BASIC ASSESSMENT REPORT

FOR THE

PROPOSED MQHASHELA TO MUNGA PEDESTRIAN BRIDGES, LOCATED ON FARM NO RE/15843 PORTION 0 (REMAINING EXTENT) OF FARM ALFRED LOCATION NO 3, KWAZULU-NATAL, WARD 33, RAY NKONYENI LOCAL MUNICIPALITY, UGU DISTRICT MUNICIPALITY

Draft

March 2019

Applicant:	Engineering Consultant:	Environmental Consultant:
Ray Nkonyeni Local Municipality	**TPA Consulting Civils & Structural Engineers & Project Managers** **TPA Consulting CC.** Zamokuhle Mlondo 2 Brendon Ln, Grayleigh, Westville, 3630 Tel: (031) 266 4168 Fax: (086) 459 0855 Email: zamo@tpa.co.za	**EnviroEdge cc** PO Box 1009, Kloof, 3640 Tel: (031) 764 2569 Fax: (086) 654 6598 Email: info@enviroedge.co.za www.enviroedge.co.za

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VERIFICATION	CAPACITY	NAME	SIGNATURE	DATE
By Author	Environmental Scientist	Steven Whitaker		April 2019
Checked and Authorised by	Senior Environmental Scientist	Karin Samouilhan		April 2019

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1 Introduction

EnviroEdge cc. has been commissioned to undertake an environmental impact assessment for the Ray Nkonyeni Local Municipality by TPA Consulting Engineers for the proposed Mqhashela to Munga Pedestrian Bridges. As such, the Proposed Mqhashela to Munga Pedestrian Bridges will require an Application for Environmental Authorisation in the form of a Basic Assessment (BA), which includes a Basic Assessment Report (BAR) and a Comments and Responses Report (CRR) Report which will be submitted to the Department of Economic Development Tourism and Environmental Affairs (DEDTEA) for Environmental Authorisation (EA).

This Basic Assessment process is being undertaken in accordance with Sections 19 – 20 in terms part 2 of chapter 4 of the National Environmental Management Act (Act No 107 of 1998), as amended, and the Environmental Impact Assessment Regulations of December 2014, as amended 2017. These Regulations identify various activities which may have a substantial detrimental effect on the environment. In addition, the Regulations list procedures for assessing potential associated environmental impacts. Public participation and the scoping of issues form part of these procedures, the results of which are captured in this, the Basic Assessment Report.

1.1 Details of the EAP

EnviroEdge cc was established in 2012 and has a record of undertaking independent environmental processes for a range of clients in compliance with the requirements of the various competent authorities. In this respect we reiterate the declaration of independence made in the application form for this project assented to and lodged with the competent authority.

Contact Details	Environmental Assessment Practitioner (EAP)
Business name of EAP:	EnviroEdge cc
Physical address:	1 Jerome Drive, Kloof
Postal address:	PO Box 1009, Kloof
Postal code:	3640
Telephone:	031 764 2569
E-mail:	info@enviroedge.co.za
Cell:	071 140 8350
Fax:	086 654 6598

Names and details of the expertise of each representative of the EAP involved in the preparation of this report are provided below. Curricula vitae will be provided on request.

Name of representative of the EAP	Educational qualifications	Professional affiliations	Environmental assessment experience (yrs)
Steven Whitaker	B.Sc. (Hons)	IAIA	11 years
Karin Samouilhan	B.A., Pr LArch	IAIA, SACLAP, CBE	22 years

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 C**
Alex Whitehead	BSc(Hons) Pr.Sci.Nat	Terrestrial and Aquatic Ecology	Appendix C	Wetland and Riparian/Aquatic Assessment Report Mqhashela to Munga Pedestrian Bridge Crossing Ray Nkonyeni Municipality

1.2 Location of the Activity

The proposed Mqhashela to Munga Pedestrian Bridge crossings of a non-perennial tributary of the Ncumuse River, are located in Mbeni in southern KwaZulu-Natal. The project area is situated approximately 22.18 km north-west of the Margate CBD, within the semi-rural area of Mbeni. Additional semi-rural areas of Dlovinga, Shobeni and Izingolweni are located 3.03 km south-west, 3.68 km south-east of the site and 2.32 km west, respectively. The National Highway (N2), lies approximately 0.68 km south of the proposed pedestrian bridges. The main Ncumuse River is located approximately 1.2 km north-west of the site, and the site itself lies on a non-perennial tributary of this river. The northern pedestrian bridge centre point can be found at 30˚46'33.24" S 30˚09'03.90" E; while the eastern pedestrian bridge centre point at 30°46'33.71"S 30° 9'4.07"E. The site is located within a semi-rural area, dominated by subsistence agricultural land and natural vegetation, and is serviced by gravel roads. No major infrastructure is found within close proximity to the site; small rural shops provide supplies and there is a school located 270m north-west of the proposed bridge crossings area. The current crossing is a simple footpath, making crossing the river difficult after moderate to heavy rains in the catchment.

Table 1: Project Proponent and Site Details

Applicant	
Trading name	Ray Nkonyeni Local Municipality
Contact person	Feziwe Mhlongo
Postal address	Dan Pienaar Drive, Port Shepstone, Margate, 4240
Telephone	039 312 8315
Facsimile	-
E-mail	Feziwe.mhlongo@rnm.gov.za
Property Details	
Property Details	Farm No RE/15843 Portion 0 (Remaining Extent) of Farm Alfred Location No 3, KwaZulu-Natal
Property Owner	Ingonyama Trust Board
SG 21 Code	N0ET00000001584300000
Land Use / Zoning	Vacant / Unspecified
Title Deed	T24280/1995
Physical Address	Culvert over a tributary of the Ncumuse River – Ward 33
Coordinates	Northern pedestrian bridge centre point: 30˚46'33.24"S; 30˚09'03.90"E; Eastern pedestrian bridge centre point: 30°46'33.71"S; 30° 9'4.07"E.
Local Municipality	Ray Nkonyeni Local Municipality
District Municipality	Ugu District Municipality
Province	KwaZulu-Natal
Neighbouring Landuses	
North	Semi-Rural area
East	Semi-Rural area
West	Semi-Rural area
South	Semi-Rural area
Water Catchment Management Area	T52L Quaternary catchment. uMvoti to uMzimkhulu WMA
Quaternary Drainage Region	T52L Quaternary catchment

1.3 Development Proposal

EnviroEdge cc. has been commissioned by TPA Consulting Engineers for the Ray Nkonyeni Local Municipality to undertake an environmental impact assessment for the proposed Mqhashela to Munga Pedestrian Bridges in the form of a Basic Assessment Report, (BAr), and a Comments and Responses Report, (CRR) Report which will be submitted to the Department of Economic Development Tourism and Environmental Affairs (DEDTEA) for Environmental Authorisation (EA).

This Basic Assessment process is being undertaken in accordance with the National Environmental Management Act (Act No 107 of 1998), as amended, and the Environmental Impact Assessment Regulations of December 2014, as amended April 2017. These Regulations identify various activities which may have a substantial detrimental effect on the environment. In addition, the Regulations list procedures for assessing potential associated environmental impacts. Public participation and the scoping of issues form part of these procedures, the results of which are captured in this the Basic Assessment Report.

The proposed pedestrian bridges are located in southern KwaZulu Natal, approximately 22.18 km north-west of the Margate CBD, within the semi-rural area of Mbeni, with predominantly natural vegetation. The northern pedestrian bridge centre point is located at: 30˚46'33.24"S; 30˚09'03.90"E; while the eastern pedestrian bridge centre point is located at: 30°46'33.71"S; 30° 9'4.07"E. The proposed two bridges are approximately 14m apart at the closest point. Please refer to Site Plan under Appendix A. Additional semi-rural areas of Dlovinga, Shobeni and Izingolweni are located 3.03 km south-west, 3.68 km south-east of the site and 2.32 km west, respectively. The National Route 2 (N2), lies approximately 0.68 km south of the proposed pedestrian bridges. The main Ncumuse River is located approximately 1.2 km north-west of the site, and the site itself lies on a non-perennial tributary of this river. Small rural shops provide supplies in the area and tracks are found at the actual crossing points. The current crossing is a simple footpath, making crossing the river difficult after moderate to heavy rains in the catchment. Construction machinery will gain access to the site from existing access roads and tracks on either side of the river. No temporary crossing across the Ncumuse River are expected to be constructed. There is a school, the Munga Primary School located 270m north-west of the proposed bridge crossing points.

The proposed pedestrian bridges will span a non-perennial tributary of the Ncumuse River. The main Ncumuse River is located approximately 1.2 km north-west of the site.

The main northern pedestrian bridge provides a 34 m length walkway across a non-perennial tributary of the Ncumuse River. The northern bridge has an internal width of 1.17 m and an external width including handrails of 1.53 m. Metal, spot welded braced handrails at a height of 1.44 m, will run along both sides of the steel frame bridge structure with a reinforced concrete walkway. The steel frame bridge structure is founded on a central reinforced concrete pier at 1.4 m square by 0.5 m thick concrete footing. On each end, (Y20) steel dowels, are encased in a concrete housing at 2.4 m by 2 m at a depth of 2.91 m. In addition, 2 grouted gabions at 1m x 1m x 1m will sit on either side of each end of the pedestrian bridge, together with grouted and tapered stone pitching work on either side of the bridge end at an approximate length of 5 m.

The smaller eastern pedestrian bridge provides a 14.4 m walkway across a non-perennial tributary of the Ncumuse River. The eastern bridge has an internal width of 1.17 m and an external width including handrails of 1.53 m. Metal, spot welded braced handrails at a height of 1.44 m, will run along both sides of the steel frame bridge structure with a reinforced concrete walkway. The steel frame bridge structure is founded on each end with (Y20) steel dowels, encased in a concrete housing at 2.4 m by 2 m at a depth of 2.91 m. In addition, 2 grouted gabions at 1t 1 by 1 by 1 m will sit on either side of each end of the pedestrian bridge, together with grouted and tapered stone pitching work on either side of the bridge end at an approximate length of 5 m.

The northern pedestrian bridge centre point can be found at 30˚46'33.24" S 30˚09'03.90" E and the eastern pedestrian bridge centre point at 30°46'33.71"S 30° 9'4.07"E. The proposed main northern pedestrian bridge, including the gabion basket work and tapered stone pitching work will have a total development footprint of 68m^2. The proposed smaller eastern pedestrian bridge, including the gabion basket work and tapered stone pitching work will have a total development footprint of 41m^2.

The construction works will include the following items:

- Establishment of site camp near the development area
- Accommodation of traffic
- Earthworks and road bed preparation
- Foundation earthworks for bridge structure
- Concrete works for foundations, anchor blocks, piers and towers
- Deck Walkway construction, handrails and steel works, steel frame bridge structure, Y20 dowels in concrete encasements, grouted gabions and tapered stone pitching work to bridge ends
- Installation of deck drainage
- Concrete finish

1.4 Description of the Scope of the Proposed Activity

The proposed pedestrian bridges are identified activities in terms of Listing Notice 1, Government Notice No. 327, as amended 2017, and Listing Notice 3 Government Notice No. 324, as amended 2017, of the National Environmental Management Act, 1998 (No. 107, 1998).

Description of Listed Activity	Applicability
Listing Notice 1 No. 327, as amended, 2017 Activity 12. The development of— (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (a) within a watercourse; ~~(b) in front of a development setback; or~~ (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; —	The northern bridge has an internal width of 1.17 m and an external width including handrails of 1.53 m. Metal, spot welded braced handrails at a height of 1.44 m, will run along both sides of the steel frame bridge structure with a reinforced concrete walkway. The steel frame bridge structure is founded on a central reinforced concrete pier at 1.4 m square by 0.5 m thick concrete footing. On each end, (Y20) steel dowels, are encased in a concrete housing at 2.4 m by 2 m at a depth of 2.91 m. In addition, 2 grouted gabions at 1m x 1m x 1m will sit on either side of each end of the pedestrian bridge, together with grouted and tapered stone pitching work on either side of the bridge end at an approximate length of 5 m. The smaller eastern pedestrian bridge provides a 14.4 m walkway across a non-perennial tributary of the Ncumuse River. The eastern bridge has an internal width of 1.17 m and an external width including handrails of 1.53 m. Metal, spot welded braced handrails at a height of 1.44 m, will run along both sides of the steel frame bridge structure with a reinforced concrete walkway. The steel frame bridge structure is founded on each end with (Y20) steel dowels, encased in a concrete housing at 2.4 m by 2 m at a depth of 2.91 m. In addition, 2 grouted gabions at 1t 1 by 1 by 1 m will sit on either side of each end of the pedestrian bridge, together with grouted and tapered stone pitching work on either side of the bridge end at an approximate length of 5 m. The proposed infrastructure will exceed 100m^2 in size, within 32 metres of a watercourse. The proposed development, therefore, triggers activity 12.

Listing Notice 1 No. 327, as amended, 2017 Activity 19. The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;	The main northern pedestrian bridge provides a 34 m length walkway across a non-perennial tributary of the Ncumuse River. The northern bridge has an internal width of 1.17 m and an external width including handrails of 1.53 m. Metal, spot welded braced handrails at a height of 1.44 m, will run along both sides of the steel frame bridge structure with a reinforced concrete walkway. The steel frame bridge structure is founded on a central reinforced concrete pier at 1.4 m square by 0.5 m thick concrete footing. On each end, (Y20) steel dowels, are encased in a concrete housing at 2.4 m by 2 m at a depth of 2.91 m. In addition, 2 grouted gabions at 1m x 1m x 1m will sit on either side of each end of the pedestrian bridge, together with grouted and tapered stone pitching work on either side of the bridge end at an approximate length of 5 m. The smaller eastern pedestrian bridge provides a 14.4 m walkway across a non-perennial tributary of the Ncumuse River. The eastern bridge has an internal width of 1.17 m and an external width including handrails of 1.53 m. Metal, spot welded braced handrails at a height of 1.44 m, will run along both sides of the steel frame bridge structure with a reinforced concrete walkway. The steel frame bridge structure is founded on each end with (Y20) steel dowels, encased in a concrete housing at 2.4 m by 2 m at a depth of 2.91 m. In addition, 2 grouted gabions at 1t 1 by 1 by 1 m will sit on either side of each end of the pedestrian bridge, together with grouted and tapered stone pitching work on either side of the bridge end at an approximate length of 5m. The construction of the proposed bridge structure, columns, gabions, and tapered stone pitching will require the infilling, depositing, and excavation of more than 10m^3, therefore, Activity 19 is triggered.
Listing Notice 3 No. 324, as amended, 2017 Activity 14. The development of – ~~(i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or~~ (ii) <u>infrastructure or structures with a physical footprint of 10 square metres or more</u> Where such development occurs – (a) Within a watercourse (b) In front of a development setback; or (c) If no development setback has been adopted, with 32 metres of a watercourse, measured from the edge of a watercourse. (c) If no development setback exists, with 32m of a watercourse, measured from the edge of a watercourse;	**<u>d. KwaZulu-Natal</u>** x. Outside urban areas: (aa) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any terrestrial protected area identified in terms of NEMPAA, or from the core area of a biosphere reserve. The proposed pedestrian bridges will exceed 10 square metres in size, ad occurs outside urban areas, within 10km of the Oribi Nature Reserve. Activity 14 is therefore triggered.

1.5 Approach

In order to meet the objectives of the environmental assessment study, the following activities were undertaken:

- Consultation with representatives of Ray Nkonyeni Local Municipality to establish the nature and extent of the proposed activity
- Identification of legislation, regulations and guidelines pertaining to the proposed activity
- A baseline desktop survey
- A site visit to the area to determine the nature of the affected environment and to identify potential issues of concern
- An identification and assessment of the physical, biological, social, economic and cultural aspects of the environment that may be affected by the proposed activity
- The identification and assessment of any feasible and reasonable alternatives
- Identification and liaison with key Interested and Affected Parties (IAP)
- Advertisement in the local press, placement of notices on site, distribution of pamphlets and Background Information Documents (BIDs); and,
- The compilation of this document the Draft Basic Assessment Report

2 Need and Desirability of the Proposed Development

The project aims to provide two safe pedestrian bridges across a non-perennial tributary of the Ncumuse River within ward 33 while improving the safety and access for the local community. The non-perennial tributary of the Ncumuse River is currently traversed via an informal pedestrian access track. Pedestrian access across the non-perennial tributary of the Ncumuse River within the area can be challenging during times of average to high rainfall. At present, there is no formal infrastructure, resulting in an unsafe environment for the local inhabitants, school children and livestock when crossing the non-perennial tributary of the Ncumuse River. The two bridges will provide a formal link between villages in the surrounding area.

3 Preferred Site, Activity and Technologies

As the preferred site already has an existing track leading towards and from either side of the non-perennial tributary of the Ncumuse River, it is preferable to develop this site, rather than developing at an entirely new location crossing at an alternative position, with associated clearing and access from either side of the proposed structures. The current site is the route which the local communities utilise between villages, schools and the local road network. The current watercourse crossings consist informal access tracks that are traversed by pedestrians and livestock during low rainfall periods. It is thus proposed to install two pedestrian bridges that will span the width of the non-perennial tributary of the Ncumuse River, one northern pedestrian bridge of 34m length, and an eastern pedestrian bridge of 14.4m length. The proposed two pedestrian bridges are approximately 14m apart at the closest point. The proposed two bridges will help to ensure an adequate and safe crossing area during high rainfall and flood events. Alternative methodologies may be available; however, the proposed method is deemed the most cost-effective and sustainable solution. Please see Appendix B for detailed design.

Image 1. Image looking south east over the Ncumuse River tributary, towards the eastern pedestrian bridge site.

Image 2. Image looking east over the Ncumuse River tributary, towards the northern pedestrian bridge site.

4 Alternatives

4.1 Site Alternatives

No alternative sites have been considered as the proposed pedestrian bridges are site specific so as to service the communities of ward 33 and surrounding areas. The proposed crossings will provide a pedestrian link between the villages in the Mbeni area, as well as an efficient route to the extended regional transportation network.

Technological/Design Alternatives

Standard design, layout and configuration of the pedestrian bridges are employed and adhered to by developers such as the Municipality. Alternatives for the proposed pedestrian bridge are likely to be inferior.

The project engineers have utilised the best and most cost effective and technically suitable structures for the proposed two pedestrian bridge structures.

4.2 No-Go Alternative

Leaving the informal tracks crossing the two sections of the non-perennial tributary of the Ncumuse River in its current condition, or not developing the pedestrian bridge is regarded as the No-Go Alternative. This alternative would have the least direct impact on the environment, as none of the construction related impacts would occur. Indirectly, however, this alternative may eventually result in the loss of life during medium to high rainfall periods. This alternative may also result in the complete erosion of the existing track. The No-Go Alternative has, therefore, not been assessed.

4.3 Preferred Alternative

Considering the site and the technological alternatives which are available, and the feasibility of each, the preferred alternative is, therefore, the site and preferred technological alternative as proposed in the development proposal description (**Section 1.3**). As the only feasible option, only the preferred alternative has been assessed.

5 Public Participation Process

5.1 Objectives of the Public Participation Process

The objectives of the public participation process (PPP) are to:

- Identify and inform potential IAPs of the proposed development
- Provide them with the opportunity to register any issues or concerns regarding the proposal, and
- Identify mitigatory and management options to address issues and concerns raised, where appropriate.

5.2 Details of the PPP

In undertaking the public participation process, all known, relevant facts pertaining to the proposed project were made available to registered and identified IAPs so that they could participate in a meaningful manner. The approach included:

- Ongoing technical liaison with relevant local municipal officials and the project facilitators regarding the proposed development
- Identifying potential IAPs during discussions with the project facilitators
- Giving written notice to organs of the state (municipality, DWS) having jurisdiction over the proposal
- Giving written notice to Non-Governmental Organisations (NGO), Community Based Organisations (CBO) etc. who might have an interest in the proposal
- Placing an advert in a local newspaper (South Coast Herald Newspaper on the 19/01/2018) calling for IAPs not previously identified to identify themselves and make an input into the process (see copy of advert in Appendix D).

- Keeping IAPs informed, keeping a register of all IAPs and allowing them the opportunity to make comment on the proposed activity (see table below of registered IAPs
- The Draft Basic Assessment will be made available to all identified Stakeholders and placed at the Ezinqoleni Library, N2 Main Harding Road, Izingolweni, Kwazulu-Natal, South Africa, from the 15 April until the 15 May 2019.

The following IAPs were identified or identified themselves:

Organisation	Contact Person	Contact Details
Department of Water and Sanitation (DWS)	Ms S. Ramburan Mr S. Govender Madibe	PO Box 1018, Durban, 4000 Tel: 031 336 2700 / 2765 RamburanS@dwa.gov.za; GovenderS2@dwa.gov.za Mngoma-MadibeJ@dws.gov.za
Department of Agriculture Forestry and Fisheries (DAFF) Forestry Regulations and Support	Jeffrey Mai Ms Karen Moodley	nandiphas@nda.agric.za; JeffreyMAI@daff.gov.za KarenM@daff.gov.za Tel: 033 392 7739; Fax: 033 342 8783 P/Bag X 9029, Pietermaritzburg, 3200
Ezemvelo KZN Wildlife	Dinesree Thambu Dominic Wieners Jenny Longmore	thambud@kznwildlife.com Jenny.Longmore@kznwildlife.com Phindile.Langazane@kznwildlife.com Dominic.Wieners@kznwildlife.com PO Box 13053, Cascades, 3202
KZN Department of Transport Transportation Engineering Sub-Directorate	Michele Schmid Judy Reddy	michele.schmid@Kzntransport.gov.za judy.reddy@kzntransport.gov.za Private Bag X 9043, Pietermaritzburg, 3200 Tel: 033 355 8600; Fax: 033 342 3962 Ref: T10/2/2/3922/2
Eskom	M. Nicol	nicolm@eskom.co.za; MtawalNP@eskom.co.za P O Box 66, New Germany, 3620 Tel: 031 710 5404
Telkom SA SOC Limited Network Engineering and Build Eastern Region Wayleave Management Section	Raymond Couch S. Mchunu R. Rampershad	Private Bag X 54326, Durban, 4000 Tel: 033 342 1591; Fax: 033 345 6126 RampeRR@telkom.co.za; wayleaves2@telkom.co.za mchunusr@telkom.co.za; RaymondC@openserve.co.za. SthembisoM@openserve.co.za;
Transnet	Thami Hadebe Jeff Scrooby	Thami.Hadebe@transnet.net Jeff.Scrooby@transnet.net
Transnet	Vicky Madonsela	vicky.madonsela@transnet.net
AMAFA Take out	Bernadet Pawandiwa Annie van de Venter Radford	amafaddps@amafapmb.co.za bernadetp@amafapmb.co.za
Ingonyama Trust Board	Suewellan Ellis	EllisS@ingonyamatrust.org.za
Ward Councillor Ward 33	Bonginkosi Nyawose	Hibiscus Coast Local Municipality, PO Box 5, Port Shepstone, 4240. Cell: 073 056 4159; 072 665 5093 Email: bonginkosi.nyawose@rnm.gov.za
Ray Nkonyeni Local Municipality	Feziwe Mhlongo	PO Box 5, Port Shepstone, 4240 Physical: 10 Connor Street, Port Shepstone Tel: 039 688 2000; Fax: 039 682 0327 Web www.rnm.gov.za Feziwe.mhlongo@rnm.gov.za
Ugu District Municipality	Janine Blackbeard	Janine.Blackbeard@ugu.gov.za noloyiso.walingo@ugu.gov.za PO Box 33, Port Shepstone, 4240 Physical 28 Connor Street, Port Shepstone Tel: 039 688 5700/ 5794; Fax: 039 682 1720 Web www.ugu.gov.za

5.3 Summary of the Issues Raises by IAPs

Comments received have been included in the Comments and Response Report (CRR) (Appendix D). These comments are documented individually with a response to each identified issue also provided in the CRR.

6 The Receiving Environment (All Alternatives)

6.1 Geographical and Physical Environments

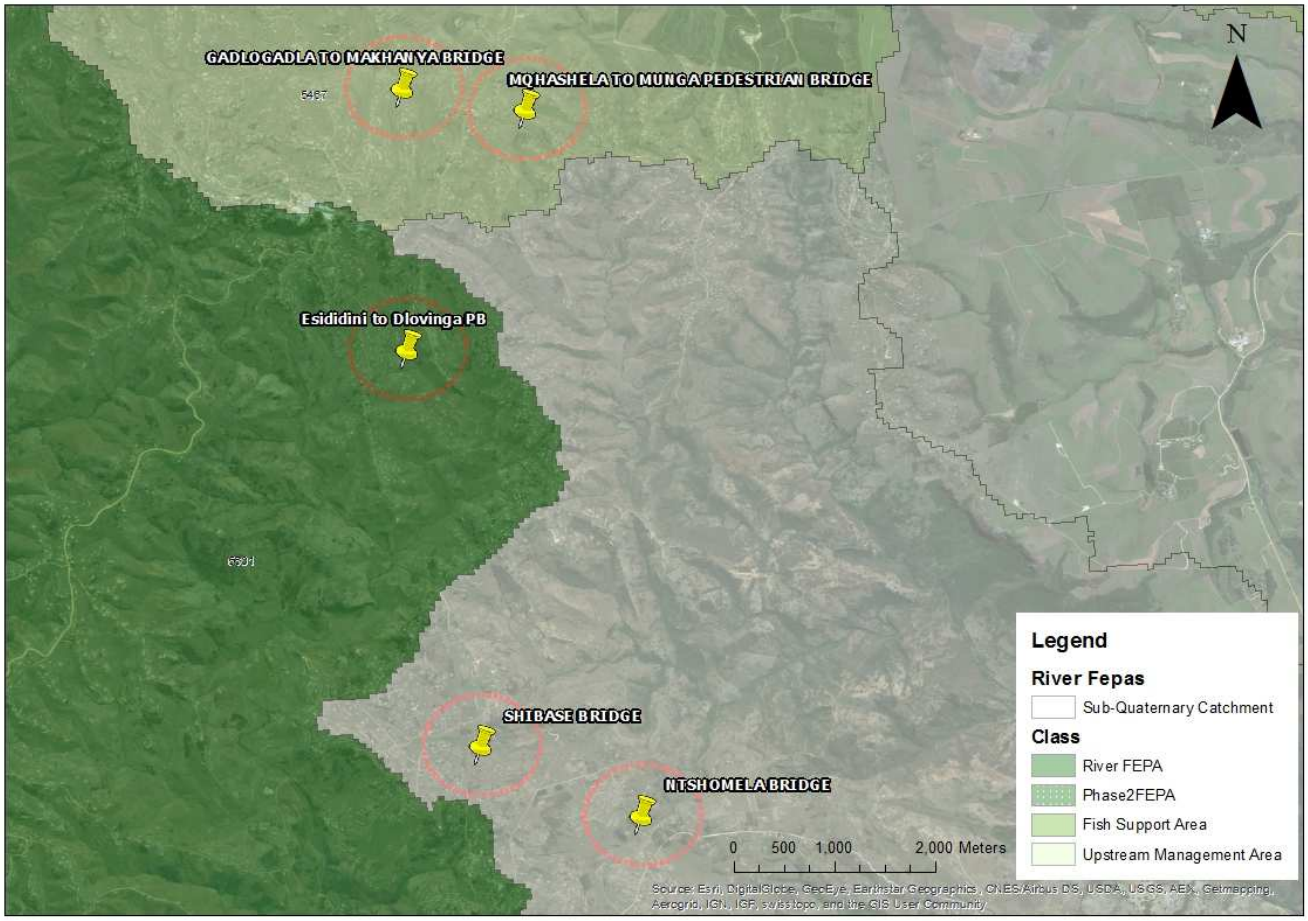
6.1.1 Topography and Drainage

The site topography and drainage are affected by the underlying geology of the area. The study area is generally undulating, and it is dissected by numerous undulating valley areas. The approximate centre point of the site can be found at: 30˚46'33.24" S 30˚09'03.90" E.

The site is located directly on a non-perennial tributary of the Ncumuse River which flows in a north-easterly direction towards the Mzimkhulwane River which in turn flows to Oribi Gorge 5km north-east of the site. To the north-east of the site the Mzimkhulwane River flows into the Mzimkhulu River which flows to the Indian Ocean to the east at Port Shepstone, 28km east of the site. The Ncumuse River passes the site approximately 1.2 km north-west of the site and the Nyongwane River lies to the west of the site. The Nyongwane flows into the Ncumuse to the north-west of the site. The site is located at approximately 512 masl, on gently undulating slopes. A high point of 566masl is found to the north, 544masl to the north-east, 602masl to the south-east, 620masl to the south-west and 637masl to the north-west.

6.1.2 Hydrology

No groundwater points have been noted. The site is located within the T52L Quaternary catchment within the uMvoti to uMzimkhulu WMA. Two wetland units, Hydrogeomorphic units (HGM units) were identified within 500m of the proposed crossing. Both are situated upstream of the proposed crossing. Please refer to Map 2. None of the wetland units identified will be affected by the proposed pedestrian bridge, directly, indirectly or at a cumulative level. A. Whitehead, SDP. A review of the Freshwater Ecosystem Priority Areas, (FEPA), data confirms that the study site is located within a Fish Support Area, (Nel et al. 2011).

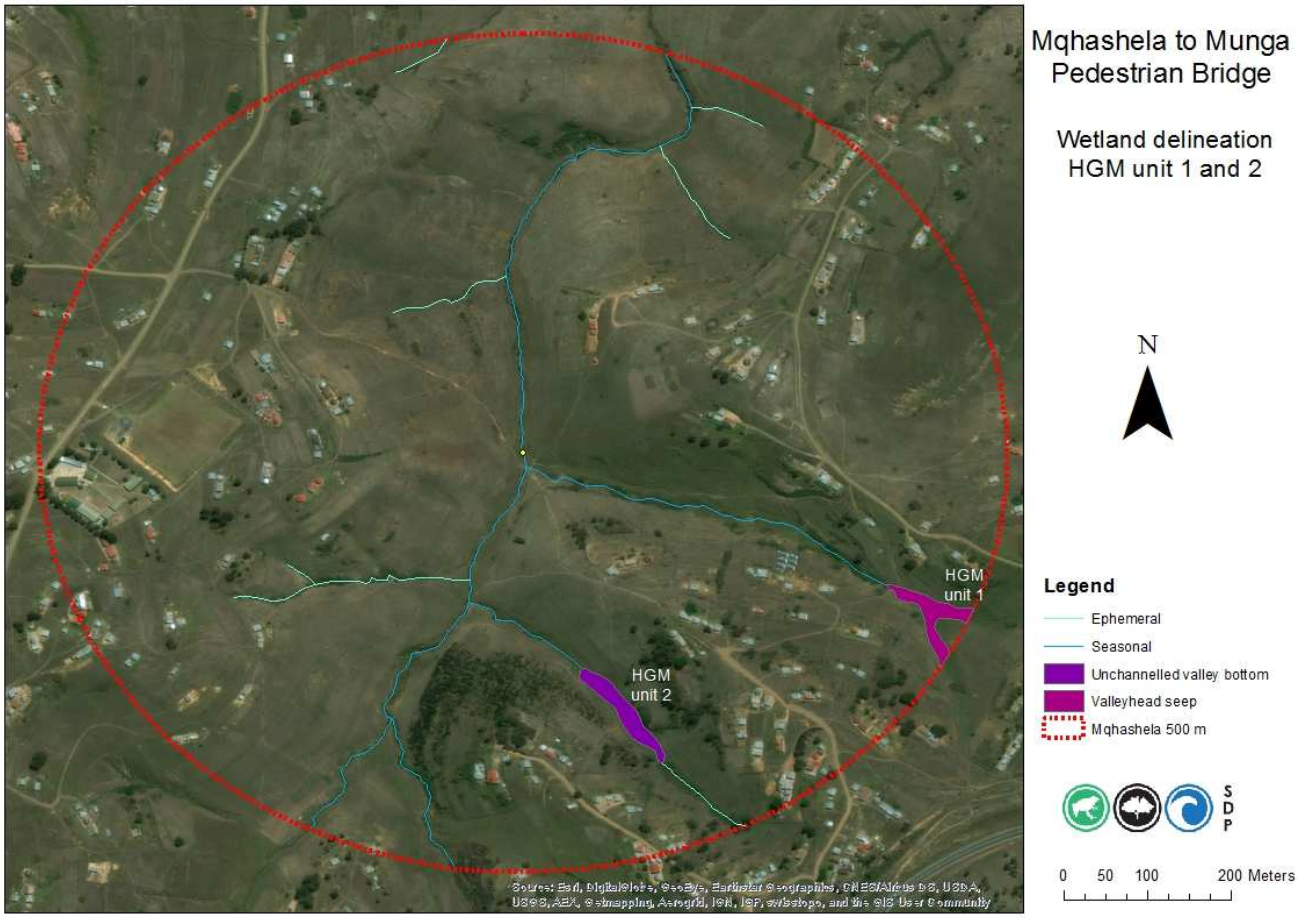


Map 1: Mqhashela to Munga Pedestrian Bridges – The location of the site within an upstream management area as defined by the Freshwater Ecosystem Priority Areas (FEPA) data (Nel et al. 2011), Wetland and Riparian/Aquatic Assessment Report, SDP, October 2018

The site falls within a Fish Support area, which means that fish may utilise the headwater streams for spawning etc. The proposed bridge will not influence fish movement as it will not influence flow of the stream. Secondly, there does not appear to be evidence suggesting that fish occur in the vicinity of the proposed bridge, so it is possible that fish do not even move that far up. Basically, the location within the FEPA should not affect the project and the project is very unlikely to have any impact significant enough to affect fish in the lower more habitable sections of the stream. A. Whitehead, SDP.

The affected non perennial tributary of the Ncumuse River watercourse has been classified as a seasonal watercourse, of less than 2 m in width (stream). Two site visits were conducted for the Wetland and Riparian/Aquatic Assessment Report for the Proposed Mqhashela to Munga Pedestrian Bridge Crossing, SDP, October 2018. During the initial site visit in March, flow was low but present. During the September follow up site visit the flow was similar if not lower than the previous visit. Flow was barely visible, with shallow open pools being dominant.

The watercourse is fed by a number of ephemeral watercourses. Two wetland units, Hydrogeomorphic units (HGM units) were identified within 500 m of the proposed crossing. Both are situated upstream of the proposed crossing. Please refer to Map 2.



Map 2: Mqhashela to Munga Pedestrian Bridges – Location of the two HGM units within 500 m of the proposed pedestrian crossing

The two HGM units identified (HGM unit 1 and 2) were classified as a valley head seep and unchannelled valley bottom wetland respectively. Both are seasonal in nature. None of the wetland units identified will be affected by the proposed pedestrian bridge, directly, indirectly or at a cumulative level.

A water quality sample was not taken as the proposed pedestrian bridge poses no threat to the water quality of the stream (which is very seasonal). Based on the catchment land use, *E. coli* from informal sanitation and disturbance from livestock are the only obvious pollutants. The water quality was rated as “largely natural” as a result. A. Whitehead, SDP.

Although no clear pollution source exists in the catchment, diffuse contamination through informal sanitation is expected, as are water quality concerns associated with livestock watering and bank destabilisation. During high flows, turbidity may be high and periodically, *E. coli* levels may become elevated with low levels potentially present at all times. Low to moderate levels of alien invasive plant infestation was identified, however the extent thereof is unlikely to have a significant effect on the catchment hydrology. Wetland and Riparian/Aquatic Assessment Report for the Proposed Mqhashela to Munga Pedestrian Bridge Crossing, SDP, October 2018

6.1.3 Geology and Soils

Ordovician Natal Group sandstone, Dwyka tillite, Ecca shale and Mapumulo gneiss or Mokolian are described within the KwaZulu Natal Coastal Belt. The weathering process of old dunes has produced Berea red sand in places and the soils supported by the rock types in the area are shallow over hard sandstones and deeper over younger and softer rocks. (Mucina and Rutherford, 2006).

Geology and Soils – Specific Site Conditions
A shallow water table (less than 1.5m deep) occurs on site.
Dolomite, sinkhole or doline areas were not found on site.
Seasonally wet soils (often close to water bodies) occur on site.
Unstable rocky slopes or steep slopes with loose soil were not found on or near the site.
Dispersive soils (soils that dissolve in water) are not likely to occur on site.
Soils with high clay content (clay fraction more than 40%) are not likely to occur on site.
No other unstable soil or geological features were noted on site.
An area sensitive to erosion was noted

6.1.4 Climate

The project site area, Mbeni, receives summer rainfall with some rain in winter, approximately 700-1100mm of rain per year, with most rainfall occurring during summer. Some valleys are sheltered and may show some weak rainshadow effects. Frost is infrequent in the area, occurring mainly where cold air becomes rapidly trapped in valleys. The average temperatures range from a maximum of 37.0°C in summer to a minimum of 4.9°C in winter. The region is the coldest during June/July when the mercury drops to 10°C on average during the night (See figures below).

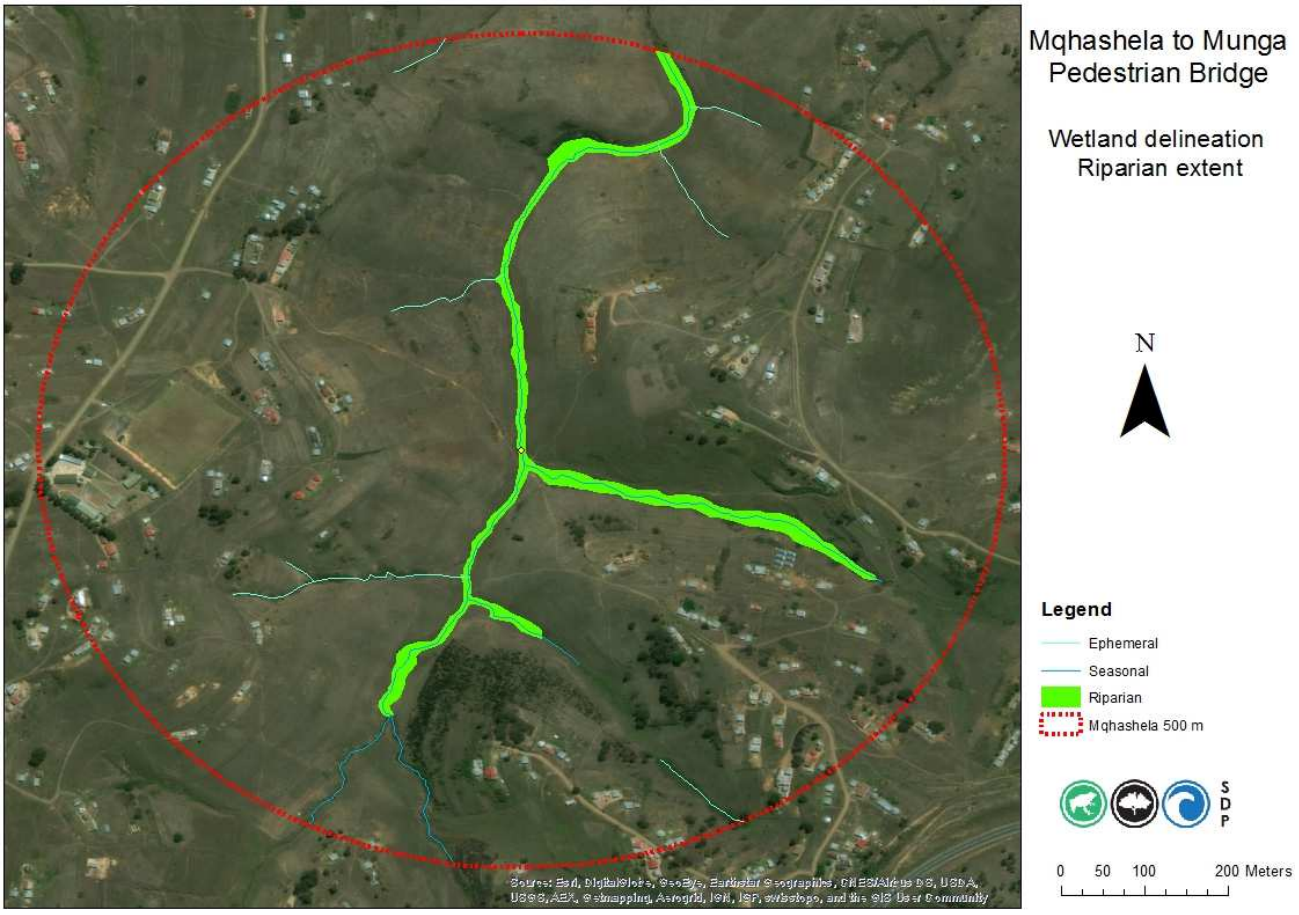
Blue bars - median monthly precipitation.
Upper and lower red lines – mean daily maximum and minimum temperature
MAP – Mean Annual Precipitation
MAT – Mean Annual Temperature

7 Biological Environment

7.1 Flora and Fauna

According to The Vegetation of South Africa, Lesotho and Swaziland, the vegetation in the study area can be classified as Ngongoni Veld, (SVs 4). Ngongoni Veld type vegetation and landscape features are characterised by dense, tall grassland almost entirely dominated by unpalatable, wiry Ngongoni grass, (*Aristida junciformis*) and associated low species diversity. Wooded areas, (thornveld areas), are found in the valleys and at lower altitudes, where the vegetation unit grades into SVs 3 KwaZulu-Natal Hinterland Thornveld and SVs 7 Bhisho Thornvled. Termitaria mounds support bush clumps with *Acacia sp*., and *Cussonia spicata*. The vegetation unit is described as Vulnerable.

The site is not situated within a Critical Biodiversity Area (CBA) zone. Please refer to Appendix A – Mapping and Appendix C – Specialist Reports. The dominant substrate is bedrock with limited lateral seepage into the channel noted. The valley was incised and steep sided, with a narrow riparian zone, closely associated with the channel and dominated by graminoids. Please refer to Map 3. The surrounding area is dominated by grassland – *Aristida junciformis* is dominant. Marginal riparian vegetation consists of a variety of sedges (*Juncus lomatophyllus, Pycreus polystachyos, Schoenoplectus brachycerus, Kyllinga melanosperma, Cyperus dives, Cyperus rotundus*) and the occasional herbaceous and woody shrubs such as *Felicia filifolia* and *Ludwigia octovalvis*.



Map 3: Mqhashela to Munga Pedestrian Bridges – The extent of riparian habitat associated with the lower reaches of the watercourses and crossing site

The watercourse is fed by a number of ephemeral watercourses (channel type A). Two wetland units (HGM units) were identified within 500 m of the proposed crossing. Both are situated upstream of the proposed crossings, (Map 2).

The two HGM units identified (HGM unit 1 and 2) were classified as a valley head seep and unchannelled valley bottom wetland respectively. Both are seasonal in nature. HGM unit 1 is dominated by a damp grassland habitat with *A. junciformis* being the most dominant graminoid species. The occurrence of other hygrophilous vegetation, such as sedges, was limited and associated with the lower reaches of the HGM unit. Soils were dark and of an organic nature. Subsistence agriculture was present along the fringes of the wetland units.

HMG unit 2 is positioned at the base of a small valley and is fed by an ephemeral drainage line. The unit was discernible from its flat topography, which contrasts the incised channels above and below. *A. junciformis* was again common with *C. dives* present in the damper areas. Wetland and Riparian/Aquatic Assessment Report for the Proposed Mqhashela to Munga Pedestrian Bridge Crossing, SDP, October 2018

The nature of the topography, watercourse and riparian habitat are illustrated in Images 3 to 10 overleaf.

Image 3. General view from the top of the slope near the Munga School. Note the steep topography and incised valley.

Image 4. The incised nature of the valley and narrow riparian zone downstream of the proposed crossing, as viewed from the left bank.

Image 5. Low flow conditions and bed rock substrate of the active channel.

Image 6. The nature of the valley upstream of the crossing. Note the dominance of *A. junciformis* within the adjacent grassland.

Image 7. The lower portion of a seasonal channel that joins the main channel from the east in the vicinity of the proposed crossing.

Image 8. View of the downstream riparian habitat taken during the subsequent follow up visit, as viewed form the right bank.

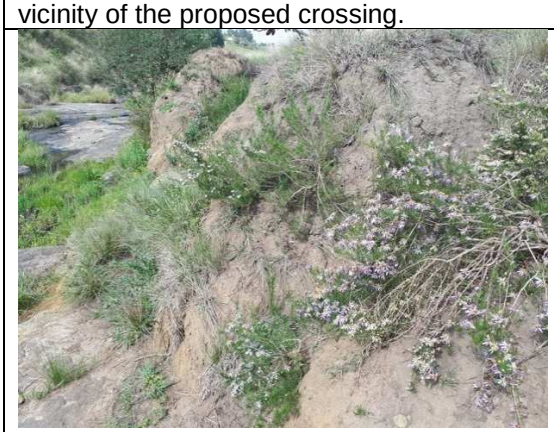


Image 9. *Felicia filifolia* growing on an eroded bank adjacent to the active channel near the crossing site.

Image 10. A smaller seasonal tributary at the crossing site. Note invasion by *A. mearnsii* and *Caesalpinia decapetala*.

7.1.1 Riparian Habitat Assessment

The marginal zone vegetation along the main watercourse channel was found to be generally intact, with occasional exotic invasion (*Nasturtium officinale*) or disturbance associated with the existing informal crossing. The majority of disturbance and impacts were associated with the non-marginal zone. Exotic invasion was prominent and the following species were noted (Image 11):

Acacia mearnsii
Senna didymobotrya
Plectranthus comosus
Lantana camara

Image 11. Riparian vegetation at the crossing site. Note invasion by *S. didymobtorya* and *P. comosus* along upper edge of channel bank.

Use of the surrounding area for grazing had resulted in trampling of some areas of the non-marginal riparian zone. Seasonal burning and grazing activities have resulted in the dominance of *A. junciformis*, which has reduced the diversity of grassland areas associated with the non-marginal zone. Overall, the riparian habitat present is considered to be “moderately modified”. Wetland and Riparian/Aquatic Assessment Report for the Proposed Mqhashela to Munga Pedestrian Bridge Crossing, SDP, October 2018

The Ncumuse River falls within the study area. The affected watercourse is a non-perennial tributary of the Ncumuse River, which feeds into the Umzimkulwana River and the Umzimkhulu River catchment. This riverine area and its associated vegetation are likely to provide habitat for associated faunal species such as avifauna, reptiles and amphibians. Domestic livestock also graze in this area.

7.1.2 Wetland Assessment

None of the wetland units identified will be affected by the proposed pedestrian bridge, directly, indirectly or at a cumulative level. As such, the status of the identified HGM units further was not assessed further.

7.1.3 Aquatic Assessment

Aquatic Fauna

A total of 12 invertebrate taxa were captured, equating to a South African Scoring System, (SASS), score of 73 and Average Score per Taxon, (ASPT), of 6.08. According to the interpretational guidelines presented in Dallas (2007) for the North Eastern Coastal Belt (upper), this reflects an Ecological Category of "largely modified". Owing to the lack of flow, (and possibly consistent flow), taxa preferring fast flowing conditions were absent, while taxa preferring slow moving or still water conditions were dominant.

The Invertebrate Habitat Suitability (Invertebrate Habitat Assessment, (IHAS), score for the instream habitat present was 64 % with an adjustment of +22. This poor habitat score was attributed to the flow conditions, with only slow and no flow conditions dominant, and the dominance of bedrock conditions with little variation in substrate. The habitat and conditions present are likely to explain the low diversity of taxa, but high numbers recorded, i.e. the habitat present was optimal for only a few taxa. Seasonal trends in invertebrate diversity may occur within the section of the watercourse based on flow, however, during both site visits (late summer and spring) the level of sustained flow was minimal suggesting that higher flow conditions are periodic and not sustained for sufficient periods to support a broader range of taxa.

The only other significant aquatic fauna noted, were tadpoles, specifically those of the genus *Amietophrynus* and *Amietia*. No fish were captured. *Enteromius gurneyi* (red tail barb) is expected to occur further downstream, where the conditions are more suitable. This fish species is often the only species present in addition to *Anguillidae* in small sand stone streams and forms an important link in the food chain (Skelton 1993).

7.1.3.1 Present Ecological State, (PES)

The desktop Present Ecological State, (PES), rating criteria estimates the watercourse's PES as B or "largely natural". This state can be attributed to the section of watercourse being unaffected by inundation or flow retardation, the presence of reasonable instream habitat (stream bed condition) with no sedimentation evident and the absence of introduced instream biota. Other components, although slightly altered were generally intact.

Assessment Attribute	Score (1-5)	Confidence
Flow	3	4
Inundation	5	4
Water Quality	3*	2
Stream Bed Condition	4	4
Introduced Instream Biota	5	3
Riparian or Stream Bank Condition	3	4
PES	B (3.8)	

*Based on indirect indicators – invertebrate diversity, water clarity, catchment condition and land use.

Table 2: PES rating of the watercourse affected by the proposed Mqhashela to Munga pedestrian footbridge

7.1.3.2 Ecological Importance and Sensitivity, (EIS)

The Ecological Importance and Sensitivity, (EIS), of the watercourse was considered to be "moderate" based on the criteria measured for assessment. The Rationale included the following:

- A lack of rare or endangered biota.
- A low species diversity with conditions optimal for limited taxa.
- Instream habitat was limited to slow or gently flowing conditions and substrate was dominated by bed rock or marginal vegetation.
- The stretch of watercourse is not believed to be a migration route and is not protected in any way.

Determinant	Score	Confidence
Biotic		
Rare and endangered biota (0-4)	1	3
Unique biota (0-4)	2	3
Intolerant biota (0-4)	3	3
Species/taxon richness (1-4)	2	4
Abiotic		
Diversity of aquatic habitat types or features (1-4)	2	4
Refuge value of habitat types (1-4)	2	3
Sensitivity of habitat to flow changes (1-4)	2	3
Sensitivity to flow related water quality changes (1-4)	3	3
Migration route/corridor for instream and riparian biota (0-4)	0	3
National Parks, wilderness areas, nature reserves, natural heritage sites, natural areas. (0-4)	0	4
EIS	1.7	MODERATE

Table 3: EIS rating of the watercourse

Adapted from: Wetland and Riparian/Aquatic Assessment Report for the Proposed Mqhashela to Munga Pedestrian Bridge Crossing, SDP, October 2018

7.2 Socio-Economic Environment

Ezinqoleni Local Municipality was merged into the Hiibiscus Coast Local Municipality and renamed the Ray Nkonyeni Local Municipality (KZN216), in August 2016. The Ray Nkonyeni Local Municipality is a Category B Municipality in terms of the Municipal Structures, 1998 (Act No. 117 of 1998), situated within the Ugu District Municipality in the province of KwaZulu-Natal. It is the largest of four municipalities in the district, making up a third of this geographical area. The Ray Nkonyeni Local Municipality has its administrative seat in Port Shepstone and covers an area of approximately 90km of coastline comprising 21 beaches, and extends 30km inland, covering a vast, rural area under the leadership of six tribal authorities. It is the most concentrated economic hub within the Ugu District Municipality in the KwaZulu-Natal province.

Beaches of world-class quality are to be found along the entire seaboard, with Marina, Trafalgar, Lucien, Southport, Umzumbe and Ramsgate beaches recognised as full Blue Flag beaches. The coastline is dotted with numerous small towns, many of which serve as seasonal recreational hubs in areas such as Port Shepstone, Umtamvuna/Port Edward, Margate, Hibberdene and Impenjati/Southbroom.

Cities and towns in the municipality include: Hibberdene, Margate, Port Edward, Port Shepstone, Southbroom, and the area it covers is: 1 487km²

The main economic sectors of the municipality are: Finance and business services (21.5%), wholesale and retail (18.7%), general government services (13.3%), manufacturing (12.3%), agriculture and forestry (8.9%), transport and communication (8.9%).

The N2 highway is found in the northern part of the municipality, running parallel to the coastline, approximately 1km inland. In Port Shepstone this highway turns to head in a generally westerly direction towards the town of Harding.

The municipality has numerous naturally occurring water bodies which range from riverine systems to wetlands and wet marshes and the Indian Ocean to the east. Most rivers run in an easterly direction from high altitudes and finally channelling into the warm Indian Ocean. The main rivers in the context of the Municipality are the Mzimkhulu River, Mtamvuna River, Mbizana River, Vungu River, Mzumbe River and the Mzikhulwane River.

Farming activities in the municipality include intensive and semi-intensive farming (sugar-cane, bananas in the Umtamvuna area, and forestry), and non-commercial stock-raising and crop production (mainly for home consumption) in the rural areas.

The South Coast is the second-largest domestic tourism market after Durban, with about 2.2 million annual visitors. The towns along the coast are popular holiday resorts which offer a wide range of sports amenities and recreational activities. The annual sardine run is also a very popular tourist attraction in the area, occurring in the winter months, June/July each year. However, the rural areas that now form part of the municipality are relatively underdeveloped. Much property growth is currently underway with the establishment of new shopping complexes and residential developments.

The total population of the Ray Nkonyeni Local Municipality in 2011, based on Stats SA's most recent Census, was estimated to be 308 675 and population growth shows a negative trend. Land use surrounding the proposed development areas consists of predominantly subsistence farming activities associated with individual households and rural settlements. The socio-economic structure can be classified as primarily low income. Most of the surrounding region within the catchment of the proposed development area is undeveloped, although some primary schools are present within close proximity. Convenience stores and rural dwellings can be found along the road side at the high reaches of the road leading to and from the proposed Mqhashela to Munga Pedestrian Bridges.

The Lake Eland Game Reserve and Oribi Gorge Nature Reserve, lie approximately 2.5 km, north-east of the proposed pedestrian bridges location and Nyamazane Game Ranch lies to the north, north-west. The Mumbazi Nature Reserve lies to the south-east of the site.

All relevant affected parties will be consulted as part of the Public Participation Process.

7.3 Culture and Heritage Environments

No sites of cultural significance were noted within the site or within close proximity to the site. The project details, the Background Information Document have been submitted to AMAFA for comment. AMAFA Heritage Case ID: 13719.

8 Environmental Impact Assessment of the Proposed Activity

8.1 Geographical and Physical Environments

8.1.1 Topography and Drainage

The topography of the area will not be affected because of the site specific nature of the proposed development.

Drainage will be affected during construction and post construction if not correctly managed. The proposed development is within a watercourse, and will thus affect the flow of the non-perennial tributary of the Ncumuse River during construction. This will be managed through the use of temporary stream diversion, if required. The flow will not be stopped at any time, and, where possible, the majority of the construction work will take place within the dry season.

8.1.2 Hydrology

The water quality was noted to be “largely natural”, (Whitehead, 2019), and is likely to be affected in the short term by the proposed development construction activities. The proposed non-perennial tributary of the Ncumuse River Pedestrian Bridges are not likely to result in attenuation as the main northern bridge central support is located out of the active channel, together with the two side support structures. The smaller eastern bridge supports are also located outside of the active river channel. Localised sedimentation from the construction activities may result downstream. A decrease in surface water quality within the active channel is expected during the construction phase owing to an accumulation of suspended sediment and excess sediment deposition from erosion during the construction phase. Once construction is complete, the structure should not have any effect on the hydrology of the system, as no part of the structure is planned to be positioned within the active channel.

The proposed development may result in contamination of surface and groundwater arising from the construction plant, oils/grease, cement, building materials etc. However, mitigation measures will be applied within the Environmental Management Programme (EMPr), which if implemented will help to ensure that these impacts are significantly reduced.

• Vehicular disturbance: Plant will need to cross the watercourse in order to undertake the minor earthworks component. Indiscriminate crossing can affect the integrity of both the riparian and instream habitats. Careful planning and site management through the implementation of the project EMPr should reduce these impacts.

• Erosion: Excavation, earth moving and vehicular movement will increase the susceptibility of the site to erosion, during the construction phase. This is likely given the steepness of the slopes either side of the channel. The measures contained within the project EMPr must be put in place.

It is anticipated that the construction methodology to be employed will utilise the most appropriate / best practice methodologies to ensure that these impacts are kept to a minimum.

8.1.3 Geology and Soils

The proposed development will have little to no negative impact on the geology and soils of the area. Construction activities may temporarily increase erosion during excavation for bridge columns, and stream sedimentation and may also result in soil compaction both within, and alongside the watercourse. Access to column areas and across the non-perennial tributary of the Ncumuse River may increase erosion and sedimentation during construction. The relevant mitigation measures to help to reduce this impact, will be incorporated into the project EMPr.

8.1.4 Climate

No measurable affect is anticipated.

8.2 Biological Environments

8.2.1 Flora

According to Whitehead 2019, the riparian habitat associated with the watercourse is narrow and is dominated by graminoids with some shrubs and herbaceous species present within the non-marginal zone. The majority of disturbance and impacts were associated with the non-marginal zone. Exotic invasion was prominent and the following species were noted: *Acacia mearnsii, Senna didymobotrya, Plectranthus comosus* and *Lantana camara*. Some scour and erosion was present within the riparian zone, as well as exotic invasion. The marginal zone vegetation along the main watercourse channel was found to be generally intact, with occasional exotic invasion (*Nasturtium officinale*) or disturbance associated with the existing informal crossing. *Acacia mearnsii, Senna didymobotrya and Plectranthus comosus* were prominent invaders in the vicinity of the proposed crossing site. Seasonal burning and grazing activities have resulted in the dominance of *A. junciformis*, which has reduced the diversity of grassland areas associated with the non-marginal zone. Overall, the riparian habitat was rated as "moderately modified".

The proposed development is likely to have a localised impact on the site vegetation, potentially resulting in additional alien invasive plants becoming established on site and downstream from the site, particularly if no site environmental management and rehabilitation measures are implemented.

8.2.2 Terrestrial Fauna

The proposed development is unlikely to significantly affect indigenous fauna, which if present, will likely retreat from the area during construction. Disturbance of the aquatic ecosystem from a physical obstruction affecting movement of aquatic biota may occur to some degree during construction. Domestic livestock also graze in this area and may be marginally displaced during construction.

8.2.3 Aquatic Fauna

The aquatic survey indicated that the most prominent faunal groups present include invertebrates and amphibians. Given the small potential footprint of any instream disturbance, any loss of individuals will be isolated and the remainder of the population will remain unaffected. Once construction is complete, it is expected that disturbed areas will be rapidly recolonised. The long terms effects are expected to be insignificant.

There are, therefore, potential impacts during the construction phase, however, during operational phase, marginal impact, as the proposed structures are located outside of the active channel.

8.3 Socio-Economic Environment

8.3.1 Social

The proposed construction of a formal pedestrian structure across the non-perennial tributary of the Ncumuse River will benefit the local community, as it will enable pedestrian and livestock passage during high rainfall events. The local community may also benefit through the provision of 1 – 10 temporary employment opportunities during the construction phase. The safety of the local inhabitants will need to be considered during construction and access to the construction area must be regulated.

Proposed Development Socio-Economic Statistics	
Expected capital value of the activity on completion:	R 3 980 000.00
Expected yearly income that will be generated by or as a result of the activity:	R 100 000.00
The activity will contribute to service infrastructure.	
The activity is a public amenity.	
Number of new employment opportunities that will be created in the development phase of the activity:	10 people
Expected value of the employment opportunities during the development phase:	R 350 000.00
Percentage of this which will accrue to previously disadvantaged individuals:	100 %
Number of employment opportunities will be created during the operational phase of the activity:	2 people
Expected current value of the employment opportunities during the first 10 years:	N/A
Percentage of this will which accrue to previously disadvantaged individuals:	N/A

8.3.2 Traffic

Access to the site will be gained via the existing dirt access tracks and gravel road that extends from the N2 tar road to the south of the site. It is anticipated that the common transportation route will be from the south of the site and the N2, as this is the shortest route to the nearest commercial centre. The size of the trucks transporting goods to and from the site will not exceed the size of the trucks utilised in the construction of the N2 itself. The trucks will also comply with local road regulations and weight specifications. The number of trucks gaining access to the site is not known at this stage.

If the speed (and weight) limits on the haulage roads are adhered to no impacts different from the impact of the current traffic are envisaged. This will include the generation of noise, dust and potential safety issues.

8.3.3 Emissions – Waste, Smoke, Dust, Noise

Dust and noise emitted during construction from vehicle movement and excavations are inevitable but will be of short duration. Dust originating from the gravel roads giving access to the site is likely to occur especially if construction takes place during the drier winter months as is recommended to help to reduce the impacts on the watercourse. If the amount of dust on the gravel access road becomes a problem, the road will be sprayed with water to settle the dust (as a last resort only).

It is not expected that the emissions will cause an impact on the residents in the surrounding areas or exceed the levels stipulated in the National Environmental Management: Air Quality Act (No.39 of 2004).

Waste generated during construction will include construction rubble and general waste, all of which will be disposed of at the nearest registered landfill site. The Hibiscus Coast Municipality's Oatlands site, on Oatlands Road, off Izotsha Road, Margate, South Coast, KwaZulu-Natal may be utilised. Recycling must be encouraged.

8.3.4 Heritage and Cultural Environment

No sites of heritage or cultural significance were noted within the site or within close proximity to the site; the proposed development is, therefore, unlikely to affect these resources. Comments have, however been requested from AMAFA for the project. AMAFA Heritage Case ID: 13719.

9 Environmental Risk Assessment Methodology

The purpose of the Environmental Risk Assessment (ERA) is to identify the potential environmental risks and impacts associated with the installation of the proposed pedestrian bridge. This provides a basis to identify the key risk drivers and make informed decisions on the way forward in order to ensure that these risks do not result in unacceptable social, environmental or reputational risk.

9.1 Risk Assessment Methodology

The potential environmental impacts associated with the proposed development have been evaluated using a recognised semi-quantitative risk assessment methodology. This methodology has been developed to ensure all procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment as set out in National Environmental Management Act (No. 107 of 1998) [NEMA] 24(4b) are met. In order to assess the significance as objectively as possible, the following criteria have been used:

SEVERITY of the impact
SPATIAL SCALE (EXTENT) of the impact
} **Consequence**

FREQUENCY of the ACTIVITY
FREQUENCY of the OCCURRENCE (PROBABILITY) of the impact
} **Likelihood**

} **Significance**

This system derives environmental significance on the basis of the consequence of the impact on the environment and the likelihood of the impact occurring. **Tables 4 to 8** describe the process in detail. The significance rating of potential risks is outlined in **Table 8**. Significance is calculated as the product of consequence and likelihood.

9.2 Determining Consequences

In terms of this project, consequence is determined based on the consideration of a combination of severity, extent and duration of the environmental impact. Consequence is determined as the average of the three values (i.e. (severity + extent + duration) / 3) (**Table 4**).

Table 4: Assessment of Consequences

Rating	Description		
	Severity	Spatial Extent (Scale)	Duration
1	Negligible / non-harmful / minimal deterioration	Within immediate area of activity	Less than 1 month / quickly reversible
2	Minor / potentially harmful / measurable deterioration	Surrounding area within project boundary	Less than 1 year / quickly reversible
3	Moderate / harmful / moderate deterioration	Beyond project boundary	More than 1 year / reversible over time
4	Significant / very harmful / substantial deterioration	Regional / provincial	More than 10 years / reversible over time / life of project or facility
5	Irreversible / permanent	National / international	Beyond life of project of facility / permanent

9.3 Determining Likelihood

Likelihood considers the frequency of the activity together with the probability of an environmental impact associated with that activity occurring. Likelihood is determined as the average of the two values (i.e. (frequency + probability / 2) (**Table 5**).

Table 5: Assessment of Likelihood

Rating	Description Frequency	Probability
1	Less than once a year	Almost impossible
2	Once in a year	Unlikely
3	Quarterly	Probable
4	Weekly	Highly likely
5	Daily	Definite

9.4 Determining Overall Impact Significance

Overall significance is determined using professional judgement based on a clear understanding of the nature of the impact, its severity, the duration and degree to which the impact can be reversed as well as the extent of the impact. These aspects define the impacts consequence which must be considered against the likelihood of the impact occurring in order to assign an overall significance of the impact. Significance ratings of the identified impacts have been based on the implementation of mitigation measures as per the proposed Environmental Management Plan (EMPr).

The status of the impact must be defined, and the impact can either be positive, neutral or negative. A positive impact is where an activity will have a social / environmental / economic benefit. A neutral impact is when an activity will have no effect. A negative impact is when an activity will be harmful socially / economically / environmentally. Significance should be assigned according to the definitions in the table below (**Table 6**).

Table 6: Description of Impact Significance

Rating	Significance	Description
L (1 – 4.9)	**Insignificant**	A potential issue which was found to have no impact when evaluated
LM (5 – 9.9)	**Very Low**	Impacts will be site specific and temporary with no mitigation necessary
M (10 – 14.99)	**Low**	Impact will have a minor influence on the biophysical and/or social environment, and will not have an influence on the decision.
MH (15 – 19.9)	**Medium**	Impact will have a moderate influence on the biophysical and/or social environment, and it should have an influence on the decision unless it is mitigated.
H (20 – 25)	**High**	Impact will have a major influence on the biophysical and/or social environment, and would influence the outcome regardless of any possible mitigation.

10 Environmental Impact Assessment Matrix

The purpose of the environmental impact assessment (EIA) is to identify the potential impacts and associated risks posed by the project on the environment. The outcomes of the EIA will provide a basis to identify the key risk drivers and make informed decisions on the way forward in order to ensure that these risks do not result in unacceptable social, environmental or reputational risk to the Ray Nkonyeni Local Municipality.

The potential environmental impacts in terms of NEMA are assessed in the risk matrix below (**Table 7**) according to the criteria described in the consequences, likelihood and significance tables provided above. The reasons for selecting each is covered under the qualification of the potential impact; the associated recommendations, findings and / or mitigation measures are also provided.

Table 7: Environmental Impact Risk Matrix

Please refer to table overleaf.

Qualification of Potential Impacts (Nature)		Severity	Extent	Duration	Consequence (S+E+D)/3	Frequency	Probability	Likelihood (F+P)/2	Significance (No Mitigation) (CxL)	Significance (With Mitigation)	Impact Assessor Comments and Recommendations: - Degree to which impact can be managed - Possible Mitigation Measures and level of residual risk - Positive and Negative Impacts
10.1 Geographical and Physical Environments (Preferred Alternative)											
Decrease in surface water quality	A decrease in surface water quality is expected during the construction phase owing to an accumulation of suspended sediment and excess sediment deposition from potential sediment release associated with the construction methodology.	2	2	2	2	2	2	2	*4 L*	-	The proposed construction methodology is considered "best practice" as it makes use of the most appropriate technologies. Notwithstanding the above, mitigation and rehabilitation measures and recommendations will be incorporated into the Environmental Management Programme. For example: Construction within the active channel will require temporary stream diversion to help reduce erosion and sedimentation. Any excavations or excavated material must be protected from erosion if it is anticipated that it will remain exposed for any length of time. Stockpiles of this material must be positioned away from the watercourse, keeping the top soil and the sub-soil separate (where applicable). As a result, a long-term decrease in surface water quality is not expected; the impact is likely to be very low (negative). **Insignificant**.
	With mitigation:	2	2	1	1.6	1	2	1.5	-	*2.4 L*	
Impact on surface water flow	Alteration of surface flow conditions owing to physical obstruction of the pedestrian bridges columns.	1	1		1	1	1	1	*1 L*	-	

	Qualification of Potential Impacts (Nature)	Severity	Extent	Duration	Consequence (S+E+D)/3	Frequency	Probability	Likelihood (F+P)/2	Significance (No Mitigation) (CxL)	Significance (With Mitigation)	Impact Assessor Comments and Recommendations: - Degree to which impact can be managed - Possible Mitigation Measures and level of residual risk - Positive and Negative Impacts
	With mitigation:	1	1	1	**1**	1	1	**1**	**-**	***1L***	The installation of the non-perennial Ncumuse River Pedestrian Bridges is not expected to significantly affect surface water flow during the construction phase. This phase is expected to be short in duration, and management measures must be employed during the construction phase to help to ensure that the surface water flow is maintained as far as possible. The impact post mitigation is expected to be very low/(negative). **Insignificant**. This impact can be reduced further if construction takes place within the dry months.
Increased sedimentation	Increased sedimentation of the watercourses owing to disturbances / alterations to the bed and banks could potentially cause an increase in transportation and deposition of sediments to the watercourse, leading to a reduction in water quality.	2	2	2	**2**	2	2	**2**	***4 LM***	***.***	The probability for this impact to occur will be increased during high rainfall periods. The potential impact of sedimentation is expected to be of a very low significance if the recommendations in the EMPr are implemented. In addition, construction on the non-perennial Ncumuse River Pedestrian Bridges will be limited to the dry (low rainfall) winter months. Based on the above, the potential impact on surface water resources is likely to be very low (negative). **Insignificant.**
	With mitigation:	2	1	1.5	**1.5**	2	2	**2**	***.***	***4.5 L***	

	Qualification of Potential Impacts (Nature)	Severity	Extent	Duration	Consequence (S+E+D)/3	Frequency	Probability	Likelihood (F+P)/2	Significance (No Mitigation) (CxL)	Significance (With Mitigation)	Impact Assessor Comments and Recommendations: - Degree to which impact can be managed - Possible Mitigation Measures and level of residual risk - Positive and Negative Impacts
Decrease in groundwater water quality	The installation method could result in contamination of ground water arising from the construction plant, oils/grease, cement, building materials etc.	3	3	3	3	3	3.5	3.25	***9.75 LM***	.	There is the potential for contamination of groundwater owing to uncontrolled releases of cement, hydraulic fluid, oil, diesel during construction. The potential impact of groundwater contamination is expected to be of a **very low (negative)** significance if the recommendations in the EMPr are not implemented and **very low** after mitigation. Please refer to recommendations regarding hazardous material and spill management in the EMPr.
	With mitigation:	2	2	2	2	2.5	2.5	2.5	.	***5 LM***	
Decrease in soil and groundwater water quality	The development of a construction site could result in damage to soil and ground water contamination.	3	2	2	2.3	3	3	3	***7 LM***	.	

	Qualification of Potential Impacts (Nature)	Severity	Extent	Duration	Consequence (S+E+D)/3	Frequency	Probability	Likelihood (F+P)/2	Significance (No Mitigation) (CxL)	Significance (With Mitigation)	Impact Assessor Comments and Recommendations: - Degree to which impact can be managed - Possible Mitigation Measures and level of residual risk - Positive and Negative Impacts
	With mitigation:	2	2	2	**2**	2	2	**2**	**.**	***4 L***	The clearing and development of the site may cause soil compaction and contamination, and ultimately erosion, as well as ground water contamination as a result of the movement of heavy vehicles and the uncontrolled release of hydrocarbons, cement and other hazardous materials. Bunded areas must be set up from the outset to help to ensure all spillages are contained. Any spillages must be immediately cleaned up and disposed of at the nearest registered landfill only, with proof of correct disposal. During construction continuous monitoring of containers, bunded areas, surface runoff and air emissions must be undertaken by a responsible person. The proposed non-perennial Ncumuse River Pedestrian Bridges areas must be kept to a minimum where possible. At the site camp and ingress and egress points of the bridges, topsoil should be removed from the proposed construction site prior to establishment. The compacted soil must be ripped up, the topsoil replaced, and rehabilitated with indigenous vegetation once construction has been completed. This impact is of **very low (negative)** significance without mitigation, and of very low, (no) significance if mitigated. **Insignificant.**

	Qualification of Potential Impacts (Nature)	Severity	Extent	Duration	Consequence (S+E+D)/3	Frequency	Probability	Likelihood (F+P)/2	Significance (No Mitigation) (CxL)	Significance (With Mitigation)	Impact Assessor Comments and Recommendations: - Degree to which impact can be managed - Possible Mitigation Measures and level of residual risk - Positive and Negative Impacts
Increased soil erosion	The installation method may exacerbate erosion of the non-perennial tributary of the Ncumuse River banks and bed.	3	3	2	2.6	4	3	3.5	***9.1 LM***	.	There is the potential for soil erosion to occur because of excavation activities within the non-perennial tributary of the Ncumuse River during construction. The probability for this impact to occur is increased during high rainfall periods. The impacts from erosion are expected to be **very low** pre-mitigation and **very low** if the soil erosion and surface water protection measures recommended in the EMPr are implemented **(negative)**. In addition, construction of the crossings will be limited to the dry winter months.
	With mitigation:	2	2	2	2	3	3	3	.	***6 LM***	
Compaction of soils	Compaction of the soils from heavy vehicles.	2	2	2	2	3.5	3	3.25	***6.5 LM***	.	

	Qualification of Potential Impacts (Nature)	Severity	Extent	Duration	Consequence (S+E+D)/3	Frequency	Probability	Likelihood (F+P)/2	Significance (No Mitigation) (CxL)	Significance (With Mitigation)	Impact Assessor Comments and Recommendations: - Degree to which impact can be managed - Possible Mitigation Measures and level of residual risk - Positive and Negative Impacts
	With mitigation:	2	1	2	**1.7**	3	3	**3**	**.**	***5.1 LM***	Compaction of soils in and along the edges of the watercourse must be minimised as far as possible. Areas excluded from development (riparian zones) must be clearly demarcated and indicated to construction staff. Compacted soil must be broken up, raked loosely, and then re-vegetated or packed with large boulders and stones (within the river bed). Use of gabions and reno mattresses must also be considered. The impact is thus expected to be **very low (negative)** both pre and post mitigation. Crossing of the non-perennial tributary of the Ncumuse River must be avoided as far as possible to help limit impact. If crossing is necessary, simple surface and temporary structures to limit damage to the non-perennial tributary must be utilised. Reno mattresses, gabion baskets and biodegradable sand bags may be utilised. No plastics. At completion, ALL imported material must be cleared up. Allwaste must be correctly disposed of with proof of correct disposal. No clearing or damage to the non-perennial tributary of the Ncumuse River will be allowed.

10.2 Biological Environments (Preferred Alternative)

	Qualification of Potential Impacts (Nature)	Severity	Extent	Duration	Consequence (S+E+D)/3	Frequency	Probability	Likelihood (F+P)/2	Significance (No Mitigation) (CxL)	Significance (With Mitigation)	Impact Assessor Comments and Recommendations: - Degree to which impact can be managed - Possible Mitigation Measures and level of residual risk - Positive and Negative Impacts
Ecological Impact – aquatic biota	Disturbance of the aquatic ecosystem from a physical obstruction affecting movement of aquatic biota.	2	2	2	**2**	2	2	**2**	***4L***	**.**	In the case of the two non-perennial tributary of the Ncumuse River bridge crossings, the installation and operation of the bridge will not present a physical obstruction, as it will involve the construction of end bridge supports out of the active channel, and the

	With mitigation:	1	1	1	**1**	1	2	**1.5**	**.**	***1.5 L***	northern bridge will have a central support, but this structure will also be out of the active channel. According to Whitehead (2019), "*Impacts on instream habitat and the active channel resulting from hydrological changes can be mitigated through consideration of certain design features during the detailed planning of the crossing. Ideally, the proposed structure should not significantly affect the flow of water, thereby minimising impacts brought about by attenuation and turbulence. It is recommended that consideration should be taken of the following in the design of the structure:* • *Allow for high flows (1:10 year flood or similar) to pass unimpeded beneath the crossing* • *Columns/culverts must offer as little resistance to flow as possible. For example, the use of pylon supports rather than numerous box culverts or stacked pipe culverts.* • *Given the width of the active channel, supports should be positioned outside of the active channel.* • *Consideration of the direction of flow. The structure should not cause the flow of the river to deviate.* *The proposed design of the footbridge appears to be in line with the mitigation measures proposed above. The footbridge is thus not expected to have any significant long term effects on stream flow or localised hydrology if the proposed design is implemented".* The proposed design of the bridge is deemed as suitable for aquatic biota to migrate upstream. The disturbance to functioning and associated ecological benefits are limited and the potential impact is considered very low. The pedestrian footbridges are expected to span the active channel comfortably with no permanent interference of flow. Some disturbance of flow may occur during construction, however this will be temporary. **Insignificant**.
Ecological Impact – temporary loss of habitat	Disturbance of the aquatic ecosystem as a result of a temporary loss of watercourse habitat.	1	1	1	**1**	1	1	**1**	***1 L***	**.**	In the case of the two non-perennial tributary of the Ncumuse River bridge crossings, the installation and operation of the bridge will not present a physical obstruction, as it will involve the construction of end bridge supports out of the active channel, and the

	With mitigation:	1	1	1	**1**	1	1	**1**	**.**	***1L***	northern bridge will have a central support, but this structure will also be out of the active channel. According to Whitehead (2019), "*Impacts on instream habitat and the active channel resulting from hydrological changes can be mitigated through consideration of certain design features during the detailed planning of the crossing. Ideally, the proposed structure should not significantly affect the flow of water, thereby minimising impacts brought about by attenuation and turbulence. It is recommended that consideration should be taken of the following in the design of the structure:* • *Allow for high flows (1:10 year flood or similar) to pass unimpeded beneath the crossing* • *Columns/culverts must offer as little resistance to flow as possible. For example, the use of pylon supports rather than numerous box culverts or stacked pipe culverts.* • *Given the width of the active channel, supports should be positioned outside of the active channel.* • *Consideration of the direction of flow. The structure should not cause the flow of the river to deviate.* *The proposed design of the footbridge appears to be in line with the mitigation measures proposed above. The footbridge is thus not expected to have any significant long term effects on stream flow or localised hydrology if the proposed design is implemented".* The proposed design of the bridge is deemed as suitable for aquatic biota to migrate upstream. The disturbance to functioning and associated ecological benefits are limited and the potential impact is considered very low. The pedestrian footbridges are expected to span the active channel comfortably with no permanent interference of flow. Some disturbance of flow may occur during construction, however this will be temporary. **Insignificant**.
Ecological impacts – benthic habitat	Disruption of the benthic habitats.	2	2	2	**2**	1	1	**2**	***4L***	**.**	The installation of the two non-perennial tributary of the Ncumuse River bridge crossings will not result in

	Qualification of Potential Impacts (Nature)	Severity	Extent	Duration	Consequence (S+E+D)/3	Frequency	Probability	Likelihood (F+P)/2	Significance (No Mitigation) (CxL)	Significance (With Mitigation)	Impact Assessor Comments and Recommendations: - Degree to which impact can be managed - Possible Mitigation Measures and level of residual risk - Positive and Negative Impacts
	With mitigation:	1	1	1	**1**	1	1	**1**	**.**	***1L***	significant disruption to the benthic habitat during construction. The pedestrian footbridges are expected to span the active channel comfortably with no permanent interference. Some disturbance of flow may occur during construction, however this will be temporary. Potential impact is considered **very low (negative)** and very low post mitigation. **Insignificant.**
Ecological impacts – river banks and beds	Modifications to the channel banks and beds from the construction process.	2	2	4	**2.6**	4	4	**4**	***10.4 M***	**.**	The topsoil must be removed and stockpiled / stored separately from the underlying sub-soil prior to construction on the banks of the watercourse. The backfill process must ensure that the material is returned in the same order that it was removed i.e. the sub-soil replaced first, followed by the topsoil material closer to the surface. The impact is thus expected to be **low (negative),** pre mitigation and **low** post mitigation.
	With mitigation:	4	1	4	**3**	4	3	**3.5**	**.**	***10.5 M***	
Ecological impacts – alien invasive vegetation	Disturbance of vegetation and the encroachment of alien invasive plant species	4	4	4	**4**	4	4	**4**	***16 M***	**.**	

	Qualification of Potential Impacts (Nature)	Severity	Extent	Duration	Consequence (S+E+D)/3	Frequency	Probability	Likelihood (F+P)/2	Significance (No Mitigation) (CxL)	Significance (With Mitigation)	Impact Assessor Comments and Recommendations: - Degree to which impact can be managed - Possible Mitigation Measures and level of residual risk - Positive and Negative Impacts
	With mitigation:	3	3	4	**3.33**	3	3	**3**	***.***	***10 LM***	It is critical that vegetation is established over disturbed areas immediately after construction is complete. Groundcover that were removed during the initial phases of construction along the river banks must be replanted on completion of construction. An approved local indigenous grass seed mixture must be applied in conjunction with the sods if it is deemed that establishment of the vegetation from the sods is unlikely to be successful. Pre mitigation the impact is expected to be **medium and post mitigation low (negative).**
Ecological impacts – loss of riparian habitat	Loss of sections of riparian habitat.	2	2	2	**2**	2	3	**2.5**	***5L M***	***.***	

	Qualification of Potential Impacts (Nature)	Severity	Extent	Duration	Consequence (S+E+D)/3	Frequency	Probability	Likelihood (F+P)/2	Significance (No Mitigation) (CxL)	Significance (With Mitigation)	Impact Assessor Comments and Recommendations: - Degree to which impact can be managed - Possible Mitigation Measures and level of residual risk - Positive and Negative Impacts
	With mitigation:	3	2	2	**2.3**	3	3	**3**	**.**	***7 LM***	The proposed working area must be clearly demarcated prior to the commencement of the works. The width of the working area within the watercourse must be kept to a strict minimum to ensure that impacts on the freshwater systems and the watercourse are minimised. All activities must be restricted to within the demarcated working area. The reinstatement of the watercourse and banks must be carried out immediately after the bridge supports and bridges have been installed. The backfill material must be returned in the same order that it was removed i.e. the sub-soil replaced first, followed by the topsoil material closer to the surface. Re-vegetation must be carried out immediately after backfilling, and the establishment of alien invasive plants must be prevented. The use of engineered mechanisms (reno and gabions), biodegradable sand bags or large rocks and boulders, will also assist in stabilising the soil and river beds and banks. The impact is then expected to be kept within the **very low range (negative)** pre-mitigation, and **very low** if mitigation measures are employed.

Qualification of Potential Impacts (Nature)		Severity	Extent	Duration	Consequence (S+E+D)/3	Frequency	Probability	Likelihood (F+P)/2	Significance (No Mitigation) (CxL)	Significance (With Mitigation)	Impact Assessor Comments and Recommendations: - Degree to which impact can be managed - Possible Mitigation Measures and level of residual risk - Positive and Negative Impacts
10.3 Socio-Economic Environment (Preferred Alternative)											
Potential Safety and security impact	Exposure of local residents (and livestock) to potentially dangerous site conditions (open excavations) during construction	4	3	2	**3**	3	3	**3**	***9 LM***	***.***	The proposed bridges will expose the local residents to potentially dangerous conditions during the construction phase if excavations are left accessible and unguarded during construction hours and after hours. Local residents must be informed of the proposed construction activities and warned to stay away. Where possible the site must be fenced off. Communication keeping the local residents/IAPs informed will be important throughout the construction phase. The impact is likely to be **very low (negative)** pre and post mitigation.
	With mitigation:	2	3	2	**2.3**	3	2	**2.5**	***.***	***5.8 LM***	
Changes in the social fabric	The influx of construction workers may create social issues such as conflict, conflict for work, changes in financial outlook, changes in domestic cohesion.	3	3	2	**2.6**	3	3	**3**	***8 LM***	***.***	The proposed development will expose the local residents to potential conflict situations if construction work is only available to some, and if social and domestic cohesion is compromised. It is suggested that the construction workers be advised of these pitfalls in order to help avoid them. This impact is expected to be of **very low (negative)** significance both pre and post mitigation.
	With mitigation:	2	2	2	**2**	3	2	**2.5**	***.***	***5 LM***	

	Qualification of Potential Impacts (Nature)	Severity	Extent	Duration	Consequence (S+E+D)/3	Frequency	Probability	Likelihood (F+P)/2	Significance (No Mitigation) (CxL)	Significance (With Mitigation)	Impact Assessor Comments and Recommendations: - Degree to which impact can be managed - Possible Mitigation Measures and level of residual risk - Positive and Negative Impacts
Improved social amenity	The construction of the proposed two non-perennial tributary of the Ncumuse River bridge crossings will provide improved and safer access for residents, pedestrians, school children.	5	3	4	4	4	4	4	***16 MH***	.	The two non-perennial tributary crossings of the Ncumuse River become difficult and dangerous to cross during high rainfall and flood events, the construction of a pedestrian bridge will improve safety and access for local residents. This is a **positive** impact of **Medium** Significance.
	With mitigation: Not required										
Construction Phase Waste, and Effluent,	Waste may be produced during the construction phase	3	3	3	3	5	4	4.5	***13.5 M***	.	A small quantity of waste in the form of construction rubble, overburden and general waste may be created during the construction phase. This will be disposed of appropriately at the nearest registered waste disposal site. **Low** impact is expected during construction and **very low** post mitigation
	With mitigation:	2	2	2	2	4	3	3.5	.	***7 LM***	
Construction Phase Emissions and Noise	Noise and Dust may be created by the construction vehicles and machinery	3	3	3	3	4	3	3.5	***10.5 M***	.	

	Qualification of Potential Impacts (Nature)	Severity	Extent	Duration	Consequence (S+E+D)/3	Frequency	Probability	Likelihood (F+P)/2	Significance (No Mitigation) (CxL)	Significance (With Mitigation)	Impact Assessor Comments and Recommendations: - Degree to which impact can be managed - Possible Mitigation Measures and level of residual risk - Positive and Negative Impacts
	With mitigation:	2	2	2	**2**	3	2	**2.5**	***.***	***5 LM***	Noise and dust may be created by construction vehicles during the construction phase (the access roads are dirt and gravel roads). This must be prevented by ensuring that the vehicles travel at reduced speeds. Wetting the roads and dusty areas down is an option but must only be considered as a last resort in extreme cases. Noise must be reduced through the use of silencers and correctly maintained equipment. These impacts are likely to be of short and intermittent duration, and are not considered intolerable. There are residents and a school located close to the site, so noise and dust must be correctly managed. The impact is thus **low** during construction and **very low (negative)** post mitigation.

10.4 Cumulative Impacts

The majority of the impacts were found to be of a medium to low negative significance, prior to mitigation. Cumulatively, the impacts assessed are not expected to significantly alter the environmental condition, especially if the mitigation measures are employed.

10.5 Degree to which the Impacts can be reversed

All the impacts can be reversed, other than the permanent impact of the installation of the proposed two pedestrian bridges. In some instances, a positive outcome is anticipated: improved, safer pedestrian access across the two proposed pedestrian bridges over the non-perennial tributary of the Ncumuse River.

10.6 Degree to which Impacts may cause Irreplaceable Loss of Resources

None of the impacts will result in an irreplaceable loss of resources.

10.7 Outcome of the Site Selection Matrix

The preferred site and technology/design was assessed. The proposed development of two pedestrian bridges is site specific as an efficient link across a non-perennial tributary of the Ncumuse River. The two bridges have been sited to optimise the existing foot paths through the valley and improve the safety of pedestrians.

11 Environmental Impact Statement

11.1 Assumptions, Uncertainties and Gaps in Knowledge

Detailed description of the construction methodology (aside from the diagrams provided in Appendix B) was not available.

11.2 Summary of Findings

11.2.1 Summary of the Positive and Negative Impacts and Risks

Table 8: Summary of Impacts and Risks (Preferred Alternative)

Please refer to Table 8 overleaf.

Potential Environmental Impacts	Qualification of Potential Impacts (Nature)	Impact Significance
Decrease in surface water quality	A decrease in surface water quality is expected during the construction phase owing to an accumulation of suspended sediment and excess sediment deposition from potential sediment release from erosion associated with the construction activities.	**Very low (negative)** during and with mitigation measures **Very low (negative)**. **Insignificant.**
Impact on surface water flow	Alteration of surface flow conditions owing to physical obstructions.	The potential impact on surface water resources is likely to be **very low (negative)** prior to mitigation. The impact post mitigation is expected to be **very low (negative). Insignificant.**
Increased sedimentation	Increased sedimentation of the watercourses owing to disturbances / alterations to the bed banks could potentially cause an increase in transportation and deposition of sediments to the watercourse, leading to a reduction in water quality.	**Very low** significance if the recommendations in the EMPr are implemented. The potential impact on surface water resources is likely to be **very low (negative)** prior to mitigation. **Insignificant.**
Decrease in groundwater water quality	The installation method could result in contamination of ground water arising from the construction plant, oils/grease, cement, building materials etc.	The potential impact of groundwater contamination is expected to be of a **very low (negative)** significance if the recommendations in the EMPr are not implemented and **very low** after mitigation.
Decrease in soil and groundwater water quality	The development of a construction site could result in damage to the soil and ground water contamination.	This impact is of **very low (negative)** significance without mitigation, and of no significance if mitigated. **Insignificant.**
Increased soil erosion	The installation method may exacerbate erosion of the non-perennial tributary of the Ncumuse River banks and bed.	The potential impact on surface water resources is likely to be **very low (negative)** both pre and post mitigation.
Compaction of soils	Compaction of the soils from heavy vehicles.	The impact is expected to be **very low (negative)** both pre and post mitigation.
Ecological Impact – aquatic biota	Disturbance of the aquatic ecosystem from a physical obstruction affecting movement of aquatic biota.	The impact is considered **very low** (both pre and post mitigation). **Insignificant.**
Ecological Impact – temporary loss of habitat	Disturbance of the aquatic ecosystem as a result of a construction activities.	The impact is expected to be l**ow (negative)** without mitigation and **very low** with mitigation. **Insignificant.**
Ecological impacts – benthic habitat	Disruption of the benthic habitats.	The potential impact is considered **very low (negative)** and **very low** post mitigation. **Insignificant.**
Ecological impacts – river banks and beds	Modifications to the channel banks and beds from the construction process.	The impact is expected to be **low (negative),** pre-mitigation and **low** post mitigation.
Ecological impacts – alien invasive vegetation	Disturbance of vegetation and the encroachment of alien invasive plant species	Pre-mitigation, the impact is expected to be **medium (negative).** The post mitigation impact is expected to be **low.**

Potential Environmental Impacts	Qualification of Potential Impacts (Nature)	Impact Significance
Ecological impacts – loss of riparian habitat	Loss of sections of riparian habitat.	The impact is expected to be kept within the **low** range **(negative)** pre-mitigation, and **very low** if mitigation measures are employed.
Potential Safety and security impact	Exposure of local residents (and livestock) to potentially dangerous site conditions (open excavations) during construction	The impact is likely to be **very low (negative)** pre and post mitigation.
Changes in the social fabric	The influx of construction workers may create social issues such as conflict, conflict for work, changes in financial outlook, and changes in domestic cohesion.	This impact is expected to be of **very low (negative)** significance both pre and post mitigation.
Improved social amenity	The construction of the two proposed pedestrian bridges over the non-perennial tributary of the Ncumuse River will provide improved and safer access for residents.	This is a **positive** impact of **Medium** Significance.
Construction Phase Waste, Effluent, Emissions and Noise	Waste may be produced during the construction phase	**Low** impact during construction and **very low (negative)** impact post mitigation.
	Noise and Dust may be created by the construction vehicles and machinery	**Low** impact during construction and **very low (negative)** impact post mitigation.

11.3 Key Impact Management Measures

11.3.1 Mitigation Measures to be included in EMPr

Mitigation measures as presented in the Risk Assessment, (**Table 7**) (amongst others) above will be included in the EMPr.

11.3.2 Mitigation Measures Identified in Specialist Reports

- Wetland and Riparian/Aquatic Assessment Report for the Proposed Mqhashela to Munga Pedestrian Bridge Crossing, SDP, October 2018

Please refer to table overleaf.

Table 9: Summary of the potential impacts and mitigation measures.

Impact	Duration	Before Mitigation	Motivation for significance rating	Proposed Mitigation	After Mitigation
Construction related impacts	Construction phase (temporary)	LOW	These impacts are temporary in nature and related to manageable aspects of the construction phase.	Implementation of construction management measures as detailed in 7.2.	LOW
Habitat loss and disturbance	Construction phase (Temporary and permanent)	LOW	Habitat loss is expected to be limited to localised areas around the actual crossing. Permanent loss will be associated with areas affected by the footings, while temporary disturbance will result due to trampling or vehicular movement. Instream habitat disturbance is likely to be limited in extent and temporary in nature.	Revegetation of the disturbed riparian areas as well as alien invasive plant removal.	LOW
Hydrological changes	Construction and operational phase (permanent)	LOW	The proposed pedestrian bridge will span the active channel and long term hydrological changes are unlikely. The proposed structure is no expected to impede flow.	Consideration of specific design criteria. The proposed pedestrian bridge appears to be in line with these design criteria.	LOW
Stormwater runoff during construction and operational phase	Operational phase (permanent)	LOW	The small footprint of the structure is unlikely to result in any significant storm water runoff.	Implementation of erosion and storm water control measures during construction. No mitigation required for operational phase.	LOW
Disturbance of instream fauna	Construction phase (temporary)	LOW	Faunal disturbance is likely to be localised and will only affect a very small portion of the present population. Recovery is highly likely once conditions stabilise.	Undertake construction during the dry, winter period.	LOW

Table 10. Impact significance calculations for the identified impacts presented in Table 9.

Impact	Before							After						
	N	*M*	*S*	*E*	*D*	*P*	*Total*	*N*	*M*	*S*	*E*	*D*	*P*	*Total*
Construction related impacts	-1	2	2	1	1	1	-8	-1	2	1	1	1	0.8	-3.6
Habitat loss and disturbance	-1	1	2	1	1	1	-4	-1	1	2	1	1	0.8	-3.6
Hydrological changes	-1	1	1	1	1	0.8	-1.8	-1	1	1	1	1	0.8	-1.8
Disturbance of instream fauna	-1	2	2	1	1	1	-8	-1	1	2	1	1	1	-4
Stormwater runoff	-1	1	0	1	1	1	0	-1	1	0	1	1	1	0

* N = Nature (-ve/+ve), M = Magnitude, S = Significance, E = Extent, D = Duration, P = Probability. Total = (NxMxS) x (E+D+P)

11.4 Aspects Conditional to the Findings

No conditional aspects have been identified.

11.5 Reasoned Opinion on Proposed Development

The Basic Assessment Study has made extensive use of desktop and field data, and input from IAPs, and reveals typical impacts associated with the proposed two pedestrian bridges over a non-perennial tributary of the Ncumuse River.

The impact of the proposed development on the receiving biophysical environment will be permanent (lifetime of the facility) but low provided the development is implemented as proposed and all reasonable steps to implement the proposed development using standard best practices and that the proposed mitigations included in a comprehensive Environmental Management Programme (EMPr) are put in place and correctly adhered to.

The operational maintenance of the proposed two pedestrian bridges over a non-perennial tributary of the Ncumuse River.is vital to ensure the longevity of the development, as well as to help reduce potential operational impacts on the geophysical, biophysical and social environments.

The information contained in this report and the documentation attached hereto is sufficient to make a decision in respect of the activity applied for.

12 Conclusion

The proposed Mqhashela to Munga Pedestrian Bridges and their surroundings reveal signs of previous disturbance owing to current and previous uses and anthropogenic changes. From a biophysical perspective, the most significant factor to take into consideration is the disturbance of the non-perennial tributary of the Ncumuse River and benthic fauna and flora within riparian areas. This includes storm-water runoff and potential erosion during construction and prior to rehabilitation of the non-perennial tributary banks taking effect. The combination of these factors is a matter of some concern and allowances for these issues must be made in the comprehensive EMPr that must be put in place for the construction and operation of the infrastructure.

Considering the impacts associated with the proposed development, the following recommendations are provided:

- The requirement for additional specialist studies is not anticipated
- Implementation must follow the proposed EMPr and adhere to standard best practices
- All proposed mitigations or reasonable alternatives must be adopted
- During implementation continuous monitoring of containers, bunded areas, surface runoff and air emissions must be undertaken by a responsible person, appointed or approved by the Department of Economic Development, Tourism and Environmental Affairs, to ensure that specifications are being duly regarded.

Provided that the recommendations and mitigation measures as proposed in this report and in the EMPr are implemented, it is the opinion of the EAP that the development may proceed as envisaged.

13 Timeframes

13.1 Environmental Authorisation Timeframes (if no Operational aspect)

- Period for which Environmental Authorisation is required: 5 years
- Date on which the Activity will be concluded: Unknown at this stage
- Date on which the Post Construction Monitoring Requirements will be finalised: Unknown

14 EAP Affirmation

Oath / Affirmation by the EAP:

The Environmental Assessment Practitioner hereby confirms that the information provided in this report is to our knowledge, correct, and includes all comments and inputs from IAPs, EAP responses to these comments, and recommendations from specialists (where relevant).

15 Financial Provisions

Details of any financial provisions for Rehabilitation (where applicable), closure, ongoing post decommissioning management of negative impacts: **Not available at this stage.**

Rehabilitation of the site will take place during and after construction during the environmental management process of the development. The cost of this process will be factored into the construction cost.

16 Any Other Specific Information

Additional information is provided in the attached appendices. Any further information can be requested from the EAP as necessary.

References

Mucina. L & Rutherford. MC (eds) 2006. *The Vegetation of South Africa, Lesotho and Swaziland.* Strelitzia 19. South African National Biodiversity Institute. Pretoria.

"*Wetland and Riparian/Aquatic Assessment Report for the Proposed Mqhashela to Munga Pedestrian Bridge Crossing*", Sustainable Development Projects, (SDP), October 2018

Ray Nkonyeni Municipality, Address: (www.rnm.gov.za/)

Appendix A – Mapping

- Figure 1: Locality Plan
- Figure 2: Topocadastral Map
- Figure 3: Site Plan
- Figure 4: Cadastral Map
- Figure 5: Watercourses Map
- Figure 6: Quarternary Catchment Map
- Figure 7: EKZNW TSCP Map
- Figure 8: SANBI Vegetation Map
- Figure 9: Landuse Map
- Figure 10: Services Map

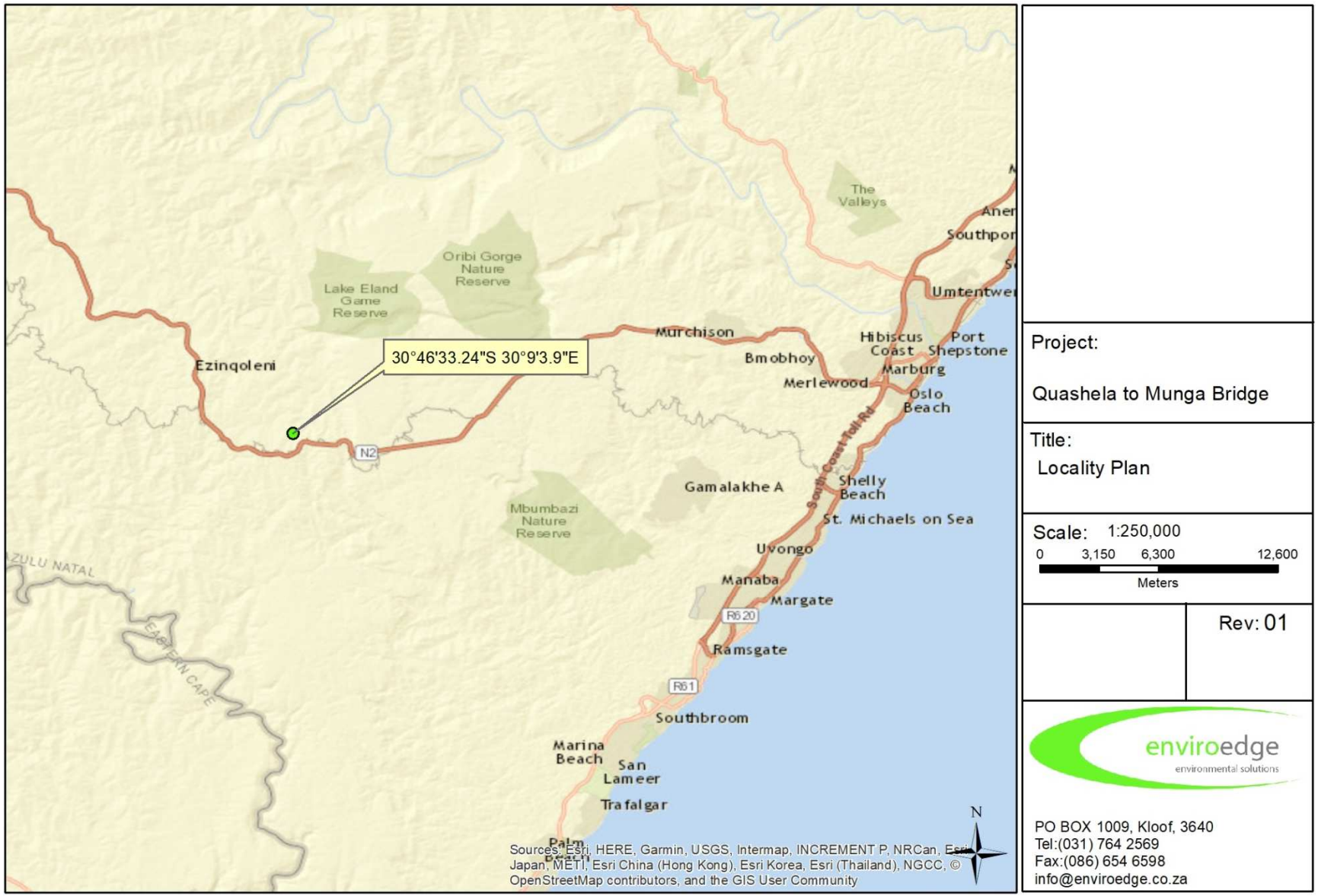


Figure 1: Mqhashela to Munga Pedestrian Bridges – Locality Plan

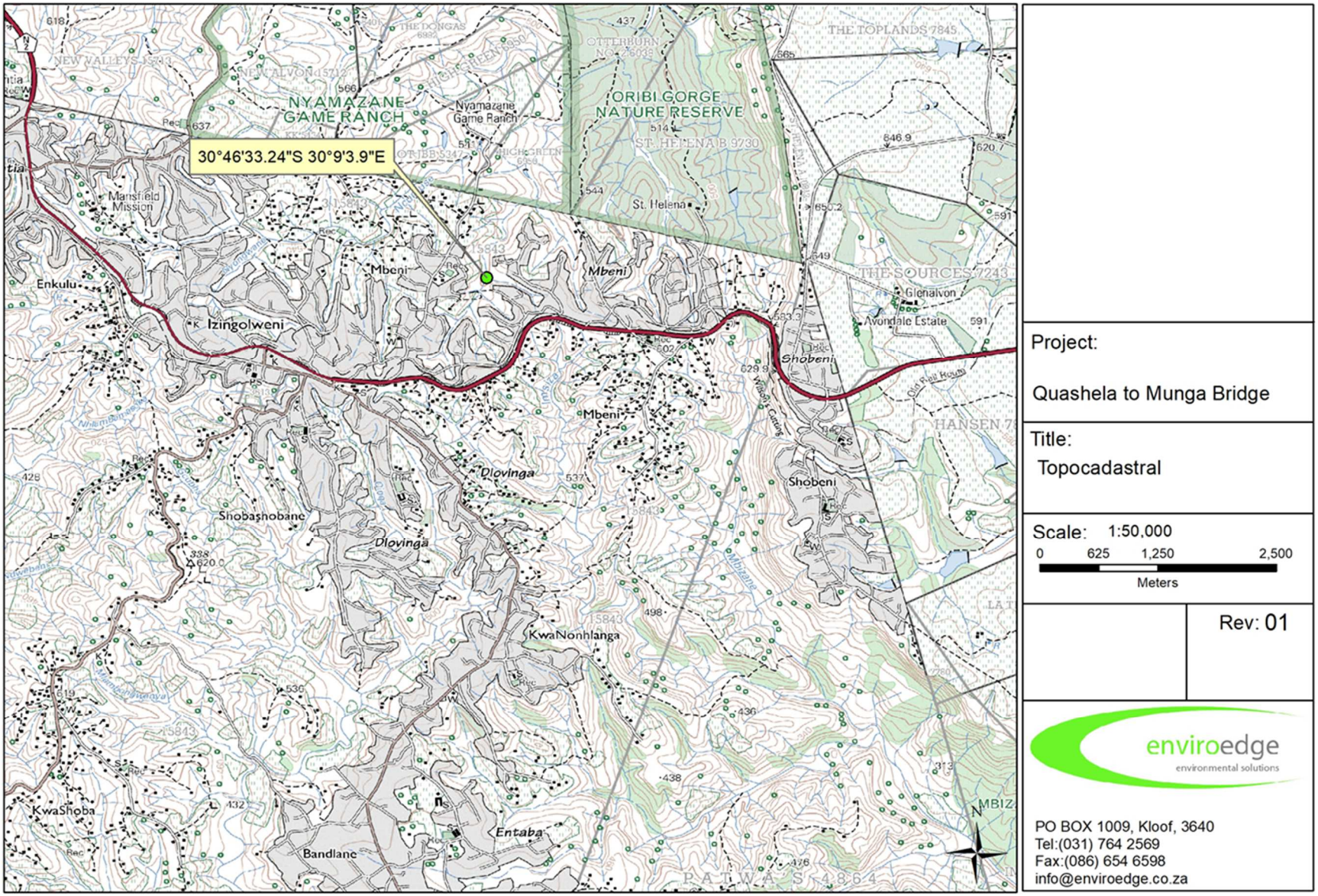


Figure 2: Mqhashela to Munga Pedestrian Bridges – Topocadastral Plan

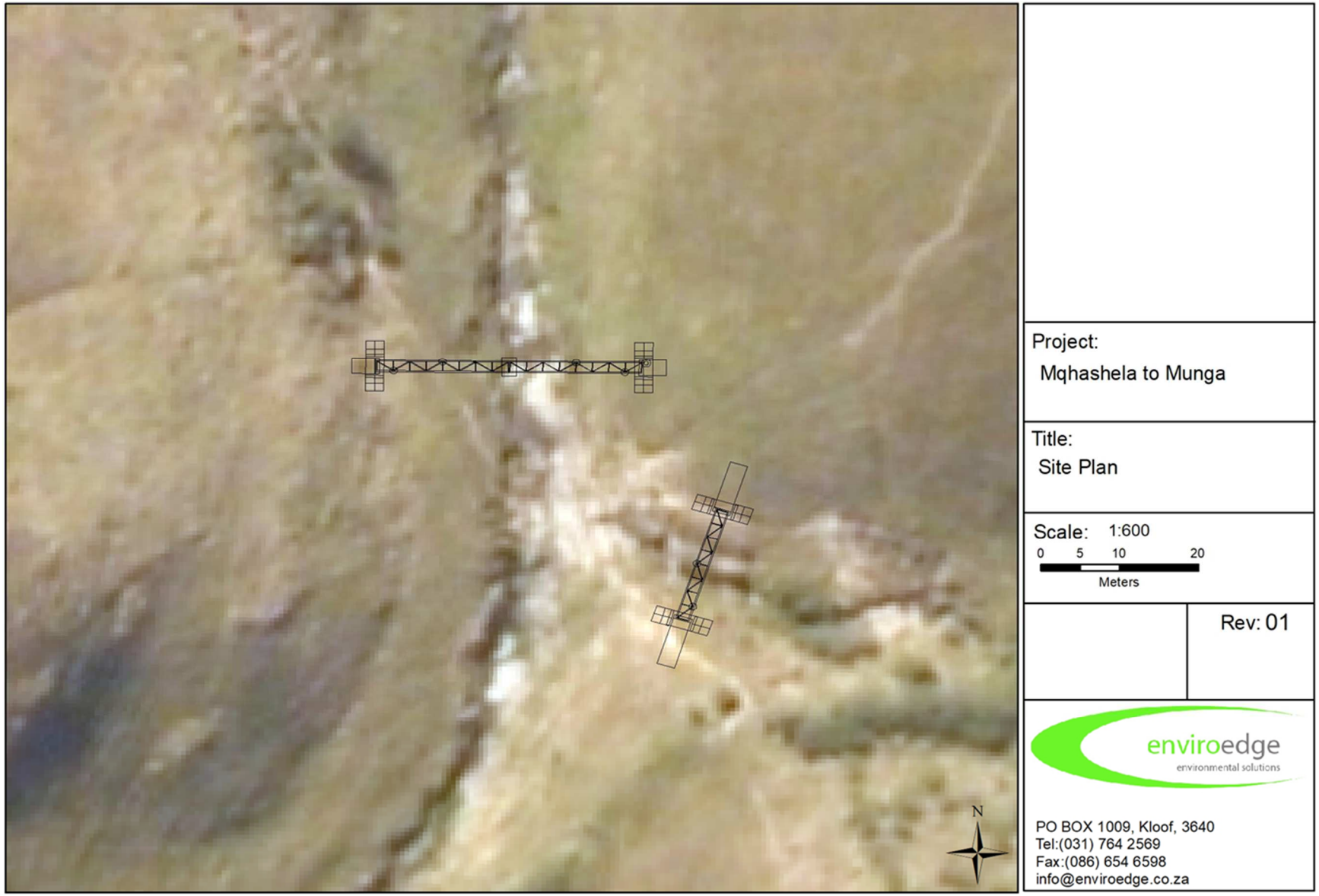


Figure 3: Mqhashela to Munga Pedestrian Bridges – Site Plan

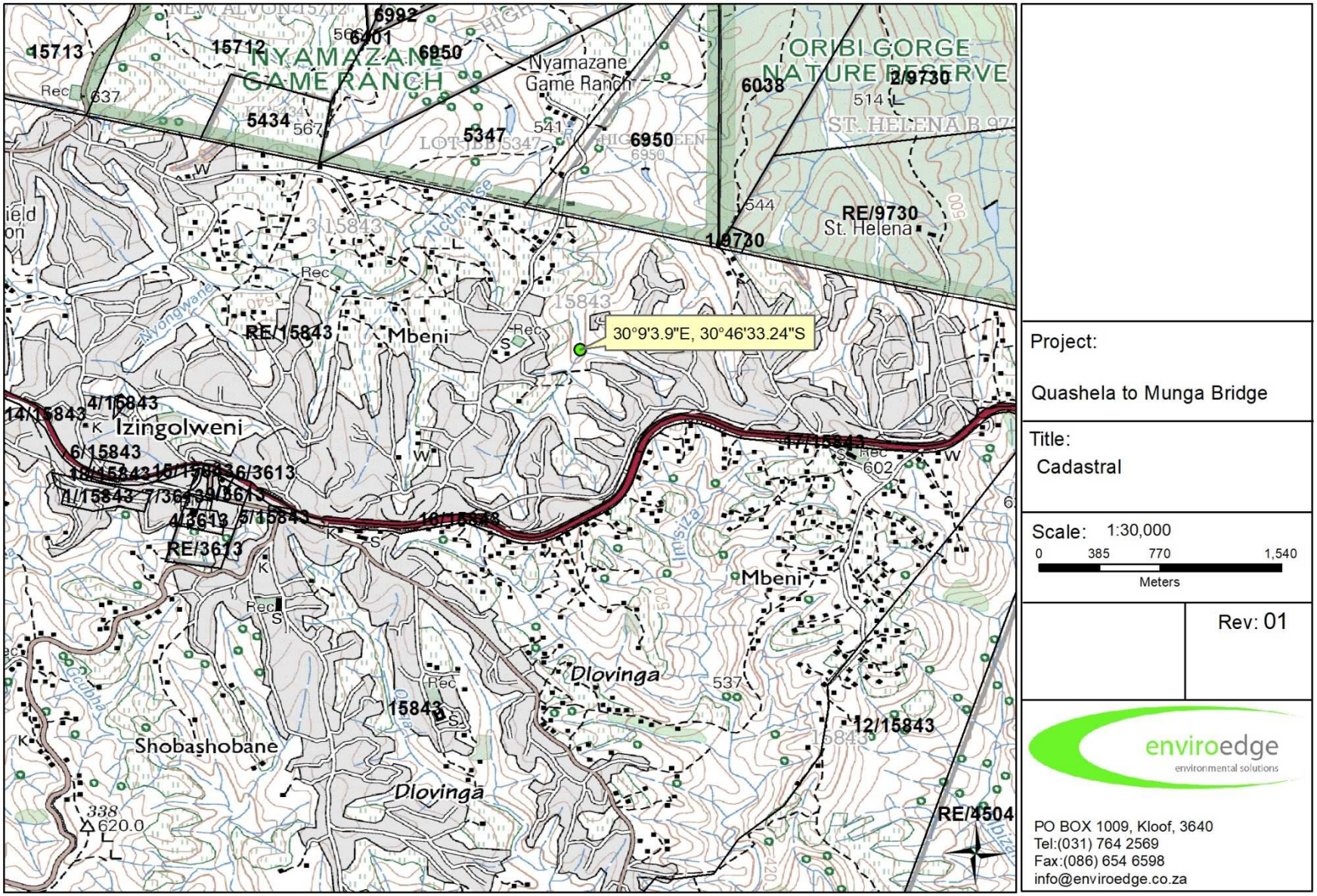


Figure 2: Mqhashela to Munga Pedestrian Bridges – Cadastral Map

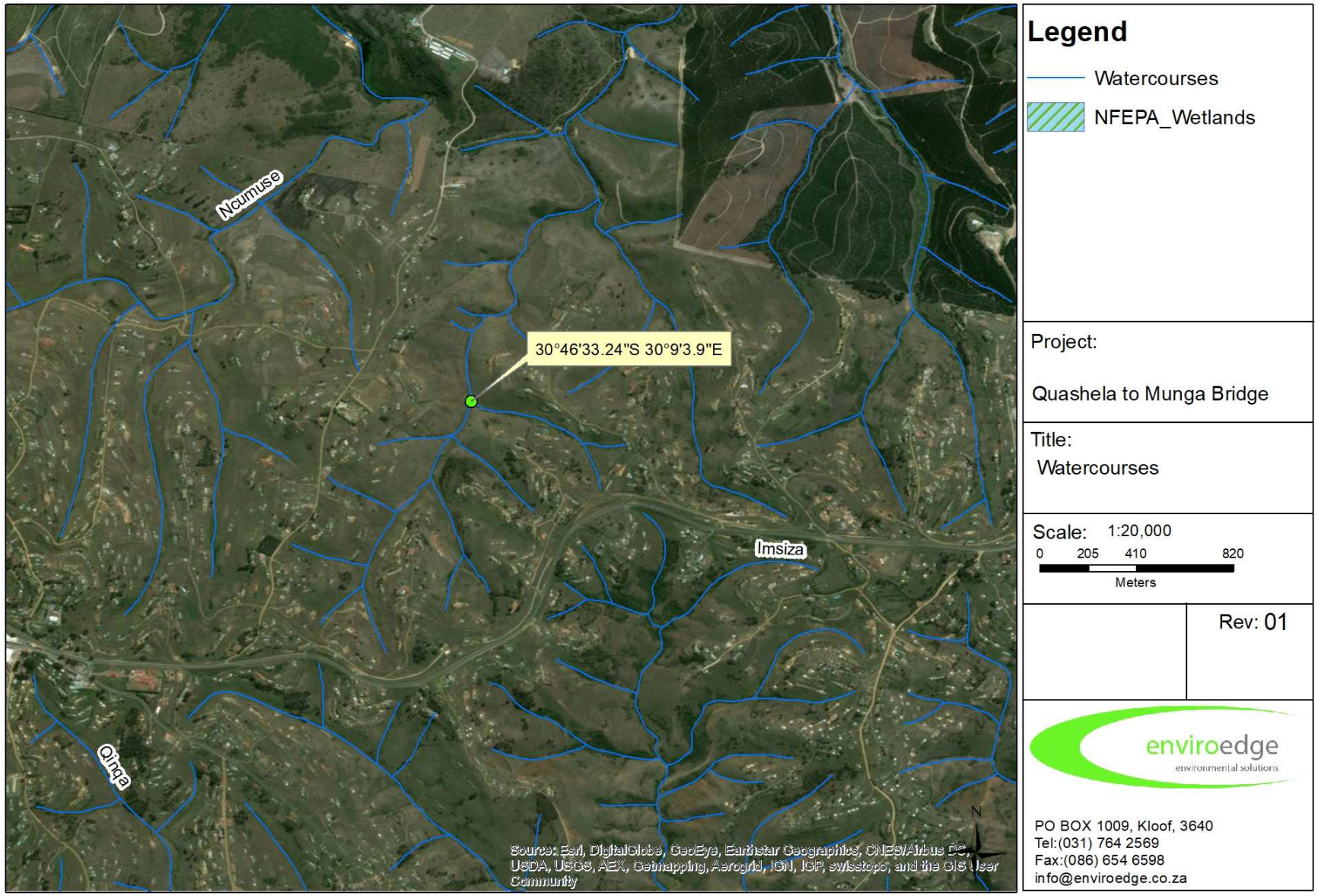


Figure 3: Mqhashela to Munga Pedestrian Bridges – Watercourses

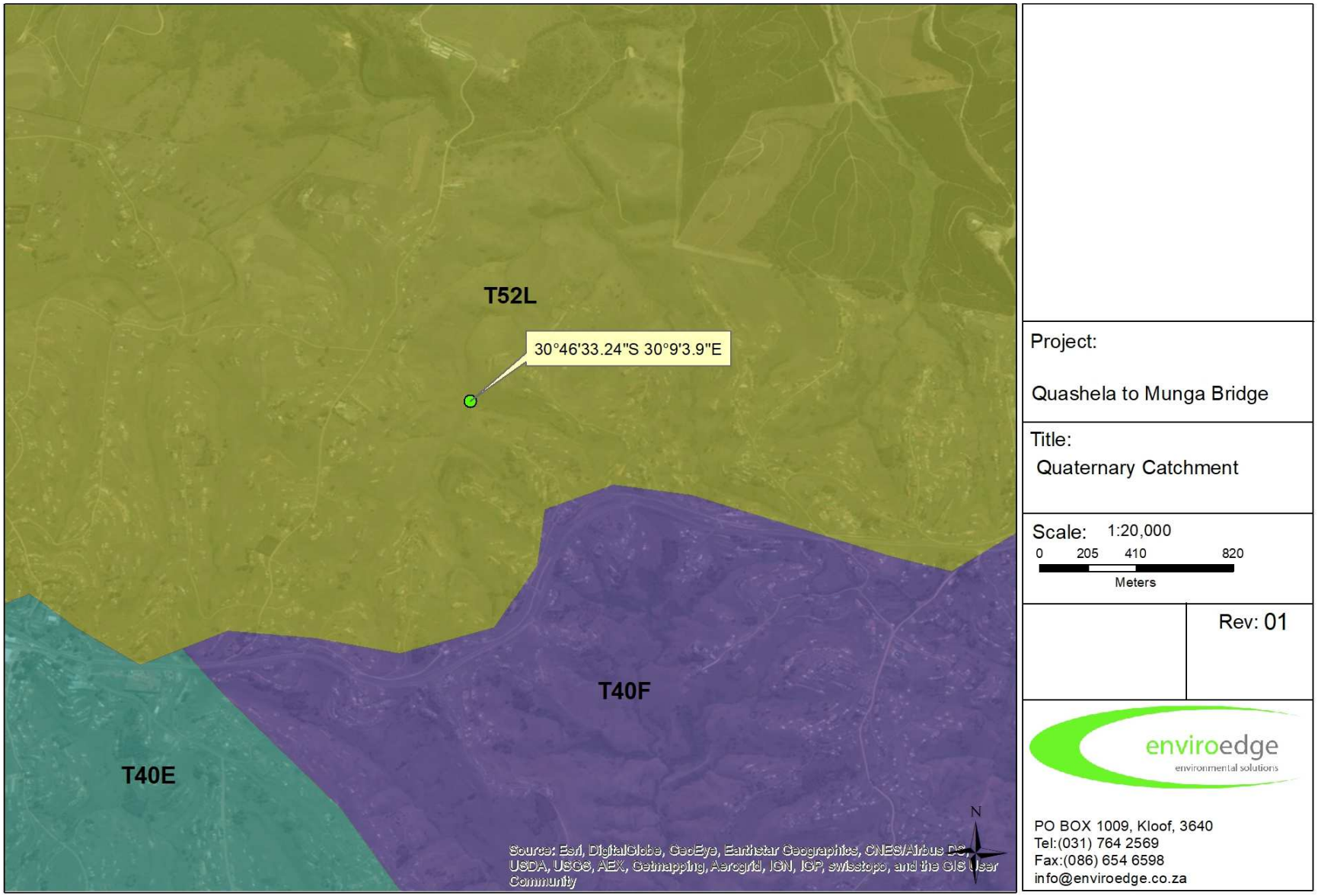


Figure 6: Mqhashela to Munga Pedestrian Bridges – Quaternary Catchment Map

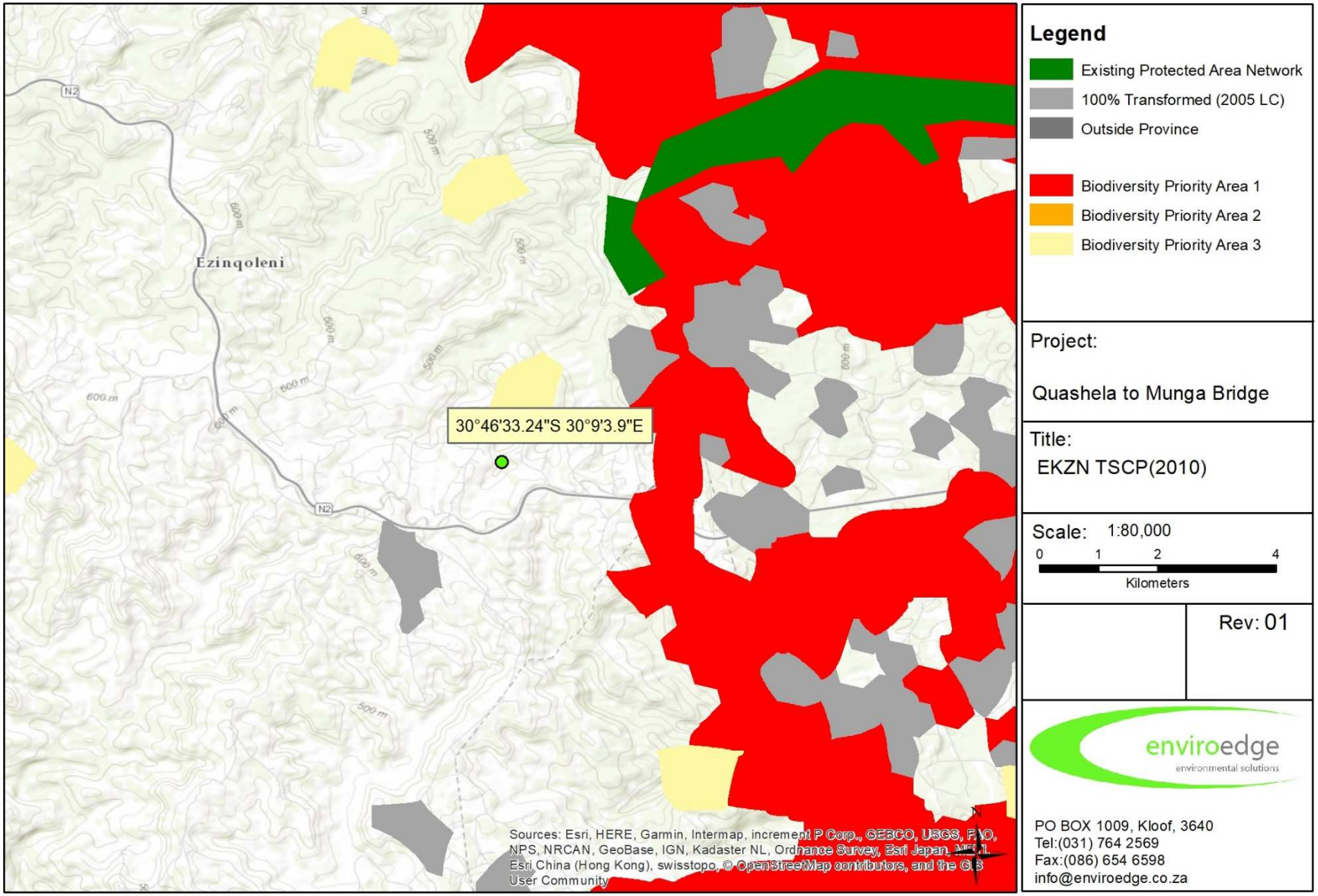


Figure 7: Mqhashela to Munga Pedestrian Bridges – EKZNW Critical Biodiversity Areas (2010)

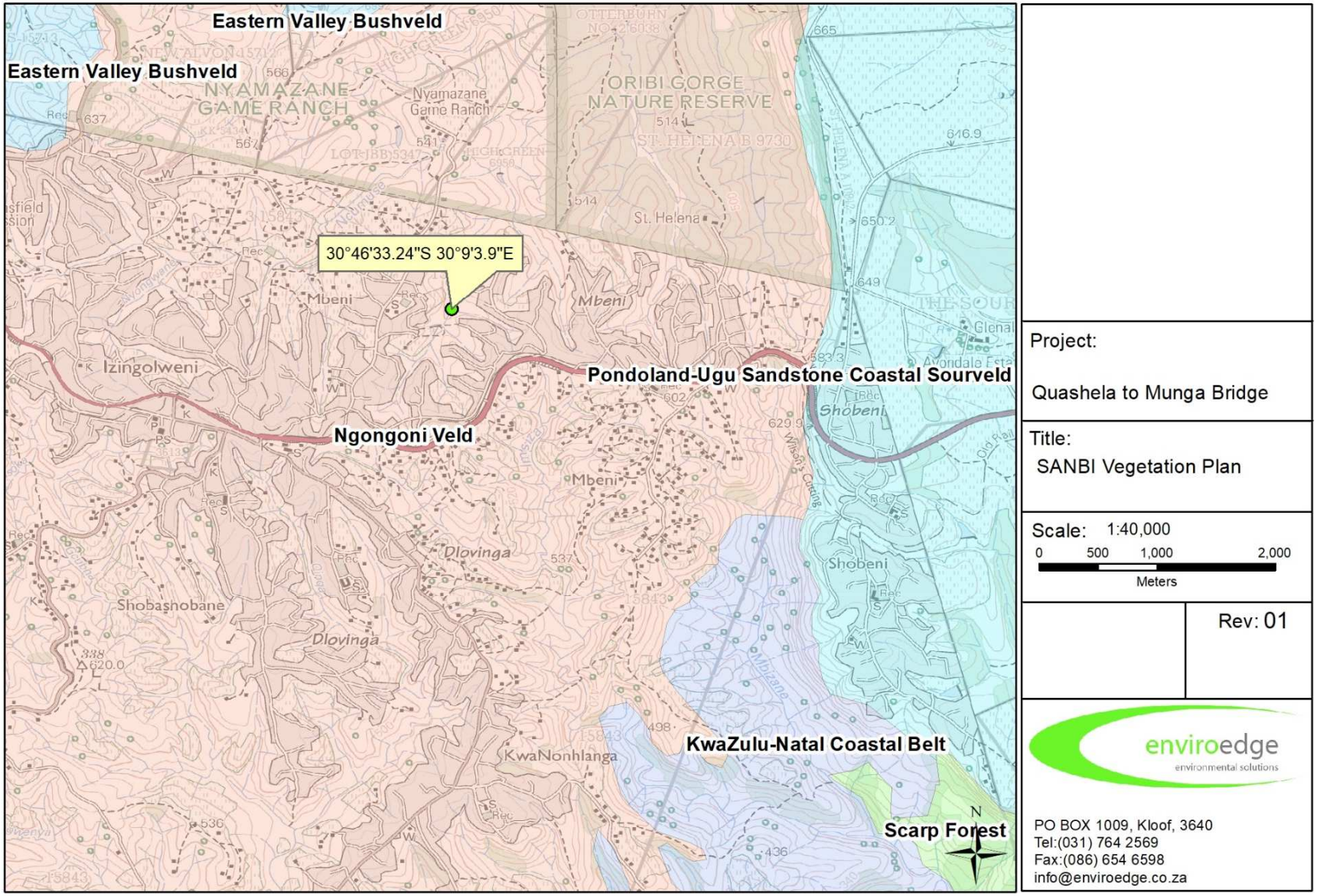


Figure 8: Mqhashela to Munga Pedestrian Bridges – SANBI Vegetation Plan

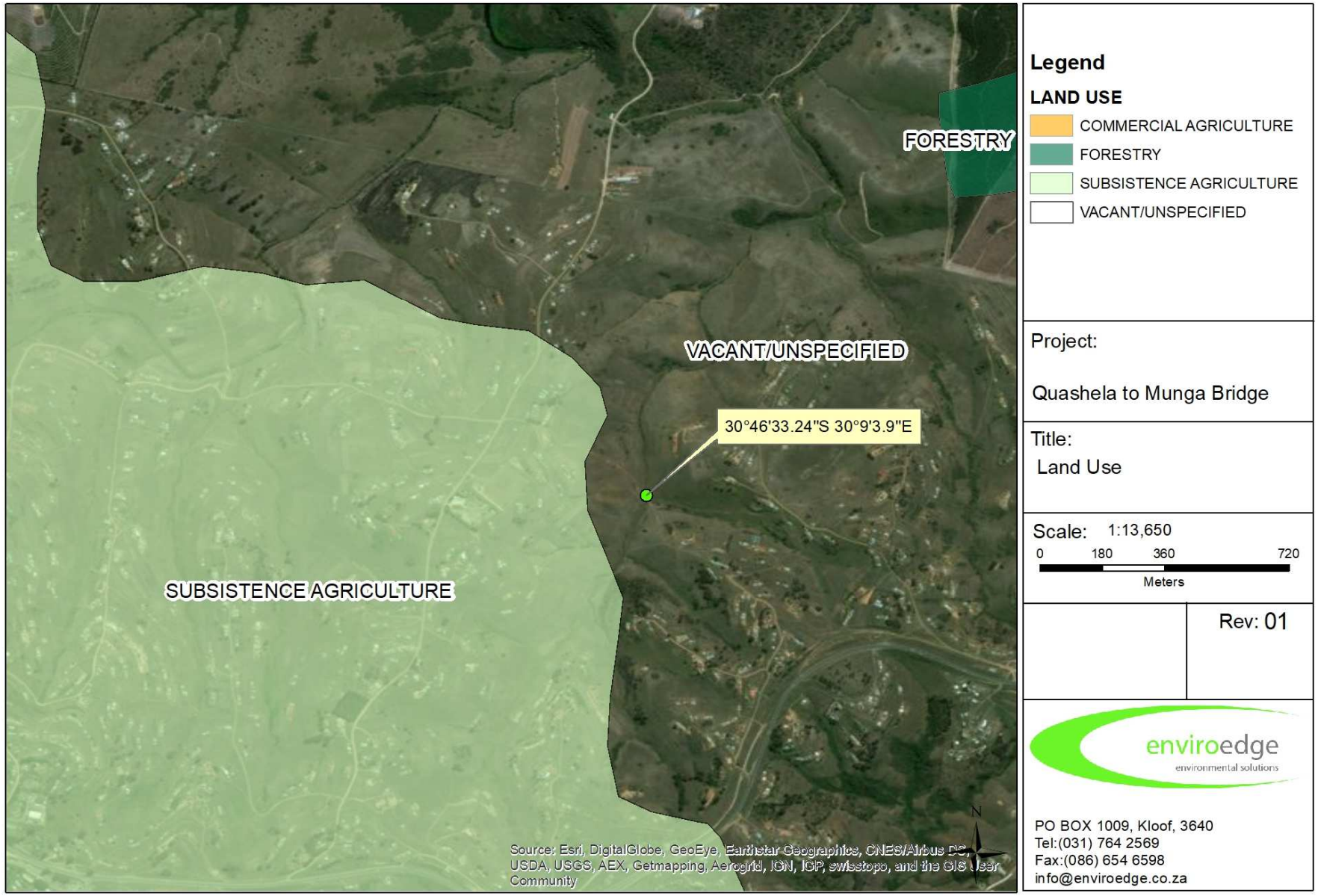


Figure 9: Mqhashela to Munga Pedestrian Bridges – Landuse Map

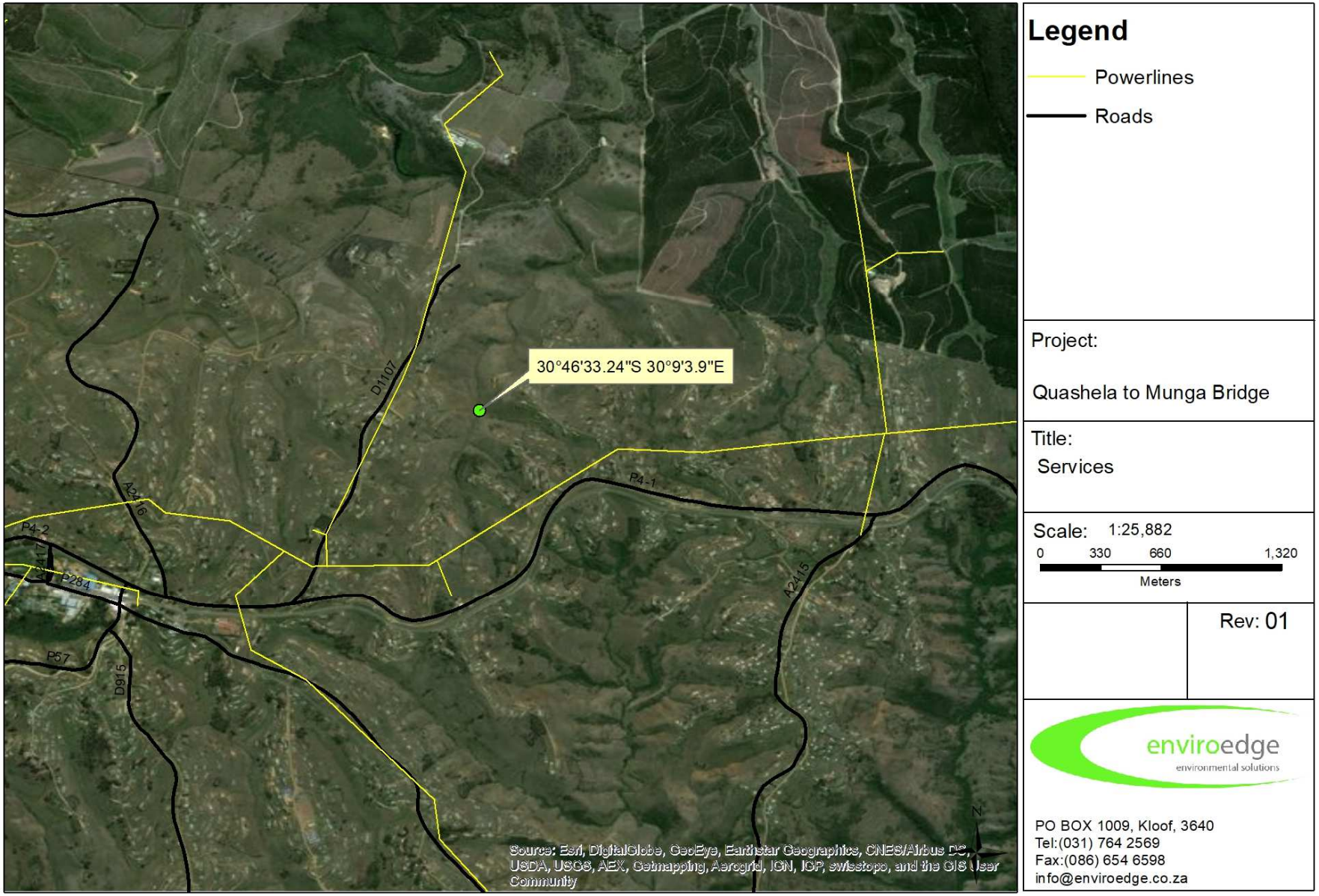


Figure 10: Mqhashela to Munga Pedestrian Bridges – Services Map

Appendix B – Development Proposal (Diagrams)

Mqhashela to Munga Pedestrian Bridges:

- Figure 11: Mqhashela to Munga Pedestrian Bridges – Site Layout Plan – RN804/02 (Preferred Alternative)
- Figure 12: Mqhashela to Munga Pedestrian Bridges – General Arrangement - Structural Details – RN804/02 (Preferred Alternative)

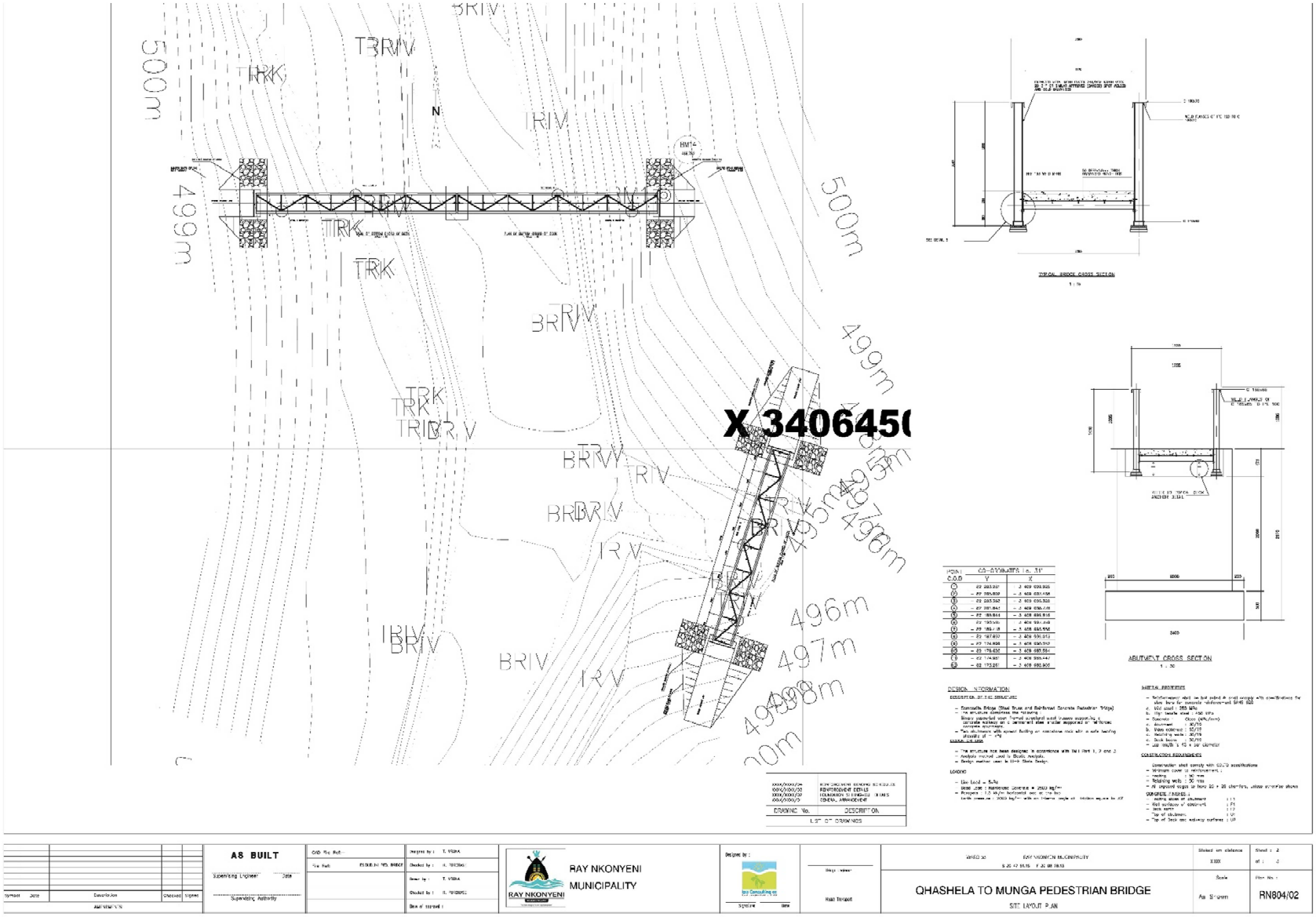


Figure 11: Mqhashela to Munga Pedestrian Bridges – Site Layout Plan – RN804/02

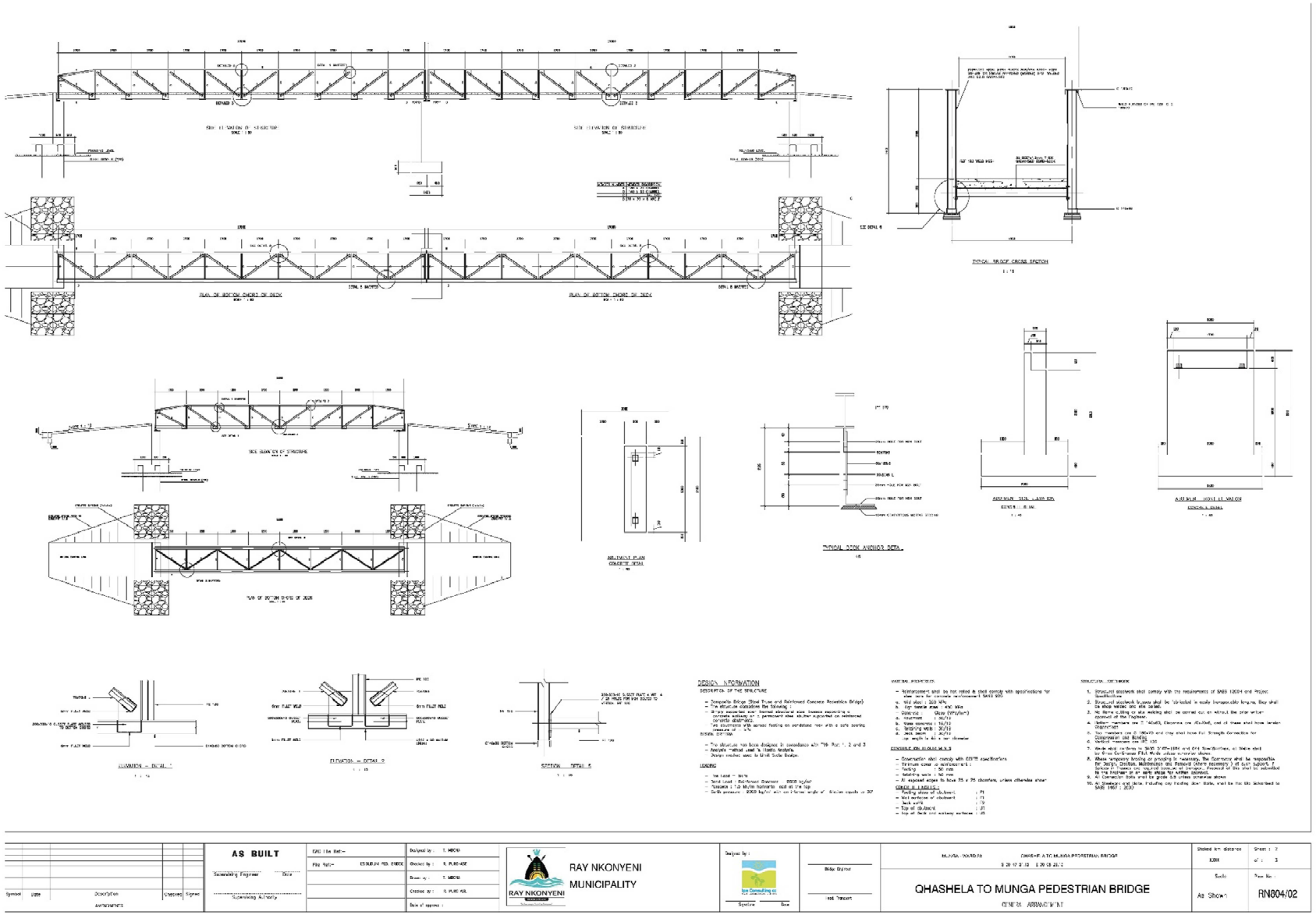


Figure 12: Mqhashela to Munga Pedestrian Bridges – General Arrangement - Structural Details – RN804/02

Appendix C – Specialist Investigations

- Wetland and Riparian/Aquatic Assessment Report for the Proposed Mqhashela to Munga Pedestrian Bridge Crossing, Sustainable Development Projects, (SDP), October 2018

Appendix D – Public Participation

- Copy of Newspaper Advertisement
- Site Notices
- Background Information Document (BID)
- Correspondence with IAPs
- Stakeholder Meeting Minutes
- Comments and Response Report

Mqhashela to Munga Pedestrian Bridges Basic Assessment Report

Comments and Response – Interested and Affected Parties

March 2019

Organisation	Contact Person	Contact Details
Department of Water and Sanitation (DWS)	**Ms S. Ramburan** **Mr S. Govender** **Ms N. Mokoena** **Ms K. Methula** **Mr N. Leburu**	PO Box 1018, Durban, 4000 Tel: 031 336 2700 / 2765 RamburanS@dwa.gov.za leburun@dwa.gov.za mokoenan@dwa.gov.za GovenderS2@dwa.gov.za
Department of Agriculture Forestry and Fisheries (DAFF) Forestry Regulations and Support	**Ms Karen Moodley**	nandiphas@nda.agric.za JeffreyMAI@daff.gov.za KarenM@daff.gov.za Tel: 033 392 7739; Fax: 033 342 8783 P/Bag X 9029, Pietermaritzburg, 3200
Ezemvelo KZN Wildlife	**Nerissa Pillay** **Dinesree Thambu** **Phindile P Langazane** **Dominic Wieners** **Jenny Longmore**	thambud@kznwildlife.com Phindile.Langazane@kznwildlife.com Dominic.Wieners@kznwildlife.com Jenny.Longmore@kznwildlife.com PO Box 13053, Cascades, 3202
KZN Department of Transport Transportation Engineering Sub-Directorate	**Michele Schmid** **Judy Reddy** **Roy Ryan**	michele.schmid@Kzntransport.gov.za judy.reddy@kzntransport.gov.za Roy.Ryan@Kzntransport.gov.za Private Bag X 9043, Pietermaritzburg, 3200 Tel: 033 355 8600; Fax: 033 342 3962 Ref: T10/2/2/3922/2
Eskom	**M. Nicol**	nicolm@eskom.co.za P O Box 66, New Germany, 3620 Tel: 031 710 5404 Nicolm@eskom.co.za MtawalNP@eskom.co.za
Telkom SA SOC Limited Network Engineering and Build Eastern Region Wayleave Management Section	**Raymond Couch** **S. Mchunu** **R. Rampershad** **R. Couch**	Private Bag X 54326, Durban, 4000 Tel: 033 342 1591; Fax: 033 345 6126 RampeRR@telkom.co.za wayleaves2@telkom.co.za SthembisoM@openserve.co.za; PortiaN2@openserve.co.za; RaymondC@openserve.co.za.
Transnet	**Thami Hadebe** **Jeff Scrooby**	Thami.Hadebe@transnet.net Jeff.Scrooby@transnet.net
Transnet	**Vicky Madonsela**	vicky.madonsela@transnet.net
Amafa	**Bernadet Pawandiwa** **Annie van de Venter Radford**	amafaddps@amafapmb.co.za bernadetp@amafapmb.co.za
Ingonyama Trust Board	**Suewellan Ellis**	EllisS@ingonyamatrust.org.za
Ward Councillor Ward 33	**Bonginkosi Nyawose**	Hibiscus Coast Local Municipality, PO Box 5, Port Shepstone, 4240 073 056 4159
Ray Nkonyeni Local Municipality	**Feziwe Mhlongo**	PO Box 5, Port Shepstone, 4240 Physical 10 Connor Street, Port Shepstone Tel 039 688 2000; Fax 039 682 0327 Web www.rnm.gov.za Feziwe.mhlongo@rnm.gov.za
Ugu District Municipality	**noloyiso.walingo@ugu.gov.za**	Janine.Blackbeard@ugu.gov.za noloyiso.walingo@ugu.gov.za PO Box 33, Port Shepstone, 4240 Physical 28 Connor Street, Port Shepstone Tel 039 688 5700; 039 688 5794 Fax 039 682 1720 Web www.ugu.gov.za PO Box 33, Port Shepstone, 4200

Comments received on the Background Information Document circulated for comment in November 2018.		
Organisation	**Contact Person & Date of Comment/s**	**Contact Details**
Department of Water and Sanitation (DWS)	*Ms S. Ramburan / S. Govender / Mr N. Leburu* *Madibe* *BID Sent: 08 November 2018 (email)* *Comments Received: 21 November 2018*	*PO Box 1018, Durban, 4000* *Tel: 031 336 2700 / 2765* *RamburanS@dwa.gov.za* *Mngoma-Madibe Jabulile (DBN) Mngoma-MadibeJ@dws.gov.za Selela Puleng (DDE) SelelaP@dwa.gov.za;leburun@dwa.gov.za*
Comments:		
Reference is made to the above-mentioned document e-mailed to this Office on 12 November 2018. This Department has the following comments and would like these to be addressed in the Basic Assessment Report: 1. The management of solid waste and hazardous waste material generated during the construction and operation phase of the project. 2. Stormwater Management Plan/System. 3. Wastewater and sewage treatment and/or management including the type of toilet facilities to be provided for workers. 4. Erosion control measures to be implemented. 5. Environmental Management Programme for the construction phase of the project. 6. Spill contingency plan for the construction and operational phase of the project. 7. Please note that any activity occurring within a 500 metre, (m), radius from the boundary of any wetland requires a Water Use Authorisation in terms of Section 21 (c) and (i) -i.e. "*impeding or diverting the flow of water in a watercourse" and "altering the bed, banks, course or characteristics of a watercourse",* respectively in terms of the National water Act, 1998, (Act No 36 of 1998), (NWA). 8. A Wetland delineation Study and a Functional Assessment must be carried out in accordance with the following document: "*A Practical Field Procedure for Identification and Delineation of Wetlands and Riparian Areas*", for all wetlands occurring on site and in close proximity to the site. (refer to Point 7). 9. The river, stream and associated tributaries must be treated as sensitive environmental areas. Caution must be exercised when developing near any watercourse. Please note that the Applicant will require an authorisation from the Department for any activity within the riparian habitat or 1 : 100 year floodline, whichever is the greatest distance. 10. The Applicant must note that river crossing structures such as bridges and causeways constitutes a Section 21 (c.) and/or Section 21 (i) water use and must be authorised under the provisions of the NWA. 11. A Geotechnical Study to ascertain the stability of the bridge. 12. The onus is on the Applicant to identify all the water uses activity to be undertaken in relation to the proposed project and ensure that authorisation is obtained prior to commencing with the activities. Ms Zama Hadebe of this Department's Water Use Authorisation Section must be contacted (031) 336 2767), for a pre-application meeting to determine the type of authorisations required and the requirements thereof. This Department awaits a copy of the Basic Assessment Report for further comments. Please do not hesitate to call this Office should you have any concerns or queries.		
Response:		
All of the above points noted and will be incorporated into the Final EMPr if not already present. The requirements for a WULA are noted and a Water Use Licence Application is being undertaken by the applicant for the project.		
Department of Agriculture Forestry and Fisheries (DAFF) Forestry Regulations and Support	*Ms Karen Moodley* *BID Sent: 08 November 2018 (email)* *Comments Received: 06 December 2018*	*KarenM@daff.gov.za* *PMBResourceCentre@daff.gov.za* *Tel: 033 392 7739* *Fax: 033 342 8783* *P/Bag X 9029, Pietermaritzburg, 3200*
Comments:		

Comments received on the Background Information Document circulated for comment in November 2018.		
Organisation	**Contact Person & Date of Comment/s**	**Contact Details**
The Department of Agriculture, Forestry and Fisheries, (DAFF), appreciates the opportunity to register as an interested and affected party for the above-mentioned project. DAFF through the sub-directorate Forestry Regulations and Support is the authority mandated to implement the National Forest Act, (Act No. 84 of 1998), by regulating the use of natural forests[1] and protected tree species in terms of the said Act. With reference to the BID received on the 11th November 2018, the proposed site consists of indigenous trees such as *Acacia sp*. and *Cussonia spicata* which will be affected by the proposed activity. DAFF, therefore, requests that vegetation specialist report be compiled and submitted as part of the DBAR to the Department. The study will assist the Department in determining the impact of the development on natural forests or protected trees as per the National Forest Act provisions. Should any further information be required, please do not hesitate to contact this office. This letter does not exempt you from considering other legislation. K. Moodley Senior Forester: KZN Forestry Management Forestry Regulations and Support		
Response:		
The DAFF comments are noted and included in the DBAR for the project. It is unlikely that any trees will be affected by the proposed development. A vegetation specialist report has been compiled and is included in the DBAR.		
Ezemvelo KZN Wildlife	*BID Sent: 08 November 2018 (email)* *Comments Received: No comments received*	*thambud@kznwildlife.com* *Phindile.Langazane@kznwildlife.com* *Dominic.Wieners@kznwildlife.com* *Jenny.Longmore@kznwildlife.com* *PO Box 13053, Cascades, 3202*
Comments: No comment received.		
Response: Noted in the DBAR.		
KZN Department of Transport Transportation Engineering Sub-Directorate	*Michele Schmid* *Judy Reddy* *Simphiwe Nkosi* *BID Sent: 08 November 2018 (email)* *Information to re-forward email information to Mr Simphiwe Nkosi from M. Schmid.* *BID Sent: 09 November 2018 (email) to Mr Simphiwe Nkosi* *Comments Received: No comments received.*	*Private Bag X 9043, Pietermaritzburg, 3200* *Tel: 033 355 8600* *Fax: 033 342 3962*
Comments: Michele Schmid informs that all future bridge, causeway or culvert related enquiries be forwarded to Engineering Services: Bridge Engineer for comment or approval. Ms Schmid later advises that there is unfortunately no-one is the position as yet, however, the information can be sent to the HOD: Mr Nkosi. No further comment received.		
Response: Noted in the DBAR.		
Eskom	*BID Sent: 08 November 2018 (email)* *Comments Received: No comments received.*	*P O Box 66, New Germany, 3620* *Tel: 031 710 5404* *Nicolm@eskom.co.za*

Comments received on the Background Information Document circulated for comment in November 2018.		
Organisation	**Contact Person & Date of Comment/s**	**Contact Details**
Comments: No comment received.		
Response: Noted in the DBAR.		
Telkom SA SOC Limited Network Engineering and Build Eastern Region Wayleave Management Section	*Raymond Couch* *BID Sent: 08 November 2018 (email)* *Response Date: 09 November 2018*	*Private Bag X 54326, Durban, 4000* *Tel: 033 342 1591; Fax: 033 345 6126* *SthembisoM@openserve.co.za* *PortiaN2@openserve.co.za* *RaymondC@openserve.co.za* *RampeRR@telkom.co.za; mchunusr@telkom.co.za* *wayleaves2@telkom.co.za*
Comments: Telkom Reference Number provided: Incoming Wayleave: Ref EWIP_NPS+3091_18 -		
Response: Noted in the DBAR.		
Transnet Pipelines	*Thami Hadebe* *Jeff Scrooby* *BID Sent: 08 November 2018 (email)* *Response Date: 08 November 2018*	*Thami Hadebe TransnetPipelinesDBN* *Thami.Hadebe@transnet.net* *Jeff Scrooby Transnet Pipelines DBN* *Jeff.Scrooby@transnet.net*
Comments: PYP/W1/07/05/NC/42927: Transnet Pipelines, a division of Transnet SOC Limited is not affected by the proposal as indicated on Mqhashela – Munga/Mbeni, Dlovinga & Izingolweni Locality and Site/Project Layout Plans. This wayleave period is valid for **thirty six (36) months from the date on this letter**. Thami Hadebe Servitude Management 08 November 2018.		
Response: Comments noted and included in the DBAR.		
Transnet	*Vicky Madonsela* *BID Sent: 08 November 2018 (email)* *Comments Received: No comments received.*	*vicky.madonsela@transnet.net*
Comments: No comment received.		
Response: Noted and included in the DBAR.		
AMAFA	*Bernadet Pawandiwa* *BID Sent: 08 November 2018 (email)* *Response Date: 15 November 2018*	*bernadetp@amafapmb.co.za* amafaddps@amafapmb.co.za bernadetp@amafapmb.co.za
Comments: Good day Thank you for notifying Amafa. Please create an application and upload the supporting documents on the SAHRIS facility on www.sahra.org.za . Include the following in the relevant fields: • Proof of payment towards handling/processing fee, currently R800 as gazetted. The banking details are on the cover sheet of the NID Form J available on the Amafa website www.heritagekzn.co.za . • Site photos of the general landscape including any features and structures on and around the proposed development covering the area beyond 50m of the site. • Kml file map showing the path or polygon of the proposed development. Kind regards Bernadet Pawandiwa Senior Heritage Officer Archaeology Research and Compliance/Permits Amafa /Heritage KwaZulu -Natali, P.O. Box 2685, Pietermaritzburg' 3201 Tel: 033 394 6543; Fax: 033 394 6552		
Response: Noted. The information has been uploaded onto the AMAFA site as requested. AMAFA Heritage Case ID: 13719.		
Ingonyama Trust	*Ms Suewellan Ellis* *BID plus Landowner Forms for EIA and Landowner Forms for DWS WULA. Sent: 12 November 2018 (email)* *Response Date: 10 December 2018*	*EllisS@ingonyamatrust.org.za*

Comments received on the Background Information Document circulated for comment in November 2018.		
Organisation	**Contact Person & Date of Comment/s**	**Contact Details**
Comments: Landowner notification forms sent through. Ms Ellis asked as to when the originals would be collected. The forms have been collected for submission.		
Response: The forms have been collected and will form part of the two applications.		
Ray Nkonyeni Local Municipality	*BID Sent: 08 November 2018 (email)* *Comments Received: No comments received.*	*Feziwe.mhlongo@rnm.gov.za* *10 Connor Street Port Shepstone 4240.* *P.O. Box 5. Port Shepstone 4240*
Comments: No comment received.		
Response: Noted and included in the DBAR.		
Ugu District Municipality	*BID Sent: 08 November 2018 (email)* *Comments Received: No comments received.*	*Janine.Blackbeard@ugu.gov.za* *noloyiso.walingo@ugu.gov.za* *PO Box 33, Port Shepstone, 4240* *28 Connor Street, Port Shepstone* *Tel: 039 688 5700, Web: www.ugu.gov.za.*
Comments: No comment received.		
Response: Noted and included in the DBAR.		
Ward Councillor	*Bonginkosi Nyawose* *BID Sent: 08 November 2018 (email)* *Comments Received: No comments received.*	*bonginkosi.nyawose@rnm.gov.za*
Comments: No comment received. See consultation attendance register.		
Response: Site visit conducted and project explained to the Ward Councillor. See Site Visit Meeting Attendance Register attached to Comments and Response Report. Noted and included in the DBAR.		

Mqashela to Munga Pedestrian Bridges Attendance Register – 05/04/2019

Name	Organisation	Contact Details	Signature
DENOVIS NYAWO	C/IR WARD 33	0726655090	[signature]

Transmittal Advice:

TO:	Ward 33 Councillor	**FROM:**	ENVIROEDGE
ATTN:	Mr B. Nyawose	**Contact :**	S Whitaker
Fax No:		**Fax No:**	086 654 6598
Tel No:	073 056 4159	**Tel No:**	031 764 2569
Date:		**Pages:**	1

Number	Type	Reference	Description
1	DOC	Mqwashela to Munga	Project Information

Issued By: S. Whitaker Signed: Date: 05/04/2019

Received By: BFANNIS Signed: Date: 05-04-2019

Enviroedge
P Box 1009, Kloof, 3640, 1 Jerome Drive, Kloof, 3610
Tel (031) 764 2569, Fax: 086 654 6598, E-Mail info@enviroedge.co.za

Appendix E – Site Photographs

- Current Site Photographs

Mqhashela to Munga Pedestrian Bridges – Photographs.

Plate 1. Image looking south east over the Ncumuse River tributary, towards the eastern pedestrian bridge site.

Plate 2. Image looking east over the Ncumuse River tributary, towards the northern pedestrian bridge site.

Plate 3. Image looking south-south east, overlooking the study area. Note in the informal pedestrian tracks cross the Ncumuse River tributary.

Plate 4. Image looking north from the site downstream along the Ncumuse River.

Plate 5. Image looking south from the site upstream of the Ncumuse River tributary.

Plate 6. Image looking north west showing existing access track to the proposed site.

Plate 7. Image showing the site notice board placement to the west of the proposed site, within the Munga area.

Plate 8. Image showing the site notice board placement opposite the Munga Primary School.

Plate 9. Image showing site notice board placement at the N2 road intersection, within Munga.

Plate 10. Image showing Munga Primary School located 350m to the west of the study area.

Plate 11. Site Photo locations

Appendix F – Environmental Management Programme