

Final draft

HERITAGE IMPACT ASSESSMENT

submitted in terms of section 38(8) of the National Heritage Resources Act

prepared for

STRATEGIC ENVIRONMENTAL FOCUS (PTY) LTD

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BLANCO
GEORGE

Executive summary

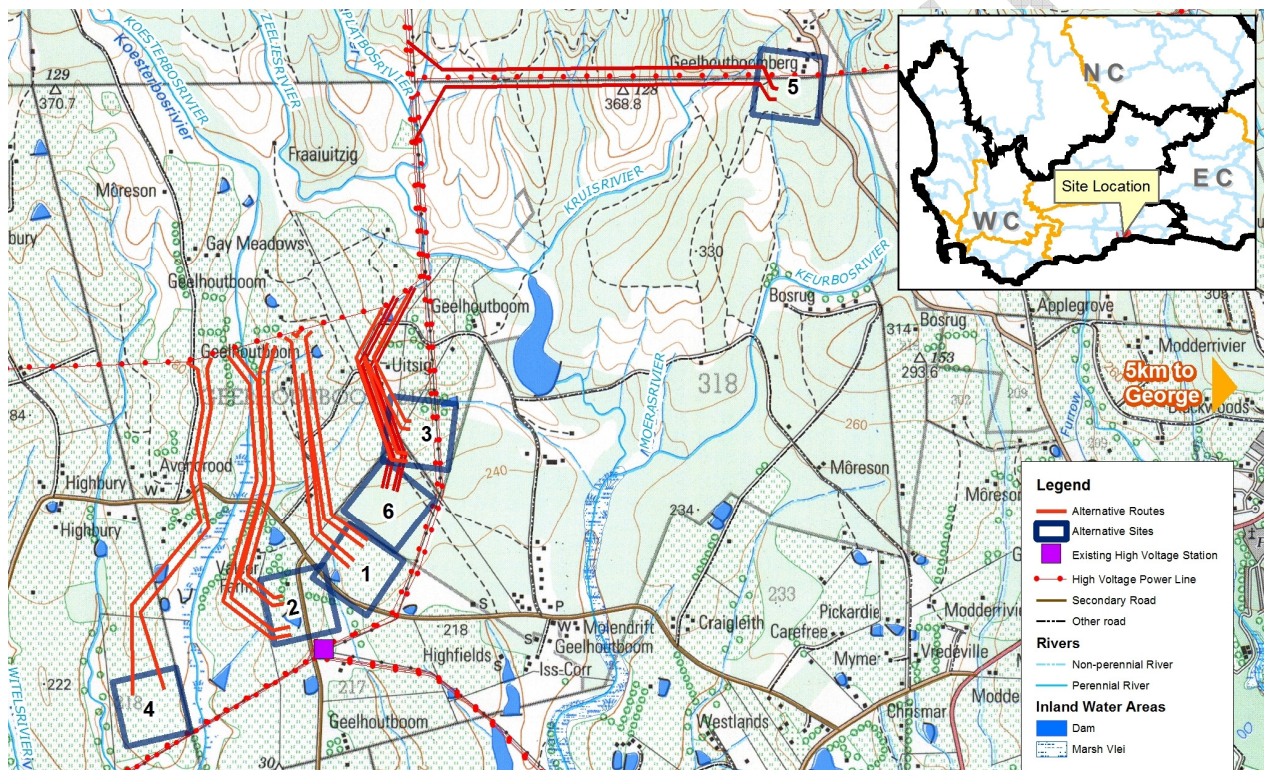
1. Site Name

Geelhoutboom Blanco, George

2. Location

Geelhoutboom, Blanco is situated approximately 10km to the west of George within jurisdiction of the George Municipality. GPS coordinates are 34° 57' 1.58" S, 22° 20' 2.63" E

3. Locality Plan



Location and geographical context of 6 alternatives for the sub-station and powerline indicated by the blue lines and polygons (3322CD & 3422AB George: Chief Director of Surveys and Mapping)

4. Description of Proposed Development

Eskom Transmission Grid Planning initiated a study to investigate possible solutions to address transformation constraints at Proteus MTS as well as the sub-transmission constraints experienced on the network supplying the Blanco area. To resolve these constraints the implementation of a new substation and powerline were considered. Initial project proposal incorporated three alternatives however Eskom included an additional number of alternatives for consideration. Seven alternative sites are proposed. The required area size for substation location is 320m x 350m to account for current and future needs/plans. The length of the turn-in lines are approximately 2.2 km, however the final distance will be determined by substation location. A 200 m buffer zone has also been considered to allow for flexibility in shifting pylon structures and in order to avoid any main areas of sensitivity.

Since completing the initial impact assessment of the proposals, changes to the size and number of the proposed substations have been proposed by ESKOM. The proposed changes include:

- Reduction in the number of alternative substation sites from 7 to 6 through the amalgamation of the old substation alternative sites 2 and 5 into a single new alternative, now referred to as Option 2
- Increase in size of the 6 individual substation alternative footprints (by an average of approximately 10 Ha each (from approx. 8.5 – 19.5 Ha
- Moderate changes to the alignment of the powerlines from the new substation alternatives 2 and 6

5. Heritage Resources Identified

Three cemeteries were identified within the Blanco broader corridors; however it should be noted that these do not fall within the proposed intervention area. ACO Associates cc undertook an Archaeological study of the proposed substation and powerline. Proposed intervention areas are considered to possess low archaeological significance. A few Stone Age archaeological sites were located but are considered to be of low significance and do not require mitigation.

The study area is considered to have a high visual and scenic quality by virtue of the landscape and environment. Sense of place is strongly pastoral, defined by green, picturesque farmland and fields set against the backdrop of the dramatic Outiniqua Mountains and punctuated by meandering, bush-lined rivers. Development outside of the towns and built up areas is domestic in scale, and sparsely spread.

Proposed site and immediate context do not fall within protected heritage areas, and is not located near to or visible from any protected heritage sites. The sites do not fall within a historical settlement or townscape and does not contribute towards a landscape of cultural significance. Proposed intervention areas are not considered as an integral component of the cultural landscape. Landscape and elements identified are considered to be of local significance.

6. Anticipated Impacts on Heritage Resources

Cottage (proposed intervention area 1) and farmworkers houses (proposed intervention area 2) could be avoided through micro siting of pylons or sub-stations. Should proposed intervention areas 1 or 2 be considered as preferred alternatives, mitigation measures incorporating a buffer area would be required to ensure no heritage impact on structures identified. No impact on archaeological resources is expected as a result of proposed intervention. Halkett states that there are no archaeological reasons to exclude the use of any of the proposed sub-station or powerline alternatives. Graveyards could be avoided through micro siting of pylons or sub-stations. Should proposed intervention areas 1 or 6 be considered as preferred alternatives, mitigation measures would be required to ensure no heritage impact on graveyards identified.

All project alternatives will be visually exposed to some extent due to the tall power line infrastructure. It is thus anticipated that all 6 project alternatives would be visible to observers and could potentially constitute a high visual prominence, potentially resulting in a visual impact. The nature of the mountainous terrain is such that it offers some degree of visual but is also sensitive to visual intrusion. The mountainous part of the study is scenic, and the construction of a power line within

such an area is highly likely to constitute a visual impact. The proposed intervention areas are identified as contributing to the scale and sense of place providing a green backdrop to the built environment. The anticipated visual impact on the landscape quality as defined by natural features (specifically the mountains) within the study area is expected to be of low significance except for moderate significance for Alternative 5.

7. Recommendations

Eskom is to select their preferred alternative based on a range of specialist studies being undertaken. From a heritage resource management perspective, Alternative 3 has been identified as the preferred alternative. Within alternative 3, mitigation measures to reduce potential visual impact should be implemented.

It is therefore recommended that:

1. Proposed intervention to establish a new substation and powerline be supported
2. Alternative 3 be noted as the preferred alternative
3. HWC issue comment that proposed intervention may proceed in terms of Section 38(8) of the NHRAct subject to the following conditions

Conditions

- Archaeologist must be informed of the selected substation site and powerline route in order to determine if a walk down must be undertaken
- If any unmarked graves containing human remains are recognised during the construction phase, the site should be cordoned off and an archaeologist must be contacted to undertake an investigation.
- The mitigation measures as stipulated by NuLeaf are adhered to in line with selected alternative

8. Authors and date

- Heritage impact assessment conducted by *vidamemoria*: Quahnita Samie and Constance Pansegrouw
- Archaeological study conducted by Dave Halkett (ACO addendum to AIA dated April 2015, and AIA February 2014)
- Heritage study commissioned by Natalie Ritsch and Ryan Jones at Strategic Environmental Focus (SEF). Project investigation Report conducted by R Randwedzi (undated)
- Visual impact assessment conducted by NuLeaf Planning and Environmental (Pty) Ltd.

Note: Heritage impact assessment is submitted to HWC for comment in terms of section 38(8).

1. Introduction

vidamemoria heritage consultants were appointed by Strategic Environmental Focus (SEF) to conduct a notification of intent to develop in terms of Section 38 of the National Heritage Resources Act (NHR Act 25 of 1999) to Heritage Western Cape for a new substation and powerline to supply the Blanco area in George. The proposed intervention is to address transformation constraints at Proteus MTS as well as the sub-transmission constraints experienced on the network supply.

Notification (ref 14031006) was submitted to Heritage Western Cape (HWC) for consideration. The proposed intervention triggers Section 38(1):

(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier over 300m in length;

(c)(i) any development or other activity that will change the character of a site exceeding 5 000 m²

HWC interim comment dated 26 March 2014 noted *the possible impact that the various proposed developments will have on various heritage resources (graves, historical buildings and possible archaeology) on the property. Therefore, a heritage impact assessment is required containing an archaeological, visual and landscape assessment*.

Quahnita Samie (*vidamemoria*) appointed Dave Halkett (ACO Associates cc) to conduct the necessary archaeological impact assessment. NuLeaf Planning and Environmental Pty (Ltd) were appointed by SEF to conduct the visual impact assessment.

Proposed intervention triggers General Notices 544 (23) and 546 (12) in terms of NEMA. Thus heritage submission is aimed at satisfying the requirements of section 38 (3) of NHRAct and is submitted to HWC for comment in terms of section 38(8).

Report structure

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Site location and description

Geelhoutboom, Blanco is situated approximately 10 km to the west of George and falls within jurisdiction of the George Municipality. The main land use categories comprise areas of human settlement (urban and rural settlements), productive areas (agriculture and forestry) and pristine natural areas (national parks, indigenous vegetated areas, coastline and ocean). The project area is however dominated by agricultural activities (livestock, dairy, maize production), water resources and indigenous vegetation.

The project area is concentrated within the Geelhoutboom area characterized by agricultural activities. GPS coordinates are 34° 57' 1.58" S, 22° 20' 2.63" E

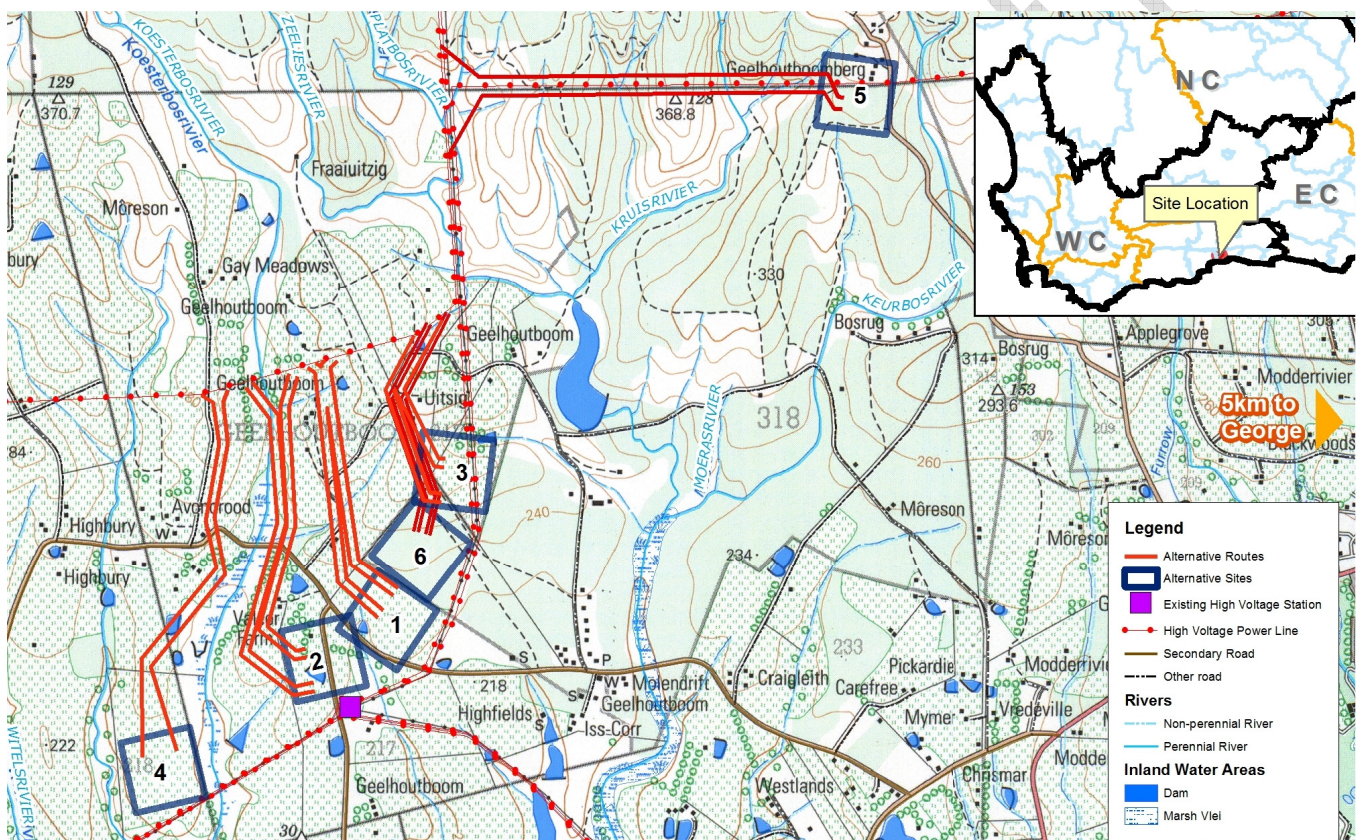


Figure 1: Location and geographical context of the 6 proposed sites for the sub-station and powerline indicated by the blue lines and polygons (3322CD & 3422AB George: Chief Director of surveys and Mapping)

The Blanco area electricity supply is gained from Proteus 400/132kV substation which forms part of the Southern Cape Customer Load Network supplied by Hydra Main Transmission System via Droerivier Main Transmission System. The following set of images depicts sites identified for each of the seven substation and power line alternatives.

Proposed intervention area 1

Proposed sub-station site lies on fallow agricultural land. Powerlines cross agricultural land before joining the existing 400kV line to the north. A small crudely fenced graveyard was identified adjacent to an old cottage to the west of the proposed alignment.



Figure 2: Small graveyard found within powerline corridor



Figure 3: Graveyard is associated with a small cottage

Proposed intervention area 2

The sub-station site lies in what was formerly a pivot irrigated field, although now appears to be given over to grazing and conventionally irrigated agriculture. Three farm workers cottages lie within the sub station buffer area. The site is diagonally opposite the existing high voltage sub-station. Proposed powerlines cross agricultural land in a north easterly direction until they meet up with the lines of alternative 4, on the other side of a stand of riverine thicket.



Figure 4: Two of the cottages that lie within the proposed sub-station buffer area.



Figure 5: Looking along the powerline route to where it crosses surviving riverine thicket.

The western edge of proposed sub-station site overlaps moderately with the eastern portion of the Alternative 2 sub station site on agricultural land immediately north of the existing Blanco high voltage sub-station. The fields were under grass and maize at the time of the visit and were not searched. The proposed powerlines cross mostly over agricultural land and riverine thicket in occasional places before joining the existing 400kV line to the north.



Figure 6: Looking to the south west from the alternative 1 substation site towards the alternative 5 sub-station site (across the road). The existing Blanco sub-station can be seen at left in the distance.

Proposed intervention area 3

The proposed sub-station site lies on agricultural land straddling a hilltop. The proposed powerlines leave the site in a westerly direction before turning to the north and passing over agricultural land to intersect with the existing 400kV line in virtually the same place as those of alternative 6.



Figure 7: Looking south towards the sea across the lower part of the alternative 3 sub-station site

Proposed intervention area 4

The proposed sub-station site lies across a number of paddocks covered by thick grass. Each paddock has a fenced irrigation point where small trees have taken root. Proposed powerlines run to the north and then north east where they overlap with proposed routes of powerlines of alternative 2. The lines initially cross grassy paddocks adjacent to the sub-station site and then over agricultural land all the way to the point where they connect to the existing 400kV powerlines.



Figure 8: The alternative 4 sub-station site crosses a number of grassed paddocks



Figure 9: The view to the north along the powerline route over adjacent farmland

Proposed intervention area 5

The proposed sub-station site lies on the lower slopes of the mountain on what appears to be old agricultural land. The site is intersected by a ridge covered in apparently undisturbed mountain fynbos. The northern boundary of the proposed site lies up against the forestry area boundary line. Rock was found to protrude through the surface in places and loose scree lies in piles where it has been removed from old ploughed areas and where roads have been cleared.



Figure 10: Vegetation covers old ploughed areas in the alternative 6 sub-station site.



Figure 11: a raised ridge covered with fynbos runs across the site from north to south. In the foreground are piles of rocks that have been cleared from fields and road.

Proposed intervention area 6

The proposed sub-station site lies on sloping fallow agricultural land between linear stands of black wattle. The proposed powerlines run towards the north over predominantly agricultural land before joining the existing 400kV line to the north. A farm cemetery is located in the bush approximately 150 meters from the north east corner of the proposed site at 33.950501°S 22.345940°E. A second small graveyard was found approximately 130 meters east of the powerline alignment at 33.940100°S 22.344010 °E



Figure 12: Looking south west across alternative 7 sub-station site



Figure 13: A large farm graveyard is located within the alternative 7 corridor.



Figure 14: A small family graveyard within the alternative 7 powerline corridor.



Figure 15: The family graveyard within the alternative 7 powerline corridor.

Description of proposals

Eskom Transmission Grid Planning initiated a study to investigate possible solutions to address transformation constraints at Proteus Main Transmission System as well as the sub-transmission constraints experienced on the network supplying the Blanco area. The Blanco area is supplied from Proteus 400/132kV substation which forms part of the Southern Cape Customer Load Network situated in the Western Grid. Southern Cape Customer Load Network is supplied by Hydra Main Transmission System via Droerivier Main Transmission System.

To resolve the above mentioned network constraints three strengthening options were considered; of which establishment of a new 400/132kV Blanco Main Transmission System with 2x500MVA transformation is recommended. The required area size for substation location is 320m x 350m to account for current and future needs.

Initial project proposal incorporated three alternatives. However, Eskom included an additional number of alternatives for consideration. The routes have changed slightly based on the orientation of the substations. A 200 m buffer zone has also been considered within assessment to allow for flexibility in shifting pylon structures to avoid any main areas of sensitivity. Seven alternative sites have been put forward as the proposed location for the substation and powerline. The length of the turn-in lines can be about 2.2 km, however the final distance will be determined by the substation location (SEF, Randwedzi).

Project description	Scope of Work	Project Benefits
Establish a new 2 x 500MVA 400/132kV Main Transmission System in the Blanco area	<ol style="list-style-type: none"> 1. Loop-in loop-out on Droerivier Proteus 400kV line to the proposed Blanco Main Transmission System 2. Establish 2 new transformations from the new 400kV busbar to the existing Blanco 132kV substation 	<ul style="list-style-type: none"> · Caters for load growth on the Distribution 132kV network. · De-loads Proteus Main Transmission System · Resolves sub-transmission N-1 voltage and thermal loading constraints · Results in saving in system losses on the 132kV network

Eskom has investigated 6 possible alternative sites for the proposed 400/132kV Blanco substation, each with an associated 400kV loop-in loop-out power line. **Alternatives are:**

Alternative 1 The proposed new 400kV/132kV substation is proposed on the northern side of the existing 132kV Yard, across the local gravel road. This is the technically preferred location because it will be easy to integrate into the existing network. The property was previously owned by Eskom but has since been sold to a local farmer. There is a pivot which will be directly affected by this alternative. The associated power line (with an approximate distance of 2.5 km) will connect with the existing high voltage power line and follow a south-easterly route across a perennial river and agricultural land where it will feed into the proposed new 400kV/132kV substation.

Alternative 2 is proposed on the western side of the existing substation across the road. This site is located on very flat land. A residential property and a cultivated agricultural land with a pivot will be affected by this alternative. The associated power line (with an approximate distance of 2.9 km) will connect with an existing high voltage power line then follow a southerly route across agricultural land and a secondary road, then at a turning point follow a south-easterly direction where it will cross over a

perennial river and tree line, and will feed into the proposed new 400kV/132kV substation. The alternative entails the construction of the substation on the portion of land adjacent to the existing Blanco distribution substation. The associated power line (with an approximate distance of 3.1 km) will connect with an existing high voltage power line, then follow a southerly direction across agricultural land, move in a south-easterly direction along the Geelhoutboom road, cross the road, and feed into the proposed new 400kV/132kV substation

Alternative 3 is proposed on the north eastern side of the existing substation, across the road. The location has a larger area and is also closer to the Droerivier Proteus 400kV line. This alternative may however affect the existing distribution line passing through the site. The associated power line (with an approximate distance of 1.7 km) will connect with an existing high voltage power line, cross a perennial river, then follow a southerly direction across a road and agricultural land and eventually feed into the proposed new 400kV/132kV substation

Alternative 4 is proposed on the south western side of the existing substation. It is however located further away from the Droerivier Proteus 400kV line. The Loop in Loop-out line will cover a longer distance compared to the other three alternatives and will affect several land owners. The associated power line (with an approximate distance of 3.7 km) will connect with an existing high voltage power line, then follow a southerly direction across agricultural land, a secondary road and a tree line until it will feed into the proposed new 400kV/132kV substation

Alternative 5 was suggested by a landowner. Suggested site had been considered and subsequently regarded as unfeasible based on the gradient of the site. An alternative area was then suggested, which is located to the east of the existing powerlines, at the foot of the mountains. The associated power line (with an approximate distance of 4.1 km) will connect with an existing high voltage power line, then follows the route of the existing 132kV powerlines heading towards Blanco, and will feed into the proposed new 400kV/132kV substation

Alternative 6 is proposed on the north eastern side of the existing substation, across the road. The location lies adjacent to the Droerivier Proteus 400kV line. The associated power line (with an approximate distance of 1.6 km) will connect with an existing high voltage power line, cross a perennial river, then follow a southerly direction across a road and agricultural land and eventually feed into the proposed new 400kV/132kV substation

Since completing initial heritage impact assessment in May 2014, changes to the size and number of the proposed substations have been proposed by ESKOM. The new proposal layout is shown in Figure 1 while the original proposal layout is shown in Figure 2 for comparison. The proposed changes include:

- Reduction in the number of alternative substation sites from 7 to 6 through the amalgamation of the old substation alternative sites 2 and 5 into a single new alternative, now referred to as Option 2
- Increase in size of the 6 individual substation alternative footprints (by an average of approximately 10 Ha each (from approx. 8.5 – 19.5 Ha
- Moderate changes to the alignment of the powerlines from the new substation alternatives 2 and 6

Figure 16 depicts original 7 alternatives and the 200 m buffer zone considered to allow for flexibility in shifting pylon structures to avoid any main areas of sensitivity. **Figure 17 depicts the 6 alternatives for consideration within this revised assessment.**

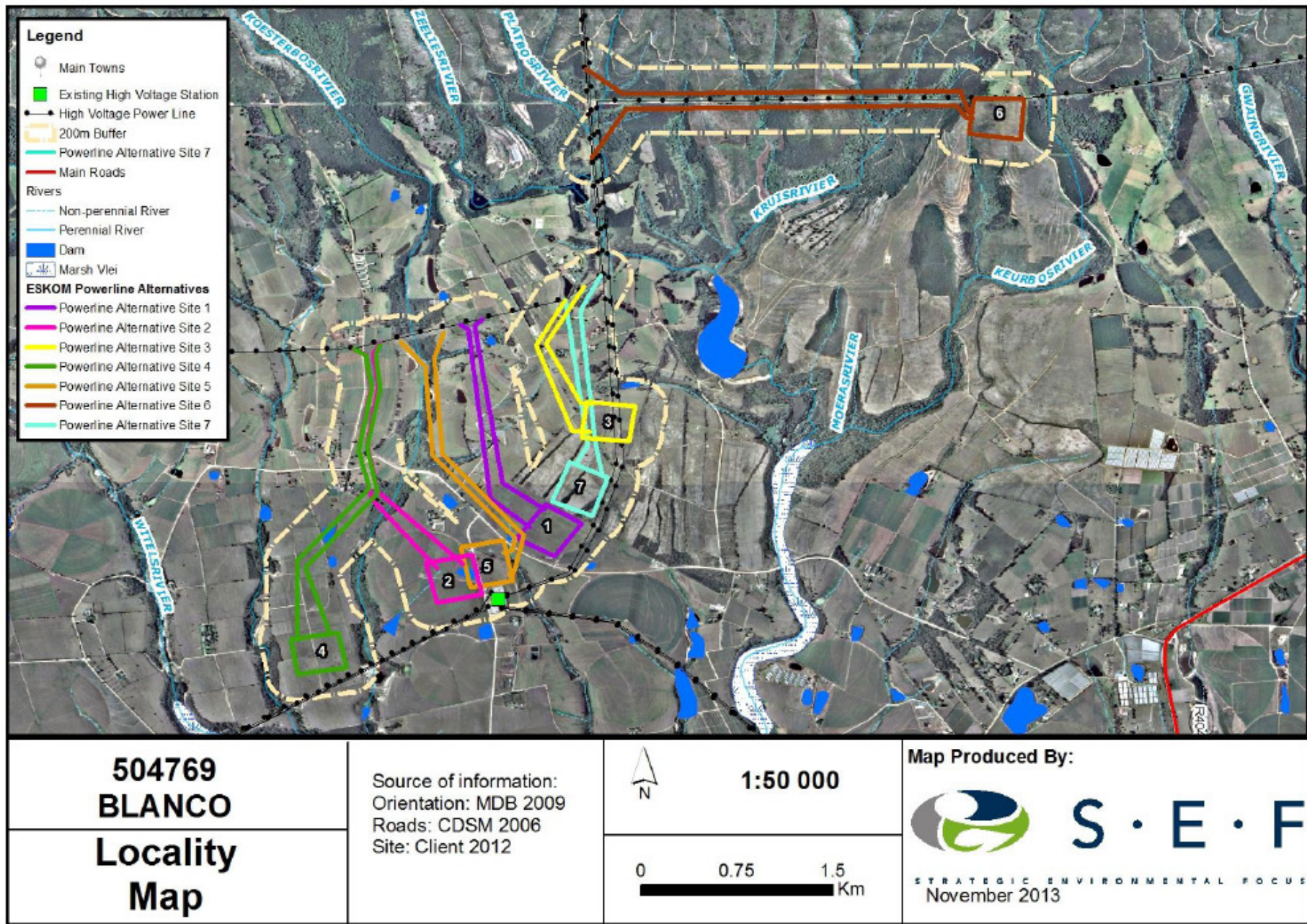


Figure 16: Seven proposed alternatives under consideration with the broader corridors indicated by light brown dashed lines

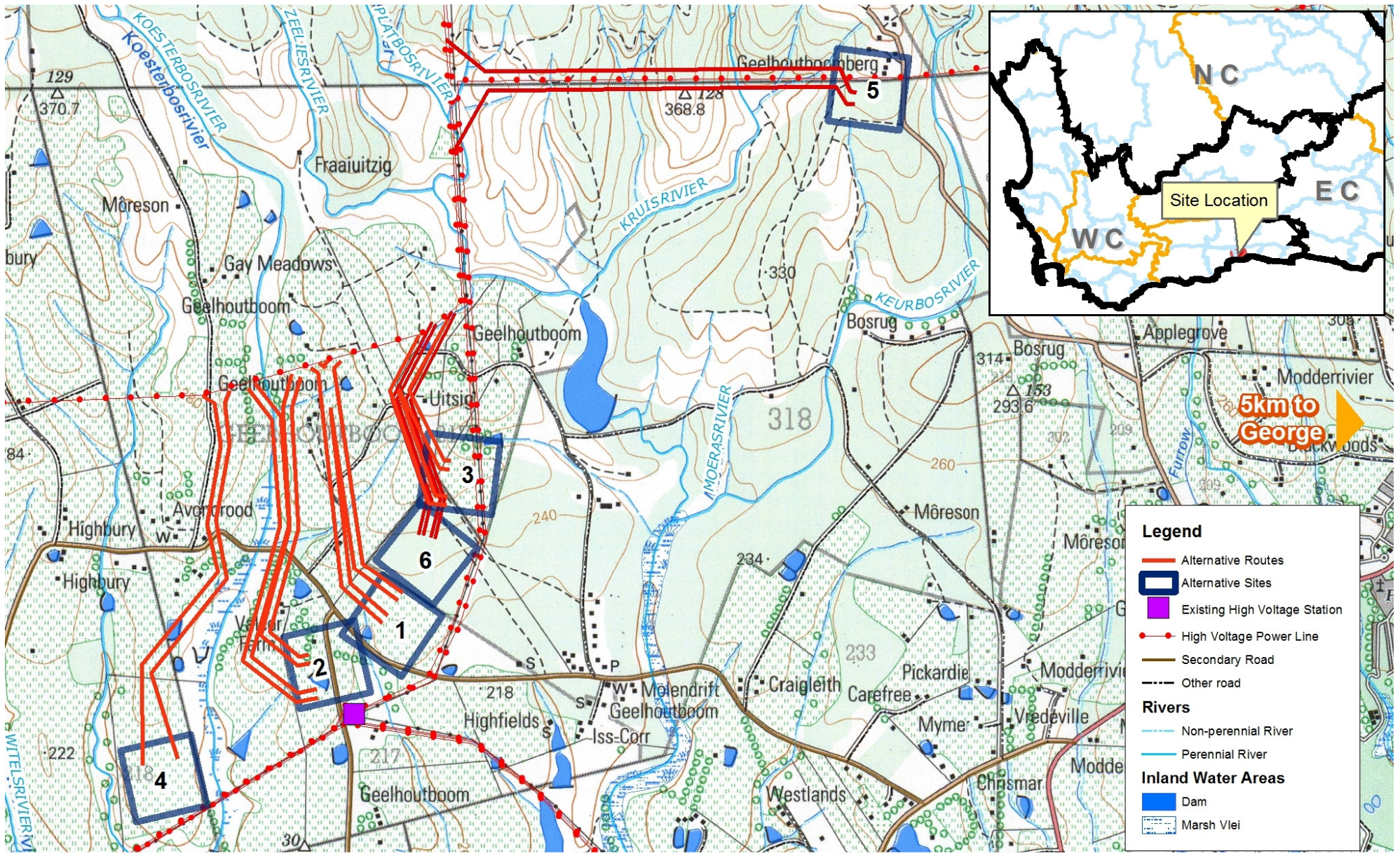


Figure 17: Six proposed alternatives under consideration with the broader corridors indicated by light brown dashed lines

2. Heritage resources

Background history of Blanco, George

Henry Fancourt White purchased a portion of the farm Modder River in 1848, of which Frances Cook bought a portion and renamed the farm Oaklands. The rest was subdivided into erven later known as a little village called 'Whitesville' named in honour of Henry Fancourt White. At the suggestion of Henry White, the name was changed to Blanco, the Spanish term for white. In 1859 Henry White built an exquisite double storey thatched mansion, which he named Blanco House. In 1903 his son Ernest Montagu White renamed the house Fancourt in honour of his father. The main route from Mossel Bay to the Langkloof passed through Blanco and commercial enterprises were soon established along the route and the village was also the main postal centre. Physical character of agricultural area that developed to the west of Blanco is characterised by major elements including mountain backdrop of the Outiniqua Mountains, farming hills and associated development and infrastructure.

Structures identified

Proposed intervention area 1: Cottage located at proposed intervention area 1

Proposed intervention area 2: Three farm workers cottages lie within the substation area



Figure 18: Cottage located at proposed intervention area 1



Figure 19: Farmworkers cottages within the proposed substation area at proposed intervention area 2

Archaeology

Dave Halkett (ACO) conducted an archaeological impact study on the seven alternative sites. He provided a report identifying and assessing archaeological resources, associated impact, assessment of significance and recommendations regarding any mitigation required. The report highlighted the presence of three cemeteries within the broader corridors and a few Stone Age archaeological sites were noted. The broader corridor area comprising the 200 m buffer area around the proposed intervention areas were not physically examined but Halkett concluded that there should be little to no archaeological heritage issues arising if infrastructure is accommodated within the corridors.

Proposed intervention area 1: No archaeological issues were identified. A small crudely fenced graveyard was identified adjacent to an old cottage located within the buffer area

Proposed intervention area 2: No archaeological issues were identified. Fields were under grass and maize at the time of the visit and were not searched; however no archeological issues were anticipated. No archaeological issues were identified.

Proposed intervention area 3: No significant archaeological issues were identified in the site area. Within the buffer area, small crudely fenced graveyard was identified adjacent to an old cottage approximately 130 meters east of the powerline alignment containing s 3 formal graves with headstones

Proposed intervention area 4: No archaeological material was observed. No archaeological issues detected along the route.

Proposed intervention area 5: Archaeological material in the form of a very low density artefact scatter was identified in amongst the vegetation at 33.926690°S, 22.371710°E. Quartz is the predominant raw material with cores, flakes, chips and chunks being noted. While one or two pieces were reminiscent of Middle Stone Age (MSA) forms, the material could equally date to the Later Stone Age (LSA). No other non-lithic materials were found in association to assist with age determination. A single Earlier Stone Age (ESA) artefact in quartzite was noted on the track alongside quartz pieces at 33.926999°S 22.372362°E. No other ESA pieces were identified within scree piles at the edges of the old fields.



Figure 20: A low density quartz artefact scatter was found on the lower part of the site



Figure 21: A single ESA artefact was found on the track alongside additional quartz pieces

Proposed intervention area 6: No archaeological issues were identified on the site itself. A farm cemetery is located in the bush approximately 150 meters from the north east corner of the proposed site (alternative 7) at 33.950501°S 22.345940°E. There appear to be in excess of 50 graves and is clearly still in use by the local community as evidenced by fresh grave goods and one recently dug but still unused grave. Some of the graves on the northern periphery are overgrown making estimates of the number of graves difficult. A second small graveyard was found approximately 130 meters east of the powerline alignment at 33.940100°S 22.344010°E containing three formal graves with headstones

Landscape

Physical character of place is attributed to major elements including mountain backdrop of the Outiniqua Mountains, farming hills, valley streams and associated vegetation, pastures, farmlands and tree belts including wind breaks. Development is domestic in scale and sparsely spread within the landscape. Key viewsheds per alternative have been identified within the visual impact assessment.



Figure 22: Visual quality of the study area (NuLEaf, 2014: 13)



Figure 23: Pastoral sense of the study area (NuLEaf, 2014: 14)

Proposed intervention area 1: viewsheds include settlements and homesteads of Gay Meadows, Geelhoutboom, Avondrood, Valcor Farm, Highfields and Uitsig

Proposed intervention area 2: viewsheds include settlements and homesteads of Geelhoutboom, Avondrood, Highbury and Valcor Farm

Proposed intervention area 3: viewsheds include settlements and homesteads of Geelhoutboom and Uitsig

Proposed intervention area 4: viewsheds include settlements and homesteads of Gay Meadows, Geelhoutboom, Avondrood, Highbury and Valcor Farm

Proposed intervention area 5: viewsheds include the homestead of Geelhoutboomberg and other smaller homesteads

Proposed intervention area 6: viewsheds include settlements and homesteads of Geelhoutboom and Uitsig

Heritage significance

Proposed site and immediate context do not fall within protected heritage areas, and is not located near to or visible from any protected heritage sites. The site does not fall within a historical settlement or townscape and does not contribute towards a landscape of cultural significance. Proposed intervention areas are not considered as an integral component of the cultural landscape. Proposed alternative lie outside of the urban edge of George and Blanco bordered by mountains to the north with much of the immediate context still farmed. Landscape and elements identified are considered to be of **local significance**.

Structures identified

Blanco House (Fancourt) as well as Bains Trace are not located within any of the proposed intervention areas.

Proposed intervention area 1: The cottage located on Alternative 1 is believed to have originally been occupied by the deceased Landmans, is currently occupied and considered to possess local heritage significance.

Proposed intervention area 2: The farmworkers cottages found in proximity to Alternative 2 appeared to be of fairly recent construction and have no heritage significance.

Visual

The study area is considered to have a high visual and scenic quality by virtue of the landscape and environment. Sense of place is strongly pastoral, defined by green, picturesque farmland and fields set against the backdrop of the dramatic Outiniqua Mountains and punctuated by meandering, bush-lined rivers. Development outside of the towns and built up areas is domestic in scale, and sparsely spread (NuLeaf 2014:13).

Landscape

The significance of the site has been considered at a local scale and considers historical and contextual significance. Landscape assessment criteria used in the evaluation and grading of cultural landscapes have been considered:

Landscape assessment criteria	Landscape significance
<i>Landscapes as a resource:</i> resource of national or regional/provincial significance with regard to its rarity and representivity	<ul style="list-style-type: none">· The context of development alternatives do not possess elements contributing to the landscape that can be considered as rare· The landscape displays limited characteristics that would set it apart from other, similar landscapes
<i>Scenic quality:</i> a high scenic quality, with pleasing, dramatic or vivid patterns of landscape features	<ul style="list-style-type: none">· Study areas of alternatives 1, 3 and 5 are considered to possess high scenic quality
<i>Unspoilt character:</i> unspoilt, without visually intrusive urban, agricultural or industrial development or infrastructure	<ul style="list-style-type: none">· The landscape for proposed alternatives is considered as unspoilt other than agricultural use and associated development and infrastructure· The broader context comprises pockets of dense urban development
<i>Harmony with nature:</i> should demonstrate a good example of the harmonious interaction between man and nature, based on sustainable land use practices	<ul style="list-style-type: none">· The immediate context bears reflects relationship between site and historical agricultural uses
<i>Cultural and living tradition:</i> bears testimony to a cultural tradition or associated with events or living traditions, ideas or beliefs	<ul style="list-style-type: none">· Association to agricultural practice has relevance within the landscape

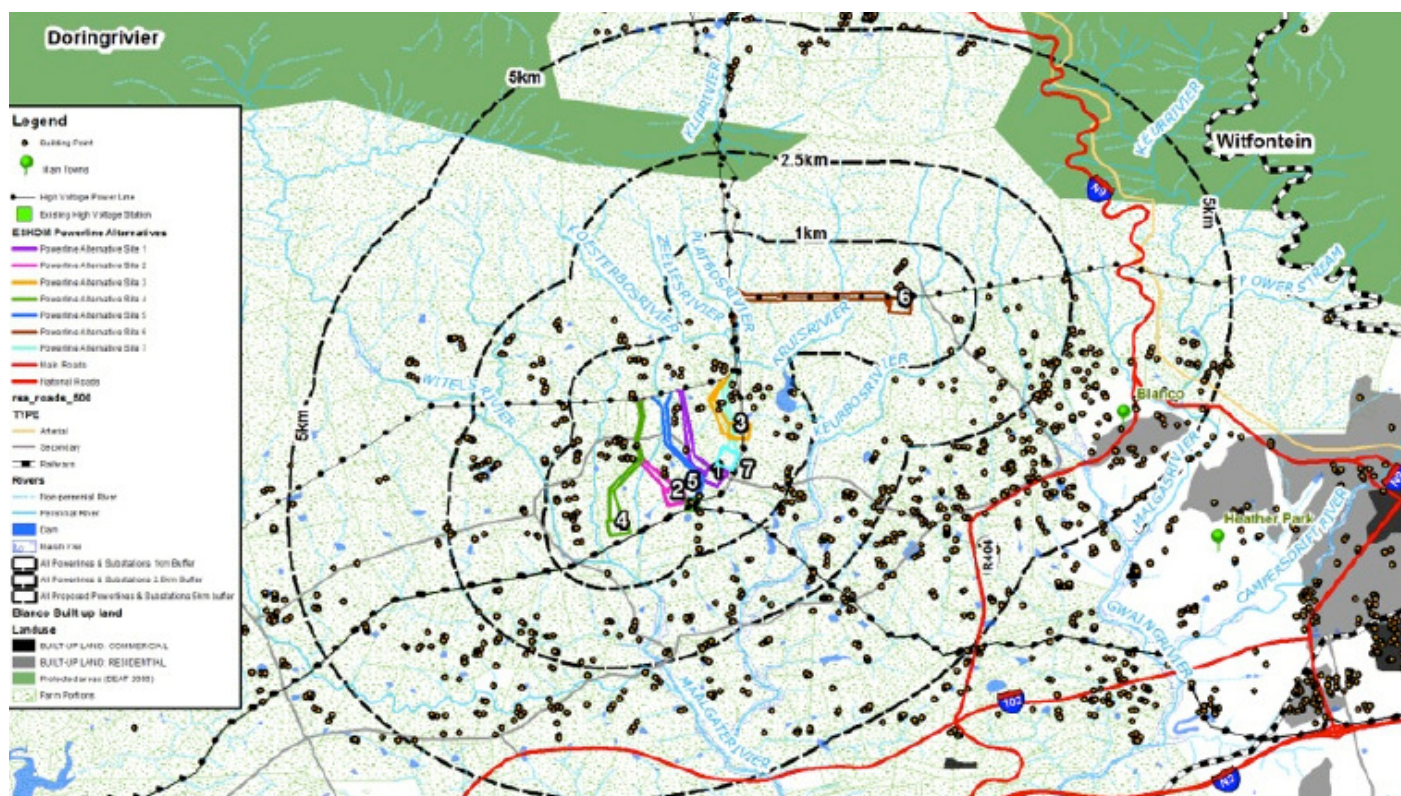


Figure 24: Conservation and Protected Areas within the study area (produced by SEF, NuLeaf 2014: 16)

The study area includes two formally protected conservation areas, namely the Doringrivier Nature Reserve to the north west and the Witfontein Nature Reserve to the north east. Both reserves fall within the Outeniqua Mountains (indicated in green on the above diagram). Vegetation units of the receiving environment consist of Critically Endangered Cape Lowland Alluvial Vegetation, Endangered Garden Route Granite Fynbos, Vulnerable Garden Route Shale Fynbos, and Vulnerable Southern Cape Afrotemperate Forest.

Summary of significance of heritage resources per route alternative

Significance of heritage resources per route alternative				
	Archaeological	Structures	Visual	Landscape
Alternative 1	Local high significance	Moderate local	High sensitivity	Moderate – High sensitivity
Alternative 2	None identified	No heritage significance	High sensitivity	High sensitivity
Alternative 3	Local high significance	None identified	Moderate sensitivity	Moderate – High sensitivity
Alternative 4	None identified	None identified	Moderate sensitivity	Moderate sensitivity
Alternative 5	Low significance	None identified	Moderate sensitivity	Low sensitivity
Alternative 6	Local high significance	None identified	Moderate sensitivity	Low - Moderate sensitivity

Archaeology

Proposed intervention areas are considered to possess low archaeological significance. Stone Age archaeological sites identified are considered to be of low significance and do not require mitigation (Halkett 2014: 12). Three graveyards noted in the vicinity of the proposed intervention area considered to be of high local significance. Table extracted from Halkett (2014: 10-11) highlights significance of archaeological resources identified.

Site	Lat-Lon	Description	Significance
Alt 6 D001 D002 D002a D003	33.95056°S 22.34620°E 33.95016°S 22.34604°E 33.95031°S 22.34559°E 33.95060°S 22.34592°E	Large farm cemetery with estimated 100 – 150 graves. Still in use. Simple earth mounds with variety of grave markers – predominantly wooden crosses but other materials also used. Some graves have cement and brick surrounds but are in the minority. Graves to the NW are overgrown and unattended while those in the south are in a clearing and more recent. It lies in the corner of a fenced camp but is otherwise unfenced.	Local high
Alt 5 D004	33.92669°S 22.37171°E	Dispersed scatter of quartz debitage, flakes, chips, chunks, cores over wide but nevertheless definable area. Age is uncertain but most likely to be LSA although some pieces show possible MSA characteristics.	Low
Alt 5 D005	33.92700°S 22.37236°E	A single Earlier Stone Age artefact in quartzite was noted on the track alongside a few pieces of quartz debitage.	Low
Alt 1 D006	33.95094°S 22.33557°E	Small, easily visible cemetery (Landman). Single large grave containing husband and wife. Elaborate marble formal headstone. Casually fenced with mesh (Plate 6).	Local high
Alt 3 L001	33.94010°S 22.34401°E	Small, easily visible cemetery (Gericke) - 3 discrete formal graves with cement surrounds and cement headstones. Name visible on only the middle one of the gravestones. Casually fenced with wire (Plate 10/10a).	Local high

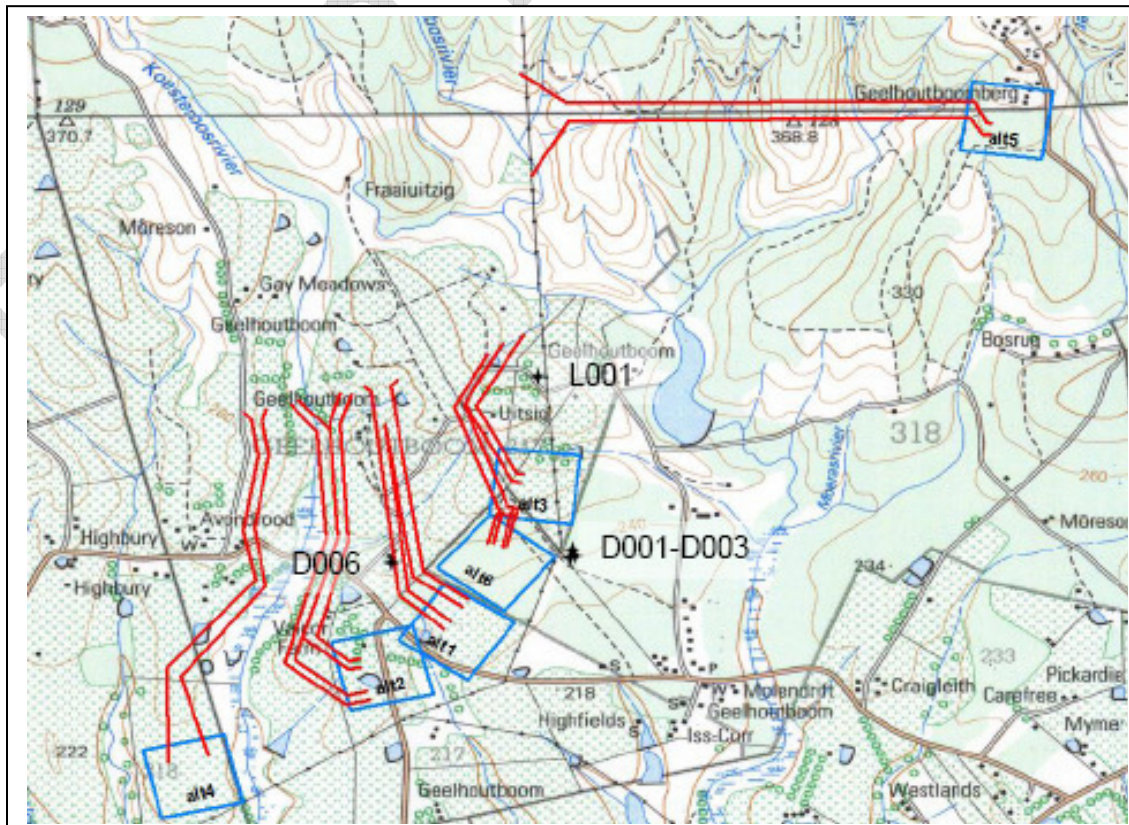


Figure 25: Location of cemeteries in relation to proposed 6 alternatives sub-station and line options (Halkett 2015:4)

Heritage indicators

Heritage indicators are identified to ensure that significance would not be adversely impacted by proposed intervention. Indicators relate specifically to impact on built structures, archaeological resources, graveyards and landscapes considered to be of local heritage significance. The key heritage indicator is the retention of rural character of the landscape.

Structures identified

Proposed intervention area 1: The cottage should not be impacted on by construction of substation or power lines

Proposed intervention area 2: Farmworkers houses should not be impacted on by construction of substation or power lines

Archaeology

Proposed intervention area 5: Archaeological material in the form of a very low density artefact scatter were considered to be of low significance. No heritage indicators in this regard are recommended.

Graveyards should be avoided through micro siting of pylons or sub-stations and must not be disturbed by any infrastructure.

Proposed intervention area 1: Small crudely fenced graveyard was identified adjacent to an old cottage

Proposed intervention area 6: Farm cemetery located in the bush approximately 150 meters from the north east corner of the proposed site and second small graveyard was found approximately 130 meters east of the powerline alignment

Visual

Proposed infrastructure will be visible within an area that is generally considered as possessing high quality natural and scenic value. Infrastructure will be visible within an area that would affect residents of homesteads and visitors of the area, who would consider visual exposure to this type of infrastructure to be intrusive (NuLeaf 2014: 29, 71).

Results of consultation

The George Heritage Trust is listed as a registered conservation area within George. No response was received from the Trust and the following organizations and individuals were approached for comment:

- George Heritage Museum. No comment regarding proposed intervention noted
- Natie de Swardt (Local historian and chairman of the Simon van der Stel Foundation). Mr de Swart endorsed the findings of the archaeological impact assessment and heritage report

No further heritage related comments and / or concerns were noted.

3. Assessment of impacts

An assessment of potential development impacts on significance considers identification of heritage resources, significance and indicators. Assessment of impacts on archeological resources is outlined as well as consideration of the landscape and assessment of cumulative impacts.

Structures identified

Cottage (proposed intervention area 1) and farmworkers houses (proposed intervention area 2) could be avoided through micro siting of pylons or sub-stations. Should proposed intervention areas 1 or 2 be considered as preferred alternatives, mitigation measures incorporating a buffer area would be required to ensure no heritage impact on structures identified. Blanco House (Fancourt) as well as Bains Trace are not located within any of the proposed intervention areas and will not be affected by proposed intervention. No heritage impact is thus expected.

Archaeology

No impact on archaeological resources is expected as a result of proposed intervention. Halkett (2014: 14) states that there are no archaeological reasons to exclude the use of any of the proposed sub-station or powerline alternatives. No heritage impact is expected. Halkeet (2015: 1) notes that the conclusions and recommendations of the original archaeological impact assessment still apply. Applicable recommendations are reiterated within this revised assessment.

Graveyards

Graveyards could be avoided through micro siting of pylons or sub-stations. Should proposed intervention areas 1 or 6 be considered as preferred alternatives, mitigation measures would be required to ensure no heritage impact on graveyards identified.

Visual

All project alternatives will be visually exposed to some extent due to the tall power line infrastructure. It is thus anticipated that all 6 project alternatives would be visible to observers and could potentially constitute a high visual prominence, potentially resulting in a visual impact (NuLeaf 2014:17). The nature of the mountainous terrain is such that it offers some degree of visual absorption (ie. towards the north of the Outeniqua Mountain Range), but it is also sensitive to visual intrusion. The mountainous part of the study is scenic, and the construction of a power line within such an area is highly likely to constitute a visual impact. This would be rendered more significant due to the sensitive nature of the natural features.

Overall, the Visual Absorption Capacity (VAC) of the receiving environment is deemed to be low by virtue of low growing vegetation and small scale of development. High VAC is expected along roads passing through plantation areas, but as a plantation is a temporary land use, such VAC was not considered within the visual assessment, thus assuming a worst-case scenario. A comparative assessment of the 6 project alternatives revealed that overall, considering all relevant criteria, Alternatives 3 and 6 are considered most preferable from a visual perspective. Alternatives 2 and 5 are also considered acceptable. Alternatives 1 and 4 are the least preferable from a visual perspective. None of the project alternatives were however considered fatally flawed from a visual perspective (NuLeaf 2014: 70)

A summary of Visual impacts were provided by NuLeaf (2014:72-73):

- The visual impact sensitive visual receptors (i.e. users of main roads and residents of homesteads and settlements) in close proximity to the proposed infrastructure (i.e. within 1km) are expected to be of high significance for Alternatives 1 and 4 and of moderate significance for all other alternatives.
- The visual impact sensitive visual receptors (i.e. users of roads and residents of homesteads and settlements) within the region (i.e. beyond the 1km offset) is expected to be of moderate significance for all Alternatives.
- The potential visual impact on residents of residents of built-up centres and populated places (i.e. the towns of Blanco, Heather Park and George, as well as the residential areas south of George) within the region beyond the 1km offset is expected to be of low significance for all Alternatives.
- The potential visual impact on protected and conservation areas (i.e. the Witfontein Nature Reserve) is expected to be of low significance for all Alternatives.
- The potential visual impact of the associated infrastructure on sensitive visual receptors in close proximity thereto is expected to be of moderate significance for all Alternatives, and may be mitigated to low for Alternatives 1, 2, 5 and 6.
- The potential visual impact of construction on sensitive visual receptors in close proximity to the proposed infrastructure is likely to be of moderate significance for all Alternatives, and may be mitigated to low.
- The anticipated visual impact of the proposed infrastructure on tourist access routes (i.e. the N2, N9, N12, R102 and R404) and tourist destinations within the region is expected to be of low significance for all Alternatives.

Landscape

A concern is potential impact of proposed intervention on the cultural landscape. The proposed intervention areas are identified as contributing to the scale and sense of place providing a green backdrop to the built environment. Intervention would impact on the contribution of the site as a continuing landscape and impact on the layers of meaning associated with its historical and visual role. The anticipated visual impact on the landscape quality as defined by natural features (specifically the mountains) within the study area is expected to be of low significance except for moderate significance for Alternative 2. The anticipated visual impact on the visual character and sense of place of the study area is expected to be of low significance except for moderate significance for alternative 5 (NuLeaf 2014:73). Visual and landscape assessment takes cognisance of impact on conservation areas within the region, landscape quality and contributing elements, landscape character and sense of place, (Nuleaf 2014: 39, 46, 48).

Summary of assessment of impact on heritage resources per route alternative

Assessment of impact				
	Archaeological	Structures	Visual	Landscape
Alternative 1	Medium – high	Medium – Low	High	Moderate
Alternative 2	None	None	Moderate – High	Moderate
Alternative 3	None	None	Moderate – Low	Moderate – Low
Alternative 4	None	None	High	Moderate
Alternative 5	None	None	Moderate – High	High
Alternative 6	Medium – High	None	Moderate – Low	Moderate – Low



Figure 26: Low visual absorption capacity of the grazing areas within the study area (Nuleaf 2014: 30)



Figure 27: High visual absorption capacity of plantations within the study area (Nulef 2014: 30)

Refer Annexure C Visual assessment: 22 – 28: **Viewshed analysis** of each alternative and 52 – 65 for photo simulations.

Proposed intervention area 1:

Visual impact index map indicates a core area of potentially **high** visual impact within a 1km offset of the proposed infrastructure (i.e. short distance). Potential areas of **very high** visual impact within the short distance include settlements and homesteads. The extent of visual impact persists the medium distance (i.e. between the 1km and 2,5km offset). Potential visual impact is mostly **moderate** within this zone. Potential areas of **high** visual impact within the medium distance include settlements and homesteads. The extent of visual impact decreases in the medium to longer distance (i.e. between the 2,5km and 5km offset). Potential visual impact is mostly **low** within this zone. Potential areas of **moderate** visual impact within the medium to longer distance include settlements and homesteads as well as stretches of the N9 and R404 in the east, and the R102 in the south. Beyond the 5km offset (i.e. long distance), the extent of visual impact is reduced as topographical undulations and hills screen visual impacts beyond to some extent. Potential visual impacts are mostly **very low** within this zone.



Figure 28: Alternative 1 post construction panoramic overview from gravel road travelling east at approximately 1km from alternative (NuLeaf, 2014: 53)

Proposed intervention area 2:

Visual impact index map indicates a core area of potentially **high** visual impact within a 1km offset of the proposed infrastructure (i.e. short distance). Potential areas of **very high** visual impact within the short distance include settlements and homesteads such as *Geelhoutboom*, *Avondrood*, *Highbury* and *Valcor Farm*. The extent of visual impact remains high the medium distance (i.e. between the 1km and 2,5km offset). Potential visual impact is mostly **moderate** within this zone. Potential areas of **high** visual impact within the medium distance include settlements and homesteads. The extent of visual impact persists in the medium to longer distance (i.e. between the 2,5km and 5km offset). Potential visual impact is mostly **low** within this zone. Potential areas of **moderate** visual impact within the medium to longer distance include settlements and homesteads as well as stretches of the N9 and R404 in the east, and the R102 in the south. Beyond the 5km offset (i.e. long distance), the extent of visual impact is reduced as topographical undulations and hills screen visual impacts beyond to some extent. Potential visual impacts are mostly **very low** within this zone.



Figure 29: Alternative 2 Post construction panoramic overview from gravel road travelling east (NuLeaf, 2014: 53) 23

Visual impact index map indicates a core area of potentially **high** visual impact within a 1km offset of the proposed infrastructure (i.e. short distance). Potential areas of **very high** visual impact within the short distance include settlements and homesteads such as *Gay Meadows*, *Geelhoutboom*, *Avondrood* and *Valcor Farm*. The extent of visual impact persists the medium distance (i.e. between the 1km and 2,5km offset). Potential visual impact is mostly **moderate** within this zone. Potential areas of **high** visual impact within the medium distance include settlements and homesteads. The extent of visual impact decreases in the medium to longer distance (i.e. between the 2,5km and 5km offset). Potential visual impact is mostly **low** within this zone. Potential areas of **moderate** visual impact within the medium to longer distance include settlements and homesteads and stretches of the N9 and R404 in the east, and the R102 in the south. Beyond the 5km offset (i.e. long distance), the extent of visual impact is reduced as topographical undulations and hills screen visual impacts beyond to some extent. Potential visual impacts are mostly **very low** within this zone.



Figure 30: Alternative 5 post construction panoramic overview west of Alt 5 (nuLeaf, 2014: 53)

Proposed intervention area 3:

Visual impact index map indicates a core area of potentially **high** visual impact within a 1km offset on either side of the proposed infrastructure (i.e. short distance). Potential areas of **very high** visual impact within the short distance include settlements and homesteads such as *Geelhoutboom* and *Uitsig*. The extent of visual impact remains relatively high the medium distance (i.e. between the 1km and 2,5km offset). Potential visual impact is mostly **moderate** within this zone. Potential areas of **high** visual impact within the medium distance include settlements and homesteads. The extent of visual impact persists in the medium to longer distance (i.e. between the 2,5km and 5km offset). Potential visual impact is mostly **low** within this zone. Potential areas of **moderate** visual impact within the medium to longer distance include settlements and homesteads and stretches of the N9, and R404 in the east, and the R102 in the south. Beyond the 5km offset (i.e. long distance), the extent of visual impact is reduced as topographical undulations and hills screen visual impacts beyond to some extent. Potential visual impacts are mostly **very low** within this zone.

Proposed intervention area 4:

Visual impact index map indicates a core area of potentially **high** visual impact within a 1km offset on either side of the proposed infrastructure (i.e. short distance). Potential areas of **very high** visual impact within the short distance include settlements and homesteads such as *Gay Meadows*, *Geelhoutboom*, *Avondrood*, *Highbury* and *Valcor Farm*. The extent of visual impact remains relatively high the medium distance (i.e. between the 1km and 2,5km offset). Potential visual impact is mostly **moderate**

within this zone. Potential areas of **high** visual impact within the medium distance include settlements and homesteads. The extent of visual impact persists in the medium to longer distance (i.e. between the 2,5km and 5km offset). Potential visual impact is mostly **low** within this zone. Potential areas of **moderate** visual impact within the medium to longer distance include settlements and homesteads and stretches of the N9 and R404 in the east, and the R102 in the south. Beyond the 5km offset (i.e. long distance), the extent of visual impact is reduced as topographical undulations and hills screen visual impacts beyond to some extent. Potential visual impacts are mostly **very low** within this zone.



Figure 31: Alternative 4 post construction panoramic overview in a north easterly direction approximately 1.2 km from proposed intervention (nuLeaf, 2014: 53)

Proposed intervention area 5:

Visual impact index map indicates a core area of potentially **high** visual impact within a 1km offset on either side of the proposed infrastructure (i.e. short distance). Potential areas of **very high** visual impact within the short distance include the homestead of *Geelhoutboomberg*. The extent of visual impact increases the medium distance (i.e. between the 1km and 2,5km offset). Potential visual impact is mostly **moderate** within this zone. Potential areas of **high** visual impact within the medium distance include settlements and homesteads. The extent of visual impact decreases in the medium to longer distance (i.e. between the 2,5km and 5km offset). Potential visual impact is mostly **low** within this zone. Potential areas of **moderate** visual impact within the medium to longer distance include settlements and homesteads and longer stretches of the N9 and R404 in the east, and the R102 in the south. Beyond the 5km offset (long distance), extent of visual impact is reduced as topographical undulations and hills screen visual impacts beyond to some extent. Potential visual impacts are mostly **very low** within this zone.

Proposed intervention area 6:

Visual impact index map indicates a core area of potentially **high** visual impact within a 1km offset on either side of the proposed infrastructure. Potential areas of **very high** visual impact within the short distance include settlements and homesteads such as *Geelhoutboom* and *Uitsig*. The extent of visual impact remains relatively high the medium distance. Potential visual impact is mostly **moderate** within this zone. Potential areas of **high** visual impact within the medium distance include settlements and homesteads. The extent of visual impact persists in the medium to longer distance (i.e. between the 2,5km and 5km offset). Potential visual impact is mostly **low** within this zone. Potential visual impacts are mostly **very low** within this zone.

4. Discussion

The establishment of a new substation and powerline is essential in solving the transformation constraints at the Proteus Main Transmission System and sub transmission constraints experienced on the network supplying the Blanco area. Key heritage concerns are relate to potential impact on an old cottage and farm workers cottages, three local graveyards and the landscape. The consideration of alternatives considers identification of the alternative that would result in the least possible impact on heritage resources. Within the selection of preferred alternative in minimizing impact on the landscape, the extent, duration and intensity of impact was considered.

No archaeological impact is expected and there are no archaeological reasons to exclude the use of any of the proposed substation or powerline alternatives as indicated (ACO 2014:12). Graveyards are not located within proposed intervention areas and could thus easily be avoided through micro siting of pylons or sub-stations. The location of the cemeteries should be a vital consideration in choosing an alternative for the implementation of the substation and powerline. The graveyards are of high local significance and should be respected and remain unaltered. The few Stone Age archaeological sites that were located are of low significance and do not require mitigation. Options 1,2,3,4 and 6 all lie on formerly or currently ploughed agricultural land and considerably reduce the archaeological sensitivity of the sites. Option 6 lies in a more isolated site higher up the slopes of the Outeniqua Mountain which has probably been under plantation at some point. Although some archaeological material was previously located there, it was not considered to be of great heritage significance. Having looked at the proposed changes in the context of the previously conducted fieldwork, we do not believe that the proposed changes would result in any significant new archaeological impacts provided the recommendations are adhered to (Halkett 2015: 2).

Should proposed intervention areas **1 or 2** be considered as preferred alternatives, a buffer area should be implemented so as to ensure no heritage impact on structures identified. Structures could be avoided through micro siting of pylons or sub-stations. Alternatives most likely to require additional archaeological investigation are proposed intervention areas **1 and 6**. The archaeologist should thus be notified of the decision of the final proposed site in order to determine if further site inspection is deemed necessary.



Figure 32: Extract of locations of archaeological observations (red circles) in relation to proposed alternatives(Halkett 2014: 11)

Visual impact assessment was undertaken during the planning stage of the project and is based on information available at that time. In terms of the tower design, a number of options are being considered ranging in height from around 27,5m to 40,5m. The visual impact assessment and all associated mapping has been undertaken according to the **worst case scenario**, which assumes the tallest tower. The height of the substation will not exceed two storeys (i.e. 6m), therefore the visual exposure of this component will fall within the viewshed generated for each power line alternative. There are not many options as to the mitigation of the visual impact of the proposed infrastructure.

The construction and operation of the proposed new Blanco transmission station and associated power lines will have a visual impact on the scenic resources of the study area. The proposed infrastructure will be visible within an area that is generally seen as having a high quality natural and scenic landscape and a resultant tourism value and potential. The infrastructure would thus be visible within an area that incorporates various sensitive visual receptors that would consider visual exposure to this type of infrastructure to be intrusive. There are not many options as to the mitigation of the visual impact of the proposed infrastructure. Vegetation screening or landscaping would not be able to hide towers at height of 40.5m (Nuleaf 2014:71).

With the exception of the anticipated impacts on rural farmsteads and settlements, visual impacts are determined to have a post mitigation significance of moderate or low. In addition, none are considered to be fatal flaws from a visual perspective. This is based on the relatively low density of visual receptors within the study area, the relatively contained extend of the infrastructure and the existing presence of power line infrastructure within the region. Nuleaf is of the opinion that the anticipated visual impact is not likely to significantly detract from the visual quality, landscape quality or sense of place. Similarly, significant impact on regional tourism appeal or numbers of tourists frequenting the area is not likely. The VIA therefore recommended that the development the proposed new Blanco 400/132kV Main Transmission Station and associated loop in – loop out power lines (i.e. the recommended or acceptable Project Alternative) be supported, subject to the implementation of the recommended mitigation measures as contained within section 6.9 and captured within Section 5 of this report (Nuleaf 2014:73).

Summary of preferred route alternatives in relation to potential for heritage impact

- **Least preferable** alternatives: Alternatives **1, 5** and **6**
- **Acceptable** alternatives: Alternatives **2** and **4**
- **Preferred** alternative: Alternative **3**

Preferred alternatives in relation to potential for heritage impact				
	Archaeological	Structures	Visual	Landscape
Alternative 1	Least preferable	Acceptable	Least preferable	Acceptable
Alternative 2	Preferable	Preferable	Acceptable	Acceptable
Alternative 3	Preferable	Preferable	Preferable	Preferable
Alternative 4	Preferable	Preferable	Least preferable	Acceptable
Alternative 5	Preferable	Preferable	Acceptable	Least preferable
Alternative 6	Least preferable	Preferable	Preferable	Preferable

5. Recommendations

Eskom is to select their preferred alternative based on a range of specialist studies being undertaken. From a heritage resource management perspective, **Alternative 3** has been identified as the preferred alternative. Within alternative 3, mitigation measures to reduce potential visual impact should be implemented.

Should alternatives **2, 4 or 5** be selected, mitigation measures to reduce potential visual impact should be implemented. Should alternatives **1 or 6** be selected, mitigation measures to reduce potential visual impact should be implemented and additional archaeological investigation is likely. Should proposed intervention areas **1 or 2** be selected, a buffer area should be implemented so as to ensure no heritage impact on structures identified.

The positions of all identified cemeteries are to be noted when selecting the final sub-station site and powerline route. The farm cemetery (corners marked by points D001-D003) may not be impacted by any sub-station footings or infrastructure. The grave/s at D006 may not be impacted by powerline infrastructure. The graves at L001 no longer appear to be threatened due to the changes in layout. Proposed changes to layout would not result in any significant new archaeological impacts provided the recommendations are adhered to and no new archaeological impact studies are required, over and above this statement, to address the changes (Halkett 2015:3).

The archaeologist must be informed of the selected substation site and powerline route in order to determine if a walk down must be undertaken. If any unmarked graves containing human remains are found during the construction phase, the site should be cordoned off and an archaeologist must be contacted to undertake an investigation (Halkett 2014: 12 and 2015:3).

Recommendations stemming from the visual impact assessment relate to mitigation of visual impacts associated with new roads, rehabilitation of access roads, consolidation of infrastructure, lighting and making use of already disturbed sites rather than pristine.

It is therefore recommended that:

1. Proposed intervention to establish a new substation and powerline be supported
2. **Alternative 3** be noted as the preferred alternative
3. HWC issue comment that proposed intervention may proceed in terms of Section 38(8) of the NHRAct subject to the following conditions

Conditions

- Archaeologist must be informed of the selected substation site and powerline route in order to determine if a walk down must be undertaken
- If any unmarked graves containing human remains are recognised during the construction phase, the site should be cordoned off and an archaeologist must be contacted to undertake an investigation.
- The mitigation measures as stipulated by NuLeaf are adhered to in line with selected alternative

References

- ACO (Draft January 2014 finalised February 2014.) *An Archaeological study of the proposed Eskom Blanco Substation and line project: Alternatives 1-7*
- NuLeaf Planning and Environmental (Pty) Ltd. January 2014. Visual Impact Assessment
- SEF (R Randwedzi, undated) *Project investigation Report: Blanco 400/132KV MTS and the Droerivier Proteus Loop-in Loop-out. Project Phase EIA: Phase 1&2*
- http://en.wikipedia.org/wiki/George,_Western_Cape

Final draft