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ENVIRONMENTAL AND GROUND
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**SITE INVESTIGATION REPORT:
PROPOSED UPGRADE OF DISTRICT ROAD 1269 (D1269) TO
BLACKTOP SURFACE,
MSINGA LOCAL MUNICIPALITY**



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SITE INVESTIGATION REPORT - PROPOSED UPGRADE OF D1269 TO A BLACKTOP SURFACE (2018)



Report Name	Proposed upgrade of district road 1269 (D1269) to a blacktop surface.
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1. INTRODUCTION

A Site Investigation is the process of collecting information, assessment of the data and reporting potential hazards within a site which is unknown (O'Brien and Gere, 2011). A site investigation/ assessment highlights potential ecological issues or constraints in relation to a proposed development (Perry, B, 2011). This site investigation report will analyse the ground assessment undertaken for the proposed development of a local road upgrade. A desktop analysis will then be done to compare these results and formulate potential environmental constraints, in reference to the proposed development. This analysis will also aid in defining specific potential environmental triggers within the project boundaries.

2. METHODOLOGY

The methodology followed for conducting the site investigation report included:

- Compilation of an environmental site visit checklist for screening purposes. This checklist is specific to local road developments and assisted in recognising potential constraints from an environmental and social perspective.
- Site Visit/Site Walk-Over (Conducted on the 15th March 2017).
- Taking site photographs for environmental evaluation purposes
- Desktop analysis using environmental management tools i.e. Google Earth, DOT GIS, SANBI, ARCGIS.

3. BACKGROUND

The KwaZulu-Natal Department of Transport (Applicant) are currently addressing the needs of previously disadvantaged rural areas by providing service delivery. The Department of Transport has initiated proposed projects for infrastructure development to ensure the safety of all road users within the rural community. Nankhoo Engineers was appointed as the design engineers by the Applicant to address a request made by the community within the uMsinga area to upgrade District Road 1269 (D1269) to a blacktop surface. Hanslab has been appointed by Nankhoo Engineers to undertake the environmental assessment of the proposed project by compiling a Basic Assessment Report for an EIA Application.

4. PROJECT LOCATION

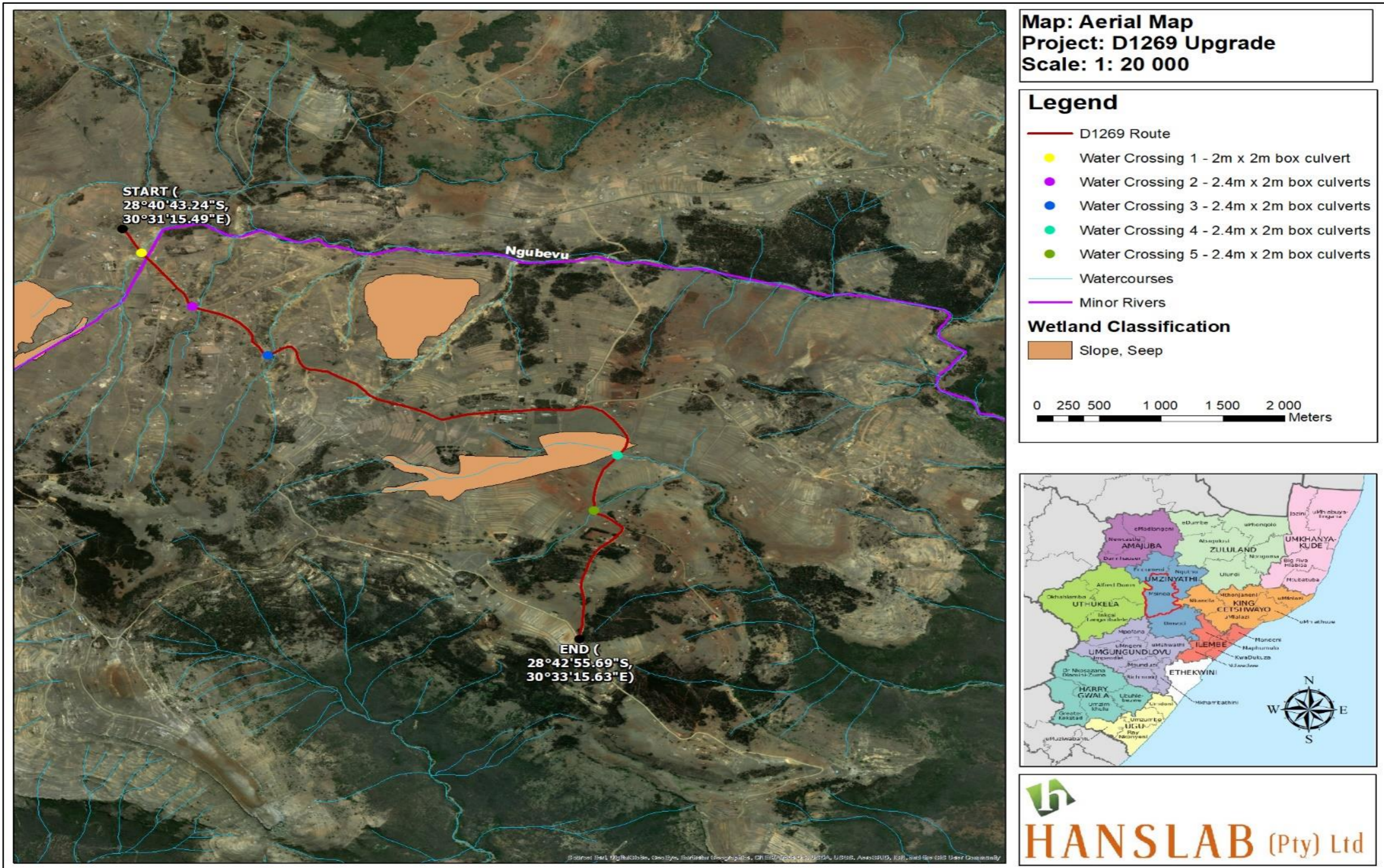


Figure 1: Showing aerial map (Source: ArcGIS, 2018)

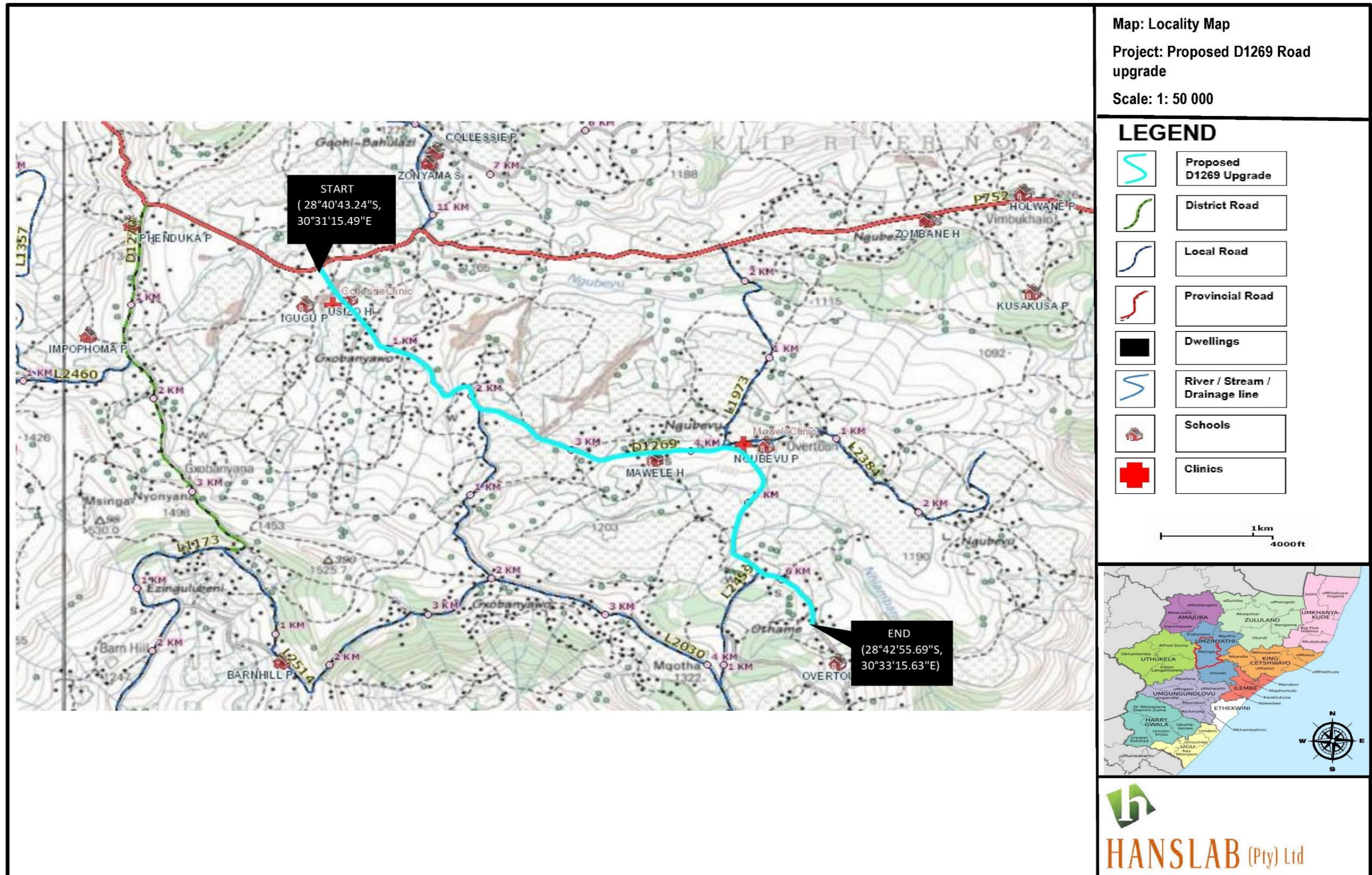


Figure 2: Showing Locality map (Source: DOT GIS, 2018)

5. SITE DESCRIPTION

The proposed upgrade of D1269 lies within ward 15 and falls under the Msinga local municipality within the uMzinyathi District Municipality. D1269 is a gravel road which is approximately seven kilometres (7.0km) in length and has existing structures along the route. A site assessment undertaken by Nankhoo Engineers indicated that the current gravel road is eroded and the existing structures along the route are ineffective in conditions of moderate and heavy rainfall.

A desktop analysis of the site identified the presence of drainage lines which were assessed during the site visit as well as No.3 seep wetlands within the study area. **Figure 1** shows a seep wetland that crosses the path of the proposed upgrade as well as No.2 seep wetlands within a 500m boundary of the proposed development.

Table 1: Showing coordinates of route.

PROPOSED ROUTE	LAT. (DDMMSS)	LONG. (DDMMSS)
Start Point	28°40'43.62"S	30°31'16.05"E
Middle Point	28°41'41.74"S	30°32'31.65"E
End Point	28°42'55.92"S	30°33'15.53"E



Photo 1: Showing sandstone outcrops on downstream section at watercourse 1.



Photo 2: Showing upstream view from crossing 2 with tributary flowing towards the culvert



Photo 3: Showing upstream view of No. 2 cell concrete box culverts at crossing No. 3 with stone pitched wing walls.



Photo 4: Showing View of crossing 4 with short to medium grasses and reeds adjacent to road and Stream.



Photo 5: View of 3 No. cell concrete pipe culvert with debris accumulation and water ponding at water crossing 5

6. PROPOSED PROJECT DESCRIPTION

The proposed project will include the upgrade of existing structures along the proposed route. The existing gravel road is 7.0km and currently consists of No. 5 water crossing points each containing existing structures. The current crossings are ineffective during periods of medium to heavy rainfall and therefore create hazardous conditions. Therefore, there is a need to replace the current structures which will mitigate the risk posed by rainfall and allow safe passage along the road way. The construction of the proposed upgrade will trigger a basic assessment application as per GNR 327 Listing Notice 1, Activity 12 of the EIA Regulations, 2014 (as amended 2017).

Table 2: Showing location of proposed upgrades of structures along the route

WATERCOURSE	EXISTING STRUCTURE	PROPOSED STRUCTURE	LATITUDE (S)	LONGITUDE (E)
1	No.4 ring Box Culvert Structure	2m x 2m box culverts (3 cell)	28°40'51.30"S	30°31'20.93"E
2	600mm x 3no. Pipe Culverts	2.4m wide x 2.4m high box culverts (1 cell)	28°41'8.61"S	30°31'34.28"E
3	600mm x 4no. Pipe Culverts	2.4m wide x 2.4m high box culverts (1 cell)	28°41'24.32"S	30°31'53.97"E
4	Drift structure	2.4m wide x 2.4m high box culverts (3 cell)	28°41'56.60"S	30°33'25.50"E
5	600mm x 1no. Pipe culvert	2.4m wide x 2.4m high box culverts (1 cell)	28°42'14.40"S	30°33'19.30"E

7. PHYSICAL SIZE OF THE ACTIVITY

Table 3: Showing physical size of the proposed structural upgrades along D1269

PROPOSED STRUCTURES		
WATERCOURSE	ALTERNATIVE	SIZE OF THE ACTIVITY
1	Alternative A1 - Preferred Alternative – 2.4m x 2.4m box culverts (3 cell)	>100m ² 131.74m ²
2	Alternative A1 - Preferred Alternative – 2.4m x 2.4m box culverts (1 cell)	>100m ² 103.32m ²
3	Alternative A1 - Preferred Alternative – 2.4m x 2.4m box culverts (1 cell)	<100m ² 64.4m ²
4	Alternative A1 - Preferred Alternative – 2.4m x 2.4m box culverts (3 cell)	>100m ² 161m ²
5	Alternative A1 - Preferred Alternative – 2.4m x 2.4m box culverts (1 cell)	<100m ² 99.89m ²

8. MOTIVATION FOR THE DEVELOPMENT

The motivating factors that contribute to the requirement of the upgrade of the road and structures are as follows:

- To encourage public transport between the surrounding villages
- Improve safety of all road users on the road way
- Encourage economic development of the communities and “unlocking land” for housing and farming
- Improve access for emergency services such as ambulances, SAPS, mobile clinics etc.
- Promoting safety for pedestrians such as school children, the elderly and general public.

9. LISTED ACTIVITIES TRIGGERED AS PER GNR 327 OF LISTING NOTICE 1

GN NO. & ACTIVITY NUMBER	LISTED ACTIVITY	ACTIVITY DESCRIPTION
GNR 327 Activity 12 of Listing Notice 1 (As amended 7 th April 2017)	<p>The development of—</p> <p><i>(i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square meters; or</i></p> <p>(ii) infrastructure or structures with a physical footprint of 100 square meters or more;</p> <p>where such development occurs—</p> <p>(a) within a watercourse;</p> <p><i>(b) in front of a development setback; or</i></p> <p><i>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; —</i></p>	<p>The proposed road upgrade has existing pipe and box culvert structures that are currently ineffective; therefore, the applicant proposes to construct box culvert structures to replace these structures. Each box culvert structure will have a different footprint as per the water crossing point and gradient along the route (Refer to Table 3 above for physical footprints)</p> <p><u>At water crossing 1</u>, the approximate width for the proposed 2m x 2m box culvert structure (3 cell) is 18.82m and length is 7.00m. The approximate physical footprint of the proposed box culvert structure is 131.74m².</p> <p><u>At water crossing 2</u>, the approximate width for the proposed 2.4m x 2.4m box culvert structure (1 cell) is 14.76m and length is 7.00m. The approximate physical footprint of the proposed</p>

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GN NO. & ACTIVITY NUMBER	LISTED ACTIVITY	ACTIVITY DESCRIPTION
	<p><i>excluding—</i></p> <p>(aa) <i>the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;</i></p> <p>(bb) <i>where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;</i></p> <p>(cc) <i>activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;</i></p> <p>(dd) where such development occurs within an urban area;</p> <p>(ee) <i>where such development occurs within existing roads, road reserves or railway line reserves; or</i></p> <p>(ff) <i>the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.</i></p>	<p>box culvert structure is 103.32m².</p> <p>At water crossing 4, the approximate width for the proposed 2.4m x 2.m box culvert structure (3 cell) is 23m and length is 7.00m. The approximate physical footprint of the proposed box culvert structure is 161m².</p> <p>The proposed development is greater than 100 m² and occurs within a rural area, therefore the activity triggers Activity 12 of Listing Notice 1.</p>

10. CONCLUSION

The site investigation assessment indicated that the proposed road upgrade has existing pipe and box culvert structures that are currently ineffective. These existing structures need to be replaced with suitable crossing structures to aid the community during medium and high rainfall. The proposed road upgrade triggers GNR 327 Listing Notice 1, Activity 12 of the EIA Regulations, 2014 (as amended 2017) and subsequently a Basic Assessment Application. Therefore, a Basic Assessment Application, must be lodged with the Department of Economic Development, Tourism and Environmental Affairs (EDTEA). The Msinga community will benefit from the proposed upgrade by providing a safer journey for people living along this road, as well as to other users on the road. The proposed upgrade of District Road 1269 will positively impact the local community by providing access to basic facilities and services, minimizing the negative impact of flooding, and reducing soil degradation. The community is in need of safe and secure means of crossing the road, for both vehicles and pedestrians. The community will benefit directly from the proposed road upgrade with associated structures, as the current structures that exist along the route are blocked during floods and are currently ineffective.

REFERENCES

EIA Regulations (2017). General Notice Regulations (GNR983), (2014), as amended (April 2017)

Nankhoo Engineers (2018). Preliminary Design Report: Proposed upgrades of crossing structures along D1269 between km0.00 – km7.0

O'Brien and Gere (2011). Geophysical/ Geotechnical/ Environmental Investigation: Restoration Project

Perry, B (2011). Environmental Investigation Report

