HANSLAB (PTY) Ltd

ENVIRONMENTAL AND GROUND ENGINEERING SPECIALIST

SITE INVESTIGATION REPORT

MTHALENI 2 EXT MUD TRACK

PROJECT NAME:

MTHALENI 2 EXT TRACK UPGRADE

AREEA/MUNICIPALITY:

MSINGA LOCAL MUNICIPALITY

CLIENT:

KZN DOT-DUNDEE

DATE: SEPTEMBER 2017

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ACTIVITY INFORMATION

PROJECT TITLE

Proposed upgrade of the existing Mthaleni 2 Ext mud track to a type 7A gravel road with associated structures along the road in the Msinga Local Municipality, within the Umzinyathi District.

PROJECT DESCRIPTION

The KZN Department of Transport (DOT) proposes to **upgrade the existing Mthaleni 2 Ext mud track** to a type 7A gravel road. The upgraded local road will be **approximately 0.66km in length, and 6 m width with a 20m road reserve** which conforms to DOT standards for local road upgrades. The upgrade will take place in the Makhasana area in Pomeroy under the Msinga Local Municipality, administered by the Umzinyathi District Municipality. The mud track traverses a watercourse, therefore the applicant **proposes to construct a portal causeway structure at the water crossing point** to allow for the natural flow of water within the watercourse. The upgrade of the track will allow for improved access for residents and minimize erosion along the track as a result of storm water run-off.

LISTED ACTIVITIES TRIGGERED

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

- ***Listing Notice 1, Listed Activity 12*:**

The development of -

(ii) infrastructure or structures with a physical footprint of 100 square metres or more

where such development occurs-

(a) within a watercourse

excluding—

(aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;

(bb) 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;

(cc) 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;

(dd) where such development occurs within an urban area;

(ee) where such development occurs within existing roads, road reserves or railway line reserves; or

(ff) 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.

Description of activity that triggers Activity 12

The proposed road upgrade traverses a water crossing point therefore the applicant proposes to construct a portal causeway structure to allow for the natural flow of water downstream (As indicated in Map 1 Below). Based on DOT standard details for a concrete slab structure, the **approximate width is 13.12m and length is 8.00m** which varies according to the stream width. The **approximate physical footprint is 104m²**, thus the activity is greater than 100 m^2 and therefore triggers activity 12 of listing notice 1 as mentioned above.

- ***Listing Notice 1, Listed 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 -

(i) a watercourse

but excluding where such infilling, depositing, dredging, excavation, removal or moving—

(a) will occur behind a development setback;

(b) is for maintenance purposes undertaken in accordance with a maintenance management plan;

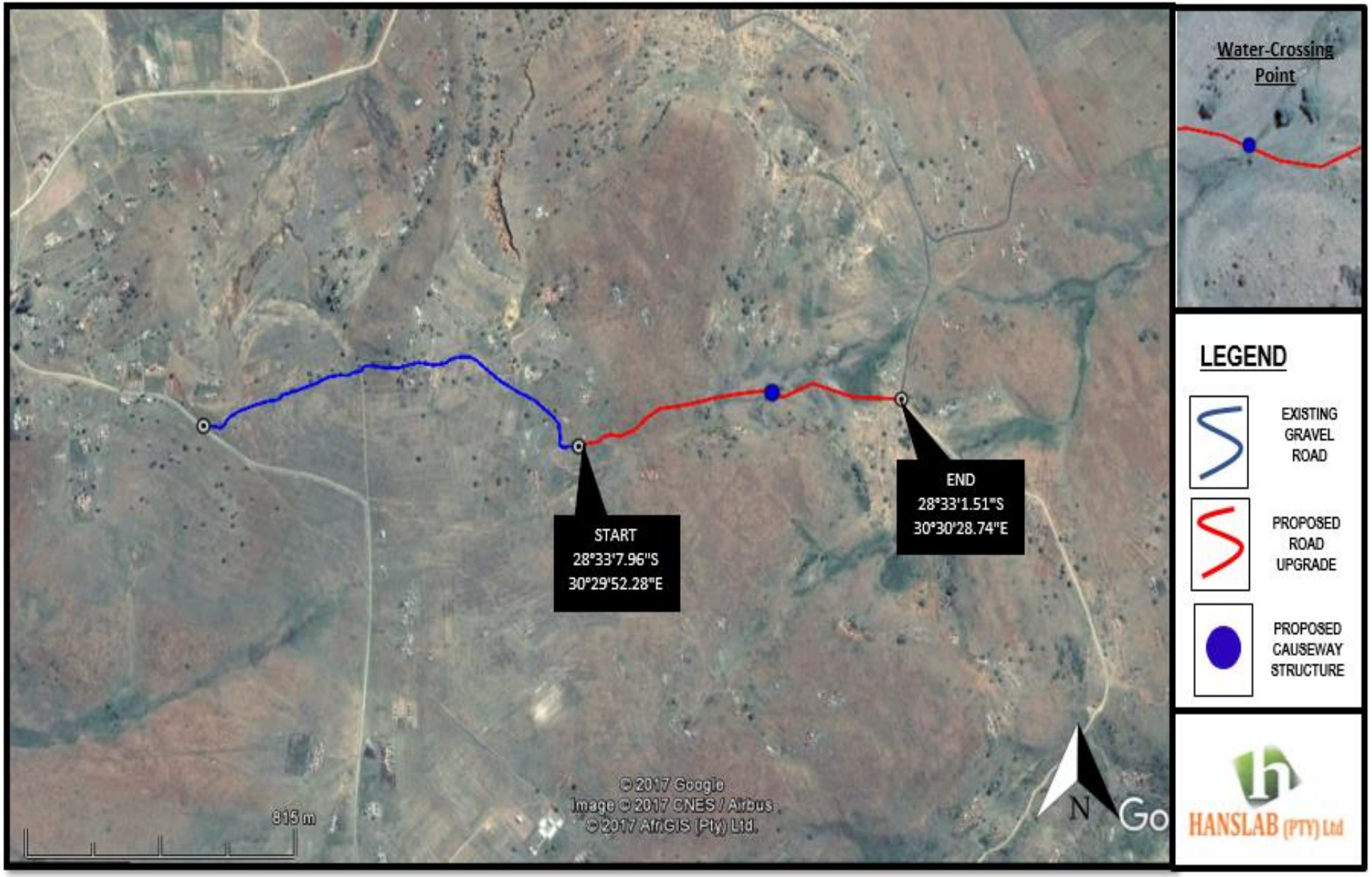
(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;

(d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or

(e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.

Description of activity that triggers Activity 19

The proposed road traverses' a water crossing point where the applicant proposes to **construct a portal causeway structure**. The proposed activity will require the temporary removal of soil from the watercourse for the proposed construction of the portal causeway structure. **Approximately 13 m^3** of soil will be removed from the watercourse to allow for the construction, thus more than 10m^3 of soil will be removed because of the activity, therefore Activity 19 of listing notice 1 is triggered. The removed soil & material from the watercourse will be re-used for stabilization of the banks.



Map 1: Showing aerial map of proposed route – Mthaleni 2 Ext

FEASIBILE AND REASONABLE ALTERNATIVES

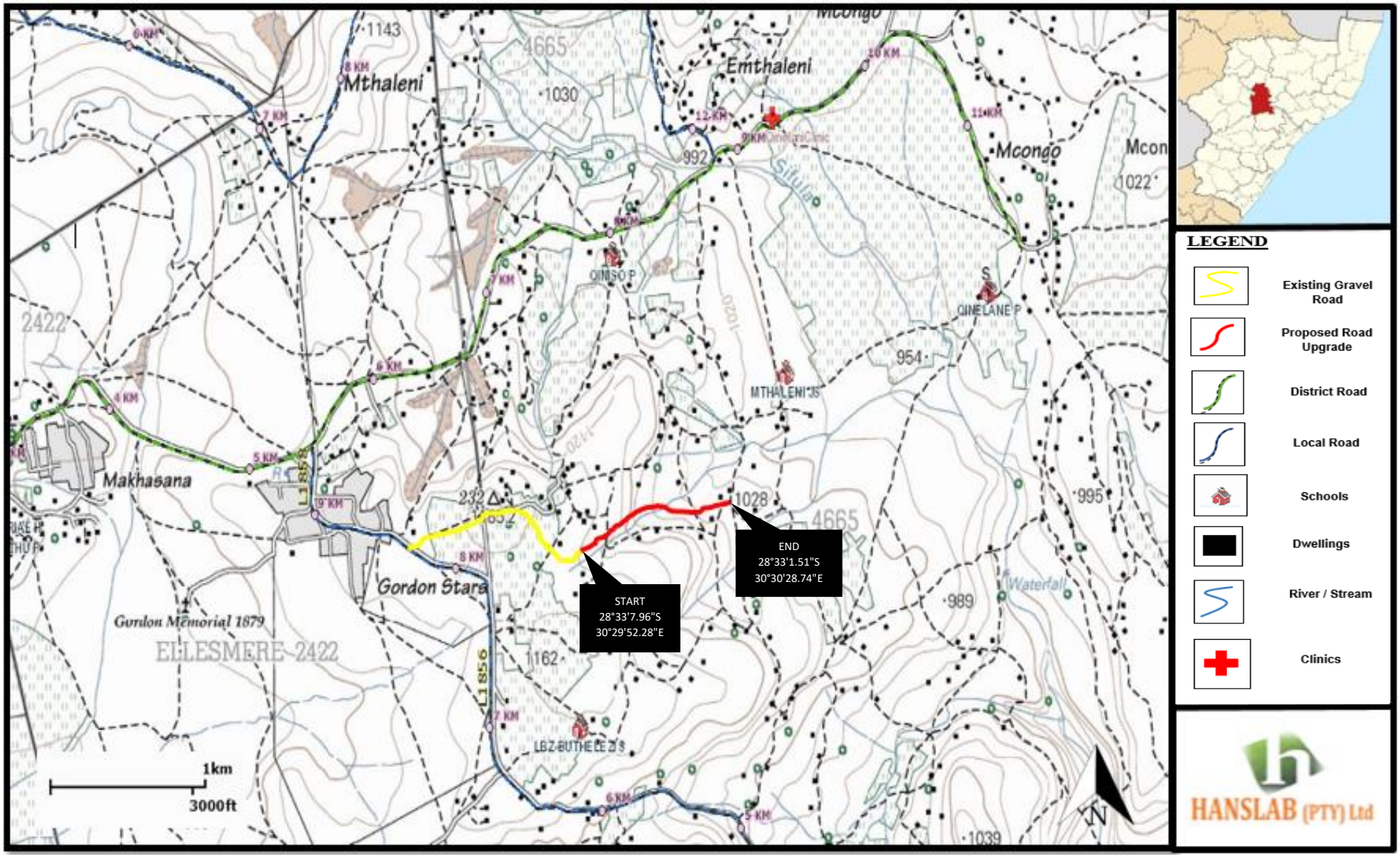
SITE ALTERNATIVE 1 – Preferred Option

The proposed route is along Mthaleni 2 Ext Mud Track, within the Msinga Local Municipality. **There are no site alternatives that have been investigated in this report, as the existing mud track will be upgraded to a gravel road.** The portal causeway structure has taken numerous engineering methodologies into consideration, which in turn will have 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 the proposed site and surrounding area has been significantly eroded. Subsequently, 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.

PROPOSED ROUTE

Table 1: Showing coordinates of proposed route

PROPOSED ROUTE	LAT. (DDMMSS)	LONG. (DDMMSS)
Start Point	28°33'7.96"S	30°29'52.28"E
Middle Point	28°33'3.15"S	30°30'7.23"E
End Point	28°33'1.51"S	30°30'28.74"E



Map 2: Showing locality map

TECHNOLOGY/DESIGN ALTERNATIVES

Portal Causeway Structure

The proposed upgrade of the Mthaleni mud track traverses water crossing point which necessitates the need for an appropriate structure to be constructed at the crossing point (Refer to **Map 1** above). For the purposes of this Basic Assessment Report the design of the causeway structure will be based on DOT standard causeway details.

Based on DOT standard details for a causeway the **approximate width is 13.12 m and length is 8.00 m** which varies according to the stream width.

Location of the Causeway Structure (Option 1):

Table 2: Showing location of proposed causeway structure / water crossing point

Causeway Structure	Lat. (DDMMSS)	Long. (DDMMSS)
	28°33'1.97"S	30°30'13.85"E

Photo 1: Showing water crossing point (West of proposed road)

Preferred Alternative: Portal Causeway Structure

Based on DOT standard details for a causeway the **approximate width is 13.12 m and length is 8.00 m** which varies according to the stream width. The **physical footprint of the structure is > 100 m².** The causeway structure will be supported on pad foundation founded on bedrock. The preferred alternative has been considered as the best practical option by the applicant, as it has a longer life span, and much more cost effective to install and maintain. Refer to facility illustration in **Appendix C.1**

Photo 2: Showing an example of a portal culvert causeway structure

Alternative 2 - Pipe Culvert (Stone Pitched Headwalls)

The Alternative 2 will be pipe culvert structures with stone pitched or gabion headwalls, with a 900mm diameter, class 100D pipes of 2.44m lengths spanning, covered by a minimum of 150mm compacted back-fill material will be constructed in the drainage line. Stone pitching, as it applies to road construction, are uniform-sized stones placed shoulder to shoulder on a prepared surface. The stones used must be sound, tough, durable, clean & are usually sourced from rock quarries. These are placed on cement with the spaces between stones filled with cement. The gabions are recommended in areas where slope stability is required. This option will be considered based on specific site conditions and the site engineer will advise accordingly during the site assessment and construction phase. Based on DOT standard details for a pipe culvert structure the approximate width is 13.12 m and length is 7.00 m which varies according to the stream width. The physical footprint of the structure is < 100 m2.

Photo 3: Showing stone pitched pipe culverts with headwalls

No-Go Alternative

No gravel road and portal causeway structures will be constructed, 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 will continue walking long distances to get to public transport facilities and delays in emergency service response time. Erosion along the mud track is evident in areas as a direct result of poor drainage. The proposed route is transformed by existing footpaths and highly degraded, most natural vegetation has been invaded by alien vegetation along the track.

PHYICAL SIZE OF THE ACTIVITY

ALTERNATIVE: Proposed Causeway Structure	SIZE OF THE ACTIVITY
Alternative A1 (preferred activity alternative)	>100m^2

ALTERNATIVE 2: Proposed Pipe Culvert Structures	SIZE OF THE ACTIVITY
Alternative A1	<50m

- **SITE ACCESS**
  - **Does ready access to the site exist?**

Yes	No
X	

  - **Describe the type of access road planned:**

    The proposed mud track will be upgraded to Type 7A gravel road, therefore, there is no need for a new access road.