undertaken, then the current status quo will remain. The community will continue to use the existing old structures that pose a danger to the community.</p>		

A complete impact assessment in terms of Regulation 19(3) of GN 983 must be included as Appendix F.

**TABLE OF IMPACTS AND SIGNIFICANCE**

NATURE OF IMPACT	DURATION		EXTENT		PROBABILITY		MAGNITUDE / SEVERITY INTENSITY RISK		REVERSABILITY		SIGNIFICANCE	
	Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation
Watercourse/soil impacts/ecology	2	1	2	1	1	0.3	2	1	2	1	9	4.03
Noise and air quality	2	1	2	1	0.6	0.2	2	1	1	1	7.06	4.02
Waste management	2	1	2	1	0.7	0.1	2	1	1	1	9.07	4.01
Safety, security, heritage	1	1	1	1	0.4	0.1	2	1	1	1	6.04	4.01
Rehabilitation	2	1	2	1	1	0.2	2	1	2	1	13.02	4.02
* Socio-economic	3	3	2	2	0.4	0.4	2	2	1	1	8.40 (+)	8.40 (+)

## 2. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

### IMPACT STATEMENT

#### Summary of impacts

Impact	Significance without mitigation	Significance with mitigation
Watercourse and soil impacts, ecology	Medium	Low
Noise and air quality	Medium	Low
Waste management	Medium	Low
Heritage, Safety, security	Medium	Low
Rehab	Medium	Low

Taking into account the assessment and rating above, the bridge/culvert construction and road upgrade will have some moderate impact on the environment during the construction phase. However, mitigation measures, once adopted, as per the EMP, will ensure that impacts are reduced to low significance.

Thus, based on the above, the option of activity or project construction is permissible.

#### Alternative A (preferred alternative)

As above

#### Alternative B

N/A

#### Alternative C

N/A

#### No-go alternative (compulsory)

The need for the road upgrade, as well as a bridge and culvert construction at the specified locations arises from the Department's initiatives to improve the old structures that are a safety hazard to the local community and to improve the road network. This project is a strategically important project endorsed by parliament.

Should the proposed project not be undertaken, then the current status quo will remain. The community will continue to use the existing old structures that pose a danger to the community.

**SECTION E. RECOMMENDATION OF PRACTITIONER**

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?

<input checked="checked" type="checkbox"/> YES	<input type="checkbox"/> NO
--	-----------------------------

If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment).

N/A
-----

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application.

**It is recommended that alternative A1 and S1 (i.e. construction of bridges and culverts and upgrade of road) be accepted from environmental and socio-economic perspective.**

**Note further that the ecological specialist study has concluded that 'due to the road being an existing road with existing bridge crossings, the upgrade of the road and the crossings is considered to have an inherent LOW RISK as all activities will be taking place in an already altered environment.**

**The lack of regular flow within the streams and extent of existing damage caused by downstream scour suggests that the proposed new box culverts will have little additional influence of the functioning of the systems. The lack of any aquatic community negates any risk associated with the disturbance thereof.'**

**The heritage specialist study concluded that the 'bridge and culvert construction project revealed no cultural heritage resources. Therefore from a heritage point of view, the proposed road upgrade and associated activities can proceed.**

**The mitigation measures and controls specified in the EMPr and specialist studies must be adhered to.**

**The construction phase of the project must be monitored by an ECO, on a monthly basis, who should ensure compliance with the construction EMPr. It is recommended that the persons compiling the EIA be responsible for auditing. Please see the EMPr attached as Appendix F for further details on management of the site during construction.**

**The need for the road upgrade, as well as bridge and culverts construction at the specified locations arises from the Department's initiatives to improve the old structures that are a safety hazard to the local community and to improve the road network.**

**The activities will provide temporary employment for locals.**

**In the long term, an enhanced road network will enable greater social development and**

**economic activities.**

**Local labour must be given preference for job opportunities, and should be encouraged to stay within the community to generate rental income.**

Is an EMPr attached?

<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
---	-----------------------------

The EMPr must be attached as Appendix G.

The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as Appendix H.

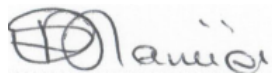
If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in Appendix I.

Any other information relevant to this application and not previously included must be attached in Appendix J.

POPPY DLAMINI

HENWOOD & NXUMALO CONSULTING ENGINEERS CC

NAME OF EAP



SIGNATURE OF EAP

03/02/2015

DATE

**SECTION F: APPENDIXES**

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix E: Public Participation

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Additional Information