HERITAGE IMPACT ASSESSMENT FOR A PROPOSED SUBSTATION AND 66 kV DE HOEK POWER LINE AT PIKETBERG, PIKETBERG MAGISTERIAL DISTRICT, WESTERN CAPE

(Assessment conducted under Section 38 (8) of the
National Heritage Resources Act (No. 25 of 1999) as part of an EIA)

Prepared for

SiVEST Environmental Division
Unit 112 Wentworth Building, Somerset Links,
De Beers Avenue, Somerset West, 7130
Phone: (021) 852 2988 Fax: (021) 852 2660
Email: rachelles@sivest.co.za

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Prepared by

Jayson Orton

ACO Associates cc
8 Jacob's Ladder
St James
7945

Phone (021) 706 4104
Fax (086) 603 7195
Email: Jayson.Orton@aco-associates.com

EXECUTIVE SUMMARY

ACO Associates cc was requested by SiVest to assess the potential impacts to heritage resources that might occur through construction of a substation and 66 kV power line to the north of Piketberg. The line is to run from the new substation on top of the Piketberg Mountain in an eastwards direction to the base of the mountain to connect with an existing power line near the N7 national road (Figure 1). The project has a long history, having been through a total of four previous alternatives with Alternatives 5 and 6 now being assessed.

A Notification of Intent to Develop was submitted to Heritage Western Cape and in turn archaeological and visual specialist studies were requested for inclusion in the HIA.

The site was visited over two days and the alignments examined through a combination of foot and vehicle survey. The mountaintop area is relatively flat but has rocky outcrops in places. It is characterised by fruit orchards and tree lines. The east facing slopes of Piketberg, down which the line would run, is steep ground covered in fynbos. The lower slopes and flat land at the base of the mountain is almost entirely under agriculture (wheat and grapes).

Archaeological resources were found in a number of locations. None were deemed of high significance. They included an ephemeral scatter of Later Stone Age artefacts (on top of the mountain) and background scatters of Early Stone Age artefacts (all at the foot of the mountain). Only one resource of any interest was found and that was a silcrete outcrop that was used as a prehistoric stone source. Alternative 6 would traverse the edge of this outcrop with minimal impact.

Historical archaeological resources include the old 1899 pass up the mountain (this would be crossed by Alternative 6) and a ruined historical complex (this would be crossed by Alternative 5). No other heritage resources of concern were encountered.

The visual impact assessment found that impacts would vary but were generally of low-medium significance. A factor moderating the impacts is the large number of power lines already present in the area. No significant visual impacts to heritage resources are anticipated.

Subject to the approval of Heritage Western Cape and adherence to the recommendations below, the proposed project should be allowed to proceed with any combination of alternatives. Alternative 5 is, however, marginally favoured.

The following recommendations are made:

- Where possible, ridgelines should be avoided to reduce visual impacts to scenic routes;
- Direct impacts to sites KV2013/001 (the historic pass) and KV2013/002 (the historical complex) must be avoided (the lines may pass above these sites);
- The amount of vegetation clearing must be kept to a minimum, especially on the east-facing mountain slopes; and
- As far as possible, avoid constructing service roads on steep terrain where they will be visible from greater distances (should Alternative 6 be used then any required access roads should be indicated to the visual and heritage consultants prior to construction).

Contents

1. INTRODUCTION

ACO Associates cc was requested by SiVest to assess the potential impacts to heritage resources that might occur through construction of a substation and 66 kV power line to the north of Piketberg. The line is to run from the new substation on top of the Piketberg Mountain in an eastwards direction to the base of the mountain to connect with an existing power line that lies east (in the case of Alternative 5) or west (for Alternative 6) of the N7 national road (Figure 1). The project has a long history, having been through a total of four previous alternatives. As such, the present two are referred to as Alternative 5 (currently the preferred alternative) and Alternative 6.

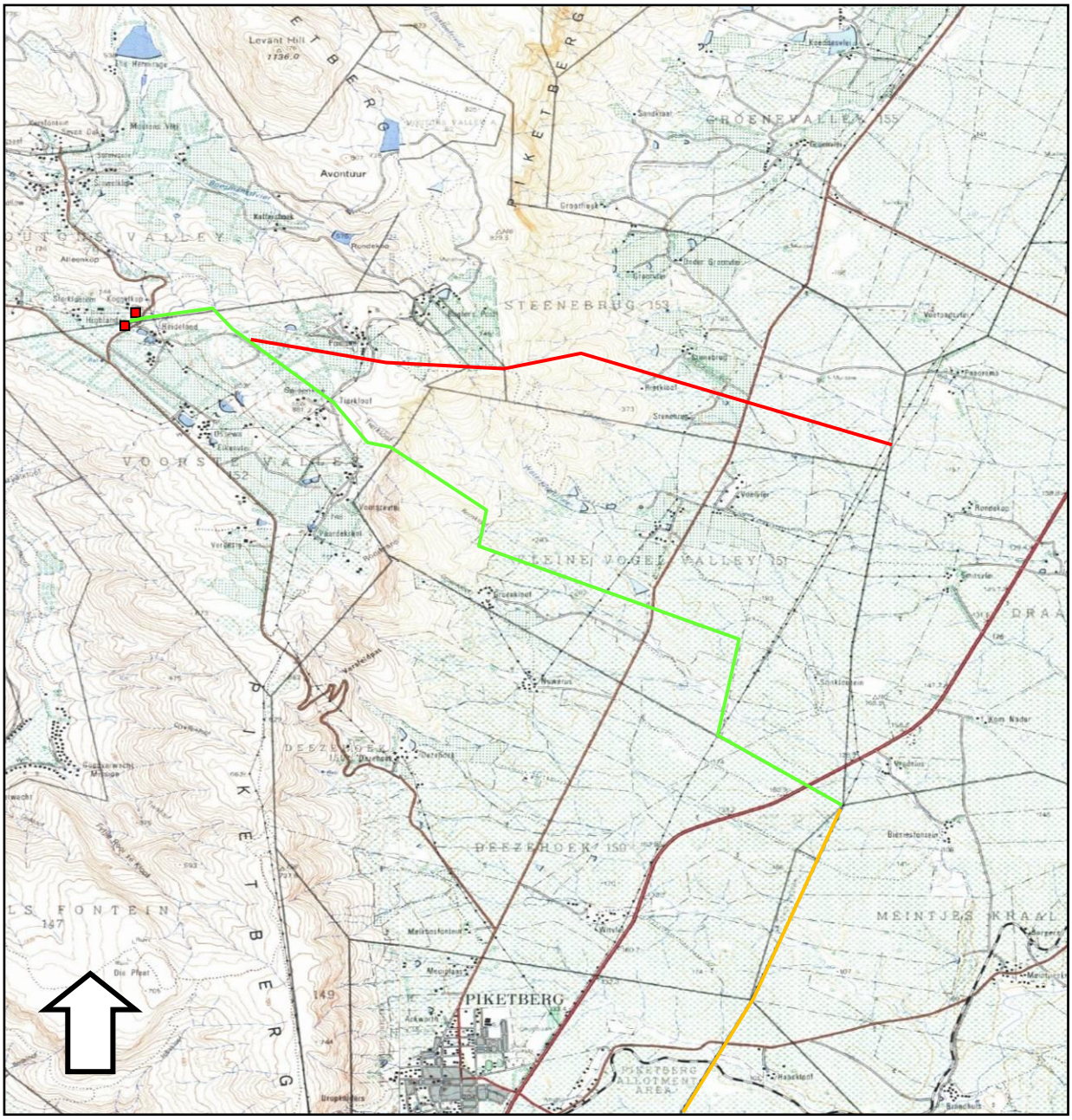

Figure 1: Map showing the location of the study area. The two proposed options for the substation are indicated by red blocks at upper left, while the preferred (Alternative 5) and alternative (Alternative 6) power line routes

are denoted by green and red lines respectively. (3218DC Moravia & DD Piketberg. Mapping information supplied by - Chief Directorate: Surveys and Mapping. Website: w3sli.wcape.gov.za)

The power line is needed due to the fact that the existing power line and substation have reached capacity and continued agricultural development on the mountain has resulted in a shortage of power. The new line is to be a 66 kV line and the substation would have a footprint of approximately 1 ha. The substation sites are unchanged from the initial study (Orton & Hart 2011). The existing line east of the N7 (extending south from Alternative 5) would also be upgraded. This will happen on the same alignment and will have no new impacts.

A large number of land parcels will be traversed. The two alternatives include various portions of farms 79, 150, 151, 152, 153, 154 and 180 (Figure 2).

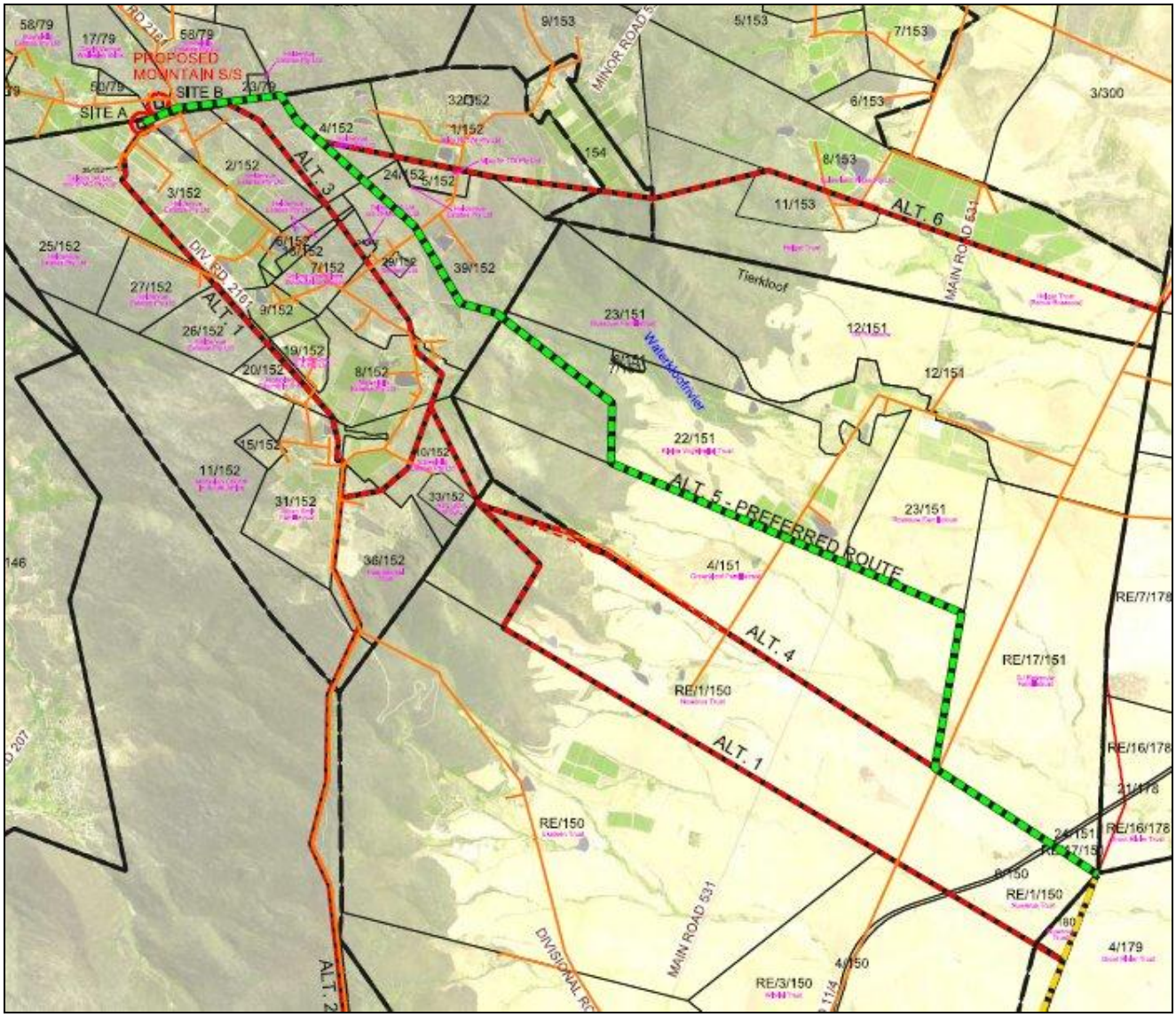

Figure 2: Diagram supplied by Eskom showing the farm portions across which the various alternatives run. Onl;y Alternatives 5 and 6 are being considered in the present report.

A notification of Intent to Develop was submitted to Heritage Western Cape (HWC) in late 2012. The response received indicated that the Heritage Impact Assessment should contain specialist assessments of archaeological resources and visual impacts. The present report fulfils this function and contains the specialist archaeological work. The visual report has

been conducted by a separate specialist and the report included here as Appendix 1. It has, nevertheless, been summarised within the HIA as required by HWC.

2. HERITAGE LEGISLATION

The National Heritage Resources Act (NHRA) No. 25 of 1999 protects a variety of heritage resources including palaeontological, prehistoric and historical material (including ruins) more than 100 years old (Section 35), human remains older than 60 years and located outside of a formal cemetery administered by a local authority (Section 36) and non-ruined structures older than 60 years (Section 34). Landscapes with cultural significance are also protected under the definition of the National Estate (Section 3 (3.2d)). Section 38 (2a) states that if there is reason to believe that heritage resources will be affected then an impact assessment report must be submitted. This report fulfils that requirement.

Since the project is subject to an Environmental Impact Assessment, Heritage Western Cape (HWC) is required to provide comment on the proposed project in order to facilitate final decision making by the Department of Environmental Affairs and Development Planning (DEA&DP).

3. METHODS

3.1. Literature survey

A survey of available literature was carried out to assess the general heritage context into which the development would be set. This literature included published material, unpublished commercial reports and online material.

3.2. Field survey

Both alternatives were subjected to foot surveys, while surrounding roads were driven to assess the cultural landscapes and views through the study area. The survey was undertaken on 07th and 08th February 2013. During the surveys the positions of finds were recorded on a hand-held GPS receiver set to the WGS84 datum. Photographs were taken at times in order to capture representative samples of both the affected heritage and the landscape settings of the proposed development.

3.3. Impact assessment

The impact assessment ratings were done using criteria supplied by SiVEST Environmental. However, a rating for ‘intensity of impact’ was added as this serves to indicate how severe the impact will be and is a key aspect in the determination of significance of impacts to heritage resources.

3.4. Limitations

At times the survey was limited by dense fynbos and grass. This was particularly the case on the top of the mountain and on its eastern slopes. We made no attempt to conduct a survey of these steep, heavily vegetated slopes since archaeology is extremely unlikely there in the absence of cliffs and rock shelters.

4. DESCRIPTION OF THE AFFECTED ENVIRONMENT

The study area is characterised by three main landscapes. The first, at the foot of the mountain, is comprised of agricultural lands. Traditionally the Swartland has been a wheat-growing area but in recent years the production of grapes has come to the fore. This is evident in the Piketberg area but wheat fields still dominate (Figures 3 and 4).

Figure 3: View west showing the alignment of Alt. 5 (white dashed line) running down from the top of the mountain. The dryland agriculture is wheat while the green areas are vineyards. Fynbos coats the mountain slopes in the background.

Figure 4: View northwest showing the alignment of Alt. 5 coming down the mountain into the agricultural lands. Note that from the base of the mountain the power line would run straight but the alignment has been affected by the topography and photographer position.

The top of the mountain is very different. It experiences more rainfall then the low lands and as such is used for fruit growing. Many orchards are present and wind breaks of pine and gum trees occur frequently. In the region where the two alternatives come together is a large tract of old agricultural lands that are recovering their cloak of fynbos. Several rocky koppies punctuate the surroundings and some patches of undisturbed indigenous vegetation also occur, particularly near the eastern edge of the mountain (Figures 5 to 9).

Figure 5: View west along the combined route towards the substation sites which are obscured from view by the rocky hill on the left edge of the photograph.

Figure 6: View northwest on Alt. 5 towards its junction

Figure 7: General landscape showing abandoned

with Alt. 6. An old road is evident between the fynbos that is recovering on the old agricultural lands.

agricultural lands and tree lines near the junction of the two alternatives.

Figure 8: View westwards on Alt. 6 which would run along the tree line at left and over the rocky hill in the distance.

Figure 9: View east from the top of the mountain showing the alignment of Alt. 6 (white dashed line). It turns leftwards (northwards) off the ridge before running past the vineyards at the foot of the mountain.

5. HERITAGE CONTEXT

5.1. Archaeology

Little archaeological research has been conducted on the Piketberg Mountain and immediate surrounds, but rock paintings are known to occur in the Piketberg massif (Johnson *et al.* 1959; Manhire & Yates 1994; Versfeld 1952; N. Wiltshire, pers. comm. 2011). An impact assessment on the northern fringe of Piketberg yielded just a single heavily weathered Early Stone Age flake (Orton 2008), while another on the eastern margin of the town yielded nothing (Halkett 2009). Further west and close to Aurora, a small scatter of quartz artefacts was located in the foothills of the mountain. The earlier EIA for this project located background scatters of predominantly ESA artefacts along a river northeast of Piketberg and also found an ephemeral scatter of LSA quartz artefacts and a rock art site on the top of the mountain (Orton & Hart 2011).

The Piketberg Museum houses a collection of artefacts, the majority of which come from a single farm to the north of the town. Included are the usual collection of Early Stone Age artefacts and Later Stone Age bored stones and grindstones. A most unusual inclusion, however, is more than half of a Khoekhoe pot with two internally reinforced, horizontally-pierced lugs (Figure 10).

Figure 10: Schematic profile of a Khoekhoe pot in the Piketberg Museum. Total height *c.* 15 cm.

A complex of historical ruins was also documented at the foot of the mountain (Orton & Hart 2011) and others like it no doubt occur widely in the region.

5.2. General heritage and history

Fransen (2004) summarises the early history of Piketberg. By 1831 thoughts of developing a local congregation were taking shape. The area separated from the Malmesbury congregation and the farm Grootfontein was purchased in 1835 for the establishment of the town, which was formally founded in 1840. A church was inaugurated in 1836 but that which currently stands on what is thought to be the same site was completed in 1882. It is a declared Provincial Heritage Site (SAHRA, n.d.). A few significant buildings date to the mid-19th century and a few more to the late 19th century, but much of the town is more recent. Particularly important though, is the last remaining pioneer-style thatched cottage which is also a declared Provincial Heritage Site (SAHRA, n.d.). Early on, the town contained many thatched “Cape Dutch” houses and a cruciform church as portrayed in an 1844 painting by Charles Bell and a later lithograph by J.C. Poortemans (Figure 11; Burger 1975). Prior to establishment of the town the first loan farms were granted in the area from 1709 onwards (Van der Merwe 1952).

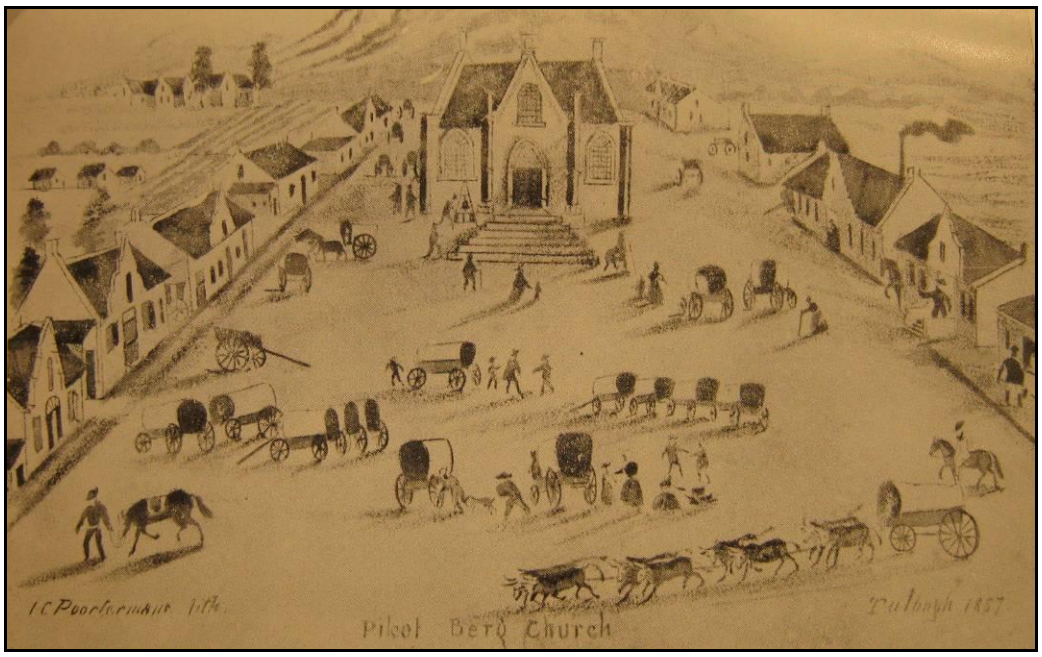

Figure 11: Lithograph by J.C. Poortemans showing the Piketberg church and surrounding "Cape Dutch" houses (Source: Burger 1975).

Significant in the area are two mission stations, Goedverwacht (started in 1845 but only achieved formal status by 1889; Fransen 2004) and Witte Water (an outpost of Goedverwacht founded in 1859). These lie to the south of the study area and, although Wittewater was affected by an earlier alternative, this is no longer the case. A survey of a road running through the western foothills of the Piketberg illustrated the wealth of historical buildings present in the outlying areas (Orton 2007). Most of these likely post-date the mid-19th century, but older buildings are certainly present. It is not uncommon to find structures already in ruin. Several farms around Piketberg retain significant buildings.

Piketberg also saw some action during the Anglo-Boer War. An attack took place to the northwest of the town on 13th October 1901 and the town itself was attached on 7th November 1901. A small blockhouse guarded the railway bridge over the Berg River at Moravia but sadly this has been completely demolished[1].

J. Versfeld bought the farm Langberg in 1868 and grew tobacco. Fruit was planted only for domestic consumption. He later bought Varstevlei and Moutons Vlei (Armstrong 1952). In 1876 he built the first road onto the top of the Piketberg, via the Goedverwacht valley. In 1899, he followed this with a pass up the eastern side of the mountain but this was replaced in 1954 and then tarred in 1958 (Truter 1998). Versfeld chose the location for the pass because it offered the only opportunity to build a road to the summit without blasting and, by including three loops, he made it possible to ascend via ox wagon. It was only after the pass afforded easy access to the mountain top that commercial fruit farming replaced tobacco and in 1923 the first commercial consignment of pears was dispatched to Great Britain. After trucks began using the pass the fruit farming industry grew rapidly (Armstrong 1952). The consulted sources do not reveal the location of the original pass, but historical aerial photographs show it to have been about 4.5 km north of the current pass. The original alignment is still faintly visible in modern aerial photographs and lies between the two alternatives being assessed here.

[1] This information was gleaned from staff and displays at the Piketberg Museum.

6. FINDINGS

Please note that the specialist archaeological findings are contained within this report with a detailed table of finds included as Appendix 1a and their mapping in Appendix 1b. Only a summary of the VIA report is included here, while the full VIA forms Appendix 2.

6.1. Archaeology

6.1.1. Stone Age

Stone Age archaeological resources were found in various places, but no *in situ* occupation sites were recorded. Early Stone Age (ESA) resources were most common and all located at the base of the mountain. Most artefacts were part of background scatters with some more dense than others (e.g. KV2013/003; Figures 12 & 13). The vast majority of artefacts were made in silcrete, while a few were in quartzite. Only one hand-axe was found; this was made on a large quartzite cobble flake (Figure 14). The material must have been brought from some distance – presumably from the Berg River to the east – as similar quartzite cobbles are not present naturally in the surrounding landscape.

Figure 12: Stone artefacts from KV2013/003 (point 021). Scale in cm.

Figure 13: A core from KV2013/003 (point 021).

Figure 14: The hand-axe found at SB2013/001 (points 016-017). Both sides and both edges are shown. The artefact is about 150 mm long, 85 mm wide and 45 mm thick.

The most interesting ESA site was one located on a silcrete outcrop. This material was no doubt sourced at this point for artefact manufacture with the result that many fragments and

small artefacts of silcrete are present all over the outcrop (Figures 15 & 16). Although no actual quarried surfaces/edges were seen, one percussion cone does indicate the point at which a strong force was delivered to the rock surface to break pieces off (Figure 17). The outcrop has survived because the farmers cannot plough over it. It is vegetated and the artefacts were found in the soil between the bushes (Figure 18).

Figure 15: Artefacts from SB2013/002 (points 018-019). Scale in cm.

Figure 16: Artefacts from SB2013/002 (points 018-019). Scale in cm.

Figure 17: The percussion cone at SB2013/002 (point 019). Scale in cm.

Figure 18: The area in which the silcrete outcrop at SB2013/002 was found.

Only in one place, on top of the mountain, did we locate a collection of Later Stone Age (LSA) artefacts. It was only a small collection, though more artefacts would undoubtedly have come to light with further searching (Figures 19 & 20). All were in quartz and one appeared to be adze-like in that it displayed retouch/working damage along both sides of one lateral margin (Figure 20).

Figure 19: Artefacts from VV2013/001 (point 001). Scale in cm.

Figure 20: Two artefacts from point 002 (near site VV2013/001). Scale in cm. The left margin of the left-hand artefact displays adze-like damage.

6.1.2. Historical period

Two important historical sites were located. The first is the historical 1899 pass to the top of Piketberg. The history behind this pass was outlined in the heritage context above. It is of relatively informal construction having been excavated out of the surface shale and soil. Excavated material was banked up slightly along the outer edge of the track to produce a low berm. In one area we noted that chunks of shale had been laid flat on the ground surface below the berm to produce an informal 'paving' that may have been to prevent erosion (Figure 22). In another place large chunks of shale had been placed along the top of the berm (Figure 23). The surface, although much deteriorated, appears to have been made by compacting clay and gravel (Figure 24). This same method was noted along the old road to the east of Clanwilliam Dam (Orton & Hart 2005).

Figure 21: The upper part of the 1899 pass (KV2013/001). This is at point 003.

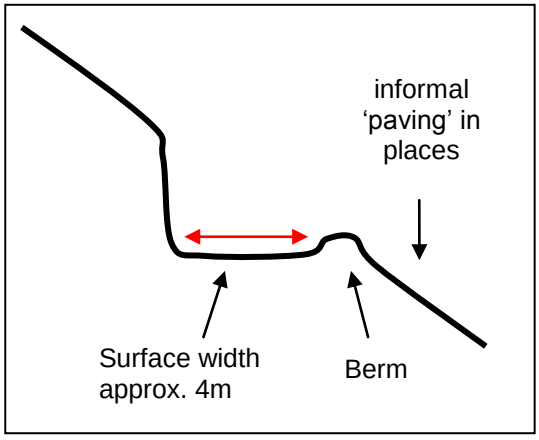

Figure 22: Schematic cross-section through the 1899 pass at point 003.

Figure 23: Stones piled alongside the 1899 pass.

Figure 24: The road surface on the 1899 pass.

The second historical site was a complex of structures no doubt related to one another. The main one is a stone and mud house ruin. Originally built as a longhouse facing south (and downhill), it had an extra room built on to the west end of the south side. A small stoep was then built into the resulting corner. A hearth was once present on the western end but this has entirely collapsed. Wooden lintels were present in at least some windows but no other joinery was evident at all. The northern wall still retains a few locally made clay bricks along the upper part. Unfortunately thick bush prevented us from seeing some parts of the structure, while other parts had collapsed. Figures 25 to 28 show aspects of the building while Figure 29 shows a floor plan.

About 80 m west of the house, in a poplar grove, is a stone and cement dam (Figure 30). It is completely silted up and has large trees growing inside it. The stream is now being diverted out of the southern edge of the dam and is undercutting the wall there (Figure 31). An iron pipe exits the base of the stone wall. Point 011 represents a probable stone feature alongside the eroded stream bed. It is of entirely unknown function and appears only to be packed stones.

Figure 25: The west end of the northern wall of the house ruin at point 009.

Figure 26: The southern wall of the added on room.

Figure 27: detail of bricks atop the stone walling on the north-western part of the house.

Figure 28: Detail of window in north-western part of the house.

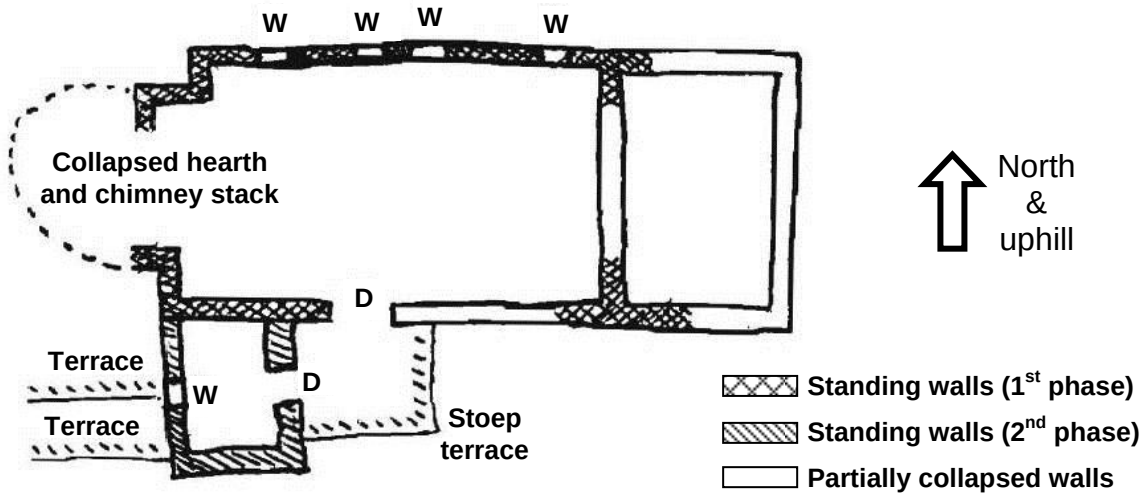

Figure 29: Schematic floor plan of the house at KV2013/002 (point 009). Windows (W) and doors (D) are indicated for the standing walls, while the other walls were too badly deteriorated and obscured by bush to determine the positions of openings. Drawing not to scale.

Figure 30: The dam wall at KV2013/002 (point 010).

Figure 31: The undercut part of the wall.

The third built component of the KV2013/002 site is probably an outbuilding, perhaps related to housing animals. It appears to have only had walls extending to about 1.4 m above ground level (Figure 32). The walls are again of stone and mud. The southwest corner was completely obscured by very dense bushes. There was an opening to the west and an extension was added to the east end. Within the southern wall of the added room was a small storage area formed by placing a large rock slab over a space in the wall (Figure 33). Part of the newer wall and a wall from the original building both were broken down where they extend northwards. Inside the north wall were two pieces of iron fastened into the wall. They are perforated and have wire tied on to them (Figure 34). In the southern wall of the addition was a small recess with two pieces of barbed wire fastened into the wall suggesting that they once supported a pole in the recess. Figure 35 shows a plan view of the structure.

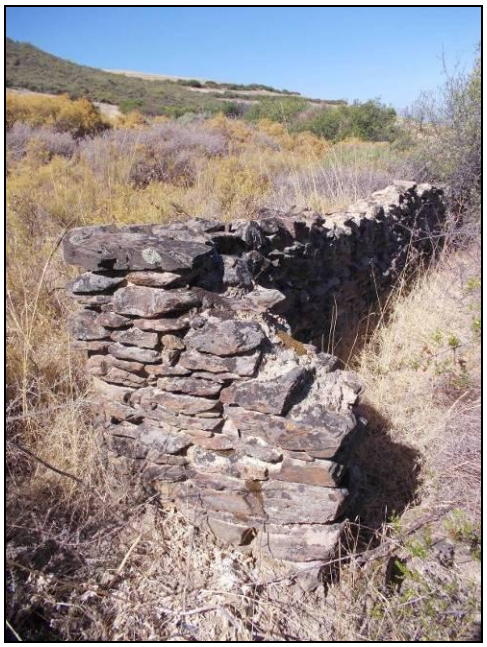

Figure 32: The outbuilding at KV2013/002 (point 012).

Figure 33 (top): The storage space in the wall.
Figure 34 (bottom): Iron and wire fastened in wall.

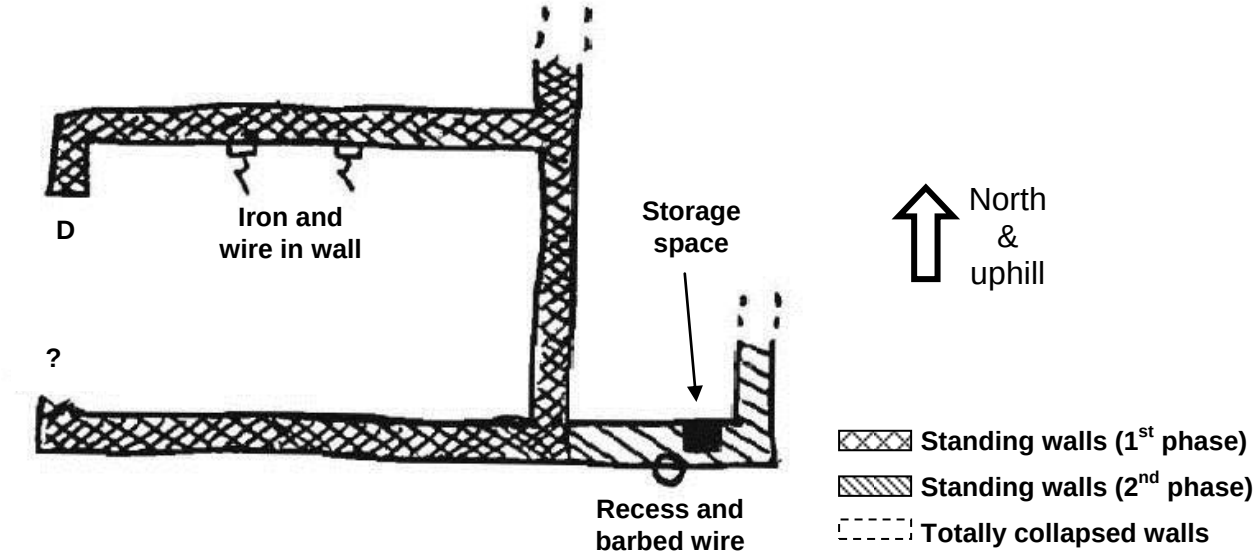

Figure 35: Schematic floor plan of the outbuilding at KV2013/002 (point 012). The door (D) is indicated. Drawing not to scale.

Close to the outbuilding, at point 013, there was a cluster of displaced building stones. No function could be discerned and they did not appear to relate to a grave. Also nearby was a single fragment of ceramic. It is not diagnostic (Figure 36).

Figure 36: The single fragment of historical ceramic found close to the outbuilding.

6.2. Visual impacts

A Visual Impact Assessment (VIA) has been conducted for the development by Anderson (2013). This section of the HIA extracts comments and observations relevant to the heritage resources of the area.

Anderson (2013) describes the landscape in terms of two 'visual units'. Firstly, the "cultivated rolling hills" are comprised primarily of wheat fields and are traversed by many existing power lines. The second is the "mountain fynbos" unit which includes cultivated areas and tree lines. Power lines and telecommunications towers occur in this landscape close to the proposed routes. Anderson (2013) notes the scenic resources to have moderate to high value.

The zone of visual influence for this project is said to be approximately 5 km, since the type of development would not be visible from further away. Various farmsteads and local roads would be visually affected, but the pass up to the top of the mountain would be protected by a ridge line. The N7 and R366 would, however, be affected. The N7 carries many vehicles, often including tourists. Due to the length of the proposed lines, the overall visibility is described as high (it is visible from a large area). Visual exposure to the identified receptors, on the other hand, is low to moderate (Anderson 2013).

Overall visual sensitivity is based on factors such as topography, geology, vegetation cover and human settlement. Human settlement can be taken as a proxy for built structures, although it is noted here that no significant heritage resources were recorded among built structures. Due to the variability in these factors and the size of the study area, its visual sensitivity varies from low to high (Anderson 2013). The greater number of trees present on top of the mountain would provide far more screening there with the result that the visual absorption capacity there is relatively high compared to the open farmlands at the foot of the mountain. The visual intrusion, which assesses the degree of compatibility of the proposed project with its surroundings, can be seen as low to moderate since many other power lines are already present and the visual permeability of the structures serves to reduce the degree of intrusion.

6.3. Other heritage

6.3.1. Built environment

No very old buildings were noted. Agricultural development only dates to the early decades of the 20th century so the vast majority of buildings date after this time. A few buildings close to the proposed routes are illustrated here as examples. Some 230 m to the south of Alternative 5 is a house that likely dates to the mid-20th century (Figure 37). Nearby (and about 160 m from Alternative 5) are two mid-20th century labourers' cottages (Figures 38 and 39). Interestingly, they are built in vernacular longhouse style with external hearth and chimney stacks on their west ends but using modern materials. The eastern one (at point 008a) was extended towards the west such that its hearth now lies inside the new end room. Oddly, the extension was not gabled.

Figure 37: Mid-20th century house at point 006.

Figure 38: Mid-20th century cottage at point 008a. It has a corrugated iron roof.

Figure 39: Mid-20th century cottage at point 008b. It has an asbestos roof.

6.3.2. Cultural landscape

Given that the agriculture on the mountain top primarily dates to the 20th century, cultural landscapes are not well entrenched there. The tree lines are relatively modern and have been planted as wind breaks for the orchards. Examples are illustrated above (Figures 5 to 8). A further item noted was an oak tree-lined avenue (Figure 40) leading to the house illustrated in Figure 37 above. The avenue is thus likely of the same age. The many trees on the mountaintop lend a strong character to the environment there.

Figure 40: Probably mid-20th century oak-lined avenue at point 007.

6.3.3. Graves

No graves were seen but there is a possibility that graves might be present within and obscured by the very dense vegetation around the historical farm complex at KV2013/002.

7. ASSESSMENT OF IMPACTS

Please note that for the purposes of heritage the impacts during and after construction are similar and these are thus conflated. The slight increase in construction-related activity is temporary and thus of little concern here.

7.1. Archaeological impacts

Archaeological impacts will be very limited. Although archaeological material occurs widely, it is generally of very low significance. Only three sites of any value were found. Impacts to SB2013/002 would be very minor while impacts to KV2013/001 and KV2013/002 should be easily mitigated. No archaeological sampling is proposed, but the two historical sites need to be avoided. The single rock art site recorded during the earlier survey is well away from either alternative and not of any concern here. Although archaeological impacts are permanent, the significance has been moderated to low based on the low heritage significance attached to the resources and the very low intensity of impacts (Table 1). Impacts at the two substation sites would similar but less probable than those for the power line routes (Table 2).

Table 1: Assessment of archaeological impacts for Alternatives 5 and 6.

Nature of impact:	Damage to or destruction of archaeological resources during construction of the power line.	
	Before mitigation	**After mitigation**
Extent	Site	Site
Intensity	Low-medium	Low
Duration	Permanent	Permanent
Probability	Probable	Probable
Reversibility	Irreversible	
Irreplaceable loss of resources	Medium	

Cumulative impacts	Low	
Significance	Very low	Very low

Table 2: Assessment of archaeological impacts for Sites A and B.

Nature of impact:	Damage to or destruction of archaeological resources during construction of the substation.	
	Before mitigation	**After mitigation**
Extent	Site	Site
Intensity	Low	Low
Duration	Permanent	Permanent
Probability	Possible	Possible
Reversibility	Irreversible	
Irreplaceable loss of resources	Medium	
Cumulative impacts	Low	
Significance	Very low	Very low

Specific mention does need to be made of the two historical sites that might be impacted. The old pass (KV2013/001) is crossed by Alternative 6. No alteration of this pass may occur. Should the power line cross the pass, it will need to be ensured that it simply spans the road and makes no physical impact on it. Alternative 5 passes over the historical complex at KV2013/002. Given the location of the complex in a deep valley, it seems highly likely that no physical impact would occur since the lines should be able to span the valley. However, if an access road is planned, it will need to be placed well around the complex (preferably to the west) to reduce the chances of intersecting concealed graves.

7.2. Visual impacts

The assessment of significance is divided into sections as follows:

- Visibility: Rated as varying between low-medium and medium-high.
- Landscape scarring: Anderson (2013) suggests that this would be negligible. Since no indication of access routes was provided in the original mapping, this was specifically sought by the present author for inclusion in the HIA report. Figure 41 shows the planned access roads on the mountainside for Alternative 5. That on top of the mountain will indeed have a negligible impact, while that to the east would only be briefly visible from a short section of the N7 due to the ridges that occur both north and south of it. Given the distance from the N7 and the transient nature of the impact, it is regarded as of low significance.
- Construction camp and vehicles: impacts are rated as of low to medium significance. (Note that no location for such a camp has been provided.)
- Change in landscape character: this is rated as varying between low and medium-high.

The impact assessment tables are contained within the appended VIA. Most impacts score a low-medium significance before mitigation with some slightly reduced after mitigation. It should be noted that the large number of similar power lines already occurring in the area serves to moderate the impacts to some degree. Mitigation relevant to heritage resources includes the following:

- Move the final route off ridge lines where possible;
- Keep the type of pylons consistent with others that already occur in the area;
- Locate lines close to existing lines where possible;

- Use designs that blend with the environment as far as possible (e.g. paint colour, height of structures); and
- Restrict new service road widths and construction areas as much as possible so as to retain the maximum amount of natural vegetation and reduce landscape scarring.

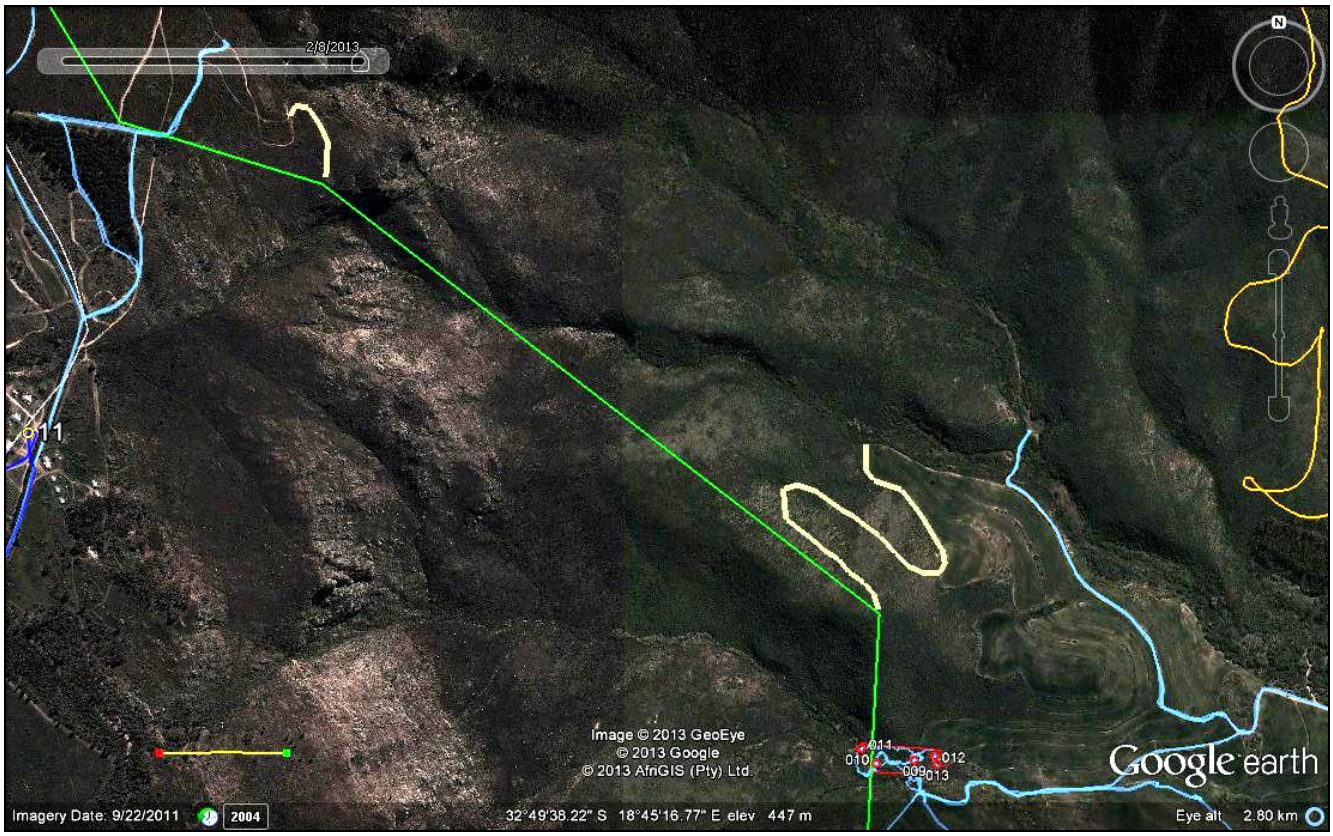

Figure 41: Aerial view showing the two access roads (beige lines) planned for the preferred Alternative 5 (green line).

7.3. Other heritage impacts

There is always the chance of intersecting an isolated grave but this is deemed to be very low here. Scenic routes (the N7 and R366) are effectively addressed within the context of the VIA and as summarised above. No other impacts of concern will occur.

8. CONCLUSIONS

From the point of view of archaeological heritage resources, any combination of substation site and power line route may be used, but alternative 5 is slightly favoured due to the smaller chance of impacting on historical archaeological resources. The VIA makes a preference for Site A for the substation (due to the lesser need for clearing of natural vegetation) and notes that while either power line route is acceptable, Alternative 5 is marginally preferred.

9. RECOMMENDATIONS

Subject to the approval of Heritage Western Cape and adherence to the recommendations below, the proposed project should be allowed to proceed with any combination of alternatives. Alternative 5 is, however, marginally favoured.

The following recommendations are made:

- Where possible, ridgelines should be avoided to reduce visual impacts to scenic routes;
- Direct impacts to sites KV2013/001 (the historic pass) and KV2013/002 (the historical complex) must be avoided (the lines may pass above these sites);
- The amount of vegetation clearing must be kept to a minimum, especially on the east-facing mountain slopes; and
- As far as possible, avoid constructing service roads on steep terrain where they will be visible from greater distances (should Alternative 6 be used then any required access roads should be indicated to the visual and heritage consultants prior to construction).

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11. INVESTIGATION TEAM

Fieldwork:	J. Orton W. Flear
Report:	J. Orton

APPENDIX 1a: HERITAGE FINDS

Table A1: Inventory of heritage finds. Note that site names (where applicable) are based on a prefix related to the original farm name, the year of recording and the site number for that farm and year.

Field Number	Site Number	Co-ordinates	Description	Heritage Significance
001	VV2013/001	S32 48 47.3 E18 45 32.8	Light scatter of LSA quartz artefacts in a farm track. Also the pine tree wind break here. Trees likely not very old.	Very Low
002	n/a	S32 48 47.3 E18 45 38.2	Three more artefacts as above, including one adze-like retouched piece.	Very Low
003	KV2013/001	S32 48 51.3 E18 45 53.4	The old 1899 pass. At this point is some informal walling on the northern (downslope) side of the pass. It has been cut into the slope with the excavated material pushed up into a berm along the opposite edge of the road. In places there are rocks packed onto the surface of the slope just below the road and there appears to have been a clay/gravel surface on the road very much like the old road past Clanwilliam Dam.	Medium
004	n/a	S32 48 36.4 E18 44 40.6	Pomona Farm. Buildings at this point are mid-20th century. Owner says oldest building on the farm is a house from the 1920s. Square land parcel was land given for a Moravian School (1950s) but now owned by Pomona again.	
005	n/a	S32 48 22.8 E18 43 12.9	Gum tree line. Probably not very old.	Low
006	n/a	S32 48 59.8 E18 44 13.4	House possibly dating to the 1950s. There are some other outbuildings and foundations of similar age to its north. There are also a few oak trees around the house. There is a large abandoned olive orchard to the west of the house.	Low
007		S32 49 03.7 E18 44 20.4	Oak tree avenue	Low
008	n/a	S32 49 08.3 E18 44 21.5	Mid-20th century labourer's cottage. It is built in traditional long house style but with no dividing walls and with a hearth and chimney stack on the west end. It was then extended to the west such that the hearth is now inside. New end was not gabled. It has a tin roof.	Low
		S32 49 07.2 E18 44 20.7	Second cottage to the west is similar but was extended to the east leaving the hearth on the west end. The original building had a single dividing wall.	Low
009	KV2013/002	S32 50 02.4 E18 45 37.4	Stone and mud ruin. Long house oriented east-west (mountain slope runs uphill to the north here) with a hearth and chimney stack (now collapsed) on the west end. A small room was added to the west end of the south side. There is some terracing extending parallel to the house from its west end wall. Impossible to measure due to extremely thick bush all round and inside ruin.	Medium
010		S32 50 02.5 E18 45 34.2	Stone and cement dam with an iron pipe exiting the base of the wall. Probably early 20th century, although may have been repacked/cemented then with original structure older. It is now completely silted up and river overflow is undercutting the wall. It lies inside a poplar forest and there are large trees all around and inside the dam.	Low

Field Number	Site Number	Co-ordinates	Description	Heritage Significance
011		S32 50 01.4 E18 45 32.9	Stone feature.	Very Low
012		S32 50 02.1 E18 45 39.2	Stone and mud ruin. Probably an outbuilding for the house. Walls seem to have only been approximately 1.4 m high. There are two metal strips built into the northern wall and they have wire tied on to them. Perhaps for tethering animals? Impossible to measure due to extremely thick bush all round and inside ruin.	Medium
013		S32 50 02.7 E18 45 39.4	Cluster of displaced building stones in the bush.	Very Low
014	n/a	S32 51 12.2 E18 47 34.2	Ephemeral ESA background scatter on silcrete. Also two smaller LSA quartz cores. This is close to the river and other small quartz artefacts may be less easily visible.	Very Low
015	n/a	S32 51 44.3 E18 47 32.8	Very ephemeral background scatter of silcrete artefacts probably of mixed age in ferricrete gravel. There are other occasional artefacts in the general area.	Very Low
016	SB2013/001	S32 49 20.2 E18 48 33.7	More extensive ESA background scatter that includes one hand-axe on a quartzite cobble flake. There is a mixture of silcrete and quartzite artefacts here.	Low
017		S32 49 22.0 E18 48 39.7		
018	SB2013/002	S32 49 23.3 E18 48 40.8	Silcrete outcrop in the bushes with many small, variably weathered silcrete artefacts all over the place. Quite a big area. Did not see quarried outcrops but did find one percussion cone (at 019). At least one faceted platform flake was seen.	Low-medium
019		S32 49 25.0 E18 48 40.5		
020	KV2013/003	S32 51 58.1 E18 47 59.0	Fairly extensive background ESA scatter of silcrete artefacts in a sandstone gravel.	Very Low
021		S32 51 54.1 E18 47 56.8		
022		S32 51 59.8 E18 48 03.7		

APPENDIX 1b: MAPPING

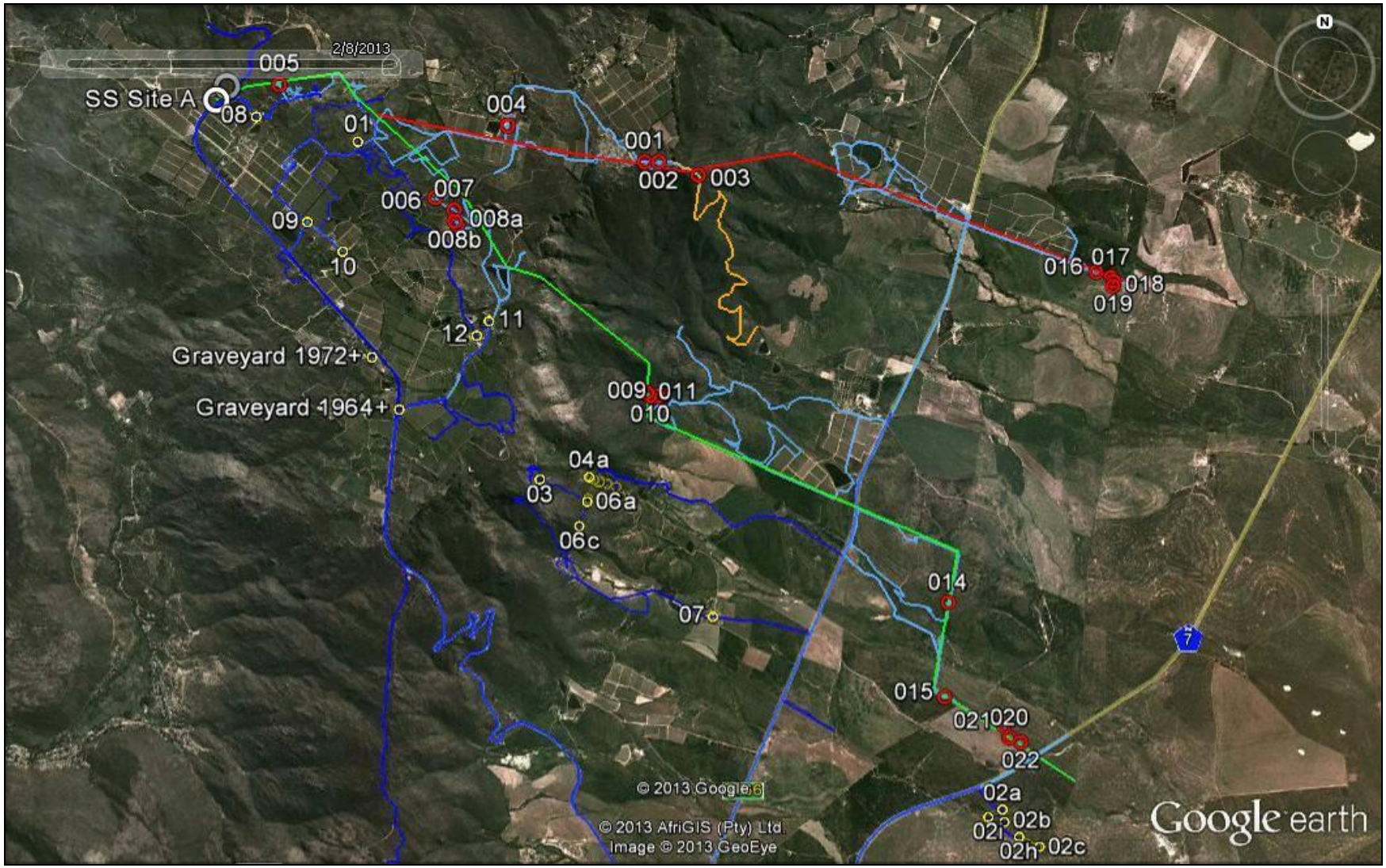

Figure A1: Aerial view of the study area showing Alternative 5 (green) and Alternative 6 (red). The walk and drive paths from the 2011 survey are shown in dark blue, while the 2013 survey is in light blue. Finds from 2011 are yellow circles, finds from 2013 are red circles.

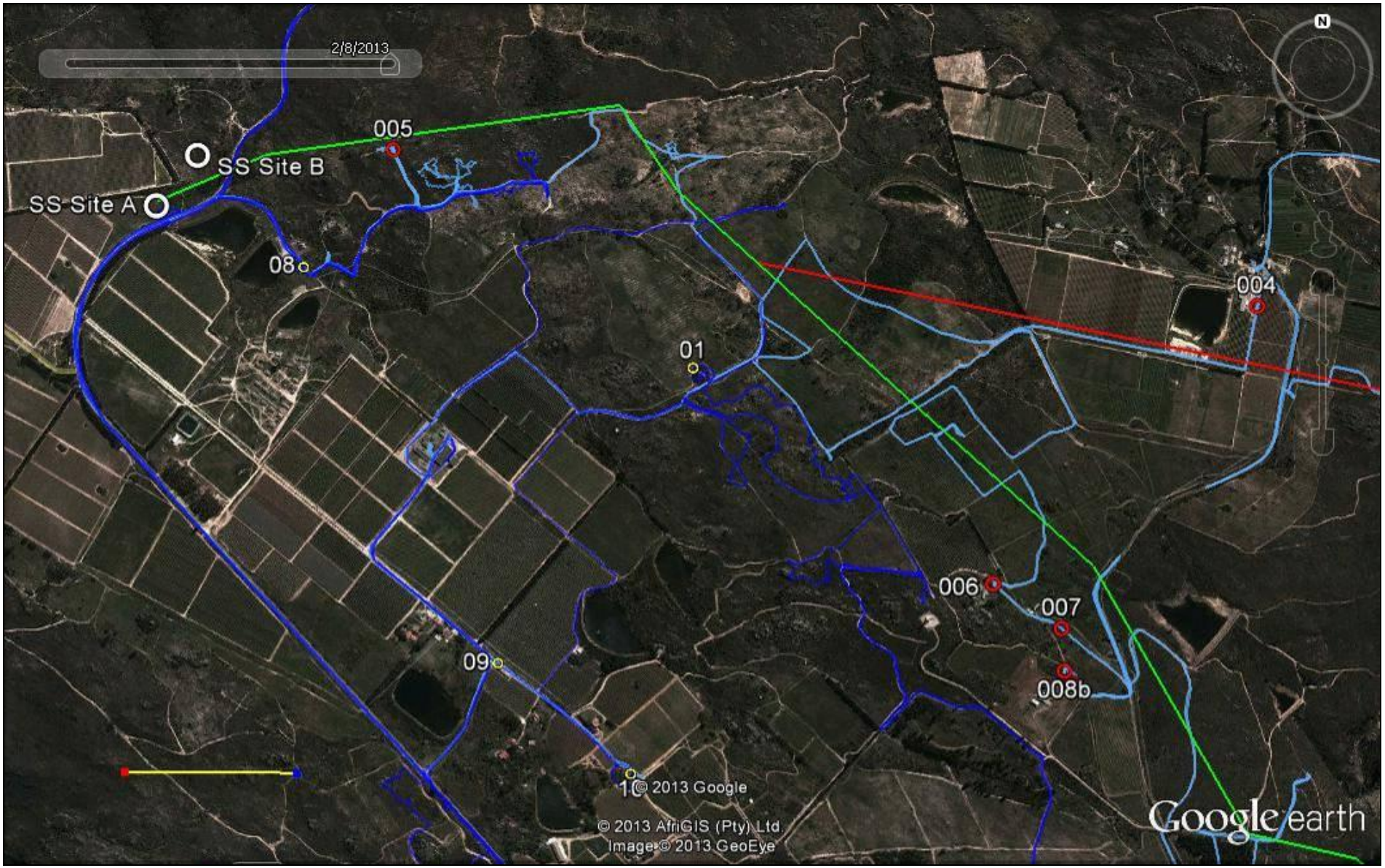

Figure A2: Aerial view of the north-western part of the study area. The yellow bar for scale at lower left is 500 m long. See Figure A1 caption for further details.

Figure A3: Aerial view of the 1899 pass showing its relationship to the two proposed Alternatives. The yellow bar for scale at lower right is 500 m long. See Figure A1 caption for further details

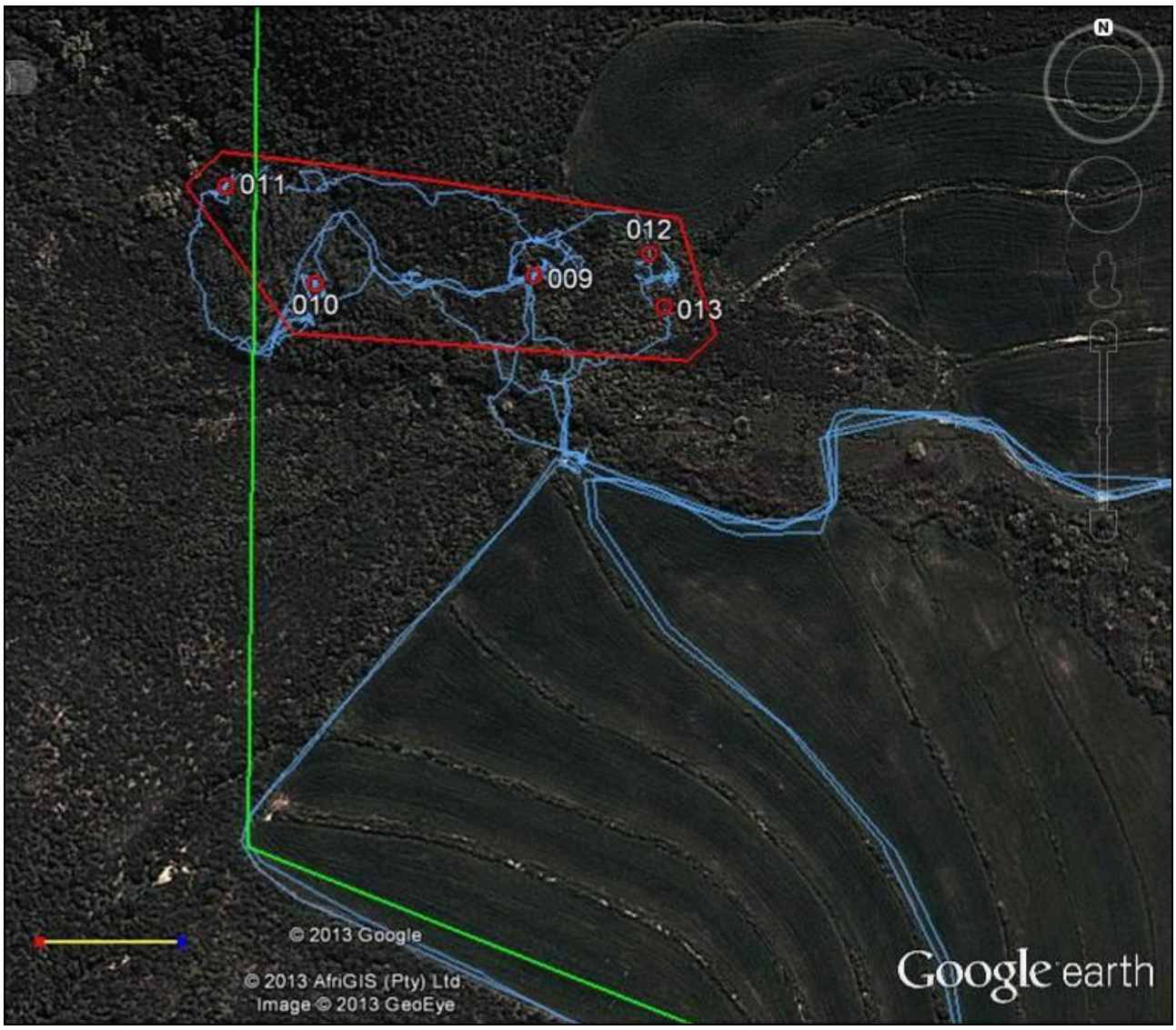

Figure A4: Aerial view of the historical site at KV2013/002 (points 009 to 013) showing its relationship to Alternative 5. The yellow bar for scale at lower right is 50 m long. See Figure A1 caption for further details

APPENDIX 2: VIA REPORT