

BACKGROUND INFORMATION DOCUMENT (BID) FOR CONSULTATION

as a component of the
Basic Assessment

for the

Rehabilitation of National Route 11 Section 2 from Ladysmith South (km 0.00) to Nkunzi River (km 47.80), Emnambithi-Ladysmith Local Municipality, UThukela District Municipality EIA Reference No: TBA

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1. CONTACT NAMES AND ADDRESSES

Interested and Affected Parties may contact the Environmental Consultants listed below for additional information.

Applicant:	Environmental Consultants:	Consulting Engineers:
 Reg. No. 1998/009584/30		
South African National Roads Agency SOC Limited (SANRAL) PO Box 100410, Scottsville, South Africa 3209	Enviroedge cc PO BOX 1009, Kloof, 3640 Tel:(031) 764 2569 Fax: (086) 654 6598 info@enviroedge.co.za www.enviroedge.co.za	Worley Parsons RSA (Pty) Ltd PO Box 38157, Langenhoven Park, 9330, South Africa

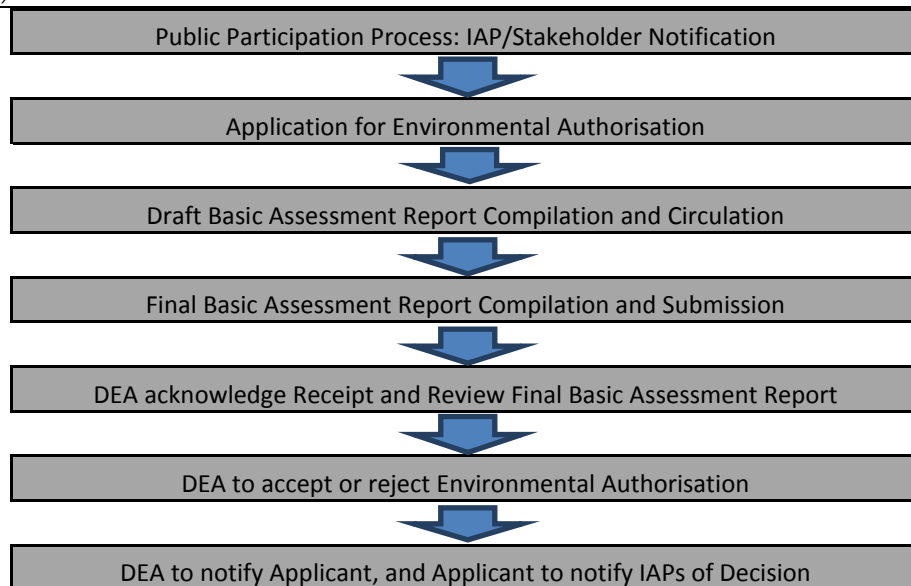
2. INTRODUCTION

THE PROPOSED REHABILITATION OF NATIONAL ROUTE 11 SECTION 2 FROM LADYSMITH (KM.00) TO NKUNZI RIVER (KM 47.80), LADYSMITH, KWAZULU-NATAL

To all Interested and Affected Parties (IAPs)

Notice is given in terms of Regulations 39 to 44 inclusive of the Environmental Impact Assessment Regulations, 2014 (GN No. R982), Government Notice No. R. 983, 984 and 985 and, under Chapter 6 Public Participation of the National Environmental Management Act (Act 107 of 1998) as amended, that the South African National Roads Agency SOC Limited (SANRAL) intends to submit an application for environmental authorisation to the Department of Environmental Affairs (DEA) for the Proposed Construction of the Rehabilitation of National Route 11 Section 2 from Ladysmith South (km 0.00) to Nkunzi River (km 47.80), Emnambithi-Ladysmith Local Municipality, uThukela District Municipality.

The proposed road rehabilitation project requires a Basic Assessment in terms of Environmental Impact Assessment Regulations of 2014 (Regulations in terms of Chapter 5 of the National Environmental Management Act, 1998, as amended). Enviroedge cc has been appointed by Worley Parsons RSA (Pty) Ltd, on behalf of SANRAL as the Environmental Consultants in this regard. The Basic Assessment process is summarised below.



Background Information Document

As part of the Basic Assessment and associated public participation process, this Background Information Document (BID) serves to inform all authorities, landowners, stakeholders, and Interested and/or Affected Parties (IAPs) of the applicant's proposed development. The BID provides interested and affected parties an opportunity to submit any issues or concerns relating to the biophysical, social or socio-economic environment.

Public Participation Process

The public participation process forms part of the Basic Assessment, and helps to ensure that IAPs have an opportunity to participate throughout the process by providing comments or concerns. Members of the public have the right to be informed of decisions that may affect them. The public is provided with an opportunity during this process to raise issues or concerns regarding the proposed development.

Interested and Affected Parties

All Interested and Affected Parties wishing to become registered as such and receive additional information, as well as an invitation to any public meeting, should one be required, should contact the environmental consultant to register as soon as possible. Registered IAPs will be kept informed of the project developments during the course of the Basic Assessment process and comments received will be included in the Basic Assessment Report submitted to DEA.

If you would be so kind, if you are aware of any IAPs who have not been informed or identified by ourselves, please let us know, so that they too may have the opportunity to register and / or receive information. Any issues, which you would like to raise and have not been identified to date, would be welcomed.

Press notices and roadside posters will notify the general public of the Basic Assessment process.

3. PROJECT BACKGROUND INFORMATION

The proposed Rehabilitation of National Route 11 Section 2 From Ladysmith South (km 0.00) to Nkunzi River (km 47.80), Emnambithi-Ladysmith Local Municipality, uThukela District Municipality is situated within the town of Ladysmith and runs north-east towards Newcastle, for the majority of the route, the final section lies in a northerly orientation, to the end point, north of the Nkunzi River crossing. The road rehabilitation length is approximately 47.80 km. The town of Ladysmith lies 190km north-west of Durban, and the town of Newcastle is located 89km to the north-east. The project falls within Ward 11, 12, 22 and 24 of the Emnambithi/Ladysmith Local Municipality (KZN232), within the uThukela District Municipality of KwaZulu-Natal.

Before any construction of the proposed Rehabilitation of National Route 11 Section 2 from Ladysmith South (km 0.00) to Nkunzi River (km 47.80), Emnambithi-Ladysmith Local Municipality may commence, an environmental authorisation is required from the Department of Environmental Affairs (DEA), in compliance with the Environmental Impact Assessment (EIA) Regulations of 2014. In order to obtain this authorisation, a Basic Assessment is currently being undertaken by Enviroedge cc. The EIA Regulations identify various activities which may have a substantial detrimental effect on the environment. The Regulations also list procedures for assessing potential associated environmental impacts.

In addition to the application for environmental authorisation, materials for the construction of the proposed roads rehabilitation project will be sourced from borrow pits and a hard rock quarry. In terms of the Minerals and Petroleum Resources Development Act (MPRDA) of 2002 a mining permit must be applied for, for the proposed hard rock quarry, and six borrow pit sources. As SANRAL is the applicant, the exemption provisions of Section 106(1) of the MPRDA will apply. In accordance with Regulation 51 of the MRPDA, the use of these materials

sources is also subject to the preparation of an Environmental Management Programme for the borrow pits and hard rock quarry that are proposed for use. The investigations for these borrow pits and hard rock quarry are in progress and the application will be submitted to the Department of Mineral Resources.

The project crosses over seven main rivers and a number of smaller rivers, streams, tributaries and drainage lines, both perennial and non-perennial in nature. As such, an application for a Water Use Licence will also be required to be submitted to the Department of Water and Sanitation in terms of the National Water Act (Act 36 of 1998).

4. PURPOSE OF THIS DOCUMENT

This report provides preliminary project information to enable Interested and/or Affected Parties an opportunity to comment on the proposed development. All issues and comments raised by IAPs will be documented in the Basic Assessment Report. This will assist in the identification of environmental issues that could have a negative and/or positive impact on the site and the community.

5. DEVELOPMENT PROPOSAL

The South African National Roads Agency SOC Limited (SANRAL) has identified the need to rehabilitate a section of road along National Route 11, Section 2 between Ladysmith South (km 0.0) and Nkunzi River (km 47.80), starting from within the town of Ladysmith and continuing in a generally north-easterly direction toward Newcastle in the north. Ladysmith is situated at 52km north of Estcourt, 69km south-east of Harrismith and 89km south of Newcastle in KwaZulu-Natal, within the Emnambithi/Ladysmith Local Municipality. The centre point of the project area is located along the National Route 11 at 28°25'23.63"; S29° 54'42.56"E.

The proposed scope of the project includes the following components:

- The strengthening of the existing pavement;
- The general widening of the existing road cross section for climbing lanes and 3.0m surfaced shoulders;
- Substantial vertical and horizontal geometric improvements;
- Geometric/safety improvement of intersections;
- The possible horizontal re-alignment of the roads between km 12.7 to km 13.6 and km 16.3 to km 17.5;
- The widening and rehabilitation of river bridges and major culverts;
- The upgrading of existing and installation of new stormwater culverts;
- The increasing of the road reserve to accommodate road widening;
- The protection of utility services affected by the rehabilitation and widening of the existing road; and'
- The extending of the existing hard-rock quarry and re-entry into 6 potential borrow pits.

The project area has a seven main rivers running through it, with associated existing bridge structures. The co-ordinates of the main river crossing points are provided below under bridges. A number of smaller rivers, streams, tributaries and drainage lines, both perennial and non-perennial in nature are crossed and these details are included under major and minor culverts.

Bridges:

There will be improvements/rehabilitation done on the eight bridges listed below.

River bridges:

The Barend Marais Spruit bridge and the Elandspruit bridge currently have inadequate capacity and will need to be replaced with new bridges.

All the other bridges listed will need to be widened to accommodate a wider cross-section.

Table 1: Bridges:

Bridge no.		Bridge name	Road km	Existing span (m)	Proposed improvements	Co-ordinates:
River bridges:						
B2113	1	Barend Marais Spruit	13.729	3 x 6.6	New 3 x 9.8m bridge with 1.5m raised deck.	28°27'33.4"S; 29°15.4"E
B2117	3	Modderspruit	20.283	4 x 9.1	Widening of the existing bridge	28°26'48.1"S; 29°52'53.8"E
B0359	4	Elandspruit	30.993	2 x 6.21	New 6.7 – 9.6 – 6.7m bridge with 1.2m raised deck.	28°22'16.2"S; 29°57'0.1"E
B2118	5	Sundays River	33.886	3 x 16.0	Widening existing bridge	28°20'59.4"S; 29°57'54.4"E
B2119	6	Mielietuin River	44.778	4/5.5	Widening existing bridge	28°15'33.4"S; 29°58'16.5"E
B2120	7	Dwars River	46.108	4/6.7	Widening existing bridge	28°14'58.5"S; 29° 57'56.6"E
B2057	8	Nkunzi River	47.808	6 x 6.7	Widening existing bridge	28°14'5.2"S; 29° 58'2.1"E
Rail bridges:						
B2115	2	Pepworth railway bridge Railway overpass near Pepworth Station	16.76		A new bridge will be constructed on the new horizontal alignment and the existing bridge will be demolished.	28°28'14.98"S; 29°51'36.21"E

Rail bridges:

Bridge no. B2115: The existing Pepworth railway bridge at km 16.76 is to be demolished, and a new bridge will be constructed on the new horizontal alignment. There are several existing dams in the vicinity of this proposed bridge realignment.

Major culverts:

Improvements/rehabilitation will be done on the fifteen (15) existing major culverts, and there will be one new major culvert constructed. Various existing major culverts have inadequate capacity and are also not structurally sound. These major culverts, therefore, need to be improved as indicated in the following table:

Table 2: Major culverts:

Stake value (km)	Culverts sizes		Structure Name	Comments
	Existing size (m)	Proposed size (m)		
9.049	2/4.6 x 1.8	2/4.6 x 1.8	Cochrane Spruit	Extend existing culvert
12.181	½.4 x 1.5	2/2.4 x 1.5	Trib.* Of Modder Spruit No. 1	Add additional culverts and extend existing culvert
16.014	2/4.6 x 1.9	2/4.6 x 1.9	Trib. Of Modder Spruit No. 2	Extend existing culvert
17.233	4/2.27 x 1.2	4/2.27 x 1.2	Wolwelaagte Spruit	Extend existing culvert
17.2 (approx.)		NEW	Wolwelaagte Spruit	New alignment
18.434	1/3.6 x 2.2	3/2.40 x 1.5	Trib. Of Modder spruit No. 3	Replace existing culvert which is not structurally sound.
22.946	2/4.0 x 1.5	6/4.0 x 1.5	Huilkuil Spruit	Add additional culverts and extend existing culvert.
26.643	1/2.4 x 1.8	3/2.4 x 1.8	Trib. of Modder spruit No. 4	Add additional culverts and extend existing culvert.
27.570	1/3.3 x 3.1	1/3.3 x 3.1	Trib. of Ethulini	Extend existing culvert
28.417	1/1.8 x 1.8	3/1.8 x 1.8		Add additional culverts and extend existing culvert.
30.880	-	2/1.8 x 1.5		New culvert
31.040	-	2/1.8 x 1.5		New culvert
32.137	1/2.4 x 1.8	3/2.4 x 1.8	Trib. of Sunday River No. 1	Add additional culverts and extend existing culvert.
37.880	1/1.50 x 1.5	3/1.5 x 1.5		Add additional culverts and extend existing culvert.
38.410	1/2.4 x 1.8	2/2.4 x 1.8	Trib. of Sunday River No. 2	Add additional culverts and extend existing culvert.
39.245	1/1.8 x 1.5	3/1.8 x 1.5		Add additional culverts and extend existing culvert.
41.429	1/4.6 x 2.1	1/4.6 x 2.1 + 1/2.0 x 2.0	Trib. Of Nkunzi River No. 1	Add additional culverts and extend existing culvert.
42.431	1/4.6 x 2.6	1/4.6 x 2.6	Trib. Of Nkunzi River No. 2	Extend existing culvert
42.899	1/4.6 x 2.6	1/4.6 x 2.6	Trib of Nkunzi River No. 3	Extend existing culvert
43.199	1/2.4 x 2.8	1/2.4 x 2.8	Trib of Mkunzi River No. 3	Extend existing culvert
46.014	2/1.8 x 1.8	2/1.8 x 1.8	Trib. of Dwars River	Extend existing culvert

*Trib. = Tributary

Minor culverts:

The following replacements and changes will be made:

- All existing 600mm diameter pipe culverts to be replaced with 900mm diameter pipe culverts and where there is insufficient cover with 900mm x 600mm box culverts (BC), as indicated in the list below.
- Erosion protection measures to be implemented to prevent erosion at in- and outlets.
- New culverts to be constructed as per the drainage chart engineering details.
- In- and outlet structures to be constructed at culverts beneath access roads.
- Culverts that are beneath the natural ground level to be day lighted in order to prevent silting up of the existing culverts.
- Culverts which are too short to be excluded in order to ensure that normal headwalls and wingwalls can be constructed.

Table 3: Minor culverts:

NO.	km DISTANCE	CULVERT SIZES		
		EXISTING SIZE	IMPROVEMENTS	PROPOSED SIZE
1-1	0.120	1 / 600 Ø PC	No improvements	
1-3	1.000	1 / 750 Ø PC	Extend existing	1 / 750 Ø PC
	1.900 - 7.315		Ladysmith Town	Minor improvements
6-1	6.259	1 / 600 Ø PC	No improvements	
6-2	6.989	1 / 600 Ø PC	No improvements	
9-2	9.988	1 / 600 Ø PC	Replace with 1 / 900 Ø PC	1 / 900 Ø PC
10-1	10.215	1 / 600 Ø PC	Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
10-2	10.543	1 / 600 Ø PC	Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
11-1	11.606	1 / 600 Ø PC	Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
12-2	12.870		New 1 / 900 x 600 BC	1 / 900 x 600 BC
	13.066	1 / 600 Ø PC	On old alignment	Remove existing
	13.191	1 / 600 Ø PC	On old alignment	Remove existing
13-1	13.200		New 1 / 900 x 600 BC	1 / 900 x 600 BC

14-1	14.139	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
16-2	16.295	1 / 600 Ø PC		Replace with 1 / 900 Ø PC	1 / 900 Ø PC
17-1	17.040			New 1 / 900 Ø PC	1 / 900 Ø PC
17-3	17.291	1 / 600 Ø PC		Replace with 1 / 900 Ø PC	1 / 900 Ø PC
	17.494	1 / 600 Ø PC		Remove existing	
17-4	17.560			New 1 / 900 x 600 BC	1 / 900 x 600 BC
17-5	17.980			New 1 / 900 x 600 BC	1 / 900 x 600 BC
18-1	18.230	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
18-3	18.488	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
18-4	18.689	2 / 600 Ø PC		Replace with 1 / 1200 x 600 BC	1 / 1200 x 600 BC
18-5	18.942	2 / 600 Ø PC		Replace with 1 / 1200 x 600 BC	1 / 1200 x 600 BC
19-1	19.203	2 / 600 Ø PC		Replace with 1 / 1200 x 600 BC	1 / 1200 x 600 BC
19-2	19.729	2 / 600 Ø PC		Replace with 1 / 1200 x 600 BC	1 / 1200 x 600 BC
21-1	21.040			New 1 / 900 x 600 BC	1 / 900 x 600 BC
21-2	21.659	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
21-3	21.960			New 1 / 900 x 600 BC	1 / 900 x 600 BC
22-1	22.260			New 1 / 900 x 600 BC	1 / 900 x 600 BC
22-1	22.496	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
23-1	23.582	2 / 600 Ø PC		Replace with 1 / 1200 x 600 BC	1 / 1200 x 600 BC
24-1	24.140	1 / 900 Ø PC		Extend existing	
24-2	24.403	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
24-3	24.961	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
25-1	25.405	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
25-2	25.500	1 / 600 Ø PC		New 1 / 900 x 600 BC	1 / 900 x 600 BC
	25.627	1 / 750 Ø PC		Remove existing	
	25.799	1 / 600 Ø PC		Remove existing	
25-3	25.500	1 / 600 Ø PC		New 1 / 900 x 600 BC	1 / 900 x 600 BC
26-1	26.220	1 / 600 Ø PC		New 1 / 900 x 600 BC	1 / 900 x 600 BC
27-2	27.796	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
28-1	28.080	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
29-1	29.065	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
29-2	29.764	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
30-1	30.297	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
31-1	31.104	1 / 750 Ø PC		Remove existing	
32-2	32.379	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
32-3	32.498	1 / 600 Ø PC		Replace with 1 / 900 Ø PC	
	32.550	1 / 600 Ø PC		Remove existing	
32-4	32.642	1 / 900 Ø PC		Extend existing	
32-5	32.720			New 1 / 900 x 600 BC	1 / 900 x 600 BC
	32.873	1 / 600 Ø PC		Remove existing	
33-1	33.300			New 1 / 900 x 600 BC	1 / 900 x 600 BC
	33.426	1 / 600 Ø PC		Remove existing	
34-1	34.604	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
34-2	34.924	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
35-1	35.056	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
35-2	35.371	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
35-3	35.489	1 / 900 x 450 BC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
35-4	35.883	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
36-1	36.069	2 / 600 Ø PC		Replace with 1 / 1200 x 600 BC	1 / 1200 x 600 BC
36-2	36.321	1 / 1830 x 1340 BC		Extend existing	
36-3	36.675	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
	36.886	1 / 600 Ø PC		Remove existing	
37-1	37.038	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
37-2	37.196	1 / 600 Ø PC		Replace with 1 / 1200 x 600 BC	1 / 1200 x 600 BC
37-3	37.375	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
37-4	37.508	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC

38-2	38.640	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
38-3	38.811	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
38-4	38.964	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
39-2	39.526	2 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
39-3	39.640	2 / 600 Ø PC		New 1 / 900 x 600 BC	1 / 900 x 600 BC
40-1	40.053	2 / 600 Ø PC		Replace with 2 / 900 Ø PC	2/ 900 Ø PC
40-2	40.780	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
	40.857	1 / 600 Ø PC		Remove existing	
41-1	41.063	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
41-2	41,28			New 1 / 900 x 600 BC	1 / 900 x 600 BC
	41.520	1 / 600 Ø PC		Remove existing	
41-4	41.708	1 / 600 Ø PC		Replace with 1 / 900 Ø PC	1/ 900 Ø PC
42-1	42.035	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
42-2	42.241	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
42-4	42.687	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
43-1	43.042	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
43-3	43.538	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
44-1	44.302	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
44-2	44.520	1 / 600 Ø PC		New 1 / 900 x 600 BC	1 / 900 x 600 BC
45-1	45.009	1 / 600 Ø PC		Replace with 1/ 900 Ø PC	1/ 900 Ø PC
45-2	45.230			New 1 / 900 x 600 BC	1 / 900 x 600 BC
45-3	45.325	1 / 600 Ø PC		Replace with 1/ 900 Ø PC	1/ 900 Ø PC
45-4	45.633	1 / 600 Ø PC		Replace with 1 / 900 x 600 BC	1 / 900 x 600 BC
45-5	45.703	1 / 600 Ø PC		Replace with 1/ 900 Ø PC	1/ 900 Ø PC
46-2	46.730			New 1/ 900 Ø PC	1/ 900 Ø PC
	47.462	1 / 600 Ø PC		Remove existing	
47-1	47.54			New 1 / 900 x 600 BC	1 / 900 x 600 BC

Additional Drainage Elements and Works:

- Concrete side drains and subsoil drains - to be installed in the larger cuttings of the proposed project.
- Drainage on high fills - to be properly controlled by the addition of concrete kerbs, down chutes and in- and outlet structures.
- Road surface - The existing cross fall on the road is approximately 2.5% and in flat areas, stormwater could accumulate on the surface during periods of rain, and when heavy vehicles travel on the road this in turn, creates a spray, which makes it impossible and dangerous to overtake these vehicles. The cross fall is to be increased to 3.0% at places where the longitudinal gradient is equal to or flatter than 0.5% and where the flat gradients occur in lengths of 500 metres or more.
- Catchwater banks at deep cuttings will be provided on top of cuttings (upstream cutface) to prevent cut slope erosion and flooding of side drains.

Road Furniture:

- Fencing – Currently there is only stock proof fencing that exists along the route. The fencing along this section of road is in a relative good condition but will be replaced to meet SANRAL's standards.
- Road signs are currently generally in relatively good condition but will be replaced to meet SANRAL's standards.
- Guardrails are currently in poor condition and will be replaced with new guardrails.
- Resting / Stopping areas – Currently there are several existing resting/stopping areas located along the route. These are in a poor condition and some are also situated at dangerous locations. The existing resting / stopping areas are to be removed to safer places.

Road Surface/Pavement Improvements:

The existing road pavement is to be strengthened and there will be sections of widening and also new horizontal and vertical improvements.

Traffic management during construction:

There will be different types of traffic accommodation utilised in the project, including:

- Type 1 : Half-width construction –out of town areas
- Type 2 : Half-width construction – in Ladysmith town

- Type 3 : Construction of the road in thirds, where the road would effectively be divided into three sections
- Type 4 : Temporary deviations
- Type 5 : Horizontal re-alignment section

5. AFFECTED AREA

General

The town of Ladysmith is situated approximately 190 km north-west of Durban in KwaZulu-Natal. It lies along National Route 11, Section 2 from KM 0.00. Please see Figure 1 – Locality Plans and Figures 2 to 2d – Site Plans.

Vegetation

According to The Vegetation of South Africa, Lesotho and Swaziland, the vegetation within the study area, in the Ladysmith town area, to the immediate west to south-west is classified as Gs 6 KwaZulu-Natal Highland Thornveld. This vegetation unit is described as forming a series of several patches in the central northern regions of KwaZulu-Natal, where it occurs on both dry valleys and moist upland. The most extensive area is found in the region from Ladysmith, Winterton, Estcourt and Colenso up to a large patch around Newcastle. To the east to north-east of the study area, Svs2 Thukela Thornveld is found. This vegetation unit is described occurring in the upper Thukela River basin, in a series of discontinuous patches, the largest area being east of Estcourt-Colenso and including Ladysmith. The majority of the study area falls within Gs4 Northern KwaZulu-Natal Moist Grassland, a vegetation unit which forms a discontinuous rim around the upper edge of the upper Thukela Basin and is situated almost entirely within the catchment of the Thukela River. The most extensive areas of this vegetation unit include north of Ladysmith and west of Newcastle.

The topography of the study area is described as hilly and rolling landscape supporting tall tussock grassland, usually dominated by *Themeda triandra* and *Hyparrhenia hirta* grasses. Open *Acacia sieberiana* var. *woodii* savannoid woodlands encroach upon valleys, usually on disturbed and highly eroded sites.

The project study area is located along the existing national N2 road, and, as such, the vegetation along the edges is predominantly disturbed, cleared and modified through anthropogenic activities, with very little of the natural plant communities remaining intact.

The average annual rainfall varies between the vegetation units from 850mm up to 1830mm in Gs6. Likewise, the average daily temperature varies, with 16.5°C as an overall average. The area is also subject to frost, which is described as having the potential to be severe in Gs4.

The Chelmsford Nature Reserve is located 22km north of the proposed road rehabilitation end point, to the west of Dannhauser.

Geology and Soils

The geology and soils of the project area vary with the vegetation units. Generally, the project area is described as having a variety of Karoo Supergroup rocks in the area, including the Dwyka, Ecca and Beaufort Groups with intrusions by dolerites of Jurassic age. Soils are described as yellow-brown soils over plinthic subsoil, shallow duplex soils and red and black heavy soils derived from dolerites with high resistance to erosion.

Hydrology

No groundwater points have been noted, however, groundwater could be expected to occur in the vicinity of drainage lines, and seepage and perched groundwater flow at the soil/rock interface are likely to become more prolific in rainy months.

Fauna

The project crosses over seven main rivers and a number of smaller rivers, streams, tributaries and drainage lines, both perennial and non-perennial in nature. There are two non-perennial streams within the study area. These riverine/drainage line areas and their associated vegetation are likely to provide habitat for associated species such as avifauna, reptiles and amphibians. Domestic livestock also graze in this area. The Ezemvelo KZN Wildlife Terrestrial Systematic Conservation Plan 2010 (TSCP) does not allocate a Biodiversity Priority Area status for the majority of the study area, however, the north-eastern portion is ascribed a Biodiversity Priority Area 1 status. Species associated with this Priority area include: *Ourebia ourebi* (Oribi), *Doratogonus falcatus* (millipede), *Cochlitoma simplex* (snail), and *Kniphofia breviflora* (Red hot poker).

Commercial agriculture was noted along the roadside, predominantly cattle farming. Scattered tree stands and bush clump areas were noted along the road length, including *Acacia* sp. and *Aloe* sp. Alien invasive plant species noted on site include the following: *Eucalyptus* sp. (Gum trees), *Melia azederach* (Syringa) and *Solanum mauritianum* (Bugweed).

Culture and Heritage

The presence of any features of cultural or historical importance is currently unknown.

Services

Infrastructure including electricity lines, large Eskom steel lattice tower electrical servitudes, Telkom and telephone

lines, street lights, a subsurface pipeline servitude (both for oil and water), as well as water pipelines currently under construction), telecommunication masts and municipal services were noted on site. All relevant government departments or parastatals will be consulted as part of the Public Participation Process.

National and District Roads

The proposed Ladysmith National Route 11, Section 2 crosses a number of smaller district roads. As such, the proposed road rehabilitation project will impact on these roads. Intersections and junctions have all been listed by the project engineers and form part of the overall design.

Topography and Drainage

The site topography is generally gently undulating, with seven main rivers and a number of smaller rivers, streams, tributaries and drainage lines, both perennial and non-perennial in nature. The approximate centre point of the site can be found at: 28°25'14.39"S; 29°54'52.16"E, along the National Route 11, Section 2. According to The Vegetation of South Africa, Lesotho and Swaziland, the area is described as hilly and rolling landscape.

The study area is bounded by the Klip River and Spruit River, within Ladysmith to the south, with a further number of main river crossings, including the Marais Spruit, Modder Spruit, Ethulini River and Sunday River, a number of smaller rivers, streams, tributaries and drainage lines, both perennial and non-perennial in nature, and the Dwars River and Nkunzi River to the north.

In the northern portion, the study area reaches a high point of approximately 1 380masl, to the west, 1 207masl in the central area, and in the lower central portion, Pepworth Hill at 1 181masl to the west of the N11. In the Ladysmith area, Observation Hill is noted to the west, Cemetery Hill to the east and Flag Hill at 1 080masl to the north-east of Ladysmith.

Land use and Socio-economic structure

Land use in the surrounding areas consists of commercial formal development within the town of Ladysmith and Ladysmith outskirts. From Ladysmith north, the land use is predominantly agricultural with large farmlands flanking either side of the N11/2. The Newcastle Platberg Colliery is located to the east of the road in the northern portion. Borrow pits are also noted along the road side in the northern portion. A few small tourism related road side stops were noted in the north of the study area.

6. POTENTIAL KEY ISSUES

Access to River and Drainage areas – Access to the river areas within the study area by construction vehicles will cause damage to the fauna and flora associated with these systems; it will also alter water and soil characteristics and flow patterns, and must be prevented.

Surface Water Runoff – The construction activities may affect the area through changed hydrological patterns and this may have an ecological impact. Permanent alteration of flow patterns is a risk and could lead to detrimental effects on the vegetation if these are not mitigated for during and after construction. Storm water management associated with the proposed road rehabilitation development should be incorporated into the design and should take into consideration the erosion potential of the region.

Rehabilitation – A rehabilitation programme should be developed for all areas to be affected by the proposed road rehabilitation development. Alien plants should be removed and replaced with indigenous vegetation. This must be an on-going process and should not be left to the end of the projected construction period.

Vegetation clearance – Where it is necessary for vegetation to be removed, this should not occur as a once off clearance, but should be phased, as needed, in order to help to reduce soil erosion potential and the proliferation of exotic weeds. Weeds will thrive in disturbed soil, and will present an eradication problem later should these plants set seed, especially near watercourses. Protected plant species should be relocated, and may not be removed without a permit from the Department Agriculture, Forestry and Fisheries (DAFF).

Erosion – Potential erosion should always be considered during and after construction. If strict mitigation measures are implemented these potential factors can be prevented / reduced. Mitigation measures include soil stabilisation and re-vegetation of affected areas as well as the avoidance (during construction and operation phases) of all areas susceptible to erosion.

The opportunities created by this development through social upliftment may help to outweigh the negative impacts. The development disturbance areas are expected to cover fairly large areas, and it will be necessary to implement a comprehensive rehabilitation programme. It is imperative, however, that the construction and operation activities occur over as small an area as is practical.

References

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

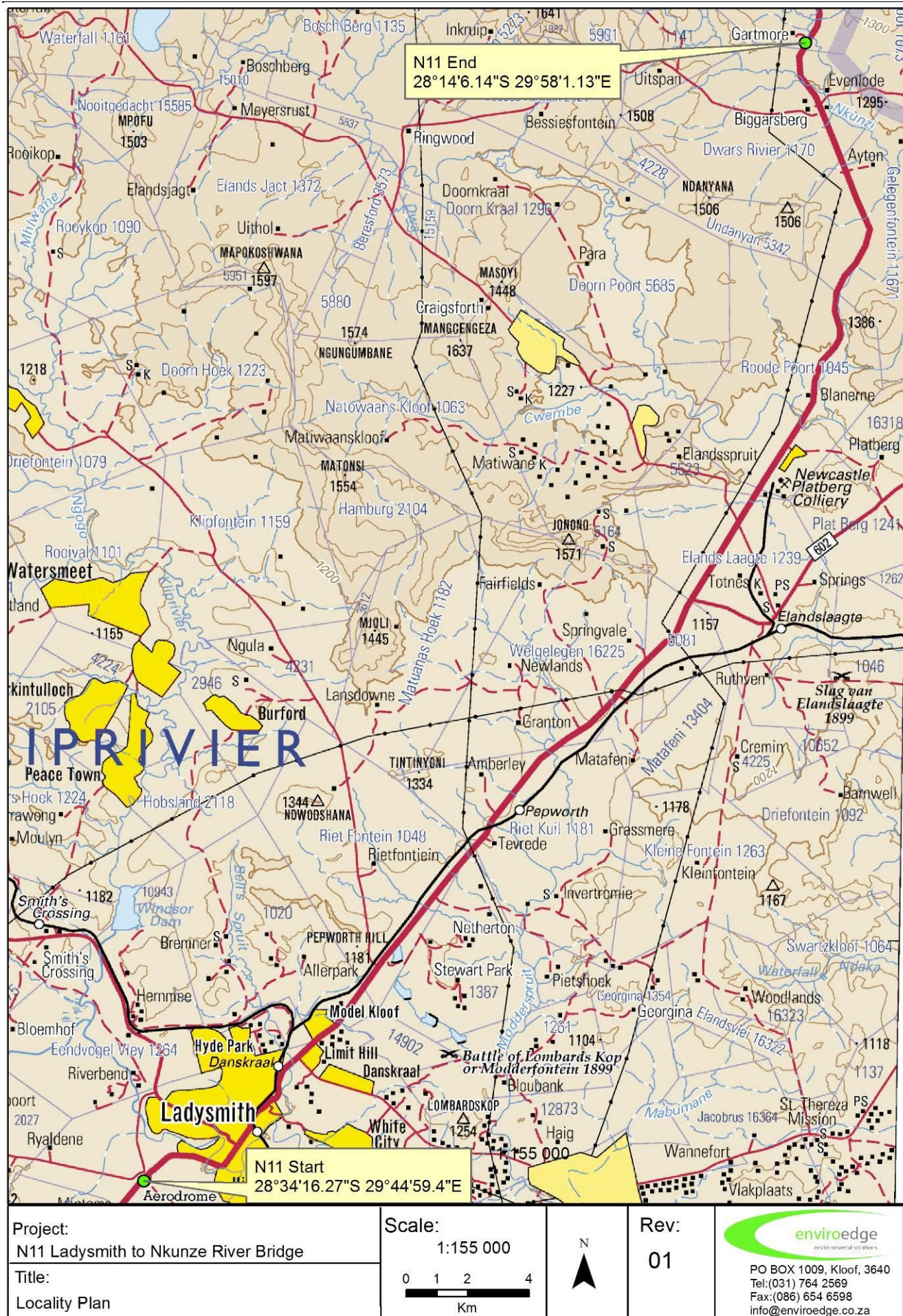


Figure 1 – Locality Plan



Figure 2 – Site Plan – Imagery Layout

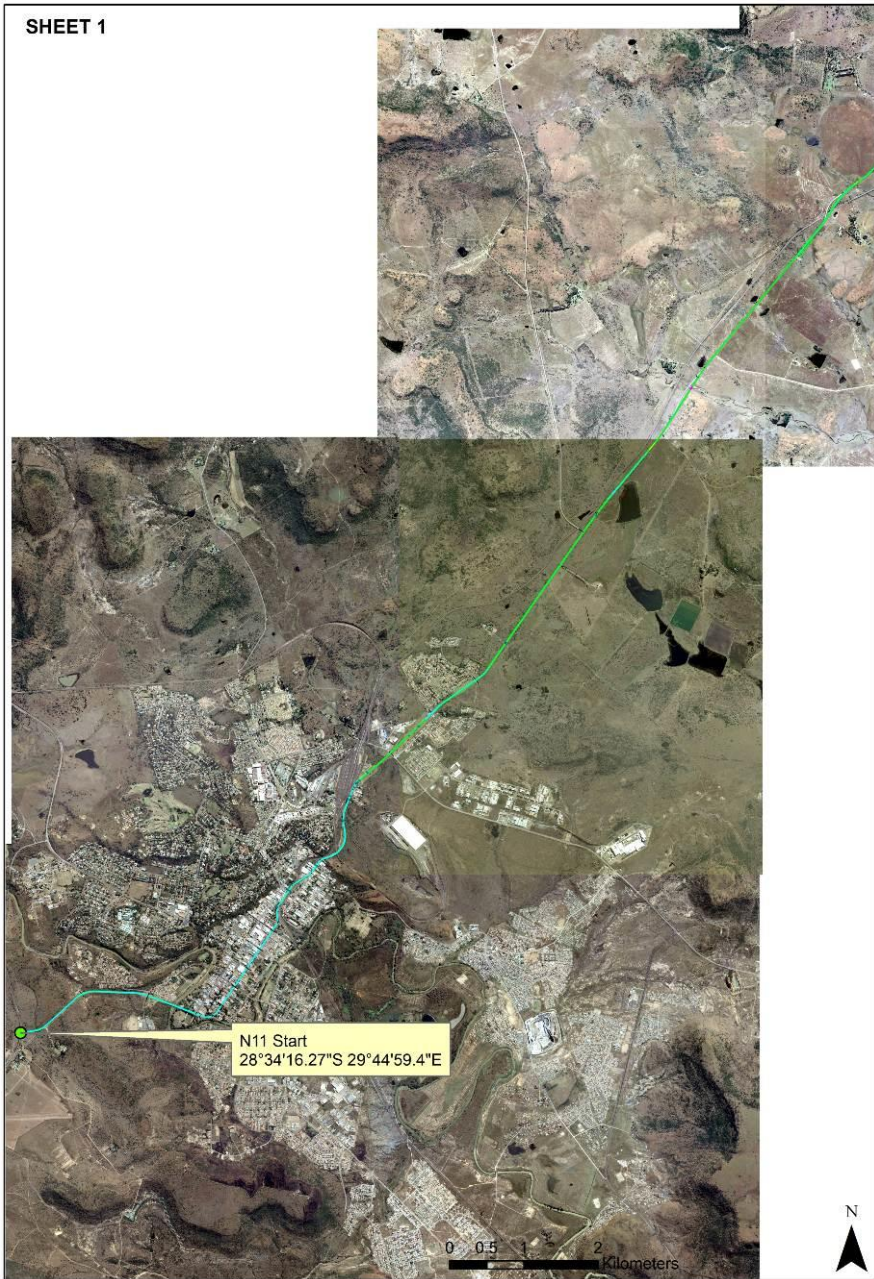


Figure 2a – N11 – Sheet 1

Figure 2b – N11 Sheet 2



Figure 2c – N11 – Sheet 3

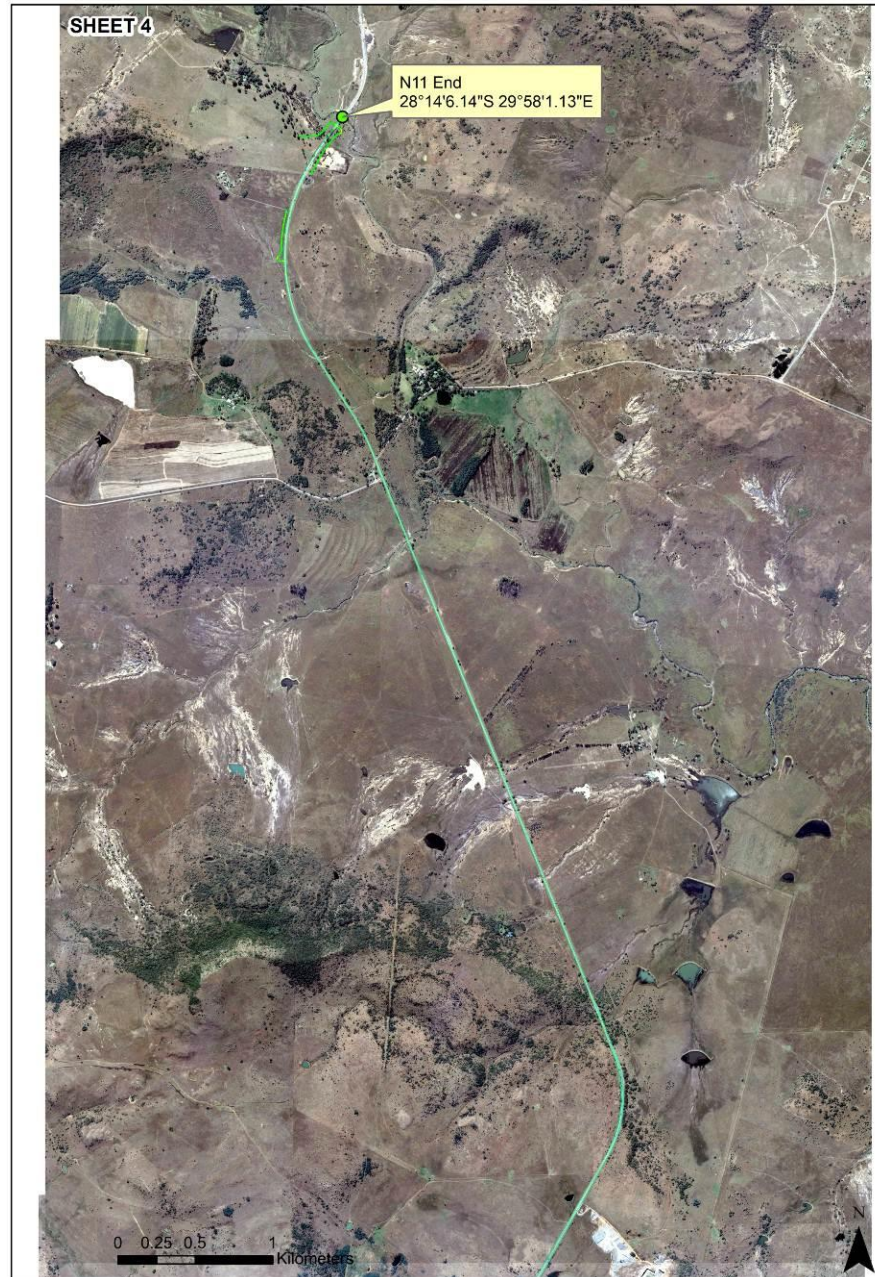


Figure 2d – N11 Sheet 4