

**PHASE ONE HERITAGE IMPACT ASSESSMENT
OF THE PROPOSED CONSTRUCTION OF A
LOCAL ROAD FROM AN EXISTING TRACK AT
TWALEYKHE NEAR GREYTOWN, KWAZULU-
NATAL**



ACTIVE HERITAGE cc.

For: Hanslab (Pty)Ltd

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LIST OF ABBREVIATIONS AND ACRONYMS

EIA	Early Iron Age
ESA	Early Stone Age
HISTORIC PERIOD	Since the arrival of the white settlers - c. AD 1820 in this part of the country
IRON AGE	Early Iron Age AD 200 - AD 1000 Late Iron Age AD 1000 - AD 1830
IIA	Intermediate Iron Age
ISA	Intermediate Stone Age
LIA	Late Iron Age
LSA	Late Stone Age
MSA	Middle Stone Age
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998 and associated regulations (2006).
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999) and associated regulations (2000)
SAHRA	South African Heritage Resources Agency
STONE AGE	Early Stone Age 2 000 000 - 250 000 BP Middle Stone Age 250 000 - 25 000 BP Late Stone Age 30 000 - until c. AD 200

A First Phase Heritage Impact Assessment and survey of the proposed construction of a local road from an existing track at Twaleykhe near Greytown, KwaZulu-Natal identified no archaeological and historical sites on the footprint. No graves occurred within 50m from the proposed road. The area is also not part of any known cultural landscape. It is, however, expected that construction activities at the two watercourses on route may severely impact on potentially fossil-bearing bedrock sediments. It is advised that should considerable fossil remains be exposed as a result of bedrock excavations during the construction of new causeway and slab structures, the responsible ECO must safeguard it and immediately report the findings to the relevant heritage authority so that appropriate mitigation measures can be put in place. Attention is drawn to the South African Heritage Resources Act, 1999 (Act No. 25 of 1999) and the KwaZulu-Natal Heritage Act (Act no 4 of 2008) which, requires that operations that expose archaeological or historical remains should cease immediately, pending evaluation by the provincial heritage agency.

1 BACKGROUND INFORMATION ON THE PROJECT

Table 1. Background information

Consultant:	Hanslab (Pty) Lmt sub-consulted Active Heritage cc to conduct the heritage impact assessment. Active Heritage cc sub-consulted Paleoservices cc to complete the palaeontological component of the study.
Type of development:	The KZN Department of Transport (DOT) proposes to construct a local road from an existing track, to a Type 7A Local Road (Gravel Road) which is (6m in width and 6.020Km in length) with a road reserve of 20m that conforms to DOT standards. The existing road will be upgraded in one of the Greytown villages off P 161. The road transverses two watercourses, therefore DOT proposes to construct a causeway structure at the first watercourse, and a slab structure at the other crossing point. The proposed construction of both structures will occur at the existing crossing point which has been disturbed. The proposed development of the local road will provide access to basic amenities as well as access to Sheshamsamo Primary School.
Rezoning or subdivision:	Not applicable
Terms of reference	To carry out a Heritage Impact Assessment including the palaeontological component.
Legislative requirements:	The Heritage Impact Assessment was carried out in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and following the requirements of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) and the KwaZulu-Natal Heritage Act, 1997 (Act No. 4 of 2008).

1.1. Details of the area surveyed:

The project area is situated within the Umvoti Local Municipality and the UMzinyathi District Municipality. It is situated approximately 6km to the north of Muden off the P 161 (Figs 1 & 2). The general topography of the region as per the site investigation is classified as undulating plains/low hills. The area can be described as rural. Zulu homesteads are occur adjacent to the proposed road upgrade and there is ample evidence for small scale subsistence activities. The vegetation along the proposed road upgrade is degraded. A watercourse is present and development of a causeway

structure has been proposed as well (see below). The following development activities has been proposed:

- The proposed construction of a local road from a mud track to a gravel road 6m in width, and a length of 6.020km. The road will be upgraded on an existing track, which has become prone to erosion and inundated during periods of high rainfall. The GPS coordinates for this road is given as: S 28° 54' 5" E 30° 26' 1"
- Based on DOT standard details for a causeway the approx. width is 8.45m and length is 7.4m which varies according to the stream width. A standard causeway will be constructed with a length of 20m and width of 8m which will be supported on pad foundation founded on bedrock. The GPS coordinates for this proposed structure is given as: S 28° 55' 48" E 30° 25' 54"
- A standard slab structure will be constructed with a length of 10 m and width of 4 m which will be supported on pad foundation founded on bedrock. The GPS coordinates for this proposed structure is given as: S 28° 55' 42.75" E 30° 25' 13.34"

1.2. Relevant Legislation:

According to the National Heritage Resources Act, 1999 (NHRA) (Act No. 25 of 1999), the heritage resources of South Africa include:

- a. places, buildings, structures and equipment of cultural significance;
- b. places to which oral traditions are attached or which are associated with living heritage;
- c. historical settlements and townscapes;
- d. landscapes and natural features of cultural significance;
- e. geological sites of scientific or cultural importance;
- f. archaeological and palaeontological sites;
- g. graves and burial grounds, including-
 - i. ancestral graves;
 - ii. royal graves and graves of traditional leaders;
 - iii. graves of victims of conflict;
 - iv. graves of individuals designated by the Minister by notice in the Gazette;

- v. historical graves and cemeteries; and
- vi. other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
- h. sites of significance relating to the history of slavery in South Africa;
- i. movable objects, including-
 - i. objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
 - ii. objects to which oral traditions are attached or which are associated with living heritage;
 - iii. ethnographic art and objects;
 - iv. military objects;
 - v. objects of decorative or fine art;
 - vi. objects of scientific or technological interest; and
 - vii. books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).

2 SCOPE OF WORK

This study aims to identify and assess the significance of any heritage and archaeological resources occurring on or adjacent to the proposed development. Based on the significance, the impact of the development on the heritage resources will be determined and appropriate actions to reduce the impact on the heritage resources put forward. In terms of the NHRA, a place or object is to be considered part of the national estate if it has cultural significance or other special value because of:

- a. its importance in the community, or pattern of South Africa's history;
- b. its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- c. its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- d. its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;

- e. its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- f. its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- g. its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- h. its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
- i. sites of significance relating to the history of slavery in South Africa.

3 BACKGROUND TO HISTORY OF THE AREA

Portions of the greater Muden area have been relatively well surveyed for archaeological heritage sites by the KwaZulu-Natal Museum, post-graduate students from the Universities of Cape Town and the Witwatersrand, and subsequently by private heritage consultants over the last few years. However, the project area has not been covered in these surveys.

The available evidence, as captured in the Amafa and the KwaZulu-Natal Museum heritage site inventories, indicate that this area contains a wide spectrum of archaeological sites covering different time-periods and cultural traditions. These range from Early Stone Age, Middle Stone Age, and Later Stone Age to Early and Later Iron Age sites as well as Historical sites relating to the rise of the Zulu Kingdom and the subsequent Colonial Period. Two rock art sites occur within 2km from the project area. A Later and Middle Stone Age Site occurs 2km to the west of the project area.

The San were the owners of the land for almost 30 000 years but the local demography started to change soon after 2000 years ago when the first Bantu-speaking farmers crossed the Limpopo settled in the greater Greytown and Muden areas. Although some of the sites constructed by these African farmers consisted of stone walling, not all of them were made from stone. Sites located elsewhere in the KwaZulu-Natal Midlands, including the Karkloof Mountains to the south of the study area, show that many settlements just consisted of wattle and daub structures.

The greater Muden area has been well researched by archaeologists of the then Natal Museum in terms of Early Iron Age sites. Early Iron Age farmers already occupied in the area around 600AD but abandoned the area 300 years later most probably due to climatic change and environmental factors (Huffman 2006). Later Iron Age sites in the area were most probably inhabited by Nguni-speaking groups such as the Cunu, Wushe, Zondo and related groups (Bryant 1965). These groups were known to be excellent metal workers and it is not surprising that some archaeological evidence for early metal working has been found near Wartburg and the in the Karkloof mountains. However, by 1820 the original African farmers were dispersed from this area due to the expansionistic policies of the Zulu Kingdom of King Shaka. African refugee groups and individuals were given permission to settle in the area by the British colonial authorities after 1845 where most of them became farm labourers. After the Anglo-Zulu war of 1879 and the Bambatha Rebellion of 1911 many of the African people in the study area adopted a Zulu ethnic identity.

4 BACKGROUND INFORMATION OF THE SURVEY

4.1 Methodology

A desktop study was conducted of the archaeological databases housed in the KwaZulu-Natal Museum. In addition, the available archaeological literature covering the greater Nqutu area was also consulted. The SAHRIS website was consulted to obtain background information on previous heritage surveys and assessments in the area.

A ground survey, following standard and accepted archaeological procedures, was conducted on the 15th August 2015.

In addition, members of local communities were approached to ask for the location of potential grave sites as well as other heritage features in the area.

4.2 Restrictions encountered during the survey

4.2.1 Visibility

Visibility was good.

4.2.2 Disturbance

No disturbance of any heritage sites or features was noted.

Details of equipment used in the survey

GPS: Garmin Etrek

Digital cameras: Canon Powershot A460

All readings were taken using the GPS. Accuracy was to a level of 5 m.

5 DESCRIPTION OF SITES AND MATERIAL OBSERVED

5.1 Locational data

Province: KwaZulu-Natal

Towns: Muden/Greytown

5.2 Description of the general area surveyed

Although the footprint is disturbed due to overgrazing no archaeological and historical sites were observed within 50m from the proposed road upgrade and associated causeways (Figs 4 & 5). No graves were observed along the proposed road upgrade. The area is also not part of any known cultural landscape.

The palaeontologist reported that the geologically recent superficial deposits that caps the bedrock sediments along the proposed route as well as the recorded dolerite intrusions within the vicinity of the study area is considered to be of low to very low palaeontological sensitivity. However, it is expected that construction activities at the two watercourses (Fig 3) may severely impact on potentially fossil-bearing bedrock sediments. It is advised that should considerable fossil remains be exposed as a result of bedrock excavations during the construction of new causeway and slab structures, the responsible ECO must safeguard it and immediately report the findings to the relevant heritage authority so that appropriate mitigation measures can be put in place (Appendix 1).

5.3 Description of sites

Not applicable as no heritage sites (excluding fossil bearing rock) occur on the footprint

6 STATEMENT OF SIGNIFICANCE (HERITAGE VALUE)

6.1 Field Rating

Not applicable, as no heritage sites (excluding fossil bearing rock) occur on the footprint.

Table 3. Field rating and recommended grading of sites (SAHRA 2005)

Level	Details	Action
National (Grade I)	The site is considered to be of National Significance	Nominated to be declared by SAHRA
Provincial (Grade II)	This site is considered to be of Provincial significance	Nominated to be declared by Provincial Heritage Authority
Local Grade IIIA	This site is considered to be of HIGH significance locally	The site should be retained as a heritage site
Local Grade IIIB	This site is considered to be of HIGH significance locally	The site should be mitigated, and part retained as a heritage site
Generally Protected A	High to medium significance	Mitigation necessary before destruction
Generally Protected B	Medium significance	The site needs to be recorded before destruction
Generally Protected C	Low significance	No further recording is required before destruction

7 SUMMARY AND RECOMMENDATIONS

- The heritage impact assessment survey identified no archaeological, historical or living heritage sites adjacent to and within 50m of Twaleykhe Road.
- No graves occur within 50m from the proposed road upgrade
- There is a possibility that construction activities at the two watercourses on route may severely impact on potentially fossil-bearing bedrock sediments. Should considerable fossil remains be exposed as a result of bedrock excavations during the construction of new causeway and slab structures, the responsible ECO must safeguard it and immediately report the findings to the relevant heritage authority so that appropriate mitigation measures can be put in place
- All heritage sites are protected by heritage legislation and may not be altered or changed without mitigation

8 MAPS AND PHOTOGRAPHS

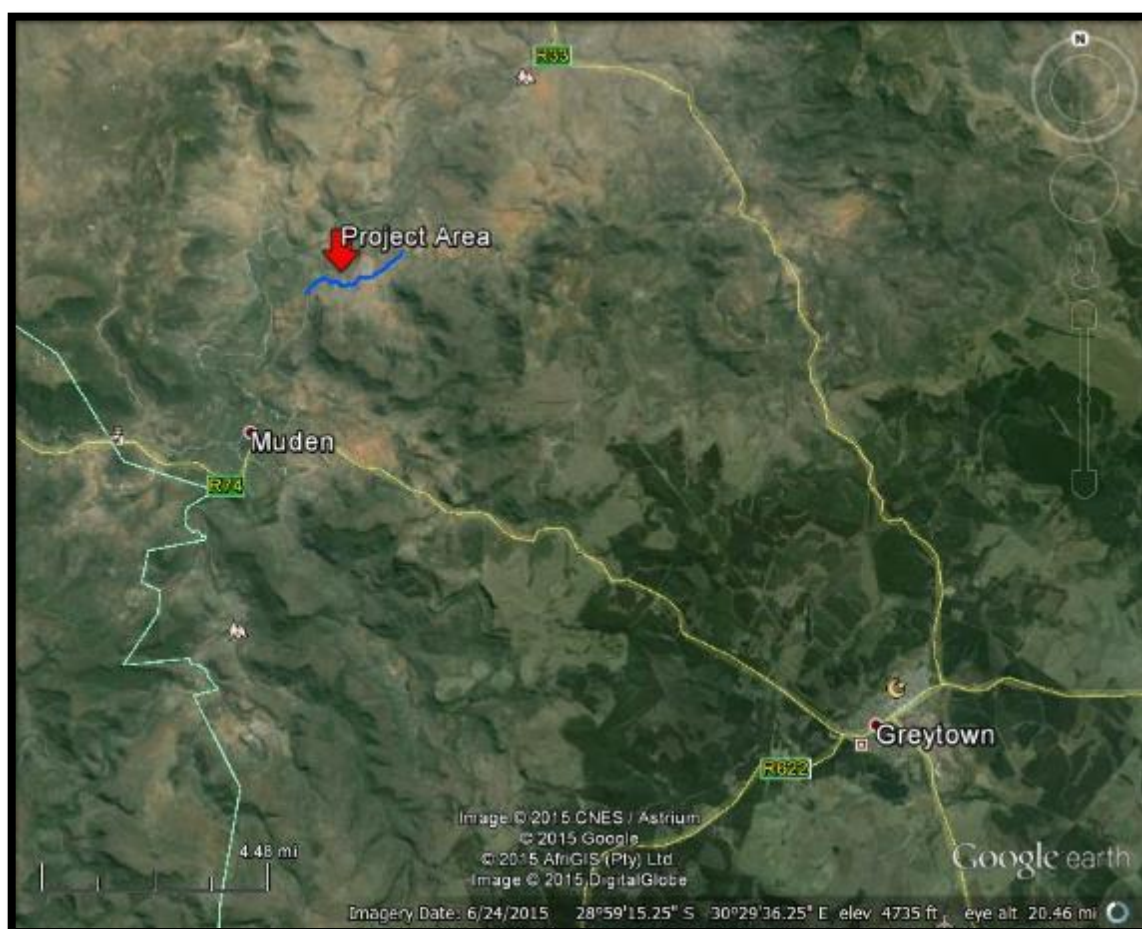


Figure 1: Google Earth Photograph showing the locality of the Project Area (Twaleykhe Road) near Muden in KwaZulu-Natal.

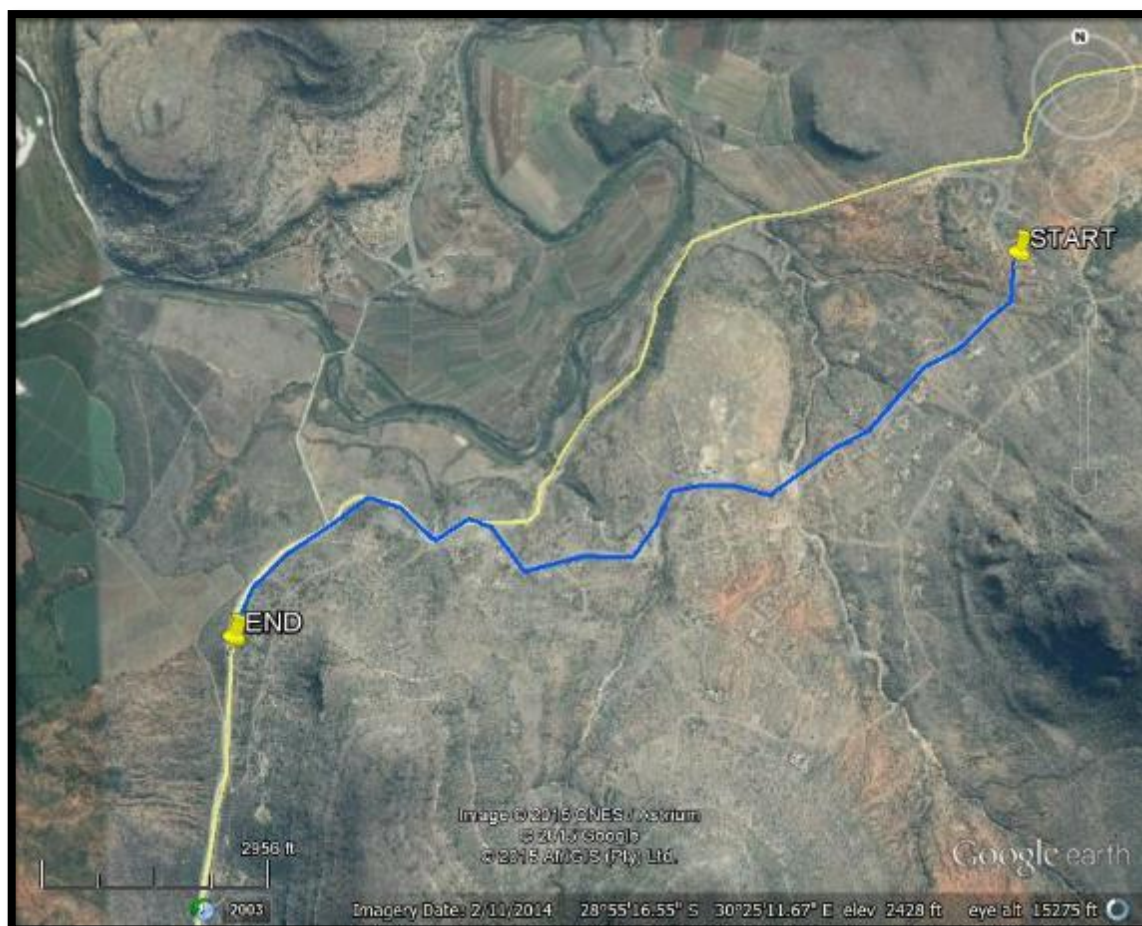


Figure 2: Google Earth Photograph showing the locality of the proposed Thwaleykhe Road near Muden in northern KwaZulu-Natal.



Figure 3. Photograph of water crossing at Twaleykhe Road.



Figure 4. Photograph of Twaleykhe Road. No heritage sites occur adjacent to the proposed road upgrade.



Figure 5. Photograph of Twaleykhe Road. The area is disturbed due to overgrazing but no heritage features were visible.

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APPENDIX 1

Phase 1 Palaeontological Impact Assessment of the proposed 6km – long Thwaleyake Access Road near Muden, KZN Province.

Report prepared by
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1. Executive Summary

A Phase 1 palaeontological impact assessment was conducted for the proposed construction of a local road from an existing track, to a 6m wide, 6.020 km gravel road with a road reserve of 20m. The existing road will be upgraded in one of the Greytown villages off the P161 near Muden, KZN Province. Potentially fossiliferous rock units along the proposed route are represented by Vryheid Formation sediments. The geologically recent superficial deposits that caps the bedrock sediments along the proposed route as well as the recorded dolerite intrusions within the vicinity of the study area is considered to be of low to very low palaeontological sensitivity. It is expected that construction activities at the two watercourses may severely impact on potentially fossil-bearing bedrock sediments. It is advised that should considerable fossil remains be exposed as a result of bedrock excavations during the construction of new causeway and slab structures, the responsible ECO must safeguard it and immediately report the findings to the relevant heritage authority so that appropriate mitigation measures can be put in place. Potential palaeontological impact resulting from this particular development is considered moderate to high. The study area is assigned a site rating of General Protection B (GP B).

2. Introduction

A Phase 1 palaeontological impact assessment was conducted for the proposed construction of a local road from an existing track, to a 6m wide, 6.020 km gravel road with a road reserve of 20m. The existing road will be upgraded in one of the Greytown villages off the P161 near Muden, KZN Province (**Fig. 1**). The road transverses two watercourses (at GPS coordinates 28°55'26.63"S 30°25'20.65"E and 28°55'22.03"S 30°25'42.04"E) and its proposed that a new causeway and slab structure is constructed at the two crossing points, respectively.

3. Methodology

The affected area was evaluated on the basis of existing field data, geological maps and published literature. The proposed road section was investigated by means of a pedestrian survey. The study area is rated according to field rating categories as prescribed by SAHRA (**Table 1**).

4. Locality data

1 : 50 000 scale topographic map 2830CD Muden

1 : 250 000 scale geological map 2830 Dundee

Site coordinates (**Fig 2**):

A) 28°55'35.31"S 30°24'19.58"E

B) 28°54'49.30"S 30°26'16.84"E

The access point to the 7 km road section is located off the R74, about 5 km north of Muden. The local road is situated within a narrow valley that is drained by the Mooi River to the north (**Fig. 2**).

5. Palaeontological Background

Palaeontological heritage in and around the study area is represented by Karoo Supergroup sandstones and siltstones belonging to the Early Permian, Vryheid Formation of the Ecca Group (*Pv*) (Lindstrom 1987) (**Fig. 3**). The Vryheid Formation is well-known for the occurrence of coal beds and its rich variety of plant fossils (Anderson and Anderson 1985; Bamford *et al.* 2004). Vertebrate fossils are absent from the Vryheid Formation, but it is noted that the aquatic reptile, *Mesosaurus*, as well as fish (*Palaeoniscus capensis*), have been recorded in equivalent-aged strata in the

Whitehill Formation in the southern part of the Karoo basin (Oelofson and Aroujo 1987; MacRae, 1999; Modesto, 2006; Johnson *et al.* 2006). Invertebrate trace fossils have been described in some detail by Mason and Christie (1986). Dolerites in the form of dykes and sills are common in the region and are not palaeontologically significant. The study area is capped by superficial deposits represented by valley sediments (brown to red sandy soils) which are assigned to the geologically recent (Quaternary) Masocheni Formation (*Qm*). Except for root casts, no fossil remains have yet been recorded in these deposits.

6. Field Assessment

The proposed section is situated within an outcrop area of light-coloured, coarse to fine-grained sandstones and dark-coloured siltstones of the Vryheid Formation (Ecca Group, Karoo Supergroup) (**Fig 4**). The sedimentary bedrock is for the most part capped by a well-developed Quaternary overburden, but sandstones are visibly exposed where both watercourses intersect the road (**Fig. 5 - 6**). A foot survey has yielded no evidence of intact fossil remains within the weathered sandstones underlying the crossing points at the two watercourses. Dolerite intrusions are exposed near the northern terminus of the proposed road section (at GPS coordinates 28°54'50.36"S 30°26'17.67"E) (**Fig. 7**).

7. Impact Statement and Recommendations

Potentially fossiliferous rock units along the proposed route are represented by Vryheid Formation sediments. The geologically recent superficial deposits that caps the bedrock sediments along the proposed route as well as the recorded dolerite intrusions within the vicinity of the study area is considered to be of low to very low palaeontological sensitivity. It is expected that construction activities at the two watercourses may severely impact on potentially fossil-bearing bedrock sediments. It is advised that should considerable fossil remains be exposed as a result of bedrock excavations during the construction of new causeway and slab structures, the responsible ECO must safeguard it and immediately report the findings to the relevant heritage authority so that appropriate mitigation measures can be put in place. Potential palaeontological impact resulting from this particular development is considered moderate to high. The study area is assigned a site rating of General Protection B (GP B).

8. References

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9. Tables and Figures

Table 1. Field rating categories as prescribed by SAHRA.

Field Rating	Grade	Significance	Mitigation
National Significance (NS)	Grade 1	-	Conservation; national site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; provincial site nomination
Local Significance (LS)	Grade 3A	High significance	Conservation; mitigation not advised
Local Significance (LS)	Grade 3B	High significance	Mitigation (part of site should be retained)
Generally Protected A (GP.A)	-	High/medium significance	Mitigation before destruction
Generally Protected B (GP.B)	-	Medium significance	Recording before destruction
Generally Protected C (GP.C)	-	Low significance	Destruction

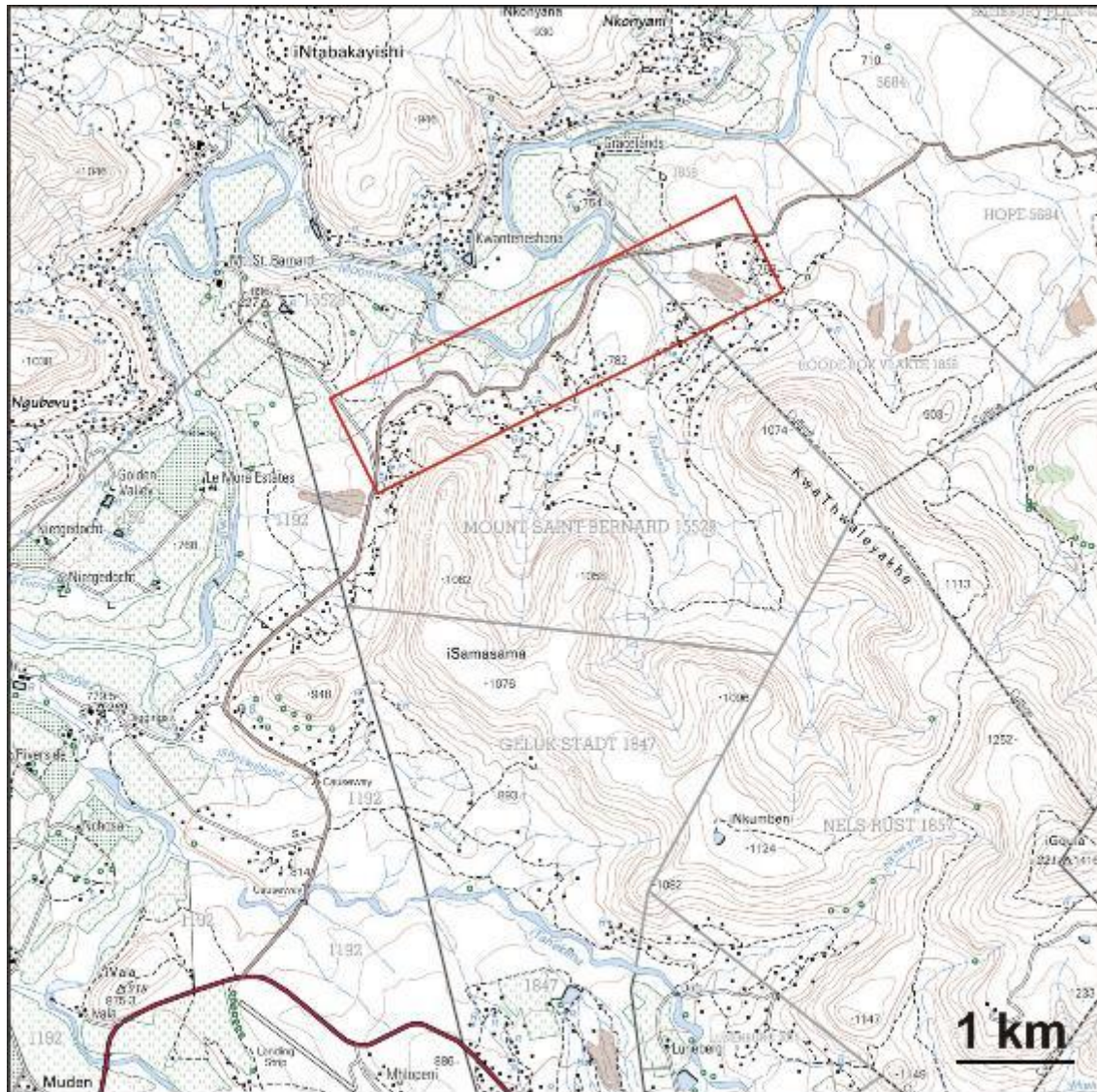


Figure 1. Location of the 6 km - long Thwaleyake road section (portion of 1:50 000 scale topographic map 2830CD Muden).



Figure 2. Aerial view of the proposed road section.

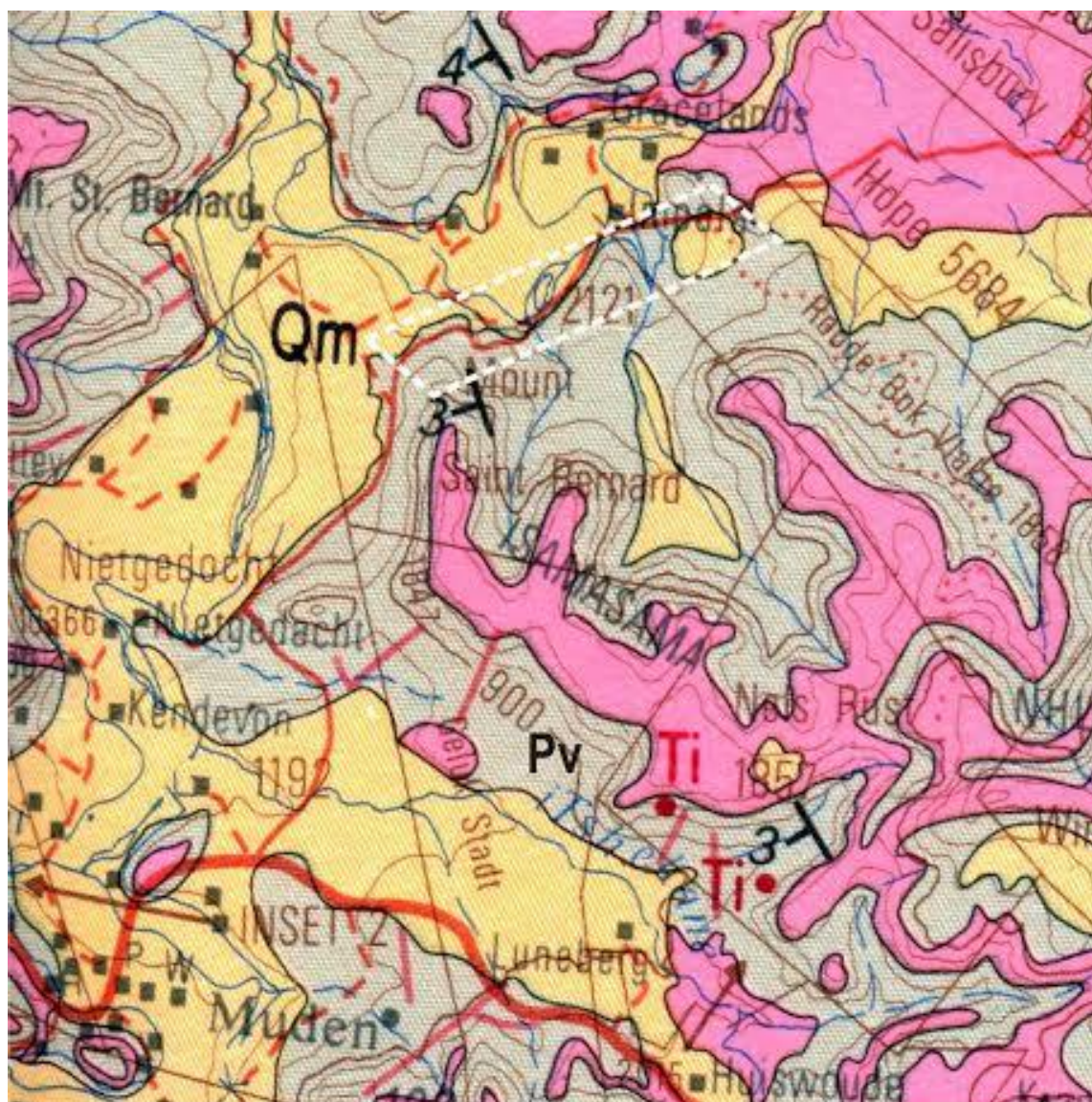


Figure 3. Portion of 1:250 000 scale geological map 2830 Dundee. The section is situated within an outcrop area of the Early Permian Vryheid Formation (*Pv*, Ecca Group, Karoo Supergroup), which is capped by substantial superficial deposits of the Masocheni Formation (*Qm*, brown to red valley sediments).



Figure 4. General view of the area looking northeast, with Vryheid Formation sandstone outcrop in foreground.



Figure 5. The proposed route is capped by a veneer of Quaternary overburden made up of brown- to red - coloured sandy soils.



Figure 6. View of weathered sandstone exposures at the two watercourses



Figure 7. Dolerite outcrop, looking north.