CONSTRUCTION OF THE BABOYI RIVER PEDESTRIAN BRIDGE DC21/0039/2012

Draft Basic Assessment Report

April 2013

Applicant: Department of Transport
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agriculture
& environmental affairs
Department:
Agriculture
& Environmental Affairs
PROVINCE OF KWAZULU-NATAL

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Waste Management Licence Number: (if applicable)	
Date Received:	

BASIC ASSESSMENT REPORT

Submitted in terms of the Environmental Impact Assessment Regulations, 2010 promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998)

This template may be used for the following applications:

- Environmental Authorization subject to basic assessment for an activity that is listed in Listing Notices 1or 3, 2010 (Government Notices No. R 544 or No. R 546 dated 18 June 2010); or
- Waste Management Licence for an activity that is listed in terms of section 20(b) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) for which a basic assessment process as stipulated in the EIA Regulations must be conducted as part of the application (refer to the schedule of waste management activities in Category A of Government Notice No. 718 dated 03 July 2009).

Kindly note that:

1. This basic assessment report meets the requirements of the EIA Regulations, 2010 and is meant to streamline applications. This report is the format prescribed by the KZN Department of Agriculture & Environmental Affairs. Please make sure that this is the latest version.
2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not 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 text.
3. Where required, place a cross in the box you select.
4. An incomplete report will 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 will result in the rejection of the application as provided for in the regulations.
6. No faxed or e-mailed reports will be accepted.
7. The report must be compiled by an independent environmental assessment practitioner ("EAP").
8. 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.
9. The KZN Department of Agriculture & Environmental Affairs may require that for specified types of activities in defined situations only parts of this report need to be completed.

10. The EAP must submit this basic assessment report for comment to all relevant State departments that administer a law relating to a matter affecting the environment. This provision is in accordance with Section 24 O (2) of the National Environmental Management Act 1998 (Act 107 of 1998) and such comments must be submitted within 40 days of such a request.
11. Please note that this report must be handed in or posted to the District Office of the KZN Department of Agriculture & Environmental Affairs to which the application has been allocated (please refer to the details provided in the letter of acknowledgement for this application).

DEPARTMENTAL REFERENCE NUMBER(S)

File reference number (EIA):	DC21/0039/2012
File reference number (Waste Management Licence):	

SECTION A: DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER AND SPECIALISTS

1. NAME AND CONTACT DETAILS OF ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

Name and contact details of the EAP who prepared this report:

Business name of EAP:	Kerry Seppings Environmental Management Specialists cc (KSEMS)		
Physical address:	4 Woodville Lane, Off Hawkstone Avenue, Summerveld, Assagay		
Postal address:	P. O. Box 396, Gillitts		
Postal code:	3603	Cell:	-
Telephone:	031 769 1578	Fax:	086 535 5281
E-mail:	kerry.seppings@telkomsa.net		

2. NAMES AND EXPERTISE OF REPRESENTATIVES OF THE EAP

Names and details of the expertise of each representative of the EAP involved in the preparation of this report:

Name of representative of the EAP	Education qualifications	Professional affiliations	Experience at environmental assessments (yrs)
Kerry Stanton	BSc (Hons) MSc (EAPSA Certified)		18
Colin Holmes	BSc (Hons) MSc		1

3. NAMES AND EXPERTISE OF SPECIALISTS

Names and details of the expertise of each specialist that has contributed to this report:

Name of specialist	Education qualifications	Field of expertise	Section/ s contributed to in this basic assessment report	Title of specialist report/ s as attached in Appendix D
Active Heritage cc	CVs available on request	Heritage Identification and Assessment	Section C (6)	Heritage Impact Assessment of the proposed Boboyi Pedestrian Bridge, Hibiscus Coast Local Municipality.
Bruce Page and Associates	CVs available on request	Vegetation Assessment	Section C (4)	Vegetation Assessment: Pedestrian Bridge and Culvert,

				Baboyi. Construction of Culvert 30°44'42.16''S and 30°23'40.25''E Construction of Pedestrian Bridge 30°44'38.68''S and 30°23'34.04''E Hibiscus Coast Local Municipality Ugu District Municipality.
Geosure	CVs available on request	Geotechnical Assessment	Section C (3)	Report to Samani Consulting cc on the Results of a Geotechnical Investigation for the Proposed Boboyi River Pedestrian Bridge, KwaZulu-Natal
River-Wise	CVs available on request	Wetland and Riparian Assessment and Delineation	Section C (4)	Riparian Delineation and Assessment, Boboyi Pedestrian Bridge, Ugu District Municipality

SECTION B: ACTIVITY INFORMATION

1. PROJECT TITLE

Describe the project title as provided on the application form for environmental authorization:

The construction of the Boboyi River Pedestrian Bridge

2. PROJECT DESCRIPTION

Provide a detailed description of the project:

The Department of Transport propose to construct a bridge structure across the Boboyi River within the Hibiscus Coast Local Municipality of the Ugu District Municipality. The proposed bridge is primarily aimed at improving access to the nearby Merlewood Secondary School. At present, many of the scholars are forced to be absent from school during periods of heavy rains.

The pedestrian bridge will be two (2) metres wide and measure a total length of 43.5 metres, crossing the river at a height where the bridge structure will be above at least the 1:50 year floodline of the river. The bridge will be a concrete structure supported approximately five (5) metres above ground level by two support piers on the river banks and two abutments where the concrete footpath will connect to the bridge structure on either side. A resocrete handrail will span the entire length of the bridge. The concrete footpath will measure a total of 258 metres in length and 1.2 metres in width, improving access to and from the bridge (Appendix C).

The pedestrian bridge will serve the local community and residents of the area and will provide the community with a safer and more efficient way of traversing the river, especially during periods of high water levels and flooding. It will improve services by providing improved access to health and police services and important transportation networks for all members of the local community, increasing the ease of mobility and decreasing travel times.

3. ACTIVITY DESCRIPTION

Describe each listed activity in Listing Notice 1 (GNR 544, 18 June2010), Listing Notice 3 (GNR 546, 18June 2010) or Category A of GN 718, 3 July 2009 (Waste Management Activities) which is being applied for as per the project description:

As per LN 1_ GNR 544_ 18th June 2010 promulgated from the 2nd of August 2010:	No. 11 iii) *Bridges*	The Applicant proposes to construct a pedestrian bridge across the Boboyi River in the Hibiscus Coast Local Municipality triggering activity 11 of GNR 544, construction of a bridge within 32 metres of a water course. The design layout of the bridge is not yet finalized but the bridge will cross the river at a point identified by the local community as a common crossing point easily accessible by the entire community, particularly the local school children who will benefit most from the bridge

	xi) Infrastructure covering an area greater 50 m^2	construction. A footpath will also be constructed on either side of the proposed bridge. The final bridge layout and consequently footpath layout has not been finalised. Therefore the development footprint of the footpath may cover an area greater than 50 square metres.
As per LN 1_ GNR 544_ 18th June 2010 promulgated from the 2nd of August 2010:	No. 18 *i) A watercourse*	As the final design layout of the bridge is not yet finalized, the structure may result in support piers within the river or on the banks immediately adjacent to the river which will trigger activity No. 18 of GNR 544 as well.
As per LN 1_ GNR 546_ 18th June 2010 promulgated from the 2nd of August 2010:	No. 12 a) *The clearance of an area of 300 square metres or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation.*	The development of this bridge and associated footpath will result in the removal of more than 300 metres of vegetation. The vegetation unit being affected by the development is the KwaZulu-Natal Coastal Belt which is classified as endangered. Therefore the removal of more than 300 square metres of an endangered vegetation community triggers Listed Activity No. 12 as per Listing Notice 3.

4. FEASIBLE AND REASONABLE ALTERNATIVES

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

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

Describe alternatives that are considered in this report. 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.

The Department of Transport propose to construct a bridge structure and associated footpath across the Baboyi River within the Hibiscus Coast Local Municipality of the Ugu District Municipality. The proposed bridge is part of DOT's on-going strategy to improve pedestrian movement in the rural areas. The proposed bridge and footpath is primarily aimed at improving access to the nearby Merlewood Secondary School. At present, many of the scholars are forced to be absent from school

during periods of heavy rains. The bridge will also improve services by providing improved access to health and police services and important transportation networks for all members of the local community.

Alternative A1 and S1:

The pedestrian bridge will be two (2) metres wide and measure a total length of 43.5 metres, crossing the river at a height where the bridge structure will be above at least the 1:50 year floodline of the river. The bridge will be a concrete structure supported five (5) metres above ground level by two support piers on the river banks and two abutments where the concrete footpath will connect to the bridge structure on either side. A resocrete handrail will span the entire length of the bridge. The concrete footpath will measure a total of 258 metres in length and 1.2 metres in width, improving access to and from the bridge (Appendix C).

Alternative A1 and S1 (preferred alternative) was chosen due to its proximity to the Merlewood School. It is currently the main informal river crossing point utilised by the surrounding community and was pinpointed by the local residents and school principal as the most appropriate location. The proposed location will be most convenient for the majority of the surround residents and it is also located near existing road infrastructure. There is a high probability that the community will continue to utilise this site as an informal crossing if this proposed site was not utilised as the bridge location.

The close proximity of the site to existing road infrastructure means that site access is possible with minimal environmental disturbance.

A site alternative was initially considered at another less utilised informal path leading to the river roughly 200 metres upstream of the preferred alternative. This alternative would have involved the construction of a pedestrian bridge as detailed above, however the terrain is significantly steeper and the area on the southern bank is undisturbed. Therefore the alternative would result in very higher construction costs and more vegetation required to be removed.

However, this alternative was not considered as this is not the preferred crossing utilised by the community, increasing commuting time and decreasing the probability of utilising the bridge. The increased construction required makes the alternative site not economically feasible and there will be a very large amount of vegetation unnecessarily removed.

No Go Alternative:

The no go alternative i.e. not constructing a pedestrian bridge across the Boboyi River would result in scholars at the Merlewood Secondary School and the local communities continued use of informal crossing points. During periods of high water levels and floods, the community would continue to be at risk while attempting to traverse the river. The local community would continue to have limited access to important road networks continuing the difficulties of accessing jobs, schools and work opportunities.

Sections B 5 – 15 below should be completed for each alternative.

5. 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, minutes and seconds. List alternative sites were applicable.

Alternative:	Latitude (S):			Longitude (E):		
Alternative S1[1] (preferred or only site alternative)	30°	44‘	38.38“	30°	23‘	34.19“
Alternative S2 (if any) N/A						
Alternative S3 (if any) N/A						

In the case of linear activities: N/A

Alternative:	Latitude (S):			Longitude (E):		
Alternative S1 (preferred or only route alternative)						
• Starting point of the activity	o	‘	“	o	‘	“
• Middle point of the activity	o	‘	“	o	‘	“
• End point of the activity	o	‘	“	o	‘	“
Alternative S2 (if any)			“			“
• Starting point of the activity	o	‘	“	o	‘	“
• Middle point of the activity	o	‘	“	o	‘	“
• End point of the activity	o	‘	“	o	‘	“
Alternative S3 (if any)			“			“
• Starting point of the activity	o	‘	“	o	‘	“
• Middle point of the activity	o	‘	“	o	‘	“
• End point of the activity	o	‘	“	o	‘	“

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

6. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative:	Size of the activity:
Alternative A1[2] (preferred activity alternative)	397 m²
Alternative A2 (if any)	N/A m²
Alternative A3 (if any)	N/A m²

or, for linear activities:

Alternative:	Length of the activity: N/A
Alternative A1 (preferred activity alternative)	m

[1] “Alternative S..” refer to site alternatives.
[2] “Alternative A..” refer to activity, process, technology or other alternatives.

Alternative A2 (if any)	m
Alternative A3 (if any)	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)	Approximately 1700m^2
Alternative A2 (if any)	N/A m^2
Alternative A3 (if any)	N/A m^2

7. SITE ACCESS

Does ready access to the site exist?	YES	NO
Footpaths are used to access the site by the local community members and there are formal access roads in close proximity to the site. A district road is located approximately 180 metres from the bridge site on the northern side. An access road forming part of the low cost housing is located approximately 180 metres from the site on the southern side of the river.	X	
If NO, what is the distance over which a new access road will be built		
Describe the type of access road planned:		
N/A		

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

8. 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 A to this report.

The site or route plans must indicate the following:

8.1. the scale of the plan which must be at least a scale of 1:500;
8.2. the property boundaries and numbers/ erf/ farm numbers of all adjoining properties of the site;
8.3. the current land use as well as the land use zoning of each of the properties adjoining the site or sites; Land use is unzoned due to its location.
8.4. the exact position of each element of the application as well as any other structures on the site;
8.5. 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; N/A
8.6. walls and fencing including details of the height and construction material; N/A
8.7. servitudes indicating the purpose of the servitude; N/A
8.8. sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):
- rivers, streams, drainage lines or wetlands;
- the 1:100 year flood line (where available or where it is required by DWA);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation including protected plant species (even if it is degraded or infested with alien species);

8.9. for gentle slopes the 1 metre 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

8.10. the positions from where photographs of the site were taken.

9. SITE PHOTOGRAPHS

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

10. FACILITY ILLUSTRATION

A detailed illustration of the facility must be provided at a scale of 1:200 and attached to this report as Appendix C. The illustrations must be to scale and must represent a realistic image of the planned activity/ies.

11. ACTIVITY MOTIVATION

11.1. Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R 5 million	
What is the expected yearly income that will be generated by or as a result of the activity?	R 316 800	
Will the activity contribute to service infrastructure?	YES X	NO
Is the activity a public amenity?	YES X	NO
How many new employment opportunities will be created in the development phase of the activity?	19	
What is the expected value of the employment opportunities during the development phase?	R 316 800	
What percentage of this will accrue to previously disadvantaged individuals?	100%	
How many permanent new employment opportunities will be created during the operational phase of the activity?	Nil	
What is the expected current value of the employment opportunities during the first 10 years?	R 316 800	
What percentage of this will accrue to previously disadvantaged individuals?	100%	

11.2. Need and desirability of the activity

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

The KwaZulu-Natal Department of Transport was alerted by the Department of Education of school children not being able to attend school during times of increased water flow of the Boboyi River. There is no permanent crossing at present and the children of Merlewood Secondary School are forced to stay at home. The infrastructure associated with the bridge construction includes that of a footpath, which is a necessity due to gradient of the southern bank of the river. The footpath will help insure safe crossing during periods of high water flow and during dry periods.

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

As above

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

As above

12. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline:	Administering authority:	Date:
National Environmental Management Act	All organs of State.	1998
Environment Conservation Act	DEA / DAEA	1989
World Heritage Convention Act	SAHRA / AMAFA / DAC	1999
Conservation of Agriculture Resources Act	DAEA	1983
National Environmental Management: Biodiversity Act	DEA	2004
National Forests Act	DAFF	1998
National Water Act	DWA	1998
National Water Resources Strategy	DWA	2004
Occupational Health and Safety Act	DOL	1993
Hazardous Chemical Substance regulations	DOL	1995
Environmental Regulations for Workplaces	Department of Labour	1987
General Administrative Regulations	Department of Labour	2003
Construction Regulations	DOL	2003
eThekwini Municipality by-laws (General By-laws)	eThekwini Municipality	2008
Noise Induced Hearing Loss Regulations	Department of Labour	2003
National Environmental Management: Air Quality Act	DEA / DAEA	2004
National Environmental Management: Waste Act	DEA / DAEA	2008
National Road Traffic Act	DEA / DAEA	1996
National Environmental Management Act: Protected Areas	DEA / DAEA	2003

13. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

13.1. Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	YES	NO
If yes, what estimated quantity will be produced per month?	±3m^3	

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

Waste will be temporarily stored on site in designated waste skips / bins and then removed by an appropriate waste contractor to an approved landfill site. This will be managed through the EMPr.

Where will the construction solid waste be disposed of? (provide details of landfill site)

Solid waste will be removed when appropriate levels of waste have accumulated at the on-site waste storage facility within the construction site camp. This waste will be disposed of at the nearest registered landfill. The nearest landfill sites are in Port Shepstone, approximately 13 kilometres away from the site.

Will the activity produce solid waste during its operational phase?	YES	NO
If yes, what estimated quantity will be produced per month?	N/A m^3	

How will the solid waste be disposed of? (provide details of landfill site)

N/A

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

N/A

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine the further requirements of the application.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?	YES	NO

If yes, contact the KZN Department of Agriculture & Environmental Affairs to obtain clarity regarding the process requirements for your application.

Is the activity that is being applied for a solid waste handling or treatment facility?	YES	NO

If yes, contact the KZN Department of Agriculture & Environmental Affairs to obtain clarity regarding the process requirements for your application.

13.2. 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?	N/A m^3	
Will the activity produce any effluent that will be treated and/or disposed of on site?	Yes	NO

If yes, contact the KZN Department of Agriculture & Environmental Affairs to obtain clarity regarding the process requirements for your application.

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:

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

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

Little to no wastewater is expected to be produced from the construction phase and no wastewater will be produced during the operational phase.

13.3. Emissions into the atmosphere

Will the activity release emissions into the atmosphere?	YES	NO
If yes, is it controlled by any legislation of any sphere of government?	YES	NO

If yes, contact the KZN Department of Agriculture & Environmental Affairs to obtain clarity regarding the process requirements for your application.

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

Dust will be produced during the construction phase as well as emissions from construction vehicles accessing the site. These emissions will be comprised primarily of CO_2 and will be of a low concentration. Dust abatement measures if required will be implemented throughout construction activities and this will be controlled by an EMPr.

13.4. Generation of noise

Will the activity generate noise?	YES	NO
If yes, is it controlled by any legislation of any sphere of government?	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.

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

The proposed activity will generate noise during the construction phase from construction vehicles and equipment. It is not expected that noise levels during construction will exceed 85dBa. Noise suppressors should be used on machinery on site. Workers will be trained regarding noise on site and construction hours will be kept to working hours (07h00 to 17h00). Work should not continue on weekends, after hours or public holidays.

14. WATER USE

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

municipal	water board	groundwater	river, stream, dam or lake	other	the activity will not use water
✓					

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:	N/A	
Does the activity require a water use permit from the Department of Water Affairs?	YES	NO

If YES, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this report.

15. ENERGY EFFICIENCY

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

The activity involves the construction of a bridge and footpath; as such energy efficient activities are not practical.

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

The activity involves the construction of a bridge and footpath; as such there are no alternative energy sources available during construction. In the event of lighting being provided on the bridge, it is recommended that energy saving light-bulbs be used for this lighting.

SECTION C: SITE/ AREA/ PROPERTY DESCRIPTION

Important notes:

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

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

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

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

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

The riverbank on the southern side of the river has a far steeper gradient compared to that of the more moderate gradient of the northern riverbank.

Alternative S2 (if any): N/A

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

Alternative S3 (if any): N/A

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

2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site (Please cross the appropriate box).

Alternative S1 (preferred site):

Ridgeline	Plateau	Side slope of hill/mountain	Closed valley	Open valley	Plain	Undulating plain/low hills	Dune	Sea-front

Alternative S2 (if any):

Ridgeline	Plateau	Side slope of hill/mountain	Closed valley	Open valley	Plain	Undulating plain/low hills	Dune	Sea-front

Alternative S3 (if any):

Ridgeline	Plateau	Side slope of hill/mountain	Closed valley	Open valley	Plain	Undulating plain/low hills	Dune	Sea-front

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Has a specialist been consulted for the completion of this section?	YES	NO

If YES, please complete the following:

Name of the specialist:	Geosure
Qualification(s) of the specialist:	Available on request
Postal address:	PO Box 1461, Westville

Postal code:	3630		
Telephone:	031 266 0458	Cell:	082 784 0544
E-mail:	geosure@iafrica.com	Fax:	086 689 5506

Are there any rare or endangered flora or fauna species (including red data species) present on any of the alternative sites?	YES	NO X
If YES, specify and explain:		
Are their any special or sensitive habitats or other natural features present on any of the alternative sites?	YES	NO X
If YES, specify and explain:		
Are any further specialist studies recommended by the specialist?	YES	NO X
If YES, specify:		
If YES, is such a report(s) attached in Appendix D?	YES X	NO

Signature of specialist: _____ Date:

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

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

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

3.1. Geotechnical Assessment

3.1.1. Summary of Findings of Geotechnical Assessment

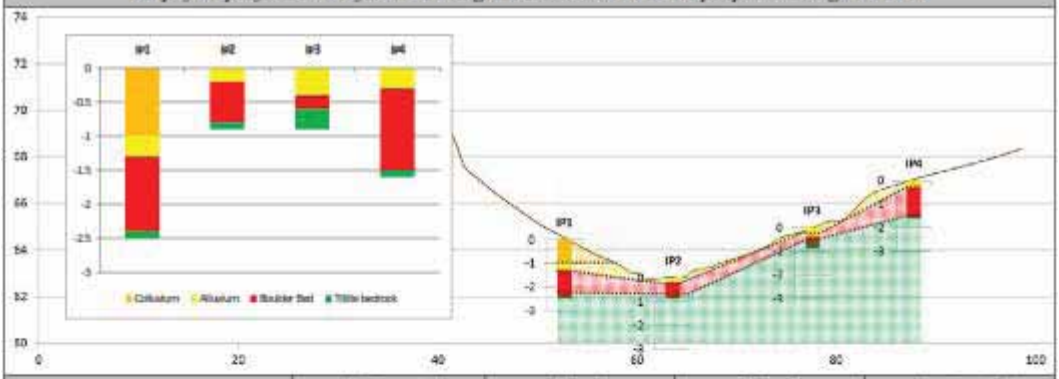
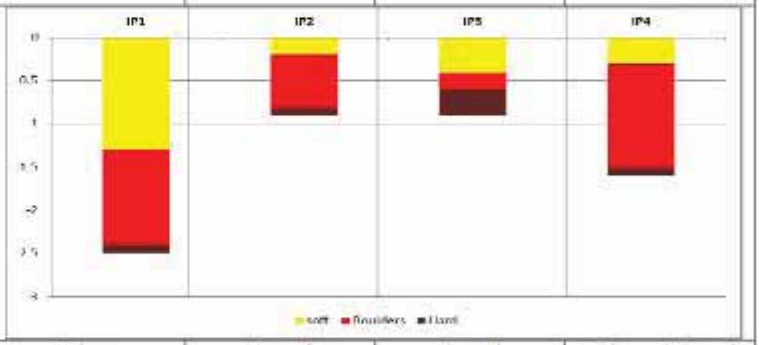
A Geotechnical assessment was conducted in November 2012 by Geosure (Pty) Ltd. The field work comprised of general geotechnical assessments of the sites, excavation and logging of inspection pits, logging of natural exposure profiles, Dynamic Cone Penetrometer testing, seismic testing and material sampling for laboratory testing. Several inspection pits were excavated to examine subsoils to a maximum reachable depth of 1.5 m or until refusal was met at shallower depths.

The site is generally underlain by transported sand and boulders overlying moderately weathered, hard rock tillite of the Dwyka Group, Karoo Supergroup. In general, the following geological units can be recognised across the site:

- **Unit 1:** Slightly moist, dark orange brown, medium dense, Clayey SAND to Sandy SILT – *Colluvium* (Only found in IP1 at the foot of the steep slope).
- **Unit 2:** Slightly moist, orange brown, loose to medium dense, Clayey SAND, with pebbles and cobbles – *Alluvium*
- **Unit 3**: Moist to wet, dark greyish brown, loose to medium dense o Clayey SAND, with abundant tillite boulders – Transported / residual tillite? (*Boulder bed)*.
- **Unit 4**: Dark grey, speckled loght grey/ olive brown, moderately weathered and moderately fractured – *Hard rock Tillite*.

Findings of the investigation are summarised in Table 1 below.

Table 1: Summary of Conditions on site and viable founding options.

Simplified profiles and Inferred Geological cross section at the proposed bridge location				
				
	Abutment A	*Pier 1*	*Pier 2*	*Abutment B*
Investigation:	IP1	IP2	IP3	IP4
Depth to bedrock (m):	2.4	0.8	0.6	1.5
Groundwater seepage:	-	-	-	1.3
Excavatebility:				
***Recommended foundation type (ABP):**	Caisson (500kN/m²)	Spread (500kN/m²)	Spread (500kN/m²)	Caisson / Spread (500kN/m²)
Expected settlement:	negligible (< 5mm) provided the concrete is cast directly onto clean competent bedrock			
Additional recommendations:	It is recommended that all foundation excavations be inspected and approved by Geosure (Pty) Ltd prior to blinding and casting concrete.			

* *Provided that water inflow and potential collapse of the excavation sidewalls can be dealt with and the footings anchored into bedrock.*

ABP – Allowable Bearing Pressure

\- No seepage encountered

3.1.2. Summary of Recommendations of Geotechnical Specialist

All earthworks should be carried out in a manner to promote stable development of the site.

It is recommended that earthworks be carried out along the guidelines given in SANS 1200 (current version).

All vegetation should be removed from the areas over which fills are to be built. Where natural ground slopes are steeper than 1(vertical):6(horizontal) (6 degrees), the fill must be benched into the slope. Benches should be minimum 0.5m deep and 2.0m wide. A minimum of three benches per fill is recommended.

Placement of fill layers should be undertaken in layers not exceeding 200mm thick when placed loose and compacted using suitable compaction plant to achieve 93% Modified AASHTO maximum dry density at ±2% optimum moisture content. Boulders larger than 2/3 of the layer thickness must not be included in the fill material. A carefully engineered fill embankment should not settle more than 0.5% of its height due to self weight.

Density control of placed fill material should be undertaken at regular intervals during fill construction.

Cut and fill embankments should generally not exceed 1(vertical):2(horizontal) and will need to be protected from undercutting scour during times of high river flows or heavy rainfall.

Conclusion: Based on the results of the fieldwork undertaken during this investigation, it is considered that this site is generally stable and suitable for development, provided that the recommendations given in this report are adhered to.

4. GROUNDCOVER

Has a specialist been consulted for the completion of this section?			YES	NO
If YES, please complete the following:				
Name of the specialist:	Bruce Page & Associates			
Qualification(s) of the specialist:	BSc (Hons); MSc Upgraded to PhD; PhD in prep.			
Postal address:	P.O. Box 843, Link Hills			
Postal code:	3652			
Telephone:	0317763756	Cell:	0824471894	
E-mail:	brupage@gmail.com	Fax:	0317763756	
Are there any rare or endangered flora or fauna species (including red data species) present on any of the alternative sites?			YES	NO
If YES, specify and explain:	N/A			
Are there any special or sensitive habitats or other natural features present on any of the alternative sites?			YES	NO
If YES, specify and explain:	N/A			
Are any further specialist studies recommended by the specialist?			YES	NO
If YES, specify:	N/A			
If YES, is such a report(s) attached in Appendix D?			YES	NO

Signature of specialist: _____ Date: _____

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

Natural veld - good condition[E]	Natural veld with scattered aliens[E]	Natural veld with heavy alien infestation[E]	Veld dominated by alien species[E]	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

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

4.1. Wetland / Riparian Impact Assessment

4.1.1. *Summary of Findings of Wetland / Riparian Assessment*

Riverwise Aquatic & Wetland Ecologists were commissioned to undertake a wetland and riparian delineation and assessment of the proposed study area. The study was undertaken to delineate any wetland and riparian areas at the site and determine the functionality of these systems and, using the results, to make recommendations regarding the proposed pedestrian bridge development. The riparian areas were delineated according to the delineation procedure as set out by "A Practical Field Procedure for the Identification and Delineation of Wetlands and Riparian Areas" document, as described by DWAF (2005).

The proposed bridge crossings are located in a rural communal area, called Bhobhoyi, and would be located along an existing worn pathway linking an older residential area to a more recently developed low cost housing development node. A series of footpaths have been worn along the proposed alignment and litter is scattered along the path. Litter and debris were prolific along the flood bench and were indicative of the recent heavy rains.

During the site visit the river at the main crossing was still in full flood, and was an indication of the extent of depth and velocities of flow that are reached in flood conditions, and the difficulty of crossing.

The riparian zone delineated is best classified as a Riparian B Channel which is seasonal. Primary inputs are from overland flow from catchment runoff and concentrated surface flow from upstream tributaries. There is a flood bench which is periodically inundated during floods.

The smaller tributary to be crossed is best classified as an A or B Section Riparian Channel. This is a steep headward channel which has eroded down to bed rock and does not carry baseflow. The primary inputs are from storm runoff during and after heavy rainfall events, and flows are therefore of a short duration, but there is a high erosion potential as demonstrated by the erosion that has taken place at the convergence with the path.

The ecological integrity score obtained for the main riparian channel gives a resultant integrity category of D reflecting that a large loss of natural habitat, biota and basic ecosystem functions have occurred. The ecological integrity score obtained for the tributary gives a resultant integrity category of C reflecting that a loss and change of natural habitat and biota have occurred but the basic ecosystem functions are still predominantly unchanged.

The impacts related to construction are thus expected to be:

- increased erosion
- increased sedimentation,
- water contamination
- deterioration of water quality, and the
- compaction of soil as a consequence of heavy machinery during construction.

Construction phase mitigation should thus aim to prevent further erosion and improve water quality.

4.1.2. Recommendations of the Wetland / Riparian Specialist

During construction of the bridge abutments and the piers (if applicable) within the river itself, all possible measures to reduce erosion and prevent sedimentation of the river must be carried out. The following mitigation recommendations apply:

- Construction of the bridge should take place during periods of low flow / the dry season.

- The disturbance footprint, including the areas traversed by trucks and machinery must be kept to a minimum and limited to a specific operational area.
- No stock piling must take place within the defined riparian zone.
- Water diversions must be limited to a specific time frame and must only divert the required water for the construction of a single pier at a time.
- All exposed soil must be stabilized post construction.

Measures must be put in place to ensure that stormwater runoff from the footpaths is not channelled along the paths causing erosion. Surface water runoff should be diverted off the paths at frequent intervals and should preferably be discharged onto adjacent grassland, rather than directed into the river. Alternatively for the approaches to the culverted structure, flows should be directed into the river onto hard rock or a permanently saturated zone, upstream of the proposed structure.

Conclusion: A bridge would improve the water quality downstream of this crossing. Disturbance to the vegetation in this instance is not considered to be of significant impact. This is due to the localized nature of the disturbance. Additionally, the wetland vegetation present in this area is considered to be resilient enough re-establish if overgrazing and excessive erosion are prevented.

4.2. Vegetation Assessment

4.2.1. Summary of Findings of Vegetation Assessment

A vegetation assessment was conducted in August 2012 by Bruce Page and Associates for the purpose of determining the type of vegetation present at the site and assessing potential impacts thereon from the construction of the Baboyi Pedestrian Bridge. The vegetation surrounding the bridge site is typical of the KwaZulu-Natal Coastal Belt type, although. However it is somewhat depauperate because of frequent burning, grazing and the harvesting of wood. There was no evidence of patches of either individual species or distinct community types that would be impacted by the erection of the proposed structures.

The point at which the footpath and bridge cross the drainage line and stream respectively have clearly been used as crossing points for an extended period. Fringing woody vegetation has been cleared to a distance of some three meters on either side of the path at the culvert site and about five meters on the south bank and ten meters on the north bank of the stream at the pedestrian bridge site. Similarly the herbaceous vegetation has been extirpated on the path and significantly reduced adjacent to it by trampling and erosion.

All of the species encountered are common within the KwaZulu-Natal Coastal Belt type and in many other adjoining types. Despite extensive searching I could not detect any of the biogeographically important and endemic species mentioned by Mucina and Rutherford (2006) and extracted from the SIBIS database in a radius of twenty metres around the sites for the proposed structures.

4.3.2. Recommendations of Vegetation Specialist

There is a very slight chance that geophytes (bulbs) may be encountered whilst clearing for the construction. It is suggested that if any are unearthed that they are simply replanted a few metres away.

The woody vegetation on the sites are nearly all alien invasive species, mostly *Chromalena odorata*, but also *Lantana camara* and *Caesalpinia decapetala*. Care should be taken when these species is in the path of required clearing to ensure that the individuals are plants is removed intact (with roots) and destroyed.

Conclusion: The vegetation assessment concludes, based on impacts on vegetation, there is no reason for suggesting that the proposed structures should not be erected.

5. LAND USE CHARACTER OF SURROUNDING AREA

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

Land use character			Description
Natural area	YES X	NO	The Boboyi River and surrounding vegetation creates the natural environment of the site. The potential impacts on the river and surrounding vegetation are discussed in Section E.
Low density residential	YES X	NO	Local community housing is found in relatively close proximity to the site. There will be no impacts on these houses.
Medium density residential	YES	NO X	
High density residential	YES	NO X	
Informal residential	YES X	NO	Local community housing is found in relatively close proximity to the site. There will be no impacts on these houses.
Retail commercial & warehousing	YES	NO X	
Light industrial	YES	NO X	
Medium industrial	YES	NO X	
Heavy industrial	YES	NO X	
Power station	YES	NO X	
Office/consulting room	YES	NO X	
Military or police base/station/compound	YES	NO X	
Spoil heap or slimes dam	YES	NO X	
Quarry, sand or borrow pit	YES	NO X	
Dam or reservoir	YES	NO X	
Hospital/medical centre	YES	NO X	
School/ creche	YES	NO X	
Tertiary education facility	YES	NO X	
Church	YES	NO X	
Old age home	YES	NO X	
Sewage treatment plant	YES	NO X	

Train station or shunting yard	YES	NO X	
Railway line	YES	NO X	
Major road (4 lanes or more)	YES	NO X	
Airport	YES	NO X	
Harbour	YES	NO X	
Sport facilities	YES	NO X	
Golf course	YES	NO X	
Polo fields	YES	NO X	
Filling station	YES	NO X	
Landfill or waste treatment site	YES	NO X	
Plantation	YES	NO X	
Agriculture	YES	NO X	
River, stream or wetland	YES X	NO	The pedestrian bridge will cross the Boboyi River. There is also a few tributaries within the vicinity. Potential impacts are discussed in Section E.
Nature conservation area	YES	NO X	
Mountain, hill or ridge	YES X	NO	The bridge is at the valley bottom, with the ridge line being located along the southern side of the river.
Museum	YES	NO X	
Historical building	YES	NO X	
Protected Area	YES	NO X	
Graveyard	YES X	NO	The northern bank of the river has previously utilised as a cemetery for paupers and victims of fatal accidents. The site is no longer utilised for any burials. A heritage impact assessment has been commissioned as part of the BAR to ensure that the existing heritage resources and potential impacts thereon are identified. This will help avoid impacts on the resources where possible. Potential impacts are discussed in Section E.
Archaeological site	YES	NO X	
Other land uses (describe)	YES	NO X	

6. CULTURAL/ HISTORICAL FEATURES

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 within 20m of the site?	YES	NO X

If YES, contact a specialist recommended by AMAFA to conduct a heritage impact assessment. The heritage impact assessment must be attached as an appendix to this report.

Briefly explain the recommendations of the specialist:	A Heritage Impact Assessment was conducted to identify heritage resources in the vicinity of thw development. Please see summary of the Heritage Impact Assessment below.

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 the necessary application to AMAFA and attach proof thereof to this report.

6.1. Heritage Impact Assessment

6.1.1.Summary of Findings of Heritage Impact Assessment

A Heritage Impact Assessment (HIA) was conducted in November 2012 by Active Heritage cc for the purpose of determining if areas or items of cultural significance are present at the point at which the proposed bridge and footpath will be located. The area is dominated by modern township developments, on either side of the river, and some individual rural homesteads.

No archaeological sites were observed in the immediate vicinity of the proposed Pedestrian Bridge Site. However, some informal graves occur on the northern bank of the Boboyi River. According to local villagers theses graves belong to paupers and people who have died in unnatural conditions. They are spatially removed from the local homesteads and formal grave yards and buried in an open field adjacent to the Boboyi River. In addition, none of the identified graves appear to be older than 60 years and they are therefore not protected by heritage legislation. However, they are protected by legislation such as such as the Human Tissues Act (Act No.65 of 1983 and as amended), the Removal of Graves and Dead Bodies Ordinance (Ord. No. 7 of 1925) and The Exhumations Ordinance (Ord. No. 12 of 1980).

6.1.2. Recommendations of Heritage Specialist

Three modern grave sites and a potential clustering of graves have been located during this survey. These sites have local significance and therefore need to be treated with respect. As they are all younger than 60 years they are not formally protected by heritage legislation.

It is proposed that the developer maintain a buffer zone of 20m around each grave site where no development may occur. No removal of artefacts or alterations of any structure will be allowed within this zone. It is proposed that the developer rather shift the alignment of the proposed bridge rather than apply for mitigation (a costly and long term process) in order to maintain the integrity of the proposed buffer zones.

Conclusion: It must be pointed out that the South African National Heritage Act requires that operations exposing archaeological and historical residues should cease immediately pending an evaluation by the heritage authorities, Amafa. The Provincial Health Authority and local Health Department must be contacted should the integrity of these graves been compromised by the proposed development.

SECTION D: PUBLIC PARTICIPATION

The application has been advertised in the South Coast Fever (local) and The Daily News (regional) Newspapers on the 24th and 29th of August 2012 respectively. Signboards have been placed in close proximity to the proposed Baboyi Pedestrian Bridge site and notices have also been handed to the local ward councilors and inkosi's for circulation within the community. A meeting may be held with registered interested and affected parties (I&APs). Written notification was given to the Nkosi and Ward Councilor on the 24th of July 2012, who has stated that he will notify the community. The following authorities and interest groups have also been notified on the 09th of October 2012: Department of Water Affairs (DWA), AMAFA Heritage KZN, WESSA, Ezemvelo KZN Wildlife, Department of Agriculture, Forestry and Fisheries, the Umzumbe Local Municipality and the Ugu District Municipality's environmental department.

1. ADVERTISEMENT

The person conducting a public participation process must take into account any guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of the application which is subjected to public participation by—

(a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the competent authority) at a place conspicuous to the public at the boundary or on the fence of—
  (i) the site where the activity to which the application relates is or is to be undertaken; and
  (ii) any alternative site mentioned in the application;

(b) giving written notice to—
  (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
  (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
  (v) the local and district municipality which has jurisdiction in the area;
  (vi) any organ of state having jurisdiction in respect of any aspect of the activity (as identified in the application form for the environmental authorization of this project); and
  (vii) any other party as required by the competent authority;

(c) placing an advertisement in—
  (i) one local newspaper; or
  (ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;

(d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official *Gazette* referred to in subregulation 54(c)(ii); and

(e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to—
  (i) illiteracy;
  (ii) disability; or
  (iii) any other disadvantage.

2. CONTENT OF ADVERTISEMENTS AND NOTICES

A notice board, advertisement or notices must:

(a) indicate the details of the application which is subjected to public participation; and

(b) state—

- (i) that an application for environmental authorization has been submitted to the KZN Department of Agriculture & Environmental Affairs in terms of the EIA Regulations, 2010;(ii)
- (iii) a brief project description that includes the nature and location of the activity to which the application relates;
- (iv) where further information on the application can be obtained; and
- (iv) the manner in which and the person to whom representations in respect of the application may be made.

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

Where the proposed activity may have impacts that extend beyond the municipal area where it is located, a notice must be placed in at least one provincial newspaper or national newspaper, indicating that an application will be submitted to the competent authority in terms of these regulations, the nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations in respect of the application can be made, unless a notice has been placed in any *Gazette* that is published specifically for the purpose of providing notice to the public of applications made in terms of the EIA regulations.

Advertisements and notices must make provision for all alternatives.

4. DETERMINATION OF APPROPRIATE PROCESS

The EAP must ensure that the public participation process is according to that prescribed in regulation 54 of the EIA Regulations, 2010, but may deviate from the requirements of subregulation 54(2) in the manner agreed by the KZN Department of Agriculture & Environmental Affairs as appropriate for this application. Special attention should be given to the involvement of local community structures such as Ward Committees, ratepayers associations and traditional authorities where appropriate.

Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was inadequate.

5. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments and respond to each comment of the public before this application is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations (regulation 57 in the EIA Regulations, 2010) and be attached as Appendix E to this report.

6. PARTICIPATION BY DISTRICT, LOCAL AND TRADITIONAL AUTHORITIES

District, local and traditional authorities (where applicable) are all key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of this application and provided with an opportunity to comment.

Has any comment been received from the district municipality?	YES	NO X

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

N/A

Has any comment been received from the local municipality?	YES X	NO

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

The local municipality requested to be registered as an I&AP to receive information relating to the Basic Assessment process.

Has any comment been received from a traditional authority?	YES	NO X

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

N/A

7. CONSULTATION WITH OTHER STAKEHOLDERS

Any stakeholder that has a direct interest in the site or property, such as servitude holders and service providers, should be informed of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders?	YES	NO X

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

N/A

SECTION E: IMPACT ASSESSMENT

The assessment of impacts must adhere to the requirements in the EIA Regulations, 2010, 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 main issues raised by interested and affected parties.

Please see Appendix E for Comments and Response Report

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 as Appendix E to this report):

Please see Appendix E for Comments and Response Report

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

2.1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN PHASE

There are no impacts as a result of the planning and design phase, as all planning and design has been completed offsite.

a. Site alternatives

List the potential impacts associated with site alternatives that are likely to occur during the planning and design phase:

Alternative A1 and S1 (preferred alternative)
Direct impacts: **N/A** ***Indirect impacts:*** **N/A** ***Cumulative impacts:*** **N/A**
Alternative S2 (if any)
Direct impacts: **N/A** ***Indirect impacts:*** **N/A** ***Cumulative impacts:*** **N/A**
No-go alternative (compulsory)
Direct impacts: **N/A** ***Indirect impacts:*** **N/A** ***Cumulative impacts:*** **N/A**

Indicate mitigation measures to manage the potential impacts listed above:

Alternative A1 and S1	**Alternative S2**

N/A	N/A

b. Process, technology, layout or other alternatives

There are no impacts as a result of the process, technology, layout or other alternatives.

List the impacts associated with any process, technology, layout or other alternatives that are likely to occur during the planning and design phase (please list impacts associated with each alternative separately):

Alternative A1 and S1 (preferred alternative)
Direct impacts: N/A ***Indirect impacts:*** N/A ***Cumulative impacts:*** N/A
Alternative S2 (if any)
Direct impacts: N/A ***Indirect impacts:*** N/A ***Cumulative impacts:*** N/A

No-go alternative (compulsory)
Direct impacts: N/A ***Indirect impacts:*** N/A ***Cumulative impacts:*** N/A

Indicate mitigation measures to manage the potential impacts listed above:

Alternative A1 and S1:	Alternative S2:
N/A	N/A

2.2. IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE

Description Of Environmental Issues Identified, Assessment Of The Significance Of Each Issue And An Indication Of The Extent To Which The Issue Could Be Addressed By The Adoption Of Mitigation Measures [Regulation 22 (2) (i-k)].

a. Site alternatives

List the potential impacts associated with site alternatives that are likely to occur during the construction phase:

Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/ reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
SOIL										
Erosion of stockpiled material (stone, sand and gravel).	Direct	Local	Construction phase (short-term)	Yes – can be managed.	No	Medium	High	Material must be stockpiled in such a way that it cannot fall or cause injury or damage to properties or the natural environment. Stockpiles must not exceed 2m in height and must be covered if exposed to heavy wind or rain. Alternatively, low walls or berms must be constructed around the stockpiles. A site-specific Environmental Management Programme (EMPr) has been designed to manage construction activities and is attached under Appendix F.	Low	Low
The onsite erosion of	Direct	Local	Construction phase	Yes – can be	No	Medium	High	The duration of exposed soil must be	Low	Low

Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/ reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
exposed soil before rehabilitation is completed.			(short-term)	managed				kept to a minimum and rehabilitation must be initiated as soon as construction is completed. The contractor must stabilise cleared areas to prevent and control erosion and / or sedimentation of the river. Only vegetation that needs to be removed for the construction of the bridge, should be removed in a phased and controlled manner.		
Increased potential for erosion along river banks resulting in the sedimentation of the river.	Indirect	Local	Construction phase (short-term)	Yes – can be managed	No	Medium	High	The necessary precautions will need to be taken to prevent erosion which should include the implementation of sandbags / silt fencing as a temporary measure until rehabilitation can occur. During construction, guidelines set out by the ECO will be followed to ensure no potential impacts occur. This must be controlled	Low	Low

Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/ reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
								by the EMPr.		
STORMWATER										
Poor stormwater management during construction can lead to erosion and loss of soil.	Indirect	Local	Construction phase (short term)	Yes	No	Medium	High	Stormwater control must be implemented during construction; however this is a temporary impact of the proposal. A drainage system must be established for the construction camp. Contaminated stormwater must not be allowed to enter the river. The drainage system must be regularly checked to ensure an unobstructed water flow. This will be controlled by the EMPr.	Low	Low
FLORA										
Risk of alien invasive encroachment into disturbed areas.	Direct	Local	Construction phase (short-term)	Yes	No	Medium	High	At present, alien encroachment is minimal but must be controlled during construction. The establishment or spread of alien plant species on site must be monitored and the correct removal and disposal of alien plant species must be	Low	Low

Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/ reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
								followed. Rehabilitation of disturbed areas must commence as soon as construction activities are completed in those areas. All activities will be managed by an EMPr.		
Damage and removal of existing vegetation.	Direct	Local	Construction phase (short-term)	Yes	No	Low	High	Workers must be educated / trained on minimizing damage to vegetation during construction. Only vegetation that must be removed for the construction of the bridge should be removed and the footprint must be kept to a minimum. Rehabilitation of disturbed areas must be undertaken with locally indigenous species upon completion of construction activities. This must be controlled through the EMPr.	Low	Low
Removal of endangered vegetation community	Direct	Local	Construction phase (short-term)	Yes	No	Low	High	The vegetation assessment has indicated that there is no biogeographically	Low	Low

Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/ reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
								important and endemic species, therefore no endangered vegetation will be removed. There is a very slight chance that geophytes (bulbs) may be encountered whilst clearing the vegetation. If any are unearthed they must be replanted a few metres from the construction site.		
FAUNA										
Hunting / Fishing by construction workers.	Direct	Local	Construction phase (short-term)	Yes	No	Low	High	Hunting, poaching or fishinh is prohibited during construction. Guidelines set out by the ECO must be followed to ensure no potential impacts occur and workers will be instructed that hunting and fishing is a non-compliance of the authorized activity. This must be controlled through the EMPr.	Low	Low

Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/ reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
SENSITIVE ENVIRONMENTAL AREAS										
Degradation and contamination of the Boboyi River and surrounding environment by cement and other hazardous materials.	Direct	Local	Construction phase (short-term)	Yes	No	High	High	Site workers will be trained in avoiding impacts in areas of potential concern (e.g. steep river banks, floodplains). Designated concrete mixing areas and storage areas for any hazardous materials must be assigned; cement mixing is not permitted in any area where runoff can enter the Boboyi River. This must be strictly controlled through the site specific EMPr.	Low	Low
Damage to river banks during excavation, causing sedimentation of the watercourse and affecting water quality.	Direct	Local	Construction phase (short-term)	Yes	No	High	High	The necessary precautions will need to be taken to prevent erosion which should include the implementation of sandbags / silt fencing as a temporary measure until rehabilitation occurs. The foundations of the bridge will be constructed on exposed bedrock and as such	Low	Low

Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/ reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
								very little excavating will be required, however, the necessary precautions will be in place for any potential excavations required. During construction, guidelines set out by the ECO must be followed to ensure no potential impacts occur. This must be strictly controlled by the EMPr.		
Modification of the river flow and riverine dynamics of the area.	Indirect	Local (potential to become regional if it affects stream flow dynamics further down the watercourse)	Construction phase (short-term)	Yes	No	High	High	The natural downstream flow of the river is to be maintained during construction. The bridge has been designed so that the support piers will be on the river banks adjacent to the river and thus no impacts on the flow dynamics are anticipated. Any activities conducted within or near watercourses should be strictly monitored by an ECO and the best construction practices, as outlined in the EMPr, must be implemented.	Low	Low

Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/ reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
Potential disturbance or unearthing of the graves on the northern side of the river and disturbance to other heritage resources during the construction phase.	Direct	Local	Construction phase	Yes	No	Medium	High	An HIA has been conducted and the full report is available in Appendix D. As per the HIA, a 20 metre 'no-go' buffer must be placed around all grave sites. In the event of any heritage resources or artifacts being discovered during construction, activities in this area must cease immediately and AMAFA must be contacted to investigate the finding. This must be strictly monitored by the ECO and controlled through the EMPr.	Low	Low
WASTE										
Improper storage and disposal of solid waste.	Direct	Local (within construction site)	Construction phase (short-term)	Yes impact can be managed	No	Medium	High	Due to the nature of the activity, waste is anticipated to be minimal. All solid waste generated during the construction process must be placed in a designated waste collection area within the construction camp and must not be allowed to blow around	Low	Low

Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/ reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
								the site, be accessible by animals, or be placed in piles adjacent to the skips / bins. All solid waste must then be disposed of at the nearest licensed landfill and safe disposal certificates must be obtained and kept on site at all times during construction. Separate skips/ bins for the different waste streams must be available on site. The waste containers must be appropriate to the waste type contained therein and where necessary should be lined and covered. This must be managed through the site specific EMPr and monitored by the ECO.		
Littering around the site.	Direct	Local (within construction site)	Construction phase (short-term)	Yes impact can be managed	No	Medium	High	Littering is not permitted on the site and general housekeeping must be enforced. General waste bins must be readily available for	Low	Low

Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/ reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
								litter disposal and general housekeeping. The EMPr must be followed during construction.		
Improper disposal of rubble i.e.: burying or neglecting building rubble resulting in direct mechanical damage to surrounding vegetation and untidiness of the site.	Direct	Local (within construction site)	Construction phase (short-term)	Yes impact can be managed	No	Medium	High	All excess material and rubble must be removed from the site so not to restrict the rehabilitation process. All excess material and rubble must go to an approved designated landfill and a safe disposal certificate must be obtained. All activities must be managed by an EMPr. Site workers will be trained in avoiding such impacts during induction training and regular toolbox talks.	Low	Low
Lack of toilet facilities resulting in unsanitary conditions.	Direct	Local (within construction site)	Construction phase (short-term)	Yes impact can be managed	No	Medium	High	Adequate chemical toilet facilities must be provided for all staff members as standard construction practice. These toilets must be regularly cleaned by a reputable company and maintained in a clean state. This must be	Low	Low

Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/ reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
								monitored in an EMPr.		
Improper disposal of toilet waste from chemical toilets resulting in contamination of the surrounding environment and the Boboyi River.	Direct	Local (within construction site)	Construction phase (short-term)	Yes impact can be managed	No	Medium	High	Chemical toilets must be placed within the construction camp and not in close proximity to the river. The chemical toilets must be provided by a registered company and all effluent must be regularly disposed of at a licenses facility. Safe disposal certificates must be kept on record.	Low	Low
Increase waste to landfill site.	Cumulative	Local (potential to become regional)	Construction phase (short-term)	Yes impact can be managed	No	Medium	High	Due to the nature of the activity, waste is anticipated to be minimal. Where possible, waste streams will be separated and recycled to limit the amount of waste being added to the landfill site.	Low	Low
HAZARDOUS CHEMICALS / FUELS										
Risk of spills from construction equipment (oils, fuels, cement etc) contaminating soil and the	Direct	Local (within construction site)	Construction phase (short-term)	Yes impact can be managed	No	Medium	High	Any hazardous or dangerous goods utilised during the construction phase must be stored on an impermeable surface that is bunded, fenced, locked and covered. A	Low	Low

Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/ reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
watercourse.								spill kit must be clearly marked and visible when utilising hazardous or dangerous materials to ensure that all spills are immediately cleaned. Spill kits must be regularly checked and maintained. The EMPr must be followed during construction.		
NOISE										
Noise generated by construction workers, machinery and construction vehicles disturbing surrounding residents.	Direct	Local (within construction site)	Construction phase (short-term)	Yes impact can be managed	No	Medium	High	Excessive noise must be controlled on site. Workers will be trained regarding noise generation on site and construction hours will be kept to working hours (07h00 to 17h00). The construction activities will be monitored by an ECO who will ensure compliance with the construction EMPr. All precautions must be taken to ensure that noise generation is kept to a minimum. If excessive noise is expected during certain	Low	Low

Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/ reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
								stages of the construction, nearby residents must be notified prior to the event.		
AIR QUALITY										
Emissions generated from construction vehicles	Direct	Local	Construction phase (short-term)	Yes impact can be managed	No	Medium	High	The only emissions that will be generated will be from construction vehicles which will be minimal and is not expected to significantly affect the surrounding communities or the environment.	Low	Low
Dust generated from construction vehicles and other on site activity	Direct	Local	Construction phase (short-term)	Yes impact can be managed	No	Medium	High	Dust control measures (the use of a water cart / truck) must be used to wet exposed soil and thereby ensure that excessive dust levels are not experienced on site. The dust levels must be kept below the required SANBS standard to ensure minimal impact on the surrounding community and the environment.	High	Low
RESOURCE USE & CONSERVATION										
Sourcing of raw materials i.e.: (gravel, stone,	Direct	Local (potential to	Construction phase (short-term)	Yes impact can be managed	No	Medium	High	All materials must be obtained from a registered and	Low	Low

Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/ reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
sand, cement and water) from unsustainable sources resulting in illegal sand mining and mining operations causing significant environmental damage.		become regional)						sustainable source and all delivery notes and slips must be made available to the ECO e.g. mined material such as stone must only be obtained from permitted quarries.		
TRAFFIC										
Speeding vehicles resulting in safety issues for surrounding community and their livestock.	Direct	Local	Construction phase (short-term)	Yes	No	Medium	High	Speeding will be prohibited. Flagmen and other traffic control measures should be implemented if the need arises during the construction phase. An EMPr has been designed to manage construction activities and is attached as Appendix F.	Low	Low
SOCIO-ECONOMIC										
Damage to surrounding neighbours' properties i.e.: houses, fence lines, crops,	Direct	Local	Construction phase (short-term)	Yes	No	Low	High	Surrounding neighbours must be consulted prior to construction to discuss the construction process and potential	Low	Low

Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/ reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
gardens and accesses.								impacts on nearby properties, as well as opportunities regarding employment. Properties are not expected to be severely impacted on as they are not in close proximity to the site, however, should unplanned impacts occur, the contractor will be responsible for the necessary repairs.		
Positive impact - Potential temporary employment during the construction phase.	Direct	Local	Construction phase (short-term)	Positive impact no mitigation required.	No	Positive impact no mitigation required.	Positive impact no mitigation required.	Positive impact no mitigation required – skilled local community members may be granted employment during the construction phase.	Positive impact no mitigation required.	Positive impact no mitigation required.
Positive impact – scholars will no longer have to swim across the river to get to school at great risk to their own safety.	Direct	Local	Construction phase (short-term)	Positive impact no mitigation required.	No	Positive impact no mitigation required.	Positive impact no mitigation required.	Positive impact no mitigation required – the pedestrian bridge will allow all scholars to safely traverse the Boboyi River.	Positive impact no mitigation required.	Positive impact no mitigation required.
Positive impact – community members will no longer have	Direct	Local	Construction phase (short-term)	Positive impact no mitigation required.	No	Positive impact no mitigation required.	Positive impact no mitigation required.	Positive impact no mitigation required – the pedestrian bridge will allow all community	Positive impact no mitigation required.	Positive impact no mitigation required.

Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/ reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
to swim across the river or use longer and more expensive alternative routes to get to important road networks.								members to quickly and safely traverse the Boboyi River.		

No-Go Alternative:

Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/ reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
IMPACTS OF THE NO-GO OPTION										
Scholars continued swimming across the Boboyi River to attend school.	Direct	Local	Long term	Yes	No	High	Low	Cannot be mitigated. Scholars would continue to be forced to swim across the Boboyi River during heavy rains to attend school at great risk to their own health and safety, particularly during periods of high water levels.	High	High
Continued lack of access to important road networks.	Direct	Local	Long term	Yes	No	Medium	Low	Cannot be mitigated. Community members would continue to risk crossing the river during periods of high	High	Medium - High

Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/ reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
								water levels (e.g. flooding) and access to important road networks would continue to be limited. Alternative ways of getting to important road networks would continue to be costly.		
Health and safety	Direct	Local	Long Term	Yes	No	Medium	Low	Cannot be mitigated. Community members, especially scholars would continue to swim across the Boboyi River at great risk to their own health and safety, particularly during periods of high water levels.	High	Medium - High

2.3. IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE

a. Site alternatives

List the potential impacts associated with site alternatives that are likely to occur during the operational phase:

Nature of Impact (potential)	Direct or Indirect	Extent of Impact	Duration of Impact	Can impact be prevented/ reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
Potential impacts on the Boboyi River.	Direct	Local	Operational phase (long term)	Yes	No	High	High	Impacts on the Boboyi River are expected to be minimal because the bridge will be well above the water level of the watercourse and informal crossing of this river will no longer be required. Community members must ensure no litter or other forms of general waste are thrown from the bridge into the river. The engineering design has taken into account the potential flow rates for the river to ensure the watercourse is not impacted upon and a maintenance team will be employed to ensure river bank stability and the functionality of the bridge in the long term.	Low	Low
Potential impacts on river	Direct	Local	Operational phase (long	Yes	No	High	High	The engineering design of the bridge will ensure	Low	Low

Nature of Impact (potential)	Direct or Indirect	Extent of Impact	Duration of Impact	Can impact be prevented/ reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
bank stability.			term)					that the integrity and stability of the river banks are not compromised. Rehabilitation measures will also be implemented upon completion of construction activities which will assist with the riverbank stability.		
Long term structural integrity of the bridge being compromised during a large flood event.	Direct	Local	Operational phase (long term)	Yes	No	High	High	The engineering design has taken into account the potential flow rates coming from each catchment area and designed the bridge accordingly (will withstand at least 1:50 year flood events) to ensure the integrity of the bridge is maintained during floods or other weather events.	Low	Low
Costs of maintenance to the bridge.	Direct	Local	Operational phase (long term)	Yes	No	Medium	Low	Regular maintenance of the bridge is required to ensure the structural integrity of the bridge is maintained and any potential damage to the bridge can be mitigated. The cost of maintenance	Medium	Medium

Nature of Impact (potential)	Direct or Indirect	Extent of Impact	Duration of Impact	Can impact be prevented/ reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
								operations must be borne by the applicant.		
Erosion of surrounding banks due to stormwater	Indirect	Local	Operational phase (long term)	Yes	No	High	Low	Stormwater control measures will need to be implemented to ensure water running off the bridge and footpath does not cause erosion to the surrounding environment. With no municipal sewer systems in the area, all stormwater should be directed to the river or surrounding vegetative environment via stormwater channels or pipelines without the possibility of sediment being picked up or structural damage to the river banks occurring.	Low	Low
Improved access to important road networks	Indirect	Local	Operational phase (long term)	Positive impact no mitigation required.	No	Positive impact no mitigation required.	Positive impact no mitigation required.	Positive impact no mitigation required. Residents will now have an easier and more efficient way of traversing the river. The completed bridge will facilitate connectivity and increase rural	Positive impact no mitigation required.	Positive impact no mitigation required.

Nature of Impact (potential)	Direct or Indirect	Extent of Impact	Duration of Impact	Can impact be prevented/ reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
								mobility in the region.		
Positive Impact – Health and Safety - community members, particularly scholars, won't have to traverse the river at great risk to their own health and safety.	Direct	Local	Construction phase (short-term)	Positive impact no mitigation required.	No	Positive impact no mitigation required.	Positive impact no mitigation required.	Positive impact no mitigation required.	Positive impact no mitigation required.	Positive impact no mitigation required.

No-Go Alternative:

IMPACTS OF THE NO-GO OPTION										
Nature of Impact (potential)	**Direct or Indirect**	**Extent of Impact**	**Duration of Impact**	**Can impact be prevented/ reversed or managed?**	**Will irreplaceable resources be lost?**	**Probability before mitigation**	**Mitigatory Potential**	**Mitigation measure**	**Probability after mitigation**	**Significance after mitigation**
Continued informal crossing of the Boboyi River (i.e. traversing across during times of increased flow).	Direct	Local	Long term	No	No	High	Low	Cannot be mitigated. Community members, particularly scholars, would continue to swim across the river in order to attend school or reach important road networks at risk to their health and safety during times of	High	Medium - High

								increased flow.		
Continued lack of access important road networks.	Direct	Local	Long term	No	No	High	Low	Cannot be mitigated. Community members would continue to risk crossing the river and access to important road networks would continue to be limited	High	Medium - High
Health and Safety - community members, especially scholars, would continue to swim across the river.	Direct	Local	Long Term	No	No	Medium	Low	Cannot be mitigated. Community members, particularly scholars, would continue to swim across the river, particularly during periods of high water, levels putting their own health and safety at risk and increasing the potential for injuries and deaths.	High	High

2.4. IMPACTS THAT MAY RESULT FROM THE DECOMISSIONING OR CLOSURE PHASE

a. Site alternatives

The proposed construction of the Boboyi Pedestrian Bridge will be a permanent structure and as such there will be no decommissioning or closure phase. However, the impacts associated with decommissioning of the bridge are listed below for both alternatives.

List the potential impacts associated with site alternatives that are likely to occur during the decommissioning or closure phase:

Nature of Impact (potential)	Direct or Indirect	Extent of Impact	Duration of Impact	Can impact be prevented/ reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
SOIL										
The rubble and steel would	Direct	Local	Decommissioning (short-	Yes – can be	No	Medium	High	Alternative uses for all waste materials should	Low	Low

Nature of Impact (potential)	Direct or Indirect	Extent of Impact	Duration of Impact	Can impact be prevented/ reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
need to be removed and disposed of off-site. As a result, there will be a potential increase in the amount of waste sent to the landfill site			term)	managed.				be sort and recycling should take place where possible. Should no alternative uses for the waste be found, disposal at a licensed landfill must occur.		
Potential contamination of the Boboyi River with rubble and waste.	Direct	Local	Decommissioning (short-term)	Yes – can be managed	No	Medium	High	The duration of exposed soil must be kept to a minimum and rehabilitation must be initiated as soon as decommissioning is completed. The contractor must stabilise cleared areas to prevent and control erosion and / or sedimentation. Any vegetation that requires removal during the decommissioning phase must be done so in a phased manner that does not damage other vegetation unnecessarily.	Low	Low
Negative impact on	Indirect	Local	Decommissioning (short-	Yes – can be	No	Medium	High	Disruption of water flow and drainage at the	Low	Low

Nature of Impact (potential)	Direct or Indirect	Extent of Impact	Duration of Impact	Can impact be prevented/ reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
riparian areas.			term)	managed				bridge and downstream of it will be minimal as there will be no modification of the river bed. Erosion on the river banks must be controlled and prevented.		
Decommissioning activities causing erosion especially along the river banks.	Direct	Local	Decommissioning (short term)	Yes	No	Low	High	The river banks will need to be rehabilitated and re-vegetated preventing any possible erosion once decommissioning is complete.	Low	Low
Construction rubble / waste entering the river could lead to increased sedimentation and impact on water quality of the river.	Indirect	Local	Decommissioning (short-term)	Yes	No	Low	High	Control measures must be implemented during decommissioning and care should be taken to prevent any rubble or other waste material entering the river.	Low	Low
Limited / restricted access to important road networks for local community members.	Indirect	Local	Decommissioning (short-term)	Yes	No	Medium	High	Local community members will cross the river at informal crossing points or will be forced to swim across the river again. They will again be at risk when trying to reach access points to	Low	Low

Nature of Impact (potential)	Direct or Indirect	Extent of Impact	Duration of Impact	Can impact be prevented/ reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
								get to jobs, schools or work opportunities.		
Scholars will once again have to traverse the Boboyi River during times of increased flow.	Direct	Local	Decommissioning (short-term)	Yes	No	High	Low	Should decommissioning occur, scholars will again have to traverse the river to attend school at great risks to their own health and safety.	Low	Low
Increase waste to landfill site.	Cumulative	Local (potential to become regional)	Decommissioning (short-term)	Yes impact can be managed	No	Medium	High	Waste streams will be separated and recycled where possible to limit amount of waste added to the landfill site.	Low	Low

2.5. PROPOSED MONITORING AND AUDITING

For each phase of the project and for each alternative, please indicate how identified impacts and mitigation will be monitored and/or audited.

Alternative A1 and S1 (preferred site)

Construction phase: It is recommended that monitoring be done through monthly environmental construction audits ensuring compliance with an Environmental Management Programme (EMPr). An independent ECO must be appointed to undertake this monitoring process.

Operation phase: The applicant must ensure inspections and scheduled maintenance of infrastructure. A post construction audit must be undertaken by the ECO to ensure the EMPr requirements have been met.

Assumptions, Uncertainties and Gaps In Knowledge [Regulation 22 (2) (m)]

There are no uncertainties or gaps in the information provided and the EAP is confident that sufficient information has been provided to allow an assessment of the proposal.

3. ENVIRONMENTAL IMPACT STATEMENT

Environmental impact statement with a reasoned opinion as to whether the activity should be authorised or not be authorized; [Regulation 22 (2) (n)]

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

It is the opinion of the EAP that the application submitted for the proposed pedestrian bridge (Alternative S1 and A1) be approved. This alternative would result in minor environmental and social impact as minimal vegetation will require removal for the construction of the bridge at this point and this is best location for the bridge in terms of the servicing the scholars and the community as a whole. The bridge will be designed to a height that will withstand at least 1:50 year flood events therefore providing the scholars and community with a more efficient and safer means of traversing the Boboyi River.

Alternative A1 and S1 (preferred site)

The Department of Transport propose to construct a bridge structure across the Boboyi River within the Hibiscus Coast Local Municipality of the Ugu District Municipality. The proposed bridge is primarily aimed at improving access to the nearby Merlewood Secondary School. At present, many of the scholars are forced to be absent from school during periods of heavy rains.

The pedestrian bridge will be two (2) metres wide and measure a total length of 43.5 metres, crossing the river at a height where the bridge structure will be above at least the 1:50 year floodline of the river. The bridge will be a concrete structure supported five (5) metres above ground level by two support piers on the river banks and two abutments where the concrete footpath will connect to the bridge structure on either side. A resocrete handrail will span the entire length of the bridge. The concrete footpath will measure a total of 258 metres in length and 1.2 metres in width, improving access to and from the bridge (Appendix C).

The pedestrian bridge will serve the local community and residents of the area and will provide the community with a safer and more efficient way of traversing the river, especially

during periods of high water levels and flooding. It will improve services by providing improved access to health and police services and important transportation networks for all members of the local community, increasing the ease of mobility and decreasing travel times. All the impacts identified with regard to this alternative can be easily and cost effectively mitigated and managed.

All potential impacts that may occur during the construction and operational phases of the bridge development have been identified in Section E above and key impacts and mitigation measures are discussed below.

The most significant impacts identified for the preferred alternative was the potential for the Boboyi River to become polluted during construction. There may be a risk of contamination of the river if proper protocol for storage and usage of certain hazardous and polluting materials is not followed. The EMPr is designed to mitigate this type of pollution and must be adhered to by the contractor to mitigate pollution of the river. The stability of the river banks could potentially be impacted upon. The bridge has been designed in such a way as to ensure river bank stability by including various structural support mechanisms. Rehabilitation of disturbed areas will also be undertaken to further ensure the stability of river banks.

The structural integrity of the bridge during periods of flood could potentially be impacted upon. The bridge has been designed to withstand at least 1:50 year flood events and regular maintenance of the bridge will be undertaken to further ensure the integrity of the bridge.

In terms of the operational phase of the development, rehabilitation measures must be implemented upon completion of construction activities. This will ensure that river bank stability is maintained and that sedimentation of the river does not occur. The operational phase will have positive impacts for the community members, particularly the scholars, as they will have a safer and more efficient means of traversing the Boboyi River as well as having greater access to important transportation routes thereby making jobs, schools and work opportunities more accessible.

In addition to the above mitigation methods, an EMPr has been produced for this project (Appendix F) which includes methods and protocol to be followed by each of the parties involved in the construction of the bridge. It is envisaged that, provided the EMPr is strictly adhered to during the construction process, it is not expected that the proposal will have significant impacts on the environment. In conclusion if all the suggested mitigation methods outlined in this report are followed then impacts can be rated as low.

Alternative S2

N/A

No-go alternative (compulsory)

The ‘No-Go’ alternative (i.e. not constructing the pedestrian bridge) will lead to the primary goal of providing the Merlewood scholars a safer and more efficient means of traversing the river, not being met. The ‘No Go’ alternative will effectively negate the community and local leader’s wishes for the construction of a bridge that provides a safe and efficient means of crossing the Boboyi River as they have expressed concern for the amount of community members, especially children, being injured or drowning while attempting to cross the river during floods. The significance of this is that local community members, particularly children, will be forced to continue crossing the Boboyi River at informal crossing points or swimming across. This is always dangerous but is especially dangerous during periods when the river is in flood and could potentially result in further drowning incidents and will result in the continued restricted access of community members to schools and important road networks. It is also expected that no new employment opportunities will be created for local residents during construction and operation. These impacts are all rated as medium-high.

SECTION F. RECOMMENDATION OF EAP

	YES	NO
Is the information contained in this report and the documentation attached hereto in the view of the EAPr sufficient to make a decision in respect of this report?	X	
If "NO", please contact the KZN Department of Agriculture & Environmental Affairs regarding the further requirements for your report. **N/A**		

If "YES", please attach the draft EMPr as Appendix F to this report and 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:

1. It is recommended that alternative A1 and S1 (i.e. construction of a pedestrian bridge across the Boboyi River) be accepted from environmental and social perspective.
2. The applicant must ensure that mitigation measures and controls specified in the EMPr are adhered to. The construction of the bridge must be monitored by an independent ECO who should ensure compliance with the construction EMPr. Please see the EMPr attached as Appendix F for further details on management of the site during construction.
3. It is recommended that environmental construction audits be conducted on a monthly basis. In addition a pre-construction audit and post-construction audit (PCA) must be conducted.
4. The contractor and his staff must attend an environmental awareness training course, presented by the site engineer or a suitably qualified EO from the engineers / contractors, prior to construction commencing. The environmental awareness training course should cover the following key aspects: (a) basic awareness and understanding of key environmental features of the work site and the surrounding environment, (b) understanding the importance of, and reasons why, the environment must be protected, (c) ways to minimize environmental impacts, and (d) requirements of the Environmental Authorisation and EMPr. The EAP must be on hand to aid with any environmentally-based questions.
5. Construction activities must comply with designated working hours and surrounding residents must be informed prior to commencement of construction activities.
6. Emergency contact numbers must be placed at each construction site.
7. Adequate chemical toilet facilities must be provided for all staff members as standard construction practice. The chemical toilets must be from a registered company and all sewage must be disposed of at an appropriate facility. Safe disposal certificates must be kept on record.
8. Existing infrastructure (i.e. electricity lines, water pipelines) must be identified prior to construction.
9. As there are no formal stormwater drainage facilities on site, the contractor must prepare a Stormwater Control Plan / Method Statement to ensure that all construction methods adopted on site do not cause, or precipitate, soil erosion. The designated responsible person on site, as indicated in the Stormwater Control Plan (usually the contractor) should ensure that no construction work takes place before the stormwater control measures are in place. The Stormwater Control Plan must be approved by the ECO prior to implementation.
10. The duration of exposed soil must be kept to a minimum and rehabilitation must be initiated as soon as construction is completed.
11. Materials must be stockpiled in appropriate areas where storm water runoff cannot erode into the stockpile.

12. Dust control must be implemented throughout the construction phase through the use of a water cart / truck.
13. Speeding must be prohibited.
14. Any alien vegetation found within, or surrounding, the construction site must be cleared to ensure that invasion of disturbed areas does not occur.
15. There may not be hunting / fishing of wildlife or poaching of livestock on the site and no setting of snares or traps. No animals are to be harmed or harassed. Hunting or poaching must be prohibited.
16. Cement mixing must take place on a hard surface or on cement mixing trays. Cement mixing will not be permitted to occur where run off can enter the watercourse. In addition cement and fuels must be stored within bunded and hard surfaced areas. If the creation of a permanent bunded area is not feasible, these materials must be stored on drip trays capable of holding at least 110% of the spilled volume.
17. All materials must be obtained from a registered and sustainable source and all delivery notes and slips must be made available to the Environmental Control Officer (e.g. mined material such as stone must only be obtained from permitted quarries).
18. Littering must not be permitted on the site and general housekeeping must be enforced.
19. Waste must be stored in the bins within the waste collection area in the construction camp and must not be allowed to blow around the site, be accessible by animals, or be placed in piles adjacent to the skips / bins and must be disposed of at an appropriate land fill site.
20. Hazardous waste must be stored on a hard surface within a bunded area and must not be allowed to enter watercourses and the surrounding environment.
21. All excess material and rubble must be removed from the site so as not to restrict the rehabilitation process. All excess material and rubble must go to an approved, designated landfill and a safe disposal certificate must be obtained.
22. Recycling should be undertaken where possible to limit waste added to the landfill site
23. The watercourse may not be used as a water source by staff unless water abstraction is approved and permitted by DWA.
24. A spill response procedure must be designed to manage spills during operation. Suitable spill kits must be available and staff must be made aware of the spill response procedure.
25. A 20 metre ‘no-go’ buffer must be placed around all potential grave sites.
26. In the event of Heritage resources or artefacts being uncovered during construction, activities around the site must cease immediately and AMAFA must be contacted to investigate the findings.

SECTION G: APPENDIXES

The following appendixes must be attached as appropriate:

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

Appendix E: Comments and responses report

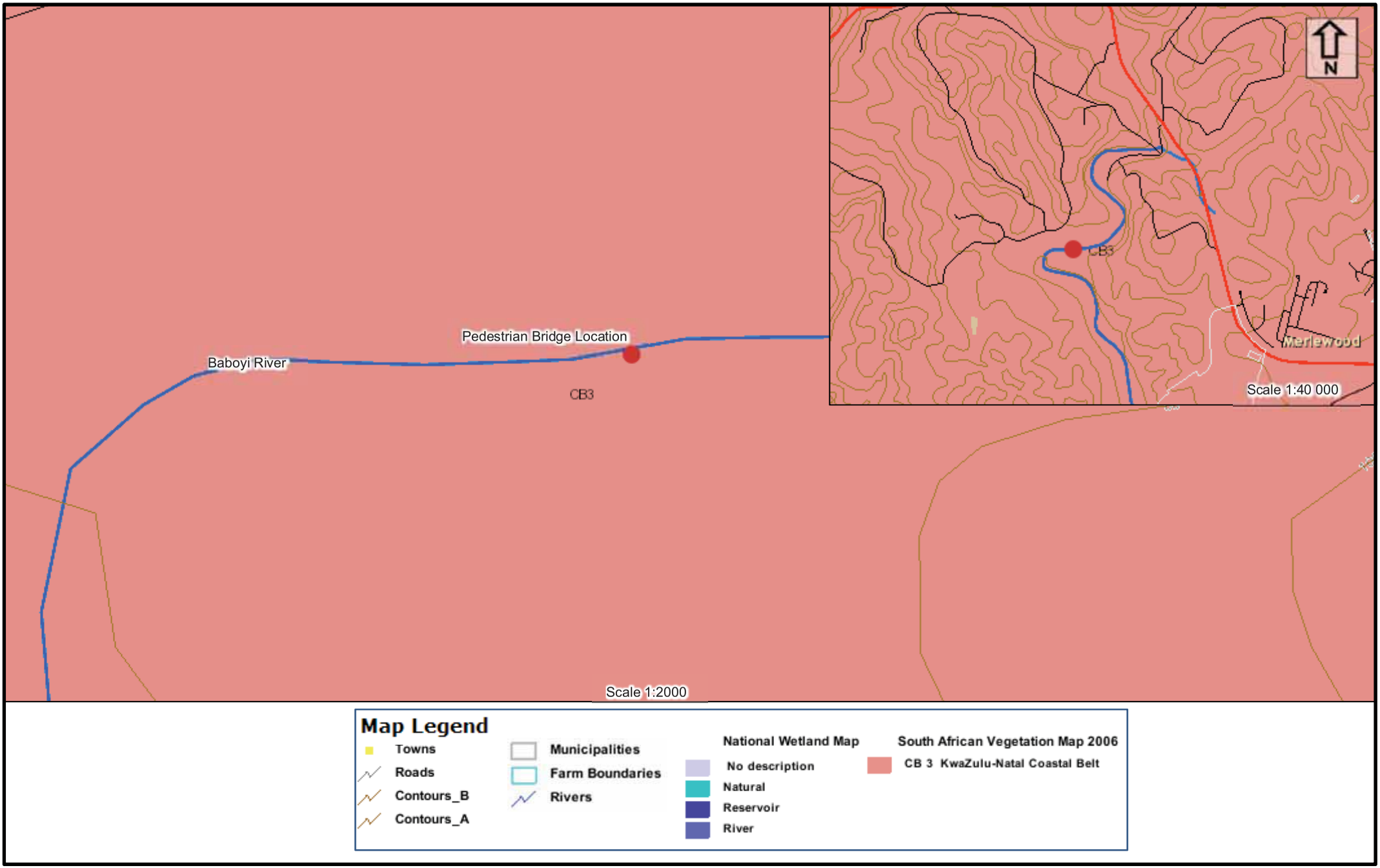
Appendix F: Draft Environmental Management Programme (EMPr)

Appendix G: Other information

Appendix A – Site Plan(s)

- Aerial photograph showing the proposed bridge site.
- Aerial photograph showing the contour intervals
- 1:50 000 Map indicating the proposed site and adjacent landuses.

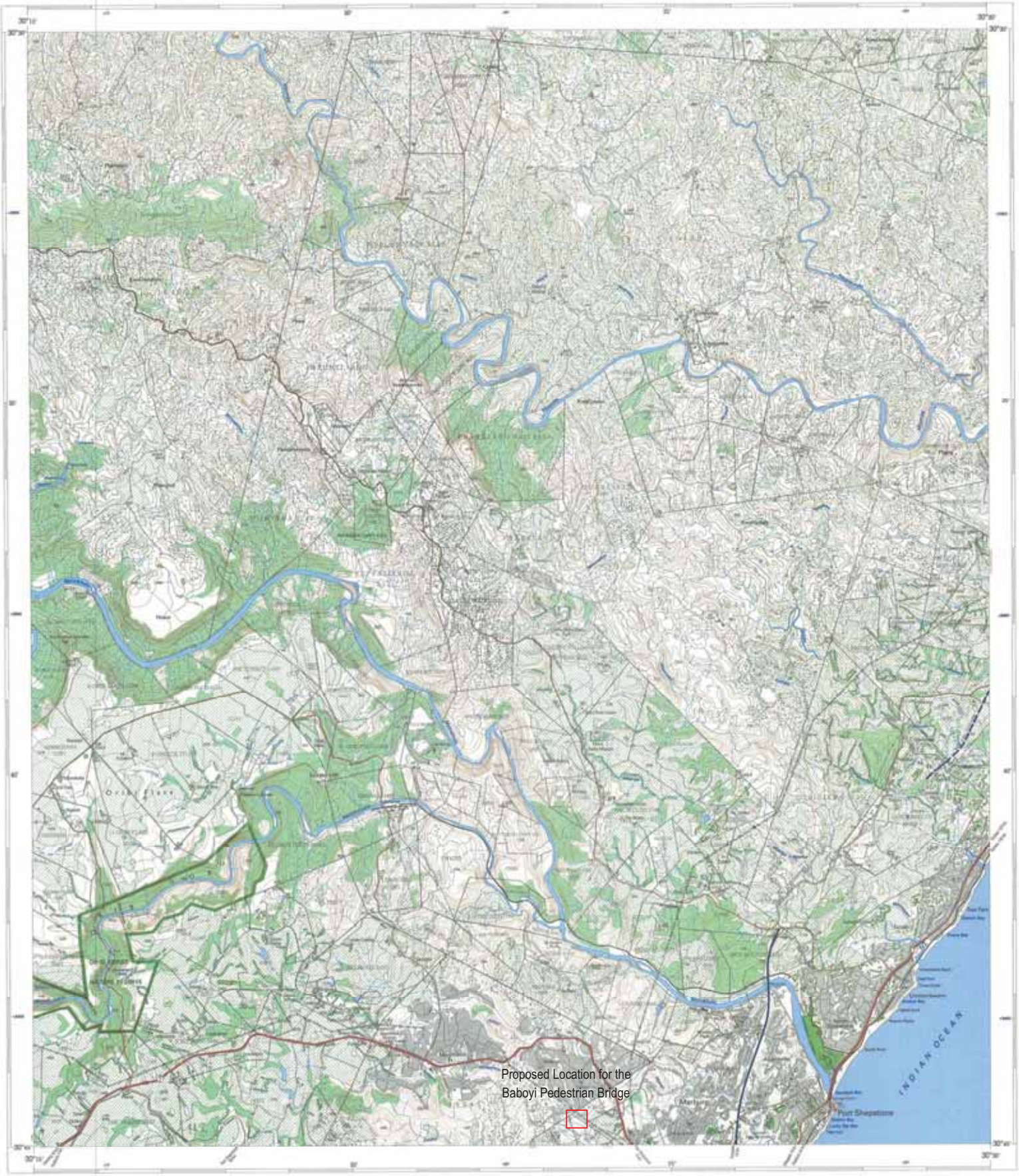

Port Shepstone
N
Port Shepstone
Baboyi Pedestrian Bridge
Bhobhoyi
Grosvenor
Main Harding Rd
2
Oslo Beac
2766 m
Baboyi Pedestrian Bridge
218 m



The proposed location of the Baboyi River Pedestrian Bridge, indicating the surrounding land-use, vegetation type, sensitive environmental areas at a scale of 1:2 000 in relation to the town of Merlewood at a scale of 1:40 000 (source: SANBI, 2013).

3030CB PORT SHEPSTONE

1:50 000 SOUTH AFRICA / SUID-AFRIKA



REFERENCE VERKLARING

3030CB PORT SHEPSTONE 1996

Appendix B – Photographs

Kindly note that photographs from the centre point of the development were not possible because this point was within the river. As such, the 8 cardinal photographers were taken from the water's edge on the northern side of the river.

Figure 1: Photographer facing north, a view across the Boboyi River from the southern banks showing the approximate location where the bridge will be on the northern side (Red).

Figure 2: Photographer facing north-east, a view of the northern bank of the Boboyi River and the vegetation thereon.

Figure 3: Photographer facing east, a view upstream of the Boboyi River showing the size of the river and the northern and southern river banks.

Figure 4: Photographer facing south-east, a view across the Boboyi River of the steep southern river bank and the vegetation located thereon.

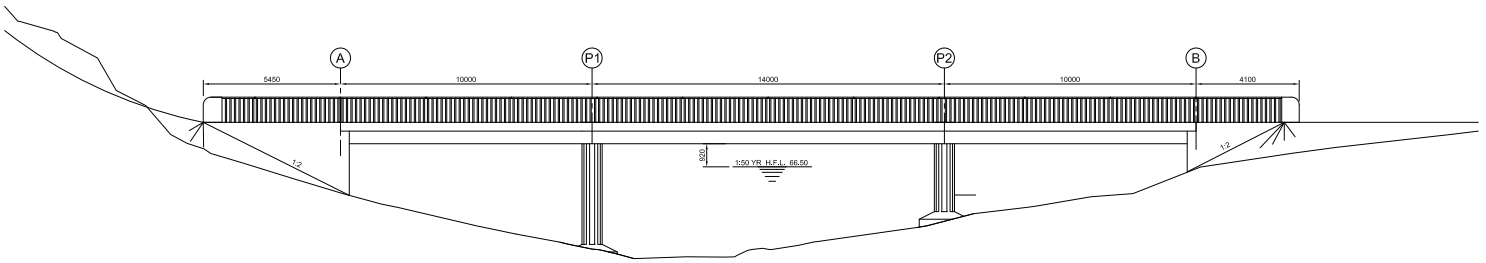
Figure 5: Photographer facing south, a view across the Boboyi River from the northern bank showing the approximate location where the bridge will be on the southern side (Red).

Figure 6: Photographer facing south west, a view across the Boboyi River to the northern banks of the river showing the vegetation thereon.

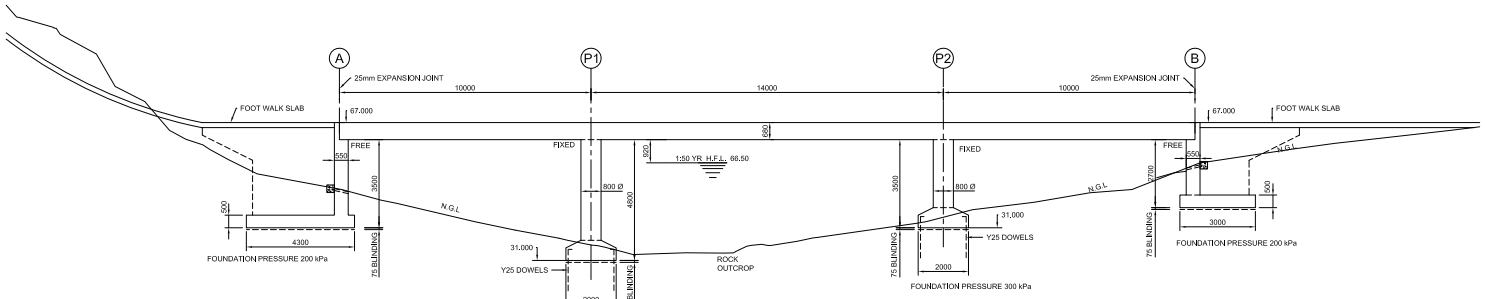
Figure 7: Photographer facing west, a view downstream of the Boboyi River showing the size of the river and the northern and southern river banks.

Figure 8: Photographer facing north-west, a view of the northern banks of the river showing the vegetation thereon.

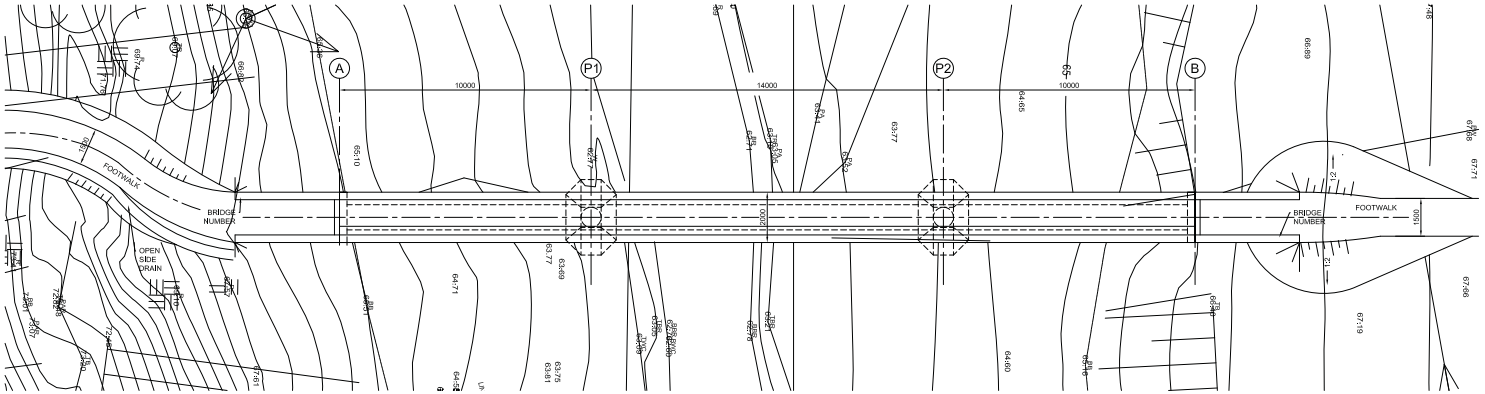
Appendix C – Facility Illustration(s)



ELEVATION
1:75

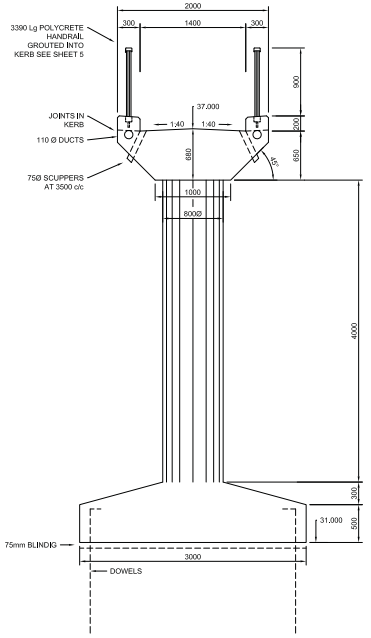


SECTION ALONG CENTRE LINE
1:75



N

PLAN
1:75



SECTION / ELEVATION
1:25

GENERAL NOTES:

1. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE C.O.L.T.O. SPECIFICATION FOR ROAD AND BRIDGE WORKS (1998)

2. DESIGN BASED ON LIMIT STATE IN ACCORDANCE WITH TMH 7 :
   PART 3 1989 CLASS 1 CRACK WIDTH 0.1 mm
   BRIDGE DESIGNED FOR A FLOOD RETURN PERIOD OF 1:50 YEAR

3. THE DESIGN LOADING IS IN ACCORDANCE WITH TMH 7 PARTS 1 & 2 1981 (REV 1988)

DEAD LOADS :	CONCRETE DENSITY	2500 Kg / m ³
SUPERIMPOSED LOADS :	5.0 kN / m²	
DEBRI LOAD :	100 kN	
TEMPERATURE CHANGE :	43°C	

PARAPET LOADING IN ACCORDANCE WITH TMH 7 AND KZN DOT STANDARD DETAIL

4. ALLOWABLE BEARING PRESSURE IS : ABUTMENTS 400 kPa
   : PIERS 400 kPa

5. CONCRETE TO BE CLASS : 15/19 (15 MPa) IN BLINDING
   30/19 (30 MPa) IN MASS CONCRETE TO PIERS
   30/19 (30 MPa) IN ABUTMENTS AND PIERS
   30/19 (30 MPa) IN DECK

6. COVER TO REINFORCEMENT: DECK - 40mm
   BASES - 50mm

7. ALL FORMED SURFACE FINISHES : EXPOSED - CLASS F3 FINISH (SMOOTH RUBBED)
   CONCEALED - CLASS F2 FINISH (SMOOTH)
   PARAPETS - CLASS F3 FINISH (SMOOTH RUBBED)

8. BEARINGS SHALL BE ELASTOMERIC BEARINGS.

9. ALL UNFORMED SURFACE FINISHES :
   TOP OF DECK - CLASS U2 (WOOD FLOATED)
   TOP OF PARAPETS - CLASS U3 (STEEL TROWEL)
   TOP OF ABUTMENTS, WINGWALLS AND PIERS - CLASS U2 (FLOATED)

10. REINFORCEMENT TO BE BENT IN ACCORDANCE WITH S.A.B.S. 82 - 1997

11. REINFORCEMENT TO CONFORM TO S.A.B.S. 920 - 1985
    HOT ROLLED HIGH YIELD STRESS DEFORMED BARS
    - CHARACTERISTIC STRENGTH 450 MPa
    HOT ROLLED MILD STEEL BARS
    - CHARACTERISTIC STRENGTH 250 MPa

12. ALL SHARP CONCRETE EDGES TO BE CHAMFERED 25 X 25mm

13. FOUNDATIONS TO BE EXCAVATED NEAT IN BEDROCK

14. BRIDGE No TO BE REBATED INTO CONCRETE

Symbol	Date	Description	Checked	Signed
AMENDMENTS				

AS BUILT

Supervising Engineer ..... Date .....

Supervising Authority .....

File no:-

Designed by:- W. HAINSWORTH
Checked by:- P. WHELAN
Drawn by:- C. SMITH
Checked by:- S. SAMLALL
Date of approval:-

PROVINCE OF KWAZULU-NATAL
DEPARTMENT OF TRANSPORT

Designed by:-
SC
Unit 5
Lakeside
Derby Downs
Westville
3630
Tel : (031) 2662955
Fax : (031) 2662376

Director ..... Date .....

Bridge Engineer .....

Head: Transport .....

CO ORDINATES S30° 44' 39.1" ; E30° 23' 34.4"

Staked km distance

BOBOYI PEDESTRIAN BRIDGE
GENERAL ARRANGEMENT

Scale AS SHOWN

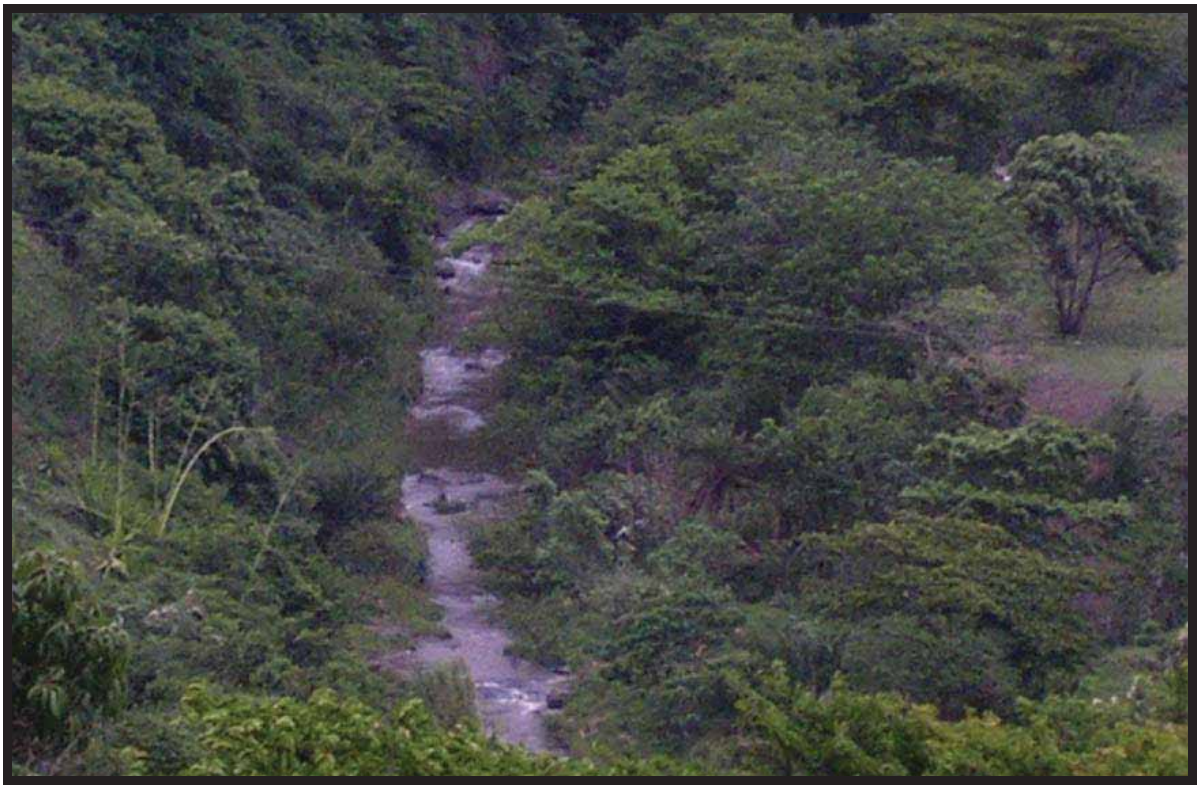
Sheet : 1 of :-

Plan No:- 3481/1

3481/1

Appendix D – Specialist Reports

HERITAGE IMPACT ASSESSMENT OF THE PROPOSED BOBOYI PEDESTRIAN BRIDGE, HIBISCUS COAST LOCAL MUNICIPALITY.



ACTIVE HERITAGE cc.

Frans Prins
MA (Archaeology)

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Howick
3290

activeheritage@gmail.com
Fax: 0867636380

30 November 2012

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LIST OF ABBREVIATIONS AND ACRONYMS

EIA	Early Iron Age
ESA	Early Stone Age
HISTORIC PERIOD	Since the arrival of the white settlers - c. AD 1820 in this part of the country
IRON AGE	Early Iron Age AD 200 - AD 1000 Late Iron Age AD 1000 - AD 1830
LIA	Late Iron Age
LSA	Late Stone Age
MSA	Middle Stone Age
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998 and associated regulations (2010).
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999) and associated regulations (2000)
SAHRA	South African Heritage Resources Agency
STONE AGE	Early Stone Age 2 000 000 - 250 000 BP Middle Stone Age 250 000 - 25 000 BP Late Stone Age 30 000 - until c. AD 200

EXECUTIVE SUMMARY

A cultural heritage survey of the proposed Boboyi Pedestrian Bridge near Port Shepstone, Hibiscus Coast Local Municipality, identified no archaeological sites. There is no known archaeological reason why the development may not proceed as planned. However, some informal graves that appear to be younger than 60 years are situated on the northern bank of the Boboyi River. None of these graves are situated closer than 30m to the river bank. Although these graves are not protected by heritage legislation they are nevertheless protected and should not be disturbed. A buffer zone of at least 20m must be maintained around each grave. Should it not be possible to realign the proposed pedestrian bridge to accommodate a 20m buffer zone then a phase two heritage assessment must be conducted by an accredited grave relocation expert. Attention is drawn to the South African Heritage Resources Act, 1999 (Act No. 25 of 1999) and the KwaZulu-Natal Heritage Act (Act no 4 of 2008) which, requires that operations that expose archaeological or historical remains should cease immediately, pending evaluation by the provincial heritage agency.

1 BACKGROUND INFORMATION ON THE PROJECT

Table 1. Background information

Consultant:	Frans Prins (Active Heritage cc) for Kerry Seppings Environmental Management Specialists
Type of development:	Construction of a pedestrian bridge across the Boboyi River. The proposed length of the bridge is 43.5m and the width is 2m.
Rezoning or subdivision:	na
Terms of reference	To carry out a Heritage Impact Assessment
Legislative requirements:	The Heritage Impact Assessment was carried out in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and following the requirements of the National Heritage Resources Act, 1999 (Act No. 25 of 1999)

1.1. Details of the area surveyed:

The project area is situated adjacent to the Boboyi River, within the Bhoboyi settlement, approximately 1km to the west of the N2 near Port Shepstone (Fig 1). The proposed bridge site will span the Boboyi River (Fig 2). The GPS coordinates for the Pedestrian Bridge Site is given as: 30º 44’ 38.68” S 30º 23’ 34.04” E.

1.2. Cultural Heritage legislation

According to Section 3 (2) of the NHRA, the heritage resources of South Africa include:

"a. places, buildings, structures and equipment of cultural significance;
b. places to which oral traditions are attached or which are associated with living heritage;
c. historical settlements and townscapes;
d. landscapes and natural features of cultural significance;
e. geological sites of scientific or cultural importance;
f. archaeological and palaeontological sites;
g. graves and burial grounds, including.
ancestral graves;
ii. royal graves and graves of traditional leaders;
iii. graves of victims of conflict;
iv. graves of individuals designated by the Minister by notice in the Gazette;
v. historical graves and cemeteries; and
vi. other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
h. sites of significance relating to the history of slavery in South Africa;
i. movable objects, including objects recovered from the soil or waters of South Africa, including
archaeological and palaeontological objects and material, meteorites and rare geological specimens;
ii. objects to which oral traditions are attached or which are associated with living heritage;
iii. ethnographic art and objects;
iv. military objects;
v. objects of decorative or fine art;
vi. objects of scientific or technological interest; and
vii. books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996)."

In terms of section 3 (3) of the NHRA, a place or object is to be considered part of the national estate if it has cultural significance or other special value because of:

“a. its importance in the community, or pattern of South Africa's history;
b. its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
c. its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
d. its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
e. its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
f. its importance in demonstrating a high degree of creative or technical achievement at a particular period;
g. its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
h. its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
i. sites of significance relating to the history of slavery in South Africa.”

2 BACKGROUND TO ARCHAEOLOGICAL HISTORY OF AREA

The project area has never been systematically surveyed for archaeological sites in the past. However, the coastal areas of the greater Hibberdene and Port Shepstone areas to the east of the project area has been surveyed by archaeologists of the then Natal Museum in the 1970’s and 1980’s. Further inland the greater Oribi Gorge, situated to the north west of the project area, has also been intensively surveyed in the past. These surveys were originally conducted by staff associated with the then Natal Parks board in the 1970’s. However, more professional surveys were conducted by archaeologists such as J. H. Cable in the early 1980’s (Cable 1984) and later by various archaeologists attached to the Natal Museum (Mazel 1989; Mitchell 2005).

The available evidence, as captured in the KwaZulu-Natal Museum heritage site inventories, indicates that the greater Hibberdene and Port Shepstone areas contains a wide spectrum of archaeological sites covering different time-periods and cultural traditions. These include Early, Middle and later Stone Age sites, Early Iron Age sites, Later Iron Age sites, and some historical sites. Various buildings and farmsteads belonging to the Victorian and Edwardian periods occur in the area. These would also be protected by heritage legislation.

Stone Age sites of all the main periods and cultural traditions occur along the coastal cordon in the immediate vicinity of Hibberdene and Port Shepstone. Most of these occur in open air contexts as exposed by donga and sheet erosion. The occurrence of Early Stone Age tools in the near vicinity of permanent water resources is typical of this tradition. These tools were most probably made by early hominins such as *Homo erectus* or *Homo ergaster*. Based on typological criteria they most probably date back to between 300 000 and 1.7 million years ago. The presence of the first anatomically modern people (i.e. *Homo sapiens sapiens*) in the area is indicated by the presence of a few Middle Stone Age blades and flakes. These most probably dates back to between 40 000 and 200 000 years ago. The later Stone Age flakes and various rock painting sites identified in the area are associated with the San (Bushmen) and their direct ancestors. These most probably dates back to between 200 and 20 000 years ago.

The San were the owners of the land for almost 30 000 years but the local demography started to change soon after 2000 years ago when the first Bantu-speaking farmers crossed the Limpopo River and arrived in South Africa. By 1500 years ago these early Bantu-speaking farmers also arrived in the project area. Due to the fact that these first farmers introduced metal technology to southern Africa they are designated as the Early Iron Age in archaeological literature. Their distinct ceramic pottery is classified to styles known as “Msuluzi” (AD 500-700), Ndondondwane (AD 700-800) and Ntshekane (AD 800-900). Most of the Early Iron Age sites in the greater Ugu District Municipality belong to these traditions (Maggs 1989:31; Huffman 2007:325-462). These sites characteristically occur on alluvial or colluvial soil adjacent to large rivers below the 1000m contour. The Early Iron Age farmers originally came from western Africa and brought with them an elaborate initiation complex and a value system centred on the central significance of cattle.

Later Iron Age sites also occur in the greater Hibberdene and Port Shepstone areas. These were Bantu-speaking agropastoralists who arrived in southern Africa after 1000 year ago via East Africa. Later Iron Age communities in KwaZulu-Natal were the direct ancestors of the Zulu-speaking people (Huffman 2007). Many African groups moved through the study area due to the period of tribal turmoil as caused by the expansionistic policies of king Shaka Zulu in the 1820’s and subsequent civil wars in Zululand to the north. It is known from oral history that the greater project area was

inhabited by Zulu refugees in the 19th century (Bryant 1965) especially by members of the abakwaCele clan. The abakwaCele arrived in the project area around 1828 soon after the murder of King Shaka when they were being pursued by supporters of King Dingane (ibid). However, it appears that the lower densely wooded valley areas were only occupied later. According to oral history most of the historical settlement of the area took place on the higher altitude grassland areas.

Archaeological sites in the near vicinity of the project area include 2 Middle Stone Age sites and 11 Later Stone Age rock art sites situated within the greater Oribi Gorge and adjacent areas. The rock art sites form part of the eastern seaboard coastal rock art zone. Most of these occur in sandstone shelters and depict red monochrome paintings. None, however, have been recorded in the project area. No Iron Age sites were identified in the project area although there is a high probability that Early Iron Age sites would occur adjacent to the uMzimkhulu River in the near vicinity of the project area.

3 BACKGROUND INFORMATION OF THE SURVEY

3.1 Methodology

A desktop study was conducted of the archaeological databases housed in the KwaZulu-Natal Museum and the SAHRA inventory of heritage sites. Aerial photographs of the area were surveyed. In addition, the available archaeological and historical literature covering KwaZulu-Natal was also consulted.

A site visit was made to the project area on 29 September 2012. A ground survey, following standard and accepted archaeological procedures, was conducted. The consultant walked the area on foot and surveyed the area for potential heritage sites. Both sides of the river bank were surveyed and no heritage sites occur within 100m from the proposed pedestrian bridge site.

3.2 Restrictions encountered during the survey

3.2.1 Visibility

Visibility was good.

3.2.2 Disturbance

No disturbance of any potential heritage sites was noted.

3.3 Details of equipment used in the survey

GPS: Garmin Etrek
Digital cameras: Canon Powershot A460
All readings were taken using the GPS. Accuracy was to a level of 5 m.

4 DESCRIPTION OF SITES AND MATERIAL OBSERVED

4.1 Locational data

Province: KwaZulu-Natal
Towns: Port Shepstone and Hibberdene
Municipality: Hibiscus Coast Local Municipality

4.2 Description of the general area surveyed

The footprint is situated adjacent to the Boboyi River approximately 5km to the west of Port Shepstone. The Boboyi River, at the proposed locality of the pedestrian bridge, was approximately 20 m broad at the time of the site visit. Exposed bedrock occurs adjacent to the river. The area is dominated by modern township developments, on either side of the river, and some individual rural homesteads (Fig 2).

No archaeological sites were observed in the immediate vicinity of the proposed Pedestrian Bridge Site. However, some informal graves occur on the northern bank of the Boboyi River. According to local villagers theses graves belong to paupers and people who have died in unnatural conditions. They are spatially removed from the local homesteads and formal grave yards and buried in an open field adjacent to the Boboyi River. In addition, none of the identified graves appear to be older than 60 years and they are therefore not protected by heritage legislation. . However, they are protected by legislation such as such as the Human Tissues Act (Act No.65 of 1983 and as amended), the Removal of Graves and Dead Bodies Ordinance (Ord. No. 7 of

1925) and The Exhumations Ordinance (Ord. No. 12 of 1980). The context of the identified graves is presented in Table 2.

5 HERITAGE SITES AND THEIR SIGNIFICANCE (HERITAGE VALUE)

Table 2. Grave sites located during the ground survey.

	Heritage site category	Brief description	Significance (Table 3) and "living heritage" values	Mitigation	GPS Latitude and Longitude
1	Informal Grave Site (Figs 2 & 4).	Informal grave situated adjacent to footpath approximately 40m from rivers edge (north bank). The grave is indicated by a square concrete structure of approximately 2m X 1.5m. The grave is unmarked. According to local villagers this grave is younger than 60 years old and belongs to a man from the village who died in unnatural conditions.	This grave is unmarked but belongs to a person who hailed from the local village. It has 'living heritage value" as it is illustrative of the traditional Nguni notion of misfortune that is still active in this part of KZN. People who died unnatural deaths, such as in mine accidents, and homeless people are said to carry *z a a* (misfortune associated with a black impersonal power). Upon death they are therefore spatially removed from the domestic area in order to counteract their misfortune that is highly contagious. Their graves are typically situated adjacent to rivers or in dense woodlands.	Maintain a 20m buffer zone around the grave' The bridge alignment can also be shifted a few metres iin order to accommodate the buffer zone's integrity. Alternatively motivate for a second phase heritage impact assessment, by a grave relocation expert. A comprehensive community consultation process will have to be initiated to arrange for potential grave exhumation and reburial (Appendix 1).	S 30º 44' 36.72" E 30º 23' 33.80"
2	Informal Grave Site (Figs 2 & 4).	Informal grave situated approximately 40m from rivers edge (north	This grave is unmarked but belongs to a person who hailed from the	Maintain a 20m buffer zone around the grave. The	S 30º 44' 36.59" E 30º 23'

		bank). The grave is indicated by a square concrete structure of approximately 1.2m X 1.5m. The grave is unmarked. According to local villagers this grave is younger than 60 years old and belongs to a man from the village who died in unnatural conditions	local village. It has 'living heritage value" as it is illustrative of the traditional Nguni notion of misfortune that is still active in this part of KZN. People who died unnatural deaths, such as in mine accidents and homeless people are said to carry *z a a* (misfortune associated with a black impersonal power). Upon death they are therefore spatially removed from the domestic area in order to counteract their misfortune that is highly contagious. Their graves are typically situated adjacent to rivers or in dense woodland	road alignment can also be shifted slightly in order to maintain the proposed buffer zone. Alternatively motivate for a second phase heritage impact assessment, by a grave relocation expert. A comprehensive community consultation process will have to be initiated to arrange for potential grave exhumation and reburial (Appendix 1).	35.42"
3	Informal Grave Site (Figs 2 & 4).	Informal grave situated approximately 32m from rivers edge (north bank). The grave is indicated by a stone heap arranged in circular format. It covers an area of approximately 1.2m x 1.6m. The grave is unmarked. According to local villagers this grave most probably belongs to a pauper or homeless person who died in the area.	This grave is unmarked. It has 'living heritage value" as it is illustrative of the traditional Nguni notion of misfortune that is still active in this part of KZN. People who died unnatural deaths, such as in mine accidents, and homeless people are said to carry *z a a* (misfortune associated with a black impersonal power). Upon death they are therefore spatially removed from the domestic area in order to counteract their misfortune that is highly contagious. Their graves are typically situated adjacent to	Maintain a 20m buffer zone around the grave yard. It would also be possible to shift the alignment of the proposed bridge slightly in order to maintain the integrity of the grave site buffer zone. Alternatively motivate for a second phase heritage impact assessment, by a grave relocation expert. A comprehensive community consultation process will have to be initiated to arrange for potential	S 30º 44' 37.03" E 30º 23' 35.38"

			rivers or in dense woodland	grave exhumation and reburial (Appendix 1).	
4	Possible unmarked graves (Figs 2 & 6)	A cluster of disparate stones, some clearly packed by humans. These may be unmarked graves of homeless people or paupers. However, their exact location is not clearly indicated. According to local villagers these potential graves are not older than 60 years.	These potential grave sites are unmarked. It has 'living heritage value" as it is illustrative of the traditional Nguni notion of misfortune that is still active in this part of KZN. People who died unnatural deaths, such as in mine accidents, and homeless people are said to carry *z a a* (misfortune associated with a black impersonal power). Upon death they are therefore spatially removed from the domestic area in order to counteract their misfortune that is highly contagious. Their graves are typically situated adjacent to rivers or in dense woodland	Maintain a 20m buffer zone around the potential grave site. The pedestrian bridge alignment can be shifted slightly in order to maintain the integrity of the buffer zone. Alternatively motivate for a second phase heritage impact assessment, by a grave relocation expert. A comprehensive community consultation process will have to be initiated to arrange for potential grave exhumation and reburial (Appendix 1).	S 28º 49' 19.15" E 31º 01' 44.60"

5.1 Field Rating

Not applicable, as no heritage sites were discovered during the survey. However, the younger grave sites are of local importance and protected by relevant legislation such as the Human Tissues Act (Act No.65 of 1983 and as amended), the Removal of Graves and Dead Bodies Ordinance (Ord. No. 7 of 1925) and The Exhumations Ordinance (Ord. No. 12 of 1980).

Table 3. Field rating and recommended grading of sites (SAHRA 2005)

Level	Details	Action
National (Grade I)	The site is considered to be of National Significance	Nominated to be declared by SAHRA
Provincial (Grade II)	This site is considered to be of Provincial significance	Nominated to be declared by Provincial Heritage Authority
Local Grade IIIA	This site is considered to be of HIGH significance locally	The site should be retained as a heritage site
Local Grade IIIB	This site is considered to be of HIGH significance locally	The site should be mitigated, and part retained as a heritage site
Generally Protected A	High to medium significance	Mitigation necessary before destruction
Generally Protected B	Medium significance	The site needs to be recorded before destruction
Generally Protected C	Low significance	No further recording is required before destruction

6 RECOMMENDATIONS

Three modern grave sites and a potential clustering of graves have been located during this survey. These sites have local significance and therefore need to be treated with respect. As they are all younger than 60 years they are not formally protected by heritage legislation. However, other legislations apply to these graves, such as the Human Tissues Act (Act No.65 of 1983 and as amended), the Removal of Graves and Dead Bodies Ordinance (Ord. No. 7 of 1925) and The Exhumations Ordinance (Ord. No. 12 of 1980). The Provincial Health Authority and local Health Department must be contacted should the integrity of these graves been compromised by the proposed development.

It is proposed that the developer maintain a buffer zone of 20m around each grave site where no development may occur. No removal of artefacts or alterations of any structure will be allowed within this zone. It is proposed that the developer rather shift the alignment of the proposed bridge rather than apply for mitigation (a costly and long term process) in order to maintain the integrity of the proposed buffer zones.

However, should this not be possible and the developer wish to develop in the immediate vicinity of each gave site (within the 20m buffer zone) then a phase two assessment should take place in order to assist with the mitigation process (Appendix 1). Depending on the recommendations of this second phase assessment a grave exhumation and relocation process may be called for.

It must also be pointed out that the KwaZulu-Natal Heritage Act requires that operations exposing archaeological and historical residues should cease immediately pending an evaluation by the heritage authorities.

7 MAPS AND FIGURES

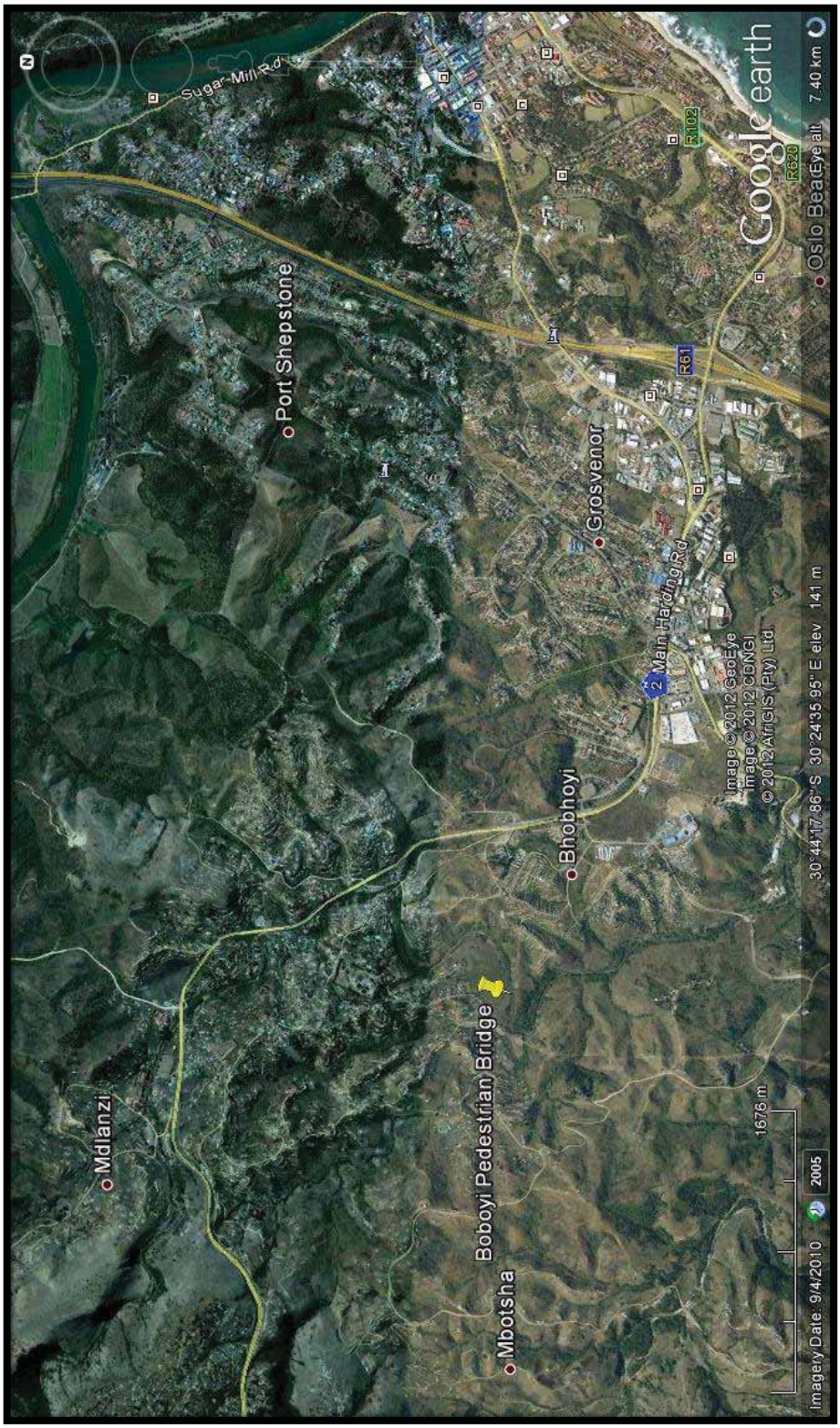

Figure 1. Google aerial photograph showing the location of the project area.

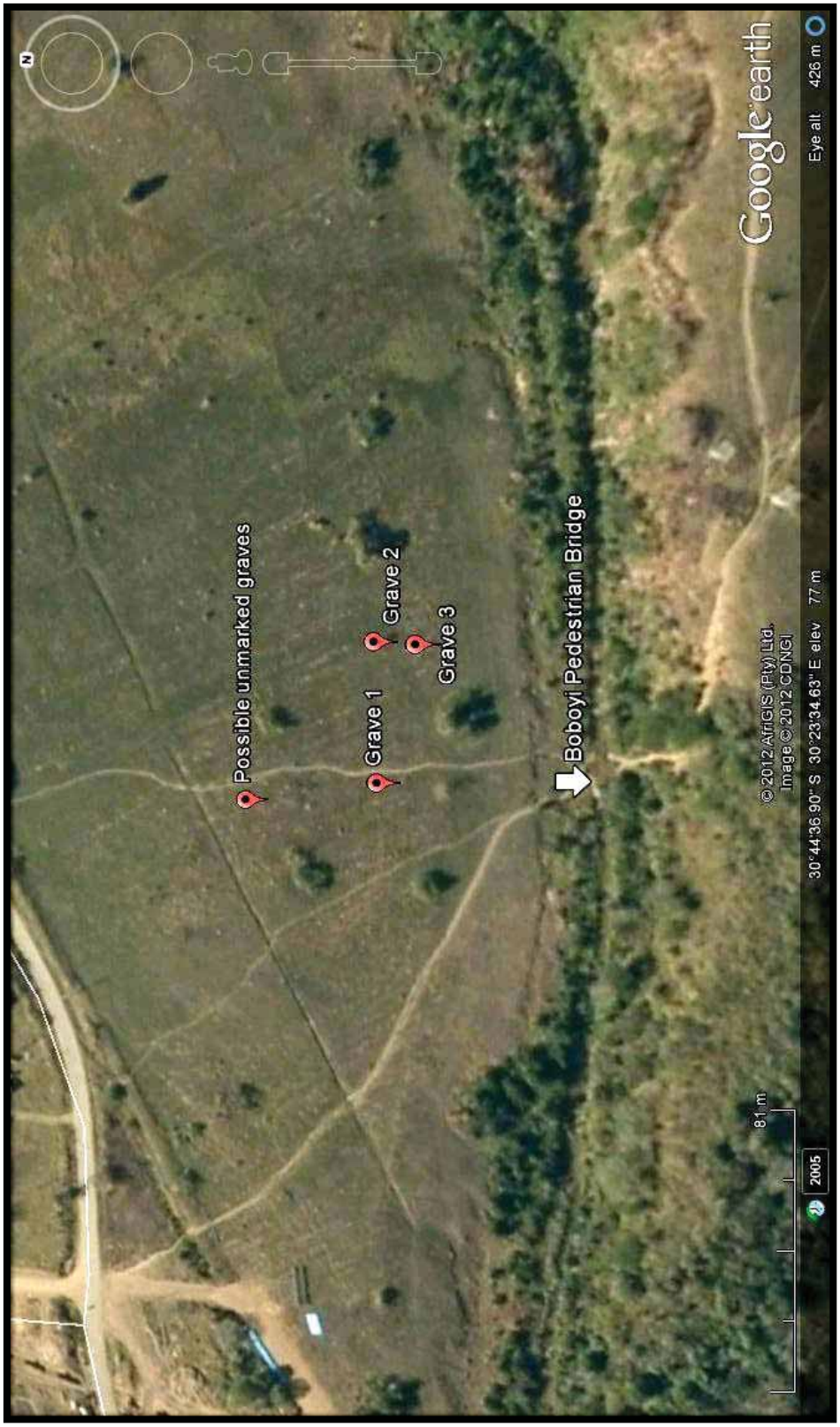

Figure 2. Google aerial photograph showing the location of the proposed Boboyi Pedestrian Bridge Site and the identified graves on the northern bank of the river.

Figure 3. View over the study area: The open field to the right (north bank) of the Boboyi River contains some informal graves. These are spatially removed from the domestic sphere (village) in the near distance as they belong to paupers, homeless people, and people who died under unnatural conditions.

Figure 4. Grave Site 1.

Figure 5. Grave Site 2

Figure 6. Grave Site 3

Figure 7. Possible Unmarked Graves

8 REFERENCES

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APPENDIX 1

RELOCATION OF GRAVES

Burial grounds and graves are dealt with in Article 36 of the NHR Act, no 25 of 1999. Below follows a broad summary of how to deal with grave in the event of proposed development.

- If the graves are younger than 60 years, an undertaker can be contracted to deal with the exhumation and reburial. This will include public participation, organising cemeteries, coffins, etc. They need permits and have their own requirements that must be adhered to.
- If the graves are older than 60 years old or of undetermined age, an archaeologist must be in attendance to assist with the exhumation and documentation of the graves. This is a requirement by law.

Once it has been decided to relocate particular graves, the following steps should be taken:

- Notices of the intention to relocate the graves need to be put up at the burial site for a period of 60 days. This should contain information where communities and family members can contact the developer/archaeologist/public-relations officer/undertaker. All information pertaining to the identification of the graves needs to be documented for the application of a SAHRA permit. The notices need to be in at least 3 languages, English, and two other languages. This is a requirement by law.

- Notices of the intention needs to be placed in at least two local newspapers and have the same information as the above point. This is a requirement by law.

- Local radio stations can also be used to try contact family members. This is not required by law, but is helpful in trying to contact family members.

- During this time (60 days) a suitable cemetery need to be identified close to the development area or otherwise one specified by the family of the deceased.

- An open day for family members should be arranged after the period of 60 days so that they can gather to discuss the way forward, and to sort out any problems. The developer needs to take the families requirements into account. This is a requirement by law.

- Once the 60 days has passed and all the information from the family members have been received, a permit can be requested from SAHRA. This is a requirement by law.

- Once the permit has been received, the graves may be exhumed and relocated.

- All headstones must be relocated with the graves as well as any items found in the grave

Consulting Engineering Geologists, Geotechnical Engineers, Geotechnicians & Geotechnical Quality Assurance Specialists

GEOSURE (Pty) Ltd

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- *Engineering Geology*
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- *Civil Engineering Laboratory*
- *Earthworks/Materials Supervision & Control*
- *Geotechnical Monitoring Systems*
- *Road Pavement Materials and Design*
- *Project Management*

Report to Samani Consulting cc on the Results of a Geotechnical Investigation for the Proposed Boboyi River Pedestrian Bridge, KwaZulu-Natal

Reference: 355-12.R01

Dated: 18 December 2012

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Report to Samani Consulting cc on the Results of a Geotechnical Investigation for the Proposed Boboyi River Pedestrian Bridge, KwaZulu-Natal

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Report to Samani Consulting cc on the Results of a Geotechnical Investigation for the Proposed Boboyi River Pedestrian Bridge, KwaZulu-Natal

Reference: 355-12.R01 **Date: 18 December 2012**

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Report to Samani Consulting cc on the Results of a Geotechnical Investigation for the Proposed Boboyi River Pedestrian Bridge, KwaZulu-Natal

Reference: 355-12.R01 **Date: 18 December 2012**

1. TERMS OF REFERENCE

Geosure (Pty) Ltd was invited by Samani Consulting cc (on behalf of Kwazulu-Natal Department of Transport) to provide a cost estimate to carry out a geotechnical investigation for the proposed Boboyi Pedestrian Bridge, KwaZulu-Natal (Quotation no. ZNQ 2499/12T).

Geosure was subsequently appointed to carry out the work as per a signed letter of appointment received from Mr S. Samlall, dated 1 November 2012.

2. SCOPE OF REPORT

This report sets out the results of a geotechnical investigation carried out for the proposed Pedestrian Bridge, KwaZulu-Natal.

The subsoil conditions beneath the site are described and comment is made on the general stability of the site. Foundation recommendations, excavatability and rippability and general earthworks for the proposed bridge are provided.

3. INFORMATION SUPPLIED

For the purposes of assisting with this investigation, Samani Consulting cc provided Geosure with a digital copy of a survey drawing, showing the local topography of the river segment.

4. SITE DESCRIPTION

The proposed pedestrian Bridge over Boboyi River is situated at approximate GPS co-ordinates 30° 44' 38.57"S and 30° 23' 34.07"E, near Port Shepstone, Kwazulu-Natal.

The meandering river transverses an undulating terrain, with the proposed bridge crossing on a moderate slope at the foot of a steep slope (on average 1:3.8 slope) along the southern bank and a gentle sloping area (1:6.2) at the northern bank. This bridge will link an existing foot path, within the Izingolweni RRTF area for the local schools and community in general. Hard rock tillite boulders were visible along the northern bank and within the river channel.

The general layout of the site is given in Figure 1 at the end of this report.

A view of the study area is shown in Diagram 1 below.


Diagram 1: General Site Appearance

5. FIELDWORK

The fieldwork for the investigation was carried out on 29 November 2012 and comprised the following:

- Inspection Pits; and
- Dynamic Cone Penetrometer (Light) tests.

5.1 Inspection Pits

Four (4No.) inspection pits, designated IP1 through IP4, were excavated with a 20 ton track mounted excavator at the approximate positions given in Figure 1. The test pitting was carried out at the positions of the proposed footings as follows:

- ***IP1 – Abutment A***; Sandy alluvium to 1.3m, covering a boulder bed that extends to a depth of 2.4m below existing ground level (EGL) and underlain by hard rock tillite. The excavator refused at 2.5m.
- ***IP2 – Pier 1***; Sandy alluvium to 0.2m, covering a boulder bed that extends to a depth of 0.8m below EGL and underlain by hard rock tillite. The excavator refused at 0.9m.
- ***IP3 – Pier 2***; Sandy alluvium to 0.4m, covering a boulder bed that extends to a depth of 0.6m below EGL and underlain by hard rock tillite. The excavator refused at 0.9m.
- ***IP4 – Abutment B;*** Sandy alluvium to 0.3m, covering a boulder bed that extends to a depth of 1.5m below EGL and underlain by hard rock tillite. The excavator refused at 1.6m.

The inspection pits were profiled using the South African Geoterminology Guidelines (2002)[1]. Copies of the detailed profiles are given in Appendix A.

[1] Geoterminology Workshop (2002) – Guidelines for Soil and Rock Logging – SAIEG – AEG – SAICE (Geotechnical Division) pp 47.

5.2 Dynamic Cone Penetrometer (Light) Tests

Four (4No.) Dynamic Cone Penetrometer (Light) tests, designated DPL1 through DPL4, were carried out at the approximate positions given in Figure 1. The DPL tests were generally advanced to refusal depths in the range 0.3m (DPL2) to 1.5m (DPL1) below EGL, all refusing upon the boulder bed.

The results of the DPL tests comprising plots of blow counts versus depth are given in Appendix B.

6. GEOLOGY AND SUBSOILS

The site is generally underlain by transported sand and boulders overlying moderately weathered, hard rock tillite of the Dwyka Group, Karoo Supergroup.

In general, the following geological units can be recognised across the site:

Unit 1 – Slightly moist, dark orange brown, medium dense, Clayey SAND to Sandy SILT – *Colluvium* (Only found in IP1 at the foot of the steep slope).

Unit 2 – Slightly moist, orange brown, loose to medium dense, Clayey SAND, with pebbles and cobbles - *Alluvium*

Unit 3 – Moist to wet, dark greyish brown, loose to medium dense o Clayey SAND, with abundant tillite boulders – Transported / residual tillite? (*Boulder bed)*.

Unit 4 – Dark grey, speckled loght grey/ olive brown, moderately weathered and moderately fractured – *Hard rock Tillite*.

The relationship between the various layers is illustrated in the inferred geological cross section given in Table 3 with an indication of the typical subsoil geology encountered across the site given in Diagram 2 below.

Diagram 2: General Soil Profile

7. GROUNDWATER OCCURRENCE

Groundwater seepage was only encountered within one of the inspection pits, with the depth and intensity of the groundwater seepage observed summarised in Table 1 below.

Table 1: Summary of the depths of groundwater occurrences and seepage intensity

IP No.	Depth (m) Below EGL	Flow Rate
IP4	1.3	Slight

It is however recommended that allowance be made for dewatering during construction of foundations, especially since the boulder layer were generally wet during the investigation.

8. DISCUSSION

8.1 Proposed Bridge Structure

It is understood that the proposed development includes a 34m long, three span bridge structure, with two piers and two abutments.

8.2 General Stability of the Site

Based on the results of the fieldwork undertaken during this investigation, it is considered that this site is generally stable and suitable for development, provided that the recommendations given in this report are adhered to.

8.3 Excavatability and Rippability Assessment

Generally the transported sand will be easily excavated using conventional light earthmoving equipment and will classify as SOFT excavation in terms of SANS 1200DA. In addition, an allowance should also be made for BOULDER EXCAVATION CLASS A for the prominent boulder bed covering bedrock. INTERMEDIATE to HARD excavation is anticipated in the underlying weathered bedrock.

Consideration should be given to using the following percentages for classification of excavations:

Soft Excavation	25%
Intermediate Excavation	10%
Boulder Excavation	55%
Hard Excavation	10%

The type of excavation plant and nature of the underlying bedrock will determine actual trenchability depths.

8.4 General Earthworks

All earthworks should be carried out in a manner to promote stable development of the site. It is recommended that earthworks be carried out along the guidelines given in SANS 1200 (current version).

All vegetation should be removed from the areas over which fills are to be built. Where natural ground slopes are steeper than $1_{(vertical)}$:$6_{(horizontal)}$ (6 degrees), the fill must be benched into the slope. Benches should be minimum 0.5m deep and 2.0m wide. A minimum of three benches per fill is recommended.

Placement of fill layers should be undertaken in layers not exceeding 200mm thick when placed loose and compacted using suitable compaction plant to achieve 93% Modified AASHTO maximum dry density at ±2% optimum moisture content. Boulders larger than

$^{2}/_{3}$ of the layer thickness must not be included in the fill material. A carefully engineered fill embankment should not settle more than 0.5% of its height due to self weight.

Density control of placed fill material should be undertaken at regular intervals during fill construction.

Cut and fill embankments should generally not exceed $1_{(vertical)}$:$2_{(horizontal)}$ and will need to be protected from undercutting scour during times of high river flows or heavy rainfall.

8.5 Foundation Recommendations

All foundation loads will need to be transferred to competent weathered bedrock. Due to the shallow depth to bedrock, the following foundation types can be considered:

- Spread Footings; or
- Caissons.

Provided that measures are put in place for dewatering and stabilisation of potential collapsing excavation sidewalls at each footing.

The approximate depths of competent weathered bedrock identified in the inspection pits are given below in Table 2.

Table 2: Summary of approximate depth to bedrock below EGL

IP No.	Approximate depth (m) of bedrock below EGL
IP1	2.4
IP2	0.8
IP3	0.6
IP4	1.5

Consideration could be given to using a combination of both spread footings and caissons. Due to the shallow depths to bedrock, less than 1.0m in certain instances, it is considered that piled foundations will not be a practical or cost effective solution.

Consideration should also be given to creation of a low dam or coffer dam around the foundation construction, so that the site can be de-watered or the water level controlled and construction can proceed largely in the dry.

Spread Footings

Due to the shallow depth to bedrock, it will be possible to employ conventional spread footings which have been taken into the competent weathered bedrock (at least soft to medium hard rock) and anchored by dowelling at least 2.0m into the rock beneath the footing. The final depth of dowelling will need to be determined by the structural/civil engineer depending on the results of a flood hydraulic analysis and anticipated debris loads of the river.

Care must be taken to remove loose slabs of rock from the excavation.

A maximum allowable bearing pressure of 500 kN/m^2 is considered applicable. Settlement of such footings should be negligible (<5mm) provided the concrete is cast directly onto clean competent bedrock.

It is recommended that all foundation excavations be inspected and approved by Geosure (Pty) Ltd prior to blinding and casting concrete.

Caissons

Caissons may be considered as an alternative to the spread footings and may be more practical to use where the depth to bedrock is significant. The caissons must be taken into competent weathered bedrock of at least medium hard rock strength, where a maximum allowable bearing pressure of 500kN/m^2 is considered applicable, and anchored by dowelling at least 2.0m into the rock.

Use of caissons could avoid the need for lateral support, but it is considered that dewatering will be necessary. It is recommended that all foundation excavations be inspected and approved by Geosure (Pty) Ltd prior to blinding and casting concrete.

9. CONCLUSION

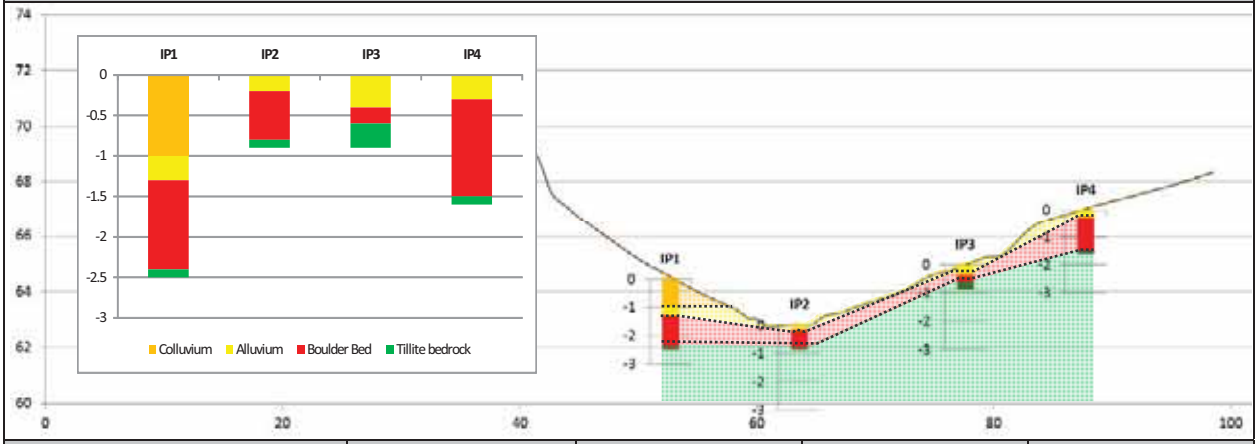
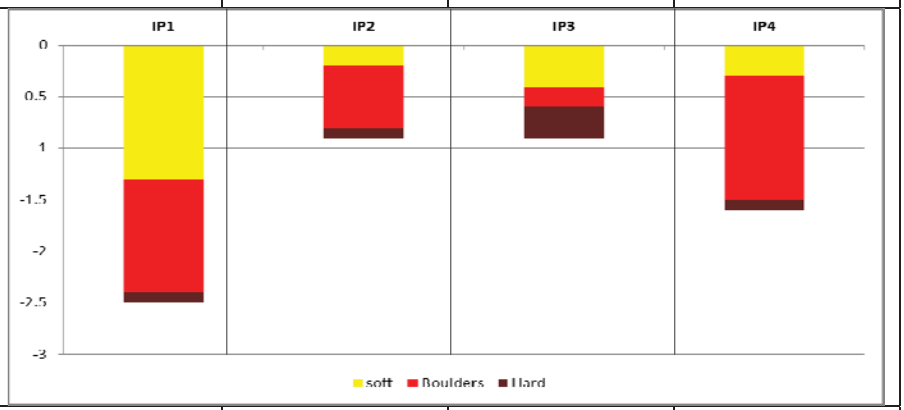
This report details the results of a geotechnical investigation for the proposed new pedestrian bridge crossing the Boboyi River near Port Shepstone, KwaZulu-Natal.

The site is generally underlain by a combination of transported sand and a boulder bed overlying moderately weathered tillite bedrock from the Dwyka Group, Karoo Supergroup.

Findings of the investigation are summarised in Table 3 Below.

The ground conditions given in this report refer specifically to the field tests carried out on site. It is therefore, quite possible that conditions at variance with those given in this reportcan be encountered elsewhere on site during construction. It is therefore important that Geosure (Pty) Ltd be appointed to carry out a strict quality assurance program during construction. Any change from the anticipated ground conditions could then be taken into account to avoid unnecessary expense.

Table 3: Summary of Conditions on site and viable founding options.

Simplified profiles and Inferred Geological cross section at the proposed bridge location				
				
	Abutment A	*Pier 1*	*Pier 2*	*Abutment B*
Investigation:	IP1	IP2	IP3	IP4
Depth to bedrock (m):	2.4	0.8	0.6	1.5
Groundwater seepage:	-	-	-	1.3
Excavatebility:				
***Recommended foundation type (ABP):**	Caisson (500kN/m^2)	Spread (500kN/m^2)	Spread (500kN/m^2)	Caisson / Spread (500kN/m^2)
Expected settlement:	negligible (< 5mm) provided the concrete is cast directly onto clean competent bedrock			
Additional recommendations:	It is recommended that all foundation excavations be inspected and approved by Geosure (Pty) Ltd prior to blinding and casting concrete.			

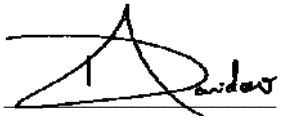
* *Provided that water inflow and potential collapse of the excavation sidewalls can be dealt with and the footings anchored into bedrock.*

ABP – Allowable Bearing Pressure

- No seepage encountered

18 December 2012

Author – E Odendaal Pr.Sci.Nat ***Date***



18 December 2012

Reviewed By – D Naidoo Pr. Sci. Nat. ***Date***

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APPENDIX A

INSPECTION PITS AND EXISTING EXPOSURE PROFILES

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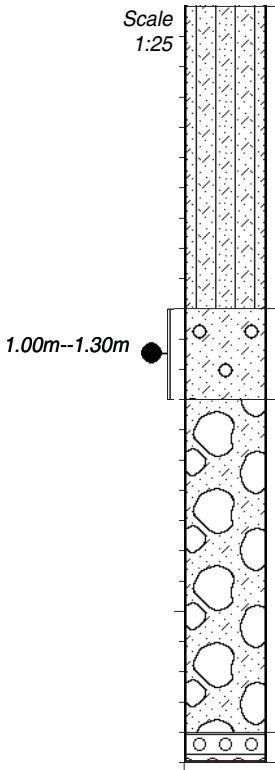
Samani Consulting
Boboyi Pedestrian Bridge

HOLE No: IP1 (Abutment A)
Sheet 1 of 1

JOB NUMBER: 355-12



0.00

Dry to slightly moist, dark orange brown, medium dense, clayey SAND to clayey SANDY SILT with sparse tillite cobbles. Talus / Colluvium.

1.00

Dry to slightly moist, dark orange brown to reddish brown, medium dense, clayey gravelly SAND with abundant tillite pebbles and cobbles.

1.30

Slightly moist, dark greyish brown banded and stained olive yellow, loose to medium dense, clayey SAND and numerous tillite BOULDERS.

2.40

Dark grey speckled light grey / olive brown and olive yellow, moderately weathered, fine to medium grained, moderately fractured, hard to very hard rock. TILLITE. Dwyka Group.

2.50

NOTES

1) No ground water seepage observed.

2) Sample taken at:
S1 1,00m--1,30m (2 x Bulk)
S2 1,00m--1,30m (Ind)

3) Refusal depth at 2,50m.

CONTRACTOR :
MACHINE : Hyundai Excavator (20 TON)
DRILLED BY :
PROFILED BY : P. Naidoo

TYPE SET BY : P. Ramsuraj
SETUP FILE : STANDARG.SET

INCLINATION :
DIAM :
DATE : 29 November 2012
DATE : 29 November 2012

DATE : 05/12/12 12:55
TEXT : ..C:\LOGS\PITS.TXT

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: IP1 (Abutment A)

GEOSURE (Pty) Ltd
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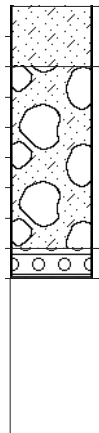
HOLE No: **IP2 (Pier 1)**
Sheet 1 of 1

JOB NUMBER: 355-12



Dry to slightly moist, light orange brown, loose, clayey, fine to medium grained SAND with pebbles and cobbles of tillite. Alluvium.

Moist to wet, dark greyish brown banded and stained olive yellow, loose to medium dense, clayey SAND amd numerous tillite BOULDERS.

Dark grey speckled light grey / olive brown and olive yellow, moderately weathered, fine to medium grained, moderately fractured, hard to very hard rock. TILLITE. Dwyka Group.

NOTES

1) No ground water seepage observed.

2) Trench wall collapsed and filled by stream water.

3) Refusal depth on rock at 0,90m.

CONTRACTOR :
MACHINE : Hyundai Excavator (20 TON)
DRILLED BY :
PROFILED BY : P. Naidoo

TYPE SET BY : P. Ramsuraj
SETUP FILE : STANDARG.SET

INCLINATION :
DIAM :
DATE : 29 November 2012
DATE : 29 November 2012

DATE : 05/12/12 12:55
TEXT : ..C:\LOGS\PITS.TXT

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: **IP2 (Pier 1)**

GEOSURE (Pty) Ltd

Geotechnical, Environmental &
Groundwater Engineering
Pile Integrity Testing & Civil
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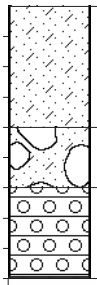
HOLE No: **IP3 (Pier 2)**
Sheet 1 of 1

JOB NUMBER: 355-12

Scale 1:25



0.00

Slightly moist to moist, dark brown blotched light orange brown, very loose to loose, slightly clayey, fine to medium grained SAND (tillite cobbles towards base). Topsoil.

0.40

Moist to wet, dark greyish brown banded and stained olive yellow, loose to medium dense, clayey SAND and numerous tillite BOULDERS.

0.60

Dark grey speckled light grey / olive brown and olive yellow, moderately to unweathered, fine to medium grained, moderately fractured, hard to very hard rock. TILLITE. Dwyka Group.

0.90

NOTES

1) No ground water seepage observed.

2) Rock is wet.

3) Refusal depth on rock at 0,90m.

CONTRACTOR :
MACHINE : Hyundai Excavator (20 TON)
DRILLED BY :
PROFILED BY : P. Naidoo

TYPE SET BY : P. Ramsuraj
SETUP FILE : STANDARG.SET

INCLINATION :
DIAM :
DATE : 29 November 2012
DATE : 29 November 2012

DATE : 05/12/12 12:55
TEXT : ..C:\LOGS\PITS.TXT

ELEVATION :
X-COORD :
Y-COORD :

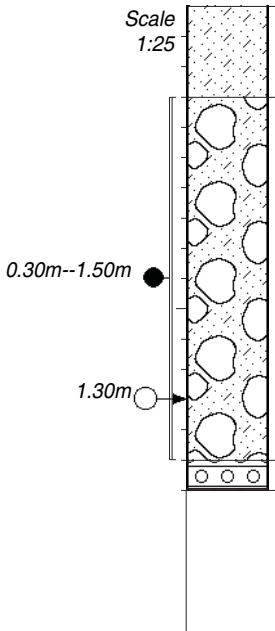
HOLE No: **IP3 (Pier 2)**

GEOSURE (Pty) Ltd
Geotechnical, Environmental & Groundwater Engineering
Pile Integrity Testing & Civil Engineering Laboratory
P O Box 1461, Westville, 3630, South Africa
Tel: (031) 266-0458
email: geosure@ iafrica.com
Fax: 086 689-5506
www.geosure.co.za

Samani Consulting
Boboyi Pedestrian Bridge

HOLE No: IP4 (Abutment B)
Sheet 1 of 1

JOB NUMBER: 355-12



Slightly moist to moist, dark brown, very loose to loose, slightly clayey, fine to medium grained SAND (tillite cobbles towards base). Topsoil.

Moist to wet, dark greyish brown banded and stained olive yellow, loose to medium dense, clayey SAND and numerous tillite BOULDERS.

Dark grey speckled light grey / olive brown and olive yellow, moderately weathered, fine to medium grained, moderately fractured, hard to very hard rock. TILLITE. Dwyka Group.

NOTES

1) Slight ground water seepage observed at 1,30m.

2) Sample taken at:
S1 0,30m--1,50m (2 x Bulk)

3) Refusal depth on tillite rock at 1,60m.

CONTRACTOR :
MACHINE : Hyundai Excavator (20 TON)
DRILLED BY :
PROFILED BY : P. Naidoo

TYPE SET BY : P. Ramsuraj
SETUP FILE : STANDARG.SET

INCLINATION :
DIAM :
DATE : 29 November 2012
DATE : 29 November 2012

DATE : 05/12/12 12:55
TEXT : ..C:\LOGS\PITS.TXT

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: IP4 (Abutment B)

APPENDIX B

DYNAMIC CONE PENTROMETER (LIGHT) TESTS

GEOSURE (PTY) LTD.

Geotechnical Engineering Consultants

Tel: (031) 266 0458 Fax: 086 689 5506 Email: geosure@iafrica.com

Client: **Samani Consulting** Ref.No. 355-12

Project: **Boboyi Pedestrian Bridge** Date: 09-11-2012

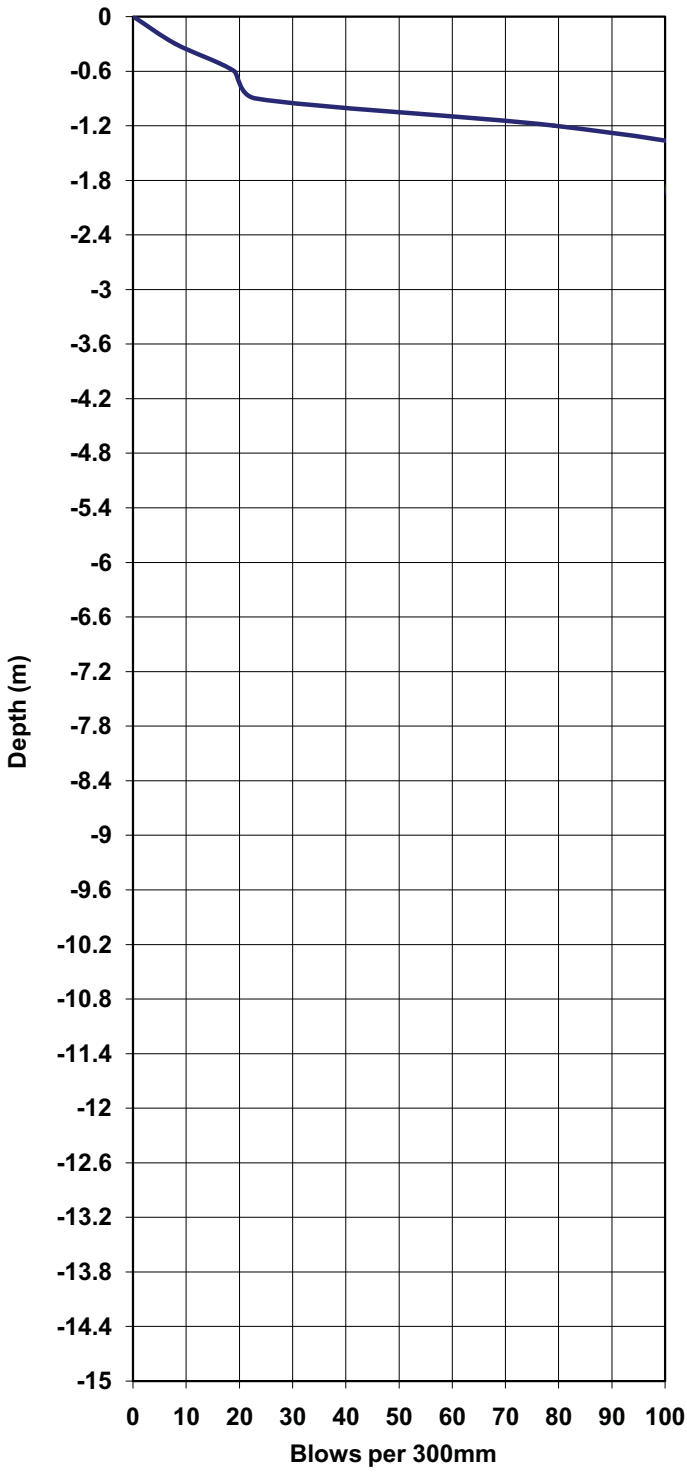
Section: Operator: P. Naidoo

Light Dynamic Penetrometer Probe ---------- ***Test No. DPL 1 (Abutment A)***

THE INSITU STRENGTH DEPENDS ON SOIL MOISTURE CONTENT AND GRAIN STRUCTURE WHICH HAVE NOT BEEN ASSESSED AND MAY CHANGE. THE VALUES GIVEN ARE THEREFORE INDICATIVE ONLY AND SHOULD BE VERIFIED BY TEST OR OBSERVATION

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angel
Rods: 16mm diameter, 22mm diameter couplings

Depth metres	Blows per 300mm	Inferred Consistency	Insitu Shear Strength
0			
0.3	8	Loose	<30 deg
0.6	19	Med.Dense	32 deg
0.9	23	Med.Dense	33 deg
1.2	79	Dense	38 deg
1.5	110	Very Dense	>38 deg
	Refusal		



GEOSURE (PTY) LTD.

Geotechnical Engineering Consultants

Tel: (031) 266 0458 Fax: 086 689 5506 Email: geosure@iafrica.com

Client: **Samani Consulting** Ref.No. 355-12

Project: **Boboyi Pedestrian Bridge** Date: 09-11-2012

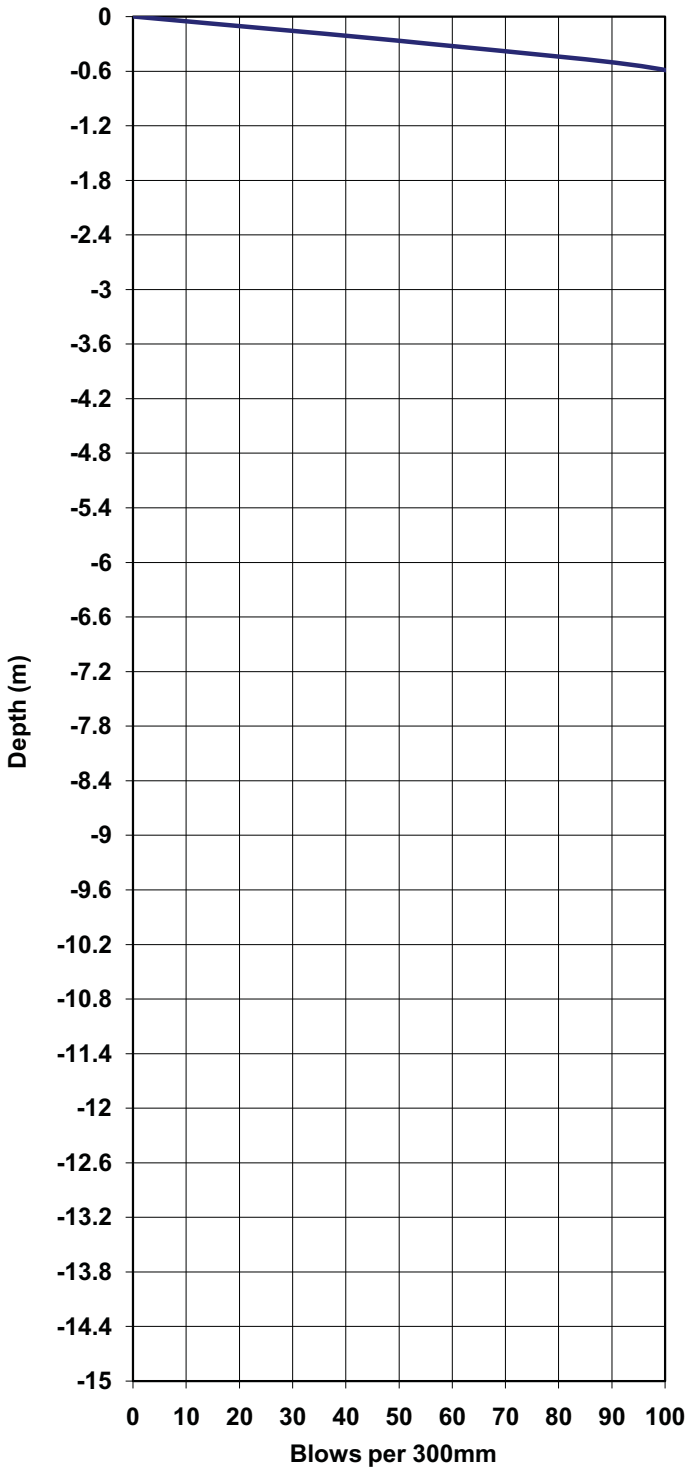
Section: Operator: P. Naidoo

Light Dynamic Penetrometer Probe ---------- ***Test No. DPL 2 (Pier 1)***

THE INSITU STRENGTH DEPENDS ON SOIL MOISTURE CONTENT AND GRAIN STRUCTURE WHICH HAVE NOT BEEN ASSESSED AND MAY CHANGE. THE VALUES GIVEN ARE THEREFORE INDICATIVE ONLY AND SHOULD BE VERIFIED BY TEST OR OBSERVATION

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angel
Rods: 16mm diameter, 22mm diameter couplings

Depth metres	Blows per 300mm	Inferred Consistency	Insitu Shear Strength
0			
0.3	56	Dense	37 deg
	Refusal		



GEOSURE (PTY) LTD.

Geotechnical Engineering Consultants

Tel: (031) 266 0458 Fax: 086 689 5506 Email: geosure@iafrica.com

Client: **Samani Consulting** Ref.No. 355-12

Project: **Boboyi Pedestrian Bridge** Date: 09-11-2012

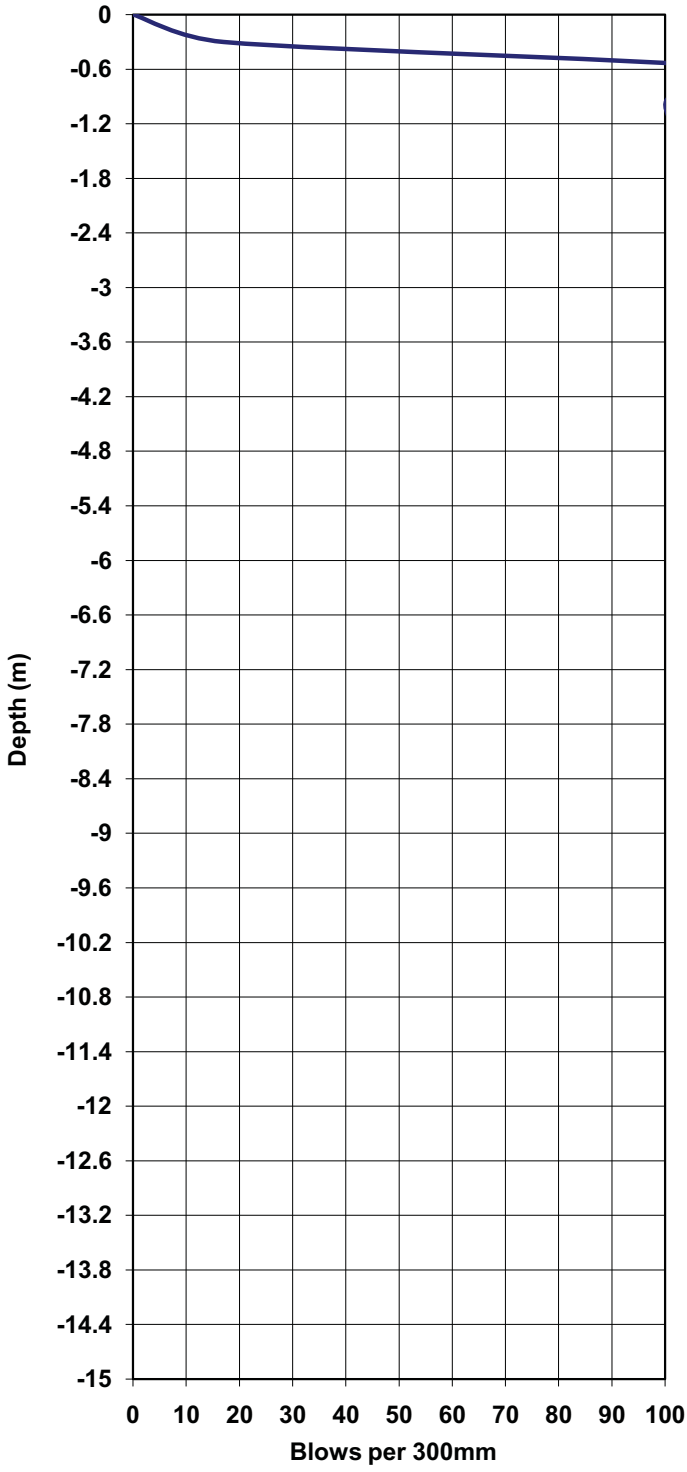
Section: Operator: P. Naidoo

Light Dynamic Penetrometer Probe ---------- ***Test No. DPL 3 (Pier 2)***

THE INSITU STRENGTH DEPENDS ON SOIL MOISTURE CONTENT AND GRAIN STRUCTURE WHICH HAVE NOT BEEN ASSESSED AND MAY CHANGE. THE VALUES GIVEN ARE THEREFORE INDICATIVE ONLY AND SHOULD BE VERIFIED BY TEST OR OBSERVATION

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angel
Rods: 16mm diameter, 22mm diameter couplings

Depth metres	Blows per 300mm	Inferred Consistency	Insitu Shear Strength
0			
0.3	17	Med.Dense	31 deg
0.6	117	Very Dense	>38 deg
	Refusal		



GEOSURE (PTY) LTD.

Geotechnical Engineering Consultants

Tel: (031) 266 0458 Fax: 086 689 5506 Email: geosure@iafrica.com

Client: **Samani Consulting** Ref.No. 355-12

Project: **Boboyi Pedestrian Bridge** Date: 09-11-2012

Section: Operator: P. Naidoo

Light Dynamic Penetrometer Probe ---------- ***Test No. DPL 4 (Abutment B)***

THE INSITU STRENGTH DEPENDS ON SOIL MOISTURE CONTENT AND GRAIN STRUCTURE WHICH HAVE NOT BEEN ASSESSED AND MAY CHANGE. THE VALUES GIVEN ARE THEREFORE INDICATIVE ONLY AND SHOULD BE VERIFIED BY TEST OR OBSERVATION

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angel
Rods: 16mm diameter, 22mm diameter couplings

Depth metres	Blows per 300mm	Inferred Consistency	Insitu Shear Strength
0			
0.3	8	Loose	<30 deg
0.6	58	Dense	37 deg
0.9	107	Very Dense	>38 deg
	Refusal		

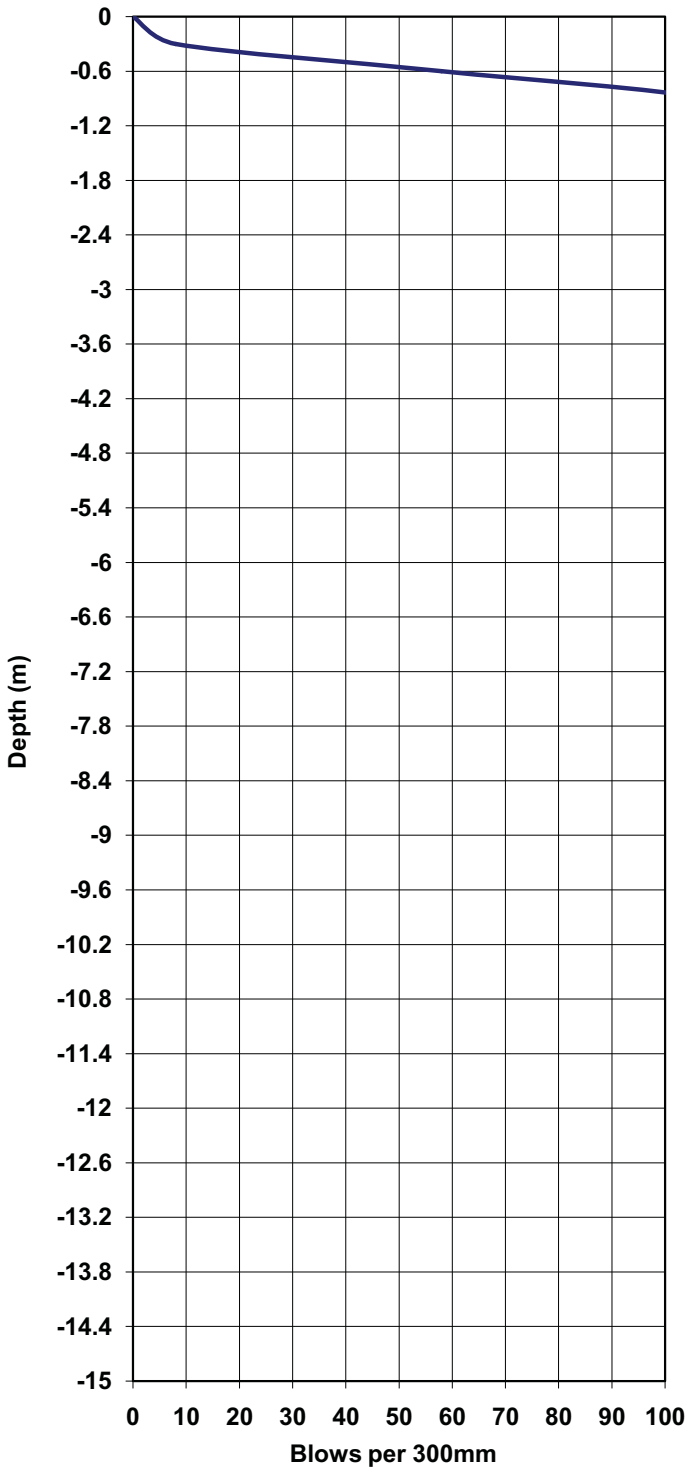
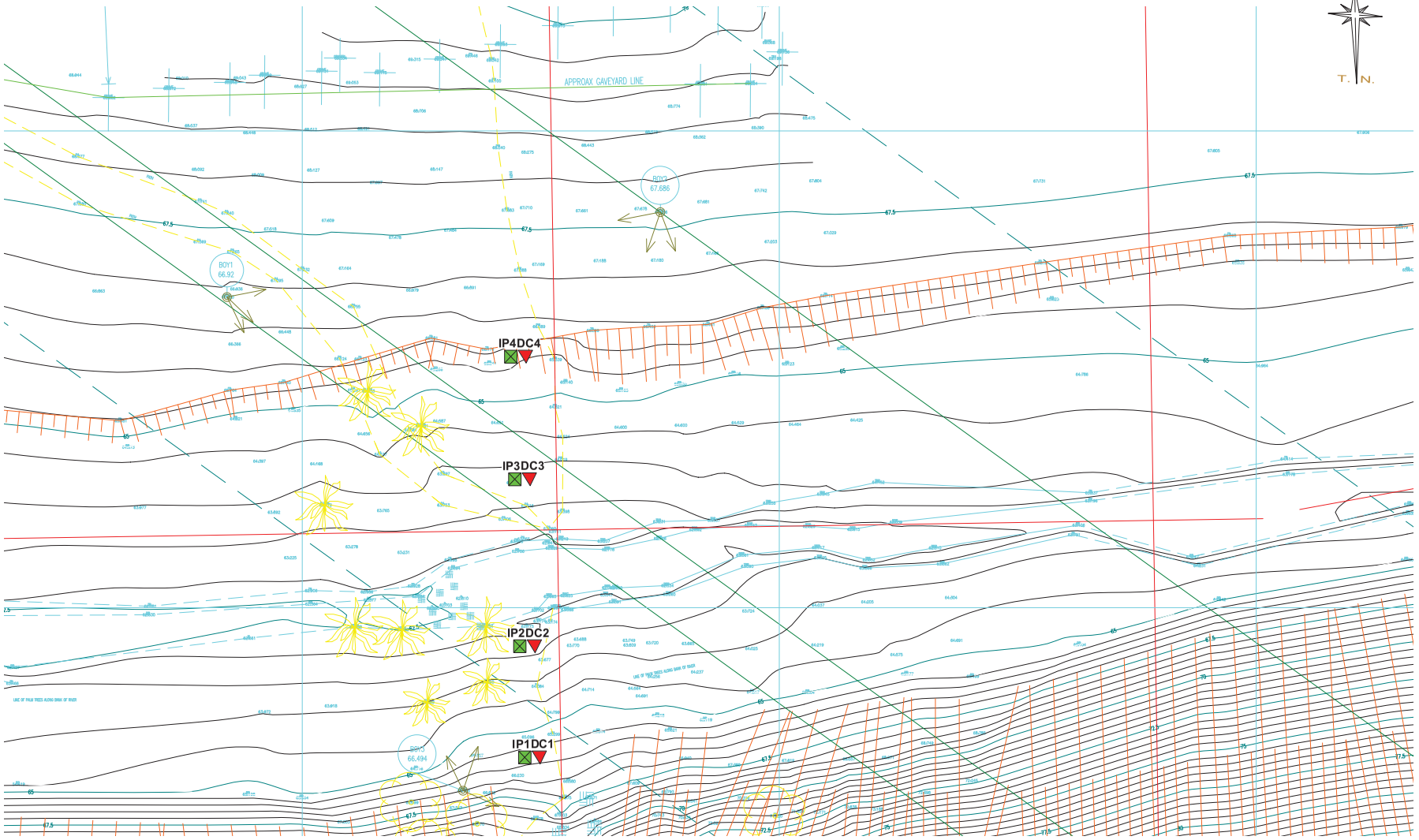


FIGURE 1

SITE PLAN



KEY:

IP1 — Approximate position of Inspection Pit.

DC1 — Approximate position of CBR Dynamic Cone Penetrometer (DCP) Test.

Site Plan showing approximate position of :

(i) Inspection Pits; and

(ii) CBR Dynamic Cone Penetrometer (DCP) Tests.

Scale 1:500

Samani Consulting
Boboyi Pedestrian Bridge

GEOSURE (PTY) LTD
Consulting Engineering Geologists, Geotechnical Engineers, Geotechnicians and Geotechnical Quality Assurance Specialists
P O Box 1461, Westville,3630, 122 Intersite Avenue, Umgeni Business Park, Durban, 4001
Tel : +27 (0)31 266 0458, Fax : +27 (0)86 689 5506, Cell : 082 784 0544,
E-Mail : geosure@iafrica.com, Website: www.geosure.co.za

DATE 12-12-2012
DRAWN V. Gounden
CHECK D. Naidoo
REFERENCE No. 355-12

Figure 1

Vegetation Assessment

Application for Environmental Authorization
Basic Assessment

Pedestrian Bridge and Culvert, Baboyi (Bhobhoyi)

Construction of Culvert
30°44'42.16''S and 30°23'40.25''E
Construction of Pedestrian Bridge
30°44'38.68''S and 30°23'34.04''E
Hibiscus Coast Local Municipality
Ugu District Municipality.

Bruce R. Page

Bruce Page & Associates

Brief and Scope of the Assessment

I was engaged by Kerry Seppings Environmental Management Specialists to assess the impacts on vegetation of the construction of a culvert across a small drainage line at 30°44'42.16''S and 30°23'40.25''E and a pedestrian bridge across the stream at 30°44'38.68''S and 30°23'34.04''E next to the Bhobhoyi settlement, as indicated by a provided map (Plate 1).

Methods

Desktop Analysis

Using satellite imagery I determined the physiognomic structure of the vegetation at the locations of the proposed culvert and pedestrian bridge, and in the immediate surroundings (Plates 1, 2, 3). In doing this analysis I paid particular attention to vegetation growing within a ten meters zone on each side of the designated site.

I then used The Vegetation of South Africa, Lesotho and Swaziland GIS (Mucina and Rutherford, 2006) to determine the regional vegetation type. From this I compiled a list of species that might be expected on the site. I added to this list by using the SIBIS:SABIF databases hosted by the SA National Biodiversity Institute, and attempted to establish the likelihood of any rare or threatened species occurring along the route.

Site Inspection and Data Collection

I visited the site on 24 August 2012. The visit followed a period of a few weeks of relatively cold and dry weather. As a result of the time of year and the recent weather, the vegetation was fairly moribund. Very few plants had flowers or fruits

or leaves. Most herbs and forbs had died back completely. I surveyed the two sites intensively in an area with a radius of twenty meters around the designated site. At each location I made notes and took a large number of photographs for further analysis. I made a list of all species that I encountered in the sampling area and collected specimens of all species that I was unable to identify with certainty and identified these using appropriate field guides, and where necessary keys and herbarium specimens.

Results

Desktop Analysis

The analysis of satellite images revealed that the culvert and pedestrian bridge are located within a well-established footpath that traverses open grassland and the fringing woody vegetation along the small drain and river. In the area on the banks where the structures will be located, woody vegetation has been cleared on both banks. Similarly the herbaceous vegetation is removed on a fairly wide path of about 1 meter in width. (Plates 1, 2 and 3)

I could detect no patches of distinctly different vegetation at the sites of the proposed structures.

Analysis of the Mucina and Rutherford (2006) GIS indicated that the site of the proposed structures occurs in KwaZulu-Natal Coastal Belt vegetation (Type CB3).

The descriptions In Mucina & Rutherford (2006) and the search of the SIBIS database indicated the possibility of the occurrence of twenty one species that are listed as being biogeographically important because of the proximity to the southern edge of their ranges, and four endemic taxa, two of which are listed as being extinct.

Field Sampling

Vegetation of the Area Surrounding the Proposed Structures

The vegetation surrounding the bridge and culvert is typical of the KwaZulu-Natal Coastal Belt type. However it is somewhat depauperate because of frequent burning, grazing and the harvesting of wood Plates 1 - 8.

I could find no evidence of patches of either individual species or distinct community types that would be impacted by the erection of the proposed structures.

Vegetation on the Site of the Proposed Structures

The points at which the footpaths cross the drainage line and stream have clearly been used as crossing points for an extended period. Fringing woody vegetation has been cleared to a distance of some three meters on either side of the path at the culvert site and about five meters on the south bank and ten meters on the north bank of the stream at the pedestrian bridge site. Similarly the herbaceous vegetation has been extirpated on the path and significantly reduced adjacent to it by trampling and erosion. Plates 1-8.

Only relatively few species were recorded in a radius of ten meters around the site of the proposed structures (Table 1). All of the species encountered are common within the KwaZulu-Natal Coastal Belt type and in many other adjoining types.

Despite extensive searching I could not detect any of the biogeographically important and endemic species mentioned by Mucina and Rutherford (2006) and extracted from the SIBIS database in a twenty meter radius around the sites for the proposed structures.

Likely Impacts on Vegetation.

The impacts on the populations all species encountered in the survey will be insignificant.

Plates 1 to 8 indicate that most of the area on which both the culvert and pedestrian bridge will be erected is already clear of vegetation because of trampling. The erection of the structures is in fact likely to reduce trampling at the crossings.

In addition in many instances at both locations the majority of individual plants that will be impacted on are alien invasive species.

It is also unlikely that there are any species that may have been missed because of the season and winter die as the riparian fringes were still fairly moist.

Recommendations

Based on impacts on vegetation, there is no reason for suggesting that the proposed structures should not be erected.

Mitigating Measures

There is a very slight chance that geophytes (bulbs) may be encountered whilst clearing for the construction. It is suggested that if any are unearthed that they are simply replanted a few meters away.

The woody vegetation on the sites are nearly all alien invasive species, mostly *Chromalena odorata*, but also *Lantana camara* and *Caesalpinia decapetala*.

Care should be taken when these species is in the path of required clearing to ensure that the individuals are plants is removed intact (with roots) and destroyed. .

Plate 1. Satellite image with the location of the footbridge and culvert indicated.

Plate 2. Satellite image showing the location of the pedestrian bridge, and the reduced woody fringe and disturbed herbaceous vegetation at the site.

Plate 3. Satellite image showing the reduced woody fringe and disturbed herbaceous vegetation at the site of the culvert

Plate 4. View of the site of the location of the culvert showing the reduced woody fringe and path devoid of herbaceous vegetation

Plate 5. View from the opposite bank of the site of the proposed culvert showing the reduced woody fringe and path without herbaceous vegetation.

Plate 6. View of the location of the proposed pedestrian bridge from the hill above the stream showing the gap in the woody fringe and reduced herbaceous vegetation along the footpath.

Plate 7. View of the location of the proposed pedestrian bridge showing the gap in the woody fringe and reduced herbaceous vegetation along the footpaths.

Plate 8. View from the opposite bank of the location of the proposed pedestrian bridge showing the gap in the woody fringe and reduced herbaceous vegetation along the footpaths.

Table 1. Species encountered within a 20 meter radius around the two sites.

Family	Species	Culvert	Bridge
Grasses & Sedges			
Poaceae	*Aristida junciformis subsp galpinii*	x	x
	Cymbopogon caesius	x	
	Digitaria eriantha		x
	Eragrostis curvula	x	x
	Heteropogon contortus		x
	Hyparrhenia filipendula	x	x
	Panicum maximum		x
	Themeda triandra	x	
Cyperaceae	Cyperus spp		
Herbs & Forbs			
Commelinaceae	Commelina erecta	x	
Trees & Shrubs			
Arecaceae	Phoenix reclinata		x
Anacardiaceae	*Sersia rehmanniana var rehmanniana*		x
Myrtaceae	Syzigium cordatum		x
Myrsinaceae	*Maesa lanceolata*		x
Rubiaceae	Vangueria infausta subsp infausta	x	
Alien Invasives			
	Chromolaena odorata	x	x
	Lantana camara	x	x
	Caesalpinia decapetala	x	x

REPORT

Riparian Delineation and Assessment, Boboyi Pedestrian Bridge and Path, Ugu District Municipality

Prepared by:
Barbara Wiseman (BSc. hons)
Professional Natural Scientist 400210/09 (Environmental Science)
DWAF Accredited Wetland Delineator
& Nick Davis (MSc. Hydrology)
of
RIVER-WISE

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Prepared for:
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Project No: 042-2012
August 2012

Contents

Figures

1 Background & Location

The following riparian study was requested by Kerry Seppings Environmental Management Specialists cc. The appointment was to undertake a riparian delineation and assessment, for the construction of a proposed pedestrian bridge and foot path. The pedestrian bridge is proposed to enable pedestrians to cross 2 tributaries of the Boboyi River. The foot path crosses a main tributary where the pedestrian bridge is proposed, and a second smaller tributary to the south east of the proposed bridge crossing, where a culverted pedestrian crossing is proposed. The two crossings are indicated on the Google Earth imagery in Figure 1, below.

Figure 1. Location of the proposed access road

2 Site Description

2.1 General

A site visit was conducted on the 10th August 2012.

The proposed bridge crossings are located in a rural communal area, called Bhobhoyi, and would be located along an existing worn pathway linking an older residential area to a more recently developed low cost housing development node.

A series of footpaths have been worn along the proposed alignment and litter is scattered along the path. Litter and debris were prolific along the flood bench and were indicative of the recent heavy rains.

Figure 2. Litter and debris washed up onto plants on the flood bench

The river at the main crossing was still in full flood, and was an indication of the extent of depth and velocities of flow that are reached in flood conditions, and the difficulty of crossing.

Figure 3. The existing crossing point

The main crossing occurs along a straight section of river, where the south bank has a gentle slope and a flood bench feature, while the north bank is steep sided with the river cutting into the bank.

The second crossing occurs on small tributary entering into the first tributary further downstream.

Figure 4. Looking south and north of the small tributary crossing respectively

The crossings are positioned on tributaries of the Boboyi River which join the Boboyi River approximately 3km from the river mouth.

2.2 Vegetation

Phoenix reclinata (Wild date palm) was the most common woody plant populating the riparian zone of the main tributary. Infestations of *Chromolaena odorata* (Triffid weed), *Senna didymobotrya* (Peanut butter cassia) and *Tithonia diversifolia* (Mexican sunflower) occurred along the riparian fringes.

The smaller tributary comprised a woody component of primarily indigenous trees including *Phoenix reclinata* (Wild date palm) and *Erythrina lysistemon* (Common coral tree) with only a small percentage of alien invasive plant species.

2.3 Catchment

The proposed pedestrian bridge and culverted crossing are located in the T40G sub-catchment, within the Mvoti to Umzimkulu Water Management Area, which receives 1057mm of rainfall and 249.9mm of runoff per annum respectively, with a mean annual evaporation of 1500mm – 1600mm per annum. The soils are moderate to deep, sandy loam with an undulating terrain, with an erodability index of 12 which is moderate in the lower reaches, (Middleton, B.J., Bailey, A.K. 2008).

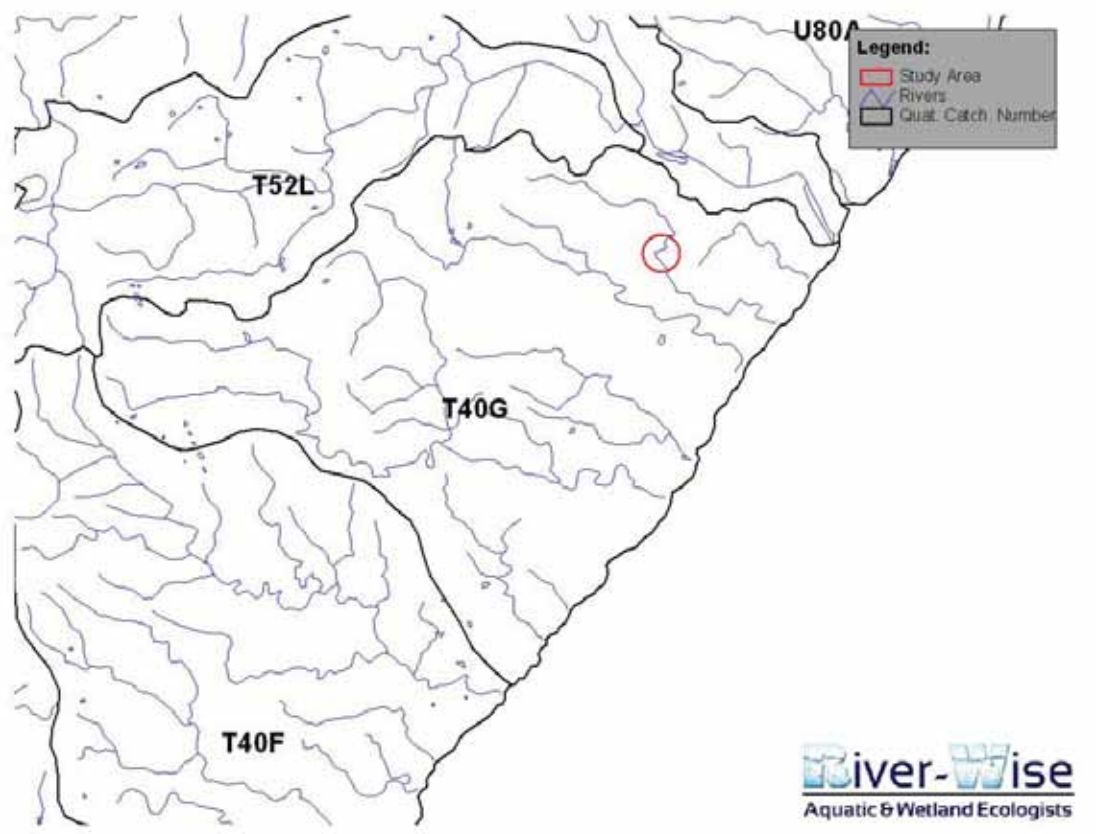


Figure 5. Location of the site within the T40G catchment

3 Approach

3.1 Delineation and Classification

The riparian area was delineated according to the delineation procedure as set out by "*A Practical Field Procedure for the Identification and Delineation of Wetlands and Riparian Areas*" document, as described by DWAF (2005).

The delineated riparian zone was classified using a hydro-geomorphic classification system based on the system proposed by the SANBI, 2009, report: Further Development of a proposed National Wetland Classification System for South Africa.

3.2 Ecological Integrity Assessment

The Index of Habitat Integrity (IHI, Kleynhans 1996), was used to assess the number and severity of anthropogenic perturbations on the river and the damage potentially inflicted on the habitat integrity of the system.

The key criteria used in the IHI assessment are:

- Water abstraction
- Extent of Inundation
- Water Quality
- Flow Modification
- Bed Modification
- Channel modification
- Presence of exotic aquatic fauna
- Presence of exotic macrophytes
- Solid waste disposal
- Decrease of indigenous vegetation from the riparian zone
- Exotic vegetation encroachment
- Bank Erosion

The following scores are used as a measure of impact:

None (0)

Small (1 to 5)

Moderate (6 to 10)

Large (11 to 15)

Serious (16 to 20)

Critical (21 to 25)

The score is then moderated by a weighting system based on the relative threat of the impact to the habitat integrity of the riverine ecosystem.

A habitat integrity score is then calculated as a percentage which places the system into a particular class.

Table 1. Habitat Integrity Assessment Classes, adapted from Kleynhans (1999).

CLASS	DESCRIPTION	SCORE (% OF TOTAL)
A	Unmodified, natural	100
B	Largely natural with few modifications. A small change in natural habitats and biota may have taken place but the	80-99

	ecosystem functions are essentially unchanged.	
C	Moderately modified. A loss and change of natural habitat and biota have occurred but the basic ecosystem functions are still predominantly unchanged.	60-79
D	Largely modified. A large loss of natural habitat, biota and basic ecosystem functions have occurred.	40-59
E	Seriously modified. The loss of natural habitat, biota and basic ecosystem functions are extensive.	20-39
F	Modifications have reached a critical level and the system has been modified completely with an almost complete loss of natural habitat and biota. In the worst instances the basic ecosystem functions have been destroyed and the changes are irreversible.	0-19

This methodology was used to assess the ecological integrity of the River Channel, but only the following criteria were considered:

- Water abstraction
- Extent of Inundation
- Water Quality
- Flow Modification
- Channel modification
- Decrease of indigenous vegetation from the riparian zone
- Exotic vegetation encroachment
- Bank Erosion

4 Findings

4.1 Delineation

The riparian zone at both of the proposed crossings was delineated. The delineations are shown in Figure 6, below.

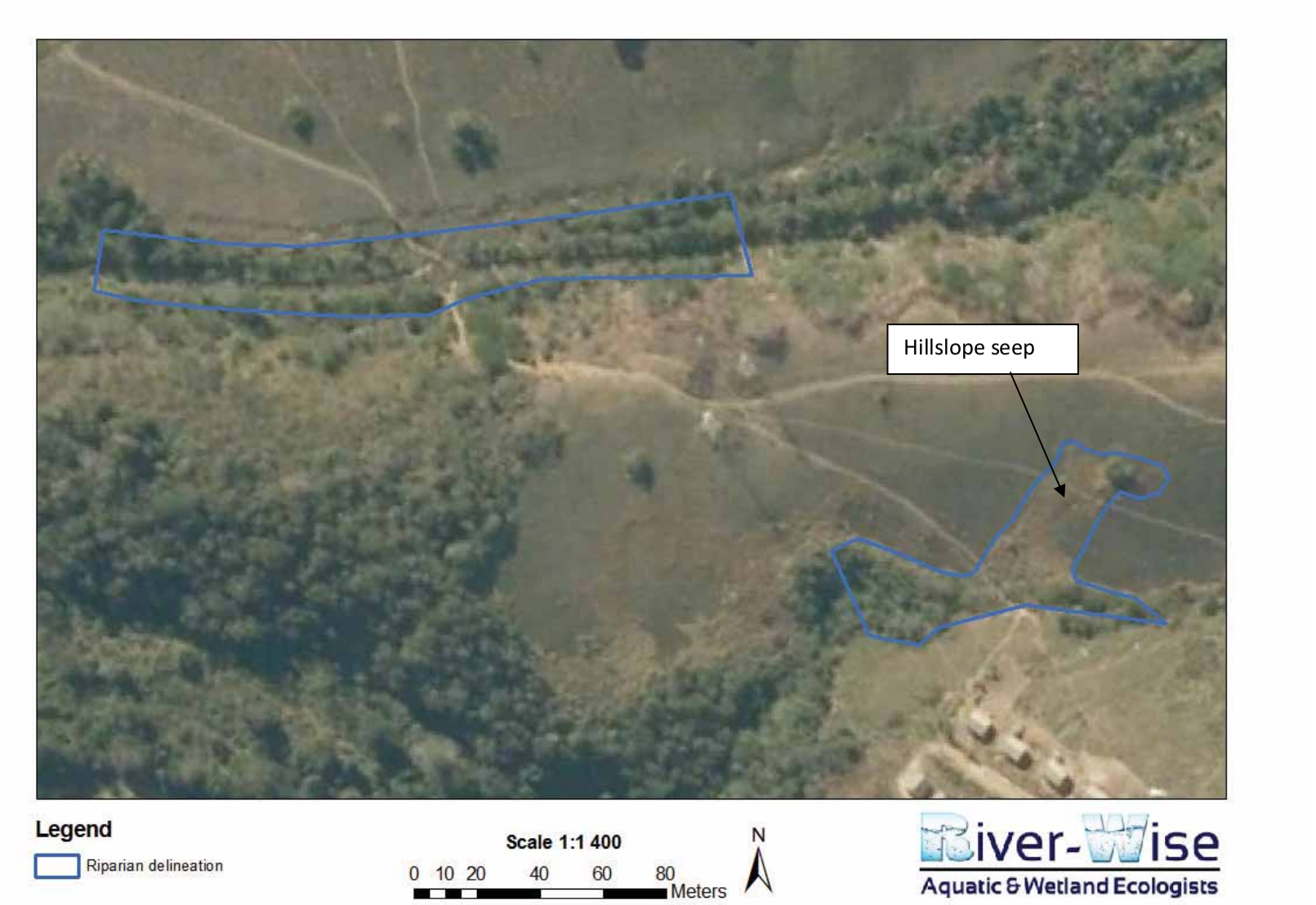


Figure 6. Riparian Zone delineation

4.2 Classification

The riparian zone delineated is best classified as a Riparian B Channel which is seasonal. Primary inputs are from overland flow from catchment runoff and concentrated surface flow from upstream tributaries. There is a flood bench which is periodically inundated during floods.

Figure 7. Riparian zone at the proposed bridge site

The smaller tributary to be crossed is best classified as an A or B Section Riparian Channel. This is a steep headward channel which has eroded down to bed rock and does not carry baseflow. The primary inputs are from storm runoff during and after heavy rainfall events, and flows are therefore of a short duration, but there is a high erosion potential as demonstrated by the erosion that has taken place at the convergence with the path.

There is small hillslope seep feeding into the tributary to the north east of the proposed crossing, which is probably the result of a perched water table.

Figure 8. Smaller riparian tributary

4.3 Riparian Habitat Integrity (RHI)

The ecological integrity score obtained for the main riparian channel gives a resultant integrity category of D reflecting that a large loss of natural habitat, biota and basic ecosystem functions have occurred.

The ecological integrity score obtained for the tributary gives a resultant integrity category of C reflecting that a loss and change of natural habitat and biota have occurred but the basic ecosystem functions are still predominantly unchanged.

5 Anticipated Impacts

5.1 Main Channel Crossing

The proposed river crossing with regards to the main stream, illustrated in Figure 3 and 6, is assumed to be a suspension bridge designed to accommodate pedestrian traffic.

The existing crossing consists of a number of rocks across the main channel. During peak flow events such as recently occurred (07/08/2012 to 09/08/2012) these rocks would have been submerged. This in addition to the significantly higher water levels would have posed a considerable danger to any wishing to cross during this period.

A suspension bridge would improve conditions for people living in this area, who need to cross the river, however, the effect of this bridge on the river system from an improvement point of view may be negligible. This is due to the current crossing point consisting of a number of rocks either naturally occurring or placed across the channel, and hence flows through this crossing are not currently impeded and disturbance to the river bed is minimal.

Additionally, the presence of a suspension bridge would improve the water quality downstream of this crossing. This would be due to a decrease in sediment loads from the footpaths that currently transport a significant quantity to the main channel. The contribution from these footpaths is due to both the incised nature of these paths and the sparse ground cover of the adjacent areas. If combined with a moderate slope angle the resulting runoff enters the footpath from upslope areas at a considerable rate, hence it could contain a significant sediment load. This water is then channeled by the path, illustrated in Figure 7, towards the river at an accelerated rate, thereby increasing the entrainment and so the overall sediment load of the water entering the river from this source. As stated previously the introduction of a pedestrian bridge would eliminate the path entering the main channel and this would significantly reduce the entry of sediments into the system from this source. However, the greater risk to the river health is not the bridge itself, although this may have some impacts, but rather the construction phase of the bridge.

Depending of the type of bridge to be constructed, in this case it has been assumed to be a suspension bridge, the disturbance to this system will be localized. It is uncertain at this stage as to whether the river will be diverted from the present course in order to accommodate the construction of the bridge.

Disturbance to the vegetation in this instance is not considered to be of significant impact. This is due to the localized nature of the disturbance and the level of existing disturbance. Additionally, the wetland vegetation present in this area is considered to be resilient enough re-establish if overgrazing and excessive erosion are prevented. The impacts related to construction are:

- increased erosion,
- increased sedimentation,
- water contamination,
- deterioration of water quality, and the
- compaction of soil as a consequence of heavy machinery during construction.

Therefore, mitigation should aim to prevent further erosion, improve water quality and reduce the quantity of litter that is very apparent in this system.

During the operational phase of this bridge the water course will be subjected to the discarding of non-biodegradable materials which is a major cause for the reduction in water quality.

If the bridge to be constructed is a suspension bridge then it is probable that the effects on the water course will be negligible. However, if the bridge to be constructed is to have piers in the channel then it is highly probable that the impacts on flows could be high, as the river may have to be diverted during the construction phase. Additionally, the presence of a pier in the main channel could cause an alteration of the flow path and could result in increased erosion on the margins of the main channel, threatening the integrity of the foundations of the proposed bridge. If there is no peer in the main channel and a foundation on either bank then it is unlikely that the flows through this system will change significantly. There is also no indication that the presence of a bridge could result in an increase in erosion which is not the case with the smaller tributary crossing.

5.2 Tributary Crossing

The proposed stream crossing is a culverted concrete low level causeway across a first order which enters the main river previously discussed.

The existing crossing consists of an exposed rock sill across the stream channel. This sill is not level with the channel and therefore impedes flow slightly. However, the effects are negligible.

A culverted low level crossing may improve on the existing crossing in terms of re-instating more natural flows across the path, if the lower internal edge of the culvert is level with the substrate of the current channel. However there are a number of potential impacts that would be associated with such a crossing.

The greatest risk to river health is likely to be presented during the construction phase. Construction of the causeway will create localized disturbance at the site and the approaches on either side of the river and may require the flow to be diverted.

Disturbance to vegetation is not considered to be a significant impact, because removal of vegetation from either side of the pathway has already been extensive. The extent of disturbance to remaining vegetation will therefore be limited. Wetland vegetation is also considered to be resilient enough to re-establish if grazing is excluded and erosion is prevented. The construction phase related impacts are considered to include:

- Increased erosion;
- Increased sedimentation;
- Water contamination; and
- Deterioration of water quality.

In addition there is expected to be soil compaction in areas traversed by heavy machinery during construction.

Mitigation should therefore aim to reduce erosion and sedimentation, and prevent the deterioration of water quality.

During the operational phase a possible impact is that of pollution of the watercourse, through littering and dumping by pedestrians as well as through polluted runoff from the surface entering the river.

The causeway structure poses the threat of flow and channel modification, through the impedance and re-direction of flows. The culverts could result in erosional channels immediately below the causeway, especially during peak or flood flows. There is also a potential for silt to build up on the upstream side of the causeway and for the culverts to silt up.

There are already erosional features around the existing crossing formed by surface flows accumulating and running along preferential flow paths. There is thus an eminent threat of erosion of the river bank developing around structures. Ultimately there is the risk of the causeway crossing being washed away and leaving debris within the watercourse.

6 Mitigation & Recommendations

Most of the construction related impacts can be avoided by restricting the construction of the low level causeway and approaches to the dry season.

The disturbance footprint, including the areas traversed by trucks and machinery must be kept to a minimum and limited to a specific operational area.

No stockpiling must take place within the defined Riparian zone.

Water diversions must be limited to a specific time frame and must only divert a portion of the river at a time, in the case of the main tributary crossing.

All exposed soil must be stabilized post construction.

Measures must be put in place to ensure that stormwater runoff from the footpaths is not channeled along the paths causing erosion. Surface water runoff should be diverted off the paths at frequent intervals and should preferably be discharged onto adjacent grassland, rather than directed into the river. Alternatively for the approaches to the culverted structure, flows should be directed into the river onto hard rock or a permanently saturated zone, upstream of the proposed structure.

With regards the culvert alignment, it is recommended that the culverts be aligned parallel to the direction of flow of the river, to prevent the impedance of flows. An apron should be present at the culvert outlets and should be designed to dissipate flows and prevent erosion immediately downstream of the causeway.

The operational phase and longer term impacts of flow and channel modification and the possibility of the causeway collapsing or ultimately being washed away can be mitigated against. However, in the instance of this causeway bridge the costs of such mitigation are prohibitive, while the returns are negligible. This applies to the main river channel crossing if peers are being positioned in the flow path.

A fixed width buffer is unlikely to achieve anything in terms of the objectives of this project, or in terms of protection of the watercourse from the negative impacts of the proposed development, and is therefore not considered.

Note: Any activity that intrudes on the delineated wetland areas on site will require a Water Use License in terms of the National Water Act (Act 36 of 1998).

7 References

Department of Water Affairs and Forestry, 2005. A practical field procedure for identification and delineation of wetland and riparian areas. DWAF, Pretoria.

Department of Water Affairs and Forestry. 1999a. *Resource Directed Measures for Protection of Water Resources.* Volume 4. Wetland Ecosystems Version 1.0, Pretoria.

Department of Water Affairs and Forestry. 1999b. *Resource Directed Measures for Protection of Water Resources.* Volume 1. River Ecosystems Version 1.0, Pretoria.

Middleton, B.J., Bailey, A.K. 2008. Water resources of South Africa, 2005 study. *Executive Summary*. Water Resource Commission.

SANBI 2009. Further Development of a proposed National Wetland Classification System for South Africa. *Primary Project Report.* Prepared by the Freshwater Consulting Group (FCG) for the South African National Biodiversity Institute (SANBI).

R. Boon. 2010. Pooley's Trees of Eastern South Africa; A Complete Guide. Flora & Fauna Publications Trust.

Appendix E –Comments and Responses Report

Comments received on the Background Information Document:

Comments	From / Date	Response
Thank you for forwarding the abovementioned application to Ezemvelo KZN Wildlife (Ezemvelo) for review and comment. Please be informed that Ezemvelo KZN Wildlife is currently experiencing significant resource constraints and will not be able to provide comment on the abovementioned application. We trust that all the appropriate measures to safeguard the ecological integrity of the receiving environment will be implemented in accordance with the principles of the National Environmental Management Act 107 of 1998.	**Dominic Wieners/ Azrah Essop** **KZN Wildlife** **22nd November 2012**	Noted. Noted. An Environmental Management Programme has been compiled for the construction phase of the development to safeguard the surrounding environment.
The Department is interested to pass comments after the Vegetation Specialist Report has been sent to our offices.	**Ms PG Bhungane** **DAFF** **12th October 2012**	Noted. The Vegetation Specialist Report will be located within the Appendix D of the Draft Basic Assessment Report
Thank you for notifying WESSA of the application. We do not wish to register and receive further information and we are satisfied that potential impacts can be addressed through good design and implementation of a site specific EMPr.	**Carolyn Schwegman** **WESSA** **23rd October 2012**	Noted.
We look forward to your submission of a hardcopy of the document on which to comment.	**Bernadet Pawandiwa** **AMAFA** **09th October 2012**	A hardcopy of the Draft Basic Assessment Report will be submitted to AMAFA for comment.
I would like to register as an I&AP and I wish to receive information relating to this Basic Assessment process.	**Liziswa Jiba** **Hibiscus Coast Local Municpality** **23rd October 2012**	Noted. Already registered and any further information regarding the development will be provided.

Comments received on the Draft Basic Assessment:

Comments	From / Date	Response

Planning Division: IEM Section

Enquiries:Dominic Wieners/Azrah Essop

Your Ref:

Kerry Seppings Environmental Management Specialists
P O. Box 396
Gillitts
3603

22 November 2012

ATTENTION: Kerry Stanton

PROPOSED CONSTRUCTION OF THE BOBOYI RIVER PEDESTRIAN BRIDGE
District Municipality: UGU

Thank you for forwarding the abovementioned application to Ezemvelo KZN Wildlife (Ezemvelo) for review and comment. Please be informed that Ezemvelo KZN Wildlife is currently experiencing significant resource constraints and will not be able to provide comment on the abovementioned application.

We trust that all the appropriate measures to safeguard the ecological integrity of the receiving environment will be implemented in accordance with the principles of the National Environmental Management Act 107 of 1998.

We sincerely regret any inconvenience caused. Please direct any queries in this regard to the Acting Co-ordinator IEM on (tel.) 033 845 1346 or (e-mail) thambud@kznwildlife.com.

Thank you in advance for your support and understanding.

Yours sincerely

pp

Coordinator IEM
For CEO : EZEMVELO KZN WILDLIFE
DATE : 22/11/2012

P O Box 13053, Cascades, 3202 ● 1 Peter Brown Drive, Montrose, 3202 ● Tel : +27 33 845 1346 Fax : +27 33 845 1499
www.kznwildlife.com

agriculture,
forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

F 086 240 1364
Tel: 0333927733
PhindileB@daff.gov.za

DAFF
Forestry Regulation & Support
P/Bag X9029
Pietermaritzburg
3200

Ms. PG Bhungane
Acting Assistant Director

12 October 2012

Dear Sir/Madam

BACKGROUND INFOMATION DOCUMENT FOR THE PROPOSED CONTRACTION A BRIDGE STRUCTURE AND ASSOCIATED FOOTPATH ACROSS THE BABOYI RIVER WITHIN THE HISBISCUS COAST LOCAL MUNICIPALITY OF THE UGU DISTRICT MUNICIPALITY

This letter serves as a notice of receipt for the above mentioned document(s) dated **11 October 2012** The Department is interested to pass comments after the Vegetation Specialist Report has been sent to our offices.

Should any further information be required, please do not hesitate to contact this office.

Yours faithfully

PG Bhungane

.....

Forestry Regulation & Support

KZN

KSEMS

From: KSEMS <kerry.seppings@telkomsa.net>
Sent: 24 October 2012 08:29 AM
To: colin.ksems@telkomsa.net
Subject: Samani Baboyi River Pedestrian Bridge-Notice of Application for Environmental Authorisation

---

From: Carolyn [mailto:afromatz@telkomsa.net]
Sent: 23 October 2012 06:20 PM
To: 'KSEMS'
Cc: Bianca Morgan
Subject: RE: Samani Baboyi River Pedestrian Bridge-Notice of Application for Environmental Authorisation

Dear Ronel

Thank you for the notification. WESSA does not wish to register as an I&AP. We are satisfied that the implementation of a site specific EMPr will address potential impacts and reduce significant environmental damage.

Regards

Carolyn Schwegman
EIA Co-ordinator
WESSA KZN Region

WESSA
PEOPLE CARING FOR THE EARTH

COASTWATCH
KWAZULU-NATAL

Tel: +27 (0)39 975 2147
Cell: +27 (0)83 9814814
Fax to email: 086 7251884
Email: afromatz@telkomsa.net
Website: www.wessa.org.za
Address: P O Box 343, Pennington, 4184

From: KSEMS [mailto:kerry.seppings@telkomsa.net]
Sent: 09 October 2012 12:48 PM
To: johan.vanderwalt@ugu.gov.za; liziswa@hcm.gov.za; pillayr@dwa.gov.za; wisemanr@daff.gov.za; WisemanR@nda.agric.za; thambud@kznwildlife.com; "Phumelela Dlamini"; Bernadetp@amafapmb.co.za; archaeology@amafapmb.co.za; 'Carolyn Schwegman'; wardn@dwa.gov.za
Subject: Samani Baboyi River Pedestrian Bridge-Notice of Application for Environmental Authorisation

Dear All

Please find attached a copy of the Notice of Application for Environmental Authorisation for the proposed construction of a concrete pedestrian bridge structure across the Boboyi River within the Hibiscus Coast Local Municipality.
Kindly also find attached the Background Information Document for the above mentioned project.

Should you wish to receive information relating to this Basic Assessment process, please register as an I & AP.

Should you have any queries please feel free to contact us.

Kind Regards

Ronell Kuppen
Junior Environmental Consultant

Kerry Seppings Environmental Management Specialists cc
Postal P.O. Box 396; Gillitts; 3603
Phone 031 7691578
Cell 079 3222957
Fax 086 5355281
Website www.ksems.co.za

KSEMS

From: Bernadetp <Bernadetp@amafapmb.co.za>
Sent: 09 October 2012 02:35 PM
To: 'KSEMS'
Subject: RE: Samani Baboyi River Pedestrian Bridge-Notice of Application for Environmental Authorisation

Dear Ronell

We look forward to your submission of a hardcopy of the document on which to comment. Please include the Need and Desirability Application Form and proof of payment. Visit the Amafa website on www.heritagekzn.co.za for the relevant forms.

Kind regards
Mrs. Bernadet Pawandiwa
Archaeology : Permits
Amafa aKwaZulu Natali
P.O.Box 2685, Pietermaritzburg 3200
Tel: 033 394 6543
Fax: 033 394 6552
Email: bernadetp@amafapmb.co.za
Website: www.heritagekzn.co.za

From: KSEMS [mailto:kerry.seppings@telkomsa.net]
Sent: Tuesday, October 09, 2012 12:48 PM
To: johan.vanderwalt@ugu.gov.za; liziswa@hcm.gov.za; pillayr@dwa.gov.za; wisemanr@daff.gov.za; WisemanR@nda.agric.za; thambud@kznwildlife.com; "Phumelela Dlamini"; Bernadetp@amafapmb.co.za; archaeology@amafapmb.co.za; 'Carolyn Schwegman'; wardn@dwa.gov.za
Subject: Samani Baboyi River Pedestrian Bridge-Notice of Application for Environmental Authorisation

Dear All

Please find attached a copy of the Notice of Application for Environmental Authorisation for the proposed construction of a concrete pedestrian bridge structure across the Boboyi River within the Hibiscus Coast Local Municipality.
Kindly also find attached the Background Information Document for the above mentioned project.

Should you wish to receive information relating to this Basic Assessment process, please register as an I & AP.

Should you have any queries please feel free to contact us.

Kind Regards

Ronell Kuppen
Junior Environmental Consultant

Kerry Seppings Environmental Management Specialists cc
Postal P.O. Box 396; Gillitts; 3603
Phone 031 7691578
Cell 079 3222957
Fax 086 5355281
Website www.ksems.co.za

KSEMS

From: Liziswa Jiba <liziswa@hcm.gov.za>
Sent: 23 October 2012 12:46 PM
To: kerry.seppings@telkomsa.net
Subject: Proposed construction of a concrete pedestrian bridge structure across the Boboyi River within the Hibiscus Coast Local Municipality.

Good afternoon

I would like to register as an I&AP and I wish to receive information relating to this Basic Assessment process.

Regards

Liziswa Jiba
Environmental Officer: Planning & Building Control
Hibiscus Coast Municipality
Tel: 039 -315 9265
Fax: 039-315 9220
Cell: 079 467 6763

Appendix F – Draft Environmental Management Programme

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

For the proposed construction of the Baboyi River Pedestrian Bridge within the Hibiscus Coast Local Municipality

DC21/0039/2012



October 2012

KERRY SEPPINGS ENVIRONMENTAL MANAGEMENT SPECIALISTS

www.ksems.co.za

Kerry Seppings Environmental Management Specialists cc

Phone: 031 769 1578 Fax: 086 535 5281 Cell: 079 322 2957 E- Mail: kerry.seppings@telkomsa.net
P.O. Box 396, Gillitts, 3603
Company Registration no: 1999/049452/23
Members: K.A. Stanton (Director)

AUTHORS

This Report was prepared by *Kerry Seppings Environmental Management Specialists cc*

Kerry Seppings BSc (Hons) MSc EAPSA certified — **Lead Environmental Consultant & Managing Director**

Certifications: Certified by the Environmental Assessment Practitioners of South Africa (EAPSA)

Tertiary Education: University of Natal, Durban
BSc (Hons) - Estuarine Ecology (Major), Urban Biogeography (Ecology) (Major) *MSc awarded cum laude*
Environmental Management and Open Space Planning Thesis *"Developing an Open Space System for the Queensburgh Municipal Area"*

Work Experience: 1993-1994 Queensburgh Municipality - Unofficial Environmental Advisor for duration of MSc
1994-1995 IDEAS- Partner in Environmental Consultancy
1995-1998 Environment Branch, North and South Central Local Council- Professional Environmental Officer
1999 - present; Director Kerry Seppings Environmental Management Specialists cc.

Colin Holmes BSc (Hons) MSc — **Environmental Consultant**

Tertiary Education: University of KwaZulu-Natal, Pietermaritzburg
BSc (Hons) – Environmental Science (*awarded cum laude*)
MSc – Applied Environmental Science (*awarded cum laude*)
Thesis: "*A Fire Management Environmental Decision Support System for the uKhahlamba Drakensberg Park World Heritage Site*"

Work Experience: 2012- Present; Environmental Consultant for Kerry Seppings Environmental Management Specialists cc

Detailed CV's and proof of certifications and degrees are available on request.

Contents

Acronyms

BAR	Basic Assessment Report
DAEA	Department of Agriculture and Environmental Affairs
DWA	Department of Water Affairs
EA	Environmental Authorisation
ECO	Environmental Control Officer
EMPr	Environmental Management Programme
I&AP	Interested and Affected Party
IEM	Integrated Environmental Management
KSEMS	Kerry Seppings Environmental Management Specialists
MSDS	Material Safety Data Sheet
NEMA	National Environmental Management Act
PCA	Post Construction Audit
RE	Resident Engineer
SHE	Safety, Health and Environment

1. Introduction

1.1 Background

The Department of Transport propose to construct a bridge structure across the Baboyi River within the Hibiscus Coast Local Municipality of the Ugu District Municipality. The proposed bridge is primarily aimed at improving access to the nearby Merlewood Secondary School. At present, many of the scholars are forced to be absent from school during periods of heavy rains.

The pedestrian bridge will be two (2) metres wide and measure a total length of 43.5 metres, crossing the river at a height where the bridge structure will be above at least the 1:50 year floodline of the river. The bridge will be a concrete structure supported five (5) metres above ground level by two support piers on the river banks and two abutments where the concrete footpath will connect to the bridge structure on either side. A resocrete handrail will span the entire length of the bridge. The concrete footpath will measure a total of 258 metres in length and 1.2 metres in width, improving access to and from the bridge (Appendix C).

The pedestrian bridge will serve the local community and residents of the area and will provide the community with a safer and more efficient way of traversing the river, especially during periods of high water levels and flooding. It will improve services by providing improved access to health and police services and important transportation networks for all members of the local community, increasing the ease of mobility and decreasing travel times.

1.2 Objectives of the Environmental Management Programme (EMPr)

The objective of the EMPr is to provide measures to mitigate and manage construction, operation and decommissioning activities in order to minimize potential negative impacts on the surrounding environment. This is achieved by;

- Assigning environmental impact mitigation responsibilities to key personnel,
- Developing specific action plans designed to ensure mitigation,
- Managing and auditing the specified action plans, and
- Managing stakeholder involvement.

Integrated Environmental Management Principles (IEM) have been used as a foundation for the development of this EMPr and must be strictly applied during its implementation.

The EMPr serves as a stand alone document to be disseminated to and used by the contractors and other stakeholders involved in the construction phase.

1.3 Assigned responsibility

In order for the EMPr to be effectively implemented the following professional inputs will be required;

Applicant – The KZN Department of Transport is responsible for the following:

- Ensuring that the engineer and contractors comply with the approved EMPr.
- Ensuring compliance with the provisions for duty of care and remediation of damage in accordance with section 28 of the National Environmental Management Act (NEMA), (No. 107 of 1998) and its obligations regarding the control of emergency incidents in terms of Section 30 of NEMA.
- Notifying the DEA of any incident as defined in subsection 30(1)(a) of NEMA.

Project Manager – Engineer is responsible for the following:

- Appointing the appropriately qualified contractor to co-ordinate, supervise and expedite different action plans.
- Ensuring adherence to the DEA conditions of authorization and any other laws and standards relevant to the construction of the facility.
- Ensuring all elements of the work undertaken are properly and competently directed, guided and executed at appointed stages of the project.
- Ensuring the adherence to statutory safety, health and environment (SHE) standards and ensuring the construction activities comply with the EMPr.
- Monitoring the site on a daily basis to ensure compliance.
- Overall responsibility and accountability for the site during the construction phase.
- Avoiding and / or mitigating adverse impacts on the environment by the appropriate design and construction.
- Ensuring transparency in their operation and environmental management of the site.
- Managing the contractors compliance and ensure documentation management.
- Ensuring that the contractor has a copy of the EMPr and all agreed Method Statements.

Contractors are responsible for the following:

- Managing and operating their activities with due care and diligence.
- Complying with all elements of the EMPr.
- Ensuring that stakeholder interest is reported to the ECO.
- Maintaining relevant documentation for review by the ECO.

ECO (Environmental Control Officer) is responsible for the following:

- Determining the conformance of the site with the EMPr criteria and compliance with the conditions of the EMPr.
- Liaising with the DEA and I & APs, if required.
- Identification of possible areas of improvement during construction.
- Undertaking ongoing monitoring of the construction site through regular site visits and record key findings. This includes photographic monitoring of the construction site. The frequency of these visits will be determined by the progress and complexity of the project.
- Advising the Project Manager and the contractors on environmental matters during the construction phase of the development.
- Monitoring implementation of the EMPr by the contractor.
- Advising the project manager on environmental impacts and provide appropriate recommendations to address and rectify these matters.

- Ensuring that the conditions stipulated in the EA and any other laws and standards relevant to the construction are being complied with.

NAMES AND TELEPHONE NUMBERS OF CONTACT PERSONS
The following list of contacts must be completed, printed and made clearly visible on the site

Name	Designation	Organization	Contact number
David Bryan	**Applicant**	Depart of Transport (KZN)	083 628 1417
Kerry Stanton / Colin Holmes	**Independent Environmental Practitioner**	Kerry Seppings Environmental Management Specialists cc	031 769 1578
	Environmental Control Officer		
	DAEA Official	KZN DAEA (South Region)	033 343 8428
	Local Municipality	Hibiscus Coast Local Municipality	
Colleen Moonsamy	**DWA Official**	DWA	031 336 2700
Rosheek Maipath	**Site Engineer**	Samani Consulting	031 266 2955
	Nkosi		
	(Other relevant construction staff)		
	Fire Department		
	Emergency Response		10177
	Police	SAPS	10111 - General
	Emergency Spill Response	Abzorbit (24 Hour response for oil and chemical spills on land or water, bioremediation, distributors of PEAT SORB)	24 hr Emergency Response Doug: 083 269 8790 Gerald: 083 2536618
	Solid Waste	Greytown Transfer Site	
	Waste Water		
	Water		

1.4 Compliance

A copy of the EMPr must be available on site at all times. Compliance with all elements of the EMPr must be reviewed on a daily basis by the site engineer and all responsible parties must sign the acceptance letter in appendix 1. In addition it must be noted as per the Environment Conservation Act and the National Environmental Management Act No 107 of 1998 (Section 28) offending parties will be held financially accountable for any pollution or environmental damage.

1.5 Monitoring

The key to a successful EMPr is appropriate monitoring and review to ensure effective functioning of the EMPr and to identify and implement corrective measures in a timely manner. Monitoring for non-compliance must be done on a daily basis (using appendices 2-7) by the contractors under the guidance of the Project Manager / Environmental Officer / Engineer. An appropriately timed audit report should be compiled by the independent ECO. Paramount to the reporting of non-conformance and incidents is that appropriate corrective and preventative action plans are developed and adhered to. Photographic records of all incidents and non-conformances must be retained.

1.6 Applicable Legislation

The following environmental legislation must be adhered to;

- Constitution of South Africa (Act No. 108 of 1996)
- National Environmental Management Act (Act No 107 of 1998) – NEMA
- Environment Conservation Act (Act No 73 of 1989)
- National Heritage Resources Act (Act No 25 of 1999)
- National Water Act (Act No 36 of 1998)
- Hazardous Substances Act (Act No. 15 of 1973)
- Protected species – provincial ordinances
- National Environmental Management: Biodiversity Act (Act No. 10 of 2004)
- Occupational Health and Safety Act (Act No 85 of 1993)
- National Environmental Management: Air Quality Act (Act No. 39 of 2004)
- National Building Regulations and Building Standards Act 103 of 1977

1.7 Layout of the EMPr

This EMPr is site and impact specific. Sections 1 and 2 are introductory sections whilst section 3 forms the bulk of the report. Section 3 has been designed so that each element is investigated for the different phases of development (ie: construction, operation and decommissioning). Where possible a photographic illustration has been included to assist with implementation of the EMPr. The layout of this EMPr allows for the users to quickly and efficiently locate and use relevant sections as the need arises. E.g.: In the event of a diesel spill on site the contractor can quickly locate and apply section F of the EMPr.

2. Proposal

The Department of Transport propose to construct a pedestrian bridge structure across the Baboyi River within the Hibiscus Coast Local Municipality of the Ugu District Municipality. The proposed bridge is part of DOT's ongoing strategy to improve pedestrian movement in the rural areas. The proposed bridge is primarily aimed at improving access to the nearby Merlewood Secondary School. At present, many of the scholars are forced to swim across the river during times of increased water flow, at great risk to their safety. The bridge will also service the community as a whole by providing improved access to important transportation networks for all members of the local community.

The pedestrian bridge will be two (2) metres wide and measure a total length of 43.5 metres, crossing the river at a height where the bridge structure will be above at least the 1:50 year floodline of the river. The bridge will be a concrete structure supported five (5) metres above ground level by two support piers on the river banks and two abutments where the concrete footpath will connect to the bridge structure on either side. A resocrete handrail will span the entire length of the bridge. The concrete footpath will measure a total of 258 metres in length and 1.2 metres in width, improving access to and from the bridge (Appendix C).

2.1 Site Description

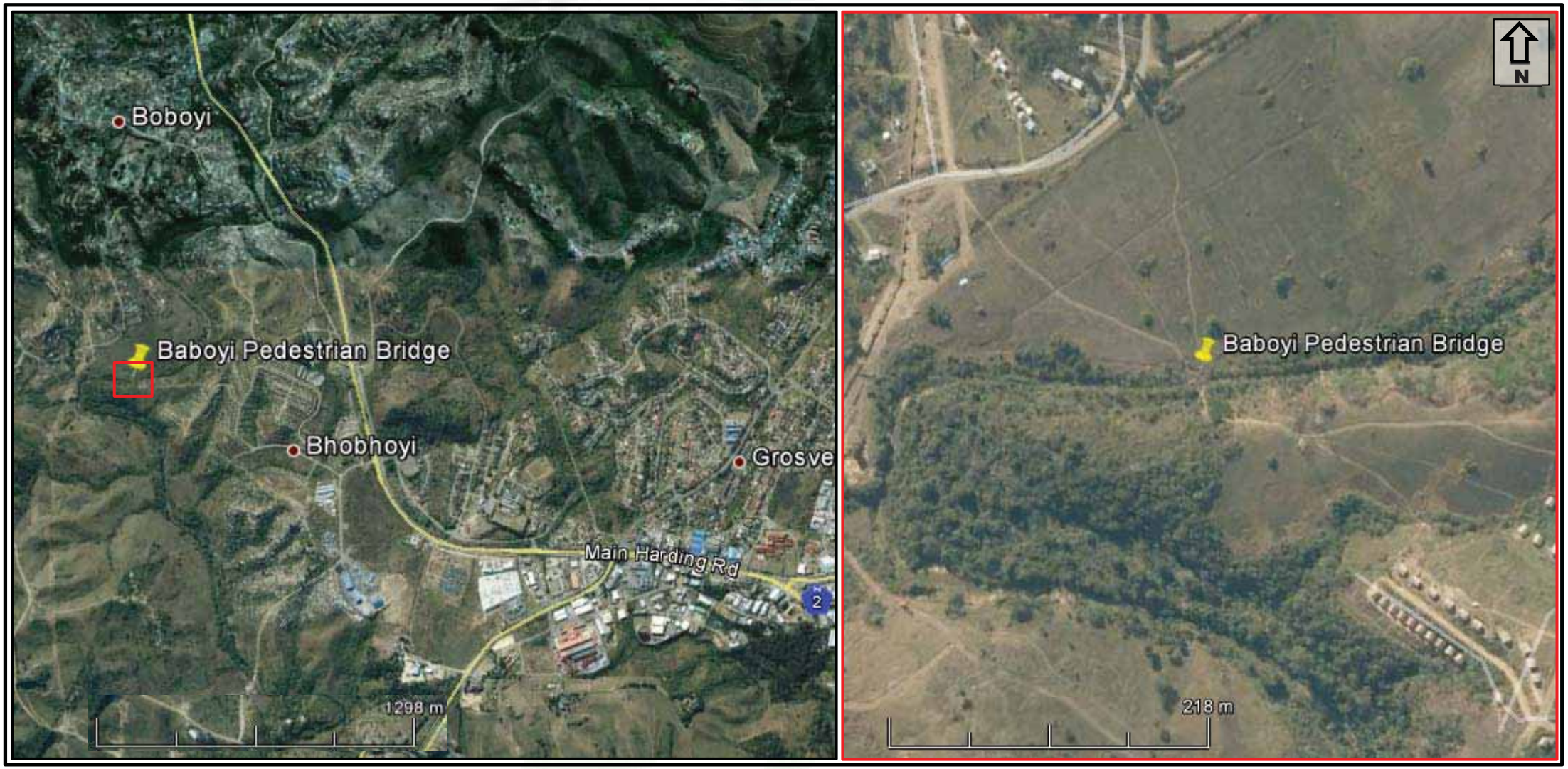
ire ti ns t t e site: The site is located within the Hibiscus Coast (Local) and Ugu (District) Municipalities. Heading south down the N2 towards Port Shepstone, take exit 45 for N2/R102 toward Marburg/ Kokstad/ Port Shepstone and turn right onto the N2. Travel for 5.2 km along the N2 then turn left onto D1014, after 500 m enter a T-junction and turn right. After 300 metres at another T-junction turn left. After 1.2 km the site will be in the drainage line (valley) on your left, 190 m from the roads edge. There is the presence of a footpath that leads directly to the site (informal river crossing).

e etati n: The vegetation surrounding the bridge site is typical of the KwaZulu-Natal Coastal Belt type, although it has been badly degraded burning, grazing and trampling and the harvesting of wood. There was no evidence of patches of either individual species or distinct community types that would be impacted by the erection of the proposed structures.

ra ient The meandering river transverses an undulating terrain, with the proposed bridge crossing on a moderate slope at the foot of a steep slope (on average 1:3.8 slope) along the southern bank and a gentle sloping area (1:6.2) at the northern bank.

rr n in an se The surrounding land use is unzoned / natural with low density rural housing and subsistence farming. A large extent of the eastern river bank is sugarcane farming, with the western bank being untransformed.

e ra i r inates 30°44'38.38" S; 30°23'34.19" E



erial t ra t e r se l ati n t e a i iver e estrian ri e in relati n t t e t n rt e st ne it in t e i is s ast al an istri t ni i alities t e a l atal r vin e s r e le art

2.2 Project Details

The pedestrian bridge will be two (2) metres wide and measure a total length of 43.5 metres, crossing the river at a height where the bridge structure will be above at least the 1:50 year floodline of the river. The bridge will be a concrete structure supported five (5) metres above ground level by two support piers on the river banks and two abutments where the concrete footpath will connect to the bridge structure on either side. A resocrete handrail will span the entire length of the bridge. The concrete footpath will measure a total of 258 metres in length and 1.2 metres in width, improving access to and from the bridge (Appendix C).

2.3 Specialist Studies

The following specialist studies were carried out and have been summarized below:

- Wetland and Riparian Delineation and Assessment (Riverwise Aquatic and Wetland Ecologists)
- Vegetation Impact Assessment (Bruce Page and Associates); and
- Heritage Impact Assessment (Active Heritage cc).
- Geotechnical Report (Geosure)

2.3.1. Wetland and Riparian Assessment

Summary of findings of a Wetland and Riparian Delineation and Assessment Report:

The proposed bridge crossings are located in a rural communal area, called Bhobhoyi, and would be located along an existing worn pathway linking an older residential area to a more recently developed low cost housing development node. A series of footpaths have been worn along the proposed alignment and litter is scattered along the path. Litter and debris were prolific along the flood bench and were indicative of the recent heavy rains.

During the site visit the river at the main crossing was still in full flood, and was an indication of the extent of depth and velocities of flow that are reached in flood conditions, and the difficulty of crossing.

The riparian zone delineated is best classified as a Riparian B Channel which is seasonal. Primary inputs are from overland flow from catchment runoff and concentrated surface flow from upstream tributaries. There is a flood bench which is periodically inundated during floods.

The smaller tributary to be crossed is best classified as an A or B Section Riparian Channel. This is a steep headward channel which has eroded down to bed rock and does not carry baseflow. The primary inputs are from storm runoff during and after heavy rainfall events, and flows are therefore of a short duration, but there is a high erosion potential as demonstrated by the erosion that has taken place at the convergence with the path.

The ecological integrity score obtained for the main riparian channel gives a resultant integrity category of D reflecting that a large loss of natural habitat, biota and basic ecosystem functions have occurred. The ecological integrity score obtained for the tributary gives a resultant integrity category of C reflecting that a loss and change of natural habitat and biota have occurred but the basic ecosystem functions are still predominantly unchanged.

The impacts related to construction are thus expected to be:

- increased erosion
- increased sedimentation,
- water contamination
- deterioration of water quality, and the
- compaction of soil as a consequence of heavy machinery during construction.

Construction phase mitigation should thus aim to prevent further erosion and improve water quality.

Recommendations of the Wetland / Riparian Specialist

During construction of the bridge abutments and the piers (if applicable) within the river itself, all possible measures to reduce erosion and prevent sedimentation of the river must be carried out. The following mitigation recommendations apply:

- Construction of the bridge should take place during periods of low flow / the dry season.
- The disturbance footprint, including the areas traversed by trucks and machinery must be kept to a minimum and limited to a specific operational area.
- No stock piling must take place within the defined riparian zone.
- Water diversions must be limited to a specific time frame and must only divert the required water for the construction of a single pier at a time.
- All exposed soil must be stabilized post construction.

Measures must be put in place to ensure that stormwater runoff from the footpaths is not channelled along the paths causing erosion. Surface water runoff should be diverted off the paths at frequent intervals and should preferably be discharged onto adjacent grassland, rather than directed into the river. Alternatively for the approaches to the culverted structure, flows should be directed into the river onto hard rock or a permanently saturated zone, upstream of the proposed structure.

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2.3.2. Vegetation Assessment

Summary of Findings of Vegetation Assessment

[1] Wiseman, R (2012). *Wetland / Riparian Delineation and Assessment. Pedestrian Bridge, Baboyi Ferry.* Riverwise Aquatic & Wetland Ecologists.
[2] Page, B. (2012). Vegetation Impact Assessment: Baboyi Pedestrian Bridge. Bruce Page and Associates.

A vegetation assessment was conducted in August 2012 by Bruce Page and Associates for the purpose of determining the type of vegetation present at the site and assessing potential impacts thereon from the construction of the Baboyi Pedestrian Bridge. The vegetation surrounding the bridge site is typical of the KwaZulu-Natal Coastal Belt type, although. However it is somewhat depauperate because of frequent burning, grazing and the harvesting of wood. There was no evidence of patches of either individual species or distinct community types that would be impacted by the erection of the proposed structures.

The point at which the footpath and bridge cross the drainage line and stream respectively have clearly been used as crossing points for an extended period. Fringing woody vegetation has been cleared to a distance of some three meters on either side of the path at the culvert site and about five meters on the south bank and ten meters on the north bank of the stream at the pedestrian bridge site. Similarly the herbaceous vegetation has been extirpated on the path and significantly reduced adjacent to it by trampling and erosion.

All of the species encountered are common within the KwaZulu-Natal Coastal Belt type and in many other adjoining types. Despite extensive searching I could not detect any of the biogeographically important and endemic species mentioned by Mucina and Rutherford (2006) and extracted from the SIBIS database in a radius of twenty metres around the sites for the proposed structures.

Recommendations of Vegetation Specialist

There is a very slight chance that geophytes (bulbs) may be encountered whilst clearing for the construction. It is suggested that if any are unearthed that they are simply replanted a few metres away.

The woody vegetation on the sites are nearly all alien invasive species, mostly *a e a ata*, but also *a ta a a a a* and *ae a a e a eta a*. Care should be taken when these species is in the path of required clearing to ensure that the individuals are plants is removed intact (with roots) and destroyed.

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2.3.3 Heritage Impact Assessment

Summary of Findings of Heritage Impact Assessment

A Heritage Impact Assessment (HIA) was conducted in November 2012 by Active Heritage cc for the purpose of determining if areas or items of cultural significance are present at the point at which the proposed bridge and footpath will be located. The area is dominated by modern township developments, on either side of the river, and some individual rural homesteads.

No archaeological sites were observed in the immediate vicinity of the proposed Pedestrian Bridge Site. However, some informal graves occur on the northern bank of the Boboyi River. According to local villagers theses graves belong to paupers and people who have died in unnatural conditions. They are spatially removed from the local homesteads and formal grave yards and buried in an open field adjacent to the Boboyi River. In addition, none of the identified graves appear to be older than 60 years and they are therefore not protected by heritage legislation. However, they are protected by legislation such as such as the Human Tissues Act (Act No.65 of 1983 and as amended), the Removal of Graves and Dead Bodies Ordinance (Ord. No. 7 of 1925) and The Exhumations Ordinance (Ord. No. 12 of 1980).

Conclusion of Heritage Specialist

Three modern grave sites and a potential clustering of graves have been located during this survey. These sites have local significance and therefore need to be treated with respect. As they are all younger than 60 years they are not formally protected by heritage legislation.

It is proposed that the developer maintain a buffer zone of 20m around each grave site where no development may occur. No removal of artefacts or alterations of any structure will be allowed within this zone. It is proposed that the developer rather shift the alignment of the proposed bridge rather than apply for mitigation (a costly and long term process) in order to maintain the integrity of the proposed buffer zones.

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2.3.4 Geotechnical Report

Summary of Findings of Geotechnical Report

A Geotechnical assessment was conducted in November 2012 by Geosure (Pty) Ltd. The field work comprised of general geotechnical assessments of the sites, excavation and logging of inspection pits, logging of natural exposure profiles, Dynamic Cone Penetrometer testing, seismic testing and material sampling for laboratory testing. Several inspection pits were excavated to examine subsoils to a maximum reachable depth of 1.5 m or until refusal was met at shallower depths.

The site is generally underlain by transported sand and boulders overlying moderately weathered, hard rock tillite of the Dwyka Group, Karoo Supergroup. In general, the following geological units can be recognised across the site:

- Unit 1: Slightly moist, dark orange brown, medium dense, Clayey SAND to Sandy SILT – (Only found in IP1 at the foot of the steep slope).
- Unit 2: Slightly moist, orange brown, loose to medium dense, Clayey SAND, with pebbles and cobbles –
- Unit 3: Moist to wet, dark greyish brown, loose to medium dense o Clayey SAND, with abundant tillite boulders – Transported / residual tillite? (e e .
- Unit 4: Dark grey, speckled loght grey/ olive brown, moderately weathered and moderately fractured – a te.

Conclusion of Geotechnical Specialist

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2.4 Summary of Impacts

- Increase potential for on site erosion;
- Potential for contamination of the Baboyi River;
- Increase in stormwater runoff;
- Increase in solid waste on site and to the landfills; and
- Improved access to facilities and schools on the eastern side of the river.

2.5 Impacts and mitigation measures identified in the BAR, including a time schedule of actions to be undertaken to implement mitigatory measures for the prevention, management and remediation of each environmental impacts, socio-economic condition and historical and cultural aspects for each phase of the proposed pedestrian bridge development

Compliance against the EMPr must be monitored on a monthly basis by an independent ECO. An EMPr checklist (Appendix 3) and an EMPr audit form (Appendix 4) must be utilized on site to monitor compliance. A complaints register (Appendix 4) and a non-conformance record (Appendix 5) must be utilized to record any complaints and non-conformances which will assist in monitoring compliance.

Time Frames

Phase 1:	Pre-construction activities (i.e. removal of vegetation within the developable area, identification of sensitive areas, etc.)
Phase 2:	Site camp establishment (i.e. site camp establishment, erection of temporary waste disposal facilities and ablutions, training programme for construction workers, etc.)
Phase 3:	Construction activities (i.e. construction of the pedestrian bridge and footpath)
Phase 4:	Post Construction (i.e. removal of waste disposal facilities, removal of site camp, site is devoid of any hazardous waste utilized during construction, ensure no unauthorised public access is possible, etc.)
Phase 5:	Rehabilitation (removal of alien vegetation, implementation of indigenous species to disturbed landscapes etc)
Phase 6:	Operational phase

The key site specific impacts relate to the contamination of the Baboyi River and the potential to cause erosion of the stream banks. Impacts are perceived to be minimal if these EMPr mitigation measures are followed. All potential impacts can be easily mitigated by following the proposed action plans in the EMPr.

The following impacts and mitigation measures were identified during the BAR.

Construction impacts				
Nature of impact (potential)	**Mitigation measure**	**Time frame for mitigation measure to be undertaken**	**Person responsible for monitoring**	**Monitoring frequency**
Erosion of stockpiled material (stone, sand and gravel).	Material must be stockpiled in such a way that it cannot fall or cause injury or damage to properties or the natural environment. Stockpiles must not exceed 2m in height and must be covered if exposed to heavy wind or rain. Alternatively, low walls or berms must be constructed around the stockpiles.	Phase 3	Contractor / ECO	The contractor / designated representative must monitor the site on a regular basis. Monthly audits must be conducted by an ECO.
The onsite erosion of exposed soil before rehabilitation is completed.	The duration of exposed soil must be kept to a minimum and rehabilitation must be initiated as soon as construction is completed. The contractor must stabilize cleared areas to prevent and control erosion and/or sedimentation. Only vegetation that needs to be removed for the construction of the bridge, should be removed in a phased and controlled manner.	Phase 3	Contractor / Designated Representative (i.e. Resident Engineer) and ECO	The contractor / designated representative must monitor the site on a regular basis. Monthly audits must be conducted by an ECO.
Increased potential for erosion along river banks resulting in the sedimentation of the river.	The necessary precautions will be taken to prevent erosion which must include the implementation of sandbags / silt fencing as a temporary measure until rehabilitation can occur. During construction, guidelines set out by the ECO must be followed to ensure no potential impacts occur. This will be controlled by this EMPr.	Phase 1 and 3	Contractor / Designated Representative (i.e. Resident Engineer) and ECO	The contractor / designated representative must monitor the site daily during phase 1. Compliance against the EMPr must be monitored on a monthly basis by the ECO.
Poor stormwater management during construction can lead to erosion and loss of soil.	Stormwater control must be implemented during construction; however this is a temporary impact of the proposal. A drainage system must be established for the construction camp. The drainage system must be regularly checked to ensure an unobstructed water flow. Stormwater must not become contaminated by construction materials and then be allowed to enter the river. The ECO must monitor this closely during the environmental audits.	Phase 1 – Phase 3	Contractor / Designated Representative (i.e. Resident Engineer) and ECO	The contractor / designated representative must monitor the site daily during phase 1. Compliance against the EMPr must be monitored on a monthly basis by the ECO.
Risk of alien invasive encroachment into disturbed areas.	The establishment or spread of alien plant species on site must be monitored and the correct removal and disposal of alien plant species must be followed. Rehabilitation of disturbed areas must commence as soon as construction activities are complete in those areas.	Phase 1 – Phase 3	Contractor / Designated Representative (i.e. Resident Engineer) and ECO	The contractor / designated representative must monitor the site daily during phase 1. Compliance against the EMPr must be monitored on a monthly basis by the ECO.
Damage and removal	Workers must be educated / trained on minimizing damage	Phase 2 – Phase 4	Contractor /	The contractor / designated

Construction impacts				
Nature of impact (potential)	**Mitigation measure**	**Time frame for mitigation measure to be undertaken**	**Person responsible for monitoring**	**Monitoring frequency**
of existing vegetation.	to vegetation during construction. Only vegetation that must be removed for the construction of the bridge should be removed and the footprint must be kept to a minimum. Rehabilitation of disturbed areas must be undertaken with locally indigenous species upon completion of construction activities. This must be controlled through the EMPr.		Designated Representative (i.e. Resident Engineer) and ECO	representative must monitor the site daily / weekly. Compliance against the EMPr must be monitored on a monthly basis by the ECO.
Hunting / Fishing by construction workers	Hunting or poaching of aquatic and terrestrial fauna is prohibited. During construction, guidelines set out by the ECO will be followed to ensure no potential negative impacts occur. Site workers must be trained / instructed that non-compliance in this regard may result in penalties.	Phase 1 – Phase 4	Contractor / Designated Representative (i.e. Resident Engineer) and ECO	The contractor / designated representative must monitor the site daily / weekly. Compliance against the EMPr must be monitored on a monthly basis by the ECO.
Degradation and contamination of the Baboyi River and surrounding environment by cement and other hazardous materials.	Site workers will be trained in avoiding impacts in areas of potential concern (e.g. steep stream banks). Designated concrete mixing areas and storage areas for any hazardous materials must be assigned; cement mixing is not permitted in any area where runoff can enter the Baboyi River. This will be strictly controlled through this site specific EMPr and monitored by an independent ECO.	Phase 3	Contractor / Designated Representative (i.e. Resident Engineer) and ECO	The contractor / designated representative must monitor the site daily / weekly. Compliance against the EMPr must be monitored on a monthly basis by the ECO.
Damage to river banks during excavation, causing sedimentation of the watercourse and affecting water quality.	The necessary precautions will be taken to prevent erosion which must include the implementation of sandbags / silt fencing as a temporary measure until rehabilitation can occur. During construction, guidelines set out by the ECO will be followed to ensure no potential impacts occur.	Phase 3	Contractor / Designated Representative (i.e. Resident Engineer) and ECO	The contractor / designated representative must monitor the site daily / weekly. Compliance against the EMPr must be monitored on a monthly basis by the ECO.
Modification of the river flow and riverine dynamics of the area.	The natural downstream flow of the river is to be maintained during construction. The bridge has been designed so that the support piers will be on the river banks adjacent to the river and thus no major impacts on the flow dynamics are anticipated. Any activities conducted within or near watercourses should be strictly monitored by an ECO and the best construction practices, as outlined in the EMPr, must be implemented.	Phase 3	Contractor / Designated Representative (i.e. Resident Engineer) and ECO	The contractor / designated representative must monitor the site daily / weekly. Compliance against the EMPr must be monitored on a monthly basis by the ECO.
Potential disturbance or unearthing of potential graves or	An HIA was conducted. As per the HIA, No heritage sites were observed within the footprint. In the event of any heritage resources or artifacts being discovered during	Phase 2 – Phase 4	Contractor / Designated Representative	The contractor / designated representative must monitor the site daily / weekly.

Construction impacts				
Nature of impact (potential)	**Mitigation measure**	**Time frame for mitigation measure to be undertaken**	**Person responsible for monitoring**	**Monitoring frequency**
disturbance to other heritage resources during the construction phase	construction, activities in this area must cease immediately and AMAFA must be contacted to investigate the finding. This must be strictly monitored by the ECO and controlled through the EMPr.		(i.e. Resident Engineer) and ECO	Compliance against the EMPr must be monitored on a monthly basis by the ECO.
Improper storage and disposal of solid waste.	Due to the nature of the activity, waste is anticipated to be minimal. All solid waste generated during the construction process must be placed in a designated waste collection area within the construction camp and must not be allowed to blow around the site, be accessible by animals, or be placed in piles adjacent to the skips / bins. All solid waste must then be disposed of at the nearest licensed landfill and safe disposal certificates must be obtained and kept on site at all times during construction. The solid waste will be removed to a licensed landfill in Port Shepstone. Separate skips/ bins for the different waste streams must be available on site. The waste containers must be appropriate to the waste type contained therein and where necessary should be lined and covered. This must be managed through the site specific EMPr and monitored by the ECO.	Phase 2 – Phase 4	Contractor / Designated Representative (i.e. Resident Engineer) and ECO	The contractor / designated representative must monitor the site daily / weekly. Compliance against the EMPr must be monitored on a monthly basis by the ECO.
Littering around the site.	Littering is not be permitted on the site and general housekeeping must be enforced. General waste bins must be readily available for litter disposal and general housekeeping. The EMPr must be followed during construction.	Phase 2 – Phase 4	Contractor / Designated Representative (i.e. Resident Engineer) and ECO	The contractor / designated representative must monitor the site daily / weekly. Compliance against the EMPr must be monitored on a monthly basis by the ECO.
Improper disposal of rubble i.e.: burying or neglecting building rubble resulting in direct mechanical damage to surrounding vegetation and untidiness of the site.	All excess material and rubble must be removed from the site so not to restrict the rehabilitation process. All excess material and rubble must go to an approved, designated landfill site and a safe disposal certificate must be obtained. Due to the rural nature of the project, only a transfer station exists in Greytown, and all solid waste must directed to this facility. All activities will be managed by this EMPr. Site workers will be trained in avoiding such impacts.	Phase 3	Contractor / Designated Representative (i.e. Resident Engineer) and ECO	The contractor / designated representative must monitor the site daily / weekly. Compliance against the EMPr must be monitored on a monthly basis by the ECO.
Lack of toilet facilities resulting in unsanitary	Adequate chemical toilet facilities must be provided for all staff members as standard construction practice. This must	Phase 1 – Phase 4	Contractor / Designated	The contractor / designated representative must monitor

Construction impacts				
Nature of impact (potential)	**Mitigation measure**	**Time frame for mitigation measure to be undertaken**	**Person responsible for monitoring**	**Monitoring frequency**
conditions.	be monitored through this EMPr and an independent ECO.		Representative (i.e. Resident Engineer) and ECO	the site daily / weekly. Compliance against the EMPr must be monitored on a monthly basis by the ECO.
Improper disposal of toilet waste from chemical toilets resulting in contamination of the surrounding environment and the Baboyi River.	The chemical toilets to be provided must be from a registered company and all effluent generated must be disposed of at an appropriate facility. Safe disposal certificates must be kept on record.	Phase 1 – Phase 4	Contractor / Designated Representative (i.e. Resident Engineer) and ECO	The contractor / designated representative must monitor the site daily / weekly. Compliance against the EMPr must be monitored on a monthly basis by the ECO.
Increase waste to landfill site.	Due to the nature of the activity, waste is anticipated to be minimal. Where possible, waste streams will be separated and recycled to limit the amount of waste being added to the landfill site.	Phase 3 – Phase 4	Contractor / Designated Representative (i.e. Resident Engineer) and ECO	The contractor / designated representative must monitor the site daily / weekly. Compliance against the EMPr must be monitored on a monthly basis by the ECO.
Risk of spills from construction equipment (oils, fuels, cement etc) contaminating soil and watercourse.	Any hazardous or dangerous goods utilized during the construction phase must be stored on an impermeable surface that is bunded, fenced, locked and covered. A spillkit must be clearly marked and visible when utilizing hazardous or dangerous materials to ensure that any spills are immediately contained. Spillkits must be regularly checked and maintained. This EMPr must be followed during construction.	Phase 2 – Phase 4	Contractor / Designated Representative (i.e. Resident Engineer) and ECO	The contractor / designated representative must monitor the site daily / weekly. Compliance against the EMPr must be monitored on a monthly basis by the ECO.
Noise generated by construction workers, machinery and construction vehicles disturbing surrounding residents.	Excessive noise must be controlled on site. Workers will be trained regarding noise on site and construction hours will be kept to normal working hours (07h00 to 17h00). All precautions must be taken to ensure that noise generation is kept to a minimum. If excessive noise is expected during certain stages of the construction, nearby residents must be notified prior to the event.	Phase 3 – Phase 4	Contractor / Designated Representative (i.e. Resident Engineer) and ECO	The contractor / designated representative must monitor the site daily / weekly. Compliance against the EMPr must be monitored on a monthly basis by the ECO.
Emissions generated from construction vehicles	The only emissions that will be generated will be from construction vehicles which will be minimal in nature and is not expected to significantly affect the surrounding	Phase 1 – Phase 4	Contractor / Designated Representative	The contractor / designated representative must monitor the site daily / weekly.

Construction impacts				
Nature of impact (potential)	**Mitigation measure**	**Time frame for mitigation measure to be undertaken**	**Person responsible for monitoring**	**Monitoring frequency**
	communities and the environment, however, this must be monitored by the independent ECO.		(i.e. Resident Engineer) and ECO	Compliance against the EMPr must be monitored on a monthly basis by the ECO.
Dust generated from construction vehicles and other on site activity	Dust control measures (i.e. the use of a water cart) must be used to suppress dust and ensure that excessive dust levels are not experienced on site. The dust levels must be kept to a minimum to ensure minimal impact on the surrounding community.	Phase 1 – Phase 4	Contractor / Designated Representative (i.e. Resident Engineer) and ECO	The contractor / designated representative must monitor the site daily / weekly. Compliance against the EMPr must be monitored on a monthly basis by the ECO.
Sourcing of raw materials i.e.: (gravel, stone, sand, cement and water) from unsustainable sources resulting in illegal sand mining and mining operations causing significant environmental damage.	All materials must be obtained from a registered and sustainable source and all delivery notes and slips must be made available to the ECO e.g. mined material such as stone must only be obtained from permitted quarries.	Phase 1 – Phase 4	Contractor / Designated Representative (i.e. Resident Engineer) and ECO	The contractor / designated representative must monitor the site daily / weekly. Compliance against the EMPr must be monitored on a monthly basis by the ECO.
Speeding vehicles resulting in safety issues for surrounding community and their livestock.	Due to the rural nature of the project, speeding will be minimal, however, all speeding will be prohibited. The access point will be upgraded to allow construction vehicles to the construction site and during this upgrade, flagsmen must be kept in attendance should traffic need to be controlled.	Phase 1 – Phase 4	Contractor / Designated Representative (i.e. Resident Engineer) and ECO	The contractor / designated representative must monitor the site daily / weekly. Compliance against the EMPr must be monitored on a monthly basis by the ECO.
Damage to surrounding neighbours' properties i.e.: houses, fence lines, crops, gardens and accesses.	Properties are not expected to be impacted on as they are not in close proximity to the construction site, however, surrounding neighbours must be consulted prior to construction to discuss the construction process and opportunities regarding employment. Where necessary the servitude should be narrowed to accommodate existing houses and infrastructure that may be affected.	Phase 3	Contractor / Designated Representative (i.e. Resident Engineer) and ECO	The contractor / designated representative must monitor the site daily / weekly. Compliance against the EMPr must be monitored on a monthly basis by the ECO.

Construction impacts				
Nature of impact (potential)	**Mitigation measure**	**Time frame for mitigation measure to be undertaken**	**Person responsible for monitoring**	**Monitoring frequency**
Positive impact - Potential temporary employment during the construction phase.	Positive impact no mitigation required – skilled local community members may be granted employment during the construction phase.			
Positive impact – scholars will no longer have to traverse the river to get to school at great risk to their own safety, during times of increased water flow.	Positive impact no mitigation required – the pedestrian bridge will allow all scholars to safely traverse the Baboyi River.			
Positive impact – community members will no longer have to traverse during times of increased water flow.	Positive impact no mitigation required – the pedestrian bridge will allow all community members to quickly and safely traverse the Baboyi River.			
Potential impacts on the Baboyi River.	Impacts on the Baboyi River are expected to be minimal because the bridge will be well above the water level of the watercourse and informal crossing of this river will no longer be required. Community members must ensure no litter or other forms of general waste are thrown from the bridge into the river. The engineering design has taken into account the potential flow rates for the river to ensure the watercourse is not impacted upon and a maintenance team will be employed to ensure river bank stability and the functionality of the bridge in the long term.	Phase 6	Applicant	A maintenance schedule must be drawn up by the applicant and monitored accordingly.
Potential impacts on river bank stability.	The engineering design of the bridge will ensure that the integrity and stability of the river banks are not compromised. Rehabilitation measures will also be implemented upon completion of construction activities which will assist with the riverbank stability.	Phase 6	Applicant	A maintenance schedule must be drawn up by the applicant and monitored accordingly.
Long term structural	The engineering design has taken into account the	Phase 6	Applicant	A maintenance

Construction impacts				
Nature of impact (potential)	**Mitigation measure**	**Time frame for mitigation measure to be undertaken**	**Person responsible for monitoring**	**Monitoring frequency**
integrity of the bridge being compromised during a large flood event.	potential flow rates coming from each catchment area and designed the bridge accordingly (will withstand at least 1:100 year flood events) to ensure the integrity of the bridge is maintained during floods or other weather events.			schedule must be drawn up by the applicant and monitored accordingly.
Maintenance to the bridge.	Regular maintenance of the bridge is required to ensure the structural integrity of the bridge is maintained and any potential damage to the bridge can be mitigated. The cost of maintenance operations must be borne by the applicant.	Phase 6	Applicant	A maintenance schedule must be drawn up by the applicant and monitored accordingly.
Stormwater control	Stormwater control measures will need to be implemented to ensure water running off the bridge does not cause erosion to the surrounding environment. With no municipal sewer systems in the area, all stormwater should be directed to the river via stormwater channels or pipelines without the possibility of sediment being picked up or structural damage to the river banks occurring.	Phase 6	Applicant	A maintenance schedule must be drawn up by the applicant and monitored accordingly.
Positive impact - Improved access to important road networks and schools.	Positive impact, no mitigation is required.			

2.6 Procedures for environmental related emergencies and remediation

The purpose of this section is to anticipate a potential impact resulting in an environmental crisis which may occur due to unforeseen circumstances. Such events cannot be predicted and as such a procedure has been prepared. This procedure must be followed in the event of such an incident to prevent degradation to the surrounding environment and to contribute to the safety of the workers and I & APs.

2.6.1. Potential environmental incidences / emergencies

The National Environmental Management Act (NEMA) defines an 'incident' as an unexpected sudden occurrence, including a major emission, fire or explosion leading to serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed. The following hazards have the potential to occur within he proposed site:

- Hazardous chemical spillage

- Leakage of fuel or oil from equipment
- Slope instability
- Potential contamination of water resource.

2.6.2. Response to environmental emergencies

The emergency response plan (Appendix 6) must be used to update the onsite emergency response plans. A record of all incidents must be recorded as defined in NEMA and NWA (Appendix 7). Incidents should be reported and recorded the relevant authority as soon as reasonably practicable after knowledge of the incident.

An emergency incident report (Appendix 8) must be completed in terms of section 30(5) of the National Environmental Management Act (Act No. 107 of 1998).

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2.7 Environmental awareness plan

In accordance with NEMA EIA (2010) regulations, an environmental awareness plan is required. As part of the environmental awareness plan ‘Toolbox Talks’ posters have been developed and can be used for training purposes.

- **Objectives of the plan**

The objective of the environmental awareness plan is to inform employees and contractors of any environmental risks which may result from their work and the manner in which the identified possible risks must be dealt with in order to prevent degradation of the environment.

- **Content of the plan**

The environmental awareness plan should include:

1. The definition of environment (people + air + soil + water +business);
2. Reasons for conserving and protecting the environment;

3. How the following activities can impact the environment: - Not using assigned ablutions, hazardous materials, uncleaned spills, mixing of cement or paint on soil or grass surfaces, waste management i.e. use of waste receptacles and waste separation for recycling, vehicle washing polluting soil & ground water; litter;
4. What to do to prevent the above impacting the environment i.e. assign impermeable mixing areas, no vehicle washing on site, use of waste receptacles and separation of waste to allow for recycling, how to respond in an emergency and deal with a spill; and
5. Consideration of neighbours.

The environmental awareness plan that should be presented to employees is attached in Appendix 8. A training record of all staff that has undergone environmental training must be kept on record (Appendix 9).

3. Environmental Management Plan

3.1 General Administration

Site Inception

- An emergency response plan must be available on site as must a copy of the EMPr and the EA.
- An incident register must be maintained and kept on site.
- A record of training must be maintained and kept on site.
- Records proving source of materials must be kept on site.
- A record of audits conducted on operations, as well as findings must be kept by the Site Engineer, and findings from audits are to be communicated to the Foreman on site. Proof of communication of findings are to be kept on site.
- The site must be sufficiently lit, enabling security and policing should work be required at night.
- The following details are to be available at each site:
  - *Emergency contact numbers: Name, contact details*
  - *Environmental Control Officer: Name, contact details*
  - *A list of the sensitive areas identified for that site*
  - *Proof of communication of these details to the staff at that particular site.*
- A hazardous chemical/waste storage area must be provided for, if required. This could be in the form of a leak proof container or suitably sized drip tray. An inventory of goods stored must be maintained and updated weekly.
- General waste bins with lids must be provided on site. Accumulated waste must be removed from site regularly and disposed of at a suitably licensed landfill site.
- Adequate spill kits and containers for spilled and contaminated material must be provided on site.
- Designated areas for stockpiling of raw materials must be identified on site. No stockpiling is to occur on or near slopes or the river. All stockpiling areas must be approved by the Site Engineer.
- Haulage roads must be identified and demarcated at site set up. These should be located where existing/future roads will be built and must be clearly indicated. Turning areas must be identified and clearly demarcated. Roads may not be located in the designated sensitive areas.
- Temporary stormwater protection measures must be established before construction activities commence.
- All staff are to be trained on their environmental responsibilities before commencing work. All new staff are to be trained before they start work on site. All construction staff will have basic environmental awareness training, which can be conducted at the same time as the required health, & safety training. Training should include (1) the definition of environment (people + air + soil + water +business); (2) reasons for conserving and protecting the environment; (3) how the following activities can impact the environment: - Not using assigned ablutions, hazardous materials, uncleaned spills, mixing of cement or paint on soil or grass surfaces, waste management i.e. use of waste receptacles and waste separation for recycling, vehicle washing polluting soil & ground water; litter; (4) What to do to prevent the above impacting the environment i.e. assign impermeable mixing areas, no vehicle washing on site, use of waste receptacles and separation of waste to allow for recycling, how to respond in an emergency and deal with a spill; (5) Consideration of neighbours.
- All existing services must be identified prior to construction as standard practice.
- Any damage to existing infrastructure (i.e. water pipelines, electricity lines and residential property) must be repaired or replaced on completion of the upgrade.
- Evidence of items with historical or archaeological value must be reported to AMAFA and work in the affected area should be stopped immediately.

3.2 Site Camp Establishment

Figure 2: The site camp must be established close to the construction site and this image shows directions to an area to the north west of the site in close proximity to the site where flat land is available for the potential location of the camp site.

Site Inception

- The construction camp must be located near the construction site (Figure 2).
- The construction camp may not be situated on slopes greater than 1:3.
- The size of the construction camp must be minimized and must not encroach on any privately owned land.
- The site camp must be fenced.
- Cut and fill must be avoided where possible during the set up of the construction camp.
- The contractor must attend to drainage of the construction camp to avoid standing water or sheet erosion.
- No contaminated runoff or grey water is allowed to be discharged from the construction camp.
- Suitable and sufficient waste bins must be provided within the construction camp.
- A materials storage area must be identified and designated within the construction camp.
- An area for fuel and hazardous chemical storage must be identified if required. This area should be bunded with an impermeable liner or a suitably sized container should be provided as storage space. There should be no bulk fuel storage tanks on site.
- Fuel bowsers must be in good condition and be provided with a drip tray for use when dispensing/ refueling equipment and must be placed under the pump and dispensing unit of the bowser during overnight storage. If possible an undercover area should be provided for overnight storage of the bowser/s.
- Decanting of any chemical should be done within the confines of a suitably sized drip tray.
- Decanting from large containers (e.g. 210L drums) should be done using a hand pump, where possible.
- Storage areas/containers containing hazardous substances / materials must be clearly signed and fire extinguishers must be located in close proximity.
- Suitable spill kits must be available at the Site Camp, and along the route of the road upgrade.
- Only emergency (breakdown where equipment is not longer mobile) and minor maintenance (e.g. greasing) may be done on site. Any other planned or required maintenance must be done offsite at a suitable location.
- Residents living adjacent to the road upgrades and/ or nearby the hazardous materials storage area must be notified of the project, the existence of the hazardous storage area and the type of chemicals being used on site.

Construction

- A designated waste area must be utilized at all times.
- Chemical toilets must be located on site and maintained regularly.
- Storm water control must be maintained and flow must be directed towards the Baboyi River.
- Litter collection bins must be provided and emptied at regular intervals.
- Drip trays are to be cleaned out daily and material collected disposed of as hazardous waste.

Key Issues	Post construction
▪ **Site camp must be established in accordance with all the requirements of the EMPr.**	▪ All building materials and waste must be removed from the site at the end of construction. ▪ Clearance from the ECO must be obtained to ensure the all of the requirements of the EMPr have been complied with. ▪ Ensure bins and / or skips have been removed from the construction site. ▪ Waybills must be produced showing the removal of waste / spoil / rubble to a registered waste site. ▪ Used oil must be collected by a registered used oil contractor and documentation to this effect has been provided.
	Operation ***(Not Applicable)***

3.3 Vegetation clearing

Figure 3: A view across the south-east banks of the river showing vegetation in close proximity to the site. It is not anticipated that vegetation will be damaged during construction, however, if required, only vegetation in the development footprint is allowed to be removed.

Key Issues

- **Only vegetation directly within the project footprint may be removed.**
- **No other vegetation surrounding the site may be impacted on.**

Site Inception

- The surrounding indigenous riverine vegetation may be impacted upon during the construction phase; this however must be avoided as far as possible (Figure 3).
- The Contractor is responsible for informing all employees about the need to prevent any harmful effects on indigenous vegetation on or around the construction site as a result of their activities.
- Workers should be informed of the areas of important indigenous/ riverine vegetation and the importance of protecting these.
- Pesticides and herbicides may not be used on the construction site. Removal of any alien vegetation should be done by hand where possible.
- Only vegetation directly impacted by the bridge must be removed.

Construction

- Care must be taken to avoid the introduction of alien plant species to the site.
- Alien vegetation re-growth must be controlled throughout the entire site during the construction period.
- All areas that have been stripped of vegetation, including the roadsides, should be dampened periodically to avoid excessive dust.
- No dumping of the removed vegetation is permitted in the properties of the surrounding residents.
- Only vegetation that is directly impacted by the construction of the bridge will be allowed to be cleared.

Post construction

- Rehabilitation of areas disturbed by construction activities or earthworks must commence immediately after the completion of construction activities.
- The site must be rehabilitated with species indigenous to the site.

Operation

(Not Applicable)

3.4 Stormwater

Figure 4: A view of the approximate point at which the bridge will begin on the southern banks (Red Square). Erosion could potentially result in this vicinity and the appropriate controls should be implemented to minimize erosion.

Site Inception

- There should be limited storage of sand and cement on the site as this could contaminate stormwater during construction.
- All potential stormwater contaminants must be bunded in the site camp to prevent run-off into the surrounding environment.
- A drainage system must be established for the construction camp. The drainage system must be regularly checked to ensure an unobstructed water flow. Establish cut off drains and berms to reduce stormwater flow through the construction site.
- As there are no formal stormwater drainage facilities on site, the contractor must prepare a Stormwater Control Plan to ensure that all construction methods adopted on site do not cause, or precipitate, soil erosion. The designated responsible person on site, as indicated in the stormwater control plan (usually the contractor) must ensure that no construction work takes place before the stormwater control measures are in place.

Construction

- Any runoff from the construction site must not be allowed to cause excessive erosion or sediment input in to the rivers (Figure 4).
- Flow of stormwater must not be impeded during construction.
- Contamination of stormwater must be avoided at all times.
- A drainage system must be established for the construction camp. The drainage system must be regularly checked to ensure an unobstructed water flow.
- The use of high velocity stormwater pipelines should be avoided in favour of open, high friction, semi-permeable channels wherever feasible.
- During construction unchannelled flow must be controlled to avoid soil erosion. Where large areas of soil are left exposed, rows of straw / hay or bundles of cut vegetation should be dug into the soil in contours to slow surface wash and capture eroded soil. The spacing between rows will be dependent on the slope.
- Any incidents involving stormwater contamination must be reported to the ECO for the purposes of maintaining the site's incident records.
- The stormwater control plan must be adhered to at all times.

Key Issues

- **Stormwater must be controlled before it is released into the surrounding areas.**

Post construction

- The new bridge must be maintained to ensure accumulation debris within the culverts does not impede water flow within the river.

Operation

- Stormwater control measures will need to be implemented to ensure water running off the bridge does not cause erosion to the surrounding environment. With no sewer systems in the area, all stormwater should be directed to the river without the possibility of sediment being picked up.

3.5 Sourcing Material

Figure 5: An example of a construction material requiring source statements.

Site Inception

- Contractors must prepare a source statement indicating the sources of all materials (including topsoil, sands, indigenous gravels, crushed stone etc) (Figure 5).
- Where possible, a signed document from the supplier of natural materials must be obtained confirming that they have been obtained in a sustainable manner and in compliance with relevant legislation.
- Any mined material must be from a licensed and permitted site. Suppliers must be able to provide permits for the quarry where material has been mined from.

Construction

- Ensure that all materials are sourced from those sites set out in the source statement and that any changes to sources of materials are updated and approved by the ECO.
- Make certain transportation of materials is such that no spillage occurs on route to the site.

Key Issues

- **Review of source materials lists.**
- **Approve any changes in material sources with ECO first.**

Post construction

- Ensure that areas where materials are sourced are rehabilitated to ensure no erosion or degradation of the surrounding area occurs.

Operation

(Not Applicable)

3.6 Water Use and Cement Batching

Figure 6: An example of mixing and moving concrete using an impermeable plastic sheet.

Site Inception

- Water used on site must be from an approved source. Should the quantity of water extracted from a natural source (river) exceed 50 000 liters per day a water use permit must be acquired from DWA.
- Topsoil must be stored on a level area at least 32m away from the river.
- Concrete should be trucked in and discharge directly to areas where it may be needed.
- No topsoil may be removed from site.

Construction

- Water use on the site must be recorded and monitored.
- Stone chip / gravel excess must not be left on site. This must be swept / raked into piles and removed to an area approved by the ECO.
- Concrete mixing directly on the ground must not be allowed and must take place on impermeable surfaces to the satisfaction of the ECO (Figure 6).
- Designated concrete mixing areas and storage areas for any hazardous materials will be assigned; cement mixing will not be permitted to where runoff can enter the Baboyi River.
- During construction, waste reduction must be targeted and recycled building materials should be used where possible.
- Cement mixing must take place on a hard surface or on cement mixing trays.
- The concrete batching activities must be located in the site camp only.

Key Issues

- **Water may only be used from an approved natural source or from a municipal source.**
- **Concrete mixing directly on the ground must not be allowed.**

Post construction

- All excess concrete must be removed from site on completion of works and disposed of. Washing of the excess material into the ground or river is not allowed.
- All excess aggregate must also be removed from site.

Operation

(Not Applicable)

3.7 Incidents/Spills

Figure 7: An example of a spillage on site that will need to be cleaned up using the prescribed methods.

Site Inception

- A method statement must be completed by the Contractor and submitted to the ECO showing procedures for dealing with possible emergencies that can occur, such as fire, accidental leaks and spillages (Figure 7).
- The Contractor must be in possession of an emergency spill kit that is complete and available at all times on site. The EO will be aware of the location of the emergency spill kit and have access to it.
- The ECO must be aware of the spillage procedure with regard to spillages of hazardous or potentially hazardous substances.

Construction

- Should any spills of hazardous materials occur on the site or in the storage area, the relevant clean-up specialists must be contacted immediately. Materials that absorb fuel & oil, such as Drizit or earth should be placed over the spill. This contaminated material must be uplifted and disposed off at a recognized disposal site.
- Environment surrounding the causeway must be protected from any contamination.
- An incident record must be compiled for all spills.

Key Issues

- **Correct procedures followed and records to be compiled.**
- **Protection of the indigenous/ riverine vegetation from contamination.**

Post construction

- No evidence of spills must be evident after construction.
- Any damage to the riverine vegetation near the bridge, due to spillages occurring during the construction period, must be remedied.

Operation

(Not Applicable)

3.8 Waste Management

(www.unisanuk.com)

Figure 8: An example of recycling bins that can be used to separate recycling material on site.

Site Inception

- Waste must be disposed at the appropriate landfill site by an approved contractor.
- Safe disposal certificates will be obtained and kept on site.
- The excavation of rubbish pits on site is not allowed.
- Burning of rubbish on site is not allowed.
- Recycling bins must be placed within the construction site to ensure all materials are properly sorted for recycling (Figure 8).

Construction

- The construction rubble must be disposed in designated spoil dumps, demarcated by the Engineer.
- Refuse must be separated at source and disposed of in the appropriate bins, which must be emptied regularly.
- Littering is prohibited and the site must be cleaned daily.
- Separation of waste and recycling of paper, glass etc must be encouraged throughout the construction period.
- All solid waste generated during the construction process (including packets, plastic, rubble, cut plant material, waste metals etc) must be placed in the waste collection area in the construction camp and must not be allowed to blow around the site, be accessible by animals, or be placed in piles adjacent the skips / bins.
- Recycling should be undertaken where possible to limit waste added to the landfill site.

Key Issues

- **Recycling to be encouraged.**
- **Bins must be located at adequate intervals in the construction area.**

Post construction

- No litter must be left on site
- All bins and other waste storage are removed from site.
- A final check must be done to ensure that no waste is left on site.
- Burying of rubble on site, or dumping in drainage lines/rivers is prohibited.
- Surfaces are to be checked for waste products from activities such as concreting and cleared in a manner approved by the ECO.
- The Contractor is to check that the stormwater channels and the drainage pipes are free from building rubble, spoil materials and waste materials.

Operation

- Maintenance personnel must undergo an induction programme to ensure compliance with requirements of the EMPr.
- Littering on site is prohibited and the site must be clean daily.

3.9 Stock Piles

Figure 9: An example of material that has been stockpiled on flat ground near to the road to ensure minimal runoff and impact on the surrounding environment.

Site Inception

- Stockpiles must be positioned and sloped to create the least visual impact.
- Stockpiles must not be located within 32m of the Baboyi River.

Construction

- The designated storage area must be secured to keep people and animals out. This area should be located in or near the construction camp enclosure.
- General building/other materials include non-hazardous materials and chemicals. These must be kept in a designated area.
- Materials must be stacked in a way that they cannot fall and cause injury or damage to property or the surrounding environment (Figure 9). Stockpiles must not exceed 2m in height and must be covered if exposed to heavy wind or rain. Alternatively, low walls or berms must be constructed around the stockpiles

Key Issues

- **Stockpiles must be located at least 32m away from river.**

Post construction

- All residual stockpiles must be removed to spoil or spread on site as directed by the ECO.
- All leftover building materials must be removed from the site.
- No foreign material generated / deposited during construction must remain on site. Areas affected by stockpiling must be reinstated to the satisfaction of the RE and ECO.

Operation

(Not Applicable)

3.10 Waste Water

(www.10000gallonwatertank.com)

Figure 10: An example of a conservancy tank that can be used to house all waste water

Site Inception

- Adequate wastewater collection facilities must be provided
- The Contractor must submit a method statement to the ECO detailing how wastewater would be collected from all wastewater generating areas, as well as storage and disposal methods (Figure 10).
- No contaminated runoff or grey water may be discharged from the site camp.
- Portable toilets must be situated outside of the 1:100 year floodline of the Baboyi River.
- A maintenance plan for the servicing of these toilets must be drawn up and strictly adhered to, to prevent malfunctioning and neglect.

Construction

- The chemical toilets servicing the camp must be maintained in a good state, and any spills or overflows must be attended to immediately by a sanitation expert.
- No waste water must be allowed to runoff into the rivers or into the indigenous vegetation areas.
- No vehicle equipment washing should be conducted on site.
- Toilet waste to be removed by an approved contractor and safe disposal certificates must be available on request.

Key Issues

- **Waste water must either be collected for removal or no washing should occur on site.**

Post construction

- Ensure clean up and rehabilitation of areas where any waste water spillage has occurred.

Operation

- No contaminated waste water is allowed to enter the Baboyi River.
- Washing of clothing and vehicles in the vicinity of the river is prohibited.

3.11 Hazardous Storage and Disposal

Figure 11: A hazardous material storage area that is hard-surfaced (impermeable), bunded, secure and undercover. Signage is required indicating the presence of hazardous material.

Site Inception

- Material Safety Data Sheets (MSDSs) must be readily available on site for all chemicals and hazardous substances to be used on site. Where possible and available, MSDSs should additionally include information on ecological impacts and measures to minimize negative environmental impacts during accidental releases or escapes (Figure 11).
- Ensure all staff are trained on proper hazardous waste disposal.
- Hazardous storage are to be hard surfaced and bunded with an impermeable liner to protect groundwater quality and undercover. The Contractor must submit a method statement to this effect to the Engineer for approval.
- Hazardous storage areas must not be located near any indigenous vegetation areas.
- Storage areas containing hazardous substances/materials must be clearly signed.
- The hazardous materials storage area must be fully secured to prevent people and animals from accessing it.
- Hazardous material storage areas must not be within 30m of the river.

Construction

- Hazardous materials to be stored separately.
- All hazardous chemicals to be returned to the storage area at the site camp each night.
- Fuel storage areas must be bunded with a catchpit of at least 110% the storage capacity of the fuel storage container. This bund must have a controlled stormwater outlet with a filter.
- Concrete waste must be disposed of at an appropriate waste site.
- A separate drum should be available for storage of contaminated soil.
- Staff dealing with these materials/substances must be aware of their potential impacts and follow the appropriate safety measures.
- Transport of hazardous materials around the site should be limited, and materials must be transported in sealed bags/containers.
- Mixing/decanting of all chemicals and hazardous substances must take place either on a tray or on an impermeable surface. Waste from these should then be disposed of to a suitable waste site.
- Decanting of any chemical should be done within the confines of a suitably sized drip tray.
- Decanting from large containers (e.g. 210L drums) must be done using a hand pump.
- Drip trays are to be cleaned out daily and material collected disposed of as hazardous waste.

Key Issues

- **Hazardous materials must always be stored on a hard-surfaced (impermeable), bunded, secure and undercover area.**

Post construction

- Hazardous materials that require disposal (cement, paints, solvents, old fuel / oil etc) must be disposed of to a registered hazardous landfill site. These materials may be removed by an appropriate hazardous waste contractor. Proof of appropriate disposal must be available to the ECO for scrutiny and kept on record.

Operation

(Not Applicable)

3.12 Erosion Control

Figure 12: The southern banks of the river are well vegetated but steep and any disturbance to the vegetation could result in the potential for erosion increasing. The relevant erosion control measures should be implemented to prevent erosion from potentially occurring.

Site Inception

- The Contractor must, as an initial and ongoing exercise, implement erosion and sedimentation control measures to the satisfaction of the ECO.

Construction

- Stabilization of cleared areas to prevent and control erosion and/or sedimentation must be actively managed (Figure 12).
- During construction, the Contractor must protect all areas susceptible to erosion by installing necessary temporary drainage systems as soon as possible and by taking any other measures necessary to prevent stormwater from concentrating in streams and scouring slopes, banks, etc.
- Damage to stabilised areas must be repaired and maintained to the satisfaction of the ECO.

Key Issues

- **Cleared areas must have erosion control measures implemented.**
- **Any eroded sections must be stabilised.**

Post construction

- In areas where construction activities have been completed and where no further disturbance would take place, rehabilitation and re-vegetation should commence as soon as possible.
- Re-vegetation of cleared land must utilize only 100% locally indigenous plant material to ensure no erosion occurs once the site is vacated.
- Any eroded soil on paths / roadways / other areas must be collected and replaced in the area from which it was eroded.

Operation

- Areas that have been rehabilitated must be maintained and monitored to ensure infestation by alien vegetation does not occur.
- Indigenous vegetation utilized in the rehabilitation process must not be used for medicinal purposes.

3.13 Training

(www.bwint.org).

Figure 13: An example of workers training on site. All workers must have a basic level of environmental awareness

Site Inception

- The ECO must ensure that the Engineer and site agents have sufficient understanding of environmental issues to pass this information on to the construction staff.
- The site manager must ensure that all direct and sub-contracted site personnel have a basic level of environmental awareness training and this has been offered to them in English and isiZulu.
- The Engineer / Environmental Control Officer must be on hand to explain more difficult / technical environmental issues and to answer questions at project commencement.
- The need for a "clean site" policy must be explained to construction workers.
- The Environmental Control Officer (ECO) has, ensured that all site staff are informed of the details of the EMP document as well as the conditions of the Environmental Authorization issued by the Department of Agriculture and Environmental Affairs (DAEA).
- Workers must be shown any indigenous vegetation areas and must be informed of the importance of ensuring this area is not impacted on.

Construction

- Regular toolbox sessions must be held to ensure that staff are reminded about environmental and safety issues and procedures (Figure 13).

Key Issues

- **Regular toolbox sessions are to be held in order to remind staff about environmental and safety issues.**

Post construction

- Information must be provided to the Merlewood Secondary School for educating the pupils (primary users of the pedestrian bridge), on the impacts of littering and disposing of waste into the Baboyi River and surrounds, and assist in preventing pollution of the Baboyi river

Operation

- All maintenance personnel must be made aware of the operational requirements of this EMPr. It is recommended that maintenance personnel undergo an induction programme regarding the requirements of the EMPr.

3.14 Equipment Maintenance and Vehicle Washbay

Figure 14: Illustrating an example of water runoff generated from washing vehicles that may contaminate the surrounding environment. Washing and refueling on site must take place within the designated area with suitable precautionary equipment available.

Site Inception

- Machinery and vehicles must be well maintained but no maintenance work will be carried out on site.
- Excessively noisy machinery must be removed from site.
- All machinery servicing areas must be bunded.

Construction

- All vehicles and equipment must be kept in good working order to maximize efficiency and minimize pollution.
- All maintenance, including washing and repairs of plant on site must take place off site (Figure 14).
- Washing of equipment must be conducted offsite where grey water can be collected or disposed.
- The Contractor must ensure that no contamination of soil or vegetation occurs.
- The Contractor must ensure that no contamination of soil or vegetation occurs.
- Drip trays must be used to collect used oil, lubricants, etc. during minor maintenance.
- Drip trays must be provided for all stationary plant.

Key Issues

- **All machinery maintenance, must take place off site.**
- **Drip trays must be provided for all stationary plant.**
- **Washing of machines and equipment must be conducted offsite.**

Post construction

- Used oil, lubricants, cleaning materials, etc. to be disposed of at a DWA approved hazardous waste site, safe disposal certificates to be obtained

Operation

- No washing of vehicles is permitted in the vicinity of the Baboyi River.

3.15 Sensitive Habitats

Figure 15: The Baboyi River and surrounding vegetation that must be protected from erosion and contaminants.

Site Inception

- The Contractor must only work within the river as required for the execution of the work.
- The Baboyi River must be protected from erosion and direct or indirect spills of pollutants, e.g. sediment, refuse, sewage, cement, oils, fuels, chemicals, wastewater etc. (Figure 15).

Construction

- Any activities undertaken in the Baboyi River must minimize damage and destabilisation of river banks.
- Where river banks are destabilised, rehabilitation and stabilisation must be undertaken immediately. In the event of a spill, the Contractor must take prompt action to clear polluted areas and prevent spreading of the pollutants. The Contractor must be liable to arrange for professional service providers to clear affected areas, if required.
- The Contractor must submit a method statement to the RE for approval, detailing the location of the temporary bypasses, spill prevention measures, erosion and sedimentation control measures, surface water flow diversion, reinstatement, etc.

Key Issues

- **Avoidance of Impacts on any riparian vegetation or river areas.**

Post construction

- Ensure that no sensitive habitats have been permanently damaged during the construction phase.
- Where habitats or the riparian vegetation have been damaged these must be reported to the ECO and procedures for rehabilitation of these habitats must be undertaken.

Operation

- The Baboyi River must not be used as a waste dumping site or wash area.

3.16 Conduct

www.furnitureminimalist.com

Figure 16: An example of portable site toilets which can be used on site. No pit latrines are to be dug.

Site Inception

- Workers must be briefed by the person in charge of managing construction / management activities on the *do's* and *don'ts* on the property, when workers arrive at the property. This must be repeated in weekly toolbox talks.
- No alcohol, drugs, snares, slingshots or animals may be brought onto the property.
- Adequate toilets must be available on site for use by construction staff at all times (Figure 16).
- The digging of pit latrines is not allowed under any circumstances.
- None of the open areas or the surrounding bush may be used as a toilet facility.

Construction

- No fires may be made on the property.
- Workers that are under the influence of alcohol or drugs may not operate chainsaws, vehicles or other machinery.
- The harvesting of firewood, medicinal plants, tree bark, flowers or other natural materials is forbidden on the site and adjacent properties.
- No workers may sleep on the property unless proper accommodations for this have been established.
- Prior to the commencement of construction, all workers need to know what possible archaeological or historical objects of value may look like, and to notify the site manager if one is found.

Key Issues

- **Workers must be briefed on the requirements of the EMPr.**

Post construction

- Any damage caused by misconduct must be remedied and rehabilitated.

Operation

(Not Applicable)

3.17 Emergency Response

www.spill-kit.com

Figure 17: The use of a spill kit during an emergency response to an accidental spill.

Site Inception

- All construction staff must be made aware of emergency phone numbers to use in the case of an emergency (Figure 17).
- All staff must be trained on how to react in the case of an emergency.
- An emergency response team must be set up to manage emergencies.

Construction

- Keep clearly marked absorbent material on site to contain spills if they occur.
- If a spill occurs, stop the source, contain it, clean up in accordance with MSDSs and notify relevant authorities.

Post construction

(Not applicable)

Key Issues

- **Emergency phone numbers and responsible persons must be indicated.**

Operation.

(Not Applicable)

3.18 Air Quality

Figure 18: An example of dust suppression at a construction site to control dust generation.

Key Issues

- **Controls must be implemented to avoid dust generated during construction.**

Site Inception

- The contractor must ensure that the necessary equipment is in place to control dust generated during construction (Figure 18).

Construction

- Vehicles travelling along the access roads must adhere to speed limits to avoid creating excessive dust.
- Dust suppression techniques must be adopted to control dust generated during construction (e.g. keep dusty areas watered, compact stockpiled soil, construct physical barriers, and control traffic on site).
- A complaints register must be maintained on site at all times and be made accessible to the surrounding community (or any affected person(s)) to record complaints regarding odours, emissions and/or excessive levels of dust.
- Vehicles and machinery are to be kept in good working order and to meet manufacturer's specifications for safety, fuel consumption etc.
- No fires are allowed on site.

Post Construction

(Not Applicable)

Operation.

(Not Applicable)

3.19 Occupational Health & Safety

www.doylefiresafe.com

Figure 19: Relevant requirements for health and safety within a construction site, including PPE.

Site Inception

- All construction staff must be provided with relevant Personal Protective Equipment (PPE) (Figure 19).

Construction

- The necessary PPE must be worn.
- Fire fighting equipment to be installed and fire teams must be trained accordingly.
- Material stockpiles must be stable and well secured to avoid collapse and possible injury to workers.
- Staff handling hazardous substances/materials must be aware of their potential impacts and follow appropriate safety measures.

Key Issues

- **Occupational health and safety risk during operation, i.e. handling of hazardous chemicals and used oils, inhalation of dangerous vapours.**

Post Construction

- Staff handling hazardous substances/materials must be aware of their potential impacts and follow appropriate safety measures.

Operation

(Not Applicable)

3.20 Decommissioning

- **A detailed decommissioning plan must be submitted to DAEA for approval at least 30 days prior to the decommissioning of the Baboyi River Pedestrian Bridge. The plan must address the following:**
  - **Air quality**
  - **Soil erosion**
  - **Waste management**
  - **Waste water management**
  - **Stormwater management**
  - **Worker conduct**
  - **Dust**
  - **Landscaping, re-vegetation, stabilization and rehabilitation**
  - **Land contamination**
  - **Complaints register**
- **Prior to decommissioning the surrounding community must be notified.**
- **Decommissioning must take place only during working hours.**
- **All solid waste and rubble must be disposed of at an approved landfill site. No waste is allowed to contaminate the *Baboyi River*.**
- **Any wash water must be treated as contaminated and is not permitted to enter stormwater drains and run-off into the *Baboyi River*.**
- **Rehabilitation measures must be put into place.**
- **All structures, foundations, concrete and tarred areas are demolished. Rubble must be removed by an approved contractor and taken to a licensed landfill site. Waste recycling must be encouraged.**
- **A long-term monitoring system must be in place to ensure total rehabilitation of the site following decommissioning.**

Appendix 1: Letter of acceptance of EMPr

(To be printed on appropriate letter head)

RE: Construction of the Baboyi River Pedestrian Bridge within the Hibiscus Coast Local Municipality.

To whom it may concern

This is to state that the undersigned have received a copy of the Environmental Management Programme (EMPr) developed for this site by *Kerry Seppings Environmental Management Specialists (KSEMS)* dated October 2012. The undersigned do hereby agree to abide by the strictures of the Environmental Management Programme (EMPr). Any contravention of the EMPr will be recorded and corrective action will be carried out.

Any changes to the EMPr must be approved by the *Environmental Control Officer (ECO)*, the consultant *Kerry Seppings Environmental Management Specialists (KSEMS)* and the relevant authority. Such changes are to be made in writing and a record must be maintained.

As Agreed on this day _____ of _____(Month) _____(Year)

Environmental Control Officer (ECO)

Name _____

Signed _____

Contractor

Name _____

Company _____

Signed _____

Engineer

Name _____

Company _____

Signed _____

Appendix 2: Complaints Register

This a register for recording all complaints received from neighbours i.e. Complaints about noise, odours, dust etc.

Date of complaint	Complainant's name	Contact Details (phone)	Nature of complaint	Corrective action taken	Date action completed

Appendix 3: Non-conformance Record and Audit Template

This is record of non compliances with the EMPr i.e. any action taken that is in violation of the EMPr must be recorded e.g. mixing concrete directly on soil, site staff using neighbouring properties as toilet facilities, dumping of material over fence etc.

Date of non conformance	Details of non conformance	Party / ies responsible	Corrective action taken	Date action completed

Appendix 4: BASIC EMERGENCY RESPONSE PLAN

1.0 AIM

1) The effective response to emergency incidents.
2) The control of emergency incidents.
3) Recording incidents and ensuring that where possible, all measures are taken to prevent them from re-occurring

2.0 DEFINITION OF AN "INCIDENT"

As defined by NEMA, section 30 "Control of emergency incidents" .

(1) In this section—

(a) "incident" means an unexpected sudden occurrence, including a major emission, fire or explosion leading to serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed;

(b) "responsible person" includes any person who—

(i) is responsible for the incident;

(ii) owns any hazardous substance involved in the incident; or

(iii) was in control of any hazardous substance involved in the incident at the time of the incident;

(c) "relevant authority" means—

(i) a municipality with jurisdiction over the area in which an incident occurs;

(ii) a provincial head of department or any other provincial official designated for that purpose by the MEC in a province in which an incident occurs;

(iii) the Director General;

(iv) any other Director General of a national department.

As defined by the National Water Act section 20 "Control of emergency incidents"

(1) In this section ``incident'' includes any incident or accident in which a substance -

(a) pollutes or has the potential to pollute a water resource; or

(b) has, or is likely to have, a detrimental effect on a water resource.

DEFINITION OF AN INCIDENT ON SITE

Spills, contamination of soil and or stormwater, fires, explosions.

3.0 CONTENTS OF REPORT TO AUTHORITIES

As taken from NEMA, section 30 :Control of Emergency Incidents"

(3) The responsible person or, where the incident occurred in the course of that person´s employment, his or her employer must forthwith after knowledge of the incident, report through the most effective means reasonably available—

(a) the nature of the incident;

(b) any risks posed by the incident to public health, safety and property;

(c) the toxicity of substances or byproducts released by the incident; and

(d) any steps that should be taken in order to avoid or minimise the effects of the incident on public health and the environment to—

(i) the DirectorGeneral;

(ii) the South African Police Services and the relevant fire prevention service;

(iii) the relevant provincial head of department or municipality; and

(iv) all persons whose health may be affected by the incident.

(4) The responsible person or, where the incident occurred in the course of that person´s employment, his or her employer, must, as soon as reasonably practicable after knowledge of the incident—

(a) take all reasonable measures to contain and minimise the effects of the incident, including its effects on the environment and any risks posed by the incident to the health, safety and property of persons;

(b) undertake cleanup procedures;

(c) remedy the effects of the incident;

(d) assess the immediate and longterm effects of the incident on the environment and public health.

(5) The responsible person or, where the incident occurred in the course of that person´s employment, his or her employer, must, within 14 days of the incident, report to the DirectorGeneral, provincial head of department and municipality such information as is available to enable an initial evaluation of the incident, including—

(a) the nature of the incident;

(b) the substances involved and an estimation of the quantity released and their possible acute effect on persons and the environment and data needed to assess these effects;

(c) initial measures taken to minimise impacts;

(d) causes of the incident, whether direct or indirect, including equipment, technology, system, or management failure; and

(e) measures taken and to be taken to avoid a recurrence of such incident.

(6) A relevant authority may direct the responsible person to undertake specific measures within a specific time to fulfil his or her obligations under subsections (4) and (5): Provided that the relevant authority must, when considering any such measure or time period, have regard to the following:

(a) the principles set out in section 2;

(b) the severity of any impact on the environment as a result of the incident and the costs of the measures being considered;

(c) any measures already taken or proposed by the person on whom measures are to be imposed, if applicable;

(d) the desirability of the State fulfilling its role as custodian holding the environment in public trust for the people;

(e) any other relevant factors.

(7) A verbal directive must be confirmed in writing at the earliest opportunity, which must be within seven days.

(8) Should—

(a) the responsible person fail to comply, or inadequately comply with a directive under subsection (6);

(b) there be uncertainty as to who the responsible person is; or

(c) there be an immediate risk of serious danger to the public or potentially serious detriment to the environment,

a relevant authority may take the measures it considers necessary to—

(i) contain and minimise the effects of the incident;

(ii) undertake cleanup procedures; and

(iii) remedy the effects of the incident.

As taken from the National Water Act section 20 "Control of emergency incidents"

(2) In this section, ``responsible person'' includes any person who -

(a) is responsible for the incident;

(b) owns the substance involved in the incident; or

(c) was in control of the substance involved in the incident at the time of the incident.

(3) The responsible person, any other person involved in the incident or any other person with knowledge of the incident must, as soon as reasonably practicable after obtaining knowledge of the incident, report to -

(a) the Department;

(b) the South African Police Service or the relevant fire department; or

(c) the relevant catchment management agency.

(4) A responsible person must -

(a) take all reasonable measures to contain and minimise the effects of the incident;

(b) undertake clean-up procedures;

(c) remedy the effects of the incident; and

(d) take such measures as the catchment management agency may either verbally or in writing direct within the time specified by such institution.

The following emergency procedures are guidelines only and should be used in conjunction with the emergency response plan provide by the contractor.

4.0 ON SITE EMERGENCY PROCEDURES
4.1 SPILL RESPONSE
4.1.1 RESPONSIBLE PERSON/S

The spill is reported to the Foreman who must report to his superior who must report to the ECO.
All employees should be made aware of the procedure in case of a spill.
The ECO must report to relevant authorities if contamination occurs and if spill falls within the definition of a spill

4.1.2 PROCEDURE

1. Identify nature and size of spill e.g. oil 20L. Consult MSDS for safety precautions
2. Protect exposed stormwater drains, prevent entry of substance to stormwater drains and drainage line.
3. For a small spill (less than a litre, locate spill kit, contain spill according to the training from the spill kit suppliers
4. For large spill (unable to deal with on site), contact external spill control contractors
5. Determine appropriate method for disposal of material base on information provided in MSDS
6. Determine if any contamination has occurred i.e. entry to stormwater, , soil contamination
7. If contamination has occurred, consult with authorities on need for ongoing monitoring and or rehabilitation requirements. Determine medium and long term effects. Stormwater incidents should be reported to Waste water
8. If no contamination has occurred, determine if spill falls under definition of an "incident" and if so, report to relevant authorities.
9. Record in Incidents register
   - Nature of incident
   - Cause of incident
   - Contamination if any
   - Measures taken to control spill and handle contamination
   - If spill falls under definition of an incident
   - Mitigation measures taken to prevent re-occurrence
10. Record in non-compliance register and incident (if defined as incident)
11. The ECO must review all spill reports
12. Adjustments will be made, if necessary, to the operational and emergency procedures to prevent future occurrences

4.3 FIRE
4.3.1 RESPONSIBLE PERSON/S

The spill is reported to the Foreman who must report to his superior who must report to the ECO.
All employees should be made aware of the procedure in case of a spill.
The ECO must report to relevant authorities if contamination occurs and if spill falls within the definition of a spill

4.3.2 PROCEDURE

1. Identify source and nature of fire
2. In case of small fire extinguish with material appropriate to the nature of the fire. Consult MSDS.
3. Immediately contact the ECO. In case of a large fire contact Fire Department

4. Seal off exposed stormwater drains to ensure spill does not cause any external contamination
5. Determine whether any contamination has occurred
6. If contamination has occurred, consult with authorities to determine appropriate rehabilitation and monitoring
7. Record in incident register: Nature of incident
   Cause of incident
   Clean up measures
   Mitigation measures taken
8. Record in non-compliance register and record as incident if applicable.
9. The ECO must review all fire reports
10. Adjustments will be made, if necessary, to the operational and emergency procedures.

Appendix 5: Incident Record

This is record of incidents as defined in NEMA and the NWA. Incidents should be recorded and reported to the applicable authorities.

Date of incident	Details of incident	Party / ies responsible	Corrective action taken	Date action completed

Appendix 6: Example of an emergency incident report form (Source: DEA website)

environmental affairs Department: Environmental Affairs REPUBLIC OF SOUTH AFRICA	**Document Type:**	Emergency Incident Report	
	Title for the Incident:		
	Date of the incident:		
Reference:	[A reference that may be used in future correspondence]	**Initial Submission Date:**	[Date of initial submission of the report to the Department: Environmental Affairs and Tourism]
Revision No.:	example	**Compiled by:**	[Full name and contact details of the person submitting the report]

This form provides a template for the emergency incident report required in terms of section 30(5) of the National Environmental Management Act (Act No. 107 of 1998) (hereinafter "NEMA") in which the responsible person or, where the incident occurred in the course of that person´s employment, his or her employer, must, within 14 days of the incident, report to the Director General, provincial head of department and municipality such information as is available to enable an initial evaluation of the incident, including: (a) the nature of the incident; (b) the substances involved and an estimation of the quantity released and their possible acute effect on persons and the environment and data needed to assess these effects; (c) initial measures taken to minimise impacts; (d) causes of the incident, whether direct or indirect, including equipment, technology, system, or management failure; and (e) measures taken and to be taken to avoid a recurrence of such incident.
In terms of section 30(1)(a) of NEMA, an "incident" means an unexpected sudden occurrence, including a major emission, fire or explosion leading to serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed.
In line with section 24 of the Constitution of the Republic of South Africa (Act No. 108 of 1996), "serious" is taken to be a measure of the impact of an incident where such an incident has had, could have had, is having, or will have a negative impact on human health or well-being.

1. RESPONSIBLE PERSON			
In terms of section 30(1)(b) of NEMA, the "responsible person" includes any person who: (i) is responsible for the incident; (ii) owns any hazardous substance involved in the incident; or (iii) was in control of any hazardous substance involved in the incident at the time of the incident			
Name:	[Full name of person, company, etc.]	**Designation:**	[designation of responsible person (n/a for companies, etc.)]
Postal Address:	[Full postal address including postal code]	**Physical Address:**	[Full physical address]
Telephone (B/H)	[Business hours contact telephone number and area code]	**Telephone (A/H)**	[After hours contact telephone number and area code]
Fax:		**Email:**	
Nature of Business:	[Brief summary of the nature of the business]		

2. Emergency Incident Summary Information							
Mark the appropriate boxes							
2.1 Fire:		**2.2 Spill:**		**2.3 Explosion:**		**2.4 Gaseous Emission:**	
2.5 Injuries		**2.6 Reportable injuries:**		**2.7 Hospitalisation:**		**2.8 Fatalities:**	
2.9 Open water impacts:		**2.10 Ground water impacts:**		**2.11 Atmospheric impacts:**		**2.12 Soil impacts:**	
2.13 Own emergency response involved		**2.14 Fire prevention services involved**		**2.15 Government hazardous materials emergency response involved**		**2.16 More than 1 governmental emergency response service involved**	
2.17 Emission of non-toxic substances at low concentrations		**2.18 Emission of non-toxic substances at high concentrations**		**2.19 Emission of toxic substances at low concentrations**		**2.20 Emission of toxic substances at high concentrations**	
2.21 No evacuation required		**2.22 Immediate area evacuated**		**2.23 Immediate surrounds evacuated**		**2.24 Evacuation of the general public**	
2.25 Others							

3. Initial Emergency Incident Report				
In terms of section 30(3) of NEMA, the responsible person or, where the incident occurred in the course of that person´s employment, his or her employer must forthwith after knowledge of the incident, report through the most effective means reasonably available: (a) the nature of the incident; (b) any risks posed by the incident to public health, safety and property; (c) the toxicity of substances or byproducts released by the incident; and (d) any steps that must be taken in order to avoid or minimise the effects of the incident on public health and the environment to: (i) the Director General; (ii) the South African Police Services and the relevant fire prevention service; (iii) the relevant provincial head of department or municipality; and (iv) all persons whose health may be affected by the incident.				
Description	**Date:**	**Time:**	**Medium:**	**Contact Details:**
Relevant fire prevention services: (in case of fire)	[submission date]	[submission time]	[Fax, phone, SMS, letter, etc.)	[who was the report made to?]
Local:				
Provincial: (Those deal with Environmental issues)				
Director General: (DEA)				
Any other Director General of National Department eg DWA				

4. Incident Details			
In terms of NEMA section 30(5)(a) and (d), the responsible person must report on the nature of the incident as well as the causes of the incident, whether direct or indirect, including equipment, technology, system, or management failure			
4.1 Location of the incident	[Provide physical address of the location where the incident happened including the GPS co-ordinates]		
Incident start date and time:	[The exact time that the unexpected event started]	**Incident duration:**	[the duration of the unexpected event]
Duration of exposure:	[The duration of conditions that had a direct impact anyone's health or well-being]		
Incident description			
Background of the incident: Operation: Incident type: Root Cause of the incident: Contributing factors to the incident: Conclusion:			
Wind speed and direction	[The wind speed and direction at the point of the incident at the time of the incident]	**Ambient air temperature**	[ambient air temperature at the time of the incident]
Weather conditions	[Sunny, light rain, mist, heavy rain, etc.]	**Other relevant meteorological conditions**	[Temperature inversion, floods, etc]

5. POLLUTANTS RELEASED DURING INCIDENT					
In terms of NEMA section 30(5)(b), the responsible person must report on the substances involved and an estimation of the quantity.					
List all the pollutants directly released during the incident (i.e. exclude those pollutants that resulted from mitigation measures, e.g. flaring, treatment, dilution etc.)					
5.1 Substance or mixture of substances	**5.2 Reference Number**	**5.3 Phase**	**5.4 Total Quantity emitted**	**5.5 Unit**	**5.6 Nature of emission**
[The name recognised by any national or internationally recognised chemical referencing system]	[Reference to any national or internationally recognised chemical referencing system]	[solid, semi-solid, liquid or gas]	[the total measured or estimated quantity released into the environment]	[the unit of measure in respect to the quantity]	[emitted from truck, underground pipe, stack, etc.]

5. POLLUTANTS RELEASED DURING INCIDENT					
In terms of NEMA section 30(5)(b), the responsible person must report on the substances involved and an estimation of the quantity.					
List all the pollutants directly released during the incident (i.e. exclude those pollutants that resulted from mitigation measures, e.g. flaring, treatment, dilution etc.)					
5.1 Substance or mixture of substances	**5.2 Reference Number**	**5.3 Phase**	**5.4 Total Quantity emitted**	**5.5 Unit**	**5.6 Nature of emission**

6. SECONDARY POLLUTANTS RESULTING FROM INCIDENT					
In terms of NEMA section 30(5)(b), the responsible person must report on the substances involved and an estimation of the quantity released.					
List all the pollutants that resulted from mitigation measures, e.g. flaring, treatment, dilution etc.					
6.1 Substance or mixture of substances	**6.2 Reference Number**	**6.3 Phase**	**6.4 Total Quantity emitted**	**6.5 Unit**	**6.6 Nature of emission**
[The name recognised by any national or internationally recognised chemical referencing system]	[Reference to any national or internationally recognised chemical referencing system]	[solid, semi-solid, liquid or gas]	[the total measured or estimated quantity released into the environment]	[the unit of measure in respect to the quantity]	[emitted from truck, underground pipe, stack, etc.]

7. POLLUTANT CONCENTRATIONS					
In terms of NEMA section 30(5)(b), the responsible person must report on the substances involved and an estimation of the quantity released.					
List all the pollutants detailed above.					
7.1. Substance or mixture of substances	**7.2. Reference Number**	**7.3. Estimated pollutant concentration**			
		7.3.1. 10m	**7.3.2. 100m**	**7.3.3. 500m**	**7.3.4. >2000m**

7. POLLUTANT CONCENTRATIONS

In terms of NEMA section 30(5)(b), the responsible person must report on the substances involved and an estimation of the quantity released.

List all the pollutants detailed above.

7.1. Substance or mixture of substances	7.2. Reference Number	7.3. Estimated pollutant concentration			
		7.3.1. 10m	7.3.2. 100m	7.3.3. 500m	7.3.4. >2000m
[The name recognised by any national or internationally recognised chemical referencing system]	[Reference to any national or internationally recognised chemical referencing system]	[estimate the concentration of the pollutant in water, soil and/or air within a 10m radius of the epicentre of the incident] [provide the units used in a case of estimating concentrations eg ppm]	[estimate the concentration of the pollutant in water, soil and/or air within a 100m radius of the epicentre of the incident] [provide the units used in a case of estimating concentrations eg ppm]	[estimate the concentration of the pollutant in water, soil and/or air within a 500m radius of the epicentre of the incident] [provide the units used in a case of estimating concentrations eg ppm]	[estimate the concentration of the pollutant in water, soil and/or air within a >2000m radius of the epicentre of the incident][provide the units used in a case of estimating concentrations eg ppm]

8. INCIDENT IMPACT

In terms of NEMA section 30(5)(b), the responsible person must report on possible acute effect on persons and the environment and data needed to assess these effects;

8.1 Minor injuries	[Describe the number and types of any minor injuries that resulted from the incident or efforts to manage the incident or the impacts thereof]
8.2 Reportable injuries	[Describe the number and types of any injuries requiring statutory reporting that resulted from the incident or efforts to manage the incident or the impacts thereof]
8.3 Hospitalisation	[Describe the number and types of any injuries that required professional medical care that resulted from the incident or efforts to manage the incident or the impacts thereof]
8.4 Fatalities	[Describe the number and cause of any fatalities that resulted from the incident or efforts to manage the incident or the impacts thereof]
8.5 Biological impacts	[Describe any impacts on biological life, other than human life, e.g. fish kills, plant mortality, etc.]
8.6 Impact area	[Describe the area possibly affected by the incident or the impacts thereof including: (i) size of the area; (ii) socio-economic context; (iii) population density; (iv) sensitive environments (if any), etc.]
8.7 Data	Attach relevant impact reports, medical reports, death certificates, post mortem reports, environmental monitoring data, etc. as Annexes C1, C2,… to this report

9. EXISTING PREVENTION PROCEDURES AND/OR SYSTEMS	
9.1 Foresight	[Briefly describe whether the incident could have, or had, been foreseen, e.g. was it included in any environmental impact assessment, risk assessment, health and safety plan, etc.]
9.2 Procedures and/or systems	Attach any relevant safety, health and environmental plans (including any statutory planning requirements) that detail what actions must be taken in the event of the incident that is the subject of this report
9.3 Procedure and/or systems failures	[Describe any failures or shortfalls in procedures and/or systems that may have contributed to the incident]
9.4 Technical measures	[Describe any technical measures, equipment, 'fail-safe' devices, etc. that are in place to prevent the occurance of the incident]
9.5 Technical failure	[Describe any failures of technical measures, equipment, 'fail-safe' devices, etc. that are in place to prevent the occurance of the incident]

10. INITIAL INCIDENT MANAGEMENT	
In terms of NEMA section 30(5)(c), the responsible person must report on initial measures taken to minimise impacts.	
10.1 Evacuation	[Describe any evacuation activities including information on the number of people evacuated and whether these people were staff or otherwise]
10.2 Technical measures	[Describe all technical measures taken to address the incident]
10.3 Mitigation measures	[Describe all measures taken to minimise the impact]
10.4 Emergency Services	[Describe any governmental emergency services involvement]

11. CLEANUP AND/OR DECONTAMINATION			
In terms of NEMA section 30(5)(c), the responsible person must report on initial measures taken to minimise impacts.			
11.1 Cleanup and/or decontamination	[Provide a detailed description of all cleanup and/or decontamination activities and the environmental quality and impacts resulting from these activities as well as contact details for any contracted service providers in an annex.]		
11.2 Permissions and Instructions			
Provide details of any permissions and/or instructions received from any organ of state during initial incident management, cleanup and/or decontamination			
11.3 Type	**11.4 Statute**	**11.5 Issued By**	**11.6 Name and contact details**
[Describe the nature or type of permission or instruction]	[Provide a reference to the legal mandate for the permission or instruction]	[Provide contact details for the permitting or instructing authority]	[provide a summary of the activities carried out in terms of the permission or instruction]

12. MITIGATION MEASURES			
In terms of NEMA section 30(5)(e), the responsible person must report on measures taken and to be taken to avoid a recurrence of such incident.			
12.1 Measure	**12.2 Objective**	**12.3 Cost**	**12.4 Timing**
[Briefly describe each of the measures taken, and to be taken, to avoid a recurrence of such incident]	[Briefly describe the objective of the measure, i.e. the desired outcome of the measure]	[Estimate the cost of the measure in terms of capital costs and/or recurrent costs]	[Provide information on the timing for the full implementation of the measure]

13. AUTHORISATIONS			
Provide detail on all authorisations (including permits, licenses, certificates, etc.) in respect of the activity to which the incident relates.			
13.1 Type	**13.2 Statute**	**13.3 Issued By**	**13.4 Issue & Expiry Date**
[Describe the nature or type of authorisation, e.g. Registration Certificate]	[Provide the reference for the authorisation, e.g. section X of the National Environmental Management Act (Act No. 107 of 1989)]	[Provide contact details for the issuing authority]	[provide the date of issue and expiry]

14. History			
Provide details on any and every similar incident involving the responsible person in the last 24 months. Similar incidents include those that: (i) involved similar circumstances; (ii) involved similar emissions; (iii) involved similar personal; and/or (iv) involved similar impacts.			
14.1 Incident title	**14.2 Report reference**	**14.3 Date of incident**	**14.4 Summary of event**
[Provide the title used in the relevant emergency incident report]	[Provide the reference in respect of the relevant emergency incident report]	[Date of incident]	[Provide a summary of the event]

Signed by, or as a mandated signatory for, the responsible person:		Date:	

APPENDIX 1 List of affected people as results of the incident				
NAME	ADDRESS	PHONE	FAULT	REMARKS

APPENDIX 2 Layout map of the area likely to be affected or affected as a result of the incident

Disclaimer: Any other information not covered in the reporting template must be included.

CAUTION: In terms of section 30 (11) of NEMA as amended, it is an offence not to report an incident and liable on conviction to a fine not exceeding R 1 million or imprisonment for a period not exceeding 1 year, or to both such a fine and such imprisonment.

Appendix 7: Environmental Awareness Plan

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Environmental Awareness Plan

Important Definitions

- **Environment** (NEMA, 1998) - means the surroundings within which humans exist and that are made up of -
  - the land, water and atmosphere of the earth;
  - microorganisms, plant and animal life;
  - any part or combination of (i) and (ii) and the interrelationships among and between them; and
  - the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing;
- **Pollution** (NEMA, 1998) - means any change in the environment caused by -
  - substances;
  - radioactive or other waves; or
  - noise, odours, dust or heat,

  emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change has an adverse effect on human health or wellbeing or on the

composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future;

- **Environmental Management Programme** – refers to a document that used to investigate, assess and evaluate the impacts that the mine is likely to have on the environment during the operation and decommission phases.

Why Should We Protect The Environment?

- It is our right to live in a clean and healthy environment.
- To ensure that future generations live in a clean environment.
- To prevent the loss of species diversity.
- To prevent loss of ecological goods and services.

Toolbox Talks

The site manager must ensure that all site staff are informed of the details of the environmental awareness plan as well as the conditions of the Environmental Authorization issued by the Department of Agriculture, Environment and Rural Department (DAEARD). Regular toolbox sessions must be held to ensure that staff are reminded about environmental and safety issues and procedures. Environmental posters must be presented to staff.

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Site Environmental Rules

- *No urinating or defecating on site. Toilet facilities provided at the at the sites to be used at all times*
- *Do not waste water*
- *No littering*
- *No washing of cars or other vehicles on site*
- *Do not feed/poach the wildlife or livestock*
- *Do not disturb, trample, break or remove any indigenous vegetation*
- *Do not use spillkits for disposal of waste*

KERRY SEPPINGS ENVIRONMENTAL MANAGEMENT SPECIALISTS

Dispensing, storage and disposal of hydrocarbons/mineral oils

DISCUSSION:

What is a Hydrocarbon (mineral oil)?

Diesel/hydraulic oil etc. are hydrocarbons and therefore classified as hazardous substances. A hazardous substance is any material that poses an unreasonable risk to people, property and the environment. The environment is our surroundings, soil, air and water.

What is the risk?

- Regular dispensing and offloading of diesel increases the risk of a spillage occurring.
- Changing hydraulic lines/ greasing parts / basic maintenance of vehicles
- Leaks from vehicles and equipment

Hydrocarbons are toxic if swallowed by humans or animals. The presence of hydrocarbons in water can also prevent aquatic organisms from breathing and may result in aquatic kills depending on the extent of the spill. Hydrocarbons should therefore be prevented from contaminating ground or surface water.

Note:

Only 1 litre of oil can contaminate a soccer field of water. It is therefore essential to prevent spillages as far as possible and to ensure that if they do occur that they are properly cleaned up and that the resulting material is disposed of correctly.

What is a spillage?

All situations involving the spilling of a hydrocarbon on to the floor or ground or water.

How do we manage this?

1 **Correct Storage:**
   a. Refer to issues around the bunded area.
   b. Should be contained in waterproof and leak proof containers. Any containers or points that are leaking to be addressed immediately.
   c. Should be stored in a dedicated area on site.

2 **Correct Dispensing:**
   a. Should check lines for leaks before starting with dispensing.
   b. Place drip tray so as to catch any drips. How would you and into what would you empty the drip tray?
   c. Ensure all residual diesel/oil is drained from pipe before disconnecting.

3 **Maintenance of vehicles and equipment**
   a. Check equipment and vehicles for leaks daily. Report leaks to supervisor immediately. Contain slow drips using a drip tray.
   b. Do not use excessive grease when greasing vehicle or equipment parts.

4 **Correct Spillage Handling and Disposal:**
   a. Clean all spillages immediately. This means treat and remove spillage.
   b. Dispose in hazardous waste drum or skip.
   c. Report spillage to supervisor.

DATE:	**TIME:**	**LOCATION:**
TOPIC:	Dispensing, storage and disposal of hydrocarbons/ mineral oils	
ISSUE:	Spillage	

KERRY SEPPINGS ENVIRONMENTAL MANAGEMENT SPECIALISTS

Use and maintenance of drip trays

What is a Drip Tray?

A drip tray is a plastic or metal container that can be used to contain a liquid. A container is suitable to be used as a drip tray, if

- it is heavy enough not to be blown away;
- has no holes in the base or side from which a liquid could leak; and
- the sides are high enough that the liquid will not overflow.

The drip tray must be sized according to the amount of liquid that needs to be captured and contained.

What is the risk?

There is a risk of spillage of hydrocarbons or other chemicals under the following circumstance:

- Various equipment and vehicles may develop slow hydrocarbon leaks (oils);
- During maintenance of vehicles and equipment, there is a risk that hydrocarbons, grease, diesel/petrol may be spilt;
- Refuelling of equipment and vehicles;
- During decanting of chemicals such as paint and curing compound etc, some of the chemicals may be spilt on the ground; and/or
- While applying paint or grease you need something to put the tin, paint brush or roller into.
- Temporary storage of chemicals at point of use

Under all these circumstances the correct use of a drip tray could prevent a spillage on to the ground or into water.

What is correct use of a drip tray?

Note that the use of a drip tray should be an additional precaution to other controls. For example:

- Decanting of chemicals should be done within a bunded area as far as possible. A funnel should be used when discharging liquids into a container with a small opening. Spillage of chemicals should always be avoided. A drip tray should be used only as a precaution in case there is a spill.
- Vehicles and equipment should be checked daily and maintained correctly to prevent leaks. Drip trays should be placed underneath equipment and vehicles when stationary as a precaution in case there is a leak.
- Temporary storage of chemicals at point of use. Chemicals should always be returned to chemical store at the end of the shift.
- When refuelling vehicles or equipment a drip tray should be used to capture any excess or spillages from the nozzle of the hose. There should be no overfilling of vehicles and equipment.
- Drip trays may be used for the placing of paint brushes and rollers while applying curing compound.

Correct maintenance?

Drip trays should be maintained empty. Drip trays are to be checked daily, cleaned and emptied into the hazardous waste skip. Drip trays that are not being used should be stored under cover to prevent them filling with rain water.

TOPIC:	Use and maintenance of Drip trays
ISSUE:	Drips trays not being used when they should be
	Incorrect maintenance of drip trays resulting in spillages

KERRY SEPPINGS ENVIRONMENTAL MANAGEMENT SPECIALISTS

Use, handling and storage of hazardous chemicals

What is a Hazardous Chemical?

These are substances that may be dangerous to humans and or the environment if not handled, stored and disposed of correctly. The definition of a hazardous chemical is based on the amount, concentration or inherent properties of the waste.

e.g. Consumption of Alcohol,

Amount – the effect of 1 glass versus 5 litres. It is the same with a chemical. One drop may not be harmful but continuous dripping over a period of a week could be very harmful

Concentration – Beer as opposed to wine, there is alcohol in both but there is more alcohol in the wine than in the beer. It is the same with some chemicals

Inherent properties – Methylated spirits versus Beer, one bottle of methylated spirits could kill you but one beer won't because of the type of alcohol in the beer versus that in methylated spirits. It is the same with some chemicals

What is the risk?

There is a risk of spillage of chemicals under the following circumstance:

- During decanting of chemicals such as paint and curing compound etc, some of the chemicals may be spilt on the ground; and/or
- While applying paint or grease you need something to put the tin, paint brush or roller into.
- Temporary storage of chemicals at point of use

What are the correct use, handling and storage of hazardous chemicals?

- Hazardous chemicals should be stored in a roofed, bunded area that is kept locked. Entry of rain water into the bunded area must be prevented.
- All chemicals or chemical contaminated items should be stored within the bunded area. NOT on the wall of the bunded area or outside the bunded area on a concrete slab.
- Empty chemical containers and drums should be stored in the bunded area until removed or smaller containers thrown in the hazardous waste skip e.g. paint tins, paint brushes or rollers.
- Decanting of chemicals should be done within a bunded area as far as possible. A funnel should be used when discharging liquids into a container with a small opening. Spillage of chemicals should always be avoided.
- All chemical containers should be labelled. No food related containers are to be used for the storage of chemicals e.g. cool drink bottles.
- Temporary storage of chemicals at point of use. Chemicals should always be returned to chemical store at the end of the shift.
- Drip trays may be used for the placing of paint brushes and rollers while applying curing compound or shutter oil.
- All these chemicals must have an MSDS (material safety data sheet). This information is required to ensure that all chemicals are stored, handled and disposed of in the best possible way to ensure the safety of staff and the environment.

Correct maintenance of bunded area

Any cracks in the walls or floors and holes in the roof are to be repaired as soon as possible. Bunded area is to be kept free of spillages. Any spillages are to be cleaned up and disposed of as hazardous waste.

TOPIC:	Use, handling and storage of hazardous chemicals
ISSUE:	Incorrect storage of chemicals
	Spillage of chemicals

KERRY SEPPINGS ENVIRONMENTAL MANAGEMENT SPECIALISTS

Hazardous Waste handling, storage and disposal

What is Hazardous waste?
These are wastes that may be dangerous to humans and or the environment if not handled, stored and disposed of correctly. The definition of a hazardous waste is based on the amount, concentration or inherent properties of the waste.
e.g. Consumption of Alcohol,
Amount – the effect of 1 glass versus 5 litres
Concentration – Beer as opposed to wine
Inherent properties – Methylated spirits versus Beer

Name some examples of hazardous wastes generated on site:
Used oils (hydrocarbons), contaminated spill absorbent or sand, paints (hydrocarbons), batteries (acid), fluorescent tubes (mercury) etc.

Correct handling, storage and disposal:
- Should be contained in waterproof and leak proof containers until they are removed from site.
- Should be stored in a dedicated area on site.
- Should not be disposed of with domestic waste, but must be disposed in containers for hazardous waste only.

Why?
- To prevent unnecessary exposure of staff and the environment to harmful wastes
- Reduce amount paid by the company for the disposal of hazardous wastes by ensuring that wastes are separated correctly.

What is an incident?
- Paint tin, fluorescent tube etc. in domestic waste bin.
- Liquid running out of the bottom of the hazardous waste bin.

TOPIC:	Hazardous Waste handling, storage and disposal
ISSUE:	Mixing of wastes
	Incorrect containment of hazardous wastes

KERRY SEPPINGS ENVIRONMENTAL MANAGEMENT SPECIALISTS

Waste segregation and separation

What is waste separation?
This is the separation of hazardous and general waste

Some examples of hazardous wastes generated on site:
Used oils (hydrocarbons), contaminated spill absorbent or sand, paints, batteries (acid), fluorescent tubes (mercury), concrete.

Some examples of general waste generated on site:
Cool drink bottles, chip packets, plastic, leftover food, paper etc.

Correct handling, storage and disposal

- General waste must be disposed of in the green wheelie bins or marked skips provided
- Hazardous waste to be thrown in marked skips provided or 210L marked drums provided in certain areas
- The two must not be mixed!
- If hazardous waste is found in general waste, all must be disposed of as hazardous waste.

Why?

- The two waste types are disposed of at different waste dumps. The general waste dump is built only to deal with general waste. Hazardous waste accidentally disposed of here, could pollute the water and harm the people in the area.
- Disposal of general waste at a hazardous waste site results in an unnecessary cost to the company, as it is a lot more expensive to dispose of hazardous waste than general waste.

What is an incident?

- Mixed waste in any of the skips or bins.

TOPIC:	Waste segregation
ISSUE:	Mixing of wastes
	Incorrect disposal of mixed wastes

KERRY SEPPINGS ENVIRONMENTAL MANAGEMENT SPECIALISTS

Wasting drinking water

What are examples of wasting of drinking water?

- Not turning a tape off properly after use.
- Poor maintenance of water fittings resulting in continuous leaking or dripping.
- Overfilling and / or overflowing of water containers.

Why should we not waste drinking water?

- Good, clean water is scarce in South Africa and expensive to produce and must therefore be used sparingly. Remember anything we put into the water (river, lake or dam) has to be removed before we can drink the water. The more we pollute the water the more expensive it becomes to clean it.

Ways to save water:

- Don't drink directly from the tape, rather fill a glass with water, switch the tape off and drink from the glass.
- Report any maintenance issues with water fittings or lines, as soon as possible.

What is an incident?

- Dripping or leaking tapes or water connections.
- Overflowing of containers that contain water.

TOPIC:	Wasting drinking water
ISSUE:	Scarcity of drinking water
	Expense to produce drinking water

KERRY SEPPINGS ENVIRONMENTAL MANAGEMENT SPECIALISTS

Protection of Sensitive Areas

Examples of sensitive areas

- Protected Vegetation
- Watercourses

Why should we protect these areas?

- To prevent degradation of the watercourses as it is a scarce freshwater resource and must therefore be protected. The more we pollute the water the more expensive it becomes to clean it.

Ways to save these areas?

- Indigenous trees must be clearly demarcated. Employees and workers must not cause damage to these trees.
- Report any damage to these sensitive areas.
- No dumping is in the watercourses or surrounding environment.

All sensitive areas must be clearly demarcated as no-go areas. Only alien control maintenance staff and rehabilitation staff are allowed to access these areas in order to protect the area. Site staff must be made well aware of these areas' locations. If an area that is not included above is identified and is sensitive it must also be demarcated.

TOPIC:	Protection of Sensitive Areas
ISSUE:	Damage to sensitive areas

KERRY SEPPINGS ENVIRONMENTAL MANAGEMENT SPECIALISTS

Cultural Heritage

What happens when an object is found on site?

-Stop work

-Call a supervisor

All the No Go areas must be demarcated, no site staff are allowed to access these areas in order to protect the cultural heritage of the area. Site staff must be made well aware of these areas' locations. If an area that is not included above is identified and is sensitive it must also be demarcated.

TOPIC:	Cultural Heritage
ISSUE:	Damage to cultural areas

Appendix 8: Training Record

This is record of training carried out on site.

Date of Training	Name of Attendee	Signature	Details of Training course	Training provided by (name)

Appendix 9: Draft Stormwater Management Plan

KERRY SEPPINGS ENVIRONMENTAL MANAGEMENT SPECIALISTS

Stormwater Management Plan

- **Applicable Legislation and Controlling Documentation**

  - Environmental Management Programme (EMPr) prepared by Messrs Kerry Seppings Environmental Management Specialists cc (KSEMS)
  - National Water Act of 1998 (Act No. 36 of 1998)
  - OHS act 85 of 1993, Construction regulations (GNR 1010 Para 11)
    Occupational Health and Safety Act and Regulations (85 of 1993)
    Water Services Act of 1997 (Act no. 108 of 1997).

- **Attached Drawings**

  - None

- **Major Equipment Required**

  - None

- **Further Attachments**

  - None

STORMWATER MANAGEMENT PLAN FOR THE CONSTRUCTION OF A PEDESTRIAN BRIDGE OVER THE BABOYI RIVER, KWAZULU-NATAL.

1) Description

The correct management of stormwater and the control of erosion during the construction phase of the project.

2) Programme

A drainage system must be put in place which must be planned and approved by the engineer. Stormwater run-off resulting from the construction activities must be estimated and the drainage system assessed accordingly by the engineers. Key elements are the reduction of flow velocity which could cause erosion problems on site, avoiding points of concentrated flow and preventing contamination of stormwater and consequently the natural environment.

3) Construction sequence and method

All existing stormwater systems (e.g. drainage lines) in this area discharge to a drainage line. Discharging stormwater into natural watercourses is only acceptable under certain conditions. No pollutants i.e. soaps, cement, paints or any other domestic pollutants are allowed to enter the natural system. Run off from cement mixing activities must not enter stormwater or any watercourse untreated.

The following conditions, as per the EMPr, should be adhered to at all times during construction:

- There should be limited storage of sand and cement on the site as this could contaminate stormwater during construction.
- All potential stormwater contaminants must be located in a bunded area in the site camp to prevent run-off into the surrounding environment.
- Any runoff from the construction site must not be allowed to cause excessive erosion or sediment input into the surrounding environment.
- Flow of stormwater must not be impeded during construction.
- Contamination of stormwater must be avoided at all times.
- A drainage system must be established for the construction camp. The drainage system must be regularly checked to ensure an unobstructed water flow.
- The use of high velocity stormwater pipelines should be avoided in favour of open, high friction, semi-permeable channels wherever feasible.
- During construction unchannelled flow must be controlled to avoid soil erosion. Where large areas of soil are left exposed, rows of straw / hay or bundles of cut vegetation should be dug into the soil in contours to slow surface wash and capture eroded soil. The spacing between rows will be dependent on the slope. Alternatively, erosion controls such as silt fencing or sandbags must be implemented.
- Any incidents involving stormwater contamination must be reported to the ECO and the on site SHE Officer for the purposes of maintaining the site's incident records.
- Construction activities should ideally be undertaken in the winter months when storms are less frequent.
-

4) Resources

The resources required for stormwater control will be dependent on the impacts of the flow velocity from the stormwater and should be sourced accordingly. In the event of minor channel cutting or erosion from stormwater, haybales, silt fencing or other suitable controls must be sourced to prevent further erosion and the input of sediment the surrounding environment. In the case of major erosive action from severe weather events, structures such as gabion basket or reno mattresses may be required to control the negative impacts of stormwater. The contractor should consult with the environmental officer, SHE Officer or the ECO to establish the best form of erosion control should it be necessary.

5) Environmental

Any eroded banks or pieces of land must be quickly repaired and the relevant erosion control measures implemented to reduce the amount of sediment entering the natural environment. Rehabilitation of exposed areas must be undertaken as soon as work is complete in that area in order to assist in the prevention of erosion by stormwater.

6) Health and Safety

Stormwater must not be allowed to artificially pond onsite, preventing the potential for waterborne disease.

Appendix G – Other Information

Public Participation Process

- Signboards
- Notification of Landowner
- Notification of Authorities
- RRTF Members consent to inform local community
- Newspaper adverts
- Distribution of BID and BID
- Communications with I & APs
- Registered I & APs
- Public Meeting Minutes, Distribution and Attendance Register
- Notification of release of Draft BAR

Signboards:

Placement of the notification signboard along the informal footpath leading to the proposed bridge location on the northern riverbank.

Placement of the notification signboard along the informal footpath leading to the proposed bridge location on the southern riverbank.

Notification of Landowner

PROJECT TITLE Baboyi River Pedestrian Bridge
Venue

Date 2012/08/13
Time 14:30

Please print names clearly!

Dept / company / private	Name	Signed	Contact no	e-mail address
Nyenyezi Trust CPA	Ayanda CELE		0767 505 337	AYANDACELE.2012@g.mail.com
	MKHOMA B.V.		0835809713	
	NCAMA S.M.		0766346342	

KERRY SEPPINGS
ENVIRONMENTAL MANAGEMENT
SPECIALISTS

Date: 13/09/2012

Re: Distribution of Information

I AYANDA COLE as the RRTF member / Induna/ Inkosi/ Ward Councillor of the area agree to inform the community of the proposed bridge construction. They will be informed of the concerns raised in the meeting with the Environmental Assessment Practitioner and community representatives. Should further issues be raised by the community these will be forwarded on to the EAP to be reviewed and assessed in the Basic Assessment Report.

Signature: _____ Place: NYENYEZI

Thank you for your assistance.

Regards,

Colin Holmes

www.ksems.co.za
Kerry Seppings Environmental Management Specialists cc

Phone: 031 765 6636 Fax: 031 765 6632 Cell: 082 823 1844 E- Mail: kerry.seppings@telkomsa.net
Unit 9 Bristol House. 1a Delamore Road, Hillcrest 3610
Company Registration no: 1999/049452/23
Members: K.A. Stanton (Director)

FEES

Stamp Duty............

...R 95,00.........

....

....

2005-04-18

T 17509/05

Prepared by me

CONVEYANCER

Poyo TP

DEED OF TRANSFER

BE IT HEREBY MADE KNOWN :

THAT THOBA PORTIA POYO of Pietermaritzburg, Conveyancer, appeared before me, the Registrar of Deeds for Province of KwaZulu-Natal, at Pietermaritzburg he, the said Appearer being duly authorised thereto by a Power of Attorney granted to him by:-

ELCSA PROPERTY MANAGEMENT COMPANY

Registration Number: 1968/007444/08

(Association incorporated under Section 21 of the Companies Act

No. 61 of 1973)

Signed at PIETERMARITZBURG on the 07TH day of ~~AUGUST 2004~~ MARCH 2005

14

AND the Appearer declared that its principal had truly and legally donated on the 7TH JANUARY ~~November~~ 2005 ~~2001~~, the hereinafter mentioned property to the hereinafter mentioned transferors which donation was accepted in writing on 7 November 2001 and that he in his capacity aforesaid did, by these presents, cede and transfer, in full and free property to and on behalf of:

NYENYEZI COMMUNAL PROPERTY ASSOCIATION
Registration Number: CPA/04/0672/A

Its successors in title or assigns the following property: -

REMAINDER OF THE FARM LOT 35 NO 4956
REGISTRATION DIVISION ET
PROVINCE OF KWAZULU-NATAL
IN EXTENT 77, 4233 (SEVEN SEVEN COMMA FOUR TWO THREE THREE) HECTARES

First transferred by Deed of Grant No. 4956/1892 with diagram SG No. GV No 88/7 relating thereto and held by Deed of Transfer No. T26896/92

THIS SAID PROPERTY IS TRANSFERRED:

subject to the conditions contained in Deed of Grant No 4956 dated 21 September 1892 in so far as still in force and applicable and more particularly to condition (c) thereof reading as follows: -

A. (c) "The said lands shall be liable without compensation to any proprietor or to any sub-grantee or lessee thereof, to the entry thereon by any person by order of the Colonial Government, to remove therefrom any coal or any other mineral that may be found thereon and also to the right of the Colonial Government to carry out such workings on or in the said lands as may be required for the removal or utilisation of such coals or other minerals, and also reserving to the Colonial Government the right of entry on said lands, and removing therefrom such materials, not including timber or wood, as may from time to time be required for the construction and repairs of any part of any public road running through the said lands."

B. Subject to a water pipe line servitude 1,83 metres wide lettered ab on diagram G V No 88/7 in favour of the Lower South Coast Regional Water Services Corporation as created in Notarial Deed of Servitude No 92/1957S.

C. Subject to a pipe line servitude 2 metres wide the south-western boundary whereof is lettered npq on diagram G V No. 88/7 in favour of the Lower South Coast Regional Water Services Corporation as created in Notarial Deed of Servitude No. K1328/77.

D. Subject to an electrical power transmission line servitude lettered fgh and jkm on diagram G V No. 88/7 in favour of the Electricity Supply Commission as created in Notarial Deed of Servitude No. K142/1976.

E. Subject to electrical power transmission line servitudes the centre lines whereof are lettered ab and de on diagram G V No. 88/7 in favour of the Electricity Supply Commission as created in Notarial Deed of Servitude No. K1285A/1971.

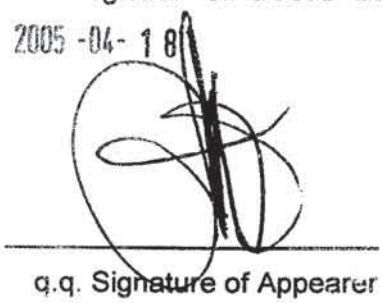
WHEREFORE all right, title and interest which the said **ELCSA PROPERTY MANAGEMENT COMPANY, NO.: 1968/07444/08, (Association incorporated under Section 21 of the Companies Act No. 61 of 1973)** heretofore had to the premises did in consequence also acknowledged them to be entirely dispossessed of and disentitled to the same and that by virtue of these presents, the said

NYENYEZI COMMUNAL PROPERTY ASSOCIATION
Registration Number: CPA/04/0672/A

its successors in title or assigns now are and henceforth shall be entitled thereto conformably to local custom, the State however reserving its rights, and finally acknowledging the value of the aforesaid property to be the sum of R294 000.00 [Two hundred and Ninety Four Thousand Rand]

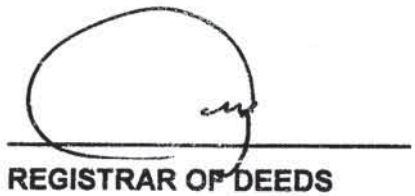
IN WITNESS WHEREOF, I the said Registrar, together with the Appearer q.q. have subscribed to these presents and have caused the Seal of Office to be affixed thereto.

THUS DONE AND EXECUTED at the Office of the Registrar of Deeds at Pietermaritzburg, in the province of KwaZulu-Natal, on 2005 -04- 18



q.q. Signature of Appearer

in my presence,



REGISTRAR OF DEEDS

Notification of Authorities:

KSEMS

From: KSEMS <kerry.seppings@telkomsa.net>
Sent: 09 October 2012 12:48 PM
To: johan.vanderwalt@ugu.gov.za; 'liziswa@hcm.gov.za'; 'pillayr@dwa.gov.za'; 'wisemanr@daff.gov.za'; WisemanR@nda.agric.za; 'thambud@kznwildlife.com' (thambud@kznwildlife.com); ''Phumelela Dlamini' (dlaminip@kznwildlife.com)'; Bernadetp@amafapmb.co.za; 'archaeology@amafapmb.co.za' (archaeology@amafapmb.co.za); 'Carolyn Schwegman'; wardn@dwa.gov.za
Subject: Samani Baboyi River Pedestrian Bridge-Notice of Application for Environmental Authorisation
Attachments: Boboyi English Signboard.pdf; Zulu Signboard1.pdf; Samani Baboyi Bridge_BID.pdf

Dear All

Please find attached a copy of the Notice of Application for Environmental Authorisation for the proposed construction of a concrete pedestrian bridge structure across the Boboyi River within the Hibiscus Coast Local Municipality.
Kindly also find attached the Background Information Document for the above mentioned project.

Should you wish to receive information relating to this Basic Assessment process, please register as an I & AP.

Should you have any queries please feel free to contact us.

Kind Regards

Ronell Kuppen
Junior Environmental Consultant

Kerry Seppings Environmental Management Specialists cc
Postal P.O. Box 396; Gillitts; 3603
Phone 031 7691578
Cell 079 3222957
Fax 086 5355281
Website www.ksems.co.za

RRTF Members consent to inform local communities:

PROJECT TITLE Baboyi River Pedestrian Bridge
Venue Hibiscus Coast Municipality

Date 24/07/12
Time 08:00

Please print names clearly!

Dept / company / private	Name	Signed	Contact no	e-mail address
Ward 20 Concillor	Shadrack Sello Morafe		0825172680	
Ndwalane Traditional Council (Deputy)	Temba		0718624394	temba.zondi01@gmail.com
	(Steering committee) for development			
	Inkosi Nelson		0718624394	sazi.ndwalane@gmail.com

ENVIRONMENTAL MANAGEMENT SPECIALISTS

24th July 2012

Re: Distribution of Information

I THEMBA JOHANNES ZONDI as the RRTF member / Induna/ Inkosi/ Ward Councillor of the area agree to inform the community of the proposed bridge construction. They will be informed of the concerns raised in the meeting with the Environmental Assessment Practitioner and community representatives. Should further issues be raised by the community these will be forwarded on to the EAP to be reviewed and assessed in the Basic Assessment Report.

Signature: _____ Place: PORT SHEPSTONE

Thank you for your assistance.

Regards,

Colin Holmes

www.ksems.co.za
Kerry Seppings Environmental Management Specialists cc
Phone 031 765 6636 Fax: 031 765 6632 Cell. 082 823 1844 E- Mail: kerry.seppings@telkomsa.net
Unit 9 Bristol House 1a Delamore Road, Hillcrest 3610
Company Registration no. 1999/049452/23
Members: K.A. Stanton (Director)

Newspaper Adverts:

National Healthcare IT Company based in Margate is seeking the Services of an I T Support Engineer

Key Competency Requirements:
- Grade 12 certificate
- A+MCSE certified qualification
- Min of 2yrs experience of healthcare IT systems advantageous

Key Job Requirements:
- Technical telephonic support
- Medical Aid queries
- Must be able to work in a team environment
- Respond to customer queries with urgency and precision

Additional Requirements:
- Good interpersonal skills
- Good communication skills
- Must be fully bilingual in English and Afrikaans

Please fax a 2 page CV to 086 648 0791

To advertise in our classifieds section call us at 039 682 1010

Bicyle Mechanic Wanted

Experienced bicycle mechanic required at Uvongo based cycle company. Salary neg based on experience. Fax CV to 086 592 5756

Admin Assistant required. Must be computer literate with knowledge of Word. Please Fax CV 039 315 5700

Home Based Telesales Agents Needed

Looking for Telesales agents, no experience is necessary, but would be a added advantage , Must have own computer, telephone line, and internet access, as well as be fluent in English and Afrikaans Basic R6000 + Commission Please Contact Vanessa on 039 3150944 / 0788 943325

Lesisaziso sihishwa ngaphansi komthetho we – EIA, ka 2010 (Umthetho wesigaba 5 wokuphathwa nokunakekelwa kwemvelo ka-1998, njengoba kuchibiyelwe) sizofakwa eMnyangweni weZolimo, ezeMvelo nokuthuthukiswa kwezindawo zaseMakhaya KwaZulu-Natali.

Umnyango wezokuthutha uhlongoza ukwakha ibhuloho likakhonkolo labahamba ngezinyawo elizokwela umfula Boboyi kumasipale wase Hibiscus Coast oyingxenye yengxenye kamasipela Ugu (Isigabe 1). Lelibhuloho elizokwakhiwa liyingxenye yombhidlango oqhubekaya we DOT's wokuphucula izindawo zasemakhaya kwezokutha nokuhamba kwabezinyawo kuphephe futhi kube lula, kuzoba lula nokufinyelela ezikoleni kubafundi Imisebenzi yezindawo ezihlongoziwe imi kanje 30°'44'38.63"S kanje 30°'23'34.04"E.

Lomsebenzi udinga ukufakelwa isicelo ngokuhambisana nokubhekela bonke bezinhlangano ezinothando kanye nalezo ezithintekayo (I&APs) bayamenywa ukuba babhalise kulowo obhalwe ngezansi zingakapheli izinsuku eziyishumi nane sikhishiwe lesisaziso. Ukumelwa mayelana nalesisicelo singenziwa ngokushaya ucingo, ifeksi noma i-email. Ukuze uqhubeke nokuthola ulwazi ngokuphathelene nalomsebenzi, kufanele ubhalise njenge I & AP. Umhlangano ungaba khona uma ufakelwa isicelo. Isikhathi nendawo somhlangano siyoqinisekiswa kulabo ababhalisile (I&APs).

Kerry Seppings Environmental Management Specialists cc

Ongamxhuma	:	Colin Holmes / Ronell Kuppen
Ucingo	:	072 291 2313 / 031 769 1578
Feksi	:	086 535 5281
E-mail	:	kerry.seppings@telkomsa.net
Website	:	www.ksems.co.za

Lesisaziso sihishwa ngaphansi komthetho we – EIA, ka 2010 (Umthetho wesigaba 5 wokuphathwa nokunakekelwa kwemvelo ka-1998, njengoba kuchibiyelwe) sizofakwa eMnyangweni weZolimo, ezeMvelo nokuthuthukiswa kwezindawo zaseMakhaya KwaZulu-Natali.

Umnyango wezokuthutha uhlongoza ukwakha ibhuloho likakhonkolo labahamba ngezinyawo elizowela umfula uMalukhaka kumasipale wase Mzumbe oyingxenye yengxenye kamasipela Ugu (Isigabe 1), Lelibhuloho elizokwakhiwa liyingxenye yombhidlango oqhubekayo we DOT's wokuphucula izindawo zasemakhayo kwezokutha nokuhamba kwabezinyawo kuphephe futhi kube lula, kuzoba lula nokufinyelele ezikoleni kubafundi Imisebenzi yezindawo ezihlongoziwe imi kanje 30°'44'38,63"S kanje 30°'23'34.04"E.

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Kerry Seppings Environmental Management Specialists cc

Ongamxhuma	:	Colin Holmes / Ronell Kuppen
Ucingo	:	072 291 2313 / 031 769 1578
Feksi	:	086 535 5281
E-mail	:	kerry.seppings@telkomsa.net
Website	:	www.ksems.co.za

VACANCY

GRADUATE HR TRAINEE – UG

Illovo Sugar Ltd – Sezela has an opportunity for a Graduate HR Trainee - in the Human Resources Department. This position is meant to give the incumbent an intensive practical HR generalist grounding in line with Sezela HR succession pipeline. It is suitable for an individual who is passionate about people management and interested in building a solid HR career foundation in an industrialized environment.

REQUIREMENTS

- Possession of a recognized tertiary HR qualification is essential while a post graduate HR qualification will be an added advantage.
- Previous HR Learnership or Internship experience in an industrial environment is highly recommended
- Above average computer literacy in Microsoft word, excel, outlook is a prerequisite
- Willingness; commitment to learn and the contribution ethic are essential attributes
- Zulu language proficiency is essential
- Good verbal and written communication are a prerequisite
- Confident self starter with ability to use initiative is critical
- Ability to maintain strict confidentiality and good corporate governance is a necessity
- Good planning, organizational and interactive skills
- Good knowledge of modern HR theory and practice will be an added advantage
- Basic knowledge of labour law is highly recommended
- Unendorsed drivers license will be an added advantage

Interested individuals are invited to send internal applications to:

The Snr HR Officer
Illovo Sugar Ltd – Sezela
P O SEZELA
4215
Fax No.: 039 975 8294
Email: snzimande@illovo.co.za

CLOSING DATE: 24 August 2012

Should you not receive any response within a month from the closing date please consider your application as having been unsuccessful.

AUCTION
IN THE KWAZULU-NATAL HIGH COURT, DURBAN REPUBLIC OF SOUTH AFRICA
Case No. 17132/2009
FIRSTRAND BANK LIMITED
Plaintiff
and
ANDRIES WILHELMUN JACOBUS VILJOEN
First Defendant
MAGDALENA LOUISE VILJOEN
Second Defendant

NOTICE OF SALE

The property will be sold in execution, by the Sheriff of PORT SHEPSTONE on the 3rd day of SEPTEMBER 2012 at 10H00 at THE SHERIFF'S OFFICE, 17A MGAZI AVENUE, UMTENTWENI CERTAIN: A UNIT CONSISTING OF : (A) SECTION NO 28 AS SHOWN AND MORE FULLY DESCRIBED ON SECTIONAL PLAN NO SS302/2006 IN THE SCHEME KNOWN AS SANTORINI IN RESPECT OF THE LAND AND BUILDING OR BUILDINGS SITUATE AT MARGATE IN THE HIBISCUS COAST MUNICIPALITY AREA, OF WHICH SECTION THE FLOOR AREA, ACCORDING TO THE SAID SECTIONAL PLAN IS 202 (TWO HUNDRED AND TWO) SQUARE METRES IN EXTENT; AND (B) AN UNDIVIDED SHARE IN THE COMMON PROPERTY IN THE SCHEME APPORTIONED TO THE SAID SECTION IN ACCORDANCE WITH THE PARTICIPATION QUOTA AS ENDORSED ON THE SAID SECTIONAL PLAN HELD UNDER DEED OF TRANSFER ST 23097/2006 2. AN EXCLUSIVE USE AREA DESCRIBED AS GARAGE AREA NO G4 MEASURING 38 (THIRTY EIGHT) SQUARE METRES BEING AS SUCH PART OF THE COMMON PROPERTY COMPRISING THE LAND AND THE SCHEME KNOWN AS SANTORINI IN RESPECT OF THE LAND AND BUILDING OR BUILDINGS SITUATE AT MARGATE IN THE HIBISCUS COAST MUNICIPALITY AREA AS SHOWN AND MORE FULLY DESCRIBED ON SECTIONAL PLAN NO. SS302/2006 HELD UNDER NOTARIAL CESSION OF EXCLUSIVE USE RIGHTS NO SK 2205/2006 AS HELD BY THE DEFENDENT UNDER DEED OF TRANSFER NUMBER ST 23097/2006, situated at UNIT 407A, SANTORNI, MARINE DRIVE, MARGATE. **ZONING:** RESIDENTIAL The property is improved, without anything warranted by detached residential single storey dwelling under concrete roof consisting of: 1 lounge, 1 dining room, 1 kitchen, 3 bedrooms, 1 bathroom, 2 showers, 2 wc's and 1 out garage. Nothing in this regards is guaranteed and the property is sold voetstoets. The sale shall be subject to the terms and conditions of the High Court Act and the Rules made thereunder and to the provisions of the Consumer Protection Act 68 of 2008 and the regulations published thereunder in the Government Gazette No. 34180 published on the 1st April 2011, regulation No. 293 whereof a copy can be obtained at www.greengazette. co.za. The Purchaser (other than the Execution Creditor) shall pay a deposit of 10% of the purchase price in cash at the time of the sale. The full conditions of sale and the rules of auction may be inspected at the offices of THE SHERIFF'S OFFICE, 17A MGAZI AVENUE, UMTENTWENI, 24 hours prior to the sale. **Take further notice that: 1.** This sale is a sale in execution pursuant to a judgement obtained in the above court. **2.** The Rules of Auction is available 24hours before the auction at the office of the sheriff THE SHERIFF'S OFFICE, 17A MGAZI AVENUE, UMTENTWENI **3.** Registration as a buyer is a pre-requisite subject to the conditions inter alia: **(a)** Directive of the Consumer Protection Act 68 of 2008; **(b)** FICA-legislation i.r.o proof of identity and address particulars; **(c)** Payment of a registration fee of R10 000.00 in cash; **(d)** Registration conditions. The Auction will be conducted by the NICHOLAS B NXUMALO. Advertising costs at current publication rates and sales costs according to court rules apply. DATED at DURBAN this 1 AUGUST. 012.WOODHEAD BIGBY & IRVING, Ref: AR/Tch/15F4643B9

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412 Langalebalele Street [LONG MARKET STREET] **PIETERMARITZBURG** Tel 033 342 8886
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Tel: 031 301 7774/5 FAX.086 225 8889 Tel: 031 262 6216 • Website: www.globaleducationandtraining.com

711 Public Notices

Notice is hereby given that an application for environmental authorization in terms of the EIA Regulations, 2010 (Regulations in terms of Chapter 5 of the National Management Act, 1998 as amended)will be lodged with the KwaZulu-Natal Department of Agriculture, Environmental Affairs and Rural Development.

The Department of Transport propose to construct a concrete pedestrian bridge structure across the Boboyi River within the Hibiscus Coast Local Municipality which forms part of the Ugu District Municipality (Figure 1). The proposed bridge is part of DOT's on-going strategy to improve rural mobility and provide safer and more efficient pedestrian movement in the rural areas. It will also improve access to the nearby schools. The co-ordinates for the proposed location of the bridge are 30°44'38.63"S and 30°23'34.04"E.

The proposed activity requires application subject to a basic assessment and all interested and affected parties (I &APs) are invited to register with the contact person below within 14 days of the issuing of this notice. Representations with respect to this application may be made by phone, fax or e-mail. Please note that in order to continue to receive information regarding this project, you must register as an I & AP. A meeting may be held if requested. The time and venue of the meeting will be confirmed with registered I & APs

Kerry Seppings Environmental Management Specialists cc
Contact: Colin Holmes / Ronell Kuppen
Phone : 031 769 1578 /Fax : 086 535 5281
E-mail: kerry.seppings@telkomsa.net
Website: www.ksems.co.za

711 Public Notices

Notice is hereby given that an application for environmental authorization in terms of the EIA Regulations, 2010 (Regulations in terms of Chapter 5 of the National Environmental Management Act, 1998, as amended) will be lodged with the KwaZulu-Natal Department of Agriculture, Environmental Affairs and Rural Development.

The Department of Transport propose to construct a concrete pedestrian bridge structure across the Malukhakha River within the Umzumbe Local Municipality which forms part of the Ugu District Municipality (Figure 1). The proposed bridge is part of DOT's on-going strategy to improve rural mobility and provide safer and more efficient pedestrian movement in the rural areas. It will also improve access to the nearby schools. The co-ordinates for the proposed location of the bridge are 30°34'06.97"S and 30°28'48.93"E.

The proposed activity requires application subject to a basic assessment and all interested and affected parties (I &APs) are invited to register with the contact person below within 14 days of the issuing of this notice. Representations with respect to this application may be made by phone, fax or e-mail. Please note that in order to continue to receive information regarding this project, you must register as an I & AP. A meeting may be held if requested. The time and venue of the meeting will be confirmed with registered I & APs

Kerry Seppings Environmental Management Specialists cc
Contact: Colin Holmes / Ronell Kuppen
Phone : 031 769 1578/ Fax :086 535 5281
E-mail : kerry.seppings@telkomsa.net
Website: www.ksems.co.za

Royal in line for top tourney

IQBAL KHAN

ROYAL Durban Golf Club is the front-runner to stage the inaugural €1 million (R10.56m) Nelson Mandela Championship from December 9-12.

This emerged from a media briefing early yesterday when the new event – co-sanctioned by the European Tour – was announced at the Nelson Mandela Children's Fund headquarters in Johannesburg.

The other venue in line to stage the latest offering for golf enthusiasts on the Sunshine Tour is Humewood Golf Club in Nelson Mandela Bay.

It was a day of major announcements from the Sunshine Tour as not only the Nelson Mandela Championship was added to the calendar but another new co-sanctioned European tour event, the Tshwane Open, scheduled to be played at the Els Club, Copperleaf from February 28-March 3, 2013, will become the sixth co-sanctioned European Tour event in South Africa.

The other four co-sanctioned European Tour events staged in South Africa are the South African Open, the Alfred Dunhill Championship, the Africa Open and the Jo'burg Open. South Africa now has more European Tour events on its annual schedule than any other country.

Senior officials at Royal Durban were ecstatic when they heard the news that their club was in the running to stage the competition.

"Who wouldn't be overjoyed," was the first reaction of club captain, Kevin Dunkley, early today.

"It will be an honour and a privilege to stage an event named after the world's finest statesman.

"We have our fingers crossed and hope negotiations go well in the ensuing days."

Peter DeVilliers, general manager of Royal Durban, said he had heard of the news late yesterday and said his club would welcome the chance to host the championship.

"It's great to be in line to stage an event of this magnitude.

"We are excited… but we will have to await a final decision from the Sunshine Tour."

The €1m (minimum) 72-hole Nelson Mandela Championship will be the first event on the 2013 European Tour international schedule and will also launch the 2013 Race to Dubai.

The field of 156 professionals will be made up of equal numbers from the Sunshine and European tours and will feature some of the world's leading and up-and-coming professional golfers

The Vodacom Players' Championship was the last Sunshine Tour event held at the club in 1999, when Chris Davison was crowned champion.

Even before the celebration of these two huge announcements could subside, the Sunshine Tour announced that the Alfred Dunhill Championship at Leopard Creek from December 13-16 this year would carry a prize fund of €1.5m; that's an increase of 50 percent from last year when Umkomaas Golf Club's professional, Garth Mulroy, won the event.

The Tshwane Open and the Alfred Dunhill Championship will be the richest events on the Sunshine Tour – both carrying €1.5m in prize money – and the winners of the two events will receive two-year exemptions on the European Tour.

"We're very pleased that the relationship with our longest-standing sponsor – Alfred Dunhill – on the Sunshine Tour continues," said Sunshine Tour's executive director, Selwyn Nathan.

"And we're delighted that one of the Sunshine Tour's best tournaments now carries a reward for the winner which is appropriate for the prestige of the event."

The addition of the Nelson Mandela Championship and the Tshwane Open means that the Sunshine Tour's summer schedule for 2012-2013 will be more exciting than ever.

Bjorn calls for Ryder Cup unity

GOLF

MARTIN KAYMER & THOMAS BJORN

CLOSE team bonds have not always been a hallmark for the US at past Ryder Cups, but that is likely to change in a big way at this year's edition, according to European vice-captain Thomas Bjorn.

While Europe could previously bank on tighter team unity in the biennial competition because of relationships forged on the smaller and more sociable European Tour, Bjorn believes the 2012 American line-up will set new standards for camaraderie.

"They've got a lot of guys who know each other really well – like Bubba (Watson) and Rickie Fowler and Hunter Mahan," Bjorn, a 13-time winner on the European Tour, told Reuters.

"They spend a lot of time together so they are really good friends. That's been one of our strengths in the past but I see a lot of that in their team now.

"It won't be as difficult for them to feel the team environment. It's a lot easier when you've got guys that really do get on well together."

Bjorn, a member of the triumphant European Ryder Cup teams in 1997 and 2002, felt the US PGA Tour had become a friendlier circuit in recent years.

"In Europe, we stick together and spend a lot of time together across nationalities while over here, in the past, it seems like you go and do your own thing… you travel with your family," the 41-year-old Dane said.

"But I see players spending time together more and more now over here now and that will stand the US in very good stead at the Ryder Cup."

Eight of the 12 spots on the US team have already been secured and, in Tiger Woods, Phil Mickelson, Watson, Webb Simpson, Keegan Bradley, Zach Johnson, Jason Dufner and Matt Kuchar, Bjorn sees a burning desire for the Cup to be wrested back from Europe.

"They've got an unbelievable team this year and they are all playing very well," said Bjorn, who along with Darren Clarke and Paul McGinley will serve as an assistant to European Ryder Cup captain Jose Maria Olazabal.

"After a period where American golf didn't look strong, they look extremely strong this season… they look like they want really hard to play in this Ryder Cup.

"That's something that has… been lacking a little bit in the past but it looks like they really want it."

Europe have won the trophy eight times in the last 16 Ryder Cups since their selection was expanded to include continental players in 1979 after years of American domination over British and Irish teams.

Captained by Colin Montgomerie, the Europeans triumphed by a slender margin of 14½ points to 13½ in the most recent edition at Celtic Manor in Wales but they will have to contend with US crowds when they defend the trophy at Medinah Country Club outside Chicago from Sept. 28-30.

"Home advantage is important," said Bjorn. "Once you start building momentum then it becomes extremely difficult for the away team to get it back because the crowds get very loud and very much behind their team and everyone gets on such a high.

"The one thing that always amazes me in the Ryder Cup, as much pressure as there is, is that it's probably where you see the best golf ever played because that momentum builds in people.

"You see players playing the best golf of their lives in the Ryder Cup. That's where the home advantage can come in. If you can build momentum, it just never seems to stop."

The 12 automatic qualifiers on the European team were confirmed on Sunday after this week's Johnnie Walker Championship at Gleneagles in Scotland when Ian Poulter and Nicolas Colsaerts were added.

Europe: Rory McIlroy (N Ire), Justin Rose (Eng), Paul Lawrie (Sco), Graeme McDowell (N Ire), Francesco Molinari (Ita), Luke Donald (Eng), Lee Westwood (Eng), Sergio Garcia (Spa), Peter Hanson (Swe), Martin Kaymer (Ger), Ian Poulter (Eng), Nicolas Colsaerts (Bel) – Reuters

Els leads local challenge

FIVE South Africans will feature in this weekend's Deutsche Bank Championship in Norton, Massachusetts, starting tomorrow.

Ernie Els, winner of The Open Championship earlier this year, is in No 18 spot on the latest standing after last weekend's Barclays Championship (won by Nick Watney) following by Louis Oosthuizen, who is in No 21.

Tim Clark, who seems to have got his game back on song after a long injury lay-off, is listed at No 35 – he was at No 54 before the Barclays Championship. Charl Schwartzel is No 71 on the list while Rory Sabbatini is at No 94. After this weekend's Deutsche Bank Championship, the field for the next FedExCup event – the BMW Championship – will be cut to the Top 70 players. This weekend's defending champion is Webb Simpson.

Justin Rose, who celebrated his return to the European Ryder Cup team, will defend his crown at the BMW Championship at crocked Stick Golf Club in Carmel, Indiana. The prize purse for that event is $8-million with the winner taking home $1.44-million.

Course reviews

FOR many years the Compleat

Iqbal Khan

PAR for the COURSE

Golfer, one of South Africa's leading magazines, has been reviewing courses around the country and the world. Recently they took a look at five local courses and one of them was KwaZulu-Natal's very own Simbithi on the North Coast.

The others were Legend Golf and Safari, Pinnacle Point, Ebotse and Hans Merensky. So if you are out travelling here's an opportunity of sampling some of these top local courses.

Golf and Safari

SET in the safari province of Limpopo, Legend consists of 19 very interesting golf holes – as well as a tribute course. The championship course comprises 18 holes designed by different golfing professionals, from Trevor Immelman and Retief Goosen to Jim Furyk and Sergio Garcia.

The Extreme 19th hole is easily the most unique golf hole in the country. Those wishing to play it need to take a helicopter up to the summit of Hanglip Mountain, where a tee box has been carved into the mountain top. Form here, golfers hit driver to the Africa-shaped green some 400 metres below.

The hole plays 400 metres in length but a good crack with the driver will give you a shot – if you hit it straight!

The resort has its own tribute course, with replica holes of some of the most famous par threes in golf, including Augusta's 12th and 16th holes, Troon's 'Postage Stamp' and TPC Sawgrass' island-green 17th.

www.legendgolfsafari.com

PINNACLE POINT

Set on the cliffs of Mossel Bay, this course has always drawn attention, but anyone who has played here will tell you it ranks as one of the top courses in the country, if not the world. Amazing views, shots over sheer cliffs and a fabulous design all contribute to this memorable experience.

www.pinnaclepointestate.co.za

EBOTSE

It's a links course – in Benoni! Not just any links course, mind you, but an absolute cracker. If you transplanted this layout onto the coast, people would be raving about it as one of the greatest in the land. This course is definitely worth a visit.

www.ebotsegolf.com

HANS MERENSKY

One of the best parts about playing golf in South Africa is seeing wildlife near the courses. In the case of Hans Merensky, you're as likely to see the animals on the course itself as the game wander freely across the layout. Golf on the wild side!

www.hansmerensky.com

SIMBITHI

Something new to South Africa – Simbithi's 'executive course' concept may well catch on. Although a full 18 hole course, Simbithi is made up mostly of par threes, with a few par fours and a par five thrown in for good measure. If you're thinking it's a mashie course, you'd be wrong – we are talking championship quality greens and fairways and you will end up using every club in your bag. And you finishe in under three hours. – what a pleasure.

www.simbithi.com

Distribution of BID and BID

KSEMS

From: KSEMS <kerry.seppings@telkomsa.net>
Sent: 09 October 2012 12:48 PM
To: johan.vanderwalt@ugu.gov.za; 'liziswa@hcm.gov.za'; 'pillayr@dwa.gov.za'; 'wisemanr@daff.gov.za'; WisemanR@nda.agric.za; 'thambud@kznwildlife.com' (thambud@kznwildlife.com); ''Phumelela Dlamini' (dlaminip@kznwildlife.com)'; Bernadetp@amafapmb.co.za; 'archaeology@amafapmb.co.za' (archaeology@amafapmb.co.za); 'Carolyn Schwegman'; wardn@dwa.gov.za
Subject: Samani Baboyi River Pedestrian Bridge-Notice of Application for Environmental Authorisation
Attachments: Boboyi English Signboard.pdf; Zulu Signboard1.pdf; Samani Baboyi Bridge_BID.pdf

Dear All

Please find attached a copy of the Notice of Application for Environmental Authorisation for the proposed construction of a concrete pedestrian bridge structure across the Boboyi River within the Hibiscus Coast Local Municipality.
Kindly also find attached the Background Information Document for the above mentioned project.

Should you wish to receive information relating to this Basic Assessment process, please register as an I & AP.

Should you have any queries please feel free to contact us.

Kind Regards

Ronell Kuppen
Junior Environmental Consultant

Kerry Seppings Environmental Management Specialists cc
Postal P.O. Box 396; Gillitts; 3603
Phone 031 7691578
Cell 079 3222957
Fax 086 5355281
Website www.ksems.co.za

KERRY SEPPINGS ENVIRONMENTAL MANAGEMENT SPECIALISTS

Sent via Winsms

Login Name	Date Sent	Mobile	Message	Status
kerry.ksems@telkomsa.net	12/10/09 14:02	27718624394	Kindly note that the Background Information Document for the Baboyi River Pedestrian Bridge can be viewed at www.ksems.co.za or contact us on 0317691578	DELIVERED
kerry.ksems@telkomsa.net	12/10/09 14:02	27825172680	Kindly note that the Background Information Document for the Baboyi River Pedestrian Bridge can be viewed at www.ksems.co.za or contact us on 0317691578	DELIVERED

Phone: 031 769 1578 Fax: 0865355281 Cell: 082 823 1844 E- Mail: kerry.seppings@telkomsa.net
PO Box 396 Gilitts 3606
Company Registration no: 1999/049452/23
Members: K.A. Stanton (Director)

KERRY SEPPINGS ENVIRONMENTAL MANAGEMENT SPECIALISTS

Background Information Document

The purpose of this document is to serves as a background information document intended to inform I & APs of the project as well as to provide information on the roles and responsibilities of registered I & APs. This document does not serve to provide detailed information on the potential impacts of the proposal which will be described in the basic assessment report

Project Title:	**The construction of the Baboyi River Pedestrian Bridge**
Application Type:	Basic Assessment
Competent Authority:	KZN Department of Agriculture & Environmental Affairs
Location of Activity:	The pedestrian bridge is located within the Hibiscus Coast (local) and Ugu (District) Municipalities
Public Participation Commencement date:	24th July 2012
Contact in Order to Register as an I & AP:	Colin Holmes / Ronell Kuppen Fax: 086 535 5281 Tel: 072 599 7816 kerry.seppings@telkomsa.net
Environmental Consultants for Project:	Kerry Stanton and Colin Holmes
Applicant:	Department of Transport
Release Date:	08th October 2012

The Proposal

The Department of Transport propose to construct a bridge structure and associated footpath across the Baboyi River within the Hibiscus Coast Local Municipality of the Ugu District Municipality. The proposed bridge is part of DOT's on going strategy to improve pedestrian movement in the rural areas. The proposed bridge and footpath is primarily aimed at improving access to the nearby Merlewood Secondary School. At present, many of the scholars are forced to be absent from school during periods of heavy rains. The bridge will also improve services by providing improved access to health and police services and important transportation networks for all members of the local community.

Need and Desirability

The KwaZulu-Natal Department of Transport was alerted by the Department of Education of school children not being able to attend school during times of increased water flow of the Baboyi River. There is no permanent crossing at present and the children of Merlewood Secondary School are forced to stay at home. The principle and ward councillors also highlighted the numerous causalities and deaths which have occurred in the recent past due to the lack of proper river crossing structures in the area. The infrastructure associated with the bridge construction includes that of a footpath, which is a necessity due to gradient of the southern bank of the river. The footpath will help insure safe crossing during periods of high water flow and during dry periods.

Site Description

The approximate co-ordinates for the proposed location of the pedestrian bridge are 30° 44' 38.38" South and 30° 23' 34.19" East. The proposed bridge is located within the community of Baboyi. The nearest town is Marburg, Port Shepstone. Approximately 5 km North-West from Baboyi, It falls within the Hibiscus Coast (Local) and Ugu (District) Municipalities of the KwaZulu-Natal Province (Figure 1). On the southern river bank the gradient of the slope to the water's edge is steep and rocky with limited vegetation. The northern river bank has a gentler slope with more grass species present. The surrounding urban settlements consist of low density homesteads and low-costing housing. The vegetation consists mainly of degraded grasslands, with scattered trees in the vicinity of the site. The northern bank of the river has previously utilised as a cemetery for paupers and victims of fatal accidents. The site is no longer utilised for any burials.

Figure 1: Aerial Photography of the proposed location of the Baboyi River Pedestrian Bridge in relation to the town of Port Shepstone, within the Hibiscus Coast (Local) and Ugu (District) Municipalities of the KwaZulu-Natal Province (source: Google Earth, 2012).

Potential Environmental Impacts and Mitigation Measures

A number of potential environmental issues have already been identified and are listed in Table 1 to assist I & APs to better understand the investigations to be undertaken as part of the environmental assessment process. Where mitigation measures have already been identified, these have also been provided in Table 1.

Table 1: Potential Impacts and Mitigation Measures

Potential Impact	Mitigation measure
During Construction	
Generation of dust, solid waste and noise pollution.	These impacts can be fully mitigated against provided suitable control systems are implemented during construction of the bridge. These impacts will be further assessed in the BAR and control measures identified therein and in the site specific EMPr attached to the BAR. An independent ECO must be employed to monitor compliance with the EMPr.
Damage and removal of existing vegetation.	Vegetation at the site degraded in nature and no species of significance were identified during the initial site visits. However a vegetation impact assessment has been commissioned as part of the BAR. Mitigation measures will be identified in the BAR and EMPr. An independent ECO must be employed to monitor compliance with the EMPr.

Impacts on watercourses, water bodies or drainage.	A wetland / riparian delineation assessment has been commissioned as part of the BAR to ensure that the watercourse and potential impacts thereon are identified. This will help avoid impacts on the watercourse where possible. These impacts will be further assessed in the BAR and control measures identified therein as well as in the EMPr. An independent ECO must be employed to monitor compliance with the EMPr.
Contamination by cement and other hazardous materials.	This impact can be fully mitigated against provided designated concrete mixing areas and storage areas for hazardous materials are set up. This impact will be further assessed in the BAR and control measures identified in the BAR and EMPr. An independent ECO must be employed to monitor compliance with the EMPr.
Erosion on the riverbanks.	This must be monitored by an independent ECO against the site specific EMPr which will be attached to the BAR. Only vegetation that is required to be removed for the construction of the bridge and footpath is allowed to be removed and rehabilitation must take place as soon as construction activities are complete.
Access roads will need to be upgraded to allow the construction equipment to access the site.	Access to the proposed construction site is limited and a temporary road may be required to create access on either side of the river. These impacts will be further assessed in the BAR and the EMPr will help ensure there is as little disturbance as possible during this process. Rehabilitation of the access roads will be required upon completion of the construction activities.
Impacts on existing Heritage Resources	A heritage impact assessment has been commissioned as part of the BAR to ensure that the existing heritage resources and potential impacts thereon are identified. This will help avoid impacts on the resources where possible. These impacts will be further assessed in the BAR and control measures identified therein as well as in the EMPr. An independent ECO must be employed to monitor compliance with the EMPr.
Impact on local and regional economy.	This will be beneficial to the local and regional economy as the construction may potentially create employment opportunities for the local community.
During Operation	
Aesthetic or visual impacts arising from the bridge.	The bridge will have a visual impact. However there are no nearby residential or tourism activities that would be affected. Therefore it should not negatively impact on the aesthetics of the area.
Impact on local and regional economy.	This will be beneficial to the local and regional economy. Community members and particularly the school children will have a safer means of traversing the river and will have greater access to important road networks.
Impacts on watercourses, water bodies or drainage.	A wetland / riparian delineation assessment has been commissioned as part of the BAR to ensure that the watercourse and potential impacts thereon are identified. This will help ensure that any impacts of the operational phase can be mitigated against.
Impacts on the ecology (fauna and flora)	Disturbance to vegetation on either side of the river is anticipated to be minimal. Rehabilitation of disturbed areas must be done with locally indigenous species to increase the biodiversity of the region.
Impact on the stability of the riverbank.	Will be investigated in the Basic Assessment Report.
Long term structural integrity of the bridge taking into account large flood events.	The bridge will be above at least the 1:50 year floodline of the river and the support piers will be designed to withstand flood events emanating from catchment region of the watercourse. This will be further assessed in the BAR.

Environmental Impact Assessment

In order to determine the overall environmental feasibility of the proposal, a Basic Assessment is required as per the National Environmental Management Act EIA regulations (Government Notice No. R 544 of 18th June 2010) promulgated as of the 2nd of August 2010. A Basic Assessment is an assessment carried out to determine the environmental impacts of a development project. It is a planning and management tool for sustainable development and aims to inform decision-makers about the potential environmental, physical, biological and socio-economic effects of the proposed project. This allows relevant authorities and decision-makers to provide an Environmental Authorisation (EA) either authorising or rejecting the proposal.

The relevant triggers from the regulations under Listing notice 1 and 3 (GNR 544 and 546) for the proposed construction of the bridge are:

Basic Assessment (Listing notice 1, GNR 544)

11) *The construction of:*

- *i) Canals;*
- *ii) Channels;*
- ***iii) Bridges***
- *iv) Dams;*
- *v) Wiers;*
- *vi) Bulk stormwater outlet structures;*
- *vii) Marinas;*
- *viii) Jetties exceeding 50 square metres in size;*
- *ix) Slipways exceeding 50 square metres in size;*
- *x) Buildings exceeding 50 square metres in size; or*
- ***xi) Infrastructure covering 50 square metres or more***

Where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse.

Basic Assessment (Listing notice 1, GNR 544)

18) *The infilling or deposing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from:*

- ***(i) a watercourse;***
- *(ii) the sea;*
- *(iii) the seashore;*
- *(iv) the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is the greater*

but excluding where such infilling, depositing, dredging, excavation, removal or moving

- *(a) is for maintenance purposes undertaken in accordance with a management plan agreed to by the relevant environmental authority; or*
- *(a) occurs behind the development setback plan.*

Basic Assessment (Listing notice 3, GNR 546)

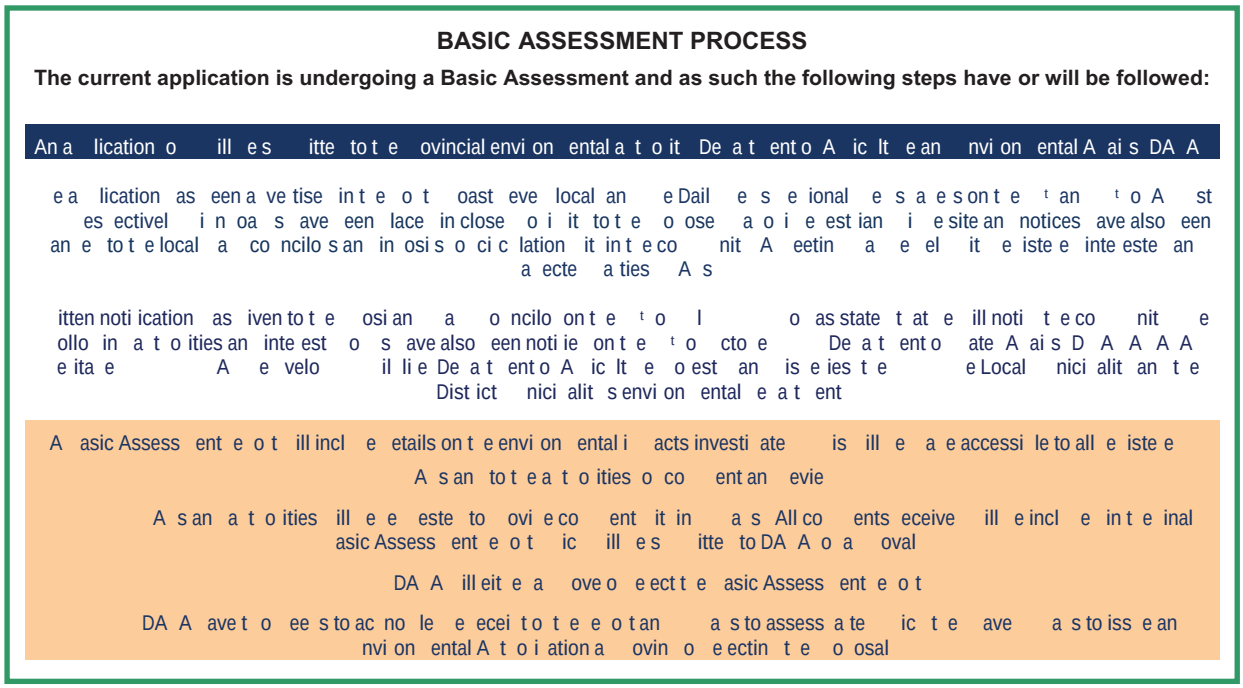
12) *The clearance of an area of 300 square metres or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation.*

- ***a) within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;***
- ***b)*** *within critical biodiversity areas identified in bioregional plans;*
- ***c)*** *Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuary, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas.*

Public Participation

Public participation is an essential phase of the EIA process. It is an opportunity for interested and affected parties (I&APs) to raise concerns, queries and suggestions regarding the proposal as well as to gather information from the consultants about the proposal. The public participation phase requires that the proposal be advertised in a local and regional newspaper, and the community notified about the development. Relevant authorities and interest groups are also required to be notified.

The figure below provides a summary of the Basic Assessment process, with steps that have been followed as well as those that are still to be carried out.



About KSEMS

Kerry Seppings Environmental Management Specialists cc (KSEMS) is an established environmental consultancy which has been based in KwaZulu-Natal since 1998. KSEMS is the independent party and is responsible for assessing the impacts of the proposal. All people that may be interested or affected by this development can help KSEMS by providing us with questions, comments or feedback for this proposal. You can do this by registering as an Interested & Affected Party (I&AP) for this project with the contact person below.

Any Persons Interested In This Project Should Register As An Interested And Affected Party In Order To Receive Information And Comment On The Proposal

You are invited to register with:
Ronell Kuppen / Colin Holmes
Kerry Seppings Environmental Management Specialists cc
Phone 072 599 7816
Fax 086 535 5281
e-mail: kerry.seppings@telkomsa.net

By registering for the process, your name will be included in the register of I & APs and you will be notified of meetings and availability of reports for comment. You will be able to offer comments or queries on any written submission or information provided which will be included in the reports that will be distributed to the authorities.

EXCERPT TAKEN FROM NEMA EIA REGULATIONS DESIGNATING RESPONSIBILITIES OF REGISTERED INTERESTED AND AFFECTED PARTIES

Registered interested and affected parties entitled to comment on submissions
56. *(1) A registered interested and affected party is entitled to comment, in writing, on all written submissions made to the competent authority by the applicant or the EAP managing an application, and to bring to the attention of the competent authority any issues which that party believes may be of significance to the consideration of the application, provided that –*

(a) comments are submitted within –
- *(i) the timeframes that have been approved or set by the competent authority; or*
- *(ii) any extension of a timeframe agreed to by the applicant or EAP;*

(b) a copy of comments submitted directly to the competent authority is served on the applicant or EAP; and

(c) the interested and affected party discloses any direct business, financial, personal or other interest which that party may have in the approval or refusal of the application.

The lead consultant on this project is Kerry Stanton.

Phone: 031 769 1578 Fax: 086 535 5281 Cell: 079 322 2957 E- Mail: kerry.seppings@telkomsa.net
P.O. Box 396; Gillitts; 3603
Company Registration no: 1999/049452/23
Members: K.A. Stanton (Director)

Communications with I & APs:

Ronell Kuppen

From: KSEMS <kerry.seppings@telkomsa.net>
Sent: 09 October 2012 02:41 PM
To: ronell.ksems@telkomsa.net
Subject: FW: Samani Baboyi River Pedestrian Bridge-Notice of Application for Environmental Authorisation

Kind Regards,

Kerry Seppings Environmental Management Specialists cc
Postal P.O. Box 396; Gillitts; 3603
Fax: 086 535 5281
Cell: 079 322 2957

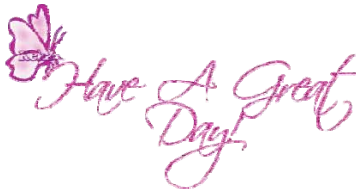
Website www.ksems.co.za

From: Bernadetp [mailto:Bernadetp@amafapmb.co.za]
Sent: 09 October 2012 02:35 PM
To: 'KSEMS'
Subject: RE: Samani Baboyi River Pedestrian Bridge-Notice of Application for Environmental Authorisation

Dear Ronell

We look forward to your submission of a hardcopy of the document on which to comment. Please include the Need and Desirability Application Form and proof of payment. Visit the Amafa website on www.heritagekzn.co.za for the relevant forms.

Kind regards
Mrs. Bernadet Pawandiwa
Archaeology : Permits
Amafa aKwaZulu Natali
P.O.Box 2685, Pietermaritzburg 3200
Tel: 033 394 6543
Fax: 033 394 6552
Email: bernadetp@amafapmb.co.za
Website: www.heritagekzn.co.za



From: KSEMS [mailto:kerry.seppings@telkomsa.net]
Sent: Tuesday, October 09, 2012 12:48 PM
To: johan.vanderwalt@ugu.gov.za; liziswa@hcm.gov.za; pillayr@dwa.gov.za; wisemanr@daff.gov.za; WisemanR@nda.agric.za; thambud@kznwildlife.com; "Phumelela Dlamini"; Bernadetp@amafapmb.co.za; archaeology@amafapmb.co.za; 'Carolyn Schwegman'; wardn@dwa.gov.za
Subject: Samani Baboyi River Pedestrian Bridge-Notice of Application for Environmental Authorisation

Dear All

Please find attached a copy of the Notice of Application for Environmental Authorisation for the proposed construction of a concrete pedestrian bridge structure across the Boboyi River within the Hibiscus Coast Local Municipality.
Kindly also find attached the Background Information Document for the above mentioned project.

Should you wish to receive information relating to this Basic Assessment process, please register as an I & AP.

Should you have any queries please feel free to contact us.

Kind Regards

Ronell Kuppen
Junior Environmental Consultant

Kerry Seppings Environmental Management Specialists cc
Postal P.O. Box 396; Gillitts; 3603
Phone 031 7691578
Cell 079 3222957
Fax 086 5355281
Website www.ksems.co.za

KSEMS

From: Liziswa Jiba <liziswa@hcm.gov.za>
Sent: 23 October 2012 02:13 PM
To: 'KSEMS'
Subject: RE: Proposed construction of a concrete pedestrian bridge structure across the Boboyi River within the Hibiscus Coast Local Municipality.

Thank you.

Regards

Liziswa Jiba
Environmental Officer: Planning & Building Control
Hibiscus Coast Municipality
Tel: 039 -315 9265
Fax: 039-315 9220
Cell: 079 467 6763

From: KSEMS [mailto:kerry.seppings@telkomsa.net]
Sent: 23 October 2012 01:36 PM
To: 'Liziswa Jiba'
Subject: RE: Proposed construction of a concrete pedestrian bridge structure across the Boboyi River within the Hibiscus Coast Local Municipality.

Good Afternoon Liziswa

Thank you for your interest in the above mentioned project.
You have been registered as an I&AP and we will keep you updated throughout the basic assessment process.

Should you have any queries please feel free to contact us.

Kind Regards,
Ronell Kuppen
Junior Environmental Consultant.

Kerry Seppings Environmental Management Specialists cc
Postal P.O. Box 396; Gillitts; 3603
Fax: 086 535 5281
Cell: 079 322 2957

Website www.ksems.co.za

Please think of the environment before printing out this email.

From: Liziswa Jiba [mailto:liziswa@hcm.gov.za]
Sent: 23 October 2012 12:46 PM
To: kerry.seppings@telkomsa.net
Subject: Proposed construction of a concrete pedestrian bridge structure across the Boboyi River within the Hibiscus Coast Local Municipality.

Good afternoon

I would like to register as an I&AP and I wish to receive information relating to this Basic Assessment process.

Regards

Liziswa Jiba
Environmental Officer: Planning & Building Control
Hibiscus Coast Municipality
Tel: 039 -315 9265
Fax: 039-315 9220
Cell: 079 467 6763

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Registered I & APs:

REGISTERED INTERESTED AND AFFECTED PARTIES

Please include all authorities as well as attendees from the public meeting

PROJECT TITLE:_____ Baboyi River Pedestrian Bridge

CONTACT	NAME	PHONE	FAX	E-MAIL	ADDRESS
Client					
Client					
DAEA					
Ugu District Municipality	Johan van der Walt	039 6885872		johan.vanderwalt@ugu.gov.za	
Hibiscus Coast Local Municipality	liziswa Jiba	039 3159265	O794676763	liziswa@hcm.gov.za	
DWA	Renelle Pillay	031 336 2742		pillayr@dwa.gov.za	
DAFF	Wiseman Rozani	033 3927761	082 8096432	wisemanR@daff.gov.za	
KZN Wildlife	Andy Blackmore	033 845 1356 / 49		andyb@kznwildlife.com	
AMAFA	Bernadette Piwanda	033 394 6543			195 Longmarket Street PMB
Ward 20 Councillor	Shadrack Sello Morafe	O82 5172680	O39 6820327		
DWA	Norman Ward	031 336 2737	082 808 2721	wardn@dwa.gov.za	
Nkosi	Ndwalane	O71 8624394			
Nyenyezi Trust CPA	Ayanda Cele	076 7505337		ayandacele.2012@gmail.com	
Nyenyezi Trust CPA	SM Ncama	076 634 6342			
Nyenyezi Trust CPA	BV Mkhoma	083 580 9713			

Public Meeting Minutes, Distribution and Attendance Register:

No formal public meeting was held due to rural nature of the project. The Background Information Document (BID) was distributed to all registered I & APs and authorities. An informal meeting was held between the ward councillor, the Nkosi and KSEMS to discuss the project, provide information about and allow for the distribution of information regarding the project to the community members. Notification of the project was also placed on site and was advertised in a local newspaper in both Zulu and English.

Notification of release of Draft BAR