HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED RENEWAL OF THE BREDASDORP –ARNISTON 66KV ESKOM LINE AND SUBSTATION UPGRADES

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

Prepared for

Susanna Nel
Landscape Dynamics
Tel:082 888 4060 / 021 - 855 0912
Fax: 086 561 7744
Email: susanna@landscapedynamics.co.za
Postal: 6 La Hey Close, Steynsrust, Somerset West, 7130

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Prepared by

Timothy Hart (PI)
Natalie Kendrick

ACO Associates
Unit c26
Prime Park
23 Mocke Rd
Diep River

Phone (021) 7064104
Fax (021) 086 6037195
Email:Tim.Hart@ACO Associates.com

Summary

The proposed activity is the construction of a new 66 kV line from Bredasdorp to Arniston as well as the construction of a new substation at Bredasdorp. ACO Associates has been commissioned to undertake the heritage component of the Basic Assessment process by Landscape Dynamics of behalf of the proponent, Eskom (State Owned Company). The proposed activity triggers section 38.8 of the National Heritage Resources Act of 1999.

The existing 66kV transmission line and associated infrastructure is more than 25 years old and has reached it's the end of its useful working life. The security of supply to Arniston is at risk. The proposal is to construct a new substation and replace the existing 66kV line with a new one.

Two alternative power line routes have been assessed as well as two alternative substation sites at Bredasdorp.

In heritage terms, the proposed activity is considered acceptable and does not constitute a significant risk to any form of heritage provided that alternative 1 is used. This constitutes the renewal of an existing transmission line. It will not cause new impacts to the landscape of the areas, and very few impacts to physical heritage. Neither proposed nor new substation sites will impact heritage resources.

No further work is recommended, however any accidental finds of archaeological material or human remains must be reported to Heritage Western Cape, or an archaeologist.

Contents

GLOSSARY

Archaeology: Remains resulting from human activity, which are 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.

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.

Trekboer. A farmer who moves stock from locality to locality on a seasonal cycle.

Wreck (protected): A ship or an aeroplane or any part thereof that lies on land or in the sea within South Africa is protected if it is more than 60 years old.

Acronyms

DEA	Department of Environmental Affairs
ESA	Early Stone Age
GPS	Global Positioning System
HIA	Heritage Impact Assessment
HWC	Heritage Western Cape
LSA	Late Stone Age
MSA	Middle Stone Age
NHRA	National Heritage Resources Act
SAHRA	South African Heritage Resources Agency
PHS	Provincial Heritage site

1 Introduction

The proposed activity is the construction of a new 66 kV line from Bredasdorp to Arniston as well as the construction of a new substation at Bredasdorp. ACO Associates has been commissioned to undertake the heritage component of the Basic Assessment process by Landscape Dynamics of behalf of the proponent, Eskom (State Owned Company). The proposed activity triggers section 38.8 of the National Heritage Resources Act of 1999.

1.1 The proposed activity

The existing 66kV transmission line and associated infrastructure is more than 25 years old and has reached it's the end of its useful working life. It has deteriorated as a result of atmospheric salt and heavy mists that characterize the area with the result that security of supply to Arniston is at risk. The proposal is to construct a new substation and replace the existing 66kV line with a new one. The old line will stay in commission until the new line is completed. Thereafter the old line and poles will be dismantled. A 66kV line does not require large support structures so its impact on the landscape in limited to one or two small footing holes per supporting structure. No roads will be built as there is already an existing servitude and farm roads that vehicles can access.

Two alternative line routes of roughly 25 km each have been proposed. Alternative 1 runs immediately parallel to the existing line and servitude while alternative 2 follows the R316 – the road from Bredasdorp to Arniston where there is no transmission line at present (Figure 1).

Two substation alternatives are proposed. Alternative 1 is situated very close to the existing substation at Bredasdorp while the second alternative is situated roughly 2.5 km to the south. Both sites are in transformed (cultivated) farm land (Figure 2).

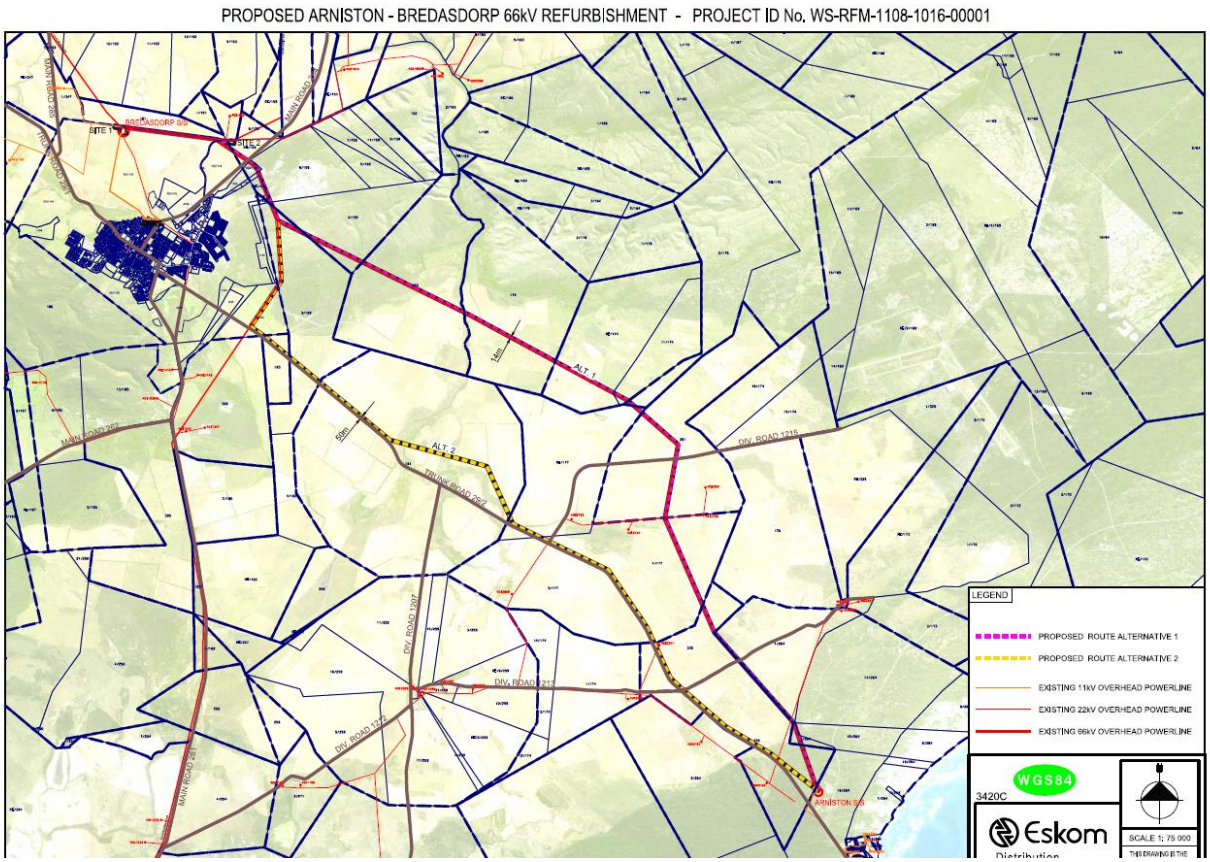

Figure 1 The proposed routes for the power lines. Alternative 1 passes north east of the R316 while alternative 2 mostly follows the R316.

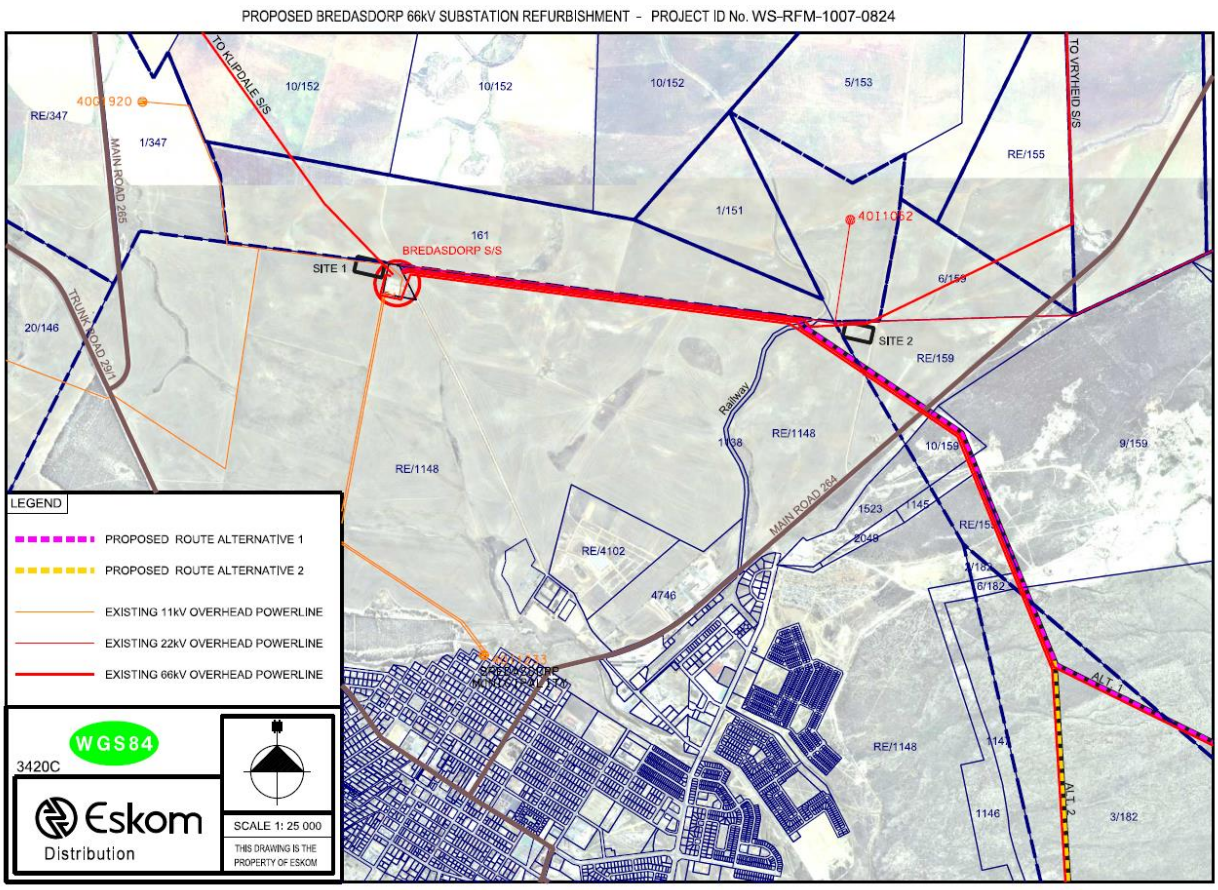

Figure 2 The two alternative substation sites at Bredasdorp.

1.2 Method

This study has been commissioned as the heritage component of a Basic Assessment. It assesses the identified range of impacts in terms of accumulated knowledge of the area. The source of information that is used for this process is based on publications and reports relating to archaeological and palaeontological work in the region. A survey of heritage resources has been conducted and visual heritage indicators such as they are, identified (conservation-worthy buildings and places celebrated as heritage). The study area has been subjected to few comprehensive archaeological assessments in the past, most of these relating to proposed coastal property development as well as a proposed 66 kV Eskom line between Bredasdorp and Struisbaai.

The heritage team drove whatever roads were accessible as part of a team site visit. The routes were not walked as such but accessed as far as the road network would allow, and the proposed substation sites visited. The outcomes of the various specialist studies (biodiversity, visual, social and heritage, economic and engineering considerations) will be integrated by the EIA team to indicate the most suitable servitude alternative.

1.2.1 Assessing heritage in the context of transmission lines

The assessment of transmission lines in terms of heritage is methodologically unlike other impact assessments that involve assessing physical landscape disturbance. Since typically transmission lines evoke the greatest change to a landscape above the ground surface, the emphasis is to assess impacts to heritage that is visually sensitive. By this we mean places or structures that are publicly celebrated as heritage or have the potential to be publicly celebrated as such. Historic farms, iconic landscapes and views, places of conflict are therefore considered important.

The following guiding principles are used;

While in open landscape during daylight hours transmission lines (400 kV) on self-supporting towers are visible (but not necessarily intrusive) from a distance of up to 5 km, the 66 kV lines that are proposed in for this project are considerably smaller being historically mounted on wooden pole "H" structures, single steel poles or light lattice towers.

CNdV and DEAP (2006) in their development of guidelines for the establishment of wind energy facilities in the Western Cape have suggested that a buffer zone of 1 km be established around significant heritage sites to minimize the change to "sense of place". The point at which a transmission line may be perceived as intrusive or offensive, is a subjective judgment, however in our experience 66 kV lines do not evoke overpowering changes to sense of place as they are absorbed into the landscape or a skyline within a few hundred meters. They are such a common feature along our road systems that most people accept them as part of the landscape.

The presence of pre-existing transmission lines in an area serves as a mitigatory factor (rather than a cumulative negative impact) in terms of establishing new transmission lines in the same area. In other words electrical infrastructure clutter is best confined to existing areas or corridors of vertical visual disturbance, rather than introducing new vertical visual disturbance to undisturbed landscape.

While archaeological and palaeontological sites share the potential to be publically celebrated heritage places, they are less visible than structures in a landscape and are therefore less celebrated as tangible heritage with visual sensitivity. Since the impact on the land surface caused by transmission lines is very small, the emphasis at the impact assessment phase must focus on heritage that is visually sensitive (declared monuments, tourism heritage. scenic landscape and drives).

1.2.2 Restrictions and assumptions

Most of the study area is under ploughed agricultural land. Crop lands cannot be accessed during the growing season and the amount of roads and tracks that intersect the proposed alternative routes is limited. As many points along the route as possible were accessed and assessed. In the last 1.5 km of the favored alternative, vegetation is extremely dense therefore visibly of the land surface is very poor.

2 Legislative context

The basis for all heritage impact assessment is the National Heritage Resources Act 25 (NHRA)

of 1999, which in turn prescribes the manner in which heritage is assessed and managed.

Loosely defined, heritage is that which is inherited. The National Heritage Resources Act 25 of 1999 has defined certain kinds of heritage as being worthy of protection, by either specific or general protection mechanisms. In South Africa the law is directed towards the protection of human made heritage, although places and objects of scientific importance are covered. The National Heritage Resources Act also protects intangible heritage such as traditional activities, oral histories and places where significant events happened. Generally protected heritage which must be considered in any heritage assessment includes:

- Cultural landscapes
- Buildings and structures (greater than 60 years of age)
- Archaeological sites (greater than 100 years of age)
- Palaeontological sites and specimens
- Shipwrecks and aircraft wrecks
- Graves and grave yards
- Living heritage

Section 38 of the NHRA requires that Heritage Impact Assessments (HIA's) are required for certain kinds of development such as rezoning of land greater than 10 000 sq m in extent or exceeding 3 or more sub-divisions, or for any activity that will alter the character or landscape of a site greater than 5000 sq m. "Standalone HIA's" are not required where an EIA is carried out as long as the EIA contains an adequate HIA component that fulfills Section 38 provisions.

3 Heritage context

3.1 Palaeonotology

Although the study crosses the Bredasdorp lime stones for a short distance. These are considered to be sparsely fossiliferous according to Almond (2012), those fossils which do occur are various forms of land snail such as *Achatina sp* (land snails). Almond has granted letters of exemption for much more invasive activities in the Bredasdorp Group – notably the Denhami Wind Energy facility near Struisbaai (Almond 2012), also see Almond and Pether 2008. The lime stones of the study area were previously walked by Avery and Avery (2005) who surveyed the route of the nearby Bredasdorp-Struisbaai 66 kV line which traverses the same landscape as the present project. They reported very few visible findings. At present there is a large mining operation (Bontebok Lime) exploiting the Bredasdorp limestones.

3.2 Pre-Colonial Archaeology

Though no were reports were found for the area traversed by the current and two proposed alternative lines between Arniston and Bredasdorp, there are two previous reports on the areas north and south of the Arniston village along the coast, and one from along the road from Gansbaai to Bredasdorp. Yates (1997) assessment of the archaeological resources in the Waenhuiskrans Nature Reserve (South of Arniston), found three archaeological areas in the coastal zone. Two of which had a small scattering of human activity, namely of marine shell, flaked quartz and quartzite and some ostrich egg shell fragments. The significant find in these

sites were cobbles arranged in circles on the surface of these areas. The third area consists of a substantial, well preserved midden, also containing stone artefacts and a few examples of ochre and pottery. In summary Yates (1997) recommended further study of the cobble structures and preservation of the midden. At the time of Yates' report these sites were believed to represent human activity during the Later Stone Age (LSA), but after 3000 years ago. The midden contained evidence of colonial contact, but is predominantly pre-colonial. A few stone artefacts from the first site may be from the Middle Stone Age (30 000 – 250 000). Yates also makes mention of a weathered and disturbed juvenile burial found exposed below a loosely arranged cairn. He offers no time frame for this burial, though it was 3 m away from a dense midden and 10 m from a scatter of marine shell, which also includes pottery.

The second study was produced by Kaplan (1997) for a proposed property development on Dollas Downs (portion 7 of erf 264/4), along the coast north of Arniston. Kaplan (1997) located 34 sites of varying size and significance. Five of these sites were rated as medium significance and five as high. These ten sites largely consisted of dense LSA middens with marine shell, pottery, ochre and stone artefacts. They are well preserved and date back to the last 3000 years. The significance of these middens meant the denial of the proposed development. One of the proposed lines runs along edge of erf 264, however it does not reach portion 7 where Kaplan's study was undertaken.

It must be noted that portions 4, 7 and 8 of the Farm Dollas Downs were provisionally declared a National Monument in July 1998 on account of the vernacular built environment. While the declaration has since lapsed these portions of land are considered to be Grade 2 (Provincial Heritage Site) status. Kassiesbaai is also a Provincial Heritage Site. The study area does not involve any of these farm portions.

An Early Stone Age quarry site was examined by the ACO during a permit application for a borrow pit for the construction of the road from Gansbaai to Bredsdorp, on farm Zandvlakte. After stone artifacts were sampled and collected for analysis it was recommended the HWC issued a destruction permit for the area, as enough mitigation for the level of the site had occurred. This site was associates with a silcrete (surface quartzite) outcrop.

3.3 Colonial period and the built environment

Bredasdorp town was founded in 1838 with the creation of a Dutch Reform Church for local merino farmers (Fransen 2004). The town and surrounding farms have a number of early 19th century buildings, some of which are graded (SAHRIS 2013). The area of Arniston has been known by other names. The fishing village Kassiebaai was settled at least as far back as 1820, and later became known as Arniston after the 1815 ship wreck of the Dutch East Indiaman Arniston (Fransen 2006). In 1986 Kassiesbaai was declared a National Monument to preserve the fishermens cottages, which are part of one the oldest surviving traditional fishing villages on the Cape Coast (Meskell & Scheermeyer 2008). Arniston has also been known as Wagenhuiskrantz, after which the Nature reserve is now named.

There have been no reports found on any historical archaeology that has been undertaken for any the buildings or lands of Arniston and Bredasdorp. The proposed power lines circumvent Bredasdorp town, but crosses mainly transformed farm land. The proposed lines do not extend as far as the fishermen's settlement of Arniston but terminate just over the boundary fence of the Denel Property on farm Dollas Downs 264 portion 16.

3.4 Landscape qualities

The area contains a smattering of historic and protected buildings that date from the early 19th century. None of these have been identified in any proximity to the study area. The area is generally scenic but bland consisting of a mosaic of transformed farm land over much of the flat landscape of the Agulhas coastal plains. Towards the coastal areas there are is vegetated dune veld, wetlands and occasional clumps of Milkwood trees, while closer to Bredasdorp, are the Bredasdorp limestones. The proposed routes pass close to a large limestone quarry and cement works which lies on the edge of the industrial area of the town. Soil depths are shallow in this area and vegetation sparse. The secondary road linking Bredasdorp with Arniston is a scenic country route. Arniston itself which lies well outside the study area is famous for its fishermen's cottages and vernacular architecture.

Figure 3 The existing 66 kV transmission line which is to be replaced with a new one. The landscape is typical of the area - gently inclined hills and cultivated lands.

Figure 4 The existing Bredasdorp substation where the power line begins.

Figure 5 The end of the existing 66 kV power line at Arniston just inside Denel property. The last 1.5 km consists of densely vegetated un-transformed land and seasonal wetland..

4 Findings

No archaeological or paleontological material was located at any point along the routes which were visited including proposed substation alternatives. This however does not preclude the existence of such material on the route. Given that most of the land along the route has been plowed, the likelihood of finding significant archaeological material is very low. Closer to the coast the landscape changes from agricultural land to a system of densely vegetated dunes and dune-slack wetlands. In undisturbed landscape the possibility of finding in-tact archaeological sites and middens is higher, however this stretch is still 2km inland of the coast. The very small foot print of the proposed activity renders the chances of serious negative impacts to be acceptably low in terms of archaeology and palaeontology.

4.1 The alternative routes

The favored alternative avoids negative impacts to the visual qualities of the R316 as the favored route and existing line lies roughly 1 km to the east and is therefore not visible. The alternative route which runs parallel to the R316 will add visual clutter to the scenic route and as such is not favored. It too passes through mainly transformed land so impacts to archaeology are likely to be of low significance.

4.2 The alternative substations

There is no difference in terms of the significance of impacts to substation alternatives 1 or 2. Both are equally acceptable.

5 Summary of Impacts

Table 1: The potential impact on heritage of the construction of a 66 kV transmission line between Bredasdorp and Arniston (proposed alternative 1)

	Without Mitigation	**With Mitigation**
Nature/Type	Neutral	Neutral
Extent	On-site	On-site
Duration	Permanent	Permanent
Probability/likelihood	Likely	Likely
Significance	Low	Low
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation: Mitigation will involve using the favored alternative and conducting a walkthrough of untransformed landscape. No mitigation is required for the built environment.		
Operational Phase: No mitigation required		
Decommissioning Phase: No mitigation required		
Cumulative impacts: None.		

Table 2: The potential impact on heritage of the construction of a 66 kV transmission line between Bredasdorp and Arniston (proposed alternative 2)

	Without Mitigation	**With Mitigation**
Nature/Type	Negative	Neutral
Extent	Loca	Local
Duration	Permanent	Permanent

Probability/likelihood	Likely	Likely
Significance	Medium	Low
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation: Mitigation will involve using the favored alternative and conducting a walkthrough of untransformed landscape. Use of the 2nd alternative is not favoured.No mitigation is required for the built environment.		
Operational Phase: No mitigation required		
Decommissioning Phase: No mitigation required		
Cumulative impacts: None.		

5.1 Ranking of alternatives

Alternative is clearly preferred over alternative 2. This because alternative 1 replaces an already existing line, and its remote location will not cause negative impacts to the R316.

Alternative 2 is not preferred as it will have a negative impact in terms of the scenic qualities of the R316.

6 Conclusion

In heritage terms, the proposed activity is considered acceptable and does not constitute a significant risk to any form of heritage provided that alternative 1 is used. This constitutes the renewal of an existing transmission line. It will not cause new impacts to the landscape of the areas, and very few, if any impacts to physical heritage. Neither proposed nor new substation sites will impact heritage resources.

7 Recommendations

The proposed activity has a limited footprint and passes through largely transformed landscape. No further work is recommended. As precaution, in the event of the accidental exposure of

archaeological material or humans remains during construction, the find must be reported to Heritage Western Cape or an archaeologist.

8 References

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