

Second document for comment  
September 2008  
Draft Basic Assessment  
Phase

## BASIC ASSESSMENT

*PROPOSED CONSTRUCTION OF A  
BRIDGE OVER THE  
BRAAMHOEKSPRUIT  
DOWNSTREAM OF THE INGULA  
PUMPED-STORAGE SCHEME,  
KWA-ZULU NATAL*

DEAT REF NO: 12/12/20/1266

**Proponent: Eskom Holdings Ltd**

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# DRAFT BASIC ASSESSMENT REPORT

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Project 11821



# environment & tourism

Department:  
Environmental Affairs and Tourism  
REPUBLIC OF SOUTH AFRICA

(For official use only)

File Reference Number:					
Application Number:					
Date Received:					

## Basic Assessment Report in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2006

### 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, 2006 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. 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.
3. Where applicable **tick** the boxes that are applicable or **black out** the boxes that are not applicable in the report.
4. An incomplete report may be returned to the applicant for revision.
5. 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.
6. This report must be handed in at offices of the relevant competent authority as determined by each authority.
7. No faxed or e-mailed reports will be accepted.
8. The report must be compiled by an independent environmental assessment practitioner.
9. 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.
10. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed. In addition, if it is clear to the EAP that because of the particular circumstances of the case it is not sensible to complete any of the sections indicated under paragraph 3 of this report, he or she may apply for exemption from completing that part of the report in the spaces provided in the report. It must however be noted that if the application for exemption is turned down, the report may have to be resubmitted.

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## SECTION A: APPLICATION FOR EXEMPTION

The relevant parts of this section must be completed if the environmental assessment practitioner (EAP) on behalf of the applicant wishes to apply for exemption from completing or complying with certain parts of this basic assessment report.

### 1. APPLICATION FOR EXEMPTION FROM ASSESSING ALTERNATIVES:

At least two alternatives (site or activity) should be assessed. If that is not possible, the applicant should apply for exemption from having to assess alternatives. Such exemption will, however, not apply to the no-go alternative that must be assessed in all cases.

Provide a detailed motivation for not considering alternatives including an explanation of the reason for the application for exemption (supporting documents, if any, should be attached to this report):

**(1) TWO ACTIVITY ALTERNATIVES WILL BE ASSESSED FOR THE DESIGN OF THE BRIDGE, HOWEVER EXEMPTION IS REQUESTED FROM ASSESSING SITE ALTERNATIVES.**

**(2) SITE ALTERNATIVES WILL BE ASSESSED FOR THE TEMPORARY BY-PASS ROAD, HOWEVER NO ACTIVITY ALTERNATIVES FOR THE TEMPORARY BY-PASS ROAD WILL BE ASSESSED.**

**THERE IS NO SITE ALTERNATIVE FOR THE BRIDGE AS THE BRIDGE CURRENTLY EXISTS, AND ESKOM INTENDS IMPROVING THE CONDITION OF THIS STRUCTURE FOR CONTINUOUS UTILISATION FOR CROSSING THE RIVER AT ALL TIMES.**

I declare that the above motivation is accurate and, hereby apply for exemption in terms of regulation 51 of the Environmental Impact Assessment Regulations, 2006, from having to assess alternatives in this application as required in section 24(4)(b) in the National Environmental Management Act, 1998 (Act No. 107 of 1998)

Signature of the EAP: \_\_\_\_\_ Date: **1 SEPTEMBER 2008**

### 2. APPLICATION FOR EXEMPTION FROM COMPLYING WITH PARTS OF REGULATION 23(2) REGARDING THE CONTENT OF THIS BASIC ASSESSMENT REPORT:

~~Application for exemption from certain parts of regulation 23(2) regarding the completion of certain parts of this basic assessment report may be made by completing the relevant sections below.~~

~~Indicate the numbers of the sections of this report for which exemption is applied for:~~

~~Section~~

~~B:~~

~~Section~~

~~C:~~

~~Section~~

~~D:~~

~~Provide a detailed motivation including an explanation of the reason for the application for exemption (supporting documents, if any, should be attached to this report):~~

**NOT APPLICABLE**

I declare that the above motivation is accurate and, hereby apply for exemption in terms of regulation 51 of the EIA Regulations, 2006, from having to complete the indicated sections of the Basic Assessment Report.

Signature of the EAP: \_\_\_\_\_ Date: **1 SEPTEMBER 2008**

## SECTION B: ACTIVITY INFORMATION

### 1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for in detail (A1):

#### **BACKGROUND**

**ESKOM IS IN THE PROCESS OF CONSTRUCTING THE INGULA PUMPED-STORAGE SCHEME (PSS). THE SCHEME RECEIVED AN ENVIRONMENTAL AUTHORISATION IN 2004 AND ACCESS ROADS TO THE PSS RECEIVED AUTHORISATION IN APRIL 2006.**

**ESKOM DETERMINED THAT A GRAVEL ROAD CROSSES THE BRAAMHOEKSPRUIT VIA A LOW-LEVEL BRIDGE CROSSING, LOCATED APPROXIMATELY 2 KM DOWNSTREAM OF THE LOWER RESERVOIR, AND THAT IT GETS FLOODED DURING HEAVY RAINS AS A RESULT OF ITS CURRENT TECHNICAL DESIGN SPECIFICATIONS. THE GRAVEL ROAD IS USED BY THE COMMUNITY FOR ACCESSING THE OPPOSITE SIDES OF THE RIVER.**

**ESKOM ALSO DETERMINED THAT THE DURATION OF FLOODING MIGHT BE INCREASED WITH RELEASES FROM THE LOWER RESERVOIR DURING THE OPERATIONAL LIFE OF THE SCHEME.**

#### **ACTIVITY**

**1) TO UPGRADE THE BRIDGE DOWNSTREAM FROM THE LOWER RESERVOIR (CROSSING THE BRAAMHOEKSPRUIT, CALLED "INGULA BRIDGE") SUCH THAT IT IS BUILT TO ACCOMMODATE AT THE MINIMUM A 1:2 YEAR FLOOD EVENT.**

**2) TO CONSTRUCT A TEMPORARY BY-PASS ROAD (APPROXIMATELY 20 METERS FROM THE BRIDGE) TO DIVERT TRAFFIC FROM THE DISTRICT ROAD D474 AND THE BRIDGE DURING THE CONSTRUCTION PHASE OF THE INGULA BRIDGE (APPROXIMATELY 4 MONTHS).**

#### **INFRASTRUCTURE**

**THE FOLLOWING INFRASTRUCTURE IS ENVISAGED FOR THE PROPOSED DEVELOPMENT:**

**1) CONCRETE BRIDGE STRUCTURE OVER THE BRAAMHOEKSPRUIT DESIGNED TO ACCOMMODATE AT MINIMUM A 1:2 YEAR FLOOD EVENT.**

**DURING THE CONSTRUCTION PHASE THE FOLLOWING TEMPORARY FACILITIES WILL BE CONSTRUCTED/ERECTED/USED:**

- 1) TEMPORARY BY-PASS ROAD TO DIVERT TRAFFIC FROM THE BRIDGE;**
- 2) PORTABLE ABLUTION FACILITIES;**
- 3) A MOBILE POWER GENERATOR**
- 4.) MATERIALS LAYDOWN AREA**

### 2. ALTERNATIVES

Describe alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity 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.

## 2 (a) Site alternatives

### (BY-PASS ROAD DIVERSION)

Describe site alternative 1 (S1), for the activity described above, or for any other activity alternative:

**\*BRIDGE - PORTIONS 3 AND 4, OF PORTION 3 OF TREK BOER 1002 FARM, WITHIN THE UTHUKELA DISTRICT MUNICIPALITY,**

**A TEMPORARY BY-PASS ROAD 20 METERS UPSTREAM OF THE PROPOSED BRIDGE**

Describe site alternative 2 (S2), if any, for the activity described above, or for any other activity alternative:

**\*BRIDGE - PORTIONS 3 AND 4, OF PORTION 3 OF TREK BOER 1002 FARM ,WITHIN THE UTHUKELA DISTRICT MUNICIPALITY,**

**A TEMPORARY BY-PASS ROAD 20 METERS DOWNSTREAM OF THE PROPOSED BRIDGE**

Describe site alternative 3 (S3), if any, for the activity described above, or for any other activity alternative:

**NOT APPLICABLE**

**\* SEE SECTION A1 – THERE ARE NO SITE ALTERNATIVES FOR THE UPGRADE OF THE BRIDGE HOWEVER THERE ARE SITE ALTERNATIVES FOR THE TEMPORARY BY-PASS ROAD**

## (2) (b) Activity alternatives

### (BRIDGE AND BY-PASS ROAD CONSTRUCTION)

Describe activity alternative 1 (A2), if any, for any or all of the site alternatives as appropriate:

**UPGRADE OF THE INGULA LOW WATER CROSSING BRIDGE. THE DESIGN OF THE BRIDGE IS PROPOSED TO CONSIST OF A REINFORCED CONCRETE SLAB / DECK THAT WILL BE LAID ONTO CONCRETE SUPPORT STRUCTURES LOCATED ON EITHER BANK OF THE RIVER. THERE WILL BE NO STRUCTURES LOCATED WITHIN THE RIVER CHANNEL. THE SLAB WILL BE PRE-CAST OFFSITE. (SEE APPENDIX A3).**

**\*\*TEMPORARY BY-PASS ROAD - CONSTRUCTION OF A TEMPORARY BY PASS ROAD. 180M IN LENGTH AND 6M IN WIDTH**

Describe activity alternative 2 (A2), if any, for any or all of the site alternatives as appropriate:

**UPGRADE OF THE INGULA LOW WATER CROSSING BRIDGE. THE DESIGN OF THE BRIDGE IS PROPOSED TO BE CULVERT STRUCTURE WITH A PILLAR SITUATED WITHIN THE RIVER CHANNEL. THIS IS AN UNDESIRABLE DESIGN OPTION DUE TO THE IMPACTS RESULTING FROM THE IMPEDANCE OF RIVER FLOWS (SEE APPENDIX A3)**

**\*\*TEMPORARY BY-PASS ROAD - CONSTRUCTION OF A TEMPORARY BY PASS ROAD. 180M IN LENGTH AND 6M IN WIDTH**

Describe activity alternative 3 (A2), if any, for any or all of the site alternatives as appropriate:

**NOT APPLICABLE**

**\*\* SEE SECTION A1 – THERE ARE NO ACTIVITY ALTERNATIVES FOR THE TEMPORARY BY-PASS ROAD, HOWEVER THERE ARE ACTIVITY ALTERNATIVES FOR THE UPGRADE OF THE BRIDGE**

**APPENDIX A1 AND A3 FOR LOCALITY MAP AND FACILITY ILLUSTRATIONS -**

### 3. ACTIVITY POSITION

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.

**Alternative:**

\*\*\*Alternative S1<sup>1</sup> (preferred or only site alternative) **BRIDGE**

**TEMPORARY BY-PASS ROAD (UPSTREAM)**

\*\*\*Alternative S2 (if any) **BRIDGE**

**TEMPORARY BY PASS ROAD (DOWNSTREAM)**

Alternative S3 (if any)

	Latitude (S):		Longitude (E):	
Alternative S1	28°	20'20.58"	29°	35'25.74"
Alternative S2	28°	20'21.08"	29°	35'28.21"
Alternative S3	28°	20'20.58"	29°	35'25.74"
Alternative S4	28°	20'18.86"	29°	35'24.07"

**In the case of linear activities: ALTHOUGH THE TEMPORARY BY-PASS ROAD IS A LINEAR ACTIVITY DUE TO ITS MINIMAL LENGTH IT WILL NOT BE ASSESSED AS A LINEAR ACTIVITY**

**PLEASE REFER TO APPENDIX A 1 FOR THE LOCALITY MAP.**

**Alternative:**

Alternative S1 (preferred or only route alternative)

Starting point of the activity

Middle point of the activity

End point of the activity

Alternative S2 (if any)

Starting point of the activity

Middle point of the activity

End point of the activity

Alternative S3 (if any)

Starting point of the activity

Middle point of the activity

End point of the activity

**Latitude (S):**

**Longitude (E):**

0	′	0	′
0	′	0	′
0	′	0	′

0	′	0	′
0	′	0	′
0	′	0	′

0	′	0	′
0	′	0	′
0	′	0	′

~~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.~~

### 4. PHYSICAL SIZE OF THE ACTIVITY

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

**Alternative:**

Alternative A1<sup>2</sup> (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

or, for linear activities: **ALTHOUGH THE TEMPORARY BY-PASS ROAD IS A LINEAR ACTIVITY DUE TO ITS MINIMAL LENGTH IT WITH NOT BE ASSESSED AS A LINEAR ACTIVITY**

**Alternative:**

Alternative A1 (preferred activity alternative)

**Size of the activity:**

<b>4000 M<sup>2</sup></b>
<b>4000 M<sup>2</sup></b>

**Length of the activity:**

<b>m</b>
----------

<sup>1</sup> "Alternative S.." refer to site alternatives.

<sup>2</sup> "Alternative A.." refer to activity, process, technology or other alternatives.

Alternative A2 (if any)  
Alternative A3 (if any)

m  
m

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

**Alternative:**

**Size of the site/servitude:**

Alternative A1 (preferred activity alternative)  
Alternative A2 (if any)  
Alternative A3 (if any)

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

## 5. SITE ACCESS

Does ready access to the site exist, or is access directly from an existing road?

YES

~~If NO, what is the distance over which a new access road will be built~~

~~Describe the type of access road planned:~~

~~Include the position of the access road on the site plan.~~

**PLEASE REFER TO APPENDIX A 3 FOR THE LOCALITY MAP.**

## 6. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

### 6 (a) Solid waste management

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

YES

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

**\*\*NOT AVAILABLE**

**\*\*PLEASE NOTE THAT THE BUILDING MATERIALS AND QUANTITIES FOR THE PROPOSED DEVELOPMENT HAVE NOT YET BEEN QUANTIFIED.**

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

**THE SOLID WASTE WILL COMPRISE OF BUILDING RUBBLE. THE BUILDING RUBBLE WILL BE USED FOR CONSTRUCTION PURPOSES FOR THE APPROACH FILLS TO THE PROPOSED NEW NORMAL-LEVEL BRIDGE CROSSING. WASTE WILL BE SEPARATED, AND ALL POTENTIALLY HAZARDOUS AND DOMESTIC WASTES WILL BE COLLECTED IN WASTE SKIPS AND DISPOSED OF AT APPROPRIATE REGISTERED LANDFILL SITES.**

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

**BUILDING RUBBLE AND DEGRADABLE WASTE WILL BE DISPOSED OF AT THE EXISTING REGISTERED LANDFILL SITE.**

Will the activity produce solid waste during its operational phase?

**NO**

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

**NOT APPLICABLE**

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

**NOT APPLICABLE**

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

**NOT APPLICABLE**

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, 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 relevant legislation?

**NO**

If yes, inform the competent authority and request a change to an application for scoping and EIA.

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

**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.

Describe the measures, if any, that will be taken to ensure the optimal reuse or recycling of materials:  
**WHERE APPROPRIATE, BUILDING RUBBLE WILL BE USED IN THE CONSTRUCTION OF THE NEW BRIDGE CROSSING TO MINIMISE CONSTRUCTION WASTE FROM THE ACTIVITY.**

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

If YES, please complete:

Name of the specialist:

Qualification(s) of the specialist:

Postal address:

Postal code:

Telephone:  Cell:

E-mail:  Fax:

Are any further specialist studies recommended by the specialist?  YES  NO

If YES, specify:

If YES, is such a report(s) attached?  YES  NO

Signature of specialist: \_\_\_\_\_ Date: \_\_\_\_\_

**6 (b) Liquid effluent**

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?  YES  NO

If yes, what estimated quantity will be produced per month?  **NOT APPLICABLE**

Will the activity produce any effluent that will be treated and/or disposed of on site?  YES  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  NO

If yes, provide the particulars of the facility:

**SEWAGE WILL BE HANDLED BY TEMPORARY ABLUTION FACILITIES. THESE WILL BE REMOVED FROM THE SITE BY A LICENSED CONTRACTOR AND DISPOSED OF A SUITABLY LICENSED FACILITY.**

Facility name:	<b>J&amp;I CONSTRUCTION</b>		
Contact person:	<b>MR ALAN VAN WYK</b>		
Postal address:	<b>PO BOX 201620</b>		
Postal code:	<b>4016</b>		
Telephone:		Cell:	<b>084 811 5625</b>
E-mail:		Fax:	

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

**NONE**

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

If YES, please complete:

Name of the specialist:

Qualification(s) of the specialist:

Postal address:

Postal code:

Telephone:  Cell:

E-mail:  Fax:

Are any further specialist studies recommended by the specialist?  YES  NO

If YES, specify:

If YES, is such a report(s) attached?  YES  NO

Signature of specialist: \_\_\_\_\_

Date: \_\_\_\_\_

**6 (c) Emissions into the atmosphere**

Will the activity release emissions into the atmosphere?

YES **ONLY DUST DURING CONSTRUCTION ONLY**

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

NO 

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

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

**FUGITIVE DUST WILL BE GENERATED BY VEHICLES TRAVERSING GRAVEL ROADS LEADING TO AND FROM THE SITE. DUST SUPPRESSION USING WATER SPRAYING, AND OTHER MEANS LIKE TRAFFIC CALMING DEVICES, ON ROADS WILL BE UTILISED**

Has a specialist been consulted to assist with the completion of this section?

YES 

If YES, please complete:

Name of the specialist:

**AIRSHED PLANNING PROFESSIONALS (PTY) LTD – MS H. LIEBENBERG ENSLIN**

Qualification(s) of the specialist:

**MSc**

Postal address:

**P. O. BOX 5260, HALFWAY HOUSE**

Postal code:

**1685**

Telephone:

**(011) 805 1940**

Cell:

E-mail:

**mail@airshed.co.za**

Fax:

**(011) 805 7010**

Are any further specialist studies recommended by the specialist?

NO 

If YES, specify:

If YES, is such a report(s) attached?

YES 

Signature of specialist: \_\_\_\_\_

Date: \_\_\_\_\_

**1 SEPTEMBER 2008**

**PLEASE REFER TO APPENDIX D 6 FOR THE AIR SCREENING ASSESSMENT REPORT.**

**6 (d) Generation of noise**

Will the activity generate noise?

YES 

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

NO 

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

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

**NOISE GENERATED WILL ONLY BE FOR THE LIFE OF THE CONSTRUCTION PERIOD, AFTER CONSTRUCTION HAS CEASED, THERE WOULD NOT BE ANY NOISE OTHER THAN FROM THE TRAFFIC CURRENTLY TRAVERSING THE ROAD.**

Has a specialist been consulted to assist with the completion of this section?

YES 

If YES, please complete:

Name of the specialist:

**MR JOHN HASSALL**

Qualification(s) of the specialist:

**NOISE IMPACT ASSESSMENT PRACTITIONER**

Postal address:

**P O BOX 1668, NORTH RIDING**

Postal code:

**2162**

Telephone:

**(011) 679 2342**

Cell:

**082 886 7133**

E-mail:

**jh29@pixie.co.za**

Fax:

**011 679 2342**

Are any further specialist studies recommended by the specialist?

NO 

If YES, specify:

If YES, is such a report(s) attached?

YES

Signature of specialist: \_\_\_\_\_ Date: **1 SEPTEMBER 2008**

**PLEASE REFER TO APPENDIX D 7 FOR THE NOISE ASSESSMENT REPORT.**

## 7. WATER USE

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

		<b>RIVER, STREAM, DAM OR LAKE</b> ✓	
--	--	---	--

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: **(DURING CONSTRUCTION ONLY)**

<b>UNKNOWN AT THIS STAGE – TO BE CONFIRMED</b>			

Does the activity require a water use permit from the Department of Water Affairs and Forestry?

<b>YES</b> ✓			

If yes, please submit the necessary application to the Department of Water Affairs and Forestry and attach proof thereof to this application if it has been submitted.

**PLEASE REFER TO APPENDIX C 1 FOR THE INFORMATION ON THE WATER USE LICENSE.**

## 8. TRAFFIC IMPACT ASSESSMENT

This section has been added as the traffic will be disturbed during the four month construction. Therefore, a Traffic Impact Assessment study was undertaken in order to predict any social, biophysical and environmental impacts associated with the road diversion and any associated activities related to the project. The diversion of the road will impact all the current road users, but only for a very short period of time i.e. for the construction phase to be completed. The road users need to bear in mind that the project is meant to improve the current condition as the road currently gets flooded during rainy seasons.

Attached to this report is the detailed Traffic Assessment Report.

**PLEASE REFER TO APPENDIX D 8 FOR THE TRAFFIC ASSESSMENT REPORT.**

## 9. SOCIAL IMPACT ASSESSMENT

Attached to this report is the detailed Social Impact Assessment.

**PLEASE REFER TO APPENDIX D 4 FOR THE TRAFFIC ASSESSMENT REPORT.**

## 10. ENERGY EFFICIENCY

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

<b>NOT APPLICABLE</b>
-----------------------

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

<b>NOT APPLICABLE</b>
-----------------------

## 11. SITE OR ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A1 to this document. The site or route plans must indicate the following:

- 11(a) The scale of the plan which must be at least a scale of 1:500;
- 11(b) the property boundaries and numbers of all the properties within 50m of the site;
- 11(c) the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
- 11(d) the exact position of each element of the application as well as any other structures on the site;
- 11(e) the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
- 11(f) all trees and shrubs taller than 1.8m;
- 11(g) walls and fencing including details of the height and construction material;
- 11(h) servitudes indicating the purpose of the servitude;
- 11(i) sensitive environmental elements within 100m of the site or sites including (but not limited thereto): rivers; the 1:100 year flood line (where available or where it is required by DWAF); ridges; cultural and historical features; areas with indigenous vegetation (even if it is degraded or invested with alien species);
- 11(j) for gentle slopes the 1m contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
- 11(k) the positions from where photographs of the site were taken.

**PLEASE REFER TO APPENDIX A 1 FOR THE SITE PLAN.**

## 12. SITE PHOTOGRAPHS

Colour photographs from the center 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 A2 to this form. It should be supplemented with additional photographs of relevant features on the site, if applicable.

**PLEASE REFER TO APPENDIX A 2 FOR SITE PHOTOS.**

## 13. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 1:200 as Appendix A3 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.

**PLEASE REFER TO APPENDIX A 3 FOR THE ILLUSTRATION OF THE FACILITY**

## 14. ACTIVITY MOTIVATION

### 14 (a) Socio-economic value of the activity

What is the expected capital value of the activity on completion?

**R 3 700 000**

What is the expected yearly income that will be generated by or as a result of the activity?

**THE ACTIVITY IS NOT MEANT TO GENERATE ANY INCOME, BUT WILL RATHER IMPROVE THE ROAD FOR USERS AND THE SURROUNDING LAND OWNERS.**

Will the activity contribute to service infrastructure or is it a public amenity?

**YES** ✓

How many new employment opportunities will be created in the development phase of the activity?

**30 NEW EMPLOYEES WILL BE APPOINTED FOR THE CONSTRUCTION PHASE.**

What is the expected value of the employment opportunities during the development phase?	<b>THE TOTAL WAGE BILL FOR THE CONSTRUCTION PHASE FOR ALL EMPLOYED CONSTRUCTORS IS ESTIMATED TO BE R 830 500.00</b>
What percentage of this will accrue to previously disadvantaged individuals?	<b>100 %</b>
How many permanent new employment opportunities will be created during the operational phase of the activity?	<b>0 THERE WILL NOT BE ANY EMPLOYMENT OPPORTUNITIES DURING THE OPERATION OF THE BRIDGE.</b>
What is the expected current value of the employment opportunities during the first 10 years?	<b>R0 THE BRIDGE WILL NOT CREATE ANY PERMANENT EMPLOYMENT OPPORTUNITIES AFTER IT HAS BEEN CONSTRUCTED. ANY MONITORING WILL BE MAINLY THE RESPONSIBILITY OF EXISTING ESKOM STAFF.</b>
What percentage of this will accrue to previously disadvantaged individuals?	<b>NOT APPLICABLE</b>

#### **14 (b) Need and desirability of the activity**

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

**THE UPGRADE OF THE INGULA BRIDGE IS PREDOMINANTLY TO BENEFIT THE COMMUNITIES THAT UTILISE THE EXISTING STRUCTURE. AFTER RAINS, THE CURRENT BRIDGE (A CULVERT STRUCTURE) GETS FLOODED AT TIMES PREVENTING THE COMMUNITY FROM CROSSING THE RIVER. WITH THE ESTABLISHMENT OF THE INGULA PSS (ONCE THE LOWER RESERVOIR IS FUNCTIONAL), THERE IS A RISK OF ELONGATED/MORE FREQUENT FLOODING OF THIS RIVER/CULVERT STRUCTURE DUE TO RELEASES FROM THE LOWER RESERVOIR. BY UNDERTAKING THIS PROJECT, THE APPLICANT INTENDS TO PREVENT FURTHER CONSTRAINTS AND RISKS FOR THE COMMUNITY IN TERMS OF USAGE OF THE BRIDGE, AND MAINTAINING A MUTUALLY BENEFICIAL RELATIONSHIP WITH THE COMMUNITY. THROUGH THE ERECTION OF THE BRIDGE, THE RISK OF FLOODING OF THE BRAAMHOEKSPRUIT IS MINIMISED, THUS ALLOWING THE USERS CONSTANT USAGE OF THE BRIDGE.**

Indicate any benefits that the activity will have for society in general:

**THE DISTRICT ROAD D474 GRAVEL ROAD IS THE MAIN ROUTE WHICH JOINS THE SOUTH WITH THE R103 AND THE N3. THE COMMUNITY DWELLERS IN WINTERSHOEK AND KRUISFONTEIN RELY ON THIS ROAD FOR TRAVELLING; THE UPGRADE OF THE BRIDGE WILL BE A PUBLIC AMENITY. THE CURRENT STRUCTURE IS AN INCONVENIENCE DURING THE RAINY SEASONS AS TRAVELLERS CANNOT CROSS THE FLOODED CURRENT STRUCTURE AND HAVE TO USE ALTERNATIVE ROUTES WHICH RESULTS IN DELAYS.**

Indicate any benefits that the activity will have for the local communities where the activity will be located:

**THE COMMUNITY WILL BE ABLE TO UTILIZE THE BRIDGE ALL YEAR ROUND AS FLOODING/FREQUENCY OF FLOODING OF THE BRIDGE WILL BE ELIMINATED/REDUCED.**



## SECTION C: SITE/AREA DESCRIPTION

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

Section C Copy No. (e.g. [REDACTED]):  
A):

**NOT APPLICABLE** (Complete only when appropriate)

### 1. GRADIENT OF THE SITE

Indicate the general gradient of the sites.

**ALTERNATIVE S1:**

	1:50 – 1:20			
--	-------------	--	--	--

**ALTERNATIVE S2:**

	1:50 – 1:20			
--	-------------	--	--	--

~~Alternative S3:~~

--	--	--	--	--

### 2. LOCATION IN LANDSCAPE

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

Alternative S1:

	UNDULATING PLAIN/LOW HILLS	
--	----------------------------------	--

Alternative S2:

	UNDULATING PLAIN/LOW HILLS	
--	----------------------------------	--

Alternative S3:

--	--	--

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

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

	Alternative S1:	Alternative S2:	Alternative S3:
Shallow water table (less than 1.5m deep)	YES ✓	YES ✓	[REDACTED]
Dolomite, sinkhole or doline areas	[REDACTED]	NO ✓	NO ✓
Seasonally wet soils (often close to water bodies)	YES ✓	YES ✓	[REDACTED]
Unstable rocky slopes or steep slopes with loose soil	YES ✓	YES ✓	[REDACTED]
Dispersive soils (soils that dissolve in water)	[REDACTED]	NO ✓	NO ✓
Soils with high clay content (clay fraction more than 40%)	YES ✓	YES ✓	[REDACTED]
Any other unstable soil or geological feature	YES ✓	YES ✓	[REDACTED]





Has a specialist been consulted? [REDACTED]

If YES, please complete the following:

Name of the specialist: [REDACTED]

Qualification(s) of the specialist: [REDACTED]

Postal address: [REDACTED]

Postal code: [REDACTED]

Telephone: [REDACTED]

Cell: [REDACTED]

E-mail: [REDACTED]

Fax: [REDACTED]

Are there any rare or endangered flora or fauna species (including red data species) present on any of the alternative sites?

If YES,

specify and explain: [REDACTED]

Are there any special or sensitive habitats or other natural features present on any of the alternative sites?

If YES,

specify and explain: [REDACTED]

Are any further specialist studies recommended by the specialist?

If YES,

specify: [REDACTED]

If YES, is such a report(s) attached? [REDACTED]

Signature of specialist: \_\_\_\_\_ Date: [REDACTED]

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

## 5. LAND USE CHARACTER OF SURROUNDING AREA

Black out land uses and/or prominent features that does not currently occur within a 500m radius of the site

Alternative S1:

Natural area	<b>LOW DENSITY RESIDENTIAL</b>	Medium density residential	High density residential	Informal residential <sup>A</sup>
Retail	Commercial & warehousing	Light industrial	Medium industrial <sup>AN</sup>	Heavy industrial <sup>AN</sup>
Power station <sup>A</sup>	Office/consulting room	Military or police base/station/compound	Casino/entertainment complex	Hospitality facility
Open cast mine	Underground mine	Spoil heap or slimes dam <sup>A</sup>	Quarry, sand or borrow pit	Dam or reservoir
Hospital/medical center	School	Tertiary education facility	Church	Old age home
Sewage treatment plant <sup>A</sup>	Train station or shunting yard <sup>N</sup>	Railway line <sup>N</sup>	Major road (4 lanes or more) <sup>N</sup>	Airport <sup>N</sup>
Harbour	Sport facilities	Golf course	Polo fields	Filling station <sup>H</sup>
Landfill or waste treatment site <sup>A</sup>	Plantation	Agriculture	<b>RIVER, STREAM OR WETLAND</b>	Nature conservation area
Mountain, koppie or ridge	Museum	Historical building	Graveyard	Archeological site
Other land uses (describe):	<b>THE AREA IS GRASSLAND. IT IS CHARACTERISED BY HILLS, ROLLING PLAINS AND VALLEYS, LOCAL FAR ROADS AND SMALL RURAL HOMESTEADS</b>			

**PLEASE REFER TO APPENDIX D 2 FOR THE SOIL, LAND CAPABILITIES, VEGETATION AND WETLAND DELINEATION REPORT.**

If any of the boxes marked with an “N” are ticked, please consult an appropriate noise specialist to assist in the completion of this section.

Has a specialist been consulted? [REDACTED] NO

If YES, please complete the following:

Name of the specialist: [REDACTED]  
 Qualification(s) of the specialist: [REDACTED]  
 Postal address: [REDACTED]  
 Postal code: [REDACTED]  
 Telephone: [REDACTED] Cell: [REDACTED]  
 E-mail: [REDACTED] Fax: [REDACTED]  
 Will the ambient noise level have a negative impact on the proposed activity? [REDACTED]  
 If YES, specify and explain: [REDACTED]  
 Are any further specialist or studies recommended by the specialist? [REDACTED]  
 If YES, specify: [REDACTED]  
 If YES, is such a report(s) attached? [REDACTED]

Signature of specialist: \_\_\_\_\_ Date: [REDACTED]

If any of the boxes marked with an “A” are ticked, please consult an appropriate air quality specialist to assist in the completion of this section.

Has a specialist been consulted? [REDACTED]

If YES, please complete the following:

Name of the specialist: [REDACTED]  
 Qualification(s) of the specialist: [REDACTED]  
 Postal address: [REDACTED]  
 Postal code: [REDACTED]  
 Telephone: [REDACTED] Cell: [REDACTED]  
 E-mail: [REDACTED] Fax: [REDACTED]  
 Will the ambient air pollution level have a negative impact on the proposed activity? [REDACTED]  
 If YES, specify and explain: [REDACTED]  
 Are any further specialist studies recommended by the specialist? [REDACTED]  
 If YES, specify: [REDACTED]  
 If YES, is such a report(s) attached? [REDACTED]

Signature of specialist: \_\_\_\_\_ Date: [REDACTED]

If any of the boxes marked with an “H” are ticked, please consult an appropriate health assessment specialist to assist in the completion of this section.

Has a specialist been consulted? [REDACTED]

If YES, please complete the following:

Name of the specialist: [REDACTED]  
 Qualification(s) of the specialist: [REDACTED]  
 Postal address: [REDACTED]  
 Postal code: [REDACTED]  
 Telephone: [REDACTED] Cell: [REDACTED]  
 E-mail: [REDACTED] Fax: [REDACTED]  
 Will the surrounding land use pose any unacceptable health risk on the proposed activity? [REDACTED]  
 If YES, specify and explain: [REDACTED]  
 Are any further specialist studies recommended by the specialist? [REDACTED]  
 If YES, specify: [REDACTED]  
 If YES, is such a report(s) attached? [REDACTED]

Signature of specialist: \_\_\_\_\_ Date: [REDACTED]

**Alternative S2:**

Natural area	<b>LOW DENSITY RESIDENTIAL</b>	Medium density residential	High density residential	Informal residential <sup>A</sup>
Retail	Commercial & warehousing	Light industrial	Medium industrial <sup>AN</sup>	Heavy industrial <sup>AN</sup>

Power station <sup>A</sup>	Office/consulting room	Military or police base/station/compound	Casino/entertainment complex	Hospitality facility
Open cast mine	Underground mine	Spoil heap or slimes dam <sup>A</sup>	Quarry, sand or borrow pit	Dam or reservoir
Hospital/medical center	School	Tertiary education facility	Church	Old age home
Sewage treatment plant <sup>A</sup>	Train station or shunting yard <sup>N</sup>	Railway line <sup>N</sup>	Major road (4 lanes or more) <sup>N</sup>	Airport <sup>N</sup>
Harbour	Sport facilities	Golf course	Polo fields	Filling station <sup>H</sup>
Landfill or waste treatment site <sup>A</sup>	Plantation	Agriculture	<b>RIVER, STREAM OR WETLAND</b>	Nature conservation area
Mountain, koppie or ridge	Museum	Historical building	Graveyard	Archeological site
Other land uses (describe):	<b>THE AREA IS GRASSLAND. IT IS CHARACTERISED BY HILLS, ROLLING PLAINS AND VALLEYS, LOCAL FAR ROADS AND SMALL RURAL HOMESTEADS</b>			

**PLEASE REFER TO APPENDIX D 2 FOR THE SOIL, LAND CAPABILITIES, VEGETATION AND WETLAND DELINEATION REPORT.**

If any of the boxes marked with an “<sup>N</sup>” are ticked, please consult an appropriate noise specialist to assist in the completion of this section.

Has a specialist been consulted? [REDACTED] **NO** ✓

If YES, please complete the following:

Name of the specialist: [REDACTED]  
 Qualification(s) of the specialist: [REDACTED]  
 Postal address: [REDACTED]  
 Postal code: [REDACTED]  
 Telephone: [REDACTED] Cell: [REDACTED]  
 E-mail: [REDACTED] Fax: [REDACTED]  
 Will the ambient noise level have a negative impact on the proposed activity?  
 If YES, specify and explain: [REDACTED]  
 Are any further specialist or studies recommended by the specialist?  
 If YES, specify: [REDACTED]  
 If YES, is such a report(s) attached? [REDACTED]

Signature of specialist: \_\_\_\_\_ Date: [REDACTED]

If any of the boxes marked with an “<sup>A</sup>” are ticked, please consult an appropriate air quality specialist to assist in the completion of this section.

Has a specialist been consulted? [REDACTED]

If YES, please complete the following:

Name of the specialist: [REDACTED]  
 Qualification(s) of the specialist: [REDACTED]  
 Postal address: [REDACTED]  
 Postal code: [REDACTED]  
 Telephone: [REDACTED] Cell: [REDACTED]  
 E-mail: [REDACTED] Fax: [REDACTED]  
 Will the ambient air pollution level have a negative impact on the proposed activity?  
 If YES, specify and explain: [REDACTED]  
 Are any further specialist studies recommended by the specialist?  
 If YES, specify: [REDACTED]  
 If YES, is such a report(s) attached? [REDACTED]

Signature of specialist: \_\_\_\_\_ Date: [REDACTED]

If any of the boxes marked with an “<sup>H</sup>” are ticked, please consult an appropriate health assessment specialist to assist in the completion of this section.

Has a specialist been consulted? [REDACTED]

If YES, please complete the following:

Name of the specialist: [Redacted]  
 Qualification(s) of the specialist: [Redacted]  
 Postal address: [Redacted]  
 Postal code: [Redacted]  
 Telephone: [Redacted] Cell: [Redacted]  
 E-mail: [Redacted] Fax: [Redacted]  
 Will the surrounding land use pose any unacceptable health risk on the proposed activity?  
 If YES, specify and explain: [Redacted]  
 Are any further specialist studies recommended by the specialist?  
 If YES, specify: [Redacted]  
 If YES, is such a report(s) attached? [Redacted]  
 Signature of specialist: \_\_\_\_\_ Date: [Redacted]

**Alternative S3:**

[Redacted]

If any of the boxes marked with an “N” are ticked, please consult an appropriate noise specialist to assist in the completion of this section.

Has a specialist been consulted? [Redacted]

If YES, please complete the following:

Name of the specialist: [Redacted]  
 Qualification(s) of the specialist: [Redacted]  
 Postal address: [Redacted]  
 Postal code: [Redacted]  
 Telephone: [Redacted] Cell: [Redacted]  
 E-mail: [Redacted] Fax: [Redacted]  
 Will the ambient noise level have a negative impact on the proposed activity?  
 If YES, specify and explain: [Redacted]  
 Are any further specialist studies recommended by the specialist?  
 If YES, specify: [Redacted]  
 If YES, is such a report(s) attached? [Redacted]

Signature of specialist: \_\_\_\_\_ Date: [Redacted]

If any of the boxes marked with an “A” are ticked, please consult an appropriate air quality specialist to assist in the completion of this section.

Has a specialist been consulted? [Redacted]

If YES, please complete the following:

Name of the specialist: [Redacted]  
 Qualification(s) of the specialist: [Redacted]  
 Postal address: [Redacted]  
 Postal code: [Redacted]  
 Telephone: [Redacted] Cell: [Redacted]  
 E-mail: [Redacted] Fax: [Redacted]  
 Will the ambient air pollution level have a negative impact on the proposed activity?  
 If YES, specify and explain: [Redacted]  
 Are any further specialist studies recommended by the specialist?  
 If YES, specify: [Redacted]  
 If YES, is such a report(s) attached? [Redacted]

Signature of specialist: \_\_\_\_\_ Date: \_\_\_\_\_

If any of the boxes marked with an "H" are ticked, please consult an appropriate health assessment specialist to assist in the completion of this section.

Has a specialist been consulted? \_\_\_\_\_

If YES, please complete the following:

Name of the specialist: \_\_\_\_\_

Qualification(s) of the specialist: \_\_\_\_\_

Postal address: \_\_\_\_\_

Postal code: \_\_\_\_\_

Telephone: \_\_\_\_\_

Cell: \_\_\_\_\_

E-mail: \_\_\_\_\_

Fax: \_\_\_\_\_

Will the surrounding land use pose any unacceptable health risk on the proposed activity?

If YES, specify and explain: \_\_\_\_\_

Are any further specialist studies recommended by the specialist? \_\_\_\_\_

If YES, specify: \_\_\_\_\_

If YES, is such a report(s) attached? \_\_\_\_\_

Signature of specialist: \_\_\_\_\_ Date: \_\_\_\_\_

## 6. CULTURAL/HISTORICAL FEATURES

Alternative S1

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or paleontological sites, on or close (within 20m) to the site? \_\_\_\_\_

NO ✓

If YES, explain: \_\_\_\_\_

N/A

If uncertain, conduct a specialist investigation by a recognized specialist in the field to establish whether there is such a feature(s) present on or close to the site.

Briefly explain the findings of the specialist: \_\_\_\_\_

**VARIOUS TYPES AND RANGES OF HERITAGE RESOURCES THAT QUALIFY AS PART OF SOUTH AFRICA'S 'NATIONAL ESTATE' HAVE BEEN OUTLINED IN THE NATIONAL HERITAGE RESOURCES ACT [NO 25 OF 1999. THE PHASE I HIA (HERITAGE IMPACT ASSESSMENT) STUDY FOR THE PROPOSED INGULA PROJECT AREA REVEALED NONE OF THE TYPES AND RANGES OF HERITAGE RESOURCES**

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

NO ✓

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

NO ✓

If yes, please submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.

### PLEASE REFER TO APPENDIX D 8 FOR THE ARCHAEOLOGICAL AND HERITAGE IMPACT ASSESSMENT

Alternative S2

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or close (within 20m) to the site? \_\_\_\_\_

NO ✓

If YES, explain: \_\_\_\_\_

N/A

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

Briefly explain the findings of the specialist:

**VARIOUS TYPES AND RANGES OF HERITAGE RESOURCES THAT QUALIFY AS PART OF SOUTH AFRICA'S 'NATIONAL ESTATE' HAVE BEEN OUTLINED IN THE NATIONAL HERITAGE RESOURCES ACT [NO 25 OF 1999. THE PHASE I HIA STUDY FOR THE PROPOSED INGULA PROJECT AREA REVEALED NONE OF THE TYPES AND RANGES OF HERITAGE RESOURCES**

Will any building or structure older than 60 years be affected in any way? **NO** ✓  
 Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)? **NO** ✓  
 If yes, please submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.

**PLEASE REFER TO APPENDIX D 8 FOR THE ARCHAEOLOGICAL AND HERITAGE IMPACT ASSESSMENT**

**Alternative S3**

~~Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or close (within 20m) to the site?~~

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

~~Briefly explain the findings of the specialist:~~

~~Will any building or structure older than 60 years be affected in any way? **YES**    **NO**~~  
~~Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)? **YES**    **NO**~~  
~~If yes, please submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.~~

## SECTION D: PUBLIC PARTICIPATION

The main objective of public participation in the Basic Assessment process is to provide Interested and Affected Parties (I&APs) with information to allow them to meaningfully contribute by way of:

- Identifying issues of concern, providing suggestions for enhanced benefits and alternatives;
- Contributing local knowledge and experience; and
- Verifying that their issues have been considered.

As a summary of the activities to date, please find below a table for easy reference.

	<b>Guideline for the minimum requirements for public participation</b>	<b>Public participation activities</b>	<b>Compliances</b>
1 (a)	Fix a notice in a conspicuous place, on the property where it is intended to undertake the activity which states that an application will be submitted to the competent authority in terms of these regulations and which provides information on the proposed nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations on the application may be made.	Six site notices were put up at conspicuous places – see description and photos later in this section.	√
1 (b)	Inform landowners and occupiers of adjacent land of the applicant's intention to submit an application to the competent authority	A focus group meeting was held with the landowner and adjacent landowners on 15 August 2008.	√
1 (c)	Inform landowners and occupiers of land within 100 metres of the boundary of the property where it is proposed to undertake the activity and whom may be directly affected by the proposed activity of the applicant's intention to submit an application to the competent authority;	A focus group meeting was held with the landowner and adjacent landowners on 15 August 2008.	√
1 (d)	Inform the ward councillor and any organisation that represents the community in the area of the applicant's intention to submit an application to the competent authority;	A Background Information Document (BID) was distributed to all stakeholders on the database. Advertisements were placed in several newspapers in the area and stakeholders were personally contacted to inform them of the proposed project. See relevant appendices with documents.	√
1 (e)	Inform the municipality which has jurisdiction over the area in which the proposed activity will be undertaken of the applicant's intention to submit an application to the competent authority; and	Personal contact was made with officials at the eMnambithi Local Municipality and Uthukela DM. BIDs were also sent to officials of both municipalities.	√
1 (f)	Inform any organ of state that may have jurisdiction over any aspect of the activity of the applicant's intention to submit an application to the competent authority; and	The Department of Water Affairs and Forestry, KZN Department of Transport, South African National Roads Agency and the Department of Traditional and Local Government Affairs were contacted and BIDs were sent to them.	√
1 (g)	Place a notice in one local newspaper and any <i>Gazette</i> that is published specifically for the purpose of providing notice to the public of applications made in terms of these regulations.	Advertisements were placed in several newspapers – see relevant appendices.	√

### 1. STAKEHOLDER DATABASE

An initial stakeholder database was compiled as the first step in the process. The stakeholder database is appended as Appendix B9 to the document. As the process will unfold, those interested/affected will also be added to the stakeholder database. The stakeholders on the database are representative of all sectors of society relevant to the proposed project.

## 2. ADVERTISEMENTS

Advertisements were published in the following newspapers to announce the project, to invite I&APs to register to become involved in the project and to raise their comments. See Appendix B3 for proof of the placement of the advertisements as well as its content.

Name of newspaper	Date of placement
Isolezwe	19 August 2008
Witness	19 August 2008
Eastern Free State Business Bulletin	20 August 2008
Eastern Free State Issue	20 August 2008
Harrismith Cronicle	20 August 2008
Qwa Qwa Express	20 August 2008
Ladysmith Herald	20 August 2008
Ladysmith Gazette	20 August 2008
Times of Ladysmith	20 August 2008

Advertisements to announce the public review period of the Draft Basic Assessment Report will be placed in the same newspapers during the second week of September, prior to the public review period. The purpose of these advertisements will be to announce the public review period as well as a public meeting to be held on 23 September 2008.

## 3. PLACEMENT OF SITE NOTICES

Site notices were placed conspicuously at the following venues:

- Three notices were placed at the proposed place of development
- One notice was placed at the local police station in Besters
- One notice was placed at the local shop (café) in Besters
- One notice was placed at the agricultural hall in Besters

See appendix B1 for proof of placement of site notices and for its content.

## 4. BACKGROUND INFORMATION DOCUMENTS

Background Information Documents (BIDs) were developed in English and translated into Zulu. The documents were distributed in the week of 10 August to all stakeholders on the database. The objective of this document was to announce the project and to provide sufficient information for stakeholders to become involved in the project and to raise their issues and concerns. The BIDs were distributed with comments and registration sheets that provided the opportunity for stakeholders to register as Interested and Affected Parties (I&APs) and to write down their comments. Stakeholders were also invited to contact the public participation office with comments or questions via telephone, email, post or fax.

Copies of the BIDs were left at the local police station, café and agricultural hall in Besters.

## 5. FOCUS GROUP MEETING

A focus group meeting was held with the landowners/occupiers of the farm Trekboer where the proposed development shall take place. A meeting was held with Messrs S. Msimanga, M. J. Hlongwane and E. Makhwane at their residence on 15 August 2008. The proposed development as well as the Basic Assessment process was explained to them. Their comments are captured in the Issues and Response Report.



## 6. COMMENTS AND RESPONSE REPORT

The comments received in response to the announcement via the distribution of the BIDs, placement of site notices and advertisements, as well as comments received at the focus group meeting assisted with the compilation of the first version of the Issues and Response Report (Appendix B5). This report is attached to the Draft Basic Assessment Report for stakeholders to verify their comments and see where it has been considered in the document.

## 7. LOCAL AUTHORITY PARTICIPATION

Councillors and officials of the eMnambithi Local Municipality and Uthukela District Municipality were personally contacted by the public participation team. They were also invited to the focus group meeting during the announcement of the project. BIDs, comment sheets and invitations to attend the public meeting were sent to them.

Has any comment been received from the local authority?  YES  NO ✓

If "YES", briefly describe the feedback below (also attach any correspondence to and from the local authority to this application):

- **THE LOCAL COUNCILOR REQUESTED THAT THE PUBLIC PARTICIPATION TEAM SPEAK DIRECTLY TO THE LANDOWNERS AND THE COMMUNITY PROPERTY ASSOCIATION (CPA).**
- **OFFICIALS REQUESTED COPIES OF THE BIDS**

## 8. CONSULTATION WITH OTHER STAKEHOLDERS

Stakeholders on the database have each received a copy of the BID as well as a notification of the public review period for the Draft Basic Assessment Report and the proposed public meeting. The registered I&APs were requested to encourage and invite other stakeholders to register and participate in the process.

Has any comment been received from stakeholders?  YES ✓  NO

If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

- **SEE THE ISSUES AND RESPONSE REPORT (APPENDIX B6)**

## 9. PUBLIC REVIEW PERIOD OF THE DRAFT BASIC ASSESSMENT REPORT

The public review period for the Draft Basic Assessment Report will be from 15 September to 15 October 2008. The following activities are taking place to notify stakeholders of the opportunity to review the document:

- Letters were sent to all stakeholders on the database to announce the public review period
- Advertisements were published in newspapers
- A Focus Group meeting was held on the 15<sup>th</sup> August 2008.

Copies of the Draft Basic Assessment Report are being placed at public places (Besters Police Station, Besters Shop and the eMnambithi Local Municipality).

A meeting to present the findings of the Draft Basic Assessment Report and to receive comments from stakeholders is being planned for 23 September 2008 at the Agricultural Hall in Besters. The minutes of this meeting will be made available to stakeholders. The Issues and Response Report will also be updated (Version 2) with the issues raised at this meeting. These documents will become appendices of the Final Basic Assessment Report.

## SECTION E: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2006, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

### 1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the issues raised by interested and affected parties.

**THE INTERESTED AND AFFECTED PARTIES ARE CONCERNED THAT THEIR LIVESTOCK COULD BE HARMED DURING CONSTRUCTION. ANOTHER ISSUE RAISED WAS THAT THE ENTIRE AREA AROUND THE BRIDGE FLOODS DURING HEAVY DOWNPOURS, INCLUDING A TRIBUTARY THAT CUTS ACROSS THE ROAD APPROXIMATELY 400 METERS FROM THE PROPOSED BRIDGE UPGRADE. THE KWA-ZULU NATAL DEPARTMENT OF TRANSPORT REQUESTED TO BE INVOLVED THROUGHOUT THE PROCESS**

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

**RESIDENTS WERE INFORMED THAT THE CONSTRUCTION SITE WILL BE FENCED OFF. SPECIALISTS STUDIES FOUND NO EVIDENCE OF SEVERE FLOODING, ALTHOUGH THE WATER DOES PUSH OVER THAT ROAD AT TIMES. LOCAL AND REGIONAL AUTHORITIES WILL ALWAYS BE PART OF THIS PROCESS. PLEASE SEE COMMENTS & RESPONSE REPORT FOR MORE COMPREHENSIVE RESPONSES TO ALL THE ISSUES RAISED.**

### 2. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN PHASE

List the potential site alternative related impacts (as appropriate) that are likely to occur as a result of the planning and design phase, including impacts relating to the choice of site alternatives.

**TO ENSURE UNIFORMITY, THE ASSESSMENT OF IMPACTS IS ADDRESSED IN A STANDARD MANNER SO THAT A WIDE RANGE OF IMPACTS CAN BE COMPARED WITH EACH OTHER. FOR THIS REASON A CLEARLY DEFINED SIGNIFICANCE RATING SCALE IS PROVIDED TO ASSESS THE SIGNIFICANCE (IMPORTANCE) OF THE ASSOCIATED IMPACTS. THE SCALE EMBRACES THE NOTION OF EXTENT AND MAGNITUDE, BUT DOES NOT ALWAYS CLEARLY DEFINE THESE SINCE THEIR IMPORTANCE IN THE RATING SCALE IS VERY RELATIVE. FOR EXAMPLE, THE MAGNITUDE (I.E. THE SIZE) OF AIR AFFECTED BY ATMOSPHERIC POLLUTION MAY BE EXTREMELY LARGE (1000 KM<sup>2</sup>) BUT THE SIGNIFICANCE OF THIS EFFECT IS DEPENDENT ON THE CONCENTRATION OR LEVEL OF POLLUTION. IF THE CONCENTRATION WERE GREAT, THE SIGNIFICANCE OF THE IMPACT WOULD BE HIGH OR VERY HIGH, BUT IF IT WERE DILUTE IT WOULD BE LOW OR VERY LOW. SIMILARLY, IF 60 HA OF A GRASSLAND TYPE ARE DESTROYED THE IMPACT WOULD BE VERY HIGH IF ONLY 100 HA OF THAT GRASSLAND TYPE WAS KNOWN. THE IMPACT WOULD BE VERY LOW IF THE GRASSLAND TYPE WERE COMMON.**

**THE POTENTIAL SIGNIFICANCE OF EVERY ENVIRONMENTAL IMPACT IDENTIFIED IS DETERMINED BY USING A RANKING SCALE, BASED ON THE FOLLOWING (THE TERMINOLOGY IS EXTRACTED FROM THE DEAT GUIDELINE DOCUMENT ON EIA REGULATIONS, APRIL 1998):**

**OCCURRENCE**

**PROBABILITY OF OCCURRENCE (HOW LIKELY IS IT THAT THE IMPACT MAY OCCUR?), AND  
DURATION OF OCCURRENCE (HOW LONG MAY IT LAST?)**

**SEVERITY**

**MAGNITUDE (SEVERITY) OF IMPACT (WILL THE IMPACT BE OF HIGH, MODERATE OR OF LOW SEVERITY?), AND  
SCALE/EXTENT OF IMPACT (WILL THE IMPACT AFFECT THE NATIONAL, REGIONAL OR LOCAL ENVIRONMENT, OR ONLY THAT OF THE SITE?)**

**IN ORDER TO ASSESS EACH OF THESE FACTORS FOR EACH IMPACT, THE FOLLOWING RANKING SCALES WERE USED:**

**PROBABILITY:**

5 – DEFINITE/DON'T KNOW  
4 – HIGHLY PROBABLE  
3 – MEDIUM PROBABILITY  
2 – LOW PROBABILITY  
1 – IMPROBABLE  
0 – NONE

**DURATION:**

5 – PERMANENT  
4- LONG-TERM (CEASES WITH THE OPERATIONAL LIFE)  
3 - MEDIUM-TERM (5-15 YEARS)  
2 - SHORT-TERM (0-5 YEARS)  
1 – IMMEDIATE

**SCALE:**

5 – INTERNATIONAL  
4 – NATIONAL  
3 – REGIONAL (>5KM)  
2 – LOCAL (<5KM)  
1 – SITE ONLY  
0 – NONE

**MAGNITUDE:**

10 - VERY HIGH/DON'T KNOW  
8 – HIGH  
6 – MODERATE  
4 – LOW  
2 – MINOR

**ONCE THE ABOVE FACTORS HAD BEEN RANKED FOR EACH IMPACT, THE ENVIRONMENTAL SIGNIFICANCE OF EACH WAS ASSESSED USING THE FOLLOWING FORMULA:**

**SP = (MAGNITUDE + DURATION + SCALE) X PROBABILITY**

**THE MAXIMUM VALUE IS 100 SIGNIFICANCE POINTS (SP). ENVIRONMENTAL EFFECTS WERE RATED AS EITHER OF HIGH, MODERATE OR LOW SIGNIFICANCE ON THE FOLLOWING BASIS:**

**MORE THAN 60 SIGNIFICANCE POINTS INDICATED HIGH ENVIRONMENTAL SIGNIFICANCE.**

**BETWEEN 30 AND 60 SIGNIFICANCE POINTS INDICATED MODERATE ENVIRONMENTAL SIGNIFICANCE.**

**LESS THAN 30 SIGNIFICANCE POINTS INDICATED LOW ENVIRONMENTAL SIGNIFICANCE.**

<b>HIGH</b>	<b>MODERATE</b>	<b>LOW</b>
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**PLEASE NOTE THAT ONLY NEGATIVE IMPACT WILL BE RANKED**

**THE DEGREE OF CERTAINTY OF THE ASSESSMENT WAS JUDGED ON THE FOLLOWING CRITERIA:**

**DEFINITE: MORE THAN 90% SURE OF A PARTICULAR FACT.**

**PROBABLE: BETWEEN 70 AND 90% SURE OF A PARTICULAR FACT, OR OF THE LIKELIHOOD OF THAT IMPACT OCCURRING.**

**POSSIBLE: BETWEEN 40 AND 70% SURE OF A PARTICULAR FACT OR OF THE LIKELIHOOD OF AN IMPACT OCCURRING.**

**UNSURE: LESS THAN 40% SURE OF A PARTICULAR FACT OR THE LIKELIHOOD OF AN IMPACT OCCURRING.**

## SITE ALTERNATIVES

### ALTERNATIVE S1 (PREFERRED ALTERNATIVE) (PROPOSAL)

Potential impacts:	Significance rating of impacts:°	Proposed mitigation:	Significance rating of impacts after mitigation:
No Potential Impacts foreseen during the planning and design phase	NO IMPACT	NO IMPACT	NO IMPACT

### ALTERNATIVE S2

Potential impacts:	Significance rating of impacts:°	Proposed mitigation:	Significance rating of impacts after mitigation:
No Potential Impacts foreseen during the planning and design phase	NO IMPACT	NO IMPACT	NO IMPACT

### Alternative S3

### NO-GO ALTERNATIVE (COMPULSORY)

Potential impacts:	Significance rating of impacts:°
<b>Direct Impact</b>	
Seasonally flooding	<b>Moderate</b> impact as the bridge continues to be flooded seasonally
<b>Indirect Impact</b>	
Community isolation / inconvenience	<b>Moderate</b> impact as community will not be able to cross the river during flood periods
<b>Cumulative impacts</b>	
No Impact	No Impact

List the potential activity/technology alternative related impacts (as appropriate) that are likely to occur as a result of the **planning and design phase**:

## ACTIVITY ALTERNATIVES

### ALTERNATIVE A1 (PREFERRED ALTERNATIVE)

Potential impacts:	Significance rating of impacts:°	Proposed mitigation:	Significance rating of impacts after mitigation:
No Potential Impacts foreseen during the planning and design phase	NO IMPACT	NO IMPACT	NO IMPACT

### ALTERNATIVE A2

Potential impacts:	Significance rating of impacts:°	Proposed mitigation:	Significance rating of impacts after mitigation:
No Potential Impacts foreseen during the planning and design phase	NO IMPACT	NO IMPACT	NO IMPACT

## Alternative A3

**NO-GO ALTERNATIVE (COMPULSORY)**

Potential impacts:	Significance rating of impacts:°
<b>Direct Impact</b>	
Seasonally flooding	<b>Moderate</b> impact as the bridge continues to be flooded seasonally
<b>Indirect Impact</b>	
Community isolation / inconvenience	<b>Moderate</b> impact as community will not be able to cross the river during flood periods
<b>Cumulative impacts</b>	
No Impact	No Impact

### 3. IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE

List the potential site alternative related impacts (as appropriate) that are likely to occur as a result of the construction phase:

#### SITE ALTERNATIVES

#### ALTERNATIVE S1 (PREFERRED ALTERNATIVE) – BRIDGE AND UPSTREAM TEMPORARY BY-PASS ROAD

Potential impacts:	Significance rating of impacts:°	Proposed mitigation:	Significance rating of impacts after mitigation:
<b>Surface water</b>			
<p>Oil and grease spills from construction vehicles may enter the Braamhoek-spruit resulting in surface water contamination by a hazardous substance.</p> <p>Accidental spillage of sewage and chemicals from temporary ablution facilities may enter the Braamhoekspruit and result in surface water contamination.</p> <p>Incorrectly managed stormwater may carry loose soils and gravels from exposed areas into the Braamhoekspruit. This may result in an increase in turbidity and sediment deposition downstream of the river crossing site.</p> <p>Uncontrolled extraction of surface water from the Braamhoekspruit during the construction phase may result in reduced</p>	<p><b>Moderate</b> Impact in the <b>short term</b>. The bridge is located directly above the Braamhoekspruit. The impact during construction is moderate to low.</p>	<p><b>Hydro-carbons</b></p> <p>No storage of hydro-carbon permitted at the construction site, with the exception of a single diesel bowser for generators used for lighting purposes. – just enough amounts will be filled onto the generators. No reserves will be on site</p> <p>A temporary “bund” area constructed of soil / inert construction waste will be constructed and lined with a suitable liner.</p> <p>Frequent inspections of vehicles and machinery will be undertaken to identify oil leaks / spills. Leaking machinery will be removed off site for maintenance purposes. No maintenance of vehicles or machinery will be undertaken onsite.</p> <p>In the event of fuel or hydrocarbon spillage, soil will be removed to a designated area for bioremediation with suitably recognized product designed for this purpose.</p>	<p><b>LOW IMPACT</b></p>

<p>water quantity downstream of the abstraction point. Downstream water users include stock watering, which may be negatively impacted.</p> <p>The insufficient management of waste may result in pollution of surface water resources.</p>		<p><b>Sanitation / Ablution Facilities</b> Proper sanitation facilities must be made available for contractors.</p> <p>The contractor, in consultation with the Environmental Manager, shall compile a surface water drainage plan prior to commencement with construction.</p> <p>At least 1 toilet per 15 workers will be provided.</p> <p>A licensed contractor will be utilized to provide and service temporary abluion facilities.</p> <p><b>Water abstraction</b> All water pumped from the Braam-hoekspruit should be measured and recorded. The general authorization volume of water abstraction may not be exceeded on a monthly basis as per the Water use License.</p> <p><b>Waste Management Measures</b> Ensure that all waste generated on site is sorted into appropriate containers.</p> <p>Waste bins should be emptied regularly and should never overflow.</p> <p>Waste must be removed by a suitably licensed contractor and disposed of at a licensed facility.</p> <p>Building rubble utilized in the construction of the concrete supports must be comprised of inert material.</p> <p>No burning / incineration of waste is to take place on the site.</p>	
<b>Soils</b>			
<p>During construction of the bridge, vegetation will be cleared, and soils excavated. The movement, handling, and exposure of soils will result in an increased risk of soil erosion.</p> <p>The movement of vehicle traffic onsite will result in the compaction of soils. Soil compaction prevents the successful re-establishment of vegetation.</p> <p>During the construction phase inadequate waste management may result in soil pollution.</p> <p>During excavation the mixing of soil substrates, and soil type will result in a reduction of soil fertility.</p>	<p><b>Low Impact in the short term.</b> The upstream by-pass road is currently on bare disturbed soils which are prone to soil erosion. Therefore by using this portion of land there is an opportunity to minimise the impact on undisturbed soils, mitigate the current soil erosion and rehabilitate the area on decommissioning of construction.</p>	<p>Physical demarcation of the working area ahead of construction must be undertaken to ensure that construction remains within the area to be disturbed.</p> <p>Access routes to / from / around the site will be designated prior to start of work.</p> <p>Should any evidence of soil contamination be discovered, appropriate measures should be taken to remediate the soil. (See hydrocarbons in surface water above).</p> <p>The temporary by-pass road must be rehabilitated as per the methodology outlined in the EMP after construction.</p> <p>Compacted soil must ripped and suitably ameliorated to ensure the successful establishment of vegetation.</p>	<p><b>Due to the small nature of the footprint it is unlikely that, with mitigation measures, the significance of the impact will change from the initial assessment.</b></p> <p><b>Mitigation Measures will however ensure that unmanaged activities do not have the opportunity to escalate.</b></p>

		<p>Care must be taken during excavation and vegetation clearing to ensure that clay soils and sandy / silty soils are stockpiled separately, and returned to their former position during rehabilitation.</p> <p>The location of soil stockpiles will be identified prior to construction, and will not be located in a position where they are likely to be washed away.</p>	
<b>Air</b>			
<p>The source of air quality impacts are:</p> <ul style="list-style-type: none"> <li>• Gases and fumes from construction vehicles; and</li> <li>• Fugitive dust emissions from vehicle traffic traversing gravel roads.</li> </ul> <p>Neither pose significant health impacts, however fugitive dust emissions will pose a significant nuisance dust factor for the community living in close proximity to the proposed construction site.</p>	<p>Without mitigation measures the impact will <b>probably be low</b> in the <u>short-term</u> affecting the local area.</p>	<p>All construction vehicles should be regularly serviced and maintained to ensure minimal exhaust fume pollution.</p> <p>No cooking fires will be permitted on site.</p> <p>Exposed soils (i.e. soil stockpiles, gravel access roads, material laydown area) will be regularly watered to reduce wind blown dust.</p>	<p><b>With mitigation measures the impact will probably be very low in the short-term affecting only the local area.</b></p>
<b>Ecological (Fauna and Flora)</b>			
<p>During the construction phase the primary impacts to terrestrial ecology will be experienced as a result of vegetation clearing and habitat destruction.</p> <p>Aquatic ecology will be impacted by the temporary by pass road constructed through the water course. The increased turbidity may affect a range of water quality parameters, thereby affecting the breeding and foraging patterns of aquatic fauna.</p> <p>In areas disturbed by construction it can be expected that alien invasive species will rapidly establish.</p>	<p><b>Low Impact in the short term</b> affecting only the area immediately around the bridge.</p>	<p>Ensure that all post construction rehabilitation is undertaken as per the attached EMP.</p> <p>Ensure that the influx, establishment and spread of all alien invasive species are monitored and prevented.</p> <p>Demarcate the construction areas intended for clearing prior to construction, mark all other areas as "No Go" areas.</p> <p>Once rehabilitated eliminate vehicle or livestock traffic over these areas.</p> <p>Rehabilitated areas are not be grazed for a period of at least 2 years.</p> <p>Ensure that only indigenous vegetation is utilised during rehabilitation.</p> <p>Unauthorised off road vehicle travel should be strictly controlled.</p>	<p><b>NO IMPACT</b></p>
<b>Aesthetics</b>			
<p>The aesthetic characteristics associated with the proposed construction at the proposed site will continue during the construction phase.</p> <p>External lighting will affect the night time character of the area for local</p>	<p>Without mitigation measures the visual impact will <b>probably be moderate</b> negative acting in the <u>short-term</u> and affecting the local community adjacent to the proposed site and users of the D474</p>	<p>Construction activities and associated infrastructure to be shielded/concealed as far as possible.</p> <p>Construction activities are to be limited to day light working hours.</p> <p>No construction crews are to be accommodated onsite after hours, except for a night watchman.</p>	<p><b>LOW IMPACT</b></p>

communities.		Low level and frequency lighting are to be utilized wherever possible.	
<b>Heritage</b>			
No archaeological or paleontological sites, artifacts or feature exist on the existing site.  No historical/cultural site, artifacts or feature exist on the existing site.	<b>NO IMPACT</b>	During excavations should any archaeological or cultural materials be unearthed, all construction will be ceased immediately, and appropriate authorities will be notified. In the event that human remains are unearthed the SAPS will also be notified; and The project manager will notify SAHRA and obtain permission to continue construction, through a registered archaeologist.	<b>NO IMPACT</b>
<b>Geology and Stability</b>			
During construction, concrete footings will be excavated to support the bridge infrastructure. The maximum depth of the excavations is unlikely to exceed 1.5m. Consequently, these excavations will not extend to the bedrock underlying the surface soils and thus no impact will be created.	<b>NO IMPACT</b>	<b>NONE</b>	<b>NO IMPACT</b>

**ALTERNATIVE S2 – BRIDGE AND DOWNSTREAM TEMPORARY BY-PASS ROAD**

Potential impacts:	Significance rating of impacts: <sup>o</sup>	Proposed mitigation:	Significance rating of impacts after mitigation:
<b>Surface water</b>			
In addition to the impacts described for Alternative 1 above the following impacts will be sustained for alternative 2:  1.) The stream bed and banks that are deeply incised will be permanently altered in the event the by-pass road is built south of the existing bridge.  2.) It is likely that during rehabilitation a large volume of sediment will be mobilized due to the topography of the southern route. The sediment will be deposited in deeper pools downstream, commonly used by fish as nurseries and breeding sites.	<b>Moderate</b> Impacts will probably be observable. Impacts will act probably be permanent.	In addition to management measures described for Alternative 1: Surface Water, the following mitigation measures will be required.  1.) Hand removal of all rockfill material utilized in the construction of the temporary by-pass road. 2.) Topographic profiling of the river banks to a near vertical slope. 3.) The use of geotextiles or stabilizing materials / rock gabions to secure the slope and eliminate future erosion. 4.) Long term monitoring of the downstream impacts of post rehabilitation.	<b>LOW IMPACT</b>
<b>Soils</b>			
Same as alternative 1.	Same as alternative	Same as alternative 1.	Same as alternative

	1.		1.
<b>Geology and Stability</b>			
Same as alternative 1.	Same as alternative 1.	Same as alternative 1.	Same as alternative 1.
<b>Air</b>			
Same as alternative 1.	Same as alternative 1.	Same as alternative 1.	Same as alternative 1.
<b>Ecological (Fauna and Flora)</b>			
Same as alternative 1.	Same as alternative 1.	Same as alternative 1.	Same as alternative 1.
<b>Archaeology/Historical/ Cultural</b>			
Same as alternative 1.	Same as alternative 1.	Same as alternative 1.	Same as alternative 1.
<b>Aesthetics</b>			
Same as alternative 1.	Same as alternative 1.	Same as alternative 1.	Same as alternative 1.

## DESIGN ALTERNATIVES

### ALTERNATIVE A1 (PREFERRED ALTERNATIVE) – DECK DESIGN AND UPSTREAM TEMPORARY BY-PASS ROAD

#### ALTERNATIVE 1 (PROPOSAL)

Potential impacts:	Significance rating of impacts: <sup>o</sup>	Proposed mitigation:	Significance rating of impacts after mitigation:
<b>Surface water</b>			
<p>Oil and grease spills from construction vehicles may enter the Braamhoek-spruit resulting in surface water contamination by a hazardous substance.</p> <p>Accidental spillage of sewage and chemicals from temporary ablution facilities may enter the Braamhoekspruit and result in surface water contamination.</p> <p>Incorrectly managed stormwater may carry loose soils and gravels from exposed areas into the Braamhoekspruit. This may result in an increase in turbidity and sediment deposition downstream of the river crossing site.</p> <p>Uncontrolled extraction of surface water from the Braamhoekspruit during the construction phase may result in reduced water quantity downstream of the abstraction point. Downstream water users include stock watering, which may be negatively impacted.</p> <p>The insufficient management of waste may result in pollution of surface water resources.</p>	<p><b>Moderate</b> impact in the <b>short term</b>. The bridge is located directly above the Braamhoekspruit. The impact during construction is moderate to low.</p>	<p><b>Hydro-carbons</b> No storage of hydro-carbon permitted at the construction site, with the exception of a single diesel bowser for generators used for lighting purposes.</p> <p>A temporary "bund" area constructed of soil / inert construction waste will be constructed and lined with a suitable liner.</p> <p>Frequent inspections of vehicles and machinery will be undertaken to identify oil leaks / spills. Leaking machinery will be removed off site for maintenance purposes. No maintenance of vehicles or machinery will be undertaken onsite.</p> <p>In the event of fuel or hydrocarbon spillage, soil will be removed to a designated area for bioremediation with suitably recognized product designed for this purpose.</p> <p><b>Sanitation / Ablution Facilities</b> Proper sanitation facilities must be made available for contractors.</p> <p>The contractor, in consultation with the Environmental Manager, shall compile a surface water drainage plan prior to commencement with construction.</p> <p>At least 1 toilet per 15 workers will be provided.</p>	<p><b>LOW IMPACT</b></p>

		<p>A licensed contractor will be utilized to provide and service temporary ablution facilities.</p> <p><b>Water abstraction</b> All water pumped from the Braamhoekspruit should be measured and recorded. The general authorization volume of water abstraction may not be exceeded on a monthly basis as per the Water use License.</p> <p><b>Waste Management Measures</b> Ensure that all waste generated on site is sorted into appropriate containers.</p> <p>Waste bins should be emptied regularly and should never overflow.</p> <p>Waste must be removed by a suitably licensed contractor and disposed of at a licensed facility.</p> <p>Building rubble utilized in the construction of the concrete supports must be comprised of inert material.</p> <p>No burning / incineration of waste is to take place on the site.</p>	
<b>Ground water</b>			
No impacts to ground water are expected from the construction phase.	<b>NO IMPACT</b>		<b>NO IMPACT</b>
<b>Water Use</b>			
The implementation of this project will result in the use of surface water for construction purposes. Eskom will provide potable water for domestic consumption.	The possible low negative impact to water use will be a short term impact affecting the proposed site.	Ensure that the volumes of water used are measured and recorded and do not exceed the general authorization limits.	Mitigation Measures will not reduce the significance of the impact.
<b>Geology</b>			
During construction, concrete footings will be excavated to support the bridge infrastructure. The maximum depth of the excavations is unlikely to exceed 1.5m. Consequently, these excavations will not extend to the bedrock underlying the surface soils and thus no impact will be created.	<b>NO IMPACT</b>		<b>NO IMPACT</b>
<b>Topography</b>			
Cut and fill operations will permanently alter the topography and local drainage patterns. Topography will be impacted at both the proposed by-pass road and bridge upgrade area.	The impact will be permanent affecting the immediate site, and will probably be of a moderate significance.	Ensure that drainage patterns along the road and rehabilitated areas are: 1.) Free draining and do not create pools; 2.) Dispersed into adjacent grasslands regularly so as to avoid concentration of water in such a manner that it may contribute to erosion. 3.) Tie into the adjacent terrain.	With mitigation measures the impact will remain be permanent affecting the immediate site, but will probably be of a VERY LOW significance.
<b>Soils</b>			
During construction of the bridge vegetation will be cleared, and soils excavated. The movement, handling, and exposure of soils will result in	Low Impact in the short term. The upstream by-pass road is currently on bare disturbed soils	Physical demarcation of the working area ahead of construction must be undertaken to ensure that construction remains within the area to be	Due to the small nature of the footprint it is unlikely that with mitigation

<p>an increased risk of soil erosion.</p> <p>The movement of vehicle traffic onsite will result in the compaction of soils. Soil compaction prevents the successful re-establishment of vegetation.</p> <p>During the construction phase inadequate waste management may result in soil pollution.</p> <p>During excavation the mixing of soil substrates, and soil type will result in a reduction of soil fertility.</p>	<p>which are prone to soil erosion. Therefore by using this portion of land there is an opportunity to minimise the impact on undisturbed soils, mitigate the current soil erosion and rehabilitate the area on decommissioning of construction.</p>	<p>disturbed.</p> <p>Access routes to / from / around the site will be designated prior to start of work.</p> <p>Should any evidence of soil contamination be discovered, appropriate measures should be taken to remediate the soil. (See hydrocarbons in surface water above).</p> <p>The temporary by-pass road must be rehabilitated as per the methodology outlined in the EMP after construction.</p> <p>Compacted soil must be ripped and suitably ameliorated to ensure the successful establishment of vegetation.</p> <p>Care must be taken during excavation and vegetation clearing to ensure that clay soils and sandy / silty soils are stockpiled separately, and returned to their former position during rehabilitation.</p> <p>The location of soil stockpiles will be identified prior to construction, and will not be located in a position where they are likely to be washed away.</p>	<p><b>measures that the significance of the impact will change from the initial assessment.</b></p> <p><b>Mitigation Measures will however ensure that unmanaged activities do not have the opportunity to escalate.</b></p>
<b>Archaeology/Historical/ Cultural</b>			
<p>No archaeological, paleontological site, artifacts or feature exist on the existing site.</p> <p>No historical/cultural site, artifacts or feature exist on the existing site.</p>	<b>NO IMPACT</b>	<p>During excavations should any archaeological or cultural materials be unearthed, all construction will be cease immediately, and appropriate authorities will be notified. In the event that human remains are unearthed the SAPS will also be notified; and The project manager will notify SAHRA and obtain permission to continue construction, through a qualified archaeologist.</p>	<b>NO IMPACT</b>
<b>Fauna or flora</b>			
<p>During the construction phase the primary impacts to terrestrial ecology will be experienced as a result of vegetation clearing and habitat destruction. Removal of vegetation during construction.</p> <p>Aquatic ecology will be impacted by the temporary by-pass road constructed through the water course. The increased turbidity may affect a range of water quality parameters, thereby affecting the breeding and foraging patterns of aquatic fauna.</p> <p>In areas disturbed by construction it can be expected that alien invasive species will rapidly establish.</p>	<p><b>Low Impact in the short term affecting only the area immediately around the bridge.</b></p>	<p>Ensure that all post construction rehabilitation is undertaken as per the attached EMP.</p> <p>Ensure that the influx, establishment and spread of all alien invasive species are monitored and prevented.</p> <p>Demarcate the construction areas intended for clearing prior to construction, mark all other areas as "No Go" areas.</p> <p>Once rehabilitated eliminate vehicle or livestock traffic over these areas.</p> <p>Rehabilitated areas are not be grazed for a period of at least 2 years.</p> <p>Ensure that only indigenous vegetation is utilised during rehabilitation.</p>	<b>NO IMPACT</b>

		Unauthorised off road vehicle travel should be strictly controlled.	
<b>Air Quality</b>			
<p>The source of air quality impacts are:</p> <ul style="list-style-type: none"> <li>• Gases and fumes from construction vehicles; and</li> <li>• Fugitive dust emissions from vehicle traffic traversing gravel roads.</li> </ul> <p>Neither pose significant health impacts, however fugitive dust emissions will pose a significant nuisance dust factor for the community living in close proximity to the proposed construction site.</p>	<p>Without mitigation measures the impact will <b>probably be low</b> in the <u>short-term</u> affecting the local area.</p>	<p>All construction vehicles should be regularly serviced and maintained to ensure minimal exhaust fume pollution.</p> <p>No cooking fires will be permitted on site.</p> <p>Exposed soils (i.e. soil stockpiles, gravel access roads, material laydown area) will be regularly watered to reduce wind blown dust.</p>	<p>With mitigation measures the impact will <b>probably be very low</b> in the <u>short-term</u> affecting <b>only the local area.</b></p>
<b>Noise</b>			
<p>The noise generated during the construction phase will predominantly result from vehicle activity on site, as well as the operation of heavy machinery and other associated noises. The noise of vehicles and machinery will be heard by the community in the area. The noise impact will be high due to the proximity of the community and associated infrastructure.</p>	<p>The impact of noise from construction activities during the construction phase will <b>probably be high</b> negative, acting in the <u>short term</u> and affecting the local area.</p>	<p>Contractors will be required to wear the appropriate Personal Protective Equipment (PPE) during the construction phase such as masks, protection glasses, ear plugs, gloves, safety boots, and overalls.</p> <p>Ensure that all contractors have appropriate induction and safety training, and understand the dangers to which they will be exposed.</p> <p>Contractors should be appropriately trained as to safe working procedures prior to commencing with work.</p> <p>Construction activities are to be limited to day light working hours.</p> <p>No construction crews are to be accommodated onsite after hours, except for a night watchman.</p> <p>Activities generating noise to be carried out between 6 am – 6 pm (Monday to Saturday) only.</p> <p>Local visitors/tourist to be informed/notified that excessive noise levels are expected.</p>	<p><b>MODERATE IMPACT</b></p>
<b>Aesthetics</b>			
<p>The aesthetic characteristics associated with the proposed construction at the proposed site will continue during the construction phase.</p> <p>External lighting will affect the night time character of the area for local communities.</p>	<p>Without mitigation measures the visual impact will <b>probably be moderate</b> negative acting in the <u>short-term</u> and affecting the local community adjacent to the proposed site and users of the D474</p>	<p>Construction activities and associated infrastructure to be shielded/concealed as far as possible.</p> <p>Construction activities are to be limited to day light working hours.</p> <p>No construction crews are to be accommodated onsite after hours, except for a night watchman.</p> <p>Low level and frequency lighting are to be utilized wherever possible.</p>	<p><b>LOW IMPACT</b></p>

<b>Traffic</b>			
<p>During the construction phase the most significant impacts will be as a result of construction vehicles and heavy machinery on site.</p> <p>Pedestrian movement may be impacted by the vehicles that access and exit the area.</p>	<p>Without mitigation measures the impact on traffic in the area will <b>probably be LOW</b> in the <u>short term</u> and affect the local area.</p>	<p>Ensure that adequate path/road diversions for visitors/tourist/pedestrians are installed during the construction phase.</p>	<p><b>LOW IMPACT</b></p>
<b>Socio-Economic</b>			
<p>Due to the size of the project only a marginal positive economic impact is anticipated during the construction phase.</p> <p>There would be no marginal short-term increase in employment in the area due to the socio-economic profile of the area.</p>	<p><b>NO IMPACT</b></p>		<p><b>NO IMPACT</b></p>
<b>Safety Hazards</b>			
<p>Tourists/pedestrians utilize the surrounding facilities extensively. Construction activities (moving vehicles and machinery) pose a significant safety risk.</p> <p>During the construction phase numerous people will have access to the site and this creates a potential safety and security risk.</p> <p>Explosion and fire risks.</p> <p>Except for fuel and oil used in construction equipment, no combustible materials will be used; therefore, increased risk of fire and explosion would be unlikely.</p> <p>Significant risks to public health and safety are not anticipated.</p>	<p>The impact to the safety of tourists /pedestrians will be a <b>definite MODERATE short-term</b> negative impact, affecting the proposed site.</p>	<p>Adequate safety fencing to be erected.</p> <p>Vehicle speeds will not exceed 40km/h along roads within the KNP or 20km/h when entering the camp.</p> <p>Warning signs to be erected along safety fencing.</p> <p>No housing of people on site, except for a night watchman at the hard parks and office areas.</p> <p>Provide transport to and from the site, to ensure that workers leave the area.</p> <p>Respond to tourist/workers complaints of theft and assist with the prosecution of transgressors.</p> <p>Standard construction safety measures would be implemented to reduce the risk of hazards and accidents.</p> <p>Fire suppression and emergency response systems must be provided on site.</p>	<p><b>LOW</b></p>
<b>Hazardous Material</b>			
<p>Possible risk of oil (hydrocarbons) and or herbicides/pesticides spillage.</p>	<p>The <b>possible low</b> negative impact to the environment will be <u>short term</u> (ad hoc) impact affecting the proposed site.</p>	<p>In addition to measures documented under surface water above the following measures should be implemented:</p> <ol style="list-style-type: none"> <li>1.) Precautions must be taken when applying herbicides to prevent possible contamination of surface water especially considering the proximity of the Braamhoekspruit river.</li> <li>2.) Only DWAF approved herbicides or pesticides will be used.</li> <li>3.) No chemical pesticides to control animal populations will be used in/or near the activity.</li> <li>4.) Target specific herbicides must be used as far as possible.</li> <li>5.) Contractors will be required to</li> </ol>	<p><b>Management measures will reduce the likelihood of spills or accidents occurring, but will not reduce the significance of the impact.</b></p>

		wear the appropriate safety gear when applying any herbicides or pesticides.	
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### ALTERNATIVE A2 – CULVERT BRIDGE DESIGN

Potential impacts:	Significance rating of impacts:°	Proposed mitigation:	Significance rating of impacts after mitigation:
<b>Surface water</b>			
The pillar in the center of the stream will not substantively contribute to the impact to surface water already described in Alternative A1: Surface Water Above.			
<b>Ground water</b>			
The impact to the environment will be the same as described for Alternative A1 above.			
<b>Water Use</b>			
The impact to the environment will be the same as described for Alternative A1 above.			
<b>Geology</b>			
The impact to the environment will be the same as described for Alternative A1 above.			
<b>Topography</b>			
The impact to the environment will be the same as described for Alternative A1 above.			
<b>Soils</b>			
The impact to the environment will be the same as described for Alternative A1 above.			
<b>Archaeology/Historical/ Cultural</b>			
The impact to the environment will be the same as described for Alternative A1 above.			
<b>Fauna or flora</b>			
The impact to the environment will be the same as described for Alternative A1 above.			
<b>Air Quality</b>			
The impact to the environment will be the same as described for Alternative A1 above.			
<b>Noise</b>			
The impact to the environment will be the same as described for Alternative A1 above.			
<b>Aesthetics</b>			
The impact to the environment will be the same as described for Alternative A1 above.			
<b>Traffic</b>			
The impact to the environment will be the same as described for Alternative A1 above.			
<b>Socio-Economic</b>			
The impact to the environment will be the same as described for Alternative A1 above.			
<b>Safety Hazards</b>			
The impact to the environment will be the same as described for Alternative A1 above.			
<b>Hazardous Material</b>			
The impact to the environment will be the same as described for Alternative A1 above.			

### Alternative S3

### NO-GO ALTERNATIVE (COMPULSORY)

Potential impacts:	Significance rating of impacts:°
<b>Direct Impact</b>	
<b>Seasonally flooding</b>	<b>Moderate</b> impact as the bridge continues to be flooded seasonally
<b>Indirect Impact</b>	
<b>Community isolation / inconvenience</b>	<b>Moderate</b> impact as community will not be able to cross the river during flood periods
<b>Cumulative impacts</b>	
<b>No Impact</b>	<b>No Impact</b>

## 4. IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE

List the potential site alternative related impacts (as appropriate) that are likely to occur as a result of the operational phase:

### ALTERNATIVE A1 (PREFERRED ALTERNATIVE) AND A2

Hazardous Material			
Possible risk of oil (hydrocarbons) spillage from vehicles utilizing the bridge.	The possible low negative impact to the environment will be incidental affecting the immediate site.	Regular biomonitoring and water quality testing should be undertaken to determine whether a cumulative or long term effect may occur. The frequency and duration of this will be informed by the IWUL.	Same as initial assessment
Disturbance of Natural River Flows (A2 ONLY)			
The culvert bridge design will result in the disturbance of the natural river flows – this should not be and may result in cumulative impacts on the riparian environment as well as aquatic ecology in the long term.	UNKNOWN	Regular biomonitoring and water quality testing should be undertaken to determine whether a cumulative or long term effect may occur.	UNKNOWN

### Alternative S3

### NO-GO ALTERNATIVE (COMPULSORY)

Potential impacts:	Significance rating of impacts:°
<b>Direct Impact</b>	
Seasonally flooding	Moderate impact as the bridge continues to be flooded seasonally
<b>Indirect Impact</b>	
Community isolation / inconvenience	Moderate impact as community will not be able to cross the river during flood periods
<b>Cumulative impacts</b>	
No Impact	No Impact

## 5. IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING AND CLOSURE PHASE

List the potential site alternative related impacts (as appropriate) that are likely to occur as a result of the decommissioning or closure phase:

**THERE IS NO FORESEEN DECOMMISSIONING AND CLOSURE PHASE OF THE BRIDGE. THE BRIDGE WILL CONTINUE TO BE OPERATIONAL INDEFINITELY.**

### ALTERNATIVE S1 (PREFERRED ALTERNATIVE)

Potential impacts:	Significance rating of impacts:°	Proposed mitigation:	Significance rating of impacts after mitigation:
No Potential Impacts foreseen during the planning and design phase	NO IMPACT	NO IMPACT	NO IMPACT

**ALTERNATIVE S2**

Potential impacts:	Significance rating of impacts:°	Proposed mitigation:	Significance rating of impacts after mitigation:
No Potential Impacts foreseen during the planning and design phase	NO IMPACT	NO IMPACT	NO IMPACT

**Alternative S3****NO-GO ALTERNATIVE (COMPULSORY)**

Potential impacts:	Significance rating of impacts:°
<b>Direct Impact</b>	
Seasonally flooding	Moderate impact as the bridge continues to be flooded seasonally
<b>Indirect Impact</b>	
Community isolation / inconvenience	Moderate impact as community will not be able to cross the river during flood periods
<b>Cumulative impacts</b>	
No Impact	No Impact

List the potential activity/technology alternative related impacts (as appropriate) that are likely to occur as a result of the decommissioning and closure phase:

**ALTERNATIVE A1 (PREFERRED ALTERNATIVE)**

Potential impacts:	Significance rating of impacts:°	Proposed mitigation:	Significance rating of impacts after mitigation:
No Potential Impacts foreseen during the planning and design phase	NO IMPACT	NO IMPACT	NO IMPACT

**ALTERNATIVE A2**

Potential impacts:	Significance rating of impacts:°	Proposed mitigation:	Significance rating of impacts after mitigation:
No Potential Impacts foreseen during the planning and design phase	NO IMPACT	NO IMPACT	NO IMPACT

**Alternative A3****NO-GO ALTERNATIVE (COMPULSORY)**

Potential impacts:	Significance rating of impacts:°
<b>Direct Impact</b>	
Seasonally flooding	Moderate impact as the bridge continues to be flooded seasonally
<b>Indirect Impact</b>	
Community isolation / inconvenience	Moderate impact as community will not be able to cross the river during flood periods
<b>Cumulative impacts</b>	
No Impact	No Impact

## 6. PROPOSED MANAGEMENT OF IMPACTS AND MITIGATION

Indicate how identified impacts and mitigation will be monitored and/or audited.

THE ESKOM AUDITING SYSTEM WILL BE UTILIZED TO AUDIT THE ACTIVITY ACCORDING TO THE ENVIRONMENTAL AUTHORISATION AND EMP REQUIREMENTS ON A FREQUENCY AND PROCESSES TO BE DETERMINED BY THE ENVIRONMENTAL AUTHORISATION.

THE ECO WILL DOCUMENT NON-COMPLIANCES IN THE ENVIRONMENTAL SITE NOTICE BOOK. THE CONTRACTOR SHALL COMPLY WITH THE SITE INSTRUCTIONS. A MINIMUM SCORE OF 75% IS REQUIRED FOR ALL AUDITS IN ORDER TO COMPLY WITH THE EMP AND TO ENSURE THE PROTECTION OF THE ENVIRONMENT.

## 7. ENVIRONMENTAL IMPACT STATEMENT

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

### Alternative S1 (preferred alternative)

THE SUM OF THE NEGATIVE IMPACTS WILL BE LOW TO MODERATE, PREDOMINANTLY LIMITED TO THE CONSTRUCTION PHASE, AND WILL NOT RESULT IN CUMULATIVE EFFECTS ON THE ENVIRONMENT.

WITH THE IMPLEMENTATION OF MITIGATION MEASURES THE ENVIRONMENTAL ASSESSMENT PRACTITIONER IS MORE THAN 80% CERTAIN THAT THE SUM OF IMPACTS TO THE BIOPHYSICAL ENVIRONMENT WILL BE OF A LOW TO MODERATE NEGATIVE SIGNIFICANCE. THE MAJORITY OF THE IMPACTS WILL ACT IN THE SHORT TERM BEING SUSTAINED DURING THE CONSTRUCTION PHASE OF THE PROJECT. IN ADDITION THE MITIGATION MEASURES ARE NOT COMPLEX OR EXCEPTIONALLY COSTLY.

THE IMPACTS FROM THE UPGRADE OF THE BRIDGE ARE WITHIN THE EXISTING BRIDGE FOOTPRINT.

THE IMPACTS FROM THE TEMPORARY BY-PASS ROAD LOCATED NORTH OF THE EXISTING BRIDGE ARE MINIMAL AS A RESULT OF THE CURRENT POOR ENVIRONMENTAL CONDITION PRESENT ON SITE IN CONJUNCTION WITH THE PROPOSED REHABILITATION OF THE AREA ONCE THE NEED FOR THE BY-PASS ROAD HAS EXPIRED.

### Alternative S2

WHEN COMPARING ALTERNATIVE S1 AND S2 THERE IS NO DISCERNABLE DIFFERENCE IN THE MAGNITUDE OF IMPACT EXPECTED FOR THE UPGRADE OF THE BRIDGE.

HOWEVER, THERE IS A SIGNIFICANT DIFFERENCE IN THE EXPECTED SIGNIFICANCE OF THE IMPACT WHEN COMPARING THE TWO BY-PASS ROAD ALIGNMENT (S1:NORTH ALIGNMENT VS. S2: SOUTH ALIGNMENT). ALTERNATIVE S2: SOUTHERN BY-PASS ALIGNMENT IS LESS FAVOURABLE DUE TO THE INCREASED DURATION, AND COMPLEXITY OF MITIGATION MEASURES REQUIRED.

### Alternative S3

### Alternative A1 (preferred alternative)

THE UTILISATION OF THE PROPOSED CONCRETE SLAB BRIDGE DESIGN APPEARS

**TO BE THE MOST SUITABLE BRIDGE DESIGN FOR THE ENVIRONMENTAL CONDITIONS PREVALENT AT INGULA BRIDGE. ALTHOUGH THE DIFFERENCE IN THE SIGNIFICANCE OF THE IMPACT BETWEEN ALTERNATIVE A1 AND A2 IS SO MARGINAL THAT IT COULD NOT BE RATED IT APPEARS TO THE ASSESSMENT PRACTITIONER THAT PLACING THE STRUCTURES AS FAR FROM THE WATER COURSE AS POSSIBLE, WITH NO IMPEDED STRUCTURES IN THE CENTRE OF THE STREAM WILL HAVE LESS IMPACTS IN THE LONG TERM. THE ENVIRONMENTAL ASSESSMENT PRACTITIONER THEREFORE RECOMMENDS ALTERNATIVE A1 BE IMPLEMENTED. IT IS, FURTHER, THE ASSESSMENT PRACTITIONERS PROFESSIONAL OPINION THAT THE POSSIBLE IMPACTS TO THE ENVIRONMENT IF ALTERNATIVE A1 IS IMPLEMENTED ARE WITHIN ACCEPTABLE LIMITS.**

**Alternative A2**

**THERE APPEARS TO BE A HIGHER RISK OF INCURRING CUMULATIVE IMPACTS TO THE RIPARIAN ENVIRONMENT IN THE LONG TERM IF A STRUCTURE IS BUILT IN THE CENTRE OF THE STREAM. THE ASSESSMENT PRACTITIONER THEREFORE RATES A2 AS THE LEAST SUITABLE DESIGN FOR THE INGULA BRIDGE UPGRADE.**

**Alternative A3**

**No-go alternative (compulsory)**

**THE STATUS QUO WILL PERSIST AND MAY HAVE THE FOLLOWING CONSEQUENCE:**

- 1.) THE INHERITED LIMITATIONS AND CHALLENGES ASSOCIATED WITH THE SPECIFIC INFRASTRUCTURE WILL PERSIST.
- 2.) THE BRIDGE WILL BE SEASONALLY FLOODED AND COMMUNITIES WILL BE INCONVENIENCED.
- 3.) THE EXISTING STRUCTURE IS SHOWING SIGNS OF FLOOD DAMAGE AND IT IS A MATTER OF TIME BEFORE THE STRUCTURE ITSELF IS WASHED AWAY.
- 4.) THERE WILL BE NO MECHANISM IN PLACE TO ADDRESS THE LONGER TERM FLOODING WHICH WILL OCCUR ONCE THE INGULA PSS IS OPERATIONAL.

**WITHOUT IMPLEMENTATION, THE ENVIRONMENTAL ASSESSMENT PRACTITIONER IS 80% CERTAIN, THAT LONG TERM IMPACT ON THE SOCIO-ECONOMIC ENVIRONMENT WILL BE OF A MODERATE NEGATIVE SIGNIFICANCE AFFECTED AT LEAST THE ADJACENT COMMUNITIES.**

## **8. RECOMMENDATION OF PRACTITIONER**

Is the information contained in this report and the documentation attached hereto sufficient to

**YES** ✓

make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner).

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):

**NOT APPLICABLE**

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:

**ALL MITIGATION AND MANAGEMENT MEASURES DOCUMENTED IN THE EMP ARE RELEVANT FOR INCLUSION IN THE ENVIRONMENTAL AUTHORIZATION.**

## **SECTION F: APPENDIXES**

### **SECTION A ACTIVITY INFORMATION**

**APPENDIX A1: Locality Map**

**APPENDIX A2: Site Photographs**

**APPENDIX A3: Facility Illustration(s)**

## **SECTION B PUBLIC PARTICIPATION**

**APPENDIX B1: Proof of site notice**

**APPENDIX B2: Background Information Document (BID)**

**APPENDIX B3: Proof of newspaper advertisements**

**APPENDIX B4: Comments from Application / Announcement / BID**

**APPENDIX B5: Minutes of any public and or stakeholder meetings**

**APPENDIX B6: Comments and Responses Report**

**APPENDIX B7: Comments from I&APs on Basic Assessment (BA) Report**

**APPENDIX B8: Comments from I&APs on amendments to the BA report**

**APPENDIX B9: Copy of the register of I&APs**

**SECTION C:  
RESOURCE USE & PROCESS DETAILS**

**APPENDIX C1: Water use license(s)**

**APPENDIX C2: SAHRA information**

**APPENDIX C3: Service letters from municipalities**

**APPENDIX C4: Water supply information**

**SECTION D:  
SPECIALIST STUDIES**

**APPENDIX D1: Visual Impact Assessment**

**APPENDIX D2: Soil, Land Capabilities, Vegetation and Wetland Delineation**

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**APPENDIX D3: Aquatic Ecology**

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**APPENDIX D4: Social Impact Assessment and Tourism**

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**Appendix D5: Traffic Assessment**

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**APPENDIX D6: Air Quality Screening Assessment**

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**APPENDIX D7: Noise Assessment**

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**APPENDIX D8: Archaeological and Heritage Assessment**

**SECTION E:  
ENVIRONMENTAL MANAGEMENT PLAN**