

**Phase 1 Heritage Impact Assessment for proposed new
Residential Development on Farm 542, Reitz, FS
Province.**

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Summary

A Phase 1 Heritage Impact Assessment was carried out for a proposed new residential development that will cover 8 ha of old agricultural land on Farm 542 in Reitz, FS Province. The site is located on low topography terrain, is primarily underlain by sedimentary rocks (Tarkastad Group) and marginally underlain by palaeontologically insignificant dolerite outcrop at its northern boundary. The footprint as a whole is capped by geologically recent residual soils, ranging between ~50 cm and ~150 cm in depth. There is no above-ground evidence for *in situ* Stone Age archaeological material, distributed as surface scatters on the landscape. There is also no above-ground evidence of graves, prehistoric structures, or historically significant buildings older than 60 years within the study area. Potentially significant Tarkastad Subgroup rocks are buffered by a well-developed and palaeontologically insignificant residual overburden that has been severely degraded by previous agricultural and excavation activities. Given the low relief terrain and depth of the modern soil veneer, likelihood for negative impact on potentially *in situ* Triassic fossils is considered low. The proposed footprint is not considered palaeontologically or archaeologically vulnerable and is assigned a site rating of Generally Protected C with a recommendation that planned development can proceed

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Introduction

A Phase 1 Heritage Impact Assessment was carried out for a proposed new residential development on Farm 542 in Reitz, FS Province (**Fig. 1**). The region’s unique and non-renewable archaeological and palaeontological heritage sites are ‘Generally’ protected in terms of the National Heritage Resources Act (No. 25 of 1999). A range of contexts can be identified which typically have high or potential cultural significance and which would require some form of heritage specialist involvement. This may include formally protected heritage sites or unprotected, but potentially significant sites or landscapes. The involvement of the heritage specialist in such a process is usually necessary when a proposed development may affect a heritage resource, whether it is formally protected or unprotected, known or unknown. In many cases, the nature and degree of heritage significance is largely unknown pending further investigation (e.g. capped sites, assemblages or subsurface fossil remains). On the other hand, it is also possible that a site may contain heritage resources (e.g. structures older than 60 years), with little or no conservation value.

The National Heritage Resources Act identifies what is defined as a heritage resource, the criteria for establishing its significance and lists specific activities for which a heritage specialist study may be required. In this case, the proposed residential development triggered Section 38(1) where proposed development is categorised as:

- (c) any development or other activity which will change the character of a site—*
- (i) exceeding 5 000 m² in extent.*

Terms of Reference

- 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.

Methodology

Archaeological and palaeontological sensitivity are evaluated on the basis of existing field data, database information and published literature, followed by a site assessment. A Garmin Etrex Vista GPS hand model (set to the WGS 84 map datum) and a digital camera were used for recording purposes during the site visit. Potential impact and site significance are summarized in **Table 1**. It is assumed that while fossil occurrences may not be evenly distributed, the fossil potential of geological strata will be consistent with similar formations previously described in the region.

Locality data

1 : 50 000 scale topographic maps: 2728CD Reitz

1 : 250 000 scale geological map 2827 Frankfort

The proposed site covers 8 ha of open, flat agricultural land bordering Froneman Street about 2.3 km south of the Reitz CBD (**Fig. 2 & 3**).

General site coordinates: 27°48'41.93"S 28°25'33.10"E

Background

Palaeontology

The study area is underlain by Karoo Supergroup rocks of the Triassic Tarkastad Subgroup (Beaufort Group), which in the northeastern FS is represented by coarse-grained sandstone units of the Verkykerskop Fm, overlain by interbedded fine-grained sandstone and mudstones units of the Driekoppen Fm. (the latter considered to be the northern equivalent of the Burgersdorp Fm.) (**Fig. 4**). Tarkastad Subgroup rocks are known to contain early Triassic therapsid, reptile, and amphibian faunas as well as fish remains, invertebrates, plant and trace fossils attributed to the *Lystrosaurus* and

Cynognathus Assemblage Zones (**Fig. 5**). Fossils are usually found in mudrock layers and are frequently associated with calcareous concretions. Sedimentary rocks in the region have been intruded in places by palaeontologically insignificant dolerite sills and dykes, following wide-scale volcanism and outpouring of basaltic lava that covered virtually the whole of southern Africa during the early Jurassic period. Quaternary deposits consist mainly of potentially significant river channel alluvium, valley sediments and unconsolidated scree along mountainsides. Sporadic fossil finds from Quaternary- aged alluvial deposits are known from several localities in the region and are mainly concentrated within overbank sediments.

Archaeology

Surface scatters of Stone Age artifacts are frequent archaeological components along erosional gullies of the larger river systems in the region. The incidence of surface scatters usually decreases away from localized areas such as riverine sites and dolerite-shale contact zones. Away from riverine contexts, Stone Age artifacts generally occur as contextually derived individual finds in the open veld. The archaeological footprint in the region is primarily represented by Late Iron Age stone-walled complexes. Kraals and enclosures are generally located on high-lying areas (koppies) along the Liebenbergsvlei and Wilge River valleys (**Fig. 6**). These sites were occupied from as early as the sixteenth and seventeenth centuries and represent a system that can be broadly attributed to groups ancestral to the Sotho-speaking people of today. Examples of large stone-walled complexes are found on farms Kalkoen, Rietspruit, Tweeling Kop, Leeukop, Bronkhorstfontein and Ebenaezer (**Fig. 7**).

Field Assessment

The site is located on low topography terrain, is primarily underlain by sedimentary rocks (Tarkastad Group) and marginally underlain by palaeontologically insignificant dolerite outcrop at its northern boundary (**Fig. 8 A**). The footprint as a whole is capped by geologically recent residual soils, ranging between ~50 cm and ~150 cm in depth. There is no above-ground evidence for *in situ* Stone Age archaeological material, distributed as surface scatters on the landscape. There is also no above-ground evidence of graves, prehistoric structures, or historically significant buildings older than 60 years within the study area.

Impact Statement and Recommendations

Potentially significant Tarkastad Subgroup rocks are buffered by a well-developed and palaeontologically insignificant residual overburden that has been severely degraded by previous agricultural and excavation activities (**Fig. 8 B**). Given the low relief terrain and depth of the modern soil veneer, likelihood for negative impact on potentially *in situ* Triassic fossils is considered low. The proposed footprint is not considered palaeontologically or archaeologically vulnerable and is assigned a site rating of Generally Protected C (**Table 1**) with a recommendation that planned development can proceed.

References

- Groenewald, G.H. 1990. Gebruik van palaeontologie in litostratigrafiese korrelasie in die Beaufort Groep, Karoo opeenvolging van Suid Afrika. *Palaeontologia africana* 27: 21 – 30.
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- Van Riet Lowe, C. 1941. *Prehistoric Art in South Africa*. Archaeological Series No. V. Bureau of Archaeology, Dept. of the Interior. Pretoria.

DECLARATION OF INDEPENDENCE

Paleo Field Services act as an independent specialist consultant and do not 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. Paleo Field Services has no interest in secondary or downstream developments as a result of the authorization of this project.



18 / 04 / 2023

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

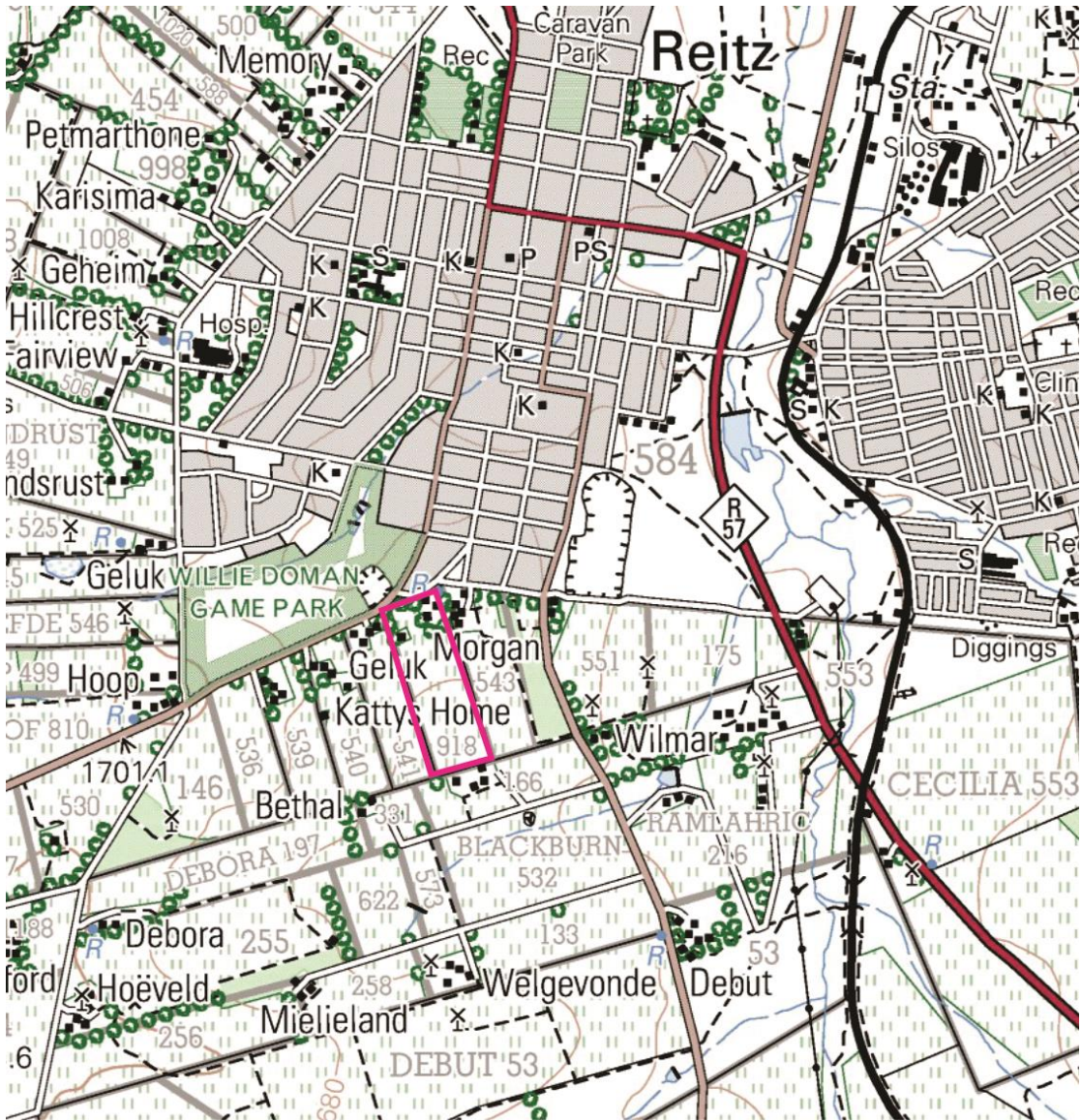


Figure 1. Position of proposed development footprint marked on portion of 1:50 000 scale topographic map 2728CD Reitz.



Figure 2. Aerial view and layout of the proposed development.



Figure 3. General view of the site, looking east-southeast towards the entrance (above) and south (below).

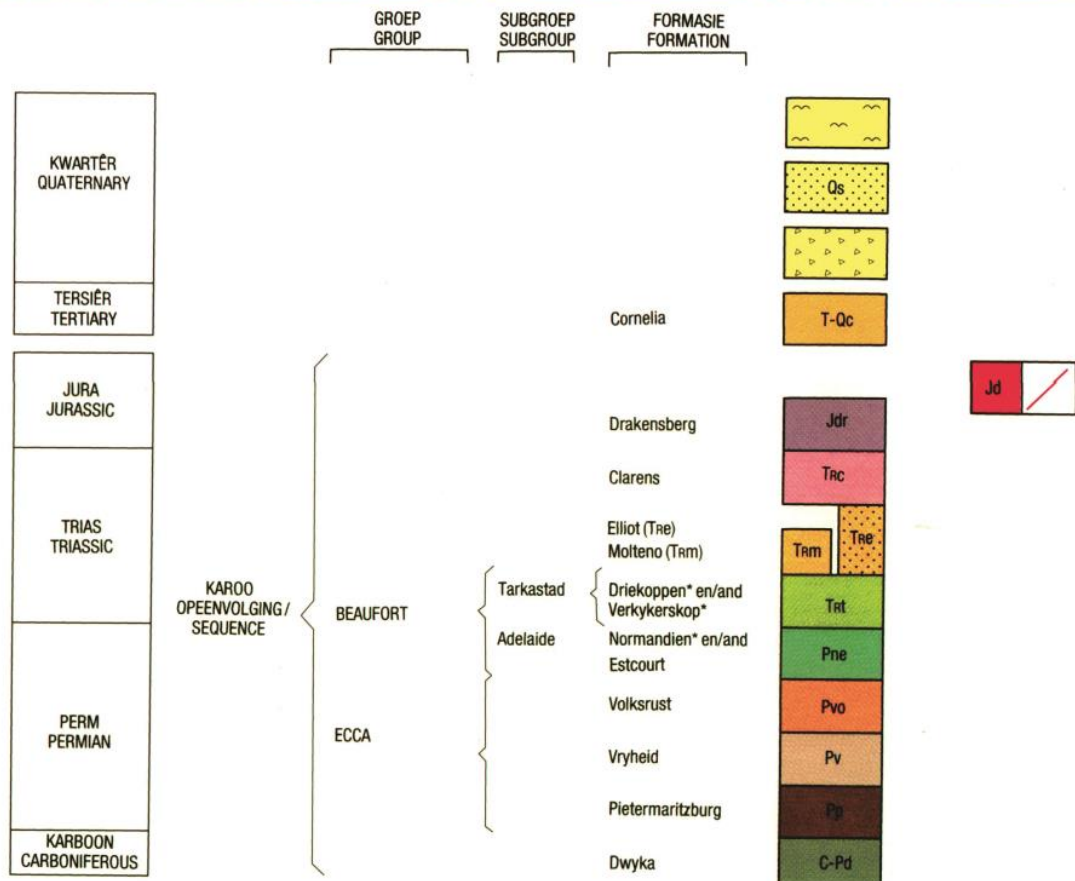


Figure 4. Portion of 1:250 000 scale geological map 2827 Frankfort, showing underlying geology in and around the study area (white polygon).

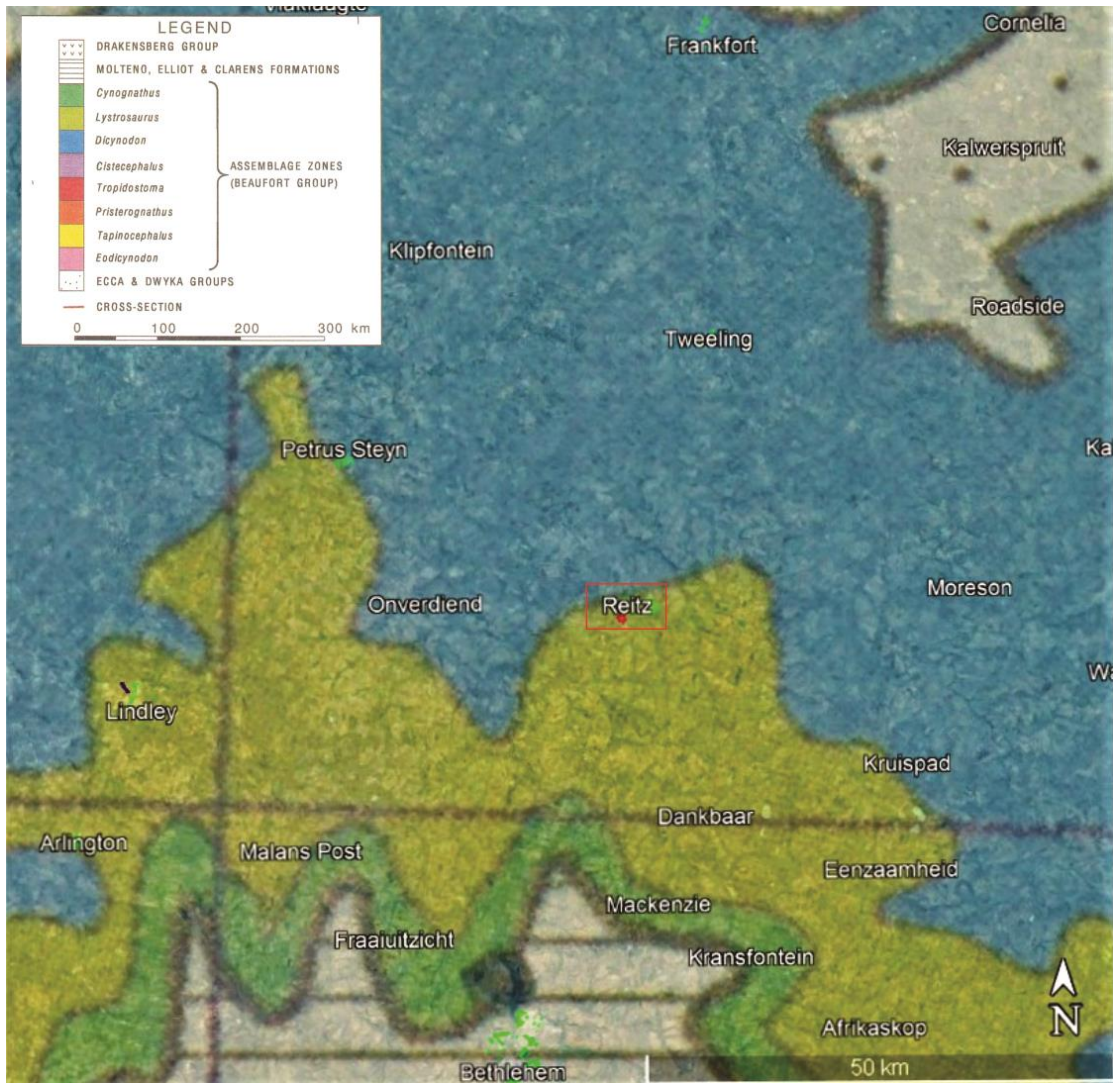


Figure 5. Portion of map showing geographic distribution of the vertebrate biozones of the Beaufort Group (after Rubidge 1995).

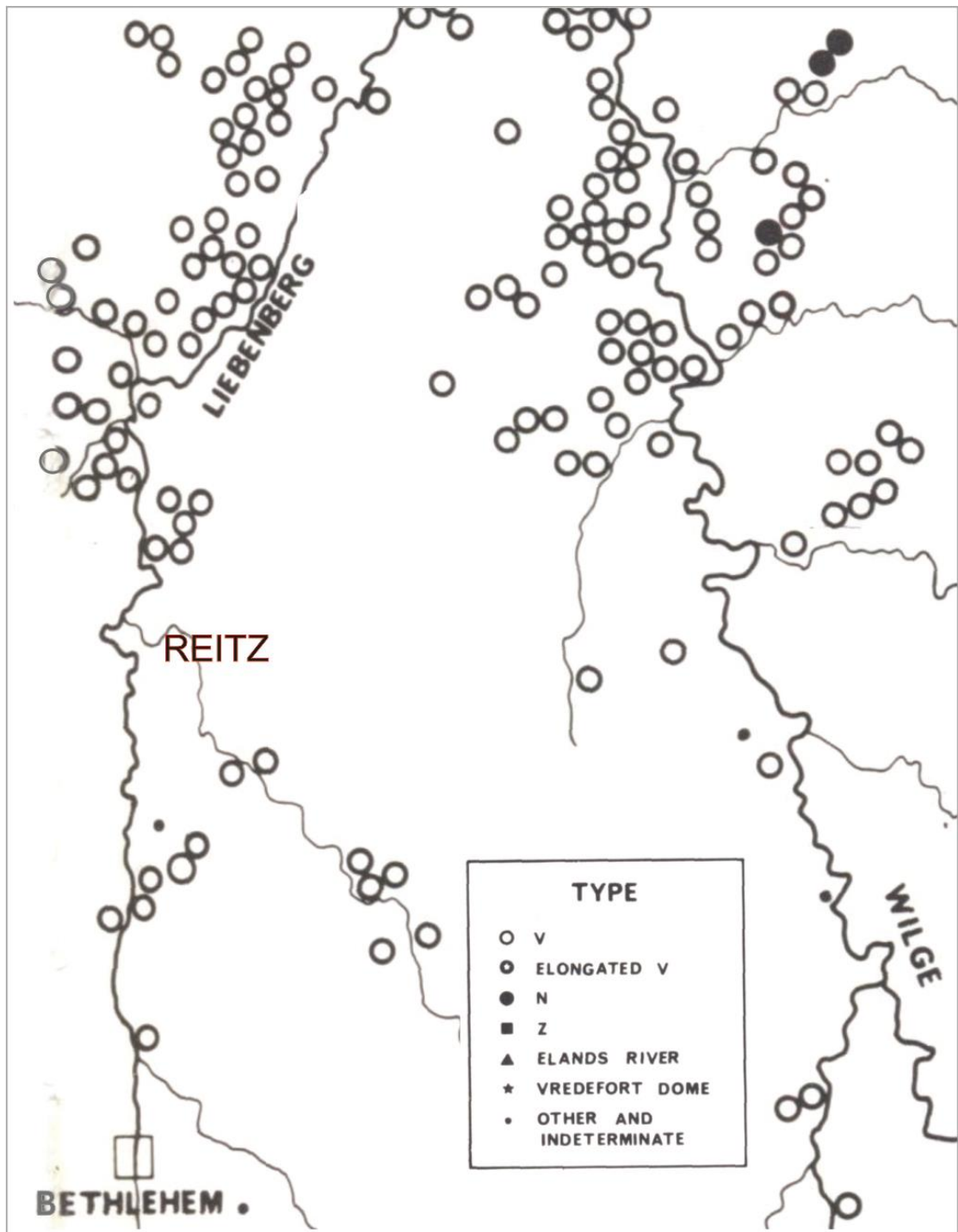


Figure 6. Distribution of Later Iron Age sites in the region according to Maggs (1976).

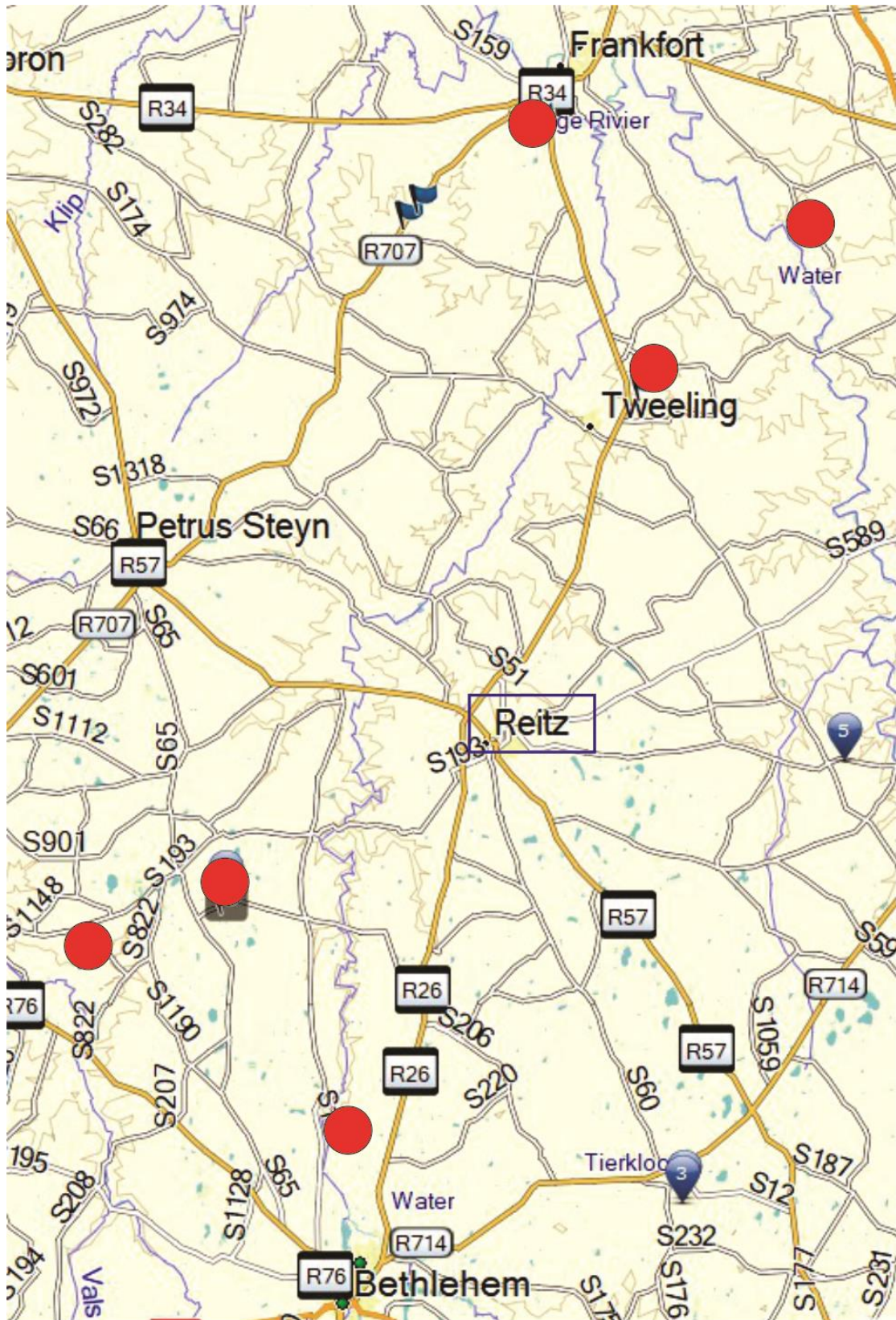


Figure 7. Distribution map of large IA complexes previously recorded around Reitz between Frankfort and Bethlehem.



Figure 8. General view of a dolerite borrow pit located at the northern boundary of the site (above) and old degraded farmland covering more than ~85% of the total footprint (below).