

**Phase 1 Heritage Impact Assessment of the proposed
new Mangaung Bus Depot, Bloemfontein, Free State
Province.**

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Summary

A Phase 1 Heritage Impact Assessment was carried out for the proposed new Mangaung Bus Depot in Bloemfontein, Free State Province. The proposed development footprint is characterized by flat, open and mostly degraded terrain. It is underlain by potentially fossil-bearing sedimentary strata of the Late Permian Adelaide that are buffered by well-developed superficial deposits considered to be of low to very low palaeontological sensitivity. As far as the overall palaeontological heritage is concerned, likelihood of palaeontological impact resulting from this development is considered low, given the disturbed terrain and overall lack of topography. However, it is recommended that should any fossils be uncovered within intact sedimentary rocks during the development or if excavations exceed more than 1 m into sedimentary rock, a suitably qualified Palaeontologist must evaluate the finds or monitor the exposed areas as soon as possible.

The survey revealed 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 (engravings on dolerite outcrop), prehistoric structures, Anglo Boer War sites, graves or buildings with historical significance older than 60 years within the boundaries of the study area. As far as the archaeological heritage is concerned, the proposed development is considered to be of low archaeological significance and is assigned a site rating of Generally Protected C.

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Introduction

A Phase 1 Heritage Impact Assessment was carried out for the proposed new Mangaung Bus Depot in Bloemfontein, Free State 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 (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 including archaeological and palaeontological sites in the area to be developed, and that make recommendations for protection or mitigation of the impact of the sites.

The primary legal trigger for identifying when heritage specialist involvement is required in the Environmental Impact Assessment process is the National Heritage Resources (NHR) Act (Act No 25 of 1999). The NHR Act requires that all heritage resources, that is, all places or objects of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance are protected. Thus any assessment should make provision for the protection of all these heritage components, including archaeology, shipwrecks, battlefields, graves, and structures over 60 years of age, living heritage and the collection of oral histories, historical settlements, landscapes, geological sites, palaeontological sites and objects. The 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 regard, categories of development listed in Section 38 (1) of the NHR Act are:

- The construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- The construction of a bridge or similar structure exceeding 50m in length;
- Any development or other activity which will change the character of the site
 - a) exceeding 5000 m² in extent; or
 - b) involving three or more existing erven or subdivisions thereof; or
 - c) involving three or more subdivisions thereof which have been consolidated within the past five years;

- The rezoning of a site exceeding 10 000 m²; or
- Any other category of development provided for in regulations by the South African Heritage Resources Agency (SAHRA).

If a heritage resource is likely to be impacted by a development listed in Section 38 (1) of the NHR Act a heritage assessment will be required either as a separate HIA or as the heritage specialist component (AIA or PIA) of an EIA.

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 (**Table 1**). 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.

Methodology

The archaeological significance of the affected area was evaluated through a desktop study and carried out 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. Relevant archaeological information, aerial photographs and site records were consulted and integrated with data acquired during the on-site inspection.

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.

Field Rating

Site significance classification standards as prescribed by SAHRA (2005) for archaeological sites were used for the purpose of this report (**Table 2**).

Locality data

1 : 50 000 scale topographic map: 2926 AA Bloemfontein

1 : 250 000 scale geological map 2924 Bloemfontein

Site Coordinates: 29° 7'25.98"S 26°14'29.27"E

The 8 ha site is located within a designated industrial area next to golf course and a sewerage facility, near the corner of Mckenzie and McGregor Streets in Bloemfontein (**Fig. 2 - 4**).

Background

According to the 1 : 250 000 scale geological map 2924 Bloemfontein, the study area is situated within the Beaufort Group, Adelaide Subgroup (Karoo Supergroup), which is primarily represented by late Permian sedimentary rocks, made up of alternating sandstone and mudstone layers (*Pa*) associated with stream and floodplain deposits (Theron 1963; Johnson *et al.* 2006). Jurassic-age dolerite intrusions, in the form of sills and dykes, occur extensively around the area (*Jd*). Quaternary to recent residual deposits, comprising unconsolidated soils, alluvial sediments and sheet wash deposits, cover the underlying sedimentary rocks. The sedimentary rocks are generally accepted to be Late Permian in age and are assigned to the *Dicynodon* Assemblage Zone (Kitching 1995). The *Dicynodon* AZ is characterized by the co-occurrence of two therapsids, *Dicynodon* and *Theriognathus* as well as a diversity of less dominant vertebrate taxa, while trace fossils of invertebrates and vertebrates as well as *Glossopteris* flora plants have also been described (**Fig. 5**).

The Stone Age archaeological record of the Bloemfontein region spans back to the Middle Stone Age. Prehistoric archaeological remains previously recorded in the region include numerous occurrences of *in situ* Middle and Later Stone Age artefacts eroding out of the overbank sediments associated with the Modder River and its tributaries where they are often found in association large mammal fossil remains (Broom 1909; Churchill *et al.* 2000; Rossouw 1999, 2000, 2006). The study area is located outside the south-western periphery of distribution of Late Iron Age stone-walled settlements in the Free State (Maggs 1976).

Field Assessment

The proposed development footprint is characterized by flat, open and mostly degraded terrain. A foot survey of the terrain revealed no evidence for the

accumulation and preservation of intact fossil material within the degraded and superficial (Quaternary) soils capping the site (**Fig. 6**). As a result, outcrop visibility is also generally poor along the footprint. The survey revealed no evidence of *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. The site is located within a part of Bloemfontein that has yielded historically significant areas and sites (**Fig. 7**). However, no indications of rock art (e.g. engravings on dolerite outcrop), prehistoric structures, SA War - related sites, graves or buildings with historical significance older than 60 years are located within the boundaries of the study area.

Impact Statement and Recommendation

The development footprint is underlain by potentially fossil-bearing sedimentary strata of the Late Permian Adelaide that are buffered by well-developed superficial deposits considered to be of low to very low palaeontological sensitivity. As far as the overall palaeontological heritage is concerned, likelihood of palaeontological impact resulting from this development is considered low, given the disturbed terrain and overall lack of topography. However, it is recommended that should any fossils be uncovered within intact sedimentary rocks during the development or if excavations exceed more than 1 m into sedimentary rock, a suitably qualified Palaeontologist must evaluate the finds or monitor the exposed areas as soon as possible.

As far as the archaeological heritage is concerned, the proposed development is considered to be of low archaeological significance and is assigned a site rating of Generally Protected C.

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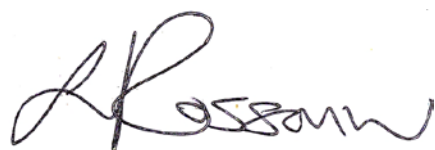
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DECLARATION OF INDEPENDENCE

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.



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Tables and Figures

Table 1: Relationship between different heritage contexts, heritage resources likely to occur within these contexts, and likely sources of heritage impacts in the Free State.

Heritage Context	Heritage Resources	Impact
Palaeontology	<ul style="list-style-type: none"> • Palaeozoic and Mesozoic fossil remains, e.g. Karoo Supergroup. • Neogene regolith, e.g. Quaternary alluvial deposits, lacustrine sediments, natural springs, pans 	Subsurface excavations including ground levelling, landscaping & foundation preparation, road cuttings, Quarries, mining development, bridge and pipeline construction , new cemeteries, construction of electrical infrastructure and alternative energy facilities, township development, demolition or alteration work.
Archaeology Early Stone Age Middle Stone Age LSA - Herder	<ul style="list-style-type: none"> • Localized Stone Age sites, containing cultural remains, animal and human remains found near or at <i>inter alia</i> the following: river courses and natural springs; pans and natural deflation hollows; stone tool making sites (e.g. dolerite contact zones); cave sites and rock shelters; freshwater shell middens; • Ancient, kraals and stonewalled complexes; • Abandoned areas of past human settlement and burials sites over 100 years old 	
Historical	<ul style="list-style-type: none"> • Historical sites and structures older than 60 years old, including rubbish dumps/middens; • Objects, including industrial machinery, older than 60 years; • Burial sites, e.g. concentration camps; • Burial architecture older than 60 years; • Graves (marked or unmarked, known or unknown); • Places associated with social identity/displacement, e.g. Witsieshoek Cave; • Mission settlements, e.g. Bethulie and Beersheba 	
Natural Landscapes	<ul style="list-style-type: none"> • Formally proclaimed nature reserves • Evidence of pre-colonial occupation • Scenic resources, e.g. view corridors, viewing sites, • Historical structures/settlements older than 60 years • Geological sites of cultural significance. 	
Relic Landscapes	<ul style="list-style-type: none"> • Battle /military sites and graveyards • Pre-colonial settlements 	

Table 2. 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

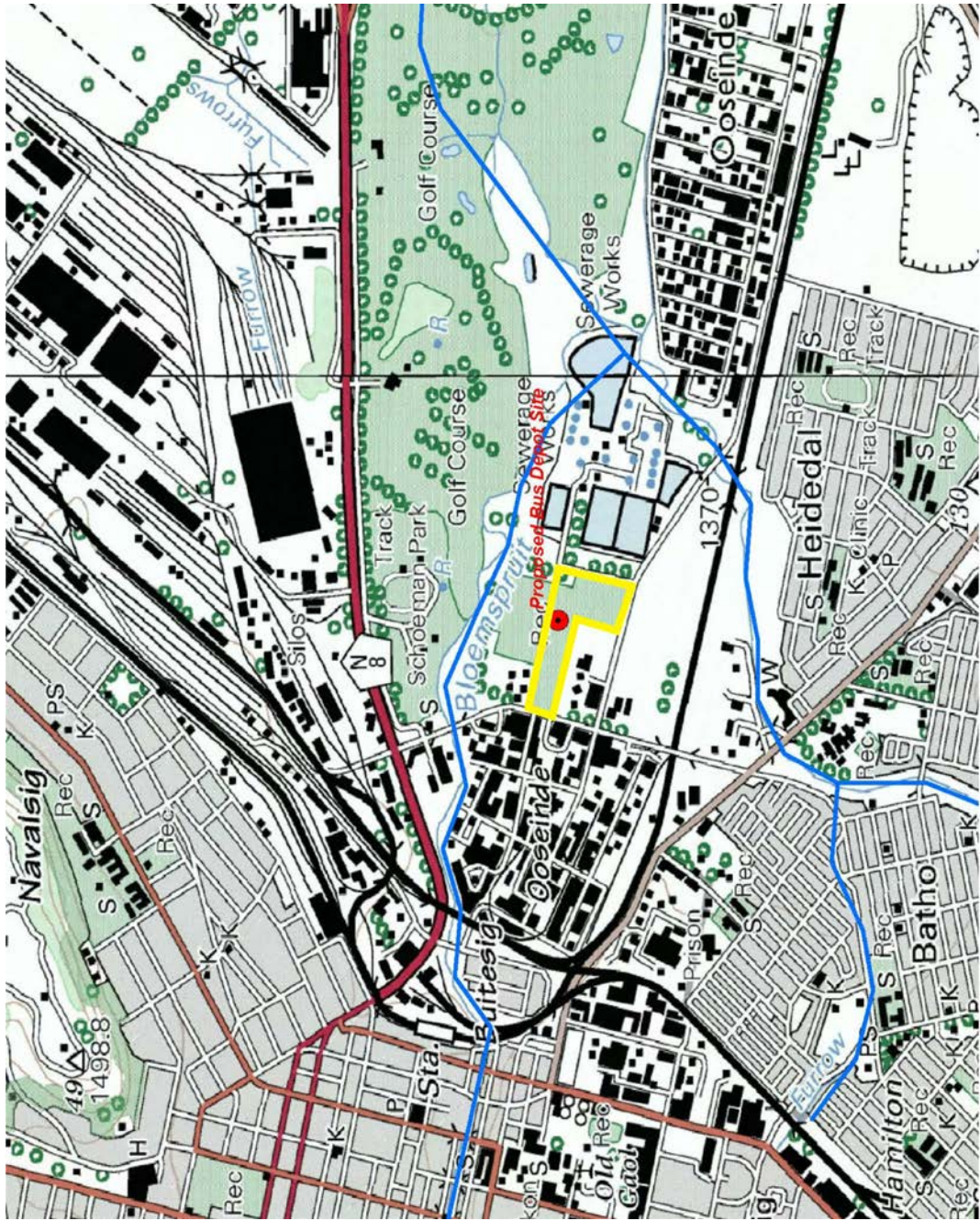


Figure 1. Map of the proposed development footprint (portion of 1:50 000 scale topographic 2916 AA Bloemfontein).



Figure 2. Aerial view of the site.



Figure 3. General view of the site, looking north (left)
and southwest (below)





Figure 4. General view of the site, looking east (left) and south (below).



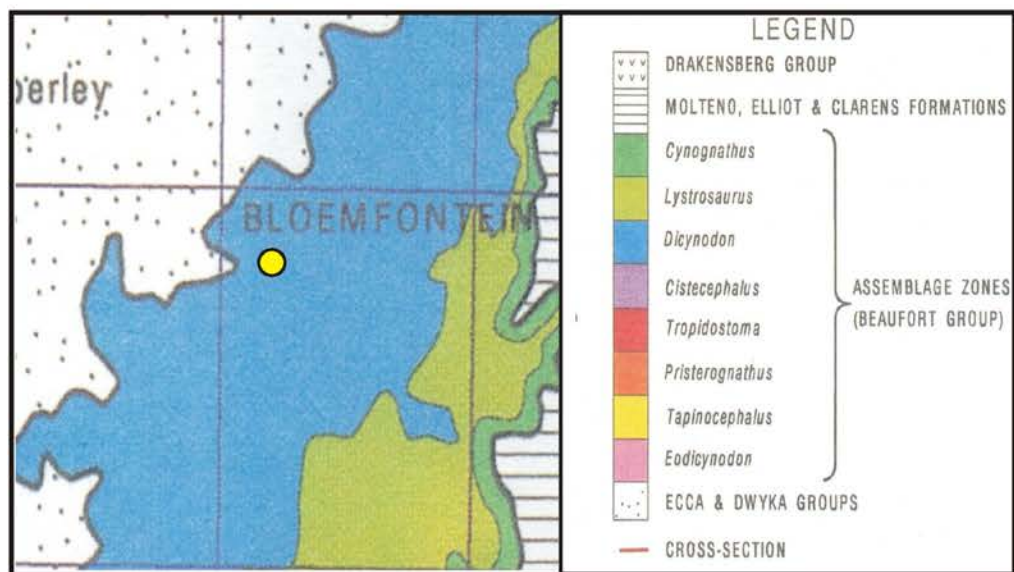
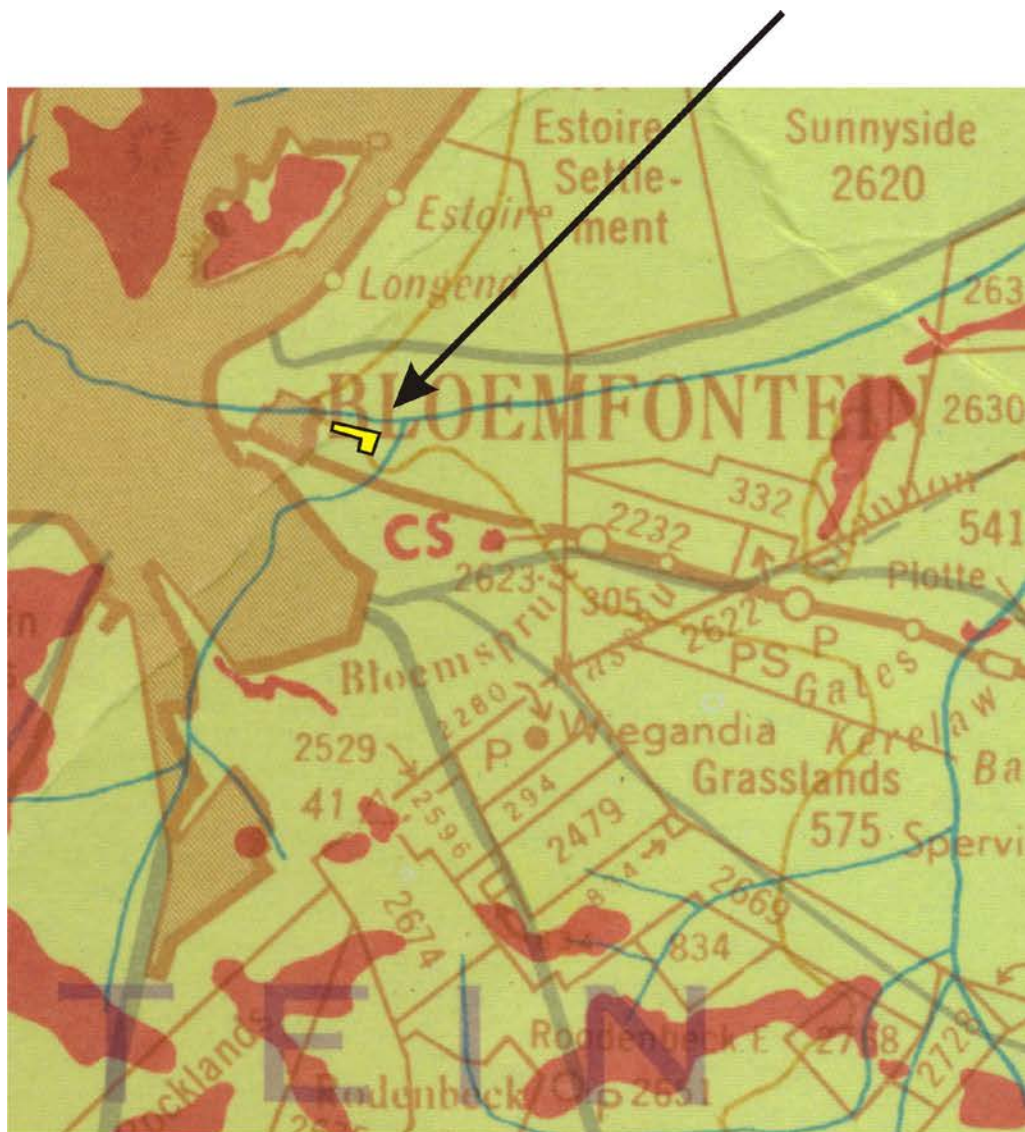


Figure 5. The development footprint is located within an area considered to be of high palaeontological sensitivity (see portion of 1:250 000 scale geological map 2926 Bloemfontein, above, green areas), with sedimentary strata assigned to the *Dicynodon* Assemblage Zone (below). Distribution of vertebrate biozones of the Beaufort Group around Bloemfontein after Rubidge 1995.



Figure 6. The proposed development footprint is characterized by flat, open and mostly degraded terrain littered by rubbish dumps and building rubble (below left, center and right). A linear eucalyptus grove located along the eastern boundary of the site (top left, center & right) is probably related to old bluegum plantings in the area, but is not considered to be older than 60 years in age in its current condition.

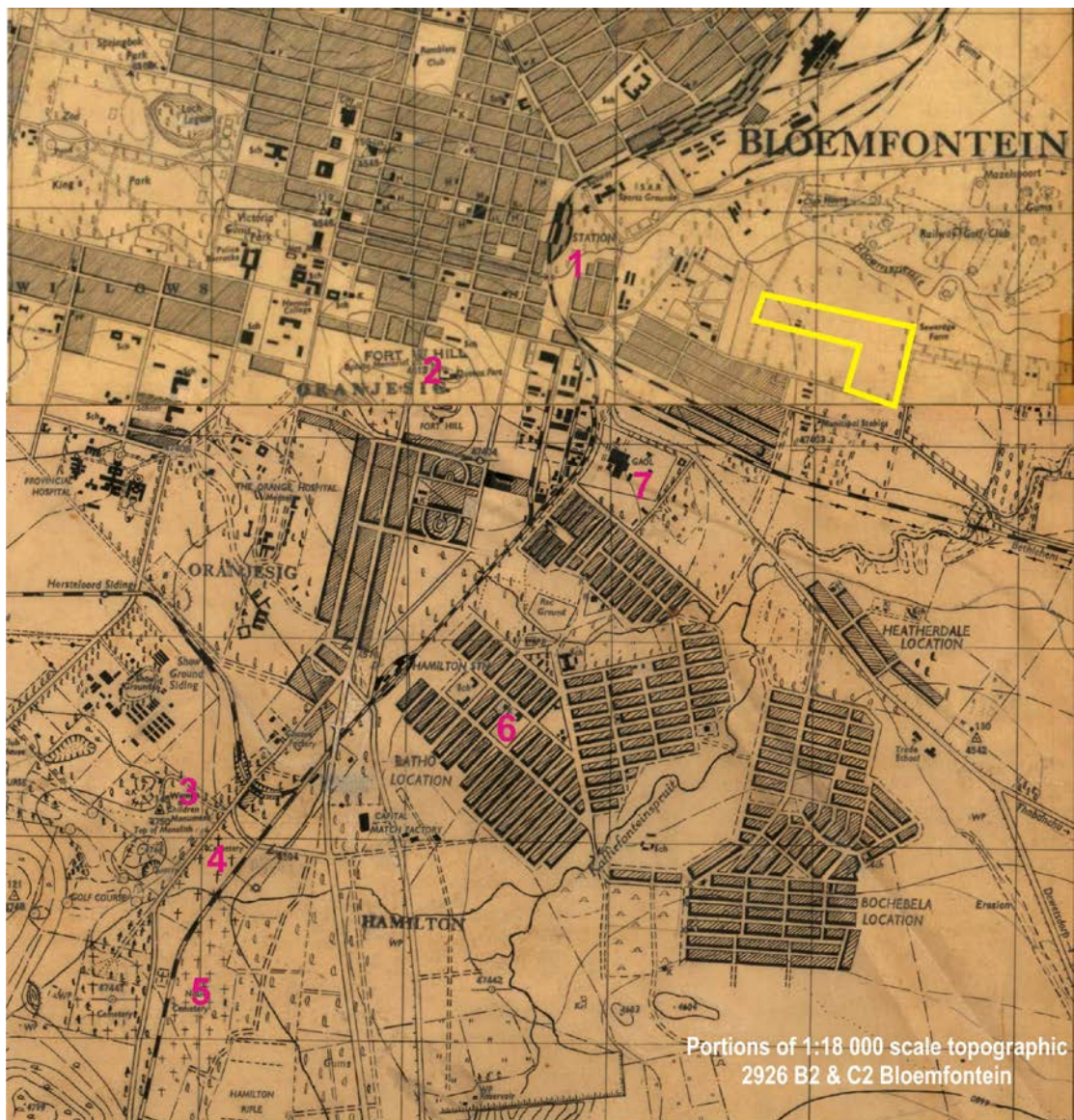


Figure 7. The study area is located just north of historically significant areas and sites, including:

- 1) Bloemfontein Train Station
- 2) Queens Fort and Batho Memorial
- 3) SA War Museum & Woman's Memorial
- 4 & 5) Historical graveyards
- 6) Historical Batho Location
- 7) Victorian style Ramkraal Prison