



HANSLAB (PTY) Ltd
ENVIRONMENTAL AND GROUND
ENGINEERING SPECIALIST

2017

DRAFT BASIC ASSESSMENT REPORT



PROJECT NAME: D2264 ROAD UPGRADE

AREA/MUNICIPALITY: OKHAHLAMBA LM

CLIENT: KZN DOT- HEAD OFFICE

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SECTION A: ACTIVITY INFORMATION

PROJECT TITLE

Proposed upgrade of D2264 from a gravel road to a blacktop within the Okhahlamba Local Municipality.

PROJECT DESCRIPTION

The KZN Department of Transport (Applicant) proposes to upgrade the existing D2264 gravel road to a blacktop category D. The road upgrade will start at P340 within the Woodford area and connect to P341 at Bethany Area. The proposed road upgrade will be approximately **4.5 km in length**, with a proposed **width of 7 m** to accommodate **two lanes of 3.5m each**, with a **concrete v-drain** and a **pavement**.

The road will be realigned in various sections to accommodate the access roads to the schools and local community houses. The Department also proposes to **construct pipe crossings for driveways** as there are various driveways along the road. The road traverses several drainage lines that have existing pipe culverts. However, the Department proposes to **replace the pipe culverts** as the structures have been damaged and not functioning at an optimal efficiency.

The construction of the pipe culverts within the drainage lines and the realignment of the road forms the focus of the basic assessment report, and triggers a listed activity as outlined below.

According to the EIA Regulations of 2014 (Listing Notice 1, GNR 983), the listed activity below is triggered:

▪ **Listing Notice 1, Listed Activity 19 (GNR 983)**

The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from-

(i) a watercourse;

Description of activity (Drainage line):

The District Road D2264 traverses several drainage lines along the route, and the Applicant proposes to replace the existing infrastructure within the drainage line with new pipe culverts. More than 5 cubic metres of soil will be removed during the construction of the proposed pipe culverts and the v-drains.

▪ **Listing Notice 1, Listed Activity 24 in (GNR 983)**

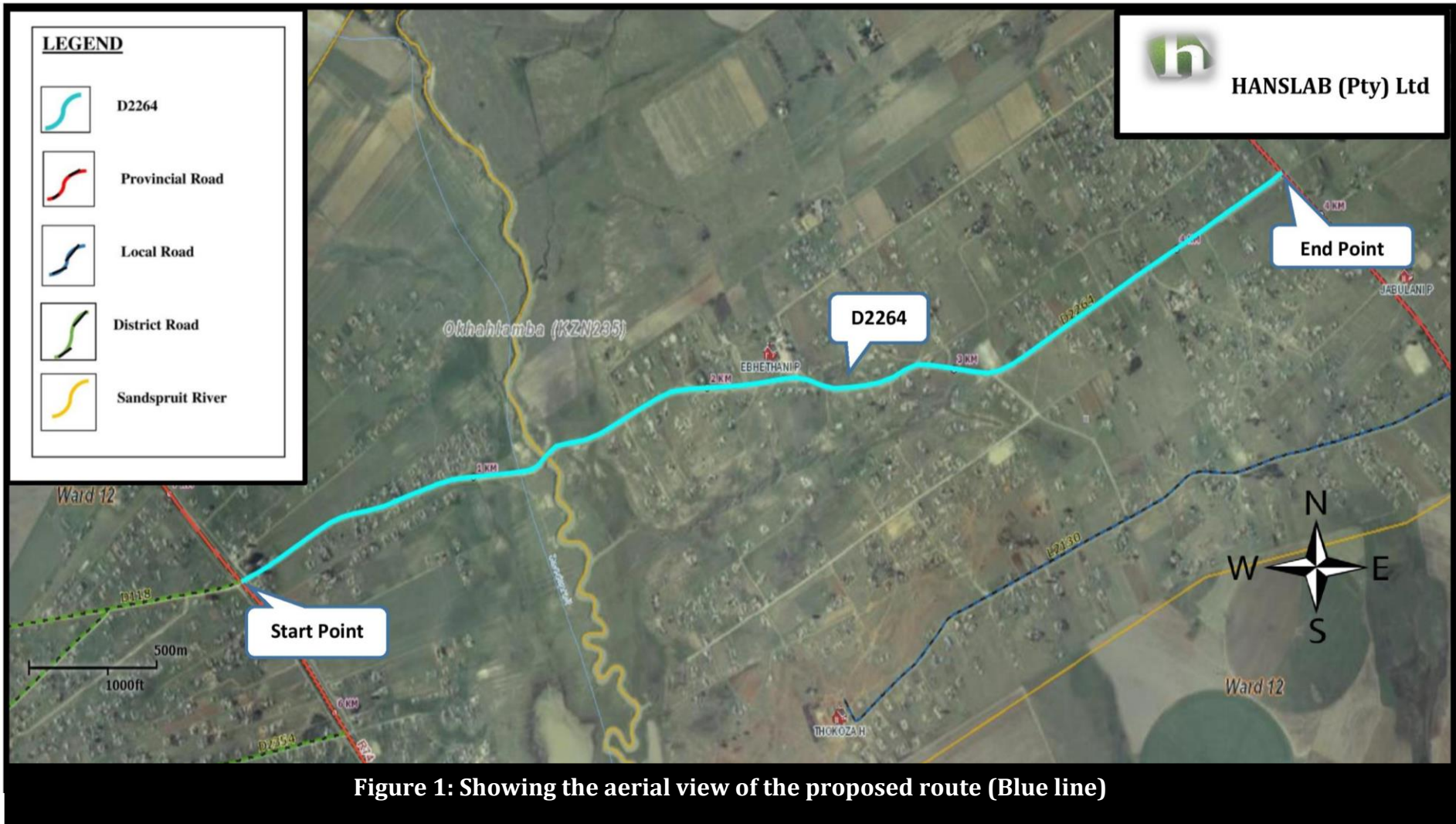
The development of –

(i) a road for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or

(ii) A road with a road reserve wider than 13.5 meters, or where no reserve exists where the road is wider than 8 meters

Description of the activity (The road)

The proposed District Road D2264 was re-aligned to have a road reserve of **20metres**, which will accommodate a carriageway of 7metres in width, pavement, v-drains, kerb, and channel. Therefore, Activity 24 described above is triggered. Refer to **Figure 1** below (Drawing C42977) which confirms the dimensions of the proposed road upgrade.



FEASIBLE AND REASONABLE ALTERNATIVES

▪ **Site Alternative 1**

The proposed route is along District Road 2264, within the Okhahlamba Local Municipality. There are no site alternatives that have been investigated for the proposed road upgrade, as this is an existing gravel road which presently services the community.

The road, pavement and pipe culvert designs have taken numerous engineering methodologies into consideration which has a minimal impact on the environment, by improving safety, drainage and reducing erosion along the route. Following the initial site visit it was evident that there has been a significant amount of erosion surrounding the proposed project area. This has led to the deepening of the drainage lines, flooding of the road during rainfall seasons which in turn, will lead to further erosion in the long term if surface runoff and drainage are not dealt with accordingly.

Table 1: Coordinates along the preferred route for the proposed project.

	Lat. (DDMMSS)	Long (DDMMSS)
Start Point	28°41'19.01"S	29°17'56.34" E
Mid-Point	28°40'56.22"S	29°19'45.69" E
End Point	28°40'33.67"S	29°20'27.37" E



Photograph 1&2: Showing the existing gravel road and houses adjacent to the proposed route

TECHNOLOGY / DESIGN ALTERNATIVE

The Department of Transport proposes to upgrade the existing gravel road to a blacktop road. Following investigations, the best engineering principles were consulted for the proposed road upgrade. A category D road which services rural communities, with an ESO.3 pavement and v-drains. This was obtained using the technology recommendations for Highway guidelines, (TRH17 for the road and TRH4 for the pavement). An upgrade to blacktop would mean greater safety for all road users. The recommended width of the new road is 7.00m (3.5m per lane).

▪ **Road design methodology**

A recent traffic count conducted by Mikros in June 2016 found that average daily traffic of 300 cars per day was counted and the average daily traffic was 153 vehicles per lane per day travelling towards P340 and 148 vehicles per lane per day travelling towards P341. The investigation recommended a Category D road, as the road normally has traffic only in the morning and afternoons, as it services schools and community members commuting to work. This was based on the road design that adheres to the THR17 geometric design philosophy which categorizes the roads into 4 categories (A-D respectively). For prediction purposes a value of 400 was used as an average traffic value to accommodate possible businesses along the way.

According to standards of the road design classification, a speed of 60km/h would be appropriate for the proposed road. However, due to restrictions on site, such as proximity of fences, driveways, and community services, a design speed of 40km/h is recommended. The traffic count that was recently completed suggests that the average speed of vehicles is as low as 55km/h. It should therefore be an easy adjustment for regular drivers on D2264 to lower their speed to 40km/h.

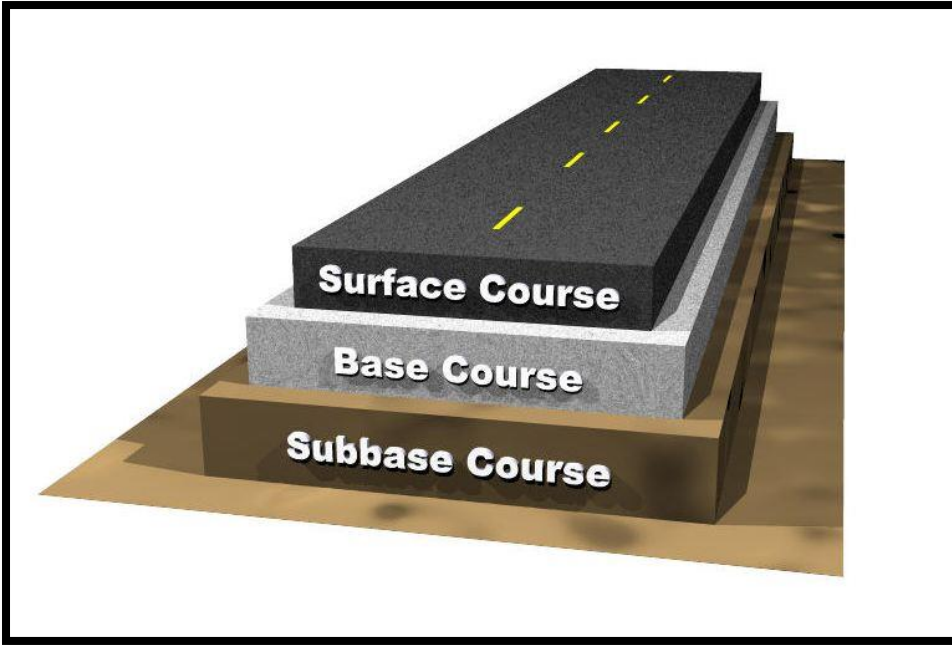


Figure 2: Showing an example of blacktop road design.

- **Pavement design methodology**

It has been found that traffic along D2264, was mainly in the form of foot and taxis. The community would greatly benefit from the increased traffic as there are also informal businesses along the way. TRH 4 guidelines have been followed in producing the following table, which indicates the pavement class of D2264. After all calculations were concluded the ES0.3 pavement design was chosen as it corresponds to the Category D road.

Road category D	
Description	Rural access roads
Service level	Moderate to low level of service
Typical Pavement Characteristics	
Risk	High
Approximate Design Reliability (%)	50
Total Equivalent Traffic Loading (E80/lane)	1×10^6
Daily Traffic (e.v.u.)	320

% of heavies	10
Growth rate	4%
Design period	10 years
Traffic growth factor	4557
	150 x 0.10 x 1.2 x 4557
MESA	0.11x 10 ⁶ E80
Pavement Class	ES0.3

As the proposed pavement, will carry loads of traffic, the structure will be a combination on layers, surfacing, base, subbase, selected subgrade and subgrade. Based on the traffic, class and road category the following pavement layers were selected:

30mm A Base	A- Asphalt surfacing
100mm BC Subbase	BC- Hot mix asphalt
200mm C4 Subbase	C4- Cemented crushed stone and gravel
G8 Selected Subgrade	G8- Gravel or soil
G10/G9 Subgrade	G10/G9- Gravel or soil

- **Drainage design**

When the road is surfaced by asphalt, there will be a large increase in surface runoff because the once bare, semi permeable road, will be a hardened surface and completely impermeable, this will increase surface run-off.

This increase in surface runoff during the post developmental stage means that a greater capacity for drainage must be provided for. This is to ensure the runoff does not damage property and pose a threat to people or to the general environment. Pipe crossings will be replaced, and v-drains have been recommended along the side of the road.



Photograph 2: Showing the construction method of the proposed V-drains.

▪ **No-go alternative**

No road or structures will be constructed or upgraded, therefore there will be no negative impacts associated with construction activity. However, there will also be no positive impacts associated with the road construction such as the improved connectivity and access for residents. Residents that make use of the road will continue to experience disruptions, as gravel along the road is absent, where gravel is present is frequently loose, making access difficult at times of high rainfall. This makes it difficult for community members to access transportation and services. The damage and lack of drainage system along the route causes the road to be slippery and unsafe. Erosion along the road is evident in areas as a direct result of poor drainage along the existing gravel road. Open drains along the road are risky for children as headwalls on installed pipes are broken.

▪ **Physical size of activity**

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

Alternative:

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

Size of the activity:

	m ²
	m ²
	N/A m ²

Alternative:

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

Length of the activity:

Approximately 4494m

▪ **Site access**

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

Yes	No
X	

- Describe the type of access road planned:

The proposed upgrade will be taking place on an existing gravel road, therefore, there is no need for a new access road.

▪ **Waste, effluent, emission and noise management**

- Solid waste management

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

YES	NO
X	

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

Approx.4 m ³

- **How will the construction solid waste be disposed of?**

All solid waste accumulated during construction will be kept in designated areas/construction campsite and disposed by the constructor at the registered local landfill site. The contractor must provide the competent authority with disposal certificates from a registered landfill site.

- **Where will the construction solid waste be disposed of?**

The construction solid waste will be disposed of at the Cathkin Park waste treatment site by the contractor. This will be addressed in the EMPr. The appointed ECO must confirm such disposal during the auditing process.

- **Will the activity produce solid waste during its operational phase?**

YES	NO x
N/A m ³	

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

▪ **Liquid effluent**

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

YES	NO X
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- **Will the activity produce effluent that will be treated and/or disposed of at another facility?**

YES	NO X
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▪ **Emissions into the atmosphere**

- Will the activity release emissions into the atmosphere other than exhaust emissions and dust associated with construction phase activities?
- If YES, is it controlled by any legislation of any sphere of government?

YES	NO
	X
YES	NO
	X

▪ **Waste permit**

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

YES	NO
	X

▪ **Generation of noise**

- Will the activity generate noise?
- If YES, is it controlled by any legislation of any sphere of government?

YES	NO
X	
YES	NO
	X

- **Describe the noise in terms of type and level:**

Noise will only be generated during the construction phase (from operating machinery, generators etc.) The level of the noise generated will be low and below 70 decibels threshold limit. No noise will be generated during the operational phase; therefore, the impact is temporary in nature and can be minimised with affective monitoring by the ECO.

- **Water use**

Municipal	Water board	Groundwater	River, stream, dam or lake	Other Water will be transported to site via water tanks.	The activity will not use water
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Water will be transported to the site via water trucks as to minimise strain placed on the local municipal system, and no water will be abstracted from any watercourse during the construction phase of the project.

APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

- **NEMA and the Environmental Impact Assessment Regulations, 2014**

The EIA Regulations 2014, promulgated under NEMA (1998), focus primarily on creating a framework for co-operative environmental governance. NEMA provides for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance and procedures for co-ordinating environmental functions exercised by State Departments and to provide for matters connected therewith.

In terms of the EIA Regulations of 2014 and activities listed in GN No. 983 and GN No. 985 (requiring a Basic Assessment (BA) process), there are listed activities that are triggered. The listed activities are deemed to include activities that could potentially have an impact on the social and biophysical state of an area and as such, the applicant is required to obtain an Environmental Authorisation (EA) by way of a BA process.

- **Constitution of Republic of South Africa (Act No 108 of 1996)**

The project falls within the boundaries of South Africa. The Constitution of the Republic of South Africa has major implications for environmental management. The main effects are the protection of environmental and property rights, the change brought about by the

sections dealing with administrative law, such as access to information, just administrative action and broadening of the locus standing of litigants. These aspects provide general and overarching support and are of major assistance in the effective implementation of the environmental management principles and structures of the NEMA. Section 24 in the Bill of Rights of the Constitution specifically states that:

Everyone has the right -

- To an environment that is not harmful to their health or well-being; and
- To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that -
- Prevent pollution and ecological degradation;
- Promote conservation; and
- Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

▪ **National Heritage Resources Act, 1999 (Act No. 25 of 1999)**

This Act legislates the necessity for cultural and heritage impact assessment in areas earmarked for development, which exceed 0.5 hectares (ha) and where linear developments (including roads) exceed 300 metres in length. The Act makes provision for the potential destruction to existing sites, pending the archaeologist's recommendations through permitting procedures. Permits are administered by Amafa KwaZulu-Natal, the Provincial Heritage Resources Authority.

▪ **National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)**

The purpose of the Biodiversity Act is to provide for the management and conservation of South Africa's biodiversity within the framework of the NEMA and the protection of species and ecosystems that warrant national protection. As part of its implementation strategy, the National Spatial Biodiversity Assessment was developed. This Act is applicable to this application for environmental authorisation as it requires the project applicant to consider the protection and management of local biodiversity.

SECTION B: SITE/ AREA/ PROPERTY DESCRIPTION

▪ **Property description/ physical address**

Province	KwaZulu-Natal
District Municipality	UThukela Municipality
Local Municipality	Okhahlamba Municipality
Ward Number(s)	11, 12
Farm name and number	Sandspruit
Portion number	6, 13, 33, 34, 44 of 5026
	5, 7, 13, 15 of 4976
	1, 7, 8, 9, 10, 11, 15 of 14123
	18, 40, 48 of 4977
SG Code	NOGT0022000050260006
	NOGT0022000050260013
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