

**Phase 1 Heritage Impact Assessment of a proposed new
Piggery in Qamata, EC Province.**

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Summary

A Phase 1 Heritage Impact Assessment was carried out for the proposed utilization of existing modern infrastructure to establish a new piggery in the community at Qamata, Eastern Cape Province. The study area is situated within the palaeontologically significant Beaufort Group, Tarkastad Subgroup of rocks that includes important vertebrate fossils assigned to the *Lystrosaurus* AZ and the *Cynognathus* AZ. The site is located on low topography terrain underlain by Burgersdorp Formation mudstones that are for the most part capped by unconformably overlying Quaternary deposits consisting severely degraded residual soils. As a result the proposed development will primarily affect disturbed Quaternary overburden wherein no fossils were observed. The probability of finding intact palaeontological material within the underlying sedimentary bedrock is considered moderate to high, depending on the scale of future excavations planned at the site. No further palaeontological studies are required for now, but it is advised that any planned excavations larger than 1 m² that exceeds depths of >1 m into unweathered sedimentary bedrock, will need monitoring by a professional palaeontologist when fresh exposures are still open. The palaeontologist must apply for a valid collection / removal permit from SAHRA if fossil material is found during the construction phase of the development. The survey yielded no evidence of *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. There are also no indications of rock art, prehistoric structures or historically significant buildings older than 60 years within the boundaries of the proposed footprint. Several grave sites are located around the site, but will not be affected by the development. The site is not considered archaeologically significant and is assigned a site rating of Generally Protected C (GP.C). Potential archaeological impact resulting from renewed access to the proposed area, is regarded as negligible. As far as the cultural and archaeological heritage is concerned, the proposed development may proceed provided that all excavation activities are restricted to within the boundaries of the development footprint.

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Introduction

A Phase 1 Heritage Impact Assessment was carried out for the proposed utilization of existing infrastructure to establish a new piggery in the community at Qamata, Eastern Cape Province (**Fig. 1**). The survey is required as a prerequisite for new development in terms of the National Environmental Management Act and is also called for in terms of the National Heritage Resources Act 25 of 1999. The region's unique and non-renewable archaeological heritage sites are 'Generally' protected in terms of the National Heritage Resources Act (Act No 25 of 1999, section 35) and may not be disturbed at all without a permit from the relevant heritage resources authority. As many such heritage sites are threatened daily by development, both the environmental and

heritage legislation require impact assessment reports that identify all heritage resources in the area to be developed, and that make recommendations for protection or mitigation of the impact of such sites.

Methodology

The heritage significance of the affected area was evaluated on the basis of existing field data, database information and published literature. This was followed by a field assessment by means of a pedestrian survey. A Garmin Etrex Vista GPS hand model (set to the WGS 84 map datum) and a digital camera were used for recording purposes. Maps and aerial photographs (incl. Google Earth) were consulted and integrated with data acquired during the on-site inspection.

Field Rating

Site significance classification standards prescribed by SAHRA (2005) were used to indicate overall significance and mitigation procedures where relevant (**Table 1**).

Terms of Reference

The task involved the following:

- Identify and map possible heritage sites and occurrences using available resources.
- Determine and assess the potential impacts of the proposed development on potential heritage resources;
- Recommend mitigation measures to minimize potential impacts associated with the proposed development.

Site information

1:50 000 scale topographic map 3127CD Qamata.

The proposed site covers approximately 6.2 ha of existing infrastructure located 8 km northwest of Qamata (**Fig. 2 & 3**). The site is located on flat terrain in a valley flood plain with minimal topography and outcrop exposure (**Fig. 4**).

General site coordinates: 31°57'15.06"S 27°21'34.94"E

Background

Geology

The study area is situated within the Beaufort Group, Tarkastad Subgroup of rocks (*Trt*, Karoo Supergroup) consisting of sedimentary layers of sandstone, siltstone and mudstone subdivided into the Katberg and overlying Burgersdorp Formations (**Fig. 5**). The Katberg Formation consist of reddish-grey medium-grained lithic sandstone and brownish-red and grey mudstones. The Burgersdorp Formation is mainly represented by grayish-red and greenish-grey mudstones with subordinate greenish-grey fine-grained lithic sandstone. Based on the characteristic presence of upward-fining cycles, lenticular sandstones, massive mudstones and non-marine vertebrate remains, the depositional history of the Tarkastad Subgroup is also interpreted as a fluvial environment. Dykes, sills and inclined sheets of resistant Jurassic dolerites (*Jd*) determine the relief of the surrounding area. Overlying Quaternary alluvial sediments are derived from old flood plain deposits that are presently incised by the present White Kei River to the west and Indwe River to the east.

Palaeontology

The Tarkastad Subgroup includes important vertebrate fossils assigned to the *Lystrosaurus* Assemblage Zone (AZ) and the *Cynognathus* AZ, which overlies the *Lystrosaurus* AZ. The *Lystrosaurus* AZ is characterized by an abundance of *Lystrosaurus* in association with *Procolophon* and the absence of *Dicynodon lacerticeps*. Other common genera include *Moschorhinus*, *Proterosuchus* and *Lydekkerina*. Casts of large burrows have also been described from several localities within this biozone. The *Cynognathus* AZ is characterized by the presence of *Cynognathus*, *Diadermodon* and *Kannemeyeria* and the absence of *Lystrosaurus*. Sediments assigned to this zone are well exposed in the Queenstown and Lady Frere districts and have been traced eastward as far as the Engcobo district. Rocks consist of blue-green, pale grayish green, dark red to very dark maroon mudstones that are in many instances more consolidated than those of the underlying *Lystrosaurus* AZ. Fossil-bearing lenticular sandstones with calcareous concretions are common. The fossil record of the *Cynognathus* AZ includes a variety of plants, trace fossils, amphibians, fish reptiles, synapsids, and occasional molluscs.

Complete, articulated skeletons are rare, but well preserved therapsids occur in mudrock units as dispersed and isolated specimens. Fragmentary therapsid and amphibian fossils frequently occur in localized scatters or in conglomerates at the base of lenticular sandstones.

The dolerite dykes, sills and inclined sheets dolerite represents no palaeontological impact.

Quaternary palaeontological sites are occasionally found exposed along Pleistocene alluvial terraces and dongas along rivers and streams. Quaternary alluvial deposits, especially near water courses and drainage lines, have the potential to yield microfossil and fossil vertebrate remains.

Archaeology

Several MSA and LSA stone tool surface assemblages previously found in association with Quaternary alluvial deposits, near Cofimvaba east of Qamata, bear evidence of early human occupation on the landscape during late Pleistocene and early Holocene times (L. Rossouw, field data).

The region was originally home to Khoisan hunter-gatherers who were eventually displaced by the Nguni people that migrated southwards along the east coast via Pondoland from as early as the 16th century onwards. As the birthplace of Transkei leader Kaiser Matanzima, Qamata originally formed part of western Thembuland, but was included into the semi-autonomous Transkei from 1963 to 1994. Present day Thembuland is situated roughly between the Mthatha and Kei rivers, and comprises the territories formerly known as Emigrant Thembuland (now the districts of Cala and Cofimvaba) and Thembuland Proper, i.e. the districts of Mqanduli, Umtata and Engcobo (Wagenaar 1988) (**Fig. 6**). In 1810 Ngubengcuka succeeded his father, Ndaba, as king of a conglomeration of clans collectively known as the Thembu - who lived between the Mbashe and Mthatha rivers (**Fig. 7**). Among these clans there were those who believed themselves to be the descendants of a common ancestor, Thembu, who had lived many hundreds of years earlier. According to tradition the Thembu people had already settled at the Mbashe river by the beginning of the 17th century while pioneering clans many have entered the territory at a much earlier date (Wagenaar 1988).

Field Assessment

The site is located on low topography terrain underlain by Burgersdorp Formation mudstones that are for the most part capped by unconformably overlying Quaternary deposits consisting severely degraded residual soils (**Fig. 8**). As a result the proposed development will primarily affect disturbed Quaternary overburden wherein no fossils were observed. The survey yielded no evidence of *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. There are also no indications of rock art, prehistoric structures or historically significant buildings older than 60 years within the boundaries of the proposed footprint (**Fig. 9**). Several grave sites are located around the site, but will not be affected by the development (**Fig. 10 & 11**).

Statement of Significance and Recommendation

The probability of finding intact palaeontological material within the Quaternary sediments covering the proposed footprint is considered to be negligible. The probability of finding intact palaeontological material within the underlying sedimentary bedrock is considered moderate to high, depending on the scale of future excavations planned at the site. No further palaeontological studies are required for now, but it is advised that

- any excavations larger than 1 m² that exceeds depths of >1 m into unweathered sedimentary bedrock, will need monitoring by a professional palaeontologist when fresh exposures are still open. In the event of fossil exposure, a professional palaeontologist must confirm and record the finds and follow appropriate mitigation procedures where necessary. The palaeontologist must apply for a valid collection / removal permit from SAHRA if fossil material is found during the construction phase of the development. Possible intact finds may require a Phase 2 rescue operation at the cost of the developer.
- in the event that localized fossil mammal material are discovered within fresh sedimentary bedrock exposed during excavation activities (i.e. lithified bones and teeth, molluscs and lithified plant material), it is recommended that a professional palaeontologist be called in to record and remove the material. In the meantime, *ex situ* remains must be wrapped in paper towels or heavy duty tin

foil and stored in a safe place. The material should not be washed or cleaned in any way. *In situ* material must be kept in place and protected from further damage by covering it with light but rigid object like a box, bucket or metal sheet until further confirmation by the palaeontologist.

The site is not considered archaeologically significant and is assigned a site rating of Generally Protected C (GP.C). Potential archaeological impact resulting from renewed access to the proposed area, is regarded as negligible. As far as the cultural and archaeological heritage is concerned, the proposed development may proceed provided that all excavation activities are restricted to within the boundaries of the development footprint.

References

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DECLARATION OF INDEPENDENCE

I, Lloyd Rossouw, declare that I act as an independent specialist consultant. I do not have or will not have any financial interest in the undertaking of the activity other than remuneration for work as stipulated in the terms of reference. I have no interest in secondary or downstream developments as a result of the authorization of this project and have no conflicting interests in the undertaking of the activity.

A handwritten signature in black ink, appearing to read 'L Rossouw', with a stylized, cursive script.

15 / 01 / 2017

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

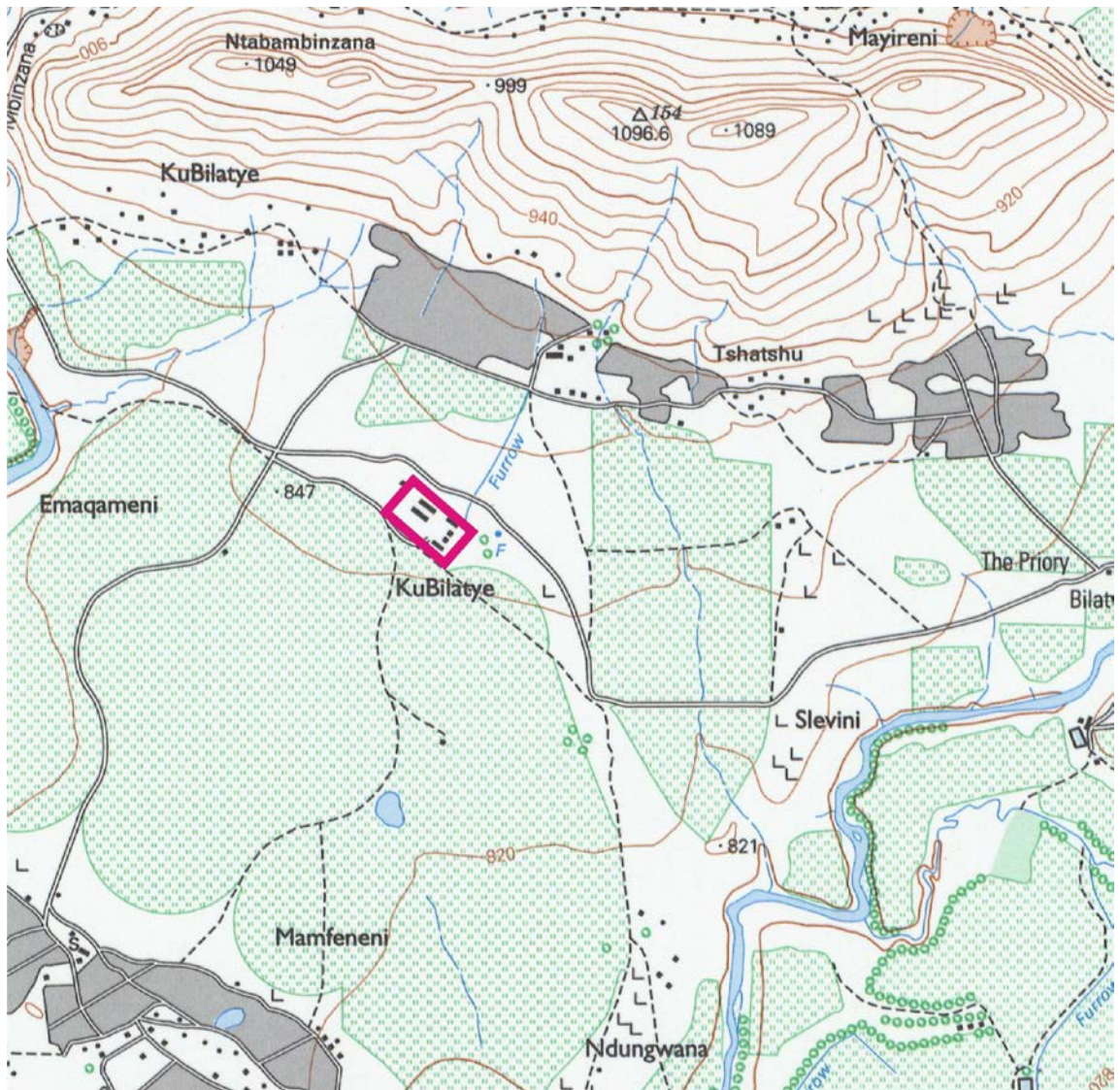


Figure 1. Map of the proposed development footprint (portion of 1:50 000 scale topographic 3127CD Qamata).



Figure 2. Aerial view of the study area.

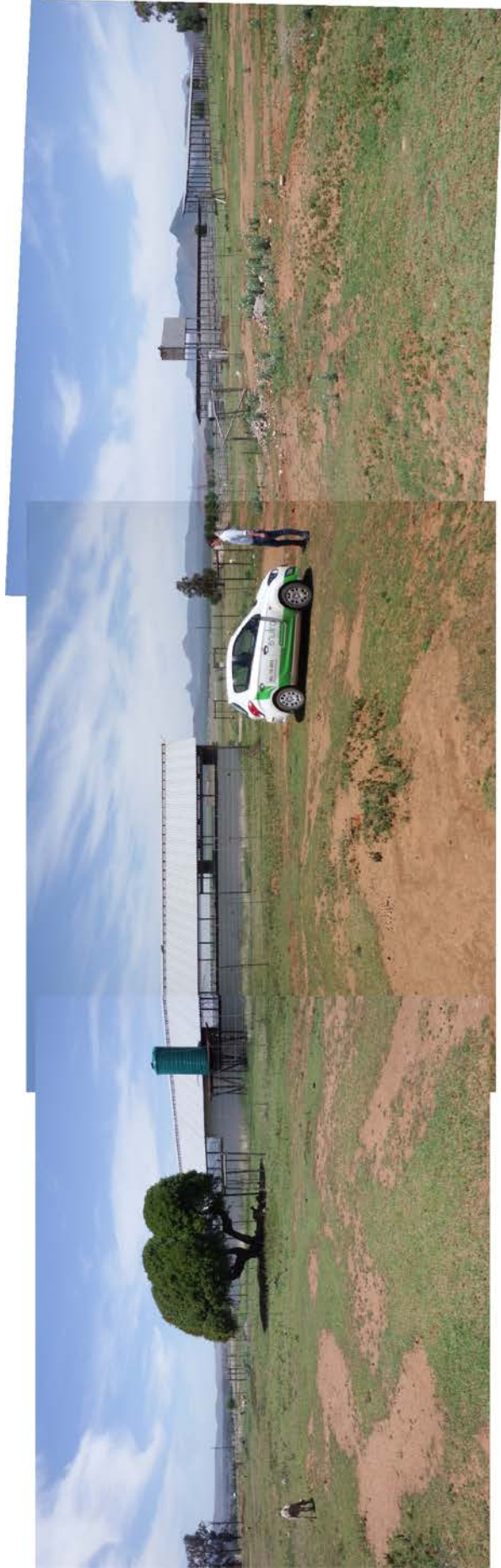


Figure 3. Panoramic view of the development footprint, looking south.



Figure 4. The site is located on flat terrain with minimal topography and outcrop exposure

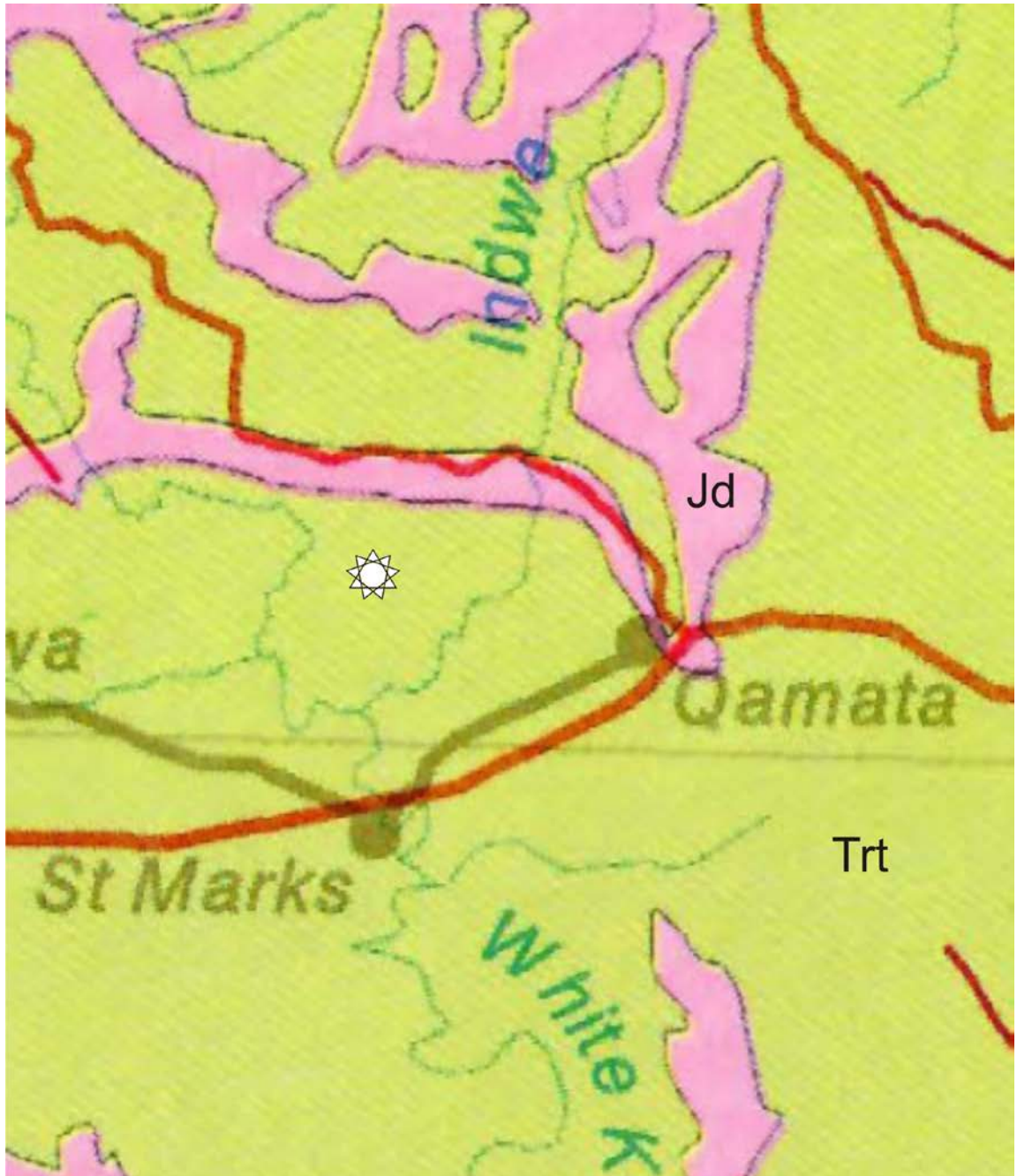


Figure 5. Portion of the 1 : 1 Ma scale geological map of Southern Africa showing bedrock geology in the region. The study area is situated within the Beaufort Group, Tarkastad Subgroup of sedimentary rocks (*Trt*, Karoo Supergroup) which are made up of sandstone, siltstone and mudstone subdivided into the Katberg and overlying Burgersdorp Formations. Weather-resistant Jurassic dolerites (*Jd*) determine the relief of the surrounding area. Overlying Quaternary alluvial ediments are derived from old flood plain deposits that are presently incised by the present White Kei River to the west and Indwe River to the east.

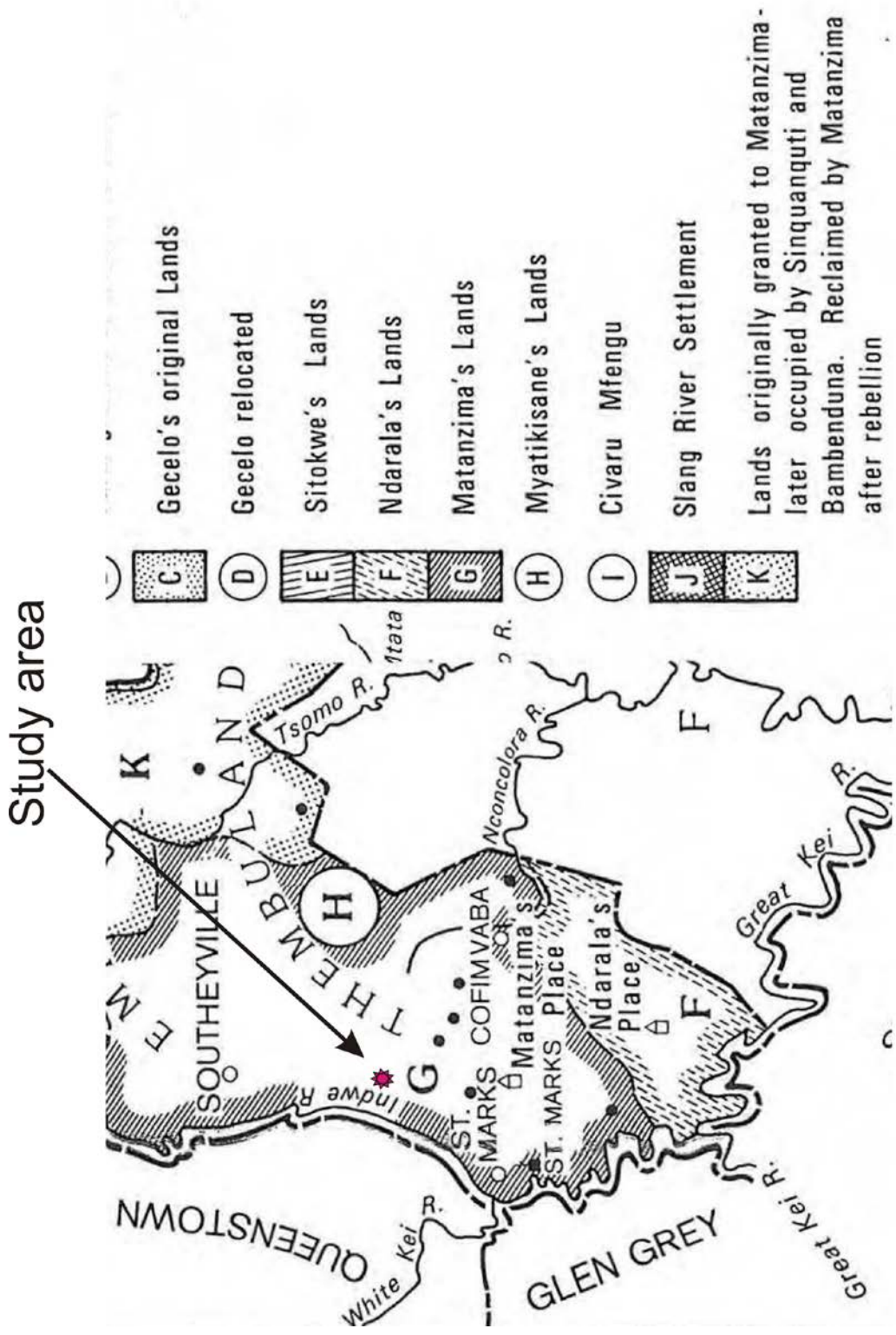


Figure 6. Thembuland after 1883 (after Wagenaar 1988).

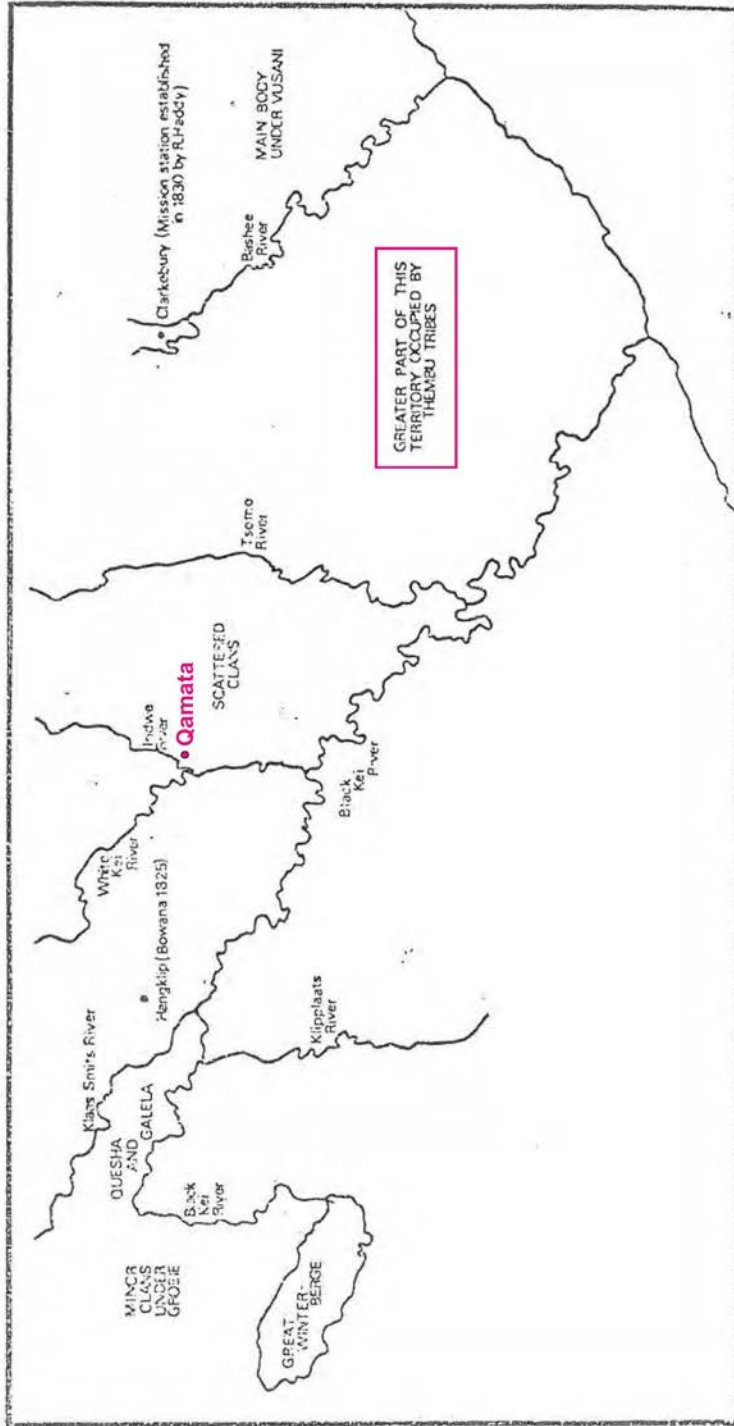


Figure 7. Settlement in the region and distribution of Thembu people by the first half of the 19th century (after Wagenaar 1988).



Figure 8. Tarkastad Subgroup mudstones (top) are for the most part capped by severely degraded residual soils (below). Scale 1 = 10 cm.



Figure 9. Existing building infrastructure observed within the boundaries of the survey area.



Figure 10. Map of grave sites recorded near the study area.



Figure 11. General view of grave sites observed near the study area.