Phase 1 Heritage Impact Assessment with regard to planned Phase 1 Township development on the Farm Bergendal 1706, Bloemfontein, Free State Province.

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Summary

The proposed development footprint is underlain by palaeontologically insignificant, Jurassic dolerites (Karoo Dolerite Suite) and associated contact metamorphic metasediments that are capped in places by a veneer of residual soil and sand. The site is also regarded as of low palaeontological significance with regards to the superficial residual soils capping the dolerite in places (Quaternary overburden). As far as the palaeontological heritage is concerned, the proposed development may proceed with no additional heritage assessments necessary, provided that all excavation activities are restricted to within the boundaries of the development footprint. A foot survey of the terrain revealed no evidence for the accumulation and preservation of *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. There are also no indications of rock art (engravings on dolerite outcrop), prehistoric structures or formal buildings with historical significance older than 60 years situated within the boundaries of the study area. The remains of at least 30 concrete slabs, each about 50 m^2 in size, are located about 370 m due west of the quarry near the northern boundary of the site These structures are recent, not marked on pre-1960 maps of the area and are not considered to be historically significant. An informal graveyard is located near to the N1 highway approximately 300 meters south of the active quarry. As far as the archaeological heritage is concerned, the terrain is assigned a site rating of Generally Protected C while the graveyard is assigned a site rating of Generally Protected A. It is advised that the proposed development may proceed with no additional heritage assessments necessary provided that all excavation activities are restricted to within the boundaries of the development footprint and that the graveyard is included in the future development plan to ensure that it is not damaged or vandalised during the construction phase of the project. Preservation of the site will require the determination of the extent of the area to be demarcated as the graveyard area. The graveyard will have to be fenced off for the duration of the proposed development of the project. The fence will have to be sturdy and highly visible to avoid accidental access to the graveyard by construction vehicles. It is also advised that the relevant heritage resources authority will only issue a permit for the removal of any burial ground or grave if is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant and in accordance with any regulations made by the responsible heritage resources authority.

Introduction

A Phase 1 Heritage Impact assessment was carried out with regard to planned township development on the Farm Bergendal 1706 in Bloemfontein, FS Province (**Fig. 1**). The assessment 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 (NHRA) 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.

Locality Data

The site is located next to the N1/R700 off-ramp to Bloemfontein and lies on a gently rising slope that adjoins an extensive dolerite outcrop to the northeast (**Fig**. **2**). The southern face of this outcrop is mined for dolerite gravel and this forms part a working quarry. The area to the south and south-east of the quarry is considerably altered by dolerite mining and associated spoil heaps. The rest of the affected area consists of open veld covered mostly by grassland (**Fig. 3**).

Site Coordinates (Fig. 2):

A) 29° 2'14.52"S 26°12'40.48"E

B) 29° 2'9.96"S 26°13'28.92"E

C) 29° 2'14.00"S 26°13'29.17"E

D) 29° 2'29.12"S 26°12'59.64"E

Background

The palaeontological footprint around Bloemfontein is primarily represented by Late Permian Karoo vertebrate fauna and Late Cenozoic (Quaternary) macrofossils (Broom 1909 a, b; Kitching 1977, 1995; Churchill *et al* 2000; Rossouw 1999, 2006). According to the 1:250 000 scale geological map of the area the site is situated within the Beaufort Group, Adelaide Subgroup (Karoo Supergroup), primarily represented by late Permian, Balfour Formation sedimentary rocks, which are made up of alternating and potentially fossil-bearing sandstone and mudstone layers (**Fig. 4**). These formations are generally horizontal and in places have been intruded by dolerite sills as demonstrated by the kopje, and dykes, which form long interlocking ridges. The dolerite intrusions coincide with the wide-scale volcanism and outpouring of basaltic lava that covered virtually the whole of southern Africa during the early Jurassic period. Quaternary-age surface deposits in the region can be highly fossiliferous in places, especially those that are directly related to fluvial environments along major river courses, or near spring areas and pans. Fossil assemblages, individual specimens and fossilized hyena burrows have been found preserved in Late Pleistocene alluvial sediments of the nearby Modder River and its tributaries.

Cultural remains previously recorded around the northern outskirts of Bloemfontein can be divided into four categories: Stone Age remains, South African War remnants, graveyards and historical structures, including residential buildings, stone-built kraal and dam walls (Dreyer 2004a, 2004b, 2004c, 2004d, 2005; Henderson 2006;

Henderson *et al*. 2008; Rossouw 2012). The Stone Age archaeological record of the Modder River catchment north of Bloemfontein spans back to the early Middle Stone Age. Widespread traces of prehistoric human habitation, in the form of stone tool scatters and individual surface finds, have previously been recorded at Bayswater 286, Lilyvale 2313 and Hillandale 249 (Goodwin and Van Riet Lowe 1929, Henderson *et al*. 2008; Rossouw 2012). After Bloemfontein was occupied by British forces on 13 March 1900, the city became a major military centre, with several farms north of Bloemfontein requisitioned for military purposes which also included military hospitals, rifle ranges, sangars and a large remount camp at Hillandale (**Fig. 5**). The Tempe Farms were originally expropriated as grazing for the horses of the South African Constabulary in August 1901, and eventually bought by the War Office in 1904. Archaeological remains related to British military activities in the area include stone wall structures and rubbish dumps, kraals and graveyards (**Fig. 6**).

Field Assessment

The proposed development footprint is underlain by intrusive Jurassic dolerites (Karoo Dolerite Suite) and associated contact metamorphic metasediments that are capped in places by a veneer of residual soil and sand (**Fig. 7 & 8**).

A foot survey of the terrain revealed no evidence for the accumulation and preservation of *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. There are also no indications of rock art (engravings on dolerite outcrop), prehistoric structures or formal buildings with historical significance older than 60 years situated within the boundaries of the study area. The remains of at least 30 concrete slabs, each about 50 m^2 in size, are located about 370 m due west of the quarry near the northern boundary of the site (**Fig. 9**; **Table 2**). These structures are recent, not marked on pre-1960 maps of the area and are not considered to be historically significant (**Fig. 10**). An informal graveyard is located near to the N1 highway approximately 300 meters south of the active quarry (Rossouw 2005) **(Fig. 11; Table 3**). The graveyard is a loose arrangement of about 54 graves or more, arranged more-or-less in rows in a northeast-southwest direction (**Fig. 12 & 13**). The graves are mostly packed with dolerite cobbles, ranging in size from large to small and occasionally brick or cement blocks. A few have bricks packed over the graves. The layout of the graves suggests that the graveyard has been laid out in an ad-hoc manner. The head and foot markers usually consist of a dolerite stone, which was placed upright at the end of the grave, sometimes slightly off-set. Very few of the graves observed have headstones on which details of the person buried in the grave

are given.

Impact Statement and Recommendations

Dolerite, in the form of dykes, sills or inclined sheets is not considered palaeontologically significant. The site is also regarded as of low palaeontological significance with regards to the superficial residual soils capping the dolerite in places (Quaternary overburden). This is mainly due to a lack of suitable alluvial/fluvial deposits at the site. The earliest, dated grave is from 1973, nearly 33 years ago. However, it is likely that it may not be the oldest grave within the graveyard. Graves older than 60 years would fall under regulations such as subsection 1 of Section 36 of the National Heritage Resources Act, and the Human Tissues Act. Exhumation of graves less than 60 years old would fall under the Exhumations Ordinance, Ordinance No.12 of 1980.

As stated in Section 36 (3) of the National Heritage Resources Act:

(3) (a) No person may, without a permit issued by SAHRA or a provincial heritage resources authority—

(a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;

(b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or

(c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

Recommendations

As far as the palaeontological heritage is concerned, the proposed development may proceed with no additional heritage assessments necessary, provided that all excavation activities are restricted to within the boundaries of the development footprint.

As far as the archaeological heritage is concerned, the terrain is assigned a site rating of Generally Protected C while the graveyard is assigned a site rating of Generally Protected A.

It is advised that the proposed development may proceed with no additional heritage assessments necessary provided that,

- all excavation activities are restricted to within the boundaries of the development footprint;

- the graveyard is included in the future development plan to ensure that it is not damaged or vandalised during the construction phase of the project. Preservation of the site will require the determination of the extent of the area to be demarcated as the graveyard area. The graveyard will have to be fenced off for the duration of the proposed development of the project. The fence will have to be sturdy and highly visible to avoid accidental access to the graveyard by construction vehicles.

It is also advised that the relevant heritage resources authority will only issue a permit for the removal of any burial ground or grave if is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant and in accordance with any regulations made by the responsible heritage resources authority.

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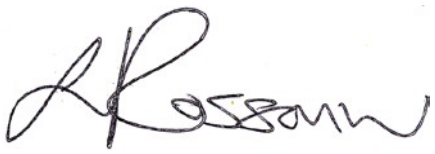
DECLARATION OF INDEPENDENCE

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.



06 / 06 / 2018

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

Table 2. GPS coordinates of concrete slab locality..

Site #	Item	Coordinates
A	Northwest corner	29° 2'13.00"S 26°13'4.41"E
B	Northeast corner	29° 2'12.72"S 26°13'7.89"E
C	Southeast corner	29° 2'16.11"S 26°13'8.50"E
D	Southwest corner	29° 2'16.71"S 26°13'4.83"E

Table 3. GPS coordinates of graveyard.

Site #	Item	Coordinates
A	Northwest corner	29° 2'19.65"S 26°13'13.05"E
B	Northeast corner	29° 2'20.29"S 26°13'15.92"E
C	Southeast corner	29° 2'21.41"S 26°13'15.80"E
D	Southwest corner	29° 2'21.20"S 26°13'12.89"E

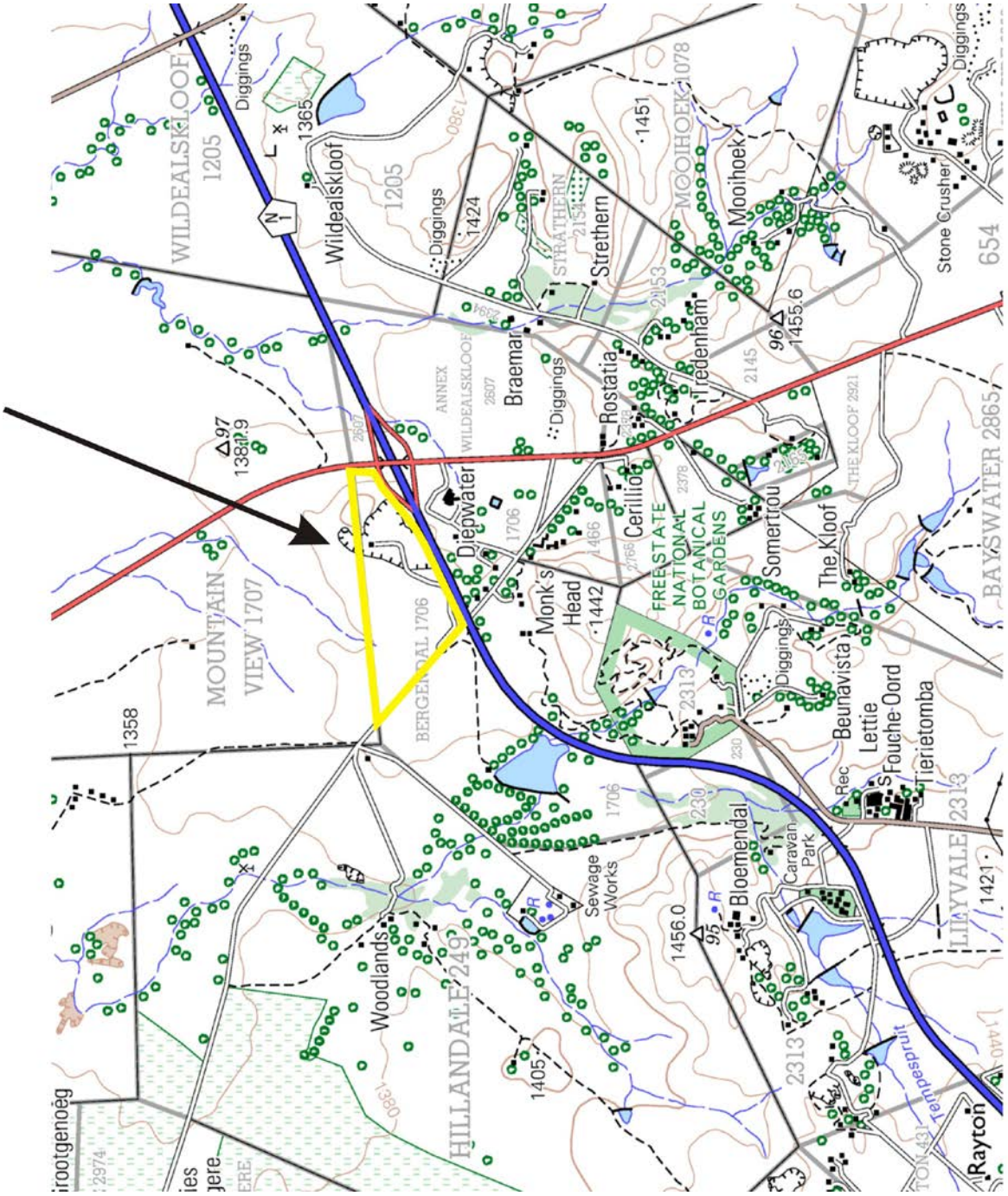


Figure 1. Map of the proposed development footprint (portion of 1:50 000 scale topographic 2926 AA Bloemfontein).

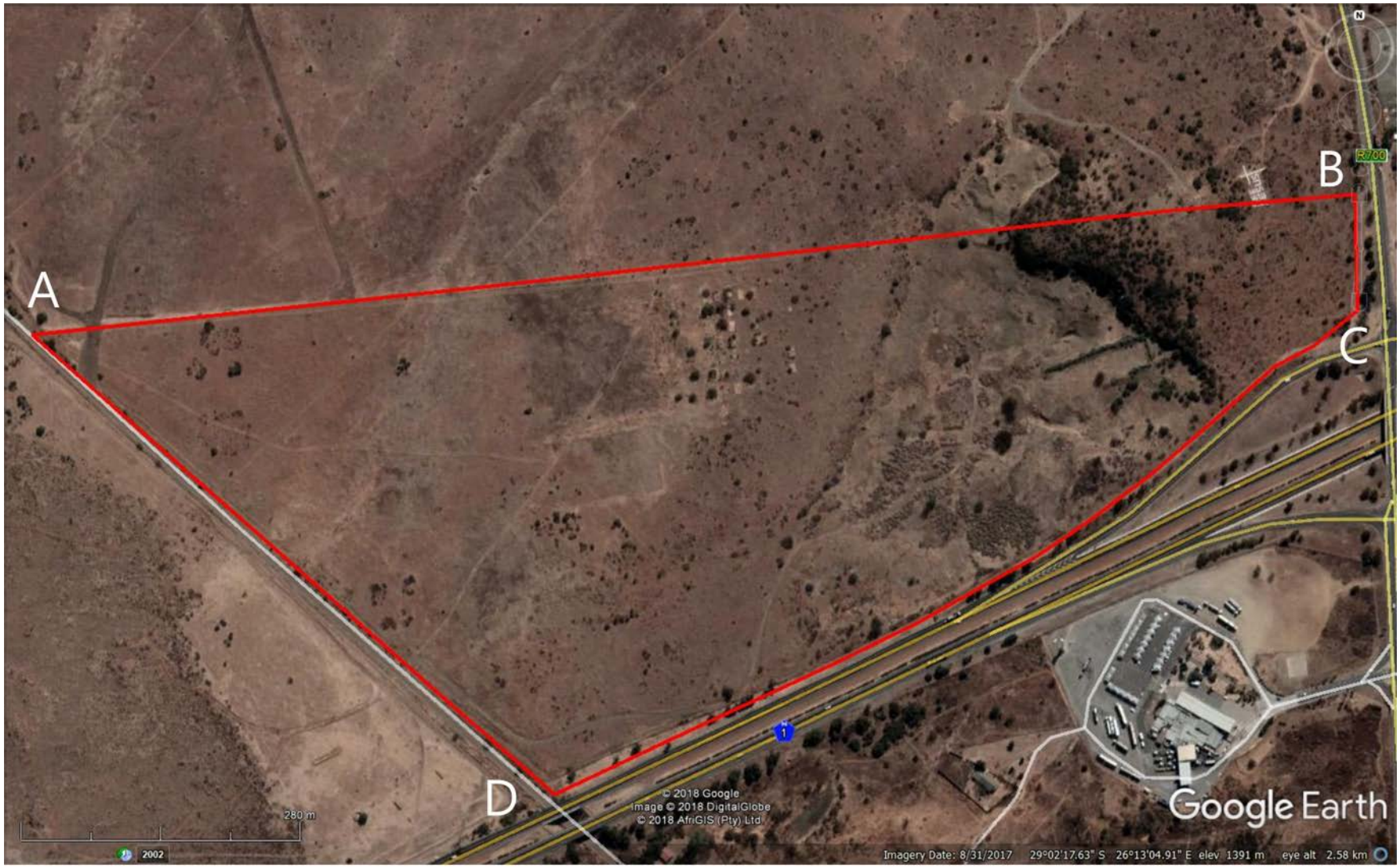


Figure 2. Aerial view of the study area.

Figure 3. General view of the site, looking southeast from the quarry area (above) and west (below).

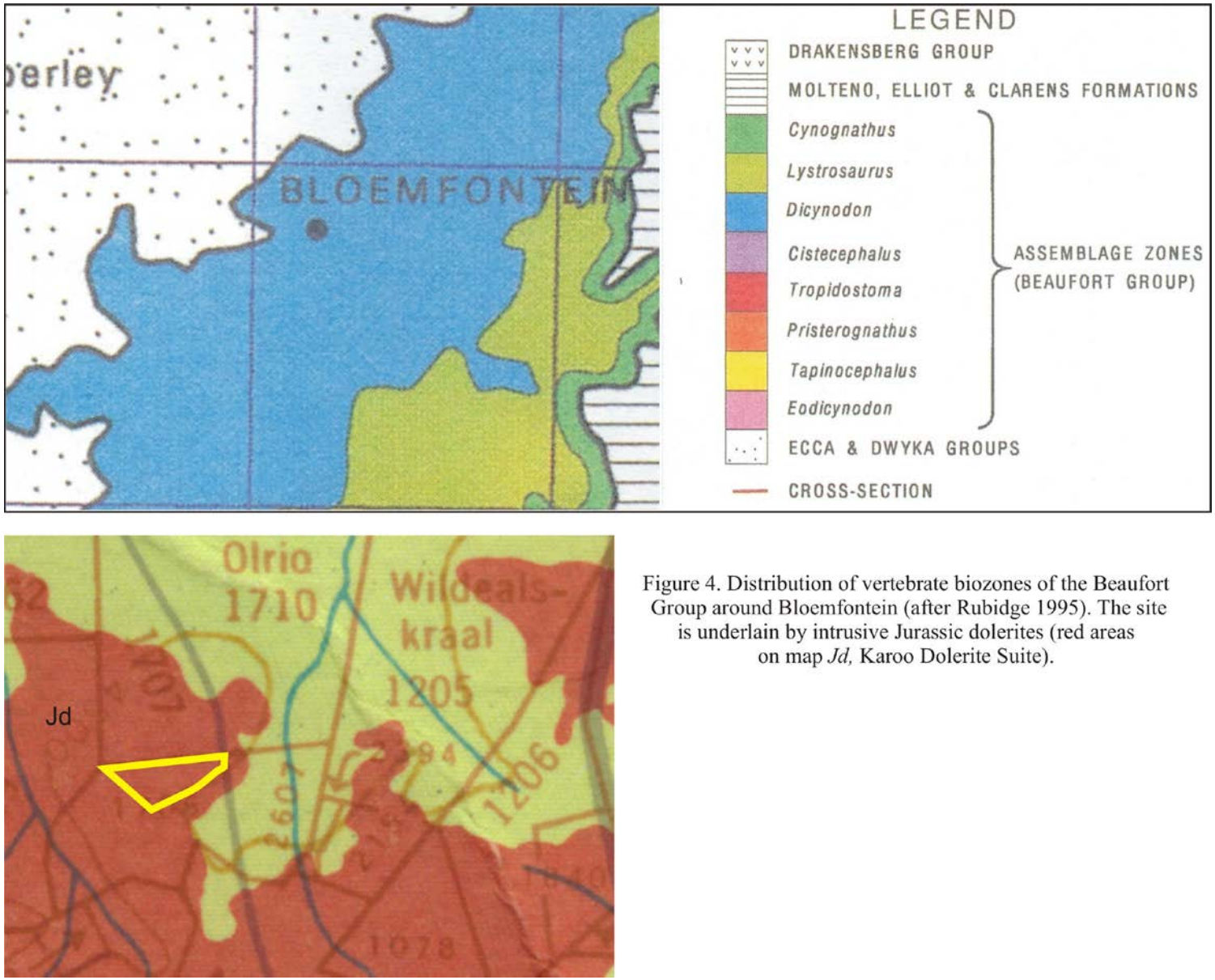


Figure 4. Distribution of vertebrate biozones of the Beaufort Group around Bloemfontein (after Rubidge 1995). The site is underlain by intrusive Jurassic dolerites (red areas on map *Jd,* Karoo Dolerite Suite).

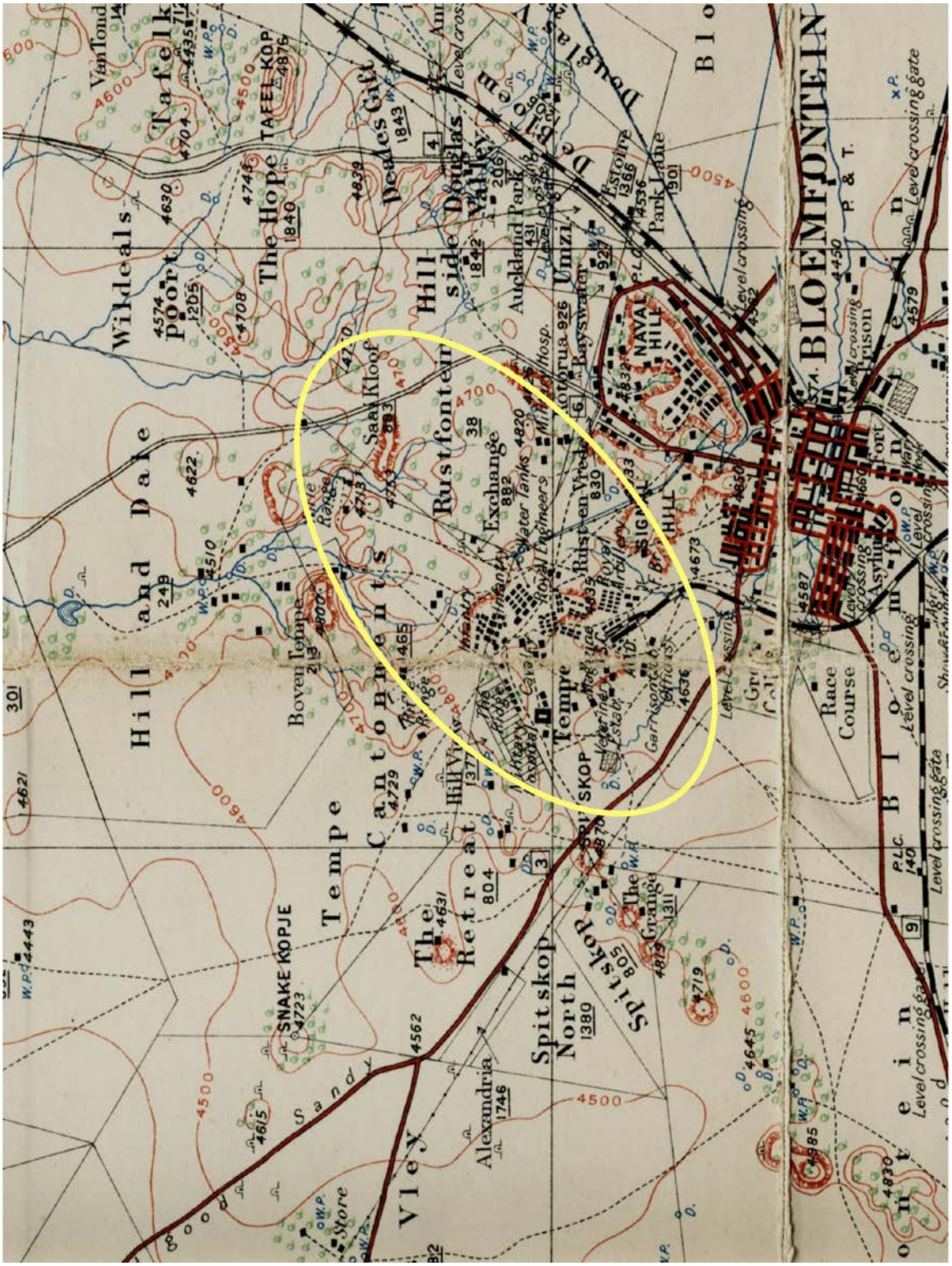


Figure 5. The position of the two power line route alternatives marked on a portion of a British military map circa 1913.

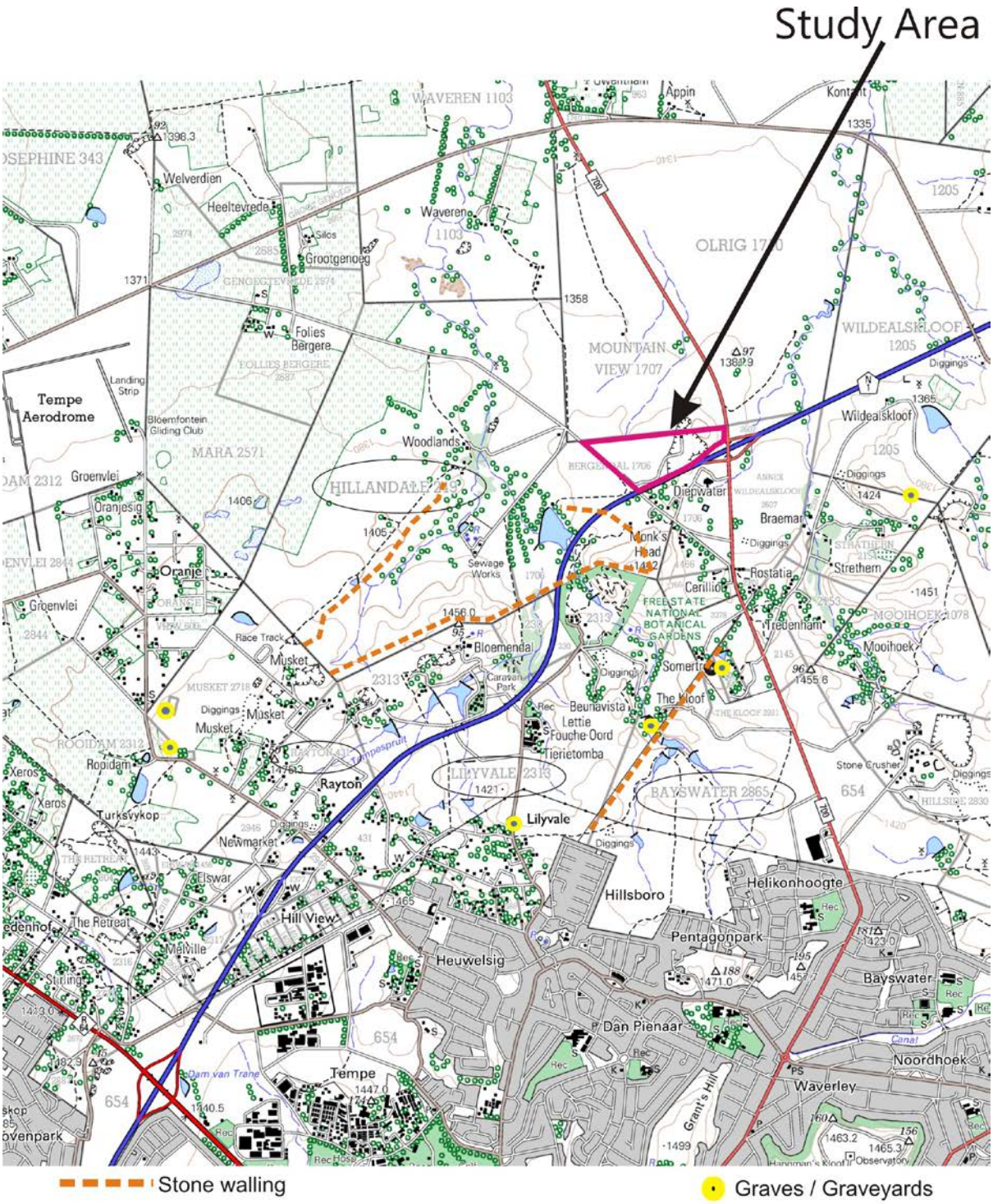


Figure 6. Low stone wall structures are one of the last remaining traces of the British military occupation of the northern part of Bloemfontein. The walls were built by the British Engineers, which had their camp stationed at Tempe. They formed part of a wall which originally ran from the water towers east of Tempe to the edge of Hillandale farm.

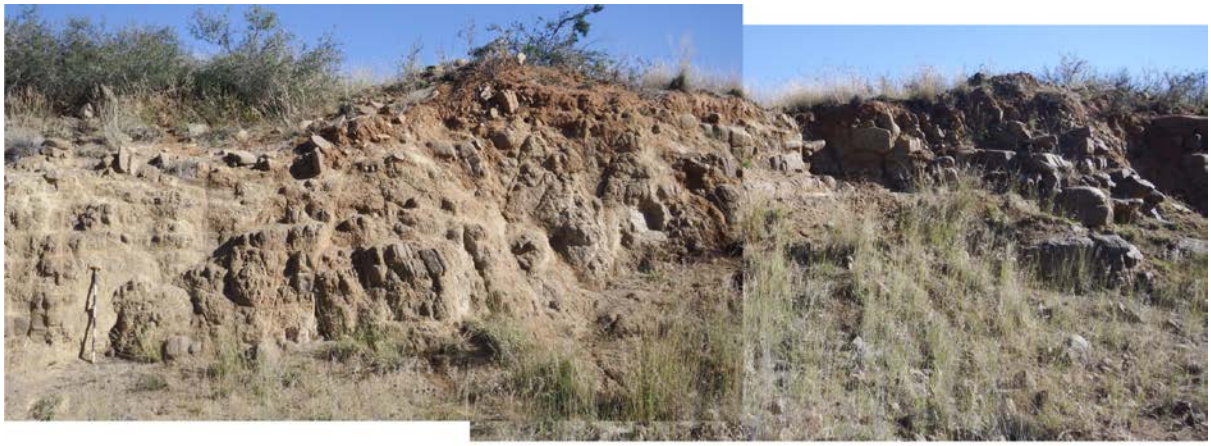


Figure 7. The site is underlain by intrusive Jurassic dolerites (Karoo Dolerite Suite) and associated contact metamorphic metasediments.
Scale 1 = 10 cm.

Figure 8. The doleritic terrain is capped in places by a veneer of residual soil and sand (looking north). Scale 1 = 10 cm.

Figure 9. Remains of concrete slabs, located about 370 m due west of the quarry near the northern boundary of the site.
Scale 1 = 10 cm.

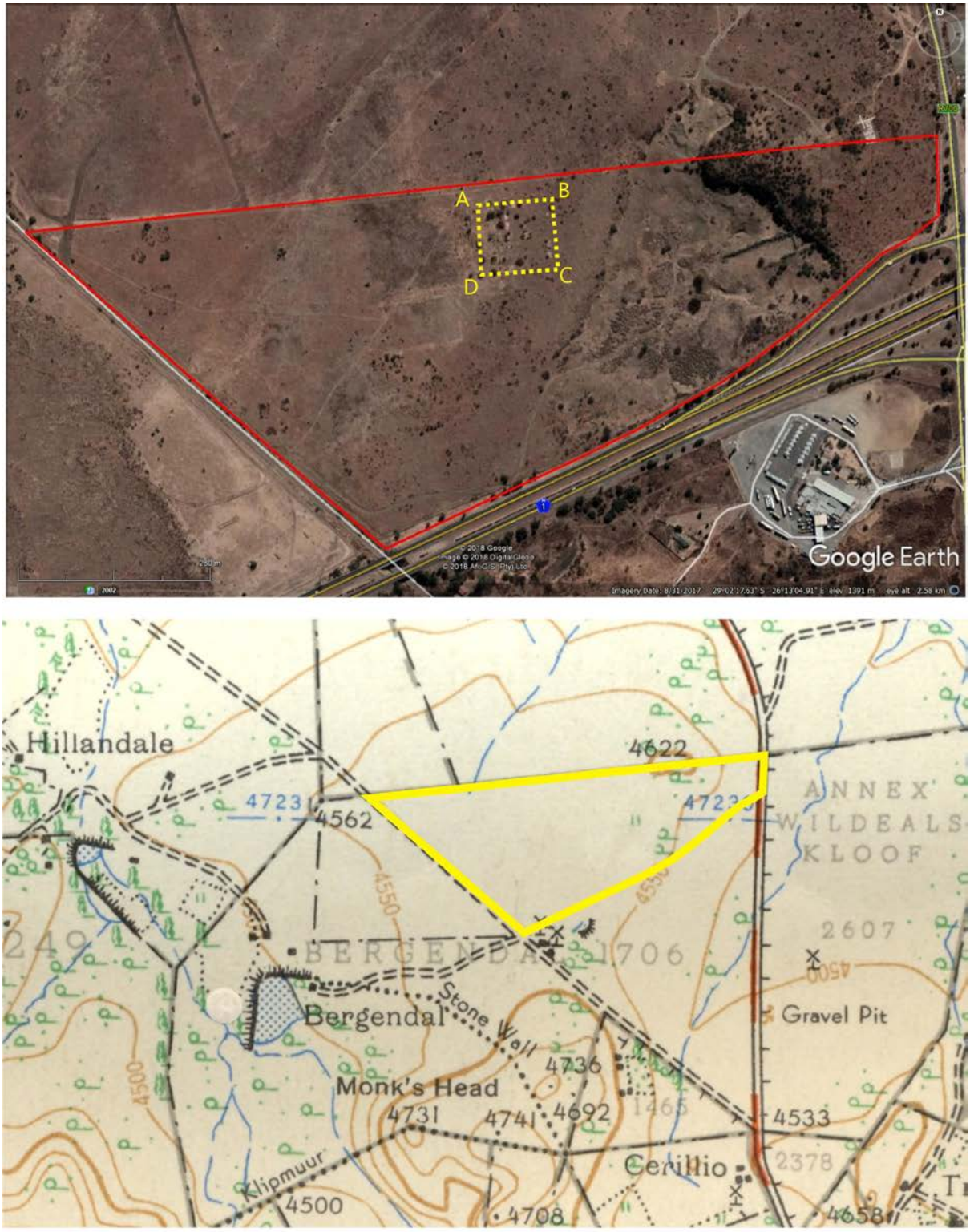


Figure 10. Position of concrete slabs on aerial photograph (above). These structures are not indicated on 1:50 000 scale topographic map dated circa 1951 (below).

Figure 11. Informal graveyard with overgrown graves located near the N1 highway approximately 300 meters south of the active quarry. Some of the graves may have been covered by dolerite spoil (bottom).

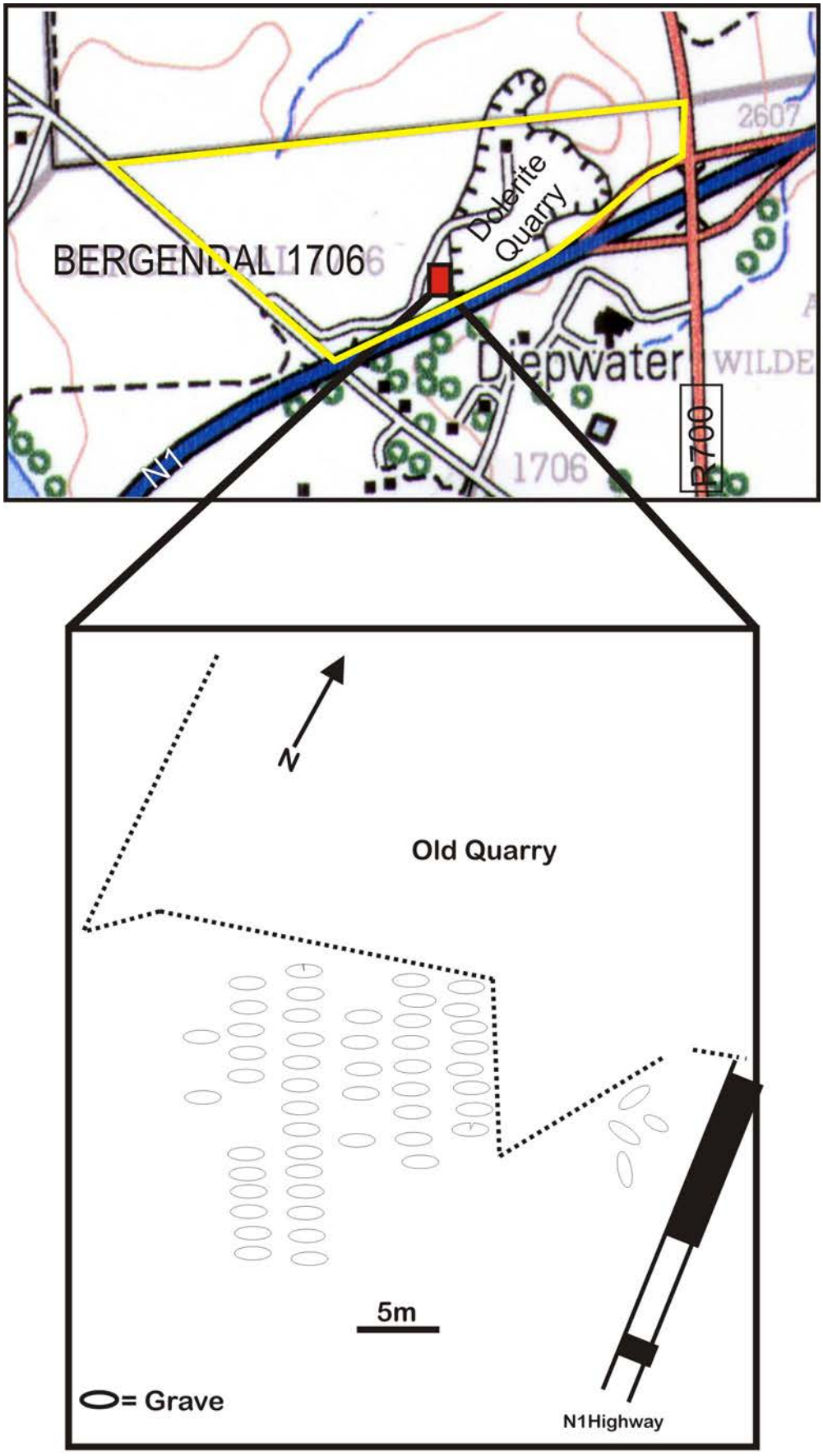


Figure 12. Diagram of graveyard layout.

Figure 13. Posi.tion of graveyard on aerial photograph