

**Phase 1 Archaeological Impact Assessment of a proposed
new 132 kV transmission line between the Harvard and
Noordstad Substations, Bloemfontein, Free State Province.**



Dr. L Rossouw
National Museum
PO Box 266
Bloemfontein
9300
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Summary

At the request of Enviroworks Environmental Consultants, a Phase 1 Archaeological Impact Assessment was conducted for a proposed new 36km-long, 132 kV overhead transmission line from the Harvard to Noordstad Substations located west and north of Bloemfontein in the Free State Province. The powerline footprint traverses existing road reserves, degraded farmland and areas formerly disturbed by the residential developments. The associated distribution center footprints are located on degraded farmland, areas formerly disturbed by the residential developments and relatively undisturbed patches of open veld. A pedestrian 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, graves or historically significant structures older than 60 years within the proposed footprints. It is advised that both options for the Hillandale loop-in represents low potential impact for underground finds because it largely traverses previously disturbed areas. As far as the archaeological heritage is concerned, the proposed development may proceed with no further assessments required. If, in the unlikely event that capped archaeological remains not observed are discovered during the construction phase of the project, it is recommended that the relevant heritage authority and a professional archaeologist are called in to investigate.

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Introduction

At the request of Enviroworks Environmental Consultants, a Phase 1 Archaeological Impact Assessment was conducted for a proposed new 36km-long, 132 kV overhead transmission line from the Harvard to Noordstad Substations located west and north of Bloemfontein in the Free State Province (**Fig. 1**). Planned development also includes the construction of 6 distribution centers, each covering approximately 1ha (**Fig. 2 & 3**).

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 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.

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.

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. Relevant publications, aerial photographs (incl. Google Earth) and site records 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**).

Locality data

1: 50 000 scale topographic map: 2926AA Bloemfontein

The development footprint is located on the northwestern outskirts of Bloemfontein between the R64 provincial road going northwest to Dealesville and the R30 provincial road going north to Brandfort.

Site coordinates:

Existing Harvard Substation: 29° 6'6.34"S 26° 7'51.95"E

Existing Noordstad Substation: 29° 3'14.62"S 26°13'38.54"E

Outspan Distribution Centre: 29° 4'11.28"S 26° 8'28.35"E

Rooidam Distribution Centre: 29° 2'38.50"S 26° 8'44.97"E

Olivier Distribution Centre: 29° 3'1.89"S 26°10'11.97"E

Tevrede Distribution Centre: 29° 1'8.37"S 26°10'17.59"E

Mimosa Distribution Centre: 29° 0'41.37"S 26°13'58.18"E

Hillandale Distribution Centre: 29° 2'17.43"S 26°12'45.58"E

Background

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. Localized occurrences of *in situ* Middle and Later Stone Age material are preserved within overbank sediments of the Modder River and its tributaries between Maselspoort and

Glen north of Bloemfontein (Churchill *et al.* 2000; Rossouw 2006). 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) (**Fig. 4**). 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**). Hillandale was owned by Abraham Fischer, and was expropriated by the British along with the Tempe farms. In the military correspondence it is referred to as Fischer's Farm (FS Archives). 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. A large military rubbish dump was recorded on Lilyvale 2313/25(33), the property adjacent to the survey area. The 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. Some sections can still be seen at the Botanical Gardens, as well as in the Lilyvale and Bayswater areas, between Hillsboro and the R700 road south of the N1 (**Fig. 6**). Graveyards and isolated graves are also known from this area.

Field Assessment

The powerline footprint traverses existing road reserves, degraded farmland and areas formerly disturbed by the residential developments (**Fig. 7**). The associated distribution center footprints are located on degraded farmland, areas formerly disturbed by the residential developments and relatively undisturbed patches of open veld (**Fig. 8**).

Impact Statement and Recommendations

The Rayton, Lilyvale Hillandale and Bayswater farms north of Bloemfontein

represent historically as well as archaeologically significant landscapes. The proposed route options circumvent these areas, which also include the Seven Dams Conservancy and the Botanical Gardens.

Harvard Connection to Outspan and Olivier loop-in (Cecilia loop-in)

The section primarily traverses existing road reserves, degraded farmland and areas formerly disturbed by the residential developments. A pedestrian 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, graves or historically significant structures older than 60 years along the line and within the Outspan and Olivier distribution centre footprints. As far as the archaeological heritage is concerned, the proposed development may proceed with no further assessments required. **The power line and distribution center footprints are considered to be of low archaeological significance and are assigned a site rating of Generally Protected C.** If, in the unlikely event that capped archaeological remains not observed during the survey are discovered during the construction phase of the project, it is recommended that the relevant heritage authority and a professional archaeologist are called in to investigate.

Rooidam to Tevrede and Mimosa loop-in

The section primarily traverses existing road reserves, degraded farmland and areas formerly disturbed by the residential developments. The Tevrede and Mimosa distribution centre footprints are located on existing farmland. A pedestrian 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, graves or historically significant structures older than 60 years within the Rooidam, Tevrede and Mimosa distribution centre footprints. As far as the archaeological heritage is concerned, the proposed development may proceed with no further assessments required. **The power line and distribution center footprints are considered to be of low archaeological significance and are assigned a site rating of Generally Protected C.** If, in the unlikely event that capped archaeological remains not observed during the survey are discovered during the construction phase of the project, it is recommended that the relevant heritage authority and a professional archaeologist are called in to investigate.

Mimosa to Noordstad loop

The section primarily traverses existing road reserves, degraded farmland, areas formerly disturbed by the residential developments as well as undisturbed open veld. A pedestrian 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, graves or historically significant structures older than 60 years within the footprint. As far as the archaeological heritage is concerned, the proposed development may proceed with no further assessments required. **The power line section is considered to be of low archaeological significance and are assigned a site rating of Generally Protected C.** If, in the unlikely event that capped archaeological remains not observed during the survey are discovered during the construction phase of the project, it is recommended that the relevant heritage authority and a professional archaeologist are called in to investigate.

Hillandale loop-in (Alternative 1)

The section primarily traverses existing road reserves, degraded farmland and areas formerly disturbed by the residential developments. Previously identified historical structures at Woodland Hills (Hillandale), such as the historical Fischer farmstead, stone wall remnants and stone-walled sangars, are located outside the proposed powerline footprint. A pedestrian 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, graves or historically significant structures older than 60 years within the Hillandale Distribution Centre footprint. As far as the archaeological heritage is concerned, the proposed development may proceed with no further assessments required. **The power line and distribution center footprints are considered to be of low archaeological significance and are assigned a site rating of Generally Protected C.** If, in the unlikely event that capped archaeological remains not observed during the survey are discovered during the construction phase of the project, it is recommended that the relevant heritage authority and a professional archaeologist are called in to investigate.

Hillandale loop-in (Alternative 2)

The section primarily traverses degraded farmland and undisturbed open veld. A pedestrian survey revealed no evidence of *in situ* Stone Age archaeological material, capped or

distributed as surface scatters on the landscape. There are also no aboveground indications of rock art, graves or historically significant structures older than 60 years within the footprint. However, it is advised that Alternative 1 represents the lowest possible impact for potential underground finds because it mostly traverses previously disturbed areas. As far as the archaeological heritage is concerned, the proposed development may proceed with no further assessments required. **The power line and distribution center footprints are considered to be of low archaeological significance and are assigned a site rating of Generally Protected C.** If, in the unlikely event that capped archaeological remains not observed during the survey are discovered during the construction phase of the project, it is recommended that the relevant heritage authority and a professional archaeologist are called in to investigate.

Underground Section between Hillandale and Mimosa

The section primarily traverses degraded farmland and undisturbed open veld. A pedestrian survey revealed no evidence of *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. There are also no aboveground indications of rock art, graves or historically significant structures older than 60 years within the footprint. As far as the archaeological heritage is concerned, the proposed development may proceed with no further assessments required. **The section is considered to be of low archaeological significance and are assigned a site rating of Generally Protected C.** If, in the unlikely event that capped archaeological remains not observed during the survey are discovered during the construction phase of the project, it is recommended that the relevant heritage authority and a professional archaeologist are called in to investigate.

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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.

11 / 05 / 2017

Tables & 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

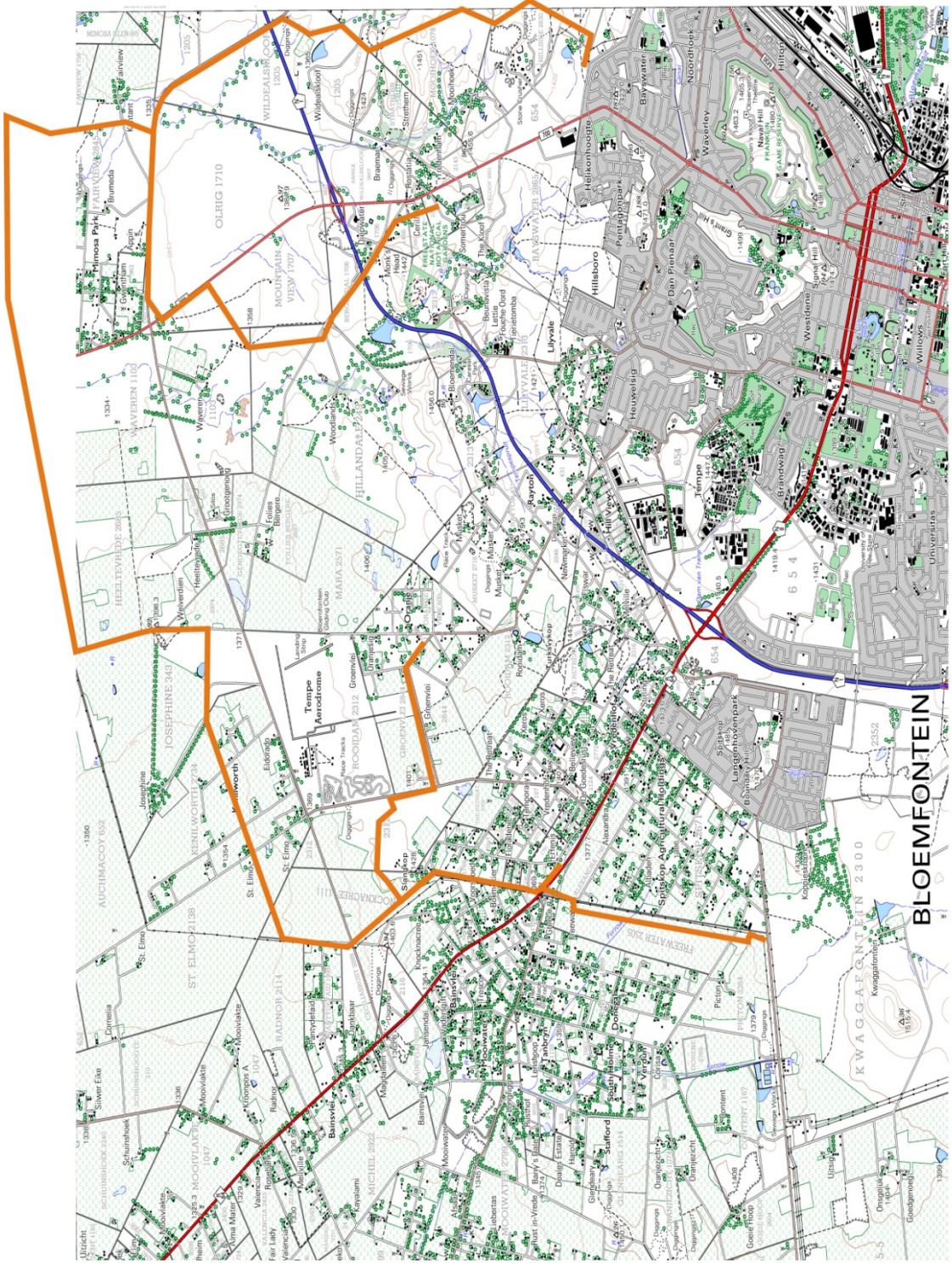
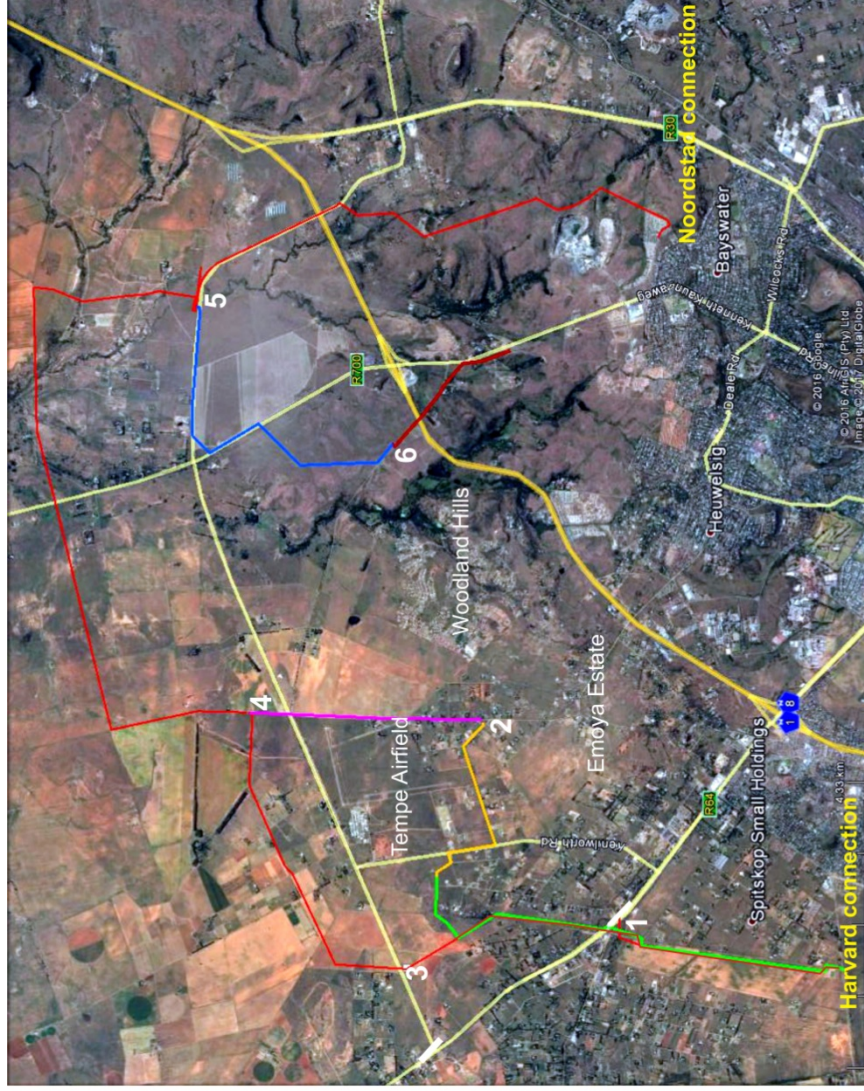


Figure 1. The proposed new 132 kV transmission line between the Harvard and Noordstad Substations, marked on portion of 1:50 000 scale topographic 2926 AA Bloemfontein.



Transmission Line Main Loop

Cecilia loop-in

Outspan loop-in

Olivier loop-in

Hillandale loop-in (Alt 1)

Hillandale loop-in (Alt 2)

Underground section

Figure 2. Aerial view of the proposed overhead powerline sections and alternatives. The distribution centre localities are numbered 1 Outspan, 2 Olivier, 3 Rooidam, 4 Teverde, 5 Mimosa and 6 Hillandale.



Figure 3. Aerial view of the (A) Outspan, (B) Rooidam, (C) Olivier, (D) Tevrede, (E) Mimosa and (F) Hillandale Distribution Centre footprints.

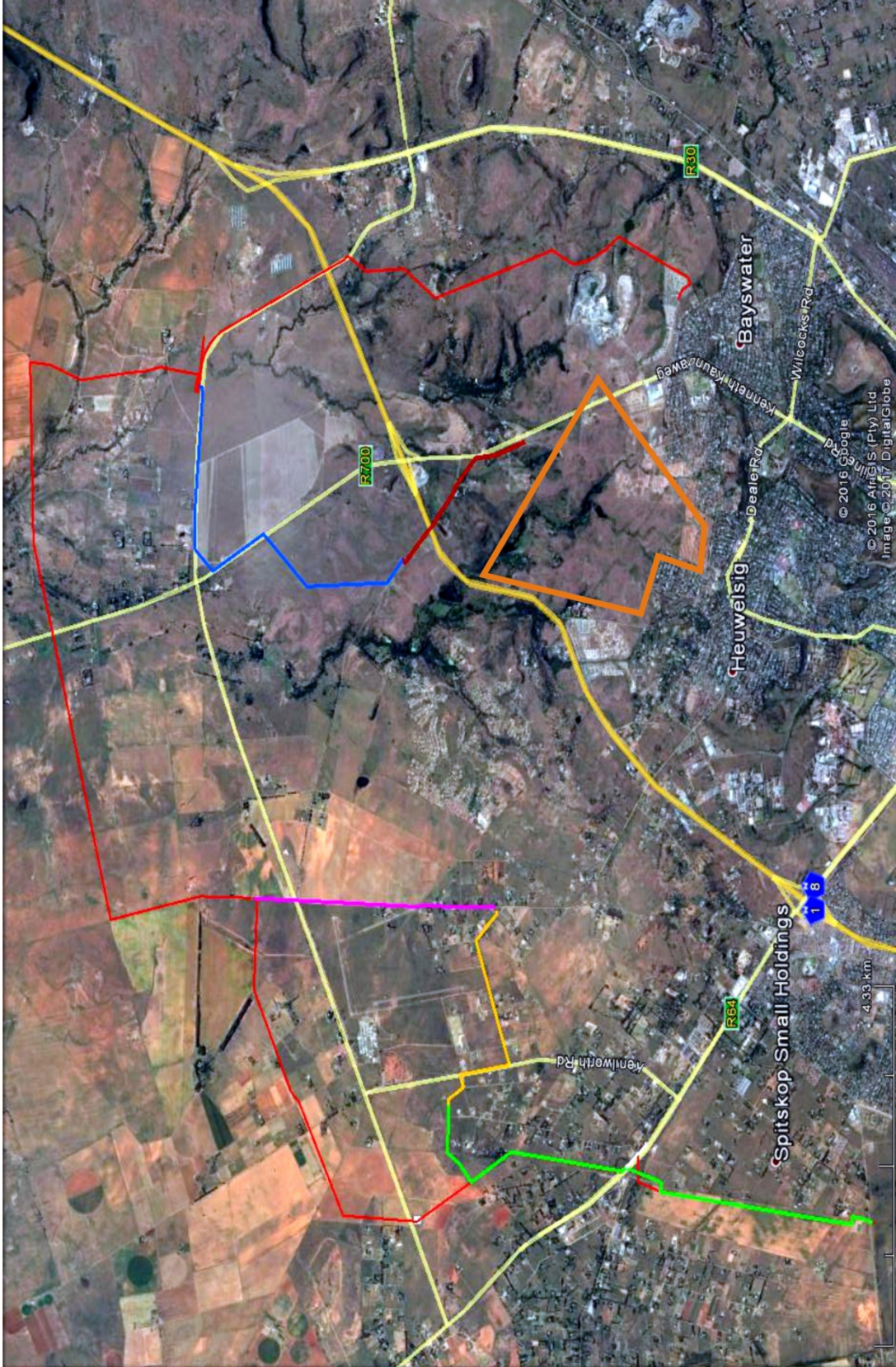


Figure 4. The orange polygon indicates formerly undisturbed veld at Bayswater 286, Lilyvale 2313 and Hillandale 249 where stone tool scatters and individual surface finds, have been recorded in the past.

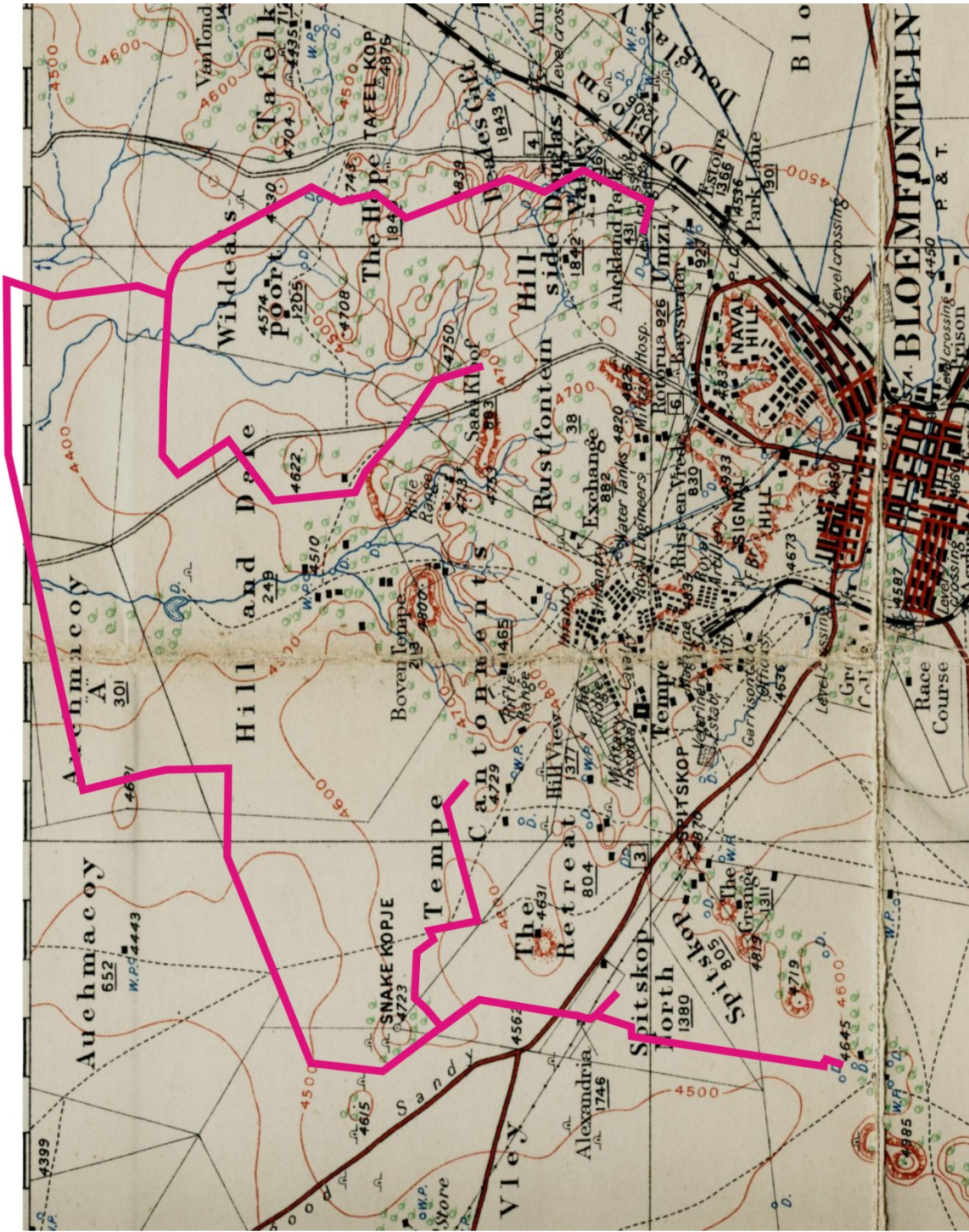
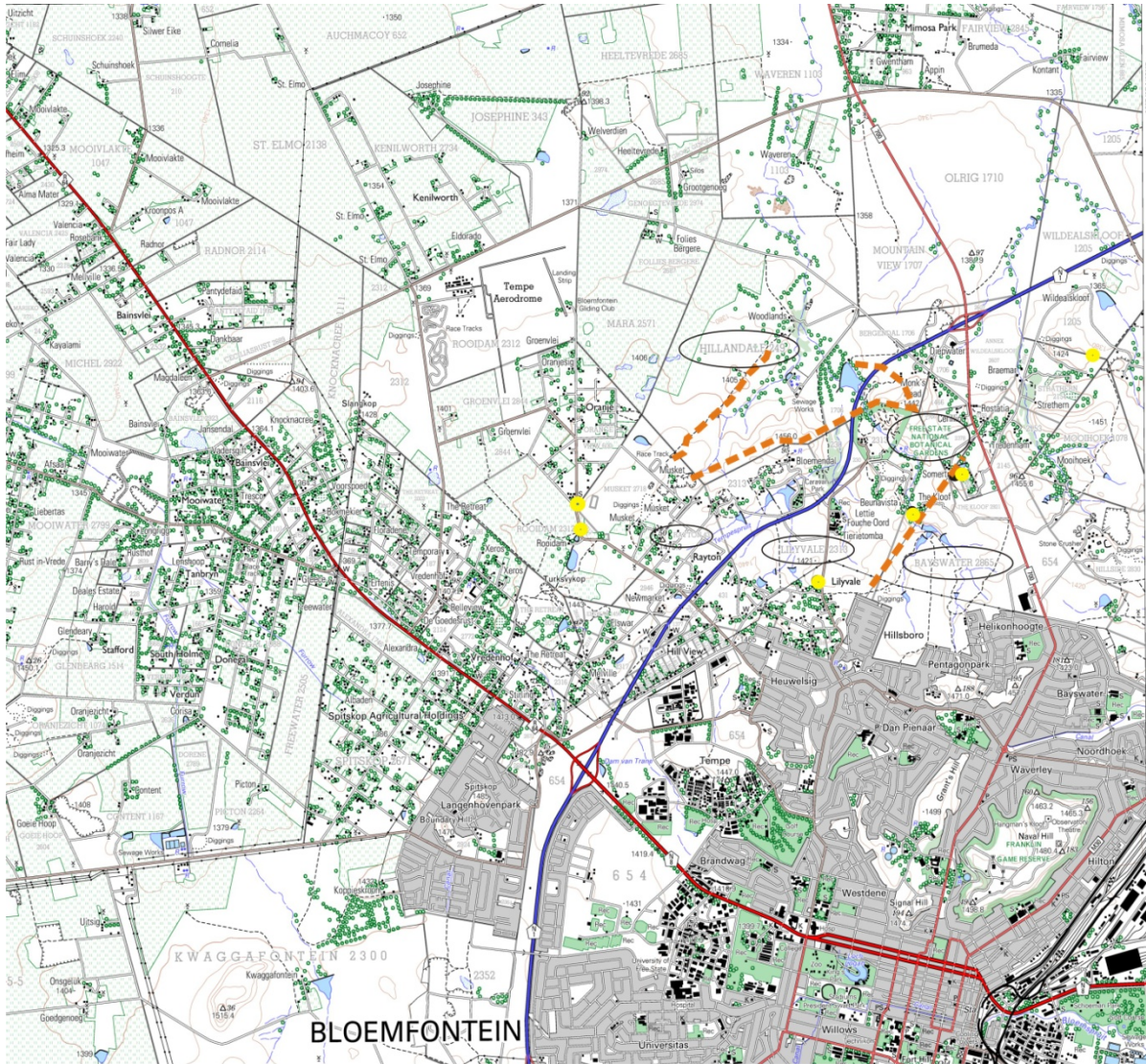


Figure 5. The position of the two power line route alternatives marked on a portion of a British military map circa 1913.



- - - - - Stone walling ● Graves / Graveyards

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 that originally ran from the water towers east of Tempe to the edge of Hillandale farm.



Figure 7. The powerline footprint primarily traverses existing road reserves, degraded farmland and areas formerly disturbed by the residential developments.

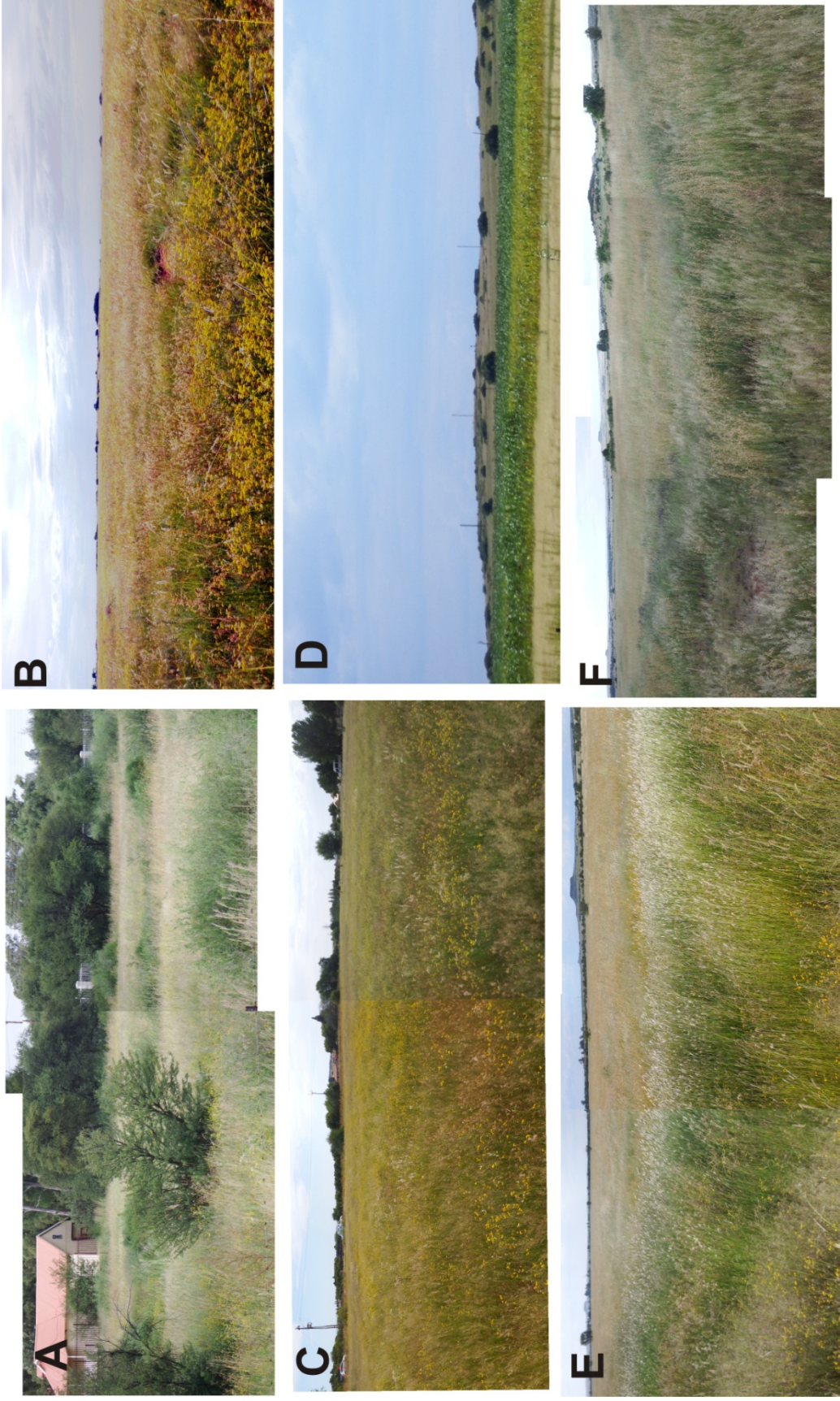


Figure 8. The distribution center footprints are located on degraded farmland, areas formerly disturbed by the residential developments and relatively undisturbed patches of open veld. A) Outspan, looking north; B) Roodam, looking northwest; C) Olivier, looking southwest; D) Teyrede looking north; E) Mimosa, looking northeast and F) Hillandale, looking northeast.