HERITAGE IMPACT ASSESSMENT: PROPOSED CONSTRUCTION OF A 400kV POWERLINE FROM GOURIKWA SUBSTATION (MOSSEL BAY) TO BLANCO SUBSTATION (GEORGE), WESTERN CAPE

(Assessment conducted under Section 38 (8) of the National Heritage Resources Act No 25 of 1999)

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> August 2016 Revised November 2016



Prepared by:

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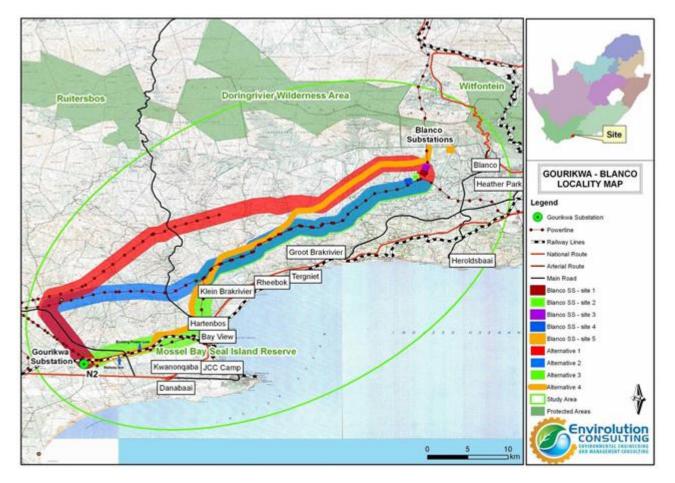
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EXECUTIVE SUMMARY

Site Name: Proposed 400 kV powerline from the Gourikwa substation to the Blanco substation.

Location: Four alternative powerlines running between Mossel Bay and George

Locality Plan:



The position of the four alternative powerlines between the Gourikwa substation at Mossel Bay and the Blanco substation at George. The red dotted lines indicate existing transmission lines.

Description of the Proposed Development:

The 400kV powerline has to be constructed in a narrow band between the mountains and the ocean. This presents a serious challenge in terms of providing three practical corridors. Two corridors, Alternative 1 and Alternative 2 have been identified (Figure). A third corridor (Green) is merely a slight deviation from the Blue corridor. A fourth corridor was proposed during the Public Participation Process. <u>All the proposed corridors have been aligned to run parallel to existing power lines.</u>

- Alternative 1 (Red corridor): It is estimated to be 57 km in length. After leaving the Gourikwa substation, the corridor runs north to the Proteus substation, and parallel to the Dx Duinzicht Proteus 66 kV powerline. It then turns north-east to join the existing 400kV Proteus Droërivier powerline. It runs parallel to this line for approximately 45 km until it reaches the site of the proposed Blanco substation.
- Alternative 2 (Blue corridor): The blue corridor exits the Gourikwa substation in a northerly direction, but turns easterly to cross over the R327 and <u>runs parallel to two 132kV existing distribution power-lines.</u> The topography is extremely rugged. It is proposed to run the line parallel to existing power-lines.

• Alternative 3 (Green deviation): provides an alternative to the blue corridor. It is aligned easterly towards Hartenbos. It is proposed to run in the corridor along the existing low voltage distribution power lines. It will join the blue corridor on the north side of the Brandwag River and then follow the same route to the Blanco substation.

During the Public Participation Process, an alternative was offered which combined the sections of the three routes into an **Alternative 4**. This allowed private game reserves and irrigation and farmlands to be avoided.

The corridor will be 1km wide although the actual servitude will be 62 m.

The design of the pylons/towers has not been finalised. The first preference would be to use the 529 crossrope and 520B guyed Vee towers in areas where there are no space constraints, and the 517/518 selfsupporting towers at bends in areas where there are space constraints. Steel monopoles are considered the least desirable solution from Eskom due to cost.

Position of Existing Eskom Transmission Lines in the Study area

The Proteus – Droerivier 400kV line	Runs along Alternative 1
2 x Proteus – Blanco 132kV lines	Runs along Alternative 2
A low voltage powerline line on gum poles	Runs along Alternative 3

Legal Background

A Notice of Intent to Develop was submitted to Heritage Western Cape and they have requested a Heritage Impact Assessment consisting of archaeology, a cultural landscape study and a visual study with an integrated set of recommendations.

Archaeological Impact Assessment:	Appendix 2
Cultural Landscape Assessment	Appendix 3
Visual Impact Assessment:	Appendix 4

• The Interim Comment to the NID application did not request a Palaeontological Impact Assessment (although the Heritage specialist requested this).

Nevertheless, Envirolution Consulting did commission a Palaeontological Baseline Assessment (desktop study) and the results of this are included in this HIA (Appendix 1). Following Section 38(3) of the National Heritage Resources Act (No 25 of 1999), even though certain specialist studies may be specifically requested, <u>all</u> heritage resources should be identified and assessed. Impacts to the Built Environment are briefly identified and discussed in this HIA.

The HIA was submitted to HWC IACom on the 9 November 2016, and the following Interim Comment was received:

In discussion it was noted that:

- The Visual Impact Assessment and the integrated HIA are not consistent in the description of the route alternatives or the preferred alternative. It is therefore not possible to make a final comment that is sufficiently accurate for DEADP to issue a decision.
- Notwithstanding these inaccuracies, the Committee was of the view that preferred alternative should be along the existing powerline route.

INTERIM COMMENT

The integrated HIA with its associated specialist reports must be reviewed for consistency in the description of the proposed alternatives and of the preferred alternative and must be resubmitted.

This HIA constitutes the revised report.

HERITAGE RESOURCES IDENTIFIED

Palaeontological Resources Identified:

The Baseline (desktop) assessment was conducted by John Almond of Natura Viva cc (Appendix 1).

He considered the probability of sectors of potentially high palaeontological sensitivity occurring:

- They are situated to the northwest and north of Mossel Bay and mainly concern outcrop areas of Mesozoic continental rocks of the Uitenhage Group. They include the Early Cretaceous Kirkwood Formation that has yielded important fossil material of dinosaurs and other terrestrial vertebrates, petrified woods and other well-preserved plant material, as well as the Early Cretaceous Hartenbos Formation that is also rich in fossil;
- Small outcrop areas of shell-rich estuarine deposits of the Klein Brak Formation Bredasdorp Group) may also be transected by the power-line corridors to the north of Mossel Bay;
- From the Klein-Brakrivier north-eastwards to Blanco the corridors are of low palaeontological sensitivity since they overlie highly deformed and metamorphosed Late Precambrian sediments of the Kaaimans Group and associated intrusions of the Cape Granite Suite.

Archaeological Heritage Resources Identified:

Archaeological Assessment was conducted by Lita Webley of ACO Associates cc (Appendix 2).

- Highly significant archaeological sites such as Pinnacle Point, Cape St Blaize and Herold's Bay Cave are situated along the Southern Cape coastline but are outside the development area and will not be impacted;
- Reports indicate that scatters of ESA and MSA stone artefacts are thinly dispersed across the landscape. They are considered of low significance;
- A few caves and rock shelters have been recorded in rocky outcrops and in incised valleys and gorges inland from the coast. Some contain LSA archaeological material and have the potential to be significant. One koppie identified in the survey which may contain archaeological sites is Botelierskop but others may exist. The Wolwedans Cave near the Great Brakrivier occurs in such a steep sided valley;
- Ruined farmhouses, including barns, kraals and stone walling are considered colonial archaeology and they may occur inside the powerline corridors;
- A number of farm cemeteries and scattered individual graves have been recorded in the area by other CRM practitioners and more may exist inside the powerline corridors.

Cultural Landscape Heritage Resources Identified:

The Cultural Landscape Assessment was conducted by Stefan de Kock of Perception Planning (Appendix 3).

The study area forms part of a coastal plain defined by the Outeniqua mountain range and the coastline. The study area has been divided into three distinctive cultural landscapes types:

- <u>The Outeniqua area</u> extending between the upper reaches of the Great Brak and the Outeniqua Pass, this is an undulating landscape characterised by forestry, stock farming and intensive agriculture as well as rural occupation and tourism-orientated activities. Its links to forestry and agriculture, together with heritage resources such as historic structures and graveyards, provide a sense of historic context and continuity. This cultural landscape is considered to be of regional and local historic, aesthetic and social cultural significance (Grade IIIB);
- <u>The area between the Great Brak and Little Brak Rivers</u> is less accessible, hilly and rugged, with limited agriculture along the higher-lying plateaus. Much of this landscape has been incorporated into private game reserves. Areas closer to the coastline have mostly been transformed through low density urban development, which has significantly eroded the quality of the cultural landscape. Whilst retaining natural beauty within the northern half of this area, few if any historic elements, which could provide a sense of historic continuity, seem to have survived until present day. From this perspective therefore, the entire area is considered of *low local historic, aesthetic and social cultural significance (Grade IIIC)*.
- <u>The Mossel Bay area</u> between the Little Brak River and the PetroSA site, this landscape retains a predominant agricultural character with some private game reserves. The northern half of this area includes tourism routes of aesthetic significance such as the R328 (to Oudtshoorn) and a section of

the R327 (leading to Herbertsdale). The southern half of this area - along the coastline - is mostly dominated by urban-related development. The landscape has been altered through mining activities and environmental authorisation for at least two wind energy facilities has been issued. While historically significant and retaining areas of moderate scenic beauty (northern portion of the study area), few historic elements remain within the landscape. The southern portion of this area has been transformed significantly through existing (and permitted) urban-related development thus permanently altering the landscape character. This area is therefore considered to be of **no local historic, aesthetic and social cultural significance (Ungradable)**.

Visual Resources Identified:

The Visual Impact Assessment was conducted by Mader van der Berg of i-scape.

Two Landscape Types (LTs) were identified in the study area:

- **Coastal Towns**: is limited to the coastal region and forms a very small part of the study area. The most densely populated areas are along the coastline, with the Town of George located further inland. What use to be placid holiday towns, have developed into established communities. A peaceful atmosphere prevails during the year but changes to a vibrant holiday atmosphere when thousands of tourists gather over holiday seasons. The towns developed rapidly along the coast and have been forced inland to accommodate the influx of permanent residents and holidaymakers. The predominant land use is residential, with commercial and light industrial development along the N2 highway. Due to the high tourism potential, many holiday resorts and privately owned guest houses are located in the towns, close to the beaches.
- Inland Rural Landscape: This area is part of the Garden Route and is wedged between the scenic Outeniqua Mountain Range and the very popular coastal towns. It is a landscape with diversity but its rural character and similar agricultural practices create uniformity over the entire area. The eastern region is intensely farmed and very little of the natural vegetation remains. The central region consists of a reasonable percentage of cultivation, but due to the varied topography, natural ecosystems are more readily found. Botlierskop Game Reserve conserves approximately 3500ha of natural and semi-natural ecosystems. In the western part of the study area, Gondwana Game Reserve and Hartenbos Game Lodge conserve 4000ha and 860ha respectively. These areas are considered natural, although fragmented cultivation occurs between the reserves. The regional tourism industry has expanded to include not only the coastline, but also managed to add major tourist attractions in the interior in the form of luxury accommodation, game farms and other outdoor activities such as skydiving, horse riding trails, hiking etc. The large dams offer fishing and birding opportunities.

ANTICIPATED IMPACTS ON HERITAGE RESOURCES

Impacts on Palaeontology:

A substantial proportion of proposed power-line sectors will cross formations that are conservatively regarded as moderate to high sensitivity in palaeontological heritage terms (*cf* palaeo-sensitivity maps on the SAHRIS website). In practice, however, the likelihood of significant negative impacts on fossil heritage on the ground is low over most sectors of these routes because the bedrocks here are often highly weathered, tectonically-deformed or covered by a substantial thickness of fossil-poor superficial deposits (scree, alluvium, soils *etc*).

Impacts on Archaeology:

While the footprint of the tower is relatively small, impacts to heritage resources may occur.

- Powerlines running in proximity to the coastline, may result in the destruction of highly significant archaeological sites;
- Caves and rock shelters, whilst not directly impacted by the construction of a tower footing, may be damaged or vandalised as a result of easier human access;
- In situ scatters of ESA and MSA stone artefacts may be damaged although the likelihood of this
 occurring is very low;
- In situ, LSA archaeological sites may be damaged by the construction of the tower footings and access roads;

- Ruined structures and historic rubbish dumps may be impacted by the tower footings and access roads. The likelihood of this occurring is medium;
- The proposed tower footings may result in the destruction of farm cemeteries and graves.

Impacts to Cultural Landscape

These cultural landscape qualities are perceived from all public roads through and around the area, including the N2 National Road and this landscape is therefore sensitive to any large-scale and/or visually intrusive development or infrastructure, such as the proposed pylons for the transmission lines.

However, a significant portion of the study area (including the Outeniqua area) is traversed by an existing Eskom overhead transmission line, which invariably already impacts on the scenic qualities of the area. It is noted that the alignment of these existing overhead transmission lines, for the most part, follows the proposed Alternative 2 and Alternative 3 route alignments. New infrastructure to be installed along either one of these alternative alignments would tend to be viewed within the context of the existing overhead transmission lines.

Visual Impacts

The transmission line will impact on the aesthetic value of the visual resource by interfering with the prevailing natural and semi-natural character of the study area, or interfering with the agricultural land uses. Areas or features of high aesthetic value and scenic quality have been identified as:

- All the game reserves in the western and central regions that are valued for their natural character, conservation of the indigenous vegetation and scenic landscapes;
- All the large dams and rivers that are crossed by the proposed routes that are valued for its aesthetic value and eco-tourism potential;
- The undulating and varied landscape of the western and central regions that is a cause for picturesque views towards the ocean and towards the Outeniqua Mountain Range.

Concentrations of highly sensitive viewers and major tourist attractions have been identified at:

- Gondwana-, Hartenbos- and Botlierskop Game Reserve;
- Hartebeeskuil-, Klipheuwel- and Wolwedans Dams;
- Western outskirts of Hartenbos, Monte Christo Estate and Wolwedans; and
- All the tourist attractions and overnight facilities that are within the study area;

Cumulative Impacts

Alternative 1 follows the existing 400kV Proteus – Droerivier alignment. The new 400kV line will theoretically double the visual prominence of the electrical infrastructure through the study area. It is expected to contrast with the natural, semi-natural and agricultural characters of the study area, thereby causing visual intrusions along its linear length.

Alternative 2 follows the existing alignment of two (2) x Proteus – Blanco distribution lines. The prominent scale of the new 400kV line will be a large addition to the electrical infrastructure in the area. A significant increase (more than double) in visual prominence of electrical infrastructure in the area can be expected. Three powerlines in one corridor are expected to exceed the visual tolerance threshold. The factor that contributes to this is that each line will consist of a different type of tower that causes major visual incoherence and clutter.

Alternative 3 follows an existing alignment of an inconspicuous low voltage power line, supported by gum poles, between the Gourikwa substation and the Hartenbos substation. A monopole extends the line to the merger point with Alternative 2. Here the line joins the same corridor as the 2 x Proteus – Blanco 132kV lines. Three powerlines in one corridor are expected to exceed the visual tolerance threshold. The factor that contributes to this is that each line will consist of a different type of tower that causes major visual incoherence and clutter.

Comments from Registered Conservation Bodies and I&APs

Heritage Western Cape, in their response to the NID application, has specifically asked for the comments from the registered conservation bodies in the area as well as the local municipalities. These have been approached for comment. **Only Heritage Mossel Bay and the Great Brak Museum commented. Heritage**

Mossel Bay did not favour Alternative 3. They support the recommendation of a walk down of the final alternative. The Great Brak Museum was satisfied with the report.

During the Public Participation Process, resistance was given to all three alternatives.

The following comments were received during the PPP process for the Scoping HIA:

- Requested the historic background on the towns of Ruiterbos (1820), Groot Brak, Mossel Bay and George (particularly Blanco);
- Requested a list of the "heritage farms" that will be impacted by the line;
- Mapping of Stone Age shell middens at Mossel Bay (as well as changes in sea level);
- Historic settler homes at Belvedere, Botelierskop and on Ruben Barnard's Farm;
- Remnants of the Colonial Period;
- Date for the heritage walk down;
- LSA or Iron Age settlements at Mossel Bay;
- Which line option is preferred?

Recommendations

The powerline corridors being assessed are 1 km wide, although the actual servitude will only be 62 m wide. This provides sufficient width for micro-placing of the tower footings to avoid direct impacts to heritage sites.

Once the final route option has been selected and the Environmental Authorisation issued, the following recommendations should be included in the EMP:

Archaeological Recommendations:

- CRM and research reports confirm that the coastline is sensitive from an archaeological perspective and a buffer of at least 1km should be maintained from the ocean;
- Assess the possibility of impacts to in situ LSA sites by a targeted walk down of certain sections of the line, along koppies and on river banks;
- Where landowners have identified caves with rock art on their properties, a targeted survey at the walk-down phase can address any concerns about potential impacts. A range of mitigation options are possible, including the careful placement of the tower footings to avoid rock art sites (micro-siting of the tower footings will be required inside the corridor to avoid impacts);
- Rock art sites in proximity to the tower footings may also be protected from vandalism by ensuring that they are fenced off during the construction of the powerline;
- With respect historical archaeological material, a targeted walk-down of the line will be required after the final powerline route has been decided. It would concentrate on areas immediately around farm buildings and structures to ensure that a sufficient buffer has been implemented to avoid impacts to historic kraals, old sheds, rubbish dumps, etc;
- The walk down phase would concentrate on areas around historic farmsteads in order to ensure that graves area avoided;
- The towers may be constructed on/or in close proximity to farm graveyards. If graveyards are discovered during the walk down phase, a buffer of at least 15 m should be employed around them;
- If unmarked graves are uncovered during the construction of the tower footings, all work in that area should cease immediately, and HWC must be contacted.

Cultural Landscape Recommendations:

- With respect the Outeniqua cultural landscape (Grade IIIB) it is therefore recommended that, from a cultural landscape perspective, Alternative alignment 3 be followed as first preference and Alternative alignment 2 as second preference. Alternative4, as a combination of the above, is also acceptable;
- With respect the Great Brak to Little Brak Rivers: Given the scenic qualities of the northern portion of this area, which is likely to become more evident should conservation continue, proposed grading for this cultural landscape (Grade IIIC) as well as the alignment of existing overhead transmission lines through this area, proposed Alternative alignments 2, 3 and 4 are both acceptable. Consequently, proposed Alternative alignment 1 through this area is not supported;

- Mossel Bay Cultural Landscape anticipated impacts associated with proposed route alignments through the rural cultural landscape would need to be considered within the context of its proposed grading (ungradable), which is partly informed by the pattern of existing and permitted development within this area. Notwithstanding, taken within the alignment of existing (similar) infrastructure through this area, it is suggested that proposed Alternative alignment 3 be preferred. Other anticipated impacts associated with this alignment on for example the Aalwyndal smallholding complex and Mossel Bay Airport would however have to be taken into consideration;
- The only specific recommendations which de Kock makes with respect mitigation of the Built Environment, is that although a Built Environment assessment was not required by Heritage Western Cape, nonetheless it is recommended that provision be made for a walk down of the approved route alignment traversing this area prior to the commencement of construction works.

Visual Recommendations:

Reduction and remediation mitigation will not be effective to prevent residual impacts from occurring. The proposed transmission line will remain visible unless major design or alignment changes are implemented. The option of consolidating existing lines into the design of the new transmission line is regarded as very effective and is highly recommended to prevent major cumulative impacts. Although cumulative impacts may still occur, the significance thereof will be reduced and the exceedance of a visual intolerance threshold may be avoided.

Avoiding sensitive landscape features and observers is regarded as being the most effective mitigation measure in reducing direct, cumulative and residual impacts. This is, however, a complex measure to implement, and is reliant on technical/feasibility studies as well as a much larger study area assessment to ensure that other sensitive features and observers are not impacted. Due to these unknown factors, avoidance mitigation is only proposed within the 2 km corridor that will reduce visual impacts on certain receptors.

Line Option Recommendations

Each of the three specialists (archaeology, cultural landscape and visual) have made different line alternative recommendations

- From an Archaeological perspective, Alternatives 1 and 2 are preferred to Alternative 3, which runs in close proximity to the coast, resulting a potential higher impact to archaeological resources.
- From a Cultural Landscape perspective, either Alignment 2 or 3 are preferable to Alignment 1 which runs along the lower reaches of the mountains.
- From a Visual Impact perspective, Alternative 1, while running along the existing 400kV Proteus-Droerivier Line, is the route that impacts on the least number of sensitive landscape features and steers clear of the least number of tourist attractions.

Conclusions

This assessment highlights that highly significant impacts are expected in the study area and require major interventions to reduce the direct and cumulative impacts in particular. Authorisation of this project will result in significant losses in aesthetic value that will cause high levels of visual intrusion in some areas. The impact is only reversible with human intervention and stands a moderate risk of causing an irreplaceable loss in resources.

Since the impacts of the 400kV line will be largely of a visual nature, this study recommends Alternative 1.

Author/s and Date:

August 2016

Lita Webley Stefan de Kock I-Dot design Studio CC trading as i-scape Archaeology Cultural Landscape Visual Impact Assessment ACO Associates cc Perception Planning Natura Viva cc

THE AUTHOR

Lita Webley is an archaeologist (PhD from the University of Cape Town 1992) with ACO Associates cc and has been conducting Heritage Impact Assessment and archaeological specialist studies in the Western Cape, Northern Cape and Eastern Cape Provinces since 1996. She is accredited as a Principal Investigator by the Association of Southern African Professional Archaeologists (ASAPA) CRM section as follows:

- > Principal Investigator: Stone Age, Shell Middens and Colonial Period; and
- Field Director: Grave Relocations.

ACO Associates cc has no financial or other interest in the proposed development and will derive no benefits other than fair remuneration for consulting services provided.

SPECIALIST DECLARATION

I, Lita Webley, declare that -

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have potential of influencing – any decision to be taken with respect to the application by the competent authority; and – the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offense in terms of regulation 71 and is punishable in terms of section 24F of the Act.

Signature of specialist

h.E. Webley

Specialist Field: Archaeology and Heritage Name of Company: ACO Associates

GLOSSARY

Archaeology: Remains resulting from human activity which is in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures.

Heritage: That which is inherited and forms part of the National Estate (Historical places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999.

National Estate: The collective heritage assets of the Nation

Palaeontology: Any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.

SAHRA: South African Heritage Resources Agency – the compliance authority which protects national heritage in the Northern Cape.

Structure (historic:) Any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith. Protected structures are those which are over 60 years old.

Acronyms

CRM DEA	Cultural Resource Management Department of Environmental Affairs
ECPHRA	Eastern Cape Provincial Heritage Resources Authority
ESA	Early Stone Age
EMP	Environmental Management Programme
GPS	Global Positioning System
HIA	Heritage Impact Assessment
HWC	Heritage Western Cape
LSA	Later Stone Age
MSA	Middle Stone Age
NHRA	National Heritage Resources Act, No 25 of 1999
SAHRA	South African Heritage Resources Agency

	Andrew September	Date:	22 April 2015	
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1. Since t	here is reason to believe that herita	age resources will b	e impacted upon. HWC rec	puires an
	terms of S. 38(3) of the NHRA (Act	-		
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2. An inte	rgrated HIA is required consisting of	of a archaeological	and visual study.	
Terms an	d Conditions:			
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1. INTRODUCTION

ACO Associates cc was appointed by Envirolution Consulting on behalf of the client, Eskom Holdings, to undertake Heritage Impact Assessment for the construction of a 400kV transmission power line from the Gourikwa substation at Mossel Bay to the Blanco (Narina) substation at George, on the southern Cape coast. The proposed powerline will be approximately 60 km long. Alternative 1 and Alternative 2 powerline options have been proposed (Figure 1) with a third option (Alternative 3) making a short dogleg off Alternative 2.

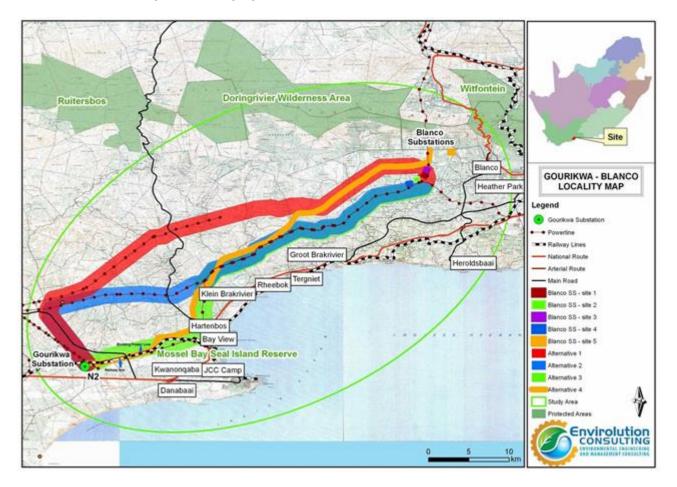


Figure 1: The location of the four powerline alternatives discussed in the text. Alternatives 1 - 3 were assessed in the field, and Alternative 4 was proposed during the public participation process.

2. DEVELOPMENT PROPOSALS

2.1 Substations

The Gourikwa substation is located on the farm Mossel Bay Rd 399/0 and it is located west of Gourikwa power station. The substation is located about 15 km west of the town of Mossel Bay, and is north of the N2 highway (Figure 1).

The Blanco (Narina) substation will be positioned on Alternative 5.

2.2 Powerline Options

The 400kV powerline between Gourikwa substation and the Blanco substation has to be constructed in a narrow band between the mountains and the ocean. This presents a serious challenge in terms of providing three practical corridors. Two corridors (Alternative 1 = Red and Alternative 2 = Blue) have been identified (Figure 1). A third corridor (Green) is merely a slight

deviation from the Blue corridor. All the proposed corridors have been aligned to run parallel to existing power lines.

Alternative 1 Red corridor: After leaving the Gourikwa substation, the corridor runs north to the Proteus substation, and parallel to the Dx Duinzicht - Proteus 66 kV powerline. It then turns northeast to join the existing 400kV Proteus - Droërivier powerline. It runs parallel to this line for approximately 45 km until it reaches the site of the proposed Blanco substation.

Alternative 2 Blue corridor: The blue corridor exits the Gourikwa substation in a northerly direction, but turns easterly to cross over the R327 and run parallel to the two (2) existing distribution Proteus-Blanco 132kV power-lines. It will cross at least four dams although attempts will be made to avoid them if possible. The topography is extremely rugged. It is proposed to run the line parallel to existing power-lines.

Alternative 3 Green deviation: this provides an alternative southern leg to the blue corridor. It is aligned easterly towards Hartenbos. It is proposed to run the corridor along the existing low voltage distribution power lines. It will join the blue corridor on the north side of the Brandwag River and then follow the route of the existing blue corridor.



Figure 2: An aerial image of the location of the Gourikwa substation and the Blanco substation with respect to Mossel Bay and George.

- The corridor will be 1km wide although the actual servitude will be 62 m. Clearing of vegetation in the servitude is normally required to comply with safety standards;
- Construction of access roads may be required. Use will be made of existing roads where possible. It can be expected that new roads will be established by means of driving over the vegetation to create a two-tread track, as opposed to a graded road;
- Establishment of construction camps and stockyards will be required.

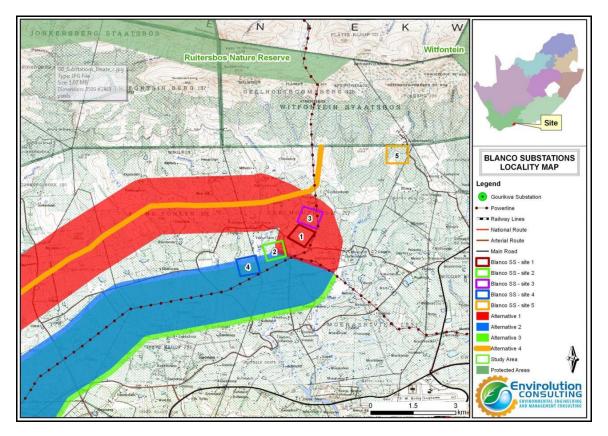


Figure 3: The new Blanco substation will be located in Alternative 5 and is the subject of a separate EIA process.

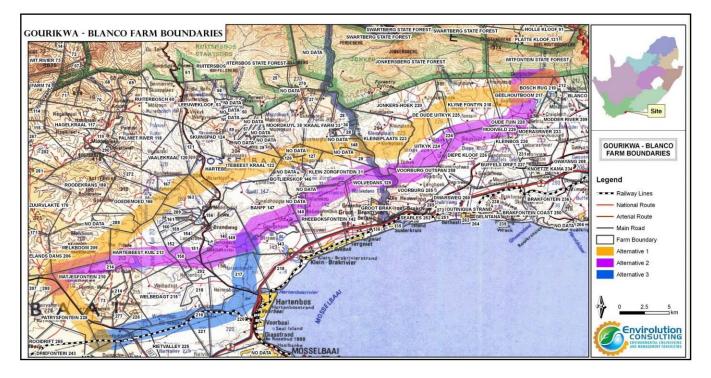


Figure 4: The farm boundaries of the properties affected by the powerline alternatives.

During the Public Participation Process, an alternative was offered which combined the sections of the three routes into an **Alternative 4**. This allowed private game reserves and irrigation and farmlands to be avoided.

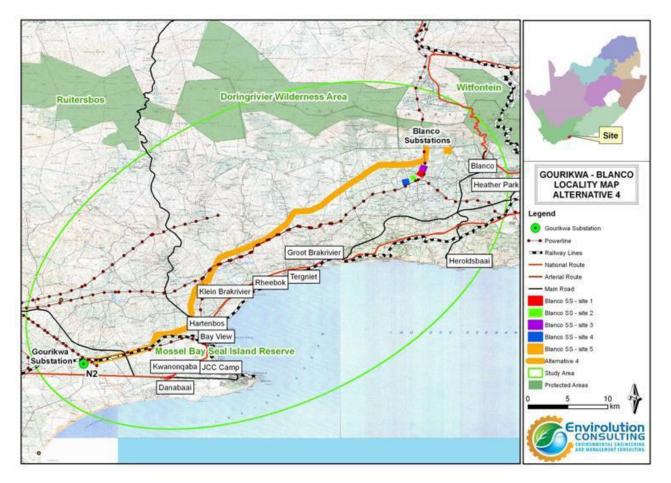


Figure 5: During the Public Participation Process, a fourth alternative (Alternative 4) was proposed. It combines sections of all three routes.

2.3 Pylon/Tower specifications

The first preference would be to use 529 cross-rope and 520B guyed Vee towers in areas of the line where there are no space/servitude constraints and 517/518 self-supporting towers at bends and in areas where there are space constraints. The height of the tower may vary depending on the terrain it traverses, but on average, it can reach heights of 50-60 m. Steel monopoles are the least desirable solution from Eskom mainly due to cost.

While it may be possible to paint the towers for a specific case, studies have shown that painting towers to "camouflage" them only works for a season i.e. a tower that is painted green may be less visible in spring/summer but be more visible in winter. "Camouflaged" towers could also have a negative environmental impact since birds and other species may collide with them. Should heavy machinery collide with one of the towers due to its camouflaged nature, this may result in interruption of power.

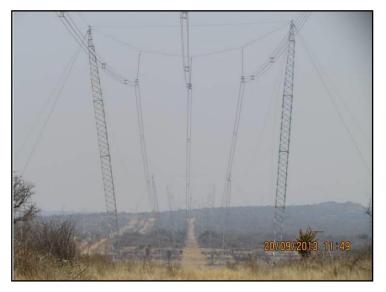




Plate 1: A 529 cross-rope tower

Plate 2: A 520B Guyed Vee tower



Plate 3: The 517/518 self-supporting tower. **Plate 4:** The extent of the impact of the tower footings are expected to be very low, unless placed directly on top of a heritage site.

3. HERITAGE LEGISLATION

This report is conducted in terms of Section 38 (8) of the National Heritage Resources Act, No 25 of 1999.

The NHRA provides protection for the following categories of heritage resources:

- Landscapes, cultural or natural (Section 3 (3))
- Buildings or structures older than 60 years (Section 34);
- Archaeological Sites, palaeontological material and meteorites (Section 35);
- Burial grounds and graves (Section 36);
- Public monuments and memorials (Section 37);
- Living heritage (defined in the Act as including cultural tradition, oral history, performance, ritual, popular memory, skills and techniques, indigenous knowledge systems and the holistic approach to nature, society and social relationships) (Section 2 (d) (xxi)).

3.1 Structures (Section 34(1))

No person may alter or demolish any structure part of a structure which is older than 60 years without a permit issued by Heritage Western Cape (HWC), the responsible provincial heritage resources authority.

3.2 Archaeology (Section 35(4))

No person may, without a permit issued by HWC, destroy, damage, excavate, alter or remove from its original position, or collect, any archaeological material or object.

3.3 Burial grounds and graves (Section 36(3))

No person may, without a permit issued by the South African Heritage Resources Authority (SAHRA), destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years, which is situated outside a formal cemetery administered by a local authority.

3.4 Cultural Landscape

While the NHRA does not clearly define the term "cultural landscape", it is briefly referred to in the schedule of definitions. Based on local and international best-practice and within the context of definitions assigned to the terms heritage resource, place and cultural significance, cultural landscape can be defined as "A place of cultural significance, which engenders qualities relating to its aesthetic, architectural, historical, scientific, social, spiritual, linguistic, technological, archaeological or palaeontological value" (Winter & Oberholzer 2014).

3.5 Grading

The South African heritage resources management system is based on grading, which provides for assigning the appropriate level of management responsibility to a heritage resource.

Grade	Level of significance	Description
I	National	Of high intrinsic, associational and contextual heritage value within a national context, i.e. formally declared or potential Grade 1 heritage resources.
11	Provincial	Of high intrinsic, associational and contextual heritage value within a provincial context, i.e. formally declared or potential Grade 2 heritage resources.
Illa	Local	Of high intrinsic, associational and contextual heritage value within a local context, i.e. formally declared or potential Grade 3a heritage resources.
IIIb	Local	Of moderate to high intrinsic, associational and contextual value within a local context, i.e. potential Grade 3b heritage resources.
IIIc	Local	Of medium to low intrinsic, associational or contextual heritage value within a national, provincial and local context, i.e. potential Grade 3c heritage resources.

The grading of heritage sites, as prescribed in the NHRA, is only concerned with categories I, II and III. The subdivision of Grade III sites was introduced in the Western Cape. A draft document provides some guidelines to the grading of Archaeological and Palaeontological sites.

A Notice of Intent to Develop was submitted to Heritage Western Cape and they have requested a Heritage Impact Assessment consisting of archaeology, cultural landscape and a visual study with an integrated set of recommendations.

Palaeontological desktop study	Appendix 1
Archaeological Impact Assessment:	Appendix 2
Cultural Landscape Assessment:	Appendix 3
Visual Impact Assessment:	Appendix 4

Although the heritage specialist requested that a Palaeontological Impact Assessment should be conducted in the NID application, this was not required in the Interim Comment to the NID.

Nevertheless, Envirolution Consulting did commission a Palaeontological Baseline Assessment (desktop study) and the results of this are included in this HIA. Following Section 38(3) of the National Heritage Resources Act (No 25 of 1999), even though certain specialist studies may be specifically requested, <u>all</u> heritage resources should be identified and assessed.

4. RECEIVING ENVIRONMENT



Plate 5: View of the start of Alternative 1 and 2 near the Gourikwa substation, at PetroSA.



Plate 6: View along Alternative 2 indicating the impacts of the existing 400Kv 520 Guyed Vee towers and line on the undulating countryside.



Plate 7: Gentle undulating topography which characterizes much of Alternative 2



Plate 8: View of the Outeniqua Mountains near the Blanco end of the line. Alternative 1 follows the lower slopes of this mountain. Note the existing powerlines overhead.

5. METHODOLOGY

5.1 Archaeology

Background archaeological research included a review of the published material as well as unpublished reports on the SAHRIS database. The 1:50 000 maps of the area as well as Google Earth aerial images were consulted. A desktop review was undertaken based on previous reports. Fieldwork involved a drive down of the three alternative routes, where this was possible. However, in view of the distance traversed, it was not possible to undertake a walk down of all three routes.

5.2 Cultural Landscape

As part of the compilation of the specialist Cultural Landscape report the author has studied, visited, photographed and assessed the study area and its environs, which more specifically involved the following:

- Field work carried out on 30th July 2015;
- Liaising with project manager and contributing specialist consultants;
- Compiling report including findings and recommendations emanating from existing historical research undertaken in Cape Town Archives with relation to the study area;
- Identification of cultural landscape related issues and concerns;
- Establishing cultural significance, based on criteria set out in NHRA;
- Identification of heritage-related design informants based on the above.

5.3 Visual Methodology

- Site investigation: Identify sensitive viewpoints and capture the character of the visual environment by establishing a photographic record;
- Project description: Describe the type, scale and visual characteristics of the proposed project and its individual elements or phases;
- Delineate the study area and divide it into logical landscape types: Determine the extent of the study area and identify landscape types that have similar visual characteristics;

- Compile a Landscape Character Assessment: Discuss the tangible and intangible characteristics of the study area to determine its value and sensitivity;
- Determine the sensitivity of receptors: Assess the sensitivity of observer groups and landscape types with regards to visual change;
- Visual Impact Assessment: Identify and describe the potential direct, indirect, cumulative and residual impacts on both the observer groups and landscape types;
- Mitigation measures: Propose mitigation measures to alleviate or completely eliminate the potential impacts that are identified;
- Rate alternatives: Provide an argument as to which alternative is most preferred based on the findings of the assessment; and
- Conclusion and recommendations: Discuss the project's main issues and provide recommendations where necessary.

6. DESCRIPTION OF HERITAGE RESOURCES

This review summarizes the most important comments from the Palaeontological, Archaeological, Cultural Landscape and Visual studies. The full reports can be consulted. They are attached as Appendices at the end of this report.

6.1 Palaeontology

The Baseline Palaeontological study by John Almond of Natura Viva cc is attached as Appendix 1.

The study area for this transmission line project lies on the southern coastal plain, from the Mossel Bay area to George. Sectors of potentially high palaeontological sensitivity occur along the three proposed Gourikwa – Blanco power-line route. They are situated to the northwest and north of Mossel Bay and mainly concern outcrop areas of Mesozoic continental rocks of the Uitenhage Group. They include the Early Cretaceous Kirkwood Formation that has yielded important fossil material of dinosaurs and other terrestrial vertebrates, petrified woods and other well-preserved plant material, as well as the Early Cretaceous Hartenbos Formation that is also rich in fossil wood (*N.B.* These formations are included within an undifferentiated Uitenhage Group, Ke, on the Oudtshoorn 1: 250 000 geology sheet). Small outcrop areas of shell-rich estuarine deposits of the Klein Brak Formation Bredasdorp Group) may also be transected by the power-line corridors to the north of Mossel Bay. From the Klein-Brakrivier northeastwards to Blanco the corridors are of low palaeontological sensitivity since they overlie highly deformed and metamorphosed Late Precambrian sediments of the Kaaimans Group and associated intrusions of the Cape Granite Suite.

The footprint for the proposed new Blanco (Narina) Substation on the western outskirts of George is underlain at depth by highly metamorphosed, deformed sediments (schists, hornfels) of the Saasveld Formation (Kaaimans Group). These Late Proterozoic metasediments are unfossiliferous. The Precambrian bedrocks are overlain by superficial deposits of low palaeontological sensitivity and, furthermore, are probably highly weathered near-surface. The palaeontological impact significance of the construction of Blanco Substation is therefore assessed as LOW.

6.2 Pre-colonial and Colonial Archaeology

The full Archaeological Impact Assessment by ACO Associates cc is attached as Appendix 2.

• In addition to the highly significant Grade II sites of Pinnacle Point, Cape St Blaize and Herolds Bay Cave along the southern Cape coastline, we may anticipate that there are numerous other coastal sites (including Later Stone Age middens) many of which have been destroyed by coastal development. The coastal strip, up to about 1 km from the high water mark, is particularly vulnerable to development;

- Inland of the coast, archaeologists have recorded ephemeral scatters of Early and Middle Stone Age artefacts. They are generally considered to be of low significance;
- Caves and rockshelters may occur in rocky outcrops and cliff faces which occur inland from the coast. They have potential to contain archaeological material, such as the LSA site which was excavated prior to the construction of the Wolwedans Dam;
- De Kock (2008) confirms that the area around Blanco has been settled by colonists since at least the early 1700's. There are numerous ruined structures and modifications to the landscape (furrows for irrigation) still evident.

6.3 Cemeteries and Graves

Formal cemeteries are associated with settlements such as Mossel Bay, Great Brak River and George. Smaller farm graveyards are often found on farms. Where impact assessments have been undertaken, they have usually reported on small, informal graveyards. Nilssen (2005a) reported on some graves on the farm Vaalevalley 219 along the coast near Klein Brakrivier. Halkett (2014) reported on cemeteries within the powerline corridors near the proposed Blanco substation but noted that they could be avoided through micro-siting of the pylons. Yates (2006) noted graveyards during his survey of the farm Geelhoutboom 318 near Blanco. He gives these graves a very high rating(IIIA).

6.4 Cultural Landscape

The Cultural Landscape assessment was conducted by Stefan de Kock of Perception Planning and is attached as Appendix 3.

For the purpose of analysing and describing the cultural landscape elements, the study area has been divided into three distinctive landscapes, namely the Outeniqua area, the area between the Great Brak and Little Brak Rivers and the Mossel Bay area.

Outeniqua Area: extending roughly between the upper reaches of Great Brak River and the Outeniqua Pass, this gently undulating landscape falls within the jurisdiction area of George municipality. Here, forestry remains evident along the foothills of Outeniqua mountain range, particularly northwest of Blanco. The landscape presents itself mostly through agriculture-orientated land uses, which include cultivation, stock farming and various forms of intensive agriculture. Few pristine natural landscape elements remain and river corridors have mostly become overgrown by alien invasive vegetation. Rural occupation and tourism-orientated uses have become evident within the landscape during recent years - sometimes militating against the overall cultural landscape qualities.

Notwithstanding, this area is associated with and thematically linked to the role that forestry and agriculture played in the early establishment and development of the Southern Cape. Taken in conjunction with strong forestry and agricultural orientated use as well as several other heritage resources (including e.g. historic structures and graveyards), all of which provide a sense of historic context and continuity, this Cultural Landscape is considered to be of regional and local historic, aesthetic and social cultural significance (Grade IIIB).

Great Brak to Little Brak Rivers: This landscape tends to be less accessible, hilly and rugged, with limited agriculture along the higher-lying plateaus towards the north and lower-lying river corridors closer to the coastline. Much of this landscape has been incorporated into private game reserves during the last decade or so and is therefore likely to once again revert to a natural landscape over the long term. Areas closer to the coastline have mostly been transformed through low density urban development, which has significantly eroded the quality of the cultural landscape. Whilst retaining natural beauty within the northern half of this area, few if any historic elements, which could provide a sense of historic continuity, seem to have survived until present day. From this perspective therefore, the entire area is considered of low local historic, aesthetic and social cultural significance (Grade IIIC).

Mossel Bay Rural Area: incorporating the westernmost portion of the study area between the Little Brak River and the PetroSA site, this landscape retains a predominant agricultural character (taken in conjunction with existing private game reserves). The northern half of this area includes tourism routes of aesthetic significance such as the R328 (to Oudtshoorn) and a section of the R327 (leading to Herbertsdale). The southern half of this area - along the coastline - is mostly dominated by urban-related development. The landscape has been altered through mining activities and environmental authorisation for at least two wind energy facilities had previously permitted within this area. While historically significant and retaining areas of moderate scenic beauty (northern portion of the study area), few historic elements remain within the landscape. The southern portion of this area has been transformed significantly through existing (and permitted) urban-related development thus permanently altering the landscape character. This area is therefore considered to be of **no local historic, aesthetic and social cultural significance (Ungradable)**.

6.5 Visual Landscape

Two Landscape Types (LTs) were identified in the study area:

- **Coastal Towns**: is limited to the coastal region and forms a very small part of the study area. The most densely populated areas are along the coastline, with the Town of George located further inland. What use to be placid holiday towns, have developed into established communities. A peaceful atmosphere prevails during the year but changes to a vibrant holiday atmosphere when thousands of tourists gather over holiday seasons. The towns developed rapidly along the coast and have been forced inland to accommodate the influx of permanent residents and holidaymakers. The predominant land use is residential, with commercial and light industrial development along the N2 highway. Due to the high tourism potential, many holiday resorts and privately owned guest houses are located in the towns, close to the beaches.
- Inland Rural Landscape: This area is part of the Garden Route and is wedged between the scenic Outeniqua Mountain Range and the very popular coastal towns. It is a landscape with diversity but its rural character and similar agricultural practices create uniformity over the entire area. The eastern region is intensely farmed and very little of the natural vegetation remains. The central region consists of a reasonable percentage of cultivation, but due to the varied topography, natural ecosystems are more readily found. Botlierskop Game Reserve conserves approximately 3500ha of natural and semi-natural ecosystems. In the western part of the study area, Gondwana Game Reserve and Hartenbos Game Lodge conserve 4000ha and 860ha respectively. These areas are considered natural, although fragmented cultivation occurs between the reserves. The regional tourism industry has expanded to include not only the coastline, but also managed to add major tourist attractions in the interior in the form of luxury accommodation, game farms and other outdoor activities such as skydiving, horse riding trails, hiking etc. The large dams offer fishing and birding opportunities.



Figure 6:: The sensitive archaeological coastal zone is indicated within the pink lines. The most significant archaeological sites are found in this area and it should be avoided.

7. IMPACTS ON HERITAGE RESOURCES:

7.1 Impacts on Palaeontology:

The Baseline Assessment by Almond (2015) concludes: A substantial proportion of proposed power-line sectors will cross formations that are conservatively regarded as moderate to high sensitivity". "In practice, however, the likelihood of significant negative impacts on fossil heritage on the ground is low over most sectors of these routes because the bedrocks here are often highly weathered, tectonically- deformed or covered by a substantial thickness of fossil-poor superficial deposits (scree, alluvium, soils, etc.)".

7.2 Impacts on Archaeology:

- Powerlines running within 1km of the coast, may result in the destruction of highly significant archaeological sites. The probability of this happening is **medium to high**;
- Caves and rock shelters, whilst not directly impacted by the construction of a tower footing, may be damaged or vandalised as a result of easier human access;
- In situ scatters of ESA and MSA stone artefacts may be damaged. The likelihood of this occurring is low;
- *In situ*, LSA archaeological sites may be damaged by the construction of the tower footings and access roads. The likelihood of this occurring is **medium to low**;
- Ruined structures and historic rubbish dumps may be impacted by the tower footings and access roads. The likelihood of this occurring is **medium**;
- The proposed tower footings may result in the destruction of farm cemeteries and graves. The likelihood of this occurring is **medium**.

7.3 Impacts on Cultural Landscape/Built Environment

With regard the Outeniqua area: Although this is an evolving landscape, the notion of agriculture and forestry remains evident within the landscape through the occurrence of modest farm buildings of typical local vernacular, pastures as well as forestry along the foothills of the Outeniqua Mountain range. These cultural landscape qualities are perceived from all public roads through and around the area, including the N2 National Road and this landscape is therefore sensitive to any large-scale and/or visually intrusive development or infrastructure.

However, a significant portion of the study area (including the Outeniqua area) is traversed by an existing Eskom overhead transmission line, which invariably already impacts on the scenic qualities of the area. It is noted that the alignment of these existing overhead transmission lines, for the most part, follows the proposed Alternative 2 and Alternative 3 route alignments. New infrastructure to be installed along either one of these alternative alignments would tend to be viewed within the context of the existing overhead transmission lines.

With regard the Great Brak to Little Brak Rivers: Given the scenic qualities of the northern portion of this area, which is likely to become more evident should conservation continue, proposed grading for this cultural landscape (Grade IIIC) as well as the alignment of existing overhead transmission lines through this area, proposed Alternative alignments 2 and 3 are both acceptable.

With regard the Mossel Bay rural area: Anticipated impacts associated with proposed route alignments through the Mossel Bay rural cultural landscape would need to be considered within the context of its proposed grading (ungradable), which is partly informed by the pattern of existing and permitted development within this area.

7.4 Visual Impacts

The VIA study distinguished between impacts on the observers and impacts on the visual resource. The observers represent all people that may be affected visually, while the impacts on the visual resource strictly assess the changes to the landscape character and the impact on its visual value. The main observer groups are residents, tourists and motorists. The visual assessment also took into consideration the Public Participation comments.

Distance from sensitive viewpoints along the coast:

- Alternative 3 is within 1 km from the western and northern outskirts of Hartenbos and passes near Vyf-Brakke Fonteinen, Hartenbos Hills and Monte Christo Estate. It also crosses the R328 which is considered a major transport route to Oudtshoorn;
- Great View Guest House and Hartenbos River Resort are two tourist destinations that will be impacted and are located within the ZMVE of Alternative 3; and
- Alternative 2 passes within 1 km north of Wolwedans community and the small holdings near Wolwedans Dam.

Distance from sensitive viewpoints inland of the coast:

Alternative 1 is within 1 km of the following sensitive viewpoints:

- It is parallel to the R327 and crosses over the road near the entrance to Gondwana Game Reserve;
- It traverses the southern section of the Gondwana Game Reserve;
- It passes through Hartenbos Game Lodge;
- It crosses over the R328, north of Brandwag;
- It traverses the northern section of Botlierskop Game Reserve; and
- It impacts on all the farm residents within the ZMVE of the alignment.

Alternative 2 is within 1 km of the following sensitive viewpoints:

- It is parallel to the R327 and crosses over the road near the entrance to Gondwana Game Reserve;
- It passes south of the Gondwana Game Reserve;
- It crosses over the southern parts of the Hartebeeskuil Dam;
- It passes north of Bergsig Game Farm and Lodge;
- It crosses over the R328, south of Brandwag;
- The corridor passes near to U-Nic Adventure and Guest Farm, Riverside Holiday Resort Park and Adventure Horse Safaris, between R328 and Klipheuwel Dam;
- It crosses over the Klipheuwel Dam;
- It traverses through the central region of Botlierskop Game Reserve;
- It crosses the Wolwedans Dam; and
- It impacts on all the farm residents within the ZMVE of the alignment.

Alternative 3 is within 1 km of the following sensitive viewpoints:

- It crosses the R327 north of Mossdustria;
- It passes the western and northern outskirts of Hartenbos;
- It crosses the R328 west of Hartenbos;
- The corridor passes near to U-Nic Adventure and Guest Farm, Riverside Holiday Resort Park and Adventure Horse Safaris, between R328 and Klipheuwel Dam;
- It crosses over the Klipheuwel Dam;
- It traverses through the central region of Botlierskop Game Reserve;
- It crosses the Wolwedans Dam; and
- It impacts on all the farm residents within the ZMVE of the alignment.

The only alternative that will cause a significant impact on the coastal landscape is Alternative 3 where its corridor intersects with the western regions of Hartenbos. Should the transmission line follow this route it will not affect the existing settlement patterns, but future development will have

to allow for a safe 55m wide servitude which will impact on settlement patterns. The Coastal Towns LT is considered a landscape with medium sensitivity along its western outskirts. It is considered a transition zone between the urban and rural landscape.

The Inland Rural landscape type is considered moderate to highly sensitive. The highly sensitive regions are in the western and central regions where a concentration of visual amenities is present. The eastern region is moderately sensitive due to its intensely farmed land use, but individual features are considered highly sensitive.

The visual impact significance summary is provided in Section 7.6 of the Visual Impact Assessment (Appendix 4).

8. CUMULATIVE IMPACTS

Table 2: Position of Existing Eskom Transmission Lines in the Study area

The Proteus – Droerivier 400kV line	Runs along Alternative 1
2 x Proteus – Blanco 132kV lines	Runs along Alternative 2
A low voltage powerline line on gum poles	Runs along Alternative 3

Alternative 1 follows the existing 400kV Proteus – Droerivier alignment. The new 400kV line will theoretically double the visual prominence of the electrical infrastructure through the study area. It is expected to contrast with the natural, semi-natural and agricultural characters of the study area, thereby causing visual intrusions along its linear length.

Alternative 2 follows the existing alignment of two (2) x Proteus – Blanco distribution lines. The prominent scale of the new 400kV line will be a large addition to the electrical infrastructure in the area. A significant increase (more than double) in visual prominence of electrical infrastructure in the area can be expected. Three powerlines in one corridor are expected to exceed the visual tolerance threshold. The factor that contributes to this is that each line will consist of a different type of tower that causes major visual incoherence and clutter.

Alternative 3 follows an existing alignment of an inconspicuous low voltage power line, supported by gum poles, between the Gourikwa substation and the Hartenbos substation. A monopole extends the line to the merger point with Alternative 2. Here the line joins the same corridor as the 2 x Proteus – Blanco 132kV lines. Three powerlines in one corridor are expected to exceed the visual tolerance threshold. The factor that contributes to this is that each line will consist of a different type of tower that causes major visual incoherence and clutter.

9. COMMENTS FROM REGISTERED CONSERVATION BODIES AND I&APS

Heritage Western Cape, in their response to the NID application, has specifically asked for the comments from the registered conservation bodies in the area as well as the local municipalities. These have been approached for comment.

The following comments were received during the PPP process for the Scoping HIA:

COMMENTS	RESPONSES
Requested the historic background on the towns of Ruiterbos (1820), Groot Brak, Mossel Bay and George (particularly Blanco)	These have been discussed in the Cultural Landscape background
Requested a list of the "heritage farms" that will be impacted by the line	These have been discussed in the Cultural Landscape background
Mapping of Stone Age shell	All the line alternatives will run a considerable distance from Mossel

middens at Mossel Bay (as well as changes in sea level)	Bay, and no impacts are expected to stone age shell middens
Historic settler homes at Belvedere, Botelierskop and on Ruben Barnard's Farm	These have been discussed in the Cultural Landscape background. Because of the width of the servitude, it is expected that the towers can be adjusted to avoid historic homes
Remnants of the Colonial Period	These are discussed in the Cultural Landscape background
Date for the heritage walk down	This will be provided by the environmental practitioner
LSA or Iron Age settlements at Mossel Bay	This is discussed in the archaeological study
Which line option is preferred	From an archaeological perspective, Alternative 1 will impact on the least number of sites, but from a Built Environment and Cultural Landscape perspective, Alternatives 2-4 are preferred.

10. CONCLUSION

Numerous heritage impact assessments have been conducted in the general area between Mossel Bay and George.

The following heritage resources may occur:

- Highly significant archaeological sites such as Pinnacle Point, Cape St Blaize and Herold's Bay Cave are situated along the Southern Cape coastline but outside the development area;
- Reports indicate that scatters of ESA and MSA stone artefacts are thinly dispersed across the landscape. They are considered of low significance;
- A few caves and rock shelters have been recorded in rocky outcrops and in incised valleys and gorges inland from the coast. Some contain LSA archaeological material and have the potential to be significant;
- Ruined farmhouses, including barns and kraals may occur in the powerline corridors;
- A number of farm cemeteries and scattered individual graves have been recorded in the area by other CRM practitioners.
- Some towns, villages, hamlets and mission stations occur in proximity to the routes although <u>none are crossed directly;</u>
- There are no provincial heritage sites situated within close proximity to the three alternative alignments.
- The proposed lines occur in areas of high scenic value and at least three 'cultural landscapes' of varying grades of significance have been identified
- The visual impact specialist has identified the coastal towns and the inland rural area has having visual sensitivity.

10.1 Recommendations:

Since the powerline corridors are 1 km wide, and the actual servitude will be only 62 m wide, there is plenty of space within the corridors to adjust the position of the towers to avoid negative impacts to surface sites.

Archaeology:

- CRM reports confirm that the coastline is sensitive from an archaeological perspective and a buffer of at least 1km should be maintained from the ocean;
- A walk-down of targeted areas along the selected powerline Alternative will be required;

- This would include areas around rocky koppies, steeply sided valleys and gorges, the banks of rivers, and areas in close proximity to farm houses;
- With respect historical archaeological material, a targeted walk-down of the line will be required after the final powerline route has been decided. It would concentrate on areas immediately around farm buildings and structures to ensure that a sufficient buffer has been implemented to avoid impacts to historic kraals, old sheds, rubbish dumps, etc;
- The walk down phase would concentrate on areas around historic farmsteads in order to ensure that graves area avoided;
- The towers may be constructed on/or in close proximity to farm graveyards. If graveyards are discovered during the walk down phase, a buffer of at least 15 m should be employed around them;
- If unmarked graves are uncovered during the construction of the tower footings, all work in that area should cease immediately, and HWC must be contacted.

Graves:

- The towers may be constructed on/or in close proximity to farm graveyards. If graveyards are discovered during the walk down phase, a buffer of at least 15 m should be employed around them;
- A survey should be conducted during the walk-down phase around farmsteads in order to ensure that graves area avoided;
- If unmarked graves are uncovered during the construction of the tower footings, all work in that area should cease immediately, and HWC must be contacted.

Cultural Landscape/Built Environment

- Having regard to the above as well as gradings proposed for the **Outeniqua cultural landscape** (Grade IIIB) it is therefore recommended that, from a cultural landscape perspective, Alternative alignment 3 be followed as first preference and Alternative alignment 2 as second preference;
- With regard the Great Brak to Little Brak cultural landscape, and the proposed grading for this cultural landscape (Grade IIIC) as well as the alignment of existing overhead transmission lines through this area, proposed Alternative alignments 2 and 3 are both acceptable. Consequently, proposed Alternative alignment 1 through this area is not supported;
- With respect the **Mossel Bay Cultural Landscape**: notwithstanding the alignment of existing (similar) infrastructure through this area, it is suggested that proposed Alternative alignment 3 be preferred.

The only specific recommendations which de Kock makes with respect mitigation, is that although a Built Environment assessment was not required by Heritage Western Cape, nonetheless it is recommended that provision be made for a walk down of the approved route alignment traversing this area prior to the commencement of construction works.

Visual

Reduction and remediation mitigation will not be effective to prevent residual impacts from occurring. The proposed transmission line will remain visible unless major design or alignment changes are implemented. The option of consolidating existing lines into the design of the new transmission line is regarded as very effective and is highly recommended to prevent major cumulative impacts. Although cumulative impacts may still occur, the significance thereof will be reduced and the exceedance of a visual intolerance threshold may be avoided.

Avoiding sensitive landscape features and observers is regarded as being the most effective mitigation measure in reducing direct, cumulative and residual impacts. This is, however, a complex measure to implement, and is reliant on technical/feasibility studies as well as a much

larger study area assessment to ensure that other sensitive features and observers are not impacted. Due to these unknown factors, avoidance mitigation is only proposed within the 2 km corridor that will reduce visual impacts on certain receptors.

Line Option Recommendations:

From an archaeological perspective, Alternatives 1 and 2 are preferred to Alternative 3, which runs in close proximity to the coast, resulting a potential higher impact to archaeological resources.

From a Cultural Landscape perspective, either Alignment 2 or 3 are preferable to Alignment 1.

From a visual impact perspective, Alternative 1 is the route that impacts on the least number of sensitive landscape features and steers clear of the least number of tourist attractions. Without drastic mitigation measures, the impact on the visual resource and sensitive observers will remain high. Alternative 2 is more preferred than Alternative 3. Alternative 3 passes within 1 km of an urban area and the increased viewer incidence makes it less preferable than Alternative 2. Both these alternatives will have significant cumulative impacts due to the existing 2x132kV distribution lines in the same corridor.

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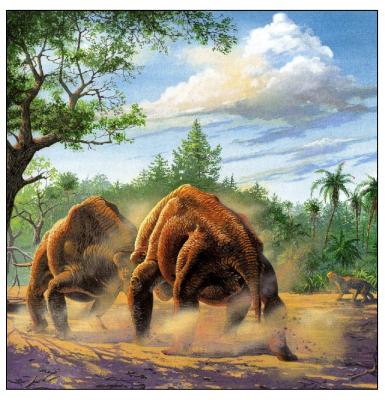
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Appendix 1: Palaeontology specialist report

PALAEONTOLOGICAL BASELINE ASSESSMENT: DESKTOP STUDY

GOURIKWA-BLANCO-DROËRIVIER 400 kV TRANSMISSION POWER-LINE AND SUBSTATION UPGRADES, WESTERN & EASTERN CAPE



Reconstruction of Middle Permian wildlife of the Karoo Basin (260 million years ago)

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Palaeontological heritage assessment: desktop study

GOURIKWA-BLANCO-DROËRIVIER 400 kV TRANSMISSION POWER-LINE AND SUBSTATION UPGRADES, WESTERN & EASTERN CAPE

John Almond & Wendy Taylor

(April 2015)

DRAFT SUMMARY

The South African public electricity company Eskom proposes to upgrade the electricity supply infrastructure in the Western and Eastern Cape through the construction of (1) a new Blanco (Narina) Substation on the western outskirts of George, (2) a new 400 kV transmission power-line from the existing Gourikwa Substation near Mossel Bay to Blanco Substation (*c*. 60 km) and (3) a new 400 kV transmission power-line from Blanco Substation to the existing Droërivier Substation near Beaufort West (*c*. 250 km). As far as possible, the proposed new power-line routes run parallel to existing lines and, to a considerable extent, also subparallel to major roads such as the N2, N12 and N9. Three route options for the Gourikwa – Blanco 400 kV power-line connection and two route options for the Blanco – Droërivier connection are under consideration.

The proposed power-line routes traverse the outcrop areas of some thirty different geological units that range in age from some 600 million years old to the Recent. Most of these units are sedimentary formations that are known to contain fossil heritage resources. Fossils preserved at or below the ground surface are likely to be disturbed, damaged or destroyed by surface clearing and excavations for access roads and electricity pylon footings undertaken during the construction phase of the project. In order to assess the possible need for further specialist studies and mitigation, the palaeontological sensitivity of each rock unit (*e.g.*, formation) crossed by the proposed power-line route options has been assessed here on the basis of its known fossil record as well as local levels of bedrock exposure and near-surface weathering, based on satellite images and the authors' previous field experience.

A substantial proportion of proposed power-line sectors will cross formations that are conservatively regarded as moderate to high sensitivity in palaeontological heritage terms (*cf* palaeonsensitivity maps on the SAHRIS website). In practice, however, the likelihood of significant negative impacts on fossil heritage on the ground is low over

most sectors of these routes because the bedrocks here are often highly weathered, tectonically-deformed or covered by a substantial thickness of fossil-poor superficial deposits (scree, alluvium, soils *etc*). In this baseline desktop study a small number of (mostly short) sectors where significant impacts to fossil heritage might occur during construction have been identified and indicated on strip maps extracted from the Riversdale, Beaufort West and Oudtshoorn 1: 250 000 geological sheets (Appendix 1, black dotted lines). The principal high-sensitivity sedimentary successions triggering Phase 1 palaeontological field assessment include shallow marine sediments of the Bokkeveld Group (Early to Middle Devonian), marine to lacustrine sediments of the Witteberg Group (Middle Devonian to Early Carboniferous) and Ecca Group (Early to Middle Permian), fluvial sediments of the Lower Beaufort Group (Middle to Late Permian), continental red beds of the Uitenhage Group (Early Cretaceous) and small outcrop areas of Quaternary estuarine deposits (Klein Brak Formation, Bredasdorp Group).

A realistic palaeontological heritage impact assessment of the Gourikwa – Blanco – Droërivier 400 kV power-line and substation upgrade project is only possible once the potentially sensitive sectors of the power-line route options identified in this study have been surveyed in the field by professional palaeontologists. This is likely to result in the "downgrading" of the inferred sensitivity of most of power-line route sectors, thereby keeping mitigation recommendations to a realistic minimum. It is therefore recommended that a pre-construction field-based assessment of these key sectors be carried out at the earliest opportunity so that any significant palaeontological heritage issues may be considered and addressed in the project design and construction phases. The proposed field assessment should focus on areas of good bedrock exposure along or close to the various power-line corridors under consideration. especially within the potentially sensitive sectors identified in Appendix 1 (black dotted lines on strip maps). Fossil material within these sectors should be recorded, the effective sensitivity of each sector assessed, and specific recommendations made regarding any further specialist studies, monitoring or mitigation required in the preconstruction or construction phase of the Gourikwa – Blanco - Droërivier power-line project.

1. Gourikwa – Blanco 400 kV power-line

The study area for this transmission line project lies on the southern coastal plain, from the Mossel Bay area to George (Fig. 1). Sectors of potentially high palaeontological sensitivity along the three proposed Gourikwa – Blanco power-line route options are shown by the black dotted lines on strip maps 1 to 3 (Appendix 1). They are situated to the northwest and north of Mossel Bay and mainly concern outcrop areas of Mesozoic

continental rocks of the Uitenhage Group. They include the Early Cretaceous Kirkwood Formation that has yielded important fossil material of dinosaurs and other terrestrial vertebrates, petrified woods and other well-preserved plant material, as well as the Early Cretaceous Hartenbos Formation that is also rich in fossil wood (*N.B.* These formations are included within an undifferentiated Uitenhage Group, Ke, on the Oudtshoorn 1: 250 000 geology sheet). Small outcrop areas of shell-rich estuarine deposits of the Klein Brak Formation (Bredasdorp Group) may also be transected by the power-line corridors to the north of Mossel Bay. From the Klein-Brakrivier northeastwards to Blanco the corridors are of low palaeontological sensitivity since they overlie highly deformed and metamorphosed Late Precambrian sediments of the Kaaimans Group and associated intrusions of the Cape Granite Suite.

Pending field assessment, there is no preference on palaeontological heritage grounds for any particular power-line route option between Gourikwa and Blanco.

2. Blanco Substation

The footprint for the proposed new Blanco (Narina) Substation on the western outskirts of George is underlain at depth by highly metamorphosed, deformed sediments (schists, hornfels) of the Saasveld Formation (Kaaimans Group). These Late Proterozoic metasediments are unfossiliferous. The Precambrian bedrocks are overlain by superficial deposits of low palaeontological sensitivity and, furthermore, are probably highly weathered near-surface. The palaeontological impact significance of the construction of Blanco Substation is therefore assessed as LOW.

3. Blanco – Droërivier 400 kV power-line

The two alternative route options for the Blanco – Droërivier 400 kV power-line both traverse a very wide range of sedimentary rock units of the coastal plain, Cape Fold Belt, Little Karoo and Great Karoo regions.

Route Alternative 1 heads due north from Blanco, crossing the Outeniqua Range and then the eastern portion of the Little Karoo, passing to the west of Dysselsdorp and De Rust. After crossing the Swartberg Range it enters the Great Karoo proper north of Klaarstroom and then runs along the western side of the N12 to Beaufort West.

Sectors of potentially high palaeontological sensitivity along the Alternative 1 power-line route are indicated by the black dotted lines on strip maps 3 to 4 and 13 to 17 (Appendix 1). These include several subunits of the Cape Supergroup, such as Bokkeveld Group bedrocks in the Klaarstroom area *plus* several narrow outcrop areas of Lower Witteberg

Group (Weltevrede Subgroup) and Upper Witteberg Group (Lake Mentz and Kommadagga Subgroups) rocks within the Cape Fold Belt to the north. Karoo Supergroup subunits of potentially high palaeontological sensitivity include Lower Ecca Group rocks north of Klaarstroom, Waterford Formation deltaic sediments in the southern Karoo near Zwartskraal, as well as a long stretch (strip maps 13 to 16) of Lower Beaufort Group rocks across the width of the Great Karoo, from the Cape Fold Belt almost as far as the Great Escarpment near Beaufort West. The Lower Beaufort Group outcrop area here is of particular palaeontological interest because of its rich fossil vertebrates (*e.g.,* reptiles, therapsids) of Middle Permian age that are assigned to the *Tapinocephalus* and *Pristerognathus* Assemblage Zones.

Route Alternative 2 is considerably longer than Alternative 1. It diverges from the latter near Outeniqua Pass and initially heads eastwards along the northern flank of the Outeniquaberg Range before turning northeast to traverse the eastern end of the Little Karoo, passing by Uniondale. It crosses the eastern extension of the Groot Swartberg Range near Ghwarriepoort and then arcs round to the northwest in the area west of Willowmore. The power-line route then heads in a straight line across the Great Karoo to Beaufort West, passing to the southwest of Rietbron (*N.B.* The Ghwarriepoort – Rietbron section of the route lies within the Eastern Cape Province).

Sectors of potentially high palaeontological sensitivity along the Alternative 2 power-line route are indicated by the black dotted lines on strip maps 3 and 5 to 13 (Appendix 1). These include several subunits of the Cape Supergroup, such as Lower and Upper Bokkeveld Group bedrocks to the west of Willowmore area *plus* several narrow outcrop areas of Lower Witteberg Group (Weltevrede Subgroup) and Upper Witteberg Group (Lake Mentz and Kommadagga Subgroups) rocks within the Cape Fold Belt to the northwest of Willowmore. Karoo Supergroup subunits of potentially hiah palaeontological sensitivity include Lower Ecca Group rocks northwest of Willowmore. as well as a long stretch (strip maps 10 to 13) of Lower Beaufort Group rocks across the width of the Great Karoo, from the Cape Fold Belt almost as far as the Great Escarpment near Beaufort West. The Lower Beaufort Group outcrop area here is of particular palaeontological importance because of its rich fossil vertebrates (e.g., reptiles, therapsids) of Middle Permian age that are assigned to the Tapinocephalus and Pristerognathus Assemblage Zones. However, substantial areas of Beaufort Group bedrock here are masked by Late Caenozoic alluvium of low palaeontological sensitivity. Pan sediments to the southeast of Beaufort West are potentially of palaeontological interest.

Pending field assessment, there is no preference on palaeontological heritage grounds for either power-line route alternative between Blanco and Droërivier.

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Note that most of the power-line project lies within the Western Cape, for which the responsible heritage resources agency is Heritage Western Cape (Contact details: Protea Assurance Building, Green Market Square, Cape Town 8000. Private Bag X9067, Cape Town 8001. Tel: 086-142 142. Fax: 021-483 9842. Email: hwc@pgwc.gov.za). The Blanco – Droërivier Alternative 2 route crosses the Eastern Cape between Ghwarriepoort and Rietbron. Here the responsible heritage resources agency is ECPHRA (Contact details: Mr Sello Mokhanya, 74 Alexander Road, King Williams Town 5600; Email: smokhanya@ecphra.org.za).

Appendix 2: Archaeology specialist report

APPENDIX 2

ARCHAEOLOGICAL IMPACT ASSESSMENT: PROPOSED CONSTRUCTION OF A 400kV POWERLINE FROM GOURIKWA SUBSTATION (MOSSEL BAY) TO BLANCO SUBSTATION (GEORGE), WESTERN CAPE

(Assessment conducted under Section 38 (8) of the National Heritage Resources Act No 25 of 1999)

Prepared for: Marinda Le Roux Envirolution Consulting P O Box 1898 Sunninghill 2157 <u>marinda@envirolution.co.za</u> 0861 44 44 99

March 2016



Prepared by:

Lita Webley ACO Associates cc 8 Jacobs Ladder St James

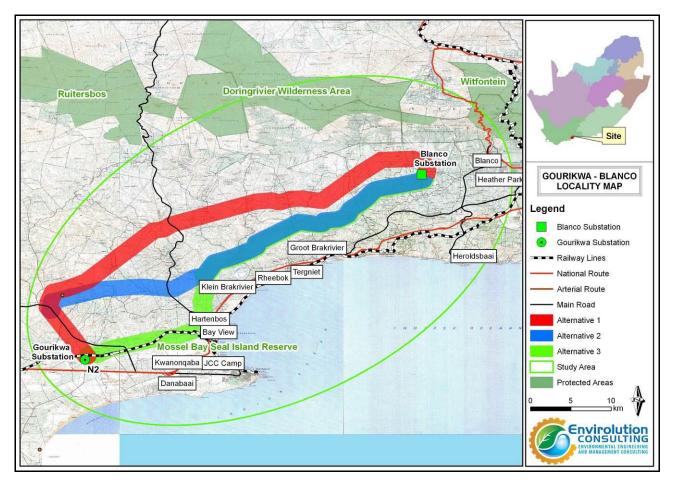
Email: lita.webley@aco-associates.com Tel: 0217064104 Fax: 0866037195

EXECUTIVE SUMMARY

Site Name: Proposed 400 kV powerline from the Gourikwa substation to the Blanco substation.

Location: Three alternative powerlines running between Mossel Bay and George

Locality Plan:



The position of the three alternative powerlines between the Gourikwa substation at Mossel Bay and the Blanco substation at George.

Description of the Proposed Development:

The 400kV powerline has to be constructed in a narrow band between the mountains and the ocean. This presents a serious challenge in terms of providing three practical corridors. Two corridors (Alternative 1 =Red and Alternative 2 = Blue) have been identified (Figure). A third corridor (Green) is merely a slight deviation from the Blue corridor. All the proposed corridors have been aligned to run parallel to existing power lines.

- Red corridor: After leaving the Gourikwa substation, the corridor runs north to the Proteus substation, and parallel to the Dx Duinzicht Proteus 66 kV powerline. It then turns north-east to join the existing Proteus Droërivier powerline. It runs parallel to this line for approximately 45 km until it reaches the site of the proposed Blanco substation.
- Blue corridor: The blue corridor exits the Gourikwa substation in a northerly direction, but turns easterly to cross over the R327 and run parallel to the existing distribution power-lines. It will cross at least four dams although attempts will be made to avoid them if possible. The topography is extremely rugged. It is proposed to run the line parallel to existing power-lines.

• Green deviation: this is an alternative leg to the blue corridor. It is aligned easterly towards Hartenbos. It is proposed to run the corridor along the existing distribution power lines. It will join the blue corridor on the north side of the Brandwag River.

The corridor is 1km wide although the actual servitude will be 62 m.

The design of the pylons/towers will be as per the "generic diagram". An illustrative example of a 400kV transmission pylon is provided.

Archaeological Resources Identified:

- Highly significant archaeological sites such as Pinnacle Point, Cape St Blaize and Herold's Bay Cave are situated along the Southern Cape coastline;
- Archaeological reports indicate that scatters of ESA and MSA stone artefacts are thinly dispersed across the landscape. They are considered of low significance;
- A few caves and rock shelters have been recorded in rocky outcrops and in incised valleys and gorges inland from the coast. Some contain LSA archaeological material and have the potential to be significant. One koppie identified in the survey was which may contain archaeological sites is Botelierskop but others may exist;
- Ruined farmhouses, including barns, kraals and stone walling are considered colonial archaeology and they may occur inside the powerline corridors;
- A number of farm cemeteries and scattered individual graves have been recorded in the area by other CRM practitioners and more may exist inside the powerline corridors.

Anticipated Impacts on Archaeological Resources:

While the footprint of the tower is relatively small, impacts to heritage resources may occur.

- Scatters of ESA and MSA stone artefacts may be damaged. The likelihood of this occurring is very low;
- Powerlines running in proximity to the coastline, may result in the destruction of highly significant archaeological sites, including shell middens. These tend to be concentrated up to 300m from the sea, although middens may occur up to several kilometres inland;
- Caves and rock shelters with rock art, whilst generally not directly impacted by the construction of a tower footing, may be damaged or vandalised as a result of easier human access;
- No rock art sites have been reported from the area between the Outeniqua Mountains and the coast although the possibility exists that they may occur;
- Later Stone Age sites on koppies or along river banks may be damaged by the tower footings;
- Colonial period archaeological remains may be damaged by tower footings although the probability of this occurring is low;
- The proposed tower footings may result in the destruction of farm cemeteries and graves. The likelihood of this occurring is medium-low.

Public Participation Comments:

Heritage Mossel Bay has commented with respect the Scoping Report and their comments are attached and addressed in the report.

Recommendations:

The powerline corridors being assessed are 1 km wide, although the actual servitude will only be 62 m wide. This provides sufficient width for micro-placing of the tower footings to avoid impacts to archaeological sites.

Once the final route option has been selected and the Environmental Authorisation issued, the following recommendations should be included in the EMP:

- CRM and research reports confirm that the coastline is sensitive from an archaeological perspective and a buffer of at least 1km should be maintained from the ocean;
- Assess the possibility of impacts to in situ LSA sites by a targeted walk down of certain sections of the line, along koppies and on river banks;

- Where landowners have identified caves with rock art on their properties, a targeted survey at the walk-down phase can address any concerns about potential impacts. A range of mitigation options are possible, including the careful placement of the tower footings to avoid rock art sites (micro-siting of the tower footings will be required inside the corridor to avoid impacts);
- Rock art sites in proximity to the tower footings may also be protected from vandalism by ensuring that they are fenced off during the construction of the powerline;
- With respect historical archaeological material, a targeted walk-down of the line will be required after the final powerline route has been decided. It would concentrate on areas immediately around farm buildings and structures to ensure that a sufficient buffer has been implemented to avoid impacts to historic kraals, old sheds, rubbish dumps, etc;
- The walk down phase would concentrate on areas around historic farmsteads in order to ensure that graves area avoided;
- The towers may be constructed on/or in close proximity to farm graveyards. If graveyards are discovered during the walk down phase, a buffer of at least 15 m should be employed around them;
- If unmarked graves are uncovered during the construction of the tower footings, all work in that area should cease immediately, and HWC must be contacted.

These recommendations must be included in the final EMP.

There are no anticipated fatal flaws with regard the construction of the powerline and Alternative 1 or 2 are considered acceptable from an archaeological perspective. Alternative 3 poses problems because of the relative proximity of the line to the coast, and the higher probability of encountering archaeological sites.

Alternative 1, closest to the mountain is, is the preferred option because of the lower probability of encountering ruined historical farm buildings. While there is an existing powerline which follows Alternative 2, it is more sensitive from an historical archaeological perspective.

Author/s and Date:

Lita Webley ACO Associates cc

THE AUTHOR

Lita Webley is an archaeologist (PhD from the University of Cape Town 1992) with ACO Associates cc and has been conducting Heritage Impact Assessment and archaeological specialist studies in the Western Cape, Northern Cape and Eastern Cape Provinces since 1996. She is accredited as a Principal Investigator by the Association of Southern African Professional Archaeologists (ASAPA) CRM section as follows:

- > Principal Investigator: Stone Age, Shell Middens and Colonial Period; and
- Field Director: Grave Relocations.

ACO Associates cc has no financial or other interest in the proposed development and will derive no benefits other than fair remuneration for consulting services provided.

SPECIALIST DECLARATION

I, Lita Webley, declare that -

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have potential of influencing – any decision to be taken with respect to the application by the competent authority; and – the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offense in terms of regulation 71 and is punishable in terms of section 24F of the Act.

Signature of specialist

h.E. Webley

Specialist Field: Archaeology and Heritage

Name of Company: ACO Associates

GLOSSARY

Archaeology: Remains resulting from human activity which is in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures.

Early Stone Age: The archaeology of the Stone Age between 700 000 and 2500 000 years ago.

Fossil: Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.

Heritage: That which is inherited and forms part of the National Estate (Historical places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999.

Holocene: The most recent geological time period which commenced 10 000 years ago.

Late Stone Age: The archaeology of the last 20 000 years associated with fully modern people.

Middle Stone Age: The archaeology of the Stone Age between 20-300 000 years ago associated with early modern humans.

National Estate: The collective heritage assets of the Nation

Palaeontology: Any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.

Pleistocene: A geological time period (of 3 million – 20 000 years ago).

SAHRA: South African Heritage Resources Agency – the compliance authority which protects national heritage in the Northern Cape.

Structure (historic:) Any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith. Protected structures are those which are over 60 years old.

Acronyms

CRM	Cultural Resource Management
DEA	Department of Environmental Affairs
ESA	Early Stone Age
GPS	Global Positioning System
HIA	Heritage Impact Assessment
LSA	Late Stone Age
MSA	Middle Stone Age
NHRA	National Heritage Resources Act
SAHRA	South African Heritage Resources Agency

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1. INTRODUCTION

ACO Associates cc was appointed by Envirolution Consulting on behalf of the client, Eskom Holdings, to undertake the Archaeological Impact Assessment for the construction of a 400kV transmission power line from the Gourikwa substation at Mossel Bay to the Blanco (Narina) substation at George, on the southern Cape coast. The proposed powerline will be approximately 60 km long. Alternative 1 and Alternative 2 powerline options have been proposed (Figure 1) with a third option (Alternative 3) making a short dogleg off Alternative 2.

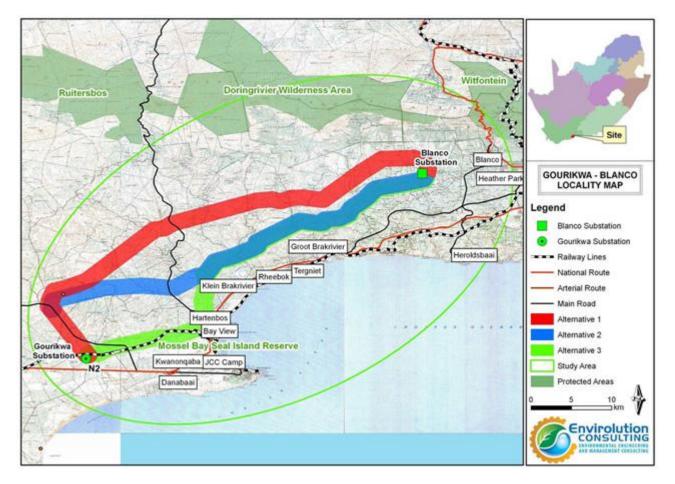


Figure 1: The location of the three powerline alternatives discussed in the text.

2. DEVELOPMENT PROPOSALS

The Gourikwa substation is located on the farm Mossel Bay Rd 399/0 and it is located west of Gourikwa power station. The substation is located about 15 km west of the town of Mossel Bay, and is north of the N2 highway (Figure 1).

The 400kV powerline between Gourikwa substation and the Blanco substation has to be constructed in a narrow band between the mountains and the ocean. This presents a serious challenge in terms of providing three practical corridors. Two corridors (Alternative 1 = Red and Alternative 2 = Blue) have been identified (Figure 1). A third corridor (Green) is merely a slight deviation from the Blue corridor. All the proposed corridors have been aligned to run parallel to existing power lines.

Red corridor: After leaving the Gourikwa substation, the corridor runs north to the Proteus substation, and parallel to the Dx Duinzicht - Proteus 66 kV powerline. It then turns north-east to join the existing Proteus - Droërivier powerline. It runs parallel to this line for approximately 45 km until it reaches the site of the proposed Blanco substation.

Blue corridor: The blue corridor exits the Gourikwa substation in a northerly direction, but turns easterly to cross over the R327 and run parallel to the existing distribution power-lines. It will cross at least four dams although attempts will be made to avoid them if possible. The topography is extremely rugged. It is proposed to run the line parallel to existing power-lines.

Green deviation: this is an alternative leg to the blue corridor. It is aligned easterly towards Hartenbos. It is proposed to run the corridor along the existing distribution power lines. It will join the blue corridor on the north side of the Brandwag River.

The corridor will be 1km wide although the actual servitude will be 62 m.

In addition to the towers, the powerline will also require an access/service gravel road and temporary locations for construction crews.

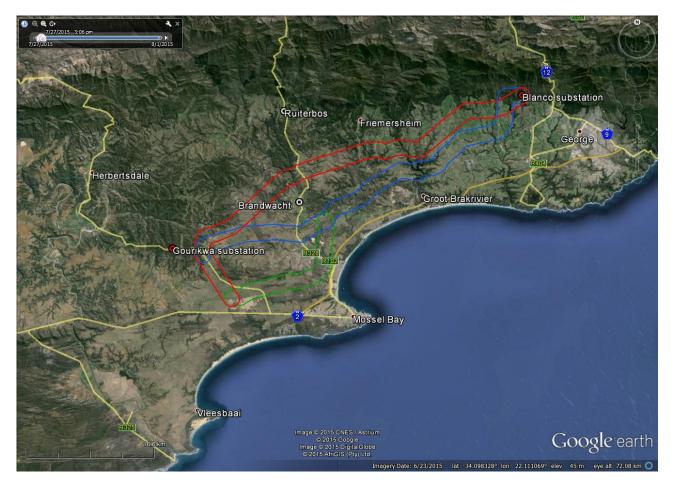
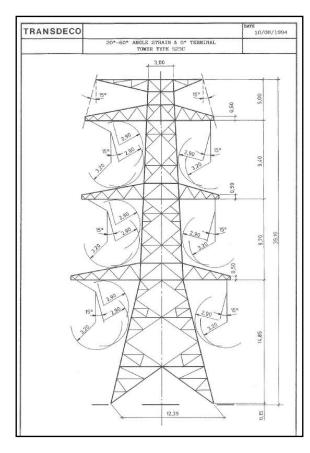


Figure 2: An aerial image of the location of the Gourikwa substation and the Blanco substation with respect to Mossel Bay and George.

The design of the pylons/towers will be as per the "generic diagram". An illustrative example of a 400kV transmission pylon is attached (Plates 1 & 2).





Plates 1 & 2: The design of a 400kV pylon.



Plate 3: Extent of the impact of a 400 kV powerline tower footing. Unless placed directly on top of an in situ archaeological site, the impacts of the tower footings are low with regard archaeology.

3. HERITAGE LEGISLATION

This report is conducted in terms of Section 38 (8) of the National Heritage Resources Act, No 25 of 1999.

The NHRA provides protection for the following categories of heritage resources:

- Landscapes, cultural or natural (Section 3 (3))
- Buildings or structures older than 60 years (Section 34);
- Archaeological Sites, palaeontological material and meteorites (Section 35);
- Burial grounds and graves (Section 36);
- Public monuments and memorials (Section 37);
- Living heritage (defined in the Act as including cultural tradition, oral history, performance, ritual, popular memory, skills and techniques, indigenous knowledge systems and the holistic approach to nature, society and social relationships) (Section 2 (d) (xxi)).

3.1 Structures (Section 34(1))

No person may alter or demolish any structure part of a structure which is older than 60 years without a permit issued by Heritage Western Cape (HWC), the responsible provincial heritage resources authority.

3.2 Archaeology (Section 35(4))

No person may, without a permit issued by HWC, destroy, damage, excavate, alter or remove from its original position, or collect, any archaeological material or object.

3.3 Burial grounds and graves (Section 36(3))

No person may, without a permit issued by the South African Heritage Resources Authority (SAHRA), destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years, which is situated outside a formal cemetery administered by a local authority.

3.4 Grading

The South African heritage resources management system is based on grading, which provides for assigning the appropriate level of management responsibility to a heritage resource.

Grade	Level of significance	Description
I	National	Of high intrinsic, associational and contextual heritage value within a national context, i.e. formally declared or potential Grade 1 heritage resources.
11	Provincial	Of high intrinsic, associational and contextual heritage value within a provincial context, i.e. formally declared or potential Grade 2 heritage resources.
Illa	Local	Of high intrinsic, associational and contextual heritage value within a local context, i.e. formally declared or potential Grade 3a heritage resources.
IIIb	Local	Of moderate to high intrinsic, associational and contextual value within a local context, i.e. potential Grade 3b heritage resources.

Table 1: Grading of Heritage Resources

IIIc	Local	Of medium to low intrinsic, associational or contextual heritage value within a national, provincial and local context, i.e. potential
	Loodi	Grade 3c heritage resources.

The grading of heritage sites, as prescribed in the NHRA, is only concerned with categories I, II and III. The subdivision of Grade III sites was introduced in the Western Cape. A draft document provides some guidelines to the grading of Archaeological and Palaeontological sites.

3.5 Legislative Requirements

A Notice of Intent to Develop was submitted to Heritage Western Cape and they have requested a Heritage Impact Assessment consisting of archaeology, cultural landscape and a visual study with an integrated set of recommendations. The response to the NID is appended as Appendix 1.

This study fulfils the recommendations for an Archaeological study.

4. METHODOLOGY

4.1 Background Literature study

Background research included a review of the published material as well as unpublished reports on the SAHRIS database. The 1:50 000 maps of the area as well as Google Earth aerial images were consulted. A desktop review was undertaken based on previous reports. Fieldwork involved a drive down of the three alternative routes, where this was possible. However, in view of the distance traversed, it was not possible to undertake a walk down of the route options. A detailed survey for archaeological sites inside each of the 1 km wide corridors falls outside of the terms of reference for this AIA report.

5. RECEIVING ENVIRONMENT

The landscape is characterised by rolling hills, farm and small holdings under agricultural lands. Many of the farms practice agriculture which requires centre pivots. Some of the farms are utilised for game farming. Much of the landscape has been extensively modified by agriculture and very little indigenous vegetation remains. The powerlines must cross rivers, streams and steep sided valleys as well as a number of rural gravel roads.



Plate 4: View of the start of Alternative 1 and 2 near the Gourikwa substation, at PetroSA.



Plate 5: View from Alternative 2 to south of the Hartebeeskuil Dam, indicating the mountainous nature of the topography on certain sections of the route options. The possibility exists that caves or rock shelters (with potential archaeology) may occur in the cliff faces. However, it is likely that the powerlines will span the valleys and there will be no impacts to the cliffs or valleys.



Plate 6: Gentle undulating topography which characterizes much of Alternative 2.



Plate 7: View of the Outeniqua Mountains near the Blanco end of the line. Alternative 1 follows the lower slopes of this mountain. Note the existing powerlines overhead.

5.1 Archaeological Background and field observations

Mossel Bay has played an important role in the development of South African archaeology. It was here, at Cape St Blaize (Figure 3), that George Leith undertook archaeological excavations in 1888, and demonstrated conclusively that the midden in the cave represented the remains of shellfish consumed by prehistoric inhabitants. These were later identified as of Middle Stone Age origins by Goodwin and Malan (Deacon 1979). The site was declared a National Monument (now a Provincial Heritage Site) in 1999. In addition to their work at Cape St Blaize Cave, Goodwin and Malan also summarized observations with regard the association of MSA artefacts with the 6-8 m raised beach at Little Brak River (Figure 3) to the east of Mossel Bay.

Herolds Bay Cave, near George (Figure 4), contains MSA material post-dating the 6-8 m high raised beach level. The association of artefacts with marine shells confirms observations elsewhere, that Middle Stone Age peoples were exploiting marine resources. The site was declared a National Monument (now a Provincial Heritage Site) in 1979.

The caves at Pinnacle Point (excavated by Curtis Marean of Arizona State University since 2000), on the coast to the west of Mossel Bay (Figure 3) contain physical evidence of human occupation older than 120 000 years. This is where people first started exhibiting significant modern behaviour, including the systematic harvesting of food from the sea, the use of complex bladelet technology and the use of ochre for symbolling. The caves at Pinnacle Point were declared a Provincial Heritage site in 2012 and, together with five other South African sites, have been included in UNESCO's tentative list for World Heritage sites.

In addition to these highly significant (Grade II) and potentially Grade I sites along the coastline between Mossel Bay and George, there are also many coastal LSA shell middens. Many have been destroyed by uncontrolled development. The only other reported excavated site is the Groot Brak Rockshelter, excavated by Bill van Rijssen in 1986 (Halkett & Mutti 2000). Excavation of this site took place before the construction of the Wolwedans Dam but the analysis of the material remains outstanding (Mary Leslie pers comm).



Figure 3: The Provincial Heritage Sites of Pinnacle Point and Cape St Blaize are indicated with a purple star. The distribution of archaeological sites (white triangle) is a reflection of the CRM surveys conducted in the area.

The distribution of archaeological sites (Figures 3 & 4) <u>inland</u> of the coast is a reflection of the archaeological impact assessments which have been conducted in the area during the last 20 years. No archaeological research programmes have targeted this area. Hart (2005) has assessed the construction of the Open Cycle Gas Turbine Power Station at the PetroSA facility at Mossel Bay as well as the proposed transmission lines to the Proteus substation. His walk-down of the line revealed isolated Early Stone Age (ESA) and Middle Stone Age (MSA) artefacts but no surface indications of significant archaeological material. Nilssen & Yates monitored earthmoving operations at the OCGT site and recovered a number of ESA artefacts. Nilssen (2009) examined a pipeline route at the Mossdustria plant and noted that ESA artefacts are common but no palaeontological or colonial material remains were observed.

Nilssen (2012) surveyed a large area to the north of Mossel Bay, on high lying land to the east of the Gourikwa substation (Figure 3) for the Mossel Bay Wind Farm, and recorded at least forty (40) stone age archaeological occurrences but considered these to be of low archaeological significance because they consisted of very low density stone artefact scatters that were recovered, in the main, in previously disturbed lands. Although stone artefacts were predominantly Early and Middle Stone Age origins, some Later Stone Age specimens were also recorded.

Nilssen (2005a) surveyed the farm Vaalevalley 219 between the Hartenbos River and the Klein Brakrivier and recorded a range of archaeological sites including ESA, MSA and Later Stone Age (shell midden) material. Nilssen (2005b) surveyed the area known as the Hartenbos Heuwels and reported on only a few isolated MSA artefacts. Nilssen (2005c) also noted scatters of ESA and MSA material but did not recommend any further work. Kaplan (1996) identified at least six low density scatters of LSA material at Great Brak River, close to the coast.

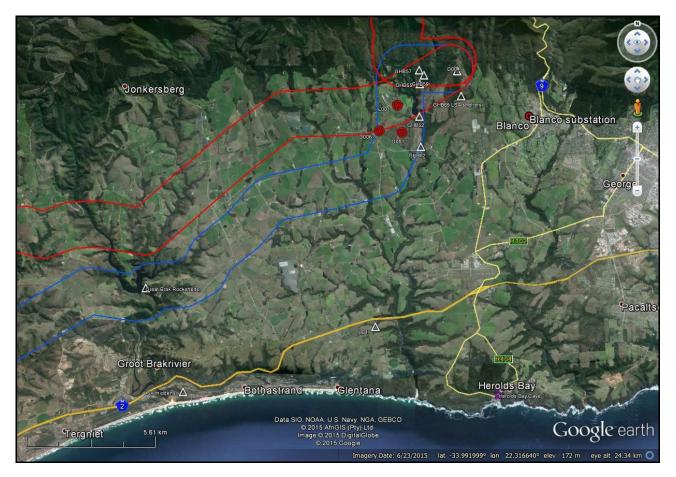


Figure 4: Herolds Bay Cave (PHS) is located at the coast and indicated by the purple star. Other archaeological sites are shown with a triangle while the red circles represent graveyards.

Yates (2006) surveyed large portions of the farm Geelhoutboom 318 near Blanco (Figure 4) and noted that the most common archaeological occurrence was solitary specimens of the ESA. In his survey for the Blanco substation (Figure 4), Halkett (2014) noted that the few Stone Age archaeological sites that were recorded are of low significance and do not need mitigation.



Plate 8: An example of ESA artefacts found by Kaplan (2005) near George.

However, Yates (2006) did note the occurrence of a series of low shelters in a quartzitic conglomerate outcrop. The talus slope below the shelter contained many Later Stone Age artefacts and some pottery. He rated this site of Medium to High significance (Grade IIIB?). With respect the shelters he notes that they are quite low and unobtrusive, being hidden behind trees.

It is possible therefore, that more caves and rock shelters may be found in rocky outcrops and koppies with a more exhaustive survey. There is only one definitive report of rock art from this area, and that is the Leggatt & Rust (2004) article on an image of a possible three masted sailing ship on the farm Crane's Crest, in the Ruitersbos area to the west of the R328. It is located some 8 km north of Alternative 1. Its location, in the foothills of the Attasquaskloof, suggests that more rock art may be found in the foothills of the mountains.

5.2 Historical Background

This area was historically referred to as Outeniqualand. Government posts were established at Mossel Bay (1787) and George (1777) to regulate the use of timber. Transportation of the timber by sea began in 1788. Outeniqualand was gradually settled from the west during the 18th century. An outspan developed on the eastern banks of the Groot Brak River and a wooden bridge was built across the river (Franklin 1975).

De Kock (2008) confirms that the area around Blanco has been settled by colonists since at least the early 1700's. In his report he mentions the importance of the water furrows developed by farmers in the area. These furrows were confirmed by Yates (2006) during his survey near Blanco. The possibility of ruined buildings (including water mills) in this area is high.

5.3 Cemeteries and Graves

Formal cemeteries are associated with settlements such as Mossel Bay, Great Brak River and George. Smaller farm graveyards are often found on farms. Where impact assessments have been undertaken, they have usually reported on small, informal graveyards. Nilssen (2005a) reported on some graves on the farm Vaalevalley 219 along the coast near Klein Brakrivier. Halkett (2014) reported on cemeteries within the powerline corridors near the proposed Blanco substation but noted that they could be avoided through micro-siting of the pylons. Yates (2006) noted graveyards during his survey of the farm Geelhoutboom 318 near Blanco. He gives these graves a very high rating (IIIA). These small graveyards are indicated as red circles on Figures 3 & 4.

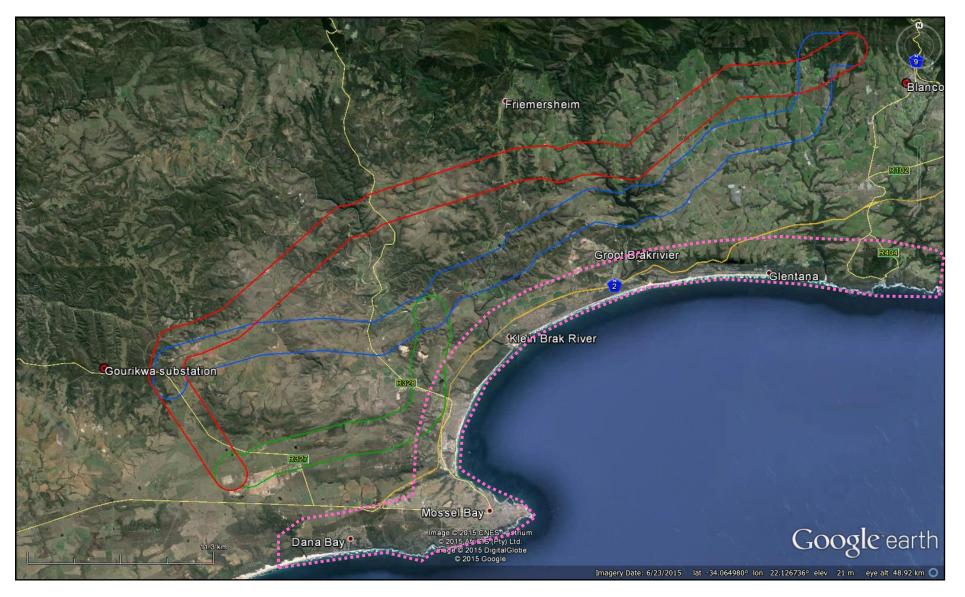


Figure 5: The sensitive archaeological coastal zone is indicated within the pink dotted lines. The most significant archaeological sites are found in this area and it should be avoided.

6. IMPACT ASSESSMENT

The archaeological landscape along the Mossel Bay coastline (including the Pinnacle Point Caves) is of outstanding archaeological significance (Figure 5) and is given a field grading of Grade II (Winter & Oberholzer 2014). *However, apart from a short section of Alternative 3, all the powerline options avoid the coastal areas.* Elsewhere, the desktop survey of the route alternatives has indicated that ephemeral scatters of ESA and MSA material occur throughout the area but they are generally of low significance. The drive-down of the routes confirms the presence of occasional rocky outcrops and steep gorges which may contain caves or rockshelters with archaeological deposits. One such koppie which falls within Alternative 2 corridor is Botelierskop but others may exist. Van Rijssen (1986) has excavated a rock shelter at the Wolwedans Dam while Yates (2006) has recorded some shelters with LSA material at Geelhoutboom near Blanco.

6.1 Impact on Pre-Colonial Archaeology

Since heritage sites, such as archaeological sites, are non-renewable, it is important that they are identified and their significance assessed prior to development.

The main cause of impacts to archaeological sites is direct, physical disturbance of the material itself and its context. The significance of an archaeological site is highly dependent on its geological and spatial context. This means that even though, for example a deep excavation may expose buried archaeological sites and artefacts, the artefacts are relatively meaningless once removed from the area in which they were found. The impacts are likely to be most severe during the construction period although indirect impacts may occur during the operational phase of the project.

NATURE OF IMPACT: Negative impacts to archaeological material which may include caves with

	Without mitigation	With mitigation
EXTENT	Local (2)	Local (1)
DURATION	Long term (4)	Long term (4)
MAGNITUDE	Moderate (4)	Minor (2)
PROBABILITY	Probable (3)	Improbable (2)
SIGNIFICANCE	(30)	(14)
STATUS	Negative	Neutral
REVERSIBILITY	Reversible	Reversible
IRREPLACEABLE LOSS OF RESOURCES?	Yes	No
CAN IMPACTS BE MITIGATED?	Yes	Yes
MITIGATION: Walk down of certain rugged topography where the possi		e, targeting koppies, river banks and ay exist.
CUMULATIVE IMPACTS: Low		
RESIDUAL IMPACTS: n/a		

Table 2: Potential impacts to Pre-colonial Archaeology

archaeological deposit and scatters of archaeological material.

The tower footings for the 400 kV line are relatively small and they are unlikely to result in significant damage to underlying archaeological material.

Recommendations:

- A targeted survey at the walk-down phase can address any concerns about potential impacts to small caves or rockshelters on koppies and in river valleys which may occur within the study area;
- Since the powerline corridors are 1 km wide, and the actual servitude will be only 62 m wide, there is plenty of space within the corridors to adjust the position of the towers to avoid negative impacts to archaeological sites.

6.2 Impact on Colonial Period Archaeology

The construction of pylons in close proximity to farmsteads, may result in the destruction of historic rubbish dumps (middens), old kraals or the ruins of old dwellings.

Recommendations:

• A targeted walk-down of the line will be required after the final powerline route has been decided. The walk down would concentrate on areas immediately around farm buildings and structures.

6.3 Impacts to Graves

Human remains are the most complicated aspects of heritage to mitigate since they require their own public participation process (See Section 36 of the NHRA) before they can be exhumed. Human remains are protected by a plethora of legislation including the Human Tissues Act (Act No 65 of 1983), the Exhumation Ordinance of 1980 and the National Heritage Resources Act (Act No 25 of 1999). In the event of human bones being found on site, HWC must be informed immediately and the remains removed by an archaeologist under an emergency permit. This process will incur some expense as removal of human remains is at the cost of the developer. Time delays may result while application is made to the authorities and an archaeologist is appointed to do the work.

NATURE OF IMPACT: Impacts wil settlements and farms) as well as ir	be through possible direct impacts o dividual graves.	on local historic cemeteries (near
	Without mitigation	With mitigation
EXTENT	Regional (3)	Local (2)
DURATION	Long term (4)	Short duration (1)
MAGNITUDE	Moderate (6)	Low (4)
PROBABILITY	Probable (3)	Improbable (2)
SIGNIFICANCE	Medium (39)	Low (14)
STATUS	Negative	Neutral
REVERSIBILITY	Yes	Yes
IRREPLACEABLE LOSS OF RESOURCES?	No	No
CAN IMPACTS BE MITIGATED?	No	Yes
MITIGATION: Walk down of selecte occur.	d sections of the line near farmstead	s where graves may be expected to
CUMULATIVE IMPACTS: n/a.		
RESIDUAL IMPACTS: n/a.		

Table 3: Summary of impacts to Cemeteries and Graves

Recommendations:

- The towers may be constructed on/or in close proximity to farm graveyards. If graveyards are discovered during the walk down phase, a buffer of at least 15 m should be employed around them;
- A survey should be conducted during the walk-down phase around farmsteads in order to ensure that graves area avoided;
- If unmarked graves are uncovered during the construction of the tower footings, all work in that area should cease immediately, and HWC must be contacted.

7. CONCLUSION

Numerous heritage impact assessments have been conducted in the general area between Mossel Bay and George.

A desktop review of archaeological sites in the general area of the proposed powerlines, as well as a drive down of the line alternatives, suggest the following heritage resources may occur:

- Highly significant archaeological sites such as Pinnacle Point, Cape St Blaize and Herold's Bay Cave are situated along the Southern Cape coastline;
- Reports indicate that scatters of ESA and MSA stone artefacts are thinly dispersed across the landscape. They are considered of low significance;
- A few caves and rock shelters have been recorded in rocky outcrops and in incised valleys and gorges inland from the coast. Some contain LSA archaeological material and have the potential to be significant;
- Ruined farm buildings, sheds, kraals and stone walling (older than 100 years) are found along the various route options and constitute the historical archaeology;
- A number of farm cemeteries and scattered individual graves have been recorded in the area by other CRM practitioners.

Anticipated Impacts on Heritage Resources:

While the footprint of the tower is relatively small, impacts to heritage resources may occur.

- Scatters of ESA and MSA stone artefacts may be damaged. The likelihood of this occurring is very low;
- Powerlines running in proximity to the coastline, may result in the destruction of highly significant archaeological sites, including shell middens. These tend to be concentrated up to 300m from the sea, although middens may occur up to several kilometres inland. One such koppie identified in the survey was Botelierskop but others may exist;
- Caves and rock shelters, whilst generally not directly impacted by the construction of a tower footing, may be damaged or vandalised as a result of easier human access;
- No rock art sites have been reported from the area between the Outeniqua Mountains and the coast although the possibility exists that they may occur;
- Colonial period archaeological remains may be damaged by tower footings although the probability of this occurring is low;
- The proposed tower footings may result in the destruction of farm cemeteries and graves. The likelihood of this occurring is medium-low.

Public Participation Comments:

One comment was received regarding Stone Age Shell middens at Mossel Bay while another asked whether Stone Age or Iron Age settlements occur in the area due to early colonial interaction with indigenous "Hottentot" groups. The comment regarding raised beach levels relates to the coastal margins which will not be impacted.

This issue is addressed in the report.

Recommendations:

Once the final route option has been selected, the following recommendations should be included in the EMP:

- CRM reports confirm that the coastline is sensitive from an archaeological perspective and a buffer of at least 1km should be maintained from the ocean;
- Assess the possibility of impacts to *in situ* LSA sites by a targeted walk down of certain sections of the line, such as koppies and river banks;
- Where landowners have identified caves with rock art on their properties, a targeted survey
 at the walk-down phase can address any concerns about potential impacts. A range of
 mitigation options are possible, including the careful placement of the tower footings to
 avoid rock art sites (micro-siting of the tower footings will be required inside the corridor to
 avoid impacts);
- Rock art sites in proximity to the tower footings may also be protected from vandalism by ensuring that they are fenced off during the construction of the powerline;
- With respect historical archaeological material, a targeted walk-down of the line will be required after the final powerline route has been decided. It would concentrate on areas immediately around farm buildings and structures to ensure that a sufficient buffer has been implemented to avoid impacts to historic kraals, old sheds, rubbish dumps, etc;
- The walk down phase would concentrate on areas around historic farmsteads in order to ensure that graves area avoided;
- If graves are uncovered during the construction of the tower footings, all work in that area should cease immediately, and HWC must be contacted.

There are no anticipated fatal flaws with regard the construction of the powerline and Alternative 1 or 2 are considered acceptable from an archaeological perspective. Alternative 3 poses problems because of the relative proximity of the line to the coast, and the higher probability of encountering archaeological sites.

Alternative 1, closest to the mountain is, is the preferred option because of the lower probability of encountering ruined historical farm buildings. While there is an existing powerline which follows Alternative 2, it is more sensitive from an historical archaeological perspective.

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Appendix 3: Cultural Landscape Study

FINAL SPECIALIST INPUT TO INTEGRATED HERITAGE IMPACT ASSESSMENT IN RELATION TO CULTURAL LANDSCAPE ASPECTS

PROPOSED CONSTRUCTION OF 400kV TRANSMISSION POWER LINE FROM BLANCO (NARINA SUBSTATION), GEORGE DISTRICT TO GOURIKWA SUBSTATION, MOSSEL BAY DISTRICT



On behalf of: ACO Associates

MARCH 2016

STÉFAN DE KOCK PERCEPTION Planning PO Box 9995 GEORGE 6530 Tel: 082 568 4719 Fax: 086 510 8357 www.perceptionplanning.co.za E-mail: perceptionplanning@gmail.com



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ABBREVIATIONS:

1. NGSI – National Geo-Spatial Information, Department of Rural Development and Land Reform, Mowbray

- 2. DEA Department of Environmental Affairs (National)
- 3. DEADP Department of Environmental Affairs & Development Planning
- 4. HIA Heritage Impact Assessment
- 5. HWC Heritage Western Cape
- 6. NHRA National Heritage Resources Act, 1999 (Act 25 of 1999)
- 7. NID Notice of Intent to Develop
- 8. PHRA Provincial Heritage Resources Agency
- 9. PHS Provincial Heritage Site

COVER: Extract compiled from early (1880-1890) SG mapping of Mossel Bay area (Source: NGSI)

1. INTRODUCTION

PERCEPTION Planning was appointed by ACO Associates to provide a specialist input regarding the potential impact of the proposed construction of a new Eskom 400kV Transmission line between the Blanco (Narina) Substation¹ and Mossel Bay (Gourikwa) Substation from a Cultural Landscape perspective. Three alternative alignments are under consideration. The intention of this specialist report is to satisfy, in part, the relevant requirement stipulated in HWC's Interim Comments dated 22nd April 2015. This report therefore serves as a specialist contribution to the Integrated Heritage Impact Assessment compiled by ACO Associates.

2. INDEPENDENCE OF ASSESSOR

With relation to the author's appointment to compile this specialist report, to be incorporated into the Integrated Heritage Impact Assessment in terms of Section 38(8) of the National Heritage Resources Act, 1999 (Act 25 of 1999), it is hereby declared that:

- This consultancy (including the author) is not a subsidiary, legally or financially, of the proponents;
- Remuneration for professional services by the proponent in relation to this proposal is not linked to approval by any decision-making authority responsible for permitting this proposal;
- Nor this consultancy, nor the author has any interests in secondary or downstream activities as a result of the authorisation of this project.

It is further hereby certified that the author has 18 years professional experience as urban planner (3 years of which were abroad) and 9 years professional experience as heritage practitioner. The author holds the following qualifications:

- Urban and Regional Planning (B-Tech, CPUT, 1997)
- Environmental Impact Assessment Management Heritage, Environmental (Dipl/ Masters, Dublin University, 2002)
- Architectural & Urban Conservation (CDP, UCT, 2007)
- Urban Design (CPD, UCT, 2009)

The author is professionally registered as follows:

- Accredited Heritage Practitioner Association for Professional Heritage Practitioners
- Registered as Professional Planner with South African Council for Planners
- Registered as Corporate Planner with South African Planning Institute

3. METHODOLOGY

As part of the compilation of this specialist report the author has studied, visited, photographed and assessed the study area and its environs, which more specifically involved the following:

- Field work carried out on 30th July 2015;
- Liaising with project manager and contributing specialist consultants;
- Compiling report including findings and recommendations emanating from existing historical research undertaken in Cape Town Archives with relation to the study area;
- Identification of cultural landscape related issues and concerns;
- Establishing cultural significance, based on criteria set out in NHRA;
- Identification of heritage-related design informants based on the above.

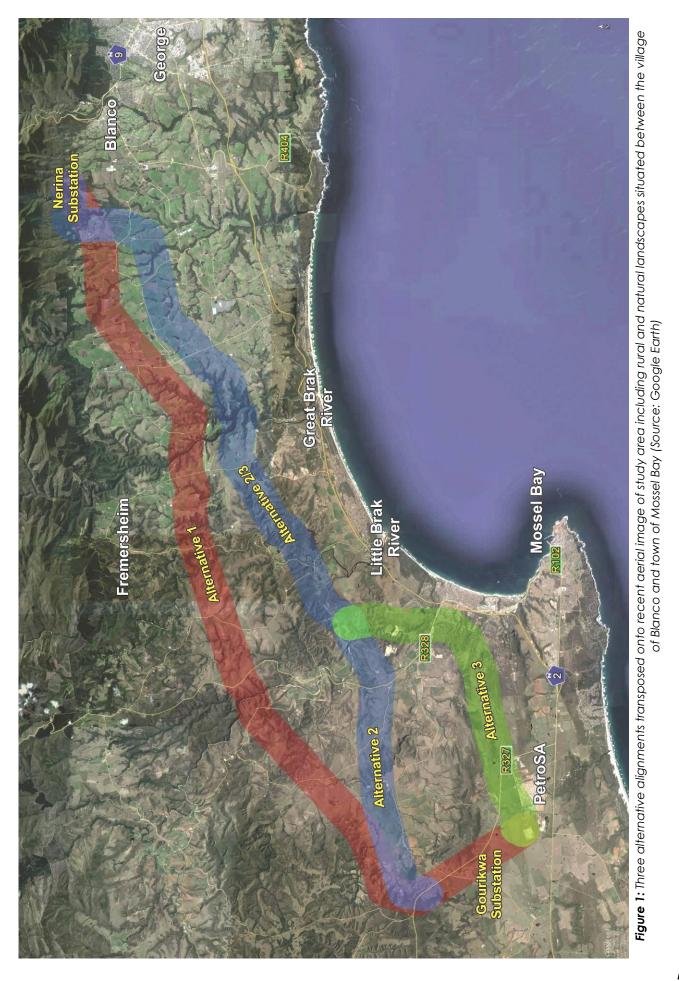
4. DESCRIPTION OF STUDY AREA

The study area straddles the magisterial districts of George and Mossel Bay and includes a substantial area extending between the existing Narina Substation, situated just outside the village of Blanco (\pm 9km northwest of the George historic town centre) and the existing Gourikwa substation, situated \pm 1km west of the PetroSA installation or \pm 17km west of the Mossel Bay historic town centre as illustrated in the locality plan (Figure 1).

PERCEPTION Planning

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¹ Position of new Substation to be confirmed through a separate EIA process



The study area is defined by three alternative alignments being considered for the construction of a new 400kV electricity transmission line between the Narina and Gourikwa Substations. Alternative alignments 1 and 2 traverse the coastal plateau along the foothills of the Outeniqua mountain range, crosses both the Great Brak River and Little Brak Rivers, the Hartenbos river valley/ R328 and continues west until intersecting with the R327 following which the two alignments merge and continue southwards towards the Gourikwa substation. For the most part, the study area includes areas transformed through agriculture, some of which are still cultivated while other areas have become pastures or have become part of game reserves. It inevitably includes several valleys created through natural drainage lines feeding ecologically significant river corridors.

Proposed alternative alignment 3 traverses the landscape between the PetroSA site and Aalwyndal smallholding complex/ Hartenbos Heuwels residential area and continues northwards passing the Monte Christo estate, two existing sand mine areas and intersecting with Alternative alignment 2 roughly halfway between the R328 and Little Brak River following it continues eastwards along the same alignment as Alternative 2.

Present land use within the study area therefore includes cultivated agricultural lands, pastures, game farms, existing and former forestry areas, smallholdings used for rural occupation, mining areas and existing urban areas.

5. BRIEF HISTORIC BACKGROUND

Historical background research focussed on relevant primary sources obtained through the Cape Town Archives, Deeds Office, Surveyor General's Office as well as existing research compiled by historian Kathleen Schulz.

5.1 Town of George

The town of George was established on land registered as a loan farm in 1760 named 'Post Rivier' registered in favour of Koert Grobbelaar². In 1777 the Dutch East India Company (DEIC) had made a decision to establish a new Company Post to monitor the felling of indigenous woods³. The DEIC annexed the farm Post Rivier in order to further establish the boundaries of the woodcutters post. Although George was established as a town in 1811, the first freeholds were only granted in 1814 by which time the town grid had been laid out. It has not been established which surveyor was responsible for the layout of the town, but appears to have been the Swellendam surveyor J H Voorman⁴. Voorman's basic layout of the town, probably with some assistance of AG van Kervel (local magistrate), is said to be similar to that of Uitenhage although with various improvements.

5.2 Village of Blanco

Blanco is situated on land expropriated by the Government in the 1820's when George was evolving as a town⁵. A circular boundary encompassed the farm Modder Rivier that represented the earlier 1756 loan farm boundary. An expropriated portion of the loan farmland was earmarked as Government grazing land, that later emerged as the village of Blanco⁶.

The village evolved during the twentieth century housing many church members who lived on land granted to various churches by Government. The company Searles of Great Brak, built a sizeable leather/shoe manufacturing business in Blanco (date not established). By 1883, 4 professional shoemakers were employed by Searles and an additional 8 independent shoemakers had settled in the village. Tasks related to tanning hides and shoe production provided job opportunities to residents. An engineer and surveyor formed part of the community. Wagon drivers and couriers also lived in the village, providing

⁴ George was established in 1811

² Cape Archives (CA)RLR 15/2 pg 511

³ CA : Resolutions : 8th July 1777

⁴ Cape Town Archives (CTA) CO 2576 1811, July 3rd. Letter from Landrost A van Kervel to Colonial Office requesting plan of Town layout compiled by Voorman to be returned as it was the only copy made.

⁵ CTNA M1/606

assistance to travellers making their way over the Montagu Pass⁷. The Blanco Village Management Board was constituted on the 12th January 1923. The Board ceased to exist in 1973 when the village was incorporated into the George municipal area⁸.

5.3 George Rural Hinterland

Census records provide information regarding early colonial use of land in the George rural hinterland. Generally, farms provided grazing for cattle, goats and sheep. Wheat was also harvested and milled on the farm Modder Rivier during the eighteenth century. The site of the mill mentioned by Anders Sparrman in his journal while visiting Modder Rivier in 1775 indicates that wheat was produced on the farm. The site of the mill has not been established, but is presumed to be along the banks of the Norga River.

The entire area between Groot Brak Heights and George was regarded as the bread basket of Outeniqualand during the eighteenth and nineteenth centuries, providing livestock, meat and wheat to an active woodcutter community⁹. Outeniqualand farms were actively contributing to the local economy at that time. Archival research indicates that significant number of woodcutters who lived in the forests between George and Plettenberg Bay depended on the agricultural produce (cattle/meat/hides and wheat) originating from these farms¹⁰. While little historic research has been done for the area, the entire study area is therefore intrinsically linked to the early development of the town of George and its surrounding rural areas.

5.4 Great Brak River

The village of Great Brak River was established on the farm Wolwedans ("Wolvedans"), measuring approximately 2,632 morgen granted by quitrent to Cornelis van der Watt in 1814. Due to its location halfway between the old main road between George and Mossel Bay, the village became a convenient outspan. An application for a liquor licence by a member of Terblanche family who ran an inn here, was refused and it was decreed that the village must remain "dry". A bridge was built across the river in 1844 and later replaced by a causeway. A tollhouse was established along the eastern bank of the river and in 1852 was manned by the first toll-keeper, Richard Searle. He and his sons reportedly "ran" the village through various enterprises, which included a hotel, woolwashery and well-known shoe factory, which commenced operation in 1886.

5.5 Village of Fremersheim¹¹

Friemersheim is situated approximately 40 kilometres inland from Great Brak River and was established on the farm Gonnakraal, purchased for his sister by Reverend Johann Kretzen of the Berliner Missionary Society in George. He visited the farm on a monthly basis, holding church services and assisted in building of a school and church here during 1869. Following his sister's death in 1872, the farm was bequeathed to the Dutch Reformed Missionary Society subject to certain conditions. As the Mossel Bay Dutch Reformed church had no other missionary congregations, the Gonnakraal church had functioned as a separate congregation since 1889. The village was renamed after Kretzen's town of birth in Germany. Friemersheim was later, in terms of applicable legislation, reserved for occupation by "coloured people".

5.6 Mossel Bay Rural

From a historic (i.e. colonial) perspective, the study area straddles a number of early farms in the Mossel Bay rural area (i.e. west of the Greak Brak River), many of which were originally surveyed during the early 19th century or earlier. Some of these include the farms Hartjesfontein, Welbedacht, Hartenbosch, Vyfbrakkefontein, Klipheuwel, Bartelsfontein, Rietvalley, Hartebeestkuil, Hartebeestkraal and Rheeboksfontein.

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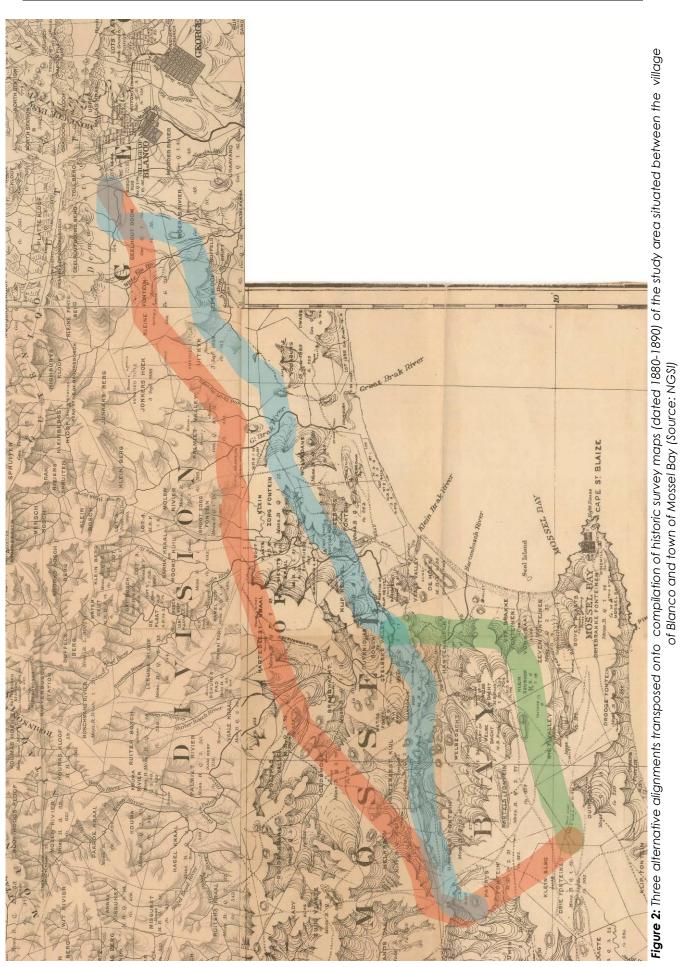
⁶ Burgher lists 1883, private archives

⁷ CTNA Geo 3/BCO

² Proved by an assessment of the Outeniqualand census records found in the J series; CTNA

³ George Museum Archives: Copied from CTNA J323.

¹¹ Provincial Government of the Western Cape



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The early farms Welbedacht, Bartelsfontein, Hartebeestkuil, Hartenbosch were some of the first freehold land parcels to be granted in the Mossel Bay district. For example, Governor Jan de le Fontaine in 1734 awarded freehold title of the farms Bartelsfontein and Hartenbosch to Cape burger Esais Engelbrecht Meyer¹². An interesting anecdote relates to an award that was bestowed on Esias Meyer for the part he played in assisting the distressed Dutch East India ship *t' Huis te Marquette* which had put into Mossel Bay for necessary storm damage repairs. It was recorded that Esais Meyer rode on horseback to Cape Town within a period of seven days in order to deliver letters to the Governor from the distressed ship's official. In addition Esais provided much needed fresh meat and provisions to the ship's crew. Other farmers in the Mossel Bay area who received grants of land for assisting with provisions were Johannes Kruywagen (Esais Meyer's brother in law) who received the farm Hartebeestkuil and Jan Christoff Beck who received Welbedacht. These farms are situated north of and west of Hartenbosch respectively.¹³

While 1741 census records and subsequent (1816) slave office records indicate that a significant number of slave were "owned" by early owners of the farms Bartelsfontein and Hartenbosch, it is not possible to determine from these records whether any slave actually resided on land that forms part of the subject study area. Early records should the occurrence of various fountains on the farm Welbedacht. While the location of an early dwelling is shown on the 1842 and 1863¹⁴ diagrams, no remains of this structure (or any other structures older than 60 years) could be located.

5.7 Conclusions

Detailed records pertaining to many of the early farms are not readily available and would require detailed archival research, which falls outside the scope of this report. However, from a colonial perspective available primary sources interrogated confirm that the study area is intrinsically linked to the early development within the Southern Cape and that the area has strong associations with agriculture, cultivation and the slave trade.

6. DESCRIPTION OF CULTURAL LANDSCAPE

The term "cultural landscape" refers to the imprint created on a natural landscape through human habitation and cultivation over an extended period of time. While the Cape has been inhabited for many hundreds of thousands of years (pre-colonial history) prior to Western settlement (colonial history), the nomadic lifestyles of early inhabitants are rarely as evident within the landscape as the imprints made by humans during the last two – three hundred years and more. Unlike ancient landscapes in parts of the world where intensive cultivation over periods much longer than locally have allowed natural and cultural components of the landscape to become interwoven, landscape components along the Southern Cape have not yet developed in such a manner. The fact that natural and cultural landscape tends to be very vulnerable to the cumulative impact of inappropriate large-scale development.

"The concept of landscape gives expression to the products and processes of the spatial and temporal interaction of people with the environment. It may thus be conceived as a particular configuration of topography, vegetation cover, land use and settlement pattern which establishes some coherence of natural and cultural processes and activities." (Green, B.H.1995).

While the NHRA does not clearly define the term "cultural landscape", it is briefly referred to in the schedule of definitions. Based on local and international best-practice and within the context of definitions assigned to the terms heritage resource, place and cultural significance, cultural landscape can be defined as "A place of cultural significance, which

¹² Cape Town Deeds Office (CTDO); Stellenbosch Freeholds II 203, dated 7th September 1734

¹³ Cape Archives (CA); C96pp 14-36 (Tanap Transcription Project)

¹⁴ SG Diagram 400/1863

engenders qualities relating to its aesthetic, architectural, historical, scientific, social, spiritual, linguistic, technological, archaeological or palaeontological value¹⁵".

Taken in conjunction of the above, the study area therefore forms part of a cultural landscape, which by itself, as well as within a broader context, provides a more lasting framework for the understanding and management of heritage resources. While in itself a heritage resource, a cultural landscape could in a sense be regarded as a "patchwork" within which all other heritage resources are embedded and which adds to their meaning and sense of place.

6.1 Urban landscape context

Whereas alternative alignments 1 and 2 mostly cross rural and natural landscapes forming part of the study area between Blanco and Little Brak River (refer to Figure 4), the third alignment would be within relative close proximity to existing urban development situated within the Mossel Bay area. Figure 3 illustrates the current urban context within close proximity to the town of Mossel Bay as well as the location of two recently-permitted wind farms situated north of the PetroSA site.

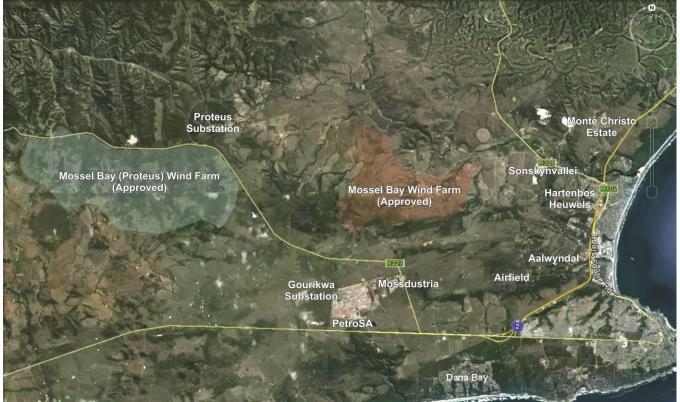


Figure 3: Existing urban context within proximity of Mossel Bay town and its direct environs (Source: GoogleEarth)

6.2 Natural and Rural landscape context

The entire study area forms part of a coastal plain defined by the Outeniqua mountain range and coastline further south (Figure 1). While the landscape may generally be characterised as Rural given prevalent land uses being e.g. cultivation/ agriculture, rural occupation and game farming, it is important to acknowledge that important Natural landscape elements remain - although mostly only along numerous natural river corridors.

For the purpose of analysing and describing remaining cultural landscape elements through this report, the study area has been divided into three distinctive landscapes, namely the Outeniqua area, the area between the Great Brak and Little Brak Rivers and the Mossel Bay area, as illustrated with Figure 4.

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¹⁵ Winter, S (October 2004)

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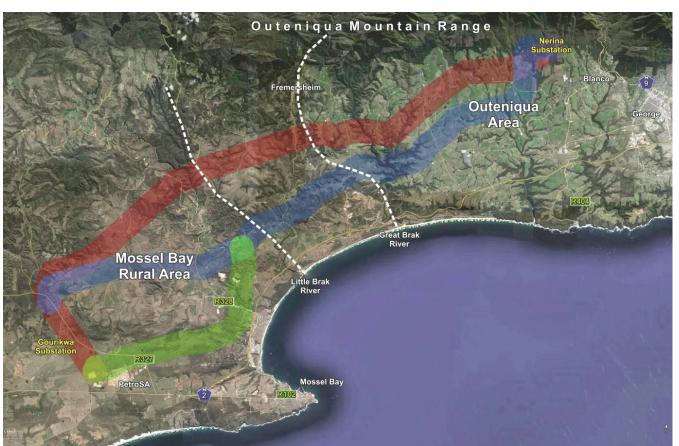


Figure 4: Study area divided into three cultural landscape areas of interest (Source: GoogleEarth)

6.2.1 <u>Outeniqua area:</u>

Extending roughly between the upper reaches of Great Brak River and the Outeniqua Pass, this gently undulating landscape falls within the jurisdiction area of George municipality. Here, forestry remains evident along the foothills of Outeniqua mountain range, particularly northwest of Blanco - following the historic boundaries of early farms Jonkershoek, Kleinefontein and Geelhoutboom. The landscape presents itself mostly through agriculture-orientated land uses, which include cultivation, stock farming and various forms of intensive agriculture (e.g. blue berries, strawberries, chicken farming). Few pristine natural landscape elements remain and river corridors have mostly become overgrown by alien invasive vegetation. Rural occupation and tourism-orientated uses have become evident within the landscape during recent years - sometimes militating against the overall cultural landscape qualities.

Notwithstanding, this area is associated with and thematically linked to the role that forestry and agriculture played in the early establishment and development of the Southern Cape. Taken in conjunction with strong forestry and agricultural orientated use as well as several other heritage resources (including e.g. historic structures and graveyards), all of which provide a sense of historic context and continuity, this cultural landscape is considered to be of **regional and local historic, aesthetic and social cultural significance (Grade 3B)**.

6.2.2 <u>Great Brak River to Little Brak River:</u>

This landscape tends to be less accessible, hilly and rugged, with limited agriculture along the higher-lying plateaus towards the north and lower-lying river corridors closer to the coastline. Much of this landscape has been incorporated into private game reserves during the last decade or so and is therefore likely to once again revert to a natural landscape over the long term. Areas closer to the coastline have mostly been transformed through low density urban development, which has significantly eroded the quality of the cultural landscape. Whilst retaining natural beauty within the northern half of this area, few if any historic elements, which could provide a sense of historic continuity, seem to have survived until present day. From this perspective therefore, the entire area is considered of *low local historic, aesthetic and social cultural significance (Grade 3C)*.

6.2.3 <u>Mossel Bay rural area:</u>

Incorporating the westernmost portion of the study area between the Little Brak River and the PetroSA site, this landscape retains a predominant agricultural character (taken in conjunction with existing private game reserves). The northern half of this area includes tourism routes of aesthetic significance such as the R328 (to Oudtshoorn) and a section of the R327 (leading to Herbertsdale). The southern half of this area - along the coastline - is mostly dominated by urban-related development as described per Section 6.1. The landscape has been altered through mining activities and environmental authorisation for at least two wind energy facilities had previously permitted within this area (see Figure 3).

While historically significant and retaining areas of moderate scenic beauty (northern portion of the study area), few historic elements remain within the landscape. The southern portion of this area has been transformed significantly through existing (and permitted) urban-related development thus permanently altering the landscape character. This area is therefore considered to be of **no local historic**, **aesthetic and social cultural significance** (Ungradable).

6.3 Built environment

It is noted that HWC, through their Interim Comments dated 22nd April 2015, did not require a built environment survey as part the Integrated HIA and therefore, provision has not been made in the budget for such work. While several structures older than 60 years were noted within the proximity of the three alternative alignments - particularly so within the Outeniqua area - it is understood that none of these structures would be directly impacted upon through the proposal. There are no provincial heritage sites situated within close proximity to the three alternative alignments. Notwithstanding, it is recommended that provision be made for a walk down of the approved route alignment traversing this area prior to the commencement of construction works.

7. RECOMMENDATIONS

7.1 Outeniqua area

Although this is an evolving landscape, the notion of agriculture and forestry remains evident within the landscape through the occurrence of modest farm buildings of typical local vernacular, pastures as well as forestry along the foothills of Geelhoutboomberg, Kleinefonteinberg, Jonkersberg and Kleinberg (part of Outeniqua Mountain range). These cultural landscape qualities are perceived from all public roads through and around the area, including the N2 National Road and this landscape is therefore sensitive to any largescale and/or visually intrusive development or infrastructure.

A significant portion of the study area (including the Outeniqua area) is traversed by an existing Eskom overhead transmission line (see Figure 5), which invariably already impacts on the scenic qualities of the area. It is noted that the alignment of these existing overhead transmission lines, for the most part, follows the proposed Alternative 2 and Alternative 3 route alignments. New infrastructure to be installed along either one of these alternative alignments would tend to be viewed within the context of the existing overhead transmission lines.

Having regard to the above as well as gradings proposed for the Outeniqua cultural landscape (Grade 3B) it is therefore recommended that, from a cultural landscape perspective, Alternative alignment 3 be followed as first preference and Alternative alignment 2 as second preference.

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7.2 Great and Little Brak Rivers

Given the scenic qualities of the northern portion of this area, which is likely to become more evident should conservation continue, proposed grading for this cultural landscape (Grade 3C) as well as the alignment of existing overhead transmission lines through this area, proposed Alternative alignments 2 and 3 are both acceptable. Consequently, proposed Alternative alignment 1 through this area is not supported.



Figure 5: Proposed alternative route alignments shown in relation to the approximate alignment of existing overhead transmission lines through the study area (Source: GoogleEarth)

7.3 Mossel Bay rural area

Anticipated impacts associated with proposed route alignments through the Mossel Bay rural cultural landscape would need to be considered within the context of its proposed grading (ungradable), which is partly informed by the pattern of existing and permitted development within this area. Notwithstanding, taken within the alignment of existing (similar) infrastructure through this area, it is suggested that proposed Alternative alignment 3 be preferred. Other anticipated impacts associated with this alignment on for example the Aalwyndal smallholding complex and Mossel Bay Airport would however have to be taken into consideration.

 Table 1: Potential impact to Cultural Landscape elements - ALIGNMENT ALTERNATIVE ONE

Impact Phase:	Construction	of Proposed	Alternative Ali	gnment One					
Nature of Impact: Visual and physical impacts associated with installation of overhead powerlines and related									
infrastructure									
	ANTIC	IPATED SCOP	PING IMPACTS	to be scoped	OUT OR I	NVESTIGA	TED FURTHER		
	Extent	Duration	Intensity	Status	Significa	nce	Probability	Confidence	
Without Mitigation	н	Perm.	Н	Negative	Hig	gh	Н	Н	
With Mitigation	Н	Perm.	Н	Negative	Hig	gh	Н	Н	
Can the impac	t be reverse	qŝ				ysical heritage resources are y non-renewable			
Will impact car or resources?	use irreplace	1	YES – propos traverse arec significance	ed alignmer a of high	t would scenic				
Can impact be	e avoided, m	anaged	NO						

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or mitigated?

Mitigation: This alignment alternative is not recommended from a cultural landscape perspective.

Table 2: Potential impact to Cultural Landscape elements - ALIGNMENT ALTERNATIVE TWO

Impact Phase	: Construction	n of Proposed	d Alternative A	lignment Two				
Nature of Im infrastructure	pact: Visual	and physic	cal impacts c	associated wit	h installat	ion of ov	verhead powe	rlines and related
	ANTIC	CIPATED SCO	PING IMPACTS	S TO BE SCOPEI	OUT OR	INVESTIGA	TED FURTHER	
	Extent	Duration	Intensity	Status	Significa	nce	Probability	Confidence
Without Mitigation	м	Perm.	М	Moderate	Мес	dium	н	Н
With Mitigation	м	Perm.	м	Moderate	Мес	dium	Н	Н
Can the impact be reversed?						NO – physical heritage resources ar generally non-renewable		
Will impact cause irreplaceable loss or resources?			YES – proposed alignment would traverse area of moderate scenic significance but also urban areas					
Can impact b or mitigated?		nanaged		lignment of exi werlines where	-			

Table 3: Potential impact to Cultural Landscape elements - ALIGNMENT ALTERNATIVE THREE

Impact Phase	: Construction	n of Proposed	Alternative Al	ignment Three	•			
Nature of Im infrastructure	npact: Visual	and physico	al impacts as	sociated with	h installat	ion of ov	verhead power	lines and related
	ANTIC	CIPATED SCOP	ING IMPACTS	to be scoped	OUT OR	NVESTIGA	TED FURTHER	
	Extent	Duration	Intensity	Status	Significa	nce	Probability	Confidence
Without Mitigation	м	Perm.	м	Moderate	Мес	dium	Н	Н
With Mitigation	м	Perm.	м	Moderate	Мес	dium	Н	Н
Can the impo	act be reverse	έqš				NO – physical heritage resources are generally non-renewable		
Will impact cause irreplaceable loss or resources?			YES – proposed alignment would traverse area of moderate scenic significance but also developed and existing urban areas					
Can impact & or mitigated?		0	'ES - Follow alig overhead pow	0	0			
Mitigation: Thi	is alianment a	Iternative is p	referred from	a cultural lanc	dscape pe	rspective.		

Based on the above it is therefore recommended that, from a cultural landscape perspective, Alternative alignment 3 be followed as the preferred alignment and Alternative alignment 2 as second preferred alternative alignment option.

PERCEPTION Planning 31st March 2016

SE DE KOCK Hons (TRP) EIA Mgmt (IRL) Pr PIn PHP

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Appendix 4: Visual Impact Assessment

(refer to VIA report is Appendix 4.6 as part of the main EIA part)