ARCHAEOLOGICAL SPECIALIST STUDY

In terms of Section 38(8) of the NHRA for a

Proposed establishment of 132kV powerline to evacuate power from the Karreebosch WEF to the National Grid in the Western and Northern Cape

Prepared by

CTS HERITAGE

In Association with

WSP

August 2021

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EXECUTIVE SUMMARY

This application is for the proposed development of a 132kV overhead power line to connect the Karreebosch Wind Energy Facility (WEF) Energy Facility to the national grid via the existing Eskom Komsberg substation. The powerline is approximately 20 km long. The project is situated north of the town of Matjiesfontein in the Karoo Hoogland Local Municipality and the Laingsburg Local Municipality in the Northern Cape Province and Western Cape Province.

The findings of this field assessment largely correlate with the findings of the Karrebosch HIA (2015) which "revealed that the study area is relatively austere in terms of pre-colonial heritage, however valley bottoms contain evidence of early trekboer cultural landscapes – ruins, graves and occasional middens. These consist of collections of ruined stone and mud buildings, threshing floors and kraals located exclusively in the valley areas between the high longitudinal ridges that characterise the study area."

No significant heritage resources were identified in any of the proposed alignment alternatives, with only one LSA chert flake (KRB022) identified within the alignment for Alternative Option 2C. This is likely due to the placement of the proposed powerline alternatives on ridgelines or slopes. It has been previously noted that in this area, it is the valley bottoms that are sensitive in terms of archaeology and heritage resources.

As such, no negative impact to significant archaeological heritage is anticipated and there is no preferred alternative alignment in terms of impacts to archaeological resources.

Recommendations

There is no objection to the proposed development of the Karreebosch overhead powerline in terms of impacts to archaeological heritage and there is no preferred alternative on condition that:

- Should any buried archaeological resources or burials be uncovered during the course of development activities, work must cease in the vicinity of these finds. The relevant heritage authority (the South African Heritage Resources Agency (SAHRA) in the Northern Cape and Heritage Western Cape (HWC) in the Western Cape) must be contacted immediately in order to determine an appropriate way forward.

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1. INTRODUCTION

1.1 Background Information on Project

This application is for the proposed development of a 132kV overhead power line to connect the Karreebosch Wind Energy Facility (WEF) Energy Facility to the national grid via the existing Eskom Komsberg substation. The powerline is approximately 20 km long. The project is situated north of the town of Matjiesfontein in the Karoo Hoogland Local Municipality and the Laingsburg Local Municipality in the Northern Cape Province and Western Cape Province. The 132kV grid connection crosses the following properties:

- Wilgebosch Rivier 188 Remainder
- Ekkraal (Nuwekraal) 199 Portion 2
- Klipbanksfontein 198 Portion 1 and Remainder
- Bon Espirange 73 Portion 1 and Remainder
- Rietfontein 197
- Ekkraal (Nuwekraal) 199 Portion 1 and Remainder
- Standvastigheid 210 Portion 2 (Komsberg Substation)

The OHL will be a 132kV steel single or double structure with a kingbird conductor (between 15 and 20m in height – above ground level). Standard overhead line construction methodology will be employed – drill holes (typically 2 – 3m in depth), plant poles, string conductor. It is not envisaged that any large excavations and stabilized backfill will be required however this will only be verified on site once the Geotech has been undertaken at each pole position (part of construction works).

The internal lines from the Karreebosch onsite substation to the Bon Espirange substation will be for Karreebosch WEF, however the line from Bon Espirange substation to the Komsberg substation will be for all three Euronotus projects.

1.2 Description of Property and Affected Environment

The proposed routes for the Karreebosch powerline connect up to the Komsberg substation in the east and traverse through much of the nearly complete Roggeveld WEF before following one of two valleys that run in a north to south direction that are separated by a prominent ridge containing a number of proposed turbines for the Karreebosch WEF. Ekkraal farm lies in much of the eastern valley and Klipbanksfontein lies in the western valley in a more rugged area than Ekkraal. Only very short sections of the alternatives cross the valley floor and tend to follow the slopes of the ridges that dominate the area. Ekkraal has small-scale farming activities with very small patches of ground dedicated to crop agriculture along the Tankwarivier in addition to providing grazing for sheep. The valley on the western route over Klipbanksfontein is largely vacant as most of the primary farming occurs in the next valley further west where water supplies are more predictable. Water was running in most of the rivers and streams at the time of the survey but the previous extended drought brought almost all farming activities in the area to the point of closure. A number of abandoned farmhouses and ruins have been documented in the area from previous surveys which confirms the rather precarious state that these farms are in due to the environment.

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The region is regarded as semi-arid as it receives limited precipitation. It is located on the border of the summer and winter rainfall regions. Precipitation is in the form of snow and rain in winter, with occasional thunderstorms during the summer. The vegetation cover falls within the Roggeveld Shale Renosterveld of the Karoo Renosterveld Bioregion and consists predominantly of low shrubs and very few trees in this area.

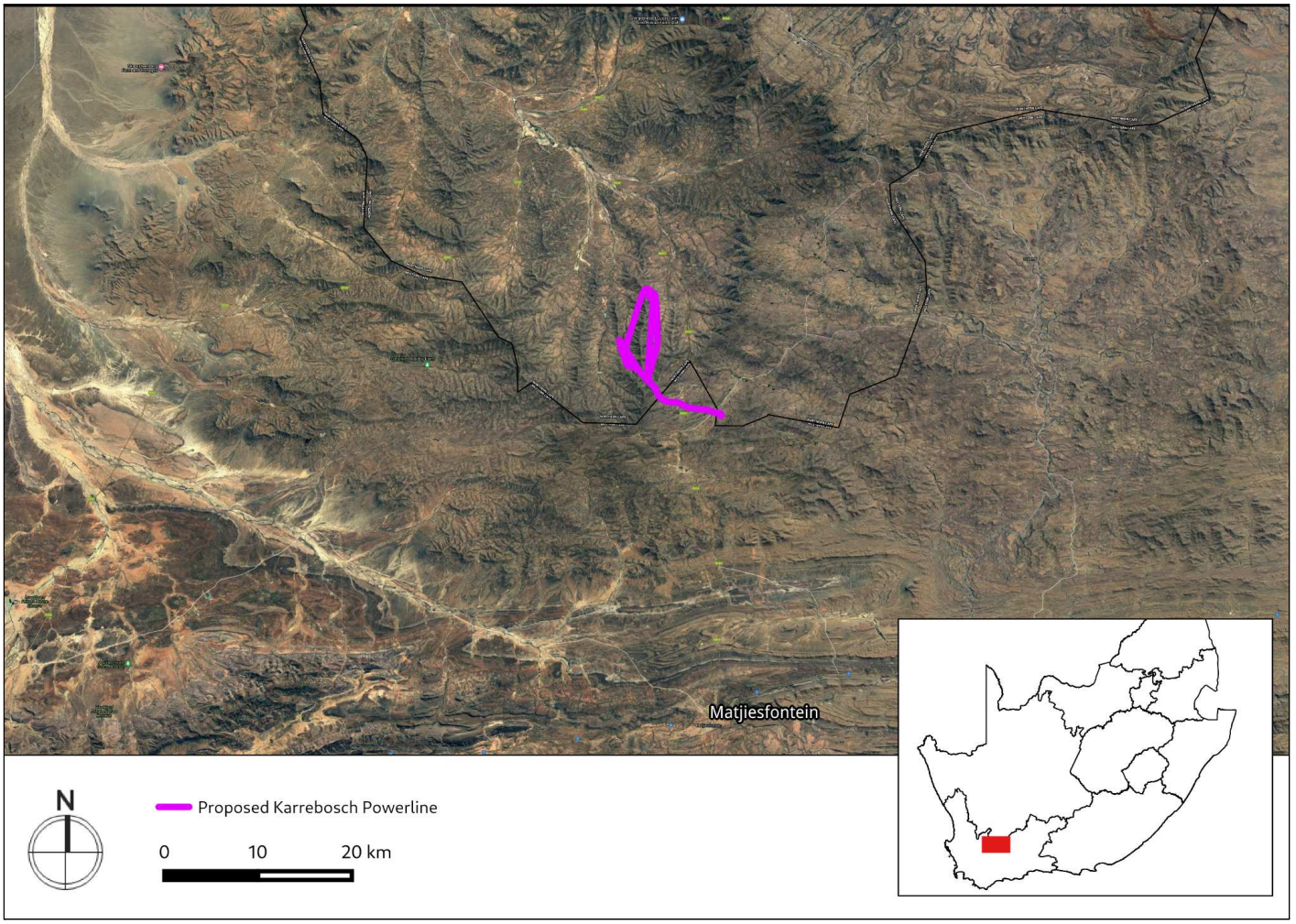

Figure 1.1: Close up satellite image indicating proposed location of study area

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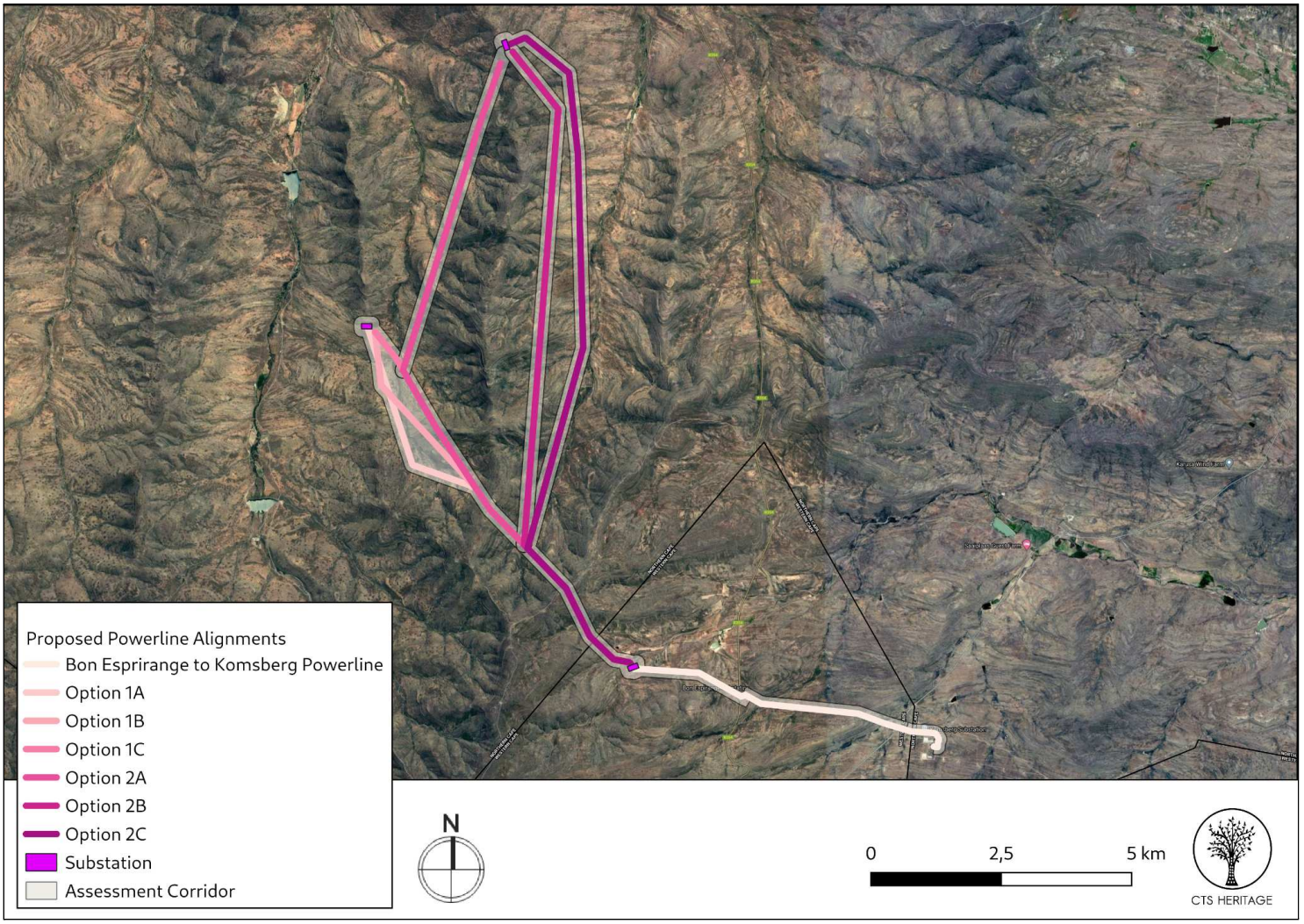

Figure 1.2: Study Area with alternatives indicated

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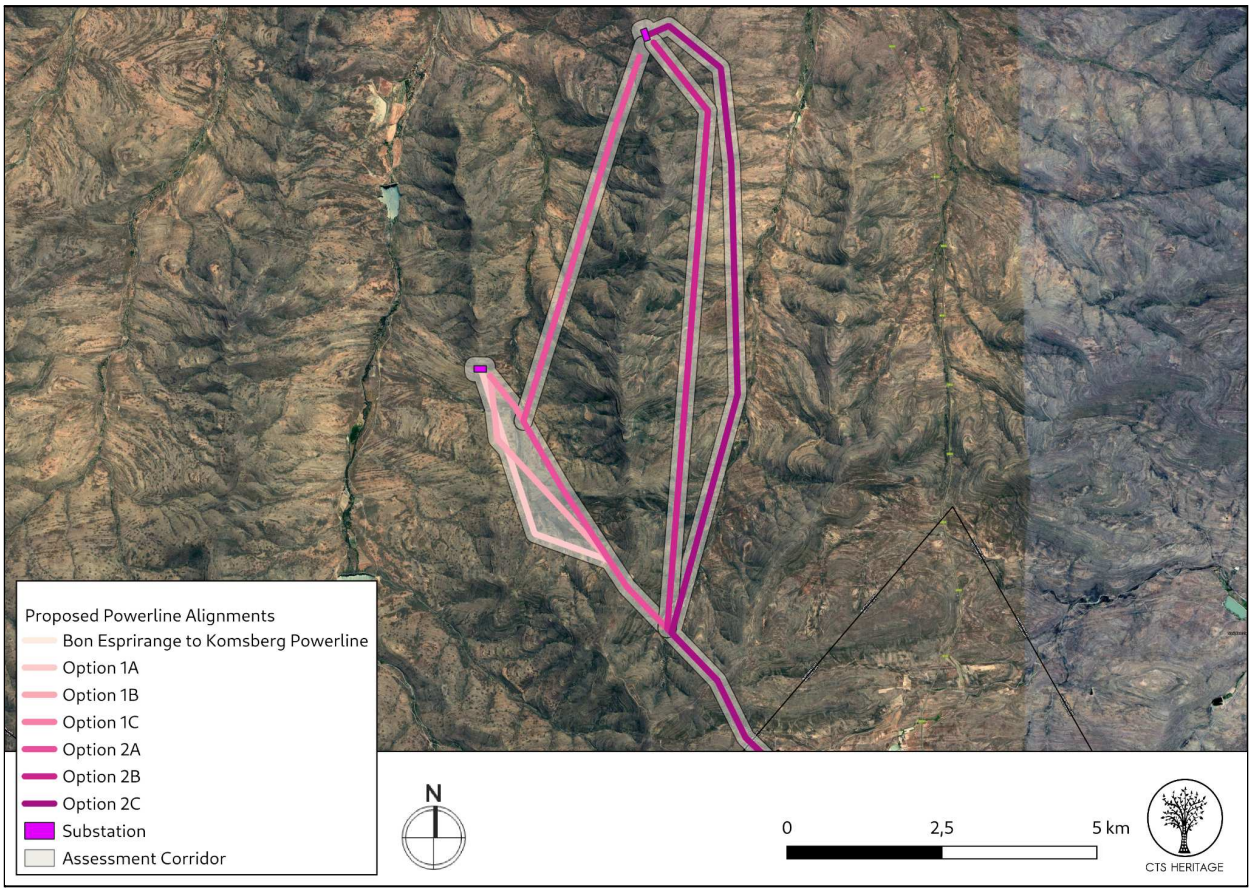

Figure 1.3: Study Area in the Northern Cape

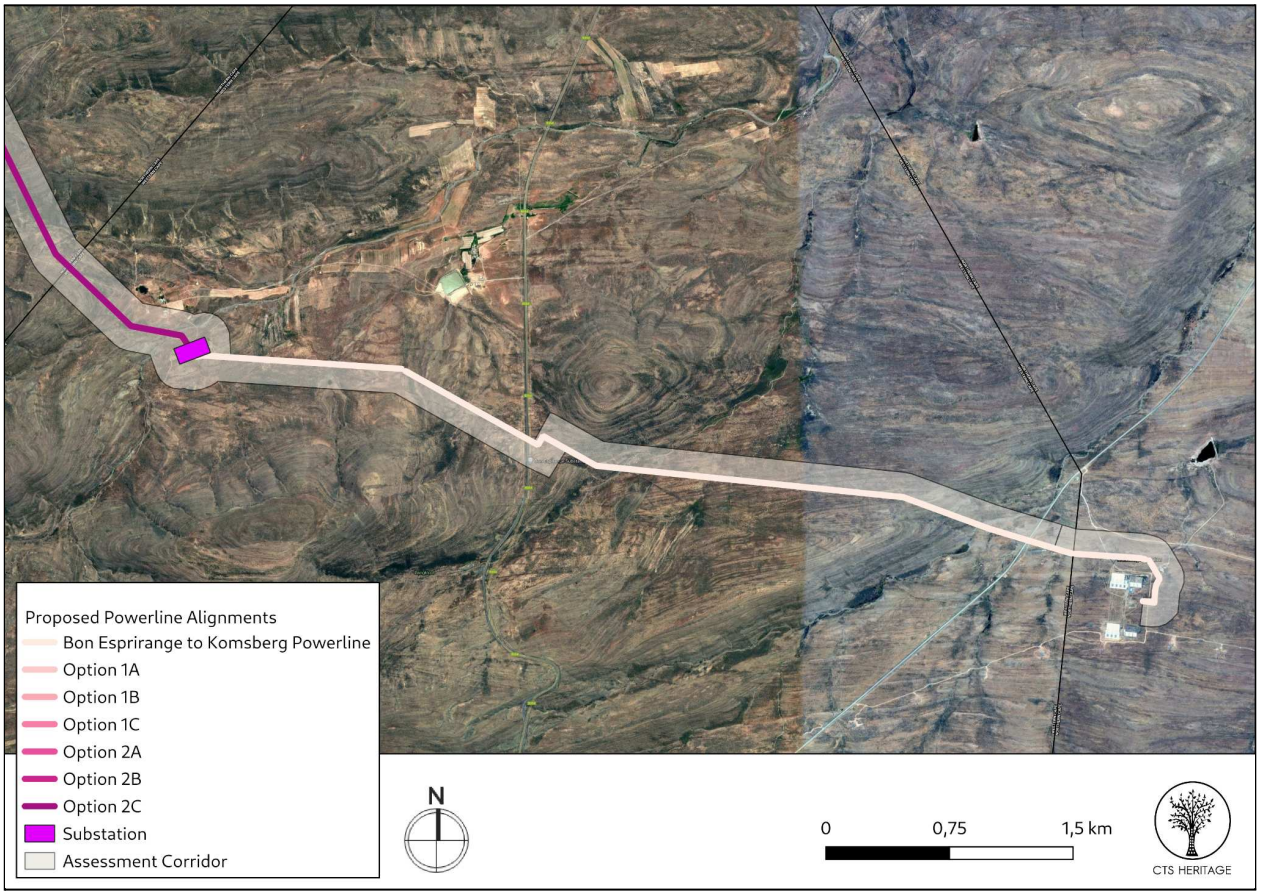

Figure 1.4: Study Area in the Western Cape

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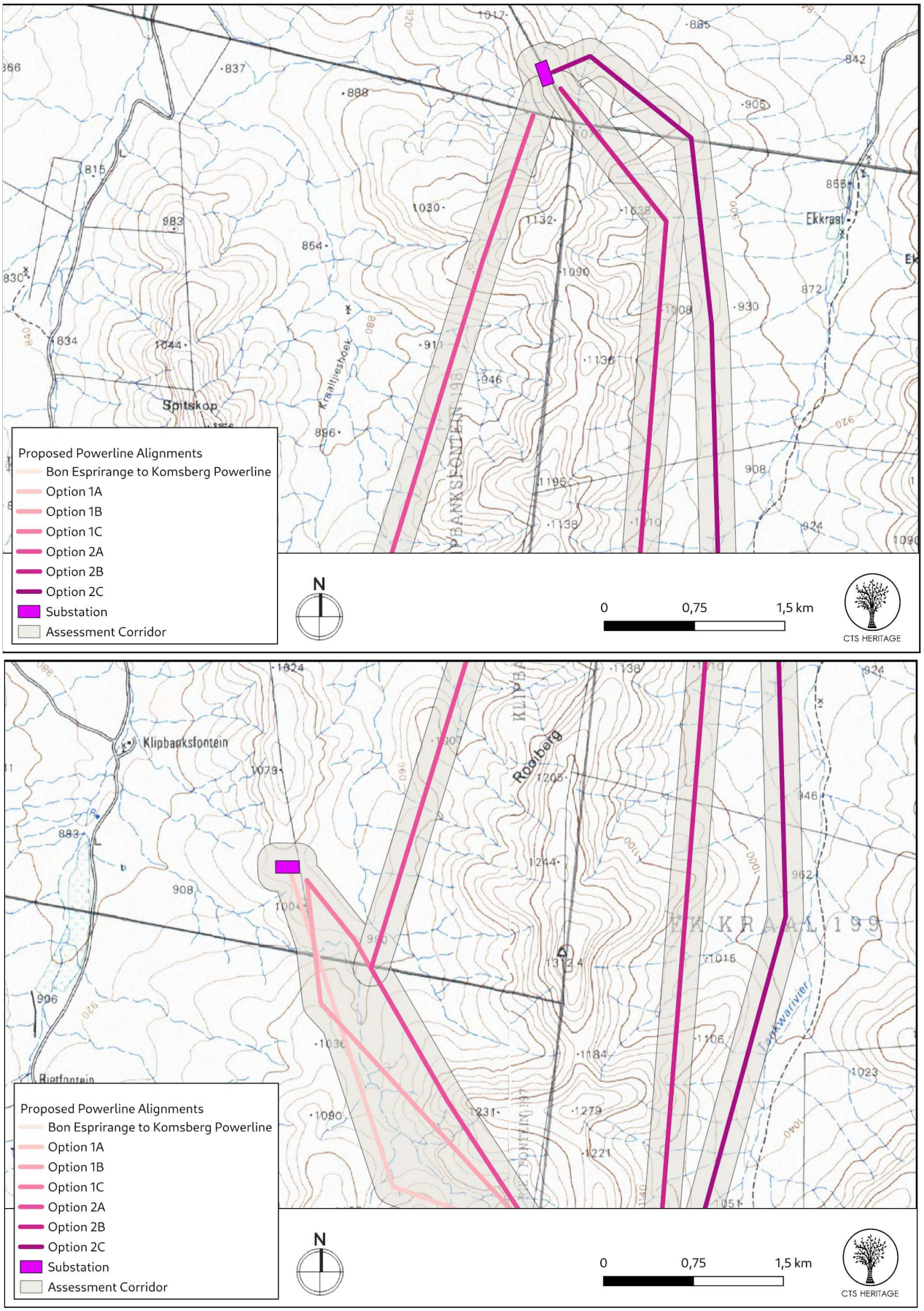

Figure 1.5: Topographic Map of the Study Area 1:50 000 (AZ08)

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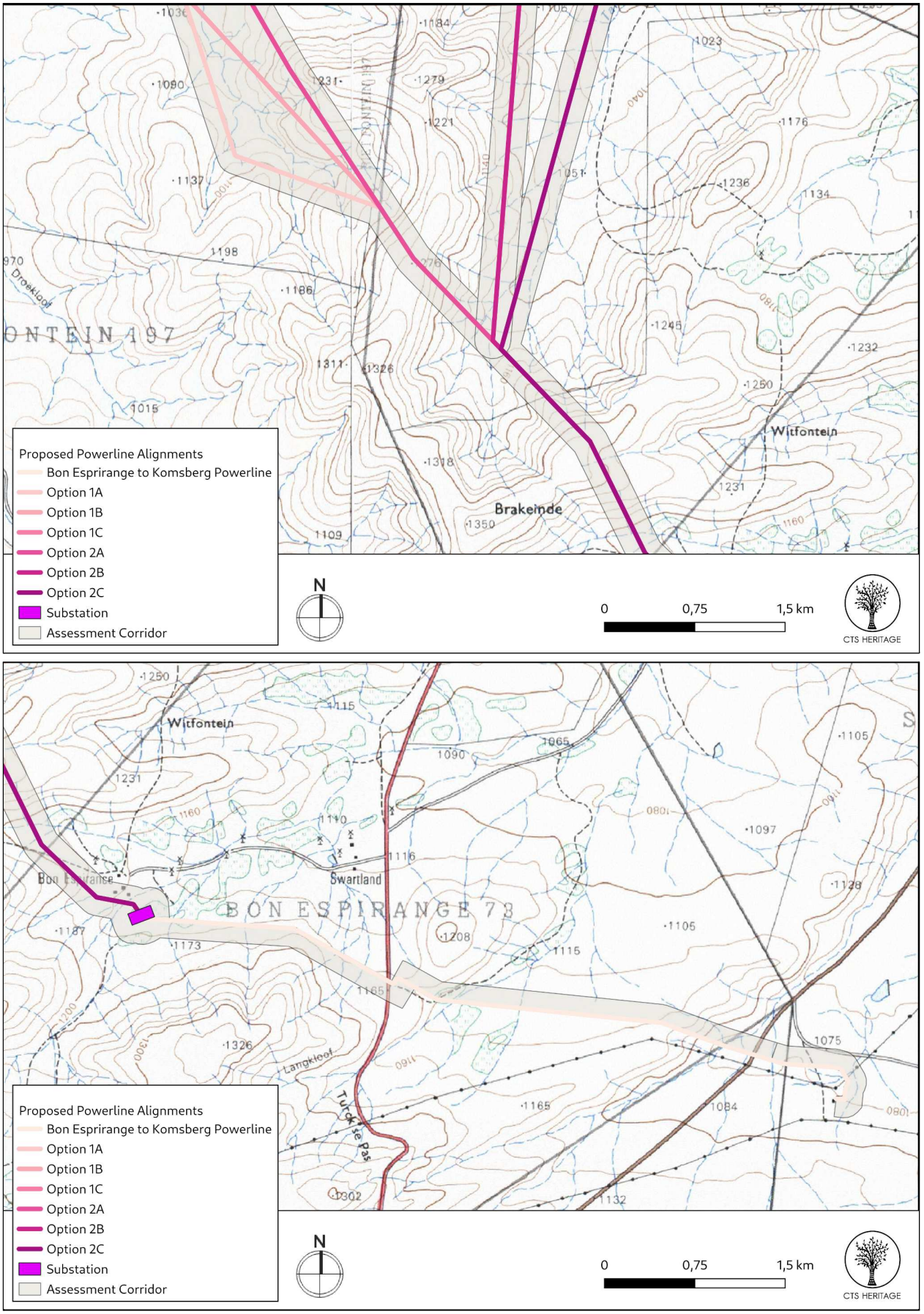

Figure 1.6: Topographic Map of the Study Area 1:50 000 (AZ08)

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2. METHODOLOGY

2.1 Purpose of Archaeological Study

The purpose of this archaeological study is to satisfy the requirements of section 38(8), and therefore section 38(3) of the National Heritage Resources Act (Act 25 of 1999) in terms of impacts to archaeological resources.

2.2 Summary of steps followed

- An archaeologist conducted a survey of the site and its environs on 13 August 2021 to determine what archaeological resources are likely to be impacted by the proposed development.
- The study area was assessed on foot in transects, photographs of the context and finds were taken, and tracks were recorded using a GPS.
- The identified resources were assessed to evaluate their heritage significance in terms of the grading system outlined in section 3 of the NHRA (Act 25 of 1999).
- Alternatives and mitigation options were discussed with the Environmental Assessment Practitioner.

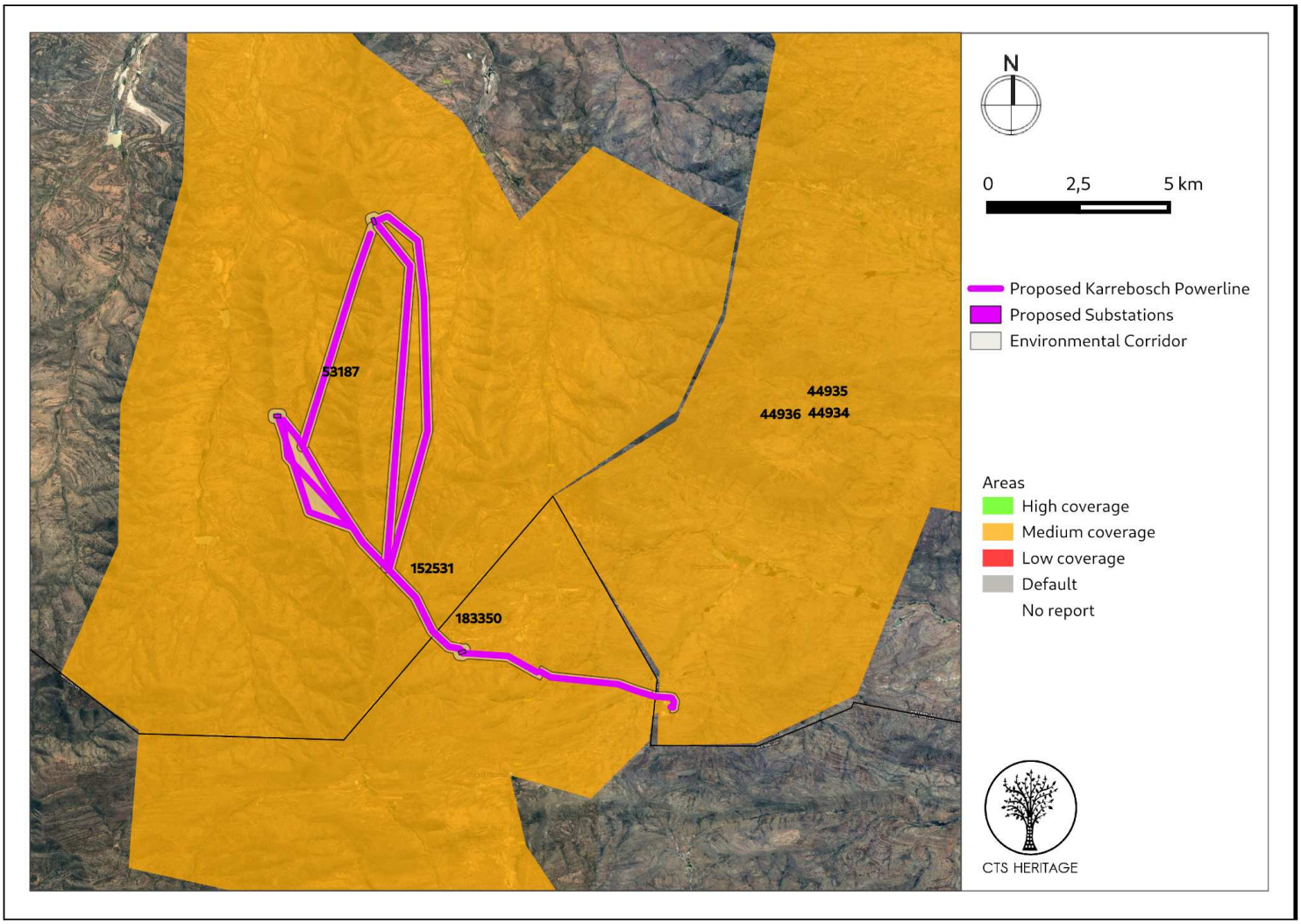

Figure 2: Close up satellite image indicating proposed location of the study area in relation to heritage studies previously conducted

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2.3 Constraints & Limitations

The vegetation did not pose any challenges to the archaeological survey but much of the ground was covered in broken rock and stone eroding down the slopes of the ridges. The placement of the OHL footings predominantly lie along the middle of the slopes en route to and from the tops of the ridges and this resulted in very few archaeological observations.

3. HISTORY AND EVOLUTION OF THE SITE AND CONTEXT

This application is for a proposed powerline associated with the Karrebosch Wind Energy Facility located in both the Western and Northern Cape. The Karrebosch WEF was previously referred to as Phase 2 of the Roggeveld WEF. SAHRA has made numerous comments on both the Roggeveld WEF and the Karrebosch WEF from 2013 with the last comment issued on 26 September 2018 (attached). EA was granted for the Karrebosch WEF on 29 January 2016. In the EA, various requirements were stipulated in terms of impacts to Historical, Cultural and Palaeontological sites. Much of the area proposed for the development of the powerline was assessed as part of the HIA completed for the Karrebosch WEF (Figure 2a and 2b) drafted by the ACO (Kendrick, 2015, SAHRIS Ref 183350). The remaining sections of the proposed powerline were assessed in the Heritage Assessments completed for the Roggeveld WEF (Hart and Webley, 2013, SAHRIS Ref 152531). The heritage information identified in these reports have been extracted and are mapped in Figure 3, 3a and 3b. These reports are also referred to below in order to provide a contextual analysis of the heritage sensitivity of the area proposed for development.

Archaeology and Built Environment Heritage

The area proposed for development has been previously assessed, more than once. In addition, the proposed powerline routes lie immediately adjacent to existing grid infrastructure. The original fieldwork conducted for the Roggeveld WEF HIA (2013) which covered the area proposed for development was comprehensive and remains relevant, similarly the fieldwork conducted for the Karrebosch WEF (2015).

The Karrebosch HIA (2015) “revealed that the study area is relatively austere in terms of pre-colonial heritage, however valley bottoms contain evidence of early trekboer cultural landscapes – ruins, graves and occasional middens. These consist of collections of ruined stone and mud buildings, threshing floors and kraals located exclusively in the valley areas between the high longitudinal ridges that characterise the study area. There are a number of existing farm houses that contain 19th century fabric, however very few of these have anything more than moderate heritage significance. Parts of the study area enjoy very high aesthetic qualities with the area known by locals as “Gods Window” having grade II aesthetic qualities, hence the significance of the study area lies mainly with its undeveloped wilderness qualities. Interestingly, pre-colonial or stone age heritage and archaeology is extremely scarce in the areas that were searched. Very few archaeological sites of these kinds were recorded despite the fact that overall 9 experienced archaeologists were involved in scouring the landscape.”

The HIA for the Karrebosch WEF notes that “The most important colonial archaeological sites in the study area are associated with Ekkraal Valley, the Rietfontein-Wilgebosch River valley and the Krans Kraal-Karrekraal valley. The

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valley bottoms are archaeologically sensitive…". Similar findings were made by ACO in their report (2010, SAHRIS Ref: 53187) over the development area (Figure 3, 3a and 3b). As the proposed powerline alternatives traverse the valley areas which have been determined to be archaeologically sensitive, it is likely that significant archaeological heritage resources may be impacted by the proposed development.

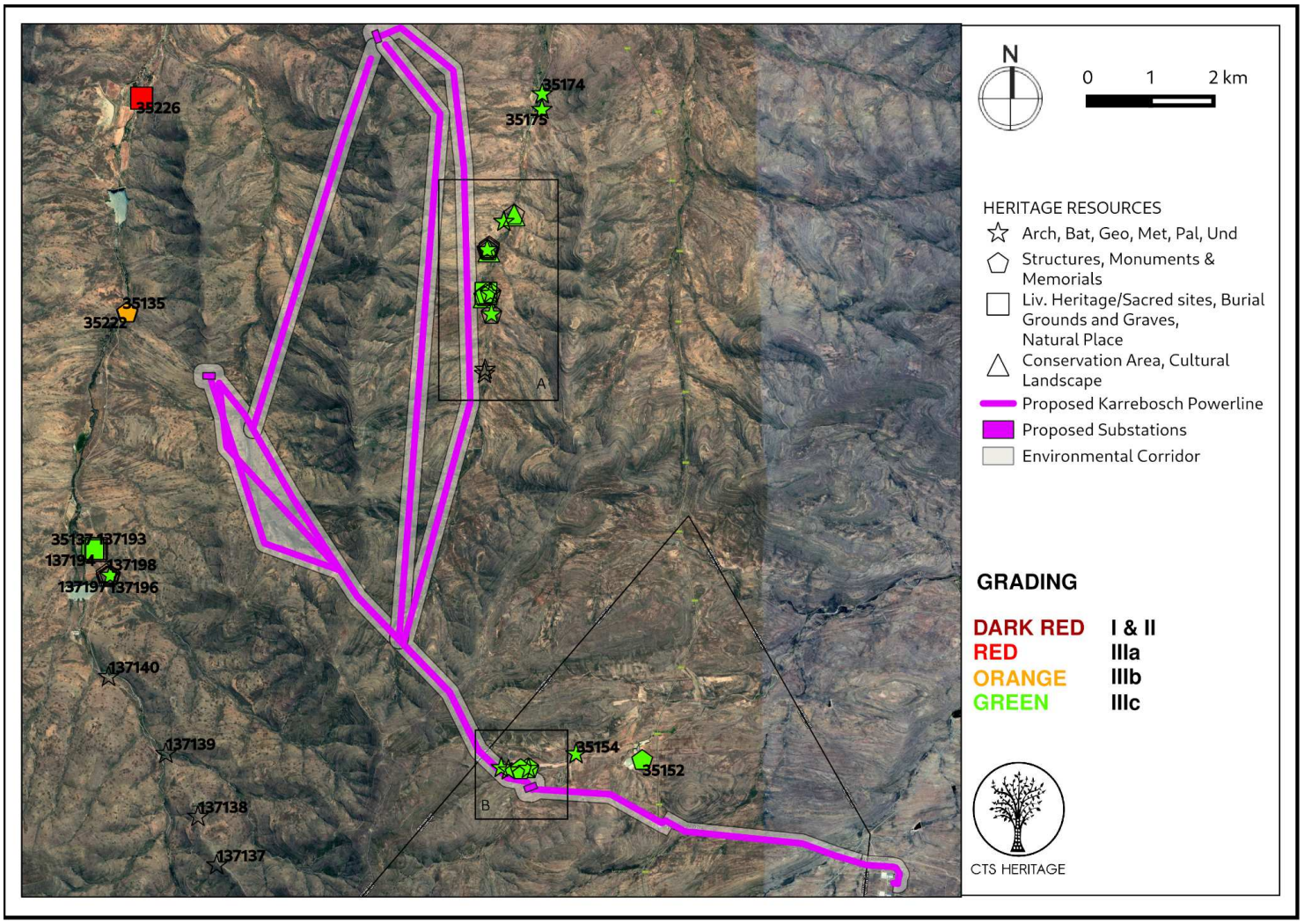

Figure 3. Heritage Resources Map. Heritage Resources previously identified in and near the study area, with SAHRIS Site IDs indicated (see Heritage Screening Assessment for insets)

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4. IDENTIFICATION OF HERITAGE RESOURCES

4.1 Field Assessment

Very few archaeological resources were identified during the archaeological field assessment completed for the proposed OHL development. The resources that were identified were all single artefact occurrences or low density artefact scatters, none of which were determined to have any scientific cultural value.

While the survey of the Karreebosch OHL must be taken in context with the broader assessments of the wind farms that have necessitated the development of the OHL, the findings were particularly limited due to the route taken for the OHL. 132kV lines typically have a very small development footprint and can be constructed without the large roads needed to build the WEFs. The routes chosen by the engineers for the various alternatives follow very rugged, mid-slope paths where almost no archaeological material or ruins were found. Where archaeological material was found, lithics consisted of local quartzites used to manufacture Middle and Later Stone Age flakes as well as cherts that were sourced in the more general region such as the Tanqua and Ceres Karoo by people in the Later Stone Age.

There have now been a rather large number of studies conducted for the various WEFs between Sutherland, Matjiesfontein, Laingsburg and the Ceres Karoo which have greatly improved our understanding of the Stone Age and historical settlement patterns in this area. Rock art sites are rare where suitable surfaces are not found in abundance near the valley floors. Isolated Stone Age material from the Middle to the Later Stone Age is found in very low numbers on the ridges, particularly the more accessible ones. We hypothesize that these were used as lookout/observation areas by hunter-gatherers as no evidence of larger campsites were found on the ridges. The historical farms have left a more obvious trace on the valley floors where arable land was taken up for agriculture during the last couple of hundred years. This is also the ground where most of the evidence for Later and Middle Stone Age occupation areas were found.

Figure 4.1: Contextual Images taken from the northern-most point of the proposed line alternatives

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Figure 4.2: Contextual Images taken from the northern-most point of the proposed line alternatives

Figure 4.3: Contextual Images taken from the ridge between Options 2A and 2B

Figure 4.4: Contextual Images taken from the substation location in the west with existing turbines visible on the ridgeline

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Figure 4.5: Contextual Images taken from the farm werf at Figure 3 inset B and Figure 8.3

Figure 4.6: Contextual Images taken from the alignment running north-west to south-east indicating turbines under construction

Figure 4.7: Contextual Images taken from the alignment running north-west to south-east indicating existing turbines

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Figure 4.8: Contextual Images taken from the alignment running north-west to south-east indicating existing turbines

Figure 4.9: Contextual Images taken from the alignment running north-west to south-east indicating existing powerlines

Figure 4.9: Contextual Images taken from the alignment running north-west to south-east indicating existing powerline infrastructure

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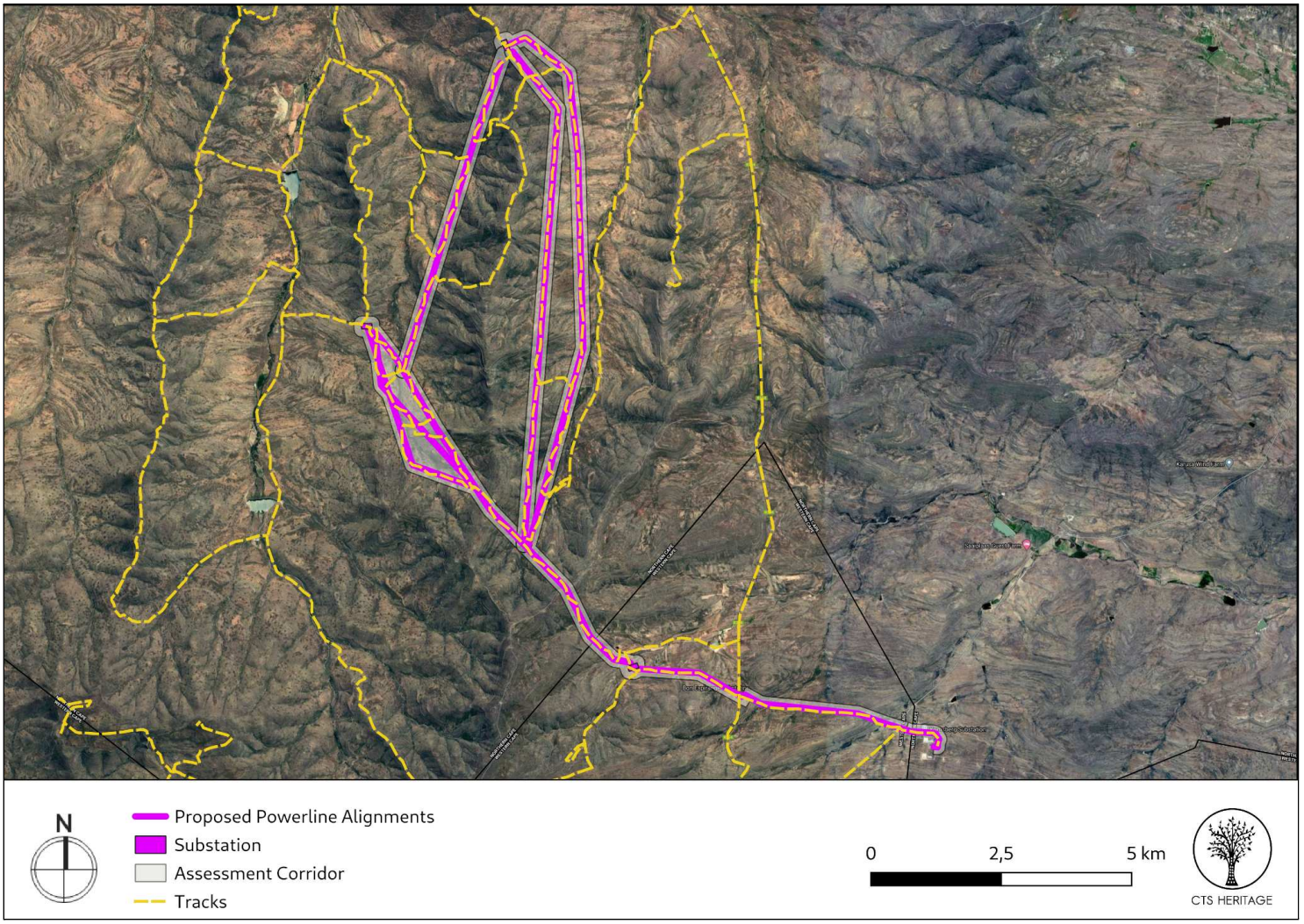

Figure 5: Overall track paths of foot survey

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4.2 Archaeological Resources identified

Table 2: Observations noted during the field assessment

Site No.	Site Name	Description	Co-ordinates		Grading	Mitigation
KRB017	Karrebosch 017	Quartzite flakes, thinly struck, prep. Platforms, MSA. Near valley floor; cores and flakes, knapping and production site	-32.85936	20.47184	NCW	NA
KRB018	Karrebosch 018	Chert flake, LSA. On top of ridge.	-32.84809	20.44152	NCW	NA
KRB019	Karrebosch 019	Quartzite flake, MSA	-32.84897	20.44073	NCW	NA
KRB020	Karrebosch 020	Quartzite flake, MSA	-32.86418	20.43635	NCW	NA
KRB021	Karrebosch 021	Chert and quartz flakes, lower grindstone near wind pump, LSA	-32.90585	20.44082	NCW	NA
KRB022	**Karrebosch 022**	**Chert flake, LSA**	**-32.88297**	**20.517862**	**NCW**	**NA**

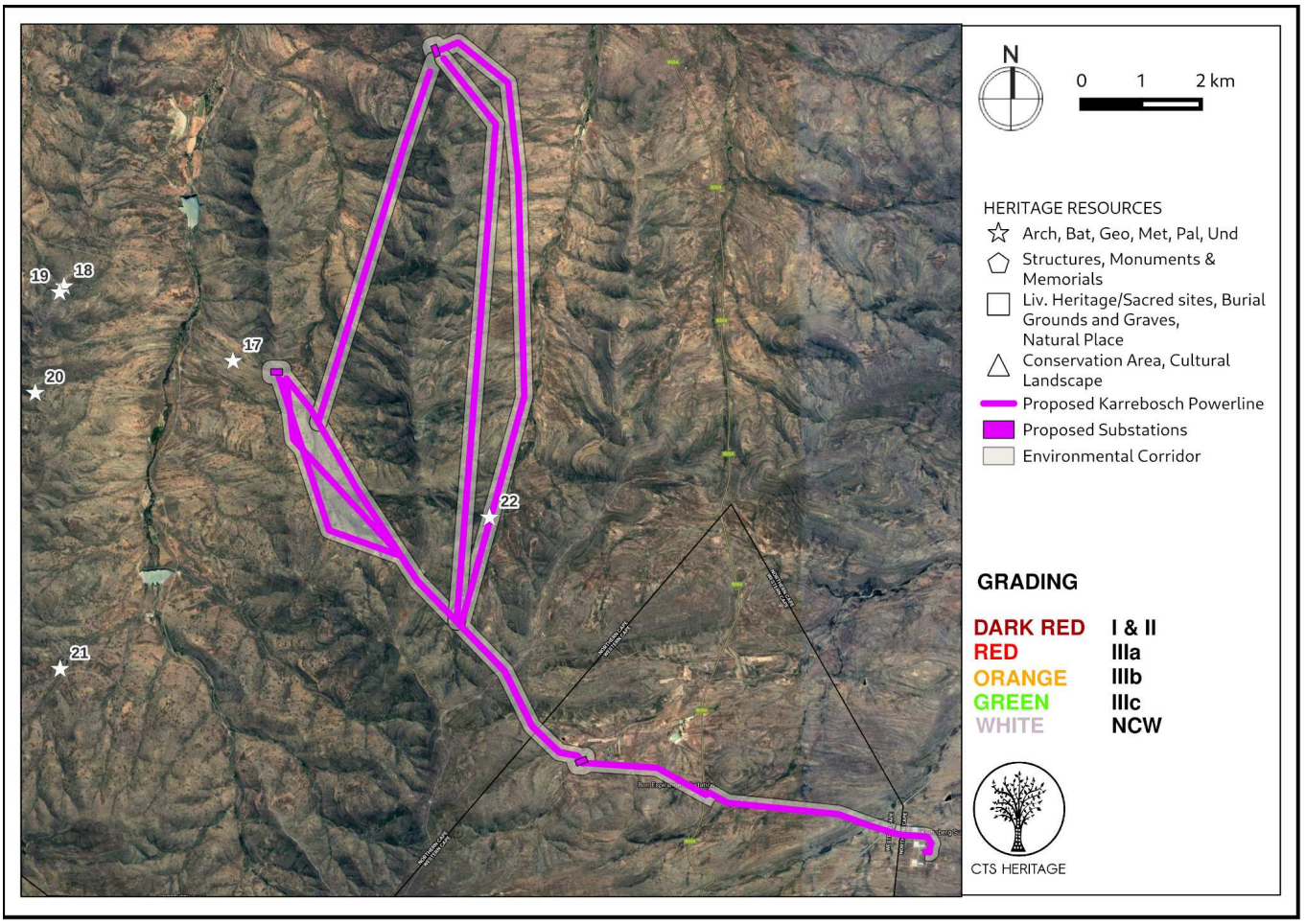

Figure 6: Map of field observations relative to the proposed development

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4.3 Selected photographic record

(a full photographic record is available upon request)

Figure 7.1: KRB017

Figure 7.2: KRB017

Figure 7.3: KRB017

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Figure 7.4: KRB018

Figure 7.5: KRB019

Figure 7.6: KRB020

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Figure 7.7: KRB021

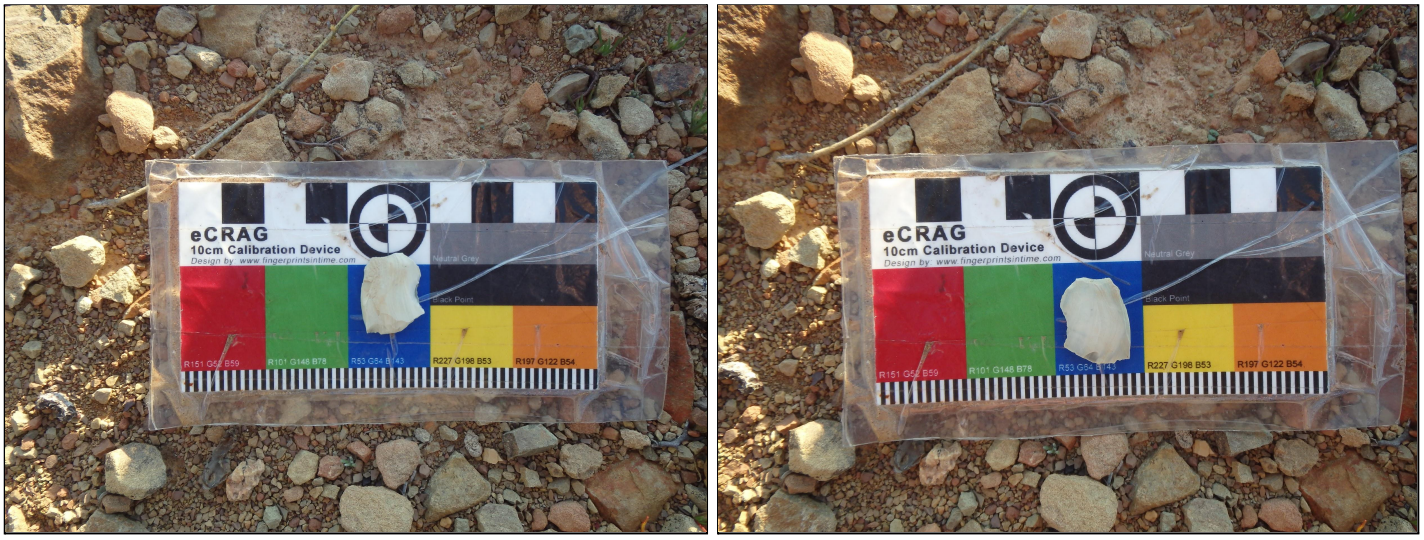

Figure 7.8: KRB022

Figure 7.9: KRB022

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5. ASSESSMENT OF THE IMPACT OF THE DEVELOPMENT

5.1 Assessment of impact to Archaeological Resources

The findings of this field assessment largely correlate with the findings of the Karrebosch HIA (2015) which "revealed that the study area is relatively austere in terms of pre-colonial heritage, however valley bottoms contain evidence of early trekboer cultural landscapes – ruins, graves and occasional middens. These consist of collections of ruined stone and mud buildings, threshing floors and kraals located exclusively in the valley areas between the high longitudinal ridges that characterise the study area."

No significant heritage resources were identified in any of the proposed alignment alternatives, with only one LSA chert flake (KRB022) identified within the alignment for Alternative Option 2C. This is likely due to the placement of the proposed powerline alternatives on ridgelines or slopes. It has been previously noted that in this area, it is the valley bottoms that are sensitive in terms of archaeology and heritage resources.

As such, no negative impact to significant archaeological heritage is anticipated and there is no preferred alternative alignment in terms of impacts to archaeological resources.

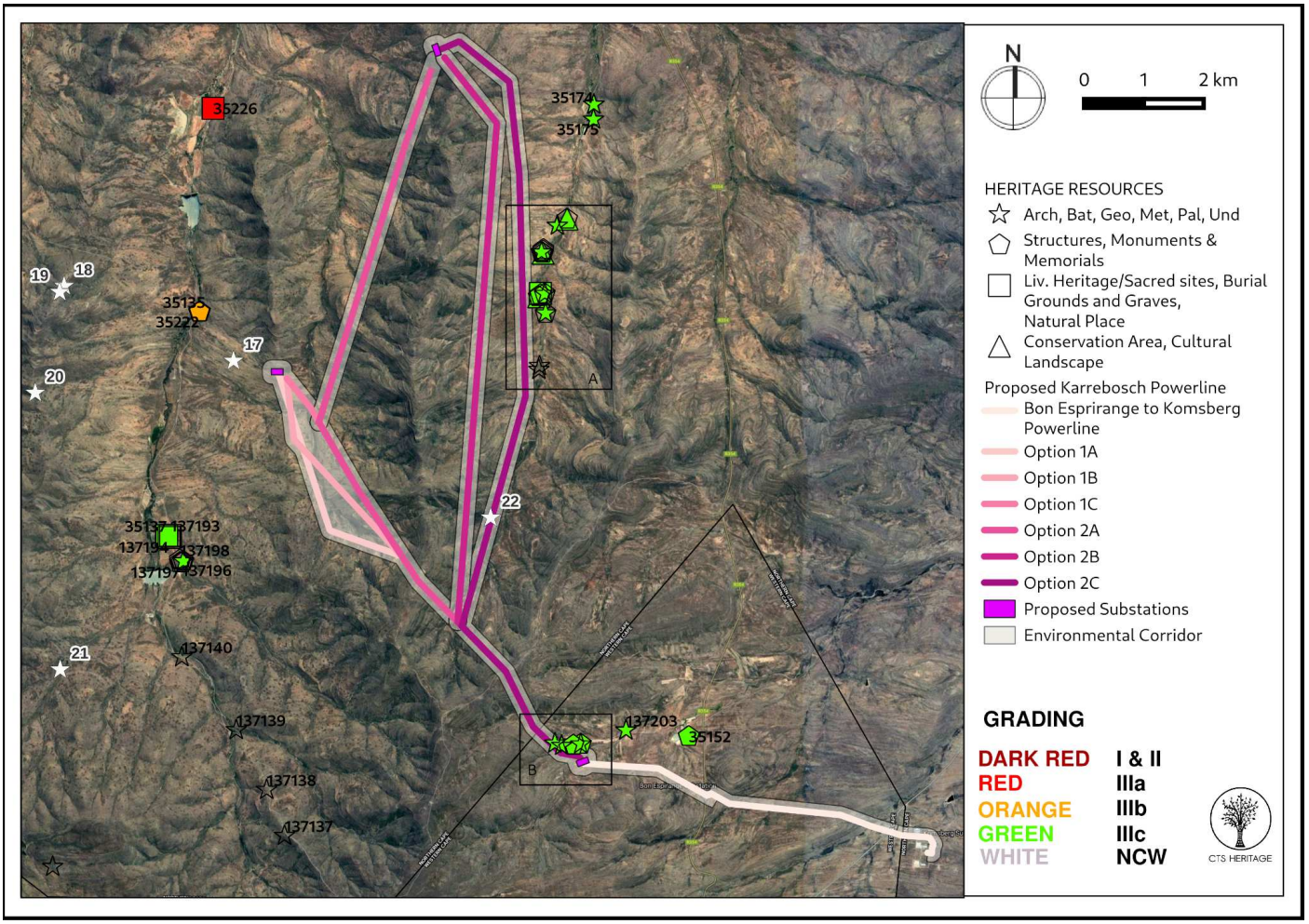

Figure 8.1: Map of heritage resources identified during the field assessment, relative to the study area and associated archaeological sensitivity

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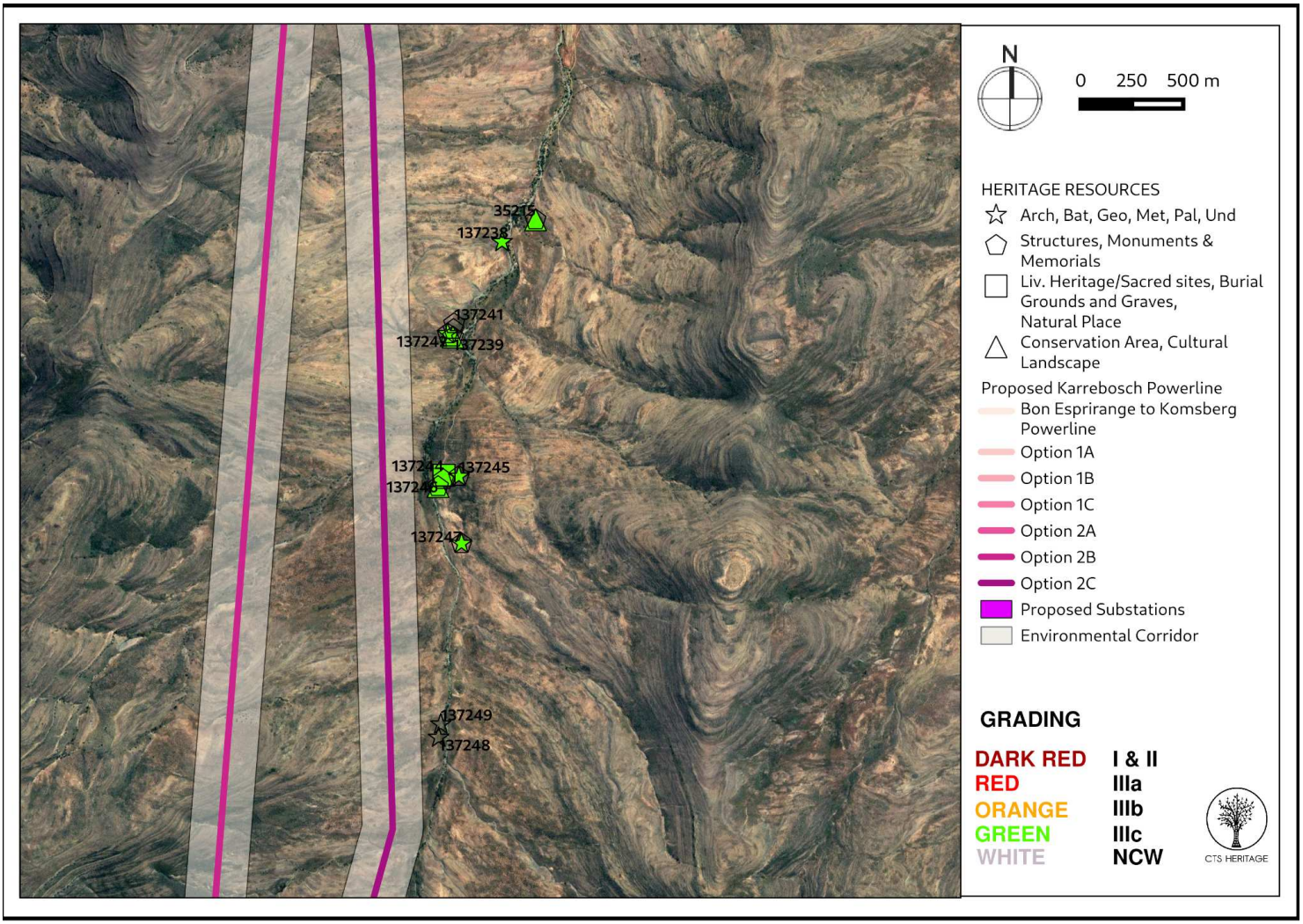

Figure 8.2: Inset A

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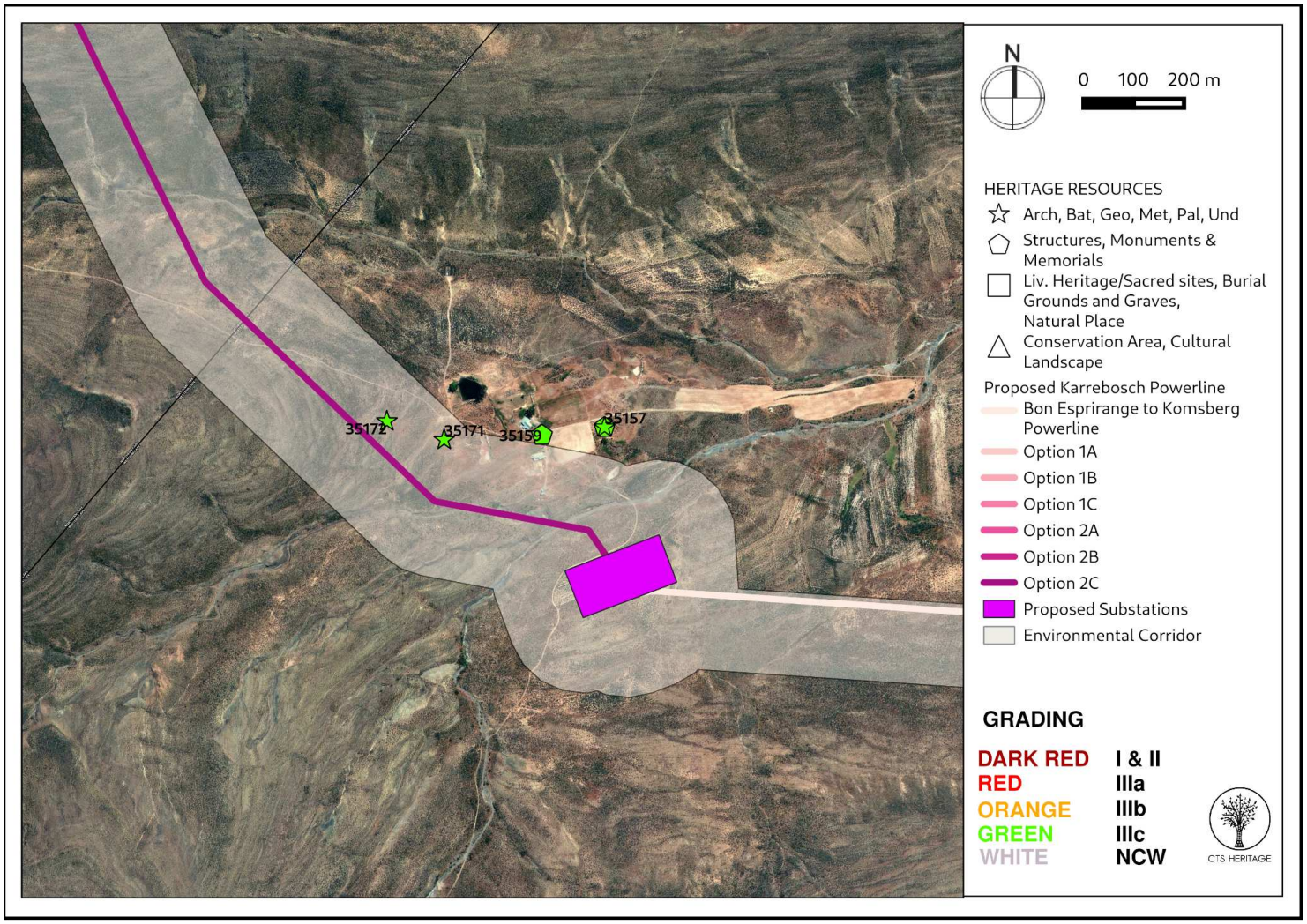

Figure 8.3: Inset B

6. CONCLUSION AND RECOMMENDATIONS

The findings of this field assessment largely correlate with the findings of the ACO in the HIA completed for the Karreebosch WEF (Kendrick, 2015, SAHRIS Ref 183350) and the Roggeveld WEF (Hart and Webley, 2013, SAHRIS Ref 152531). The archaeological resources identified were all *ex situ* and are of limited scientific and heritage significance.

Based on the findings of this and other assessments completed in the area, it is unlikely that the proposed development of the OHL will negatively impact significant resources. This is due to the fact that 132kV lines typically have a very small development footprint and can be constructed without the large roads needed to build the WEFs. The routes chosen by the engineers for the various alternatives follow very rugged, mid-slope paths where almost no archaeological material or ruins were found.

It is possible, although unlikely, that archaeological resources may be located beneath the ground surface which may be impacted during the course of development. Recommendations in this regard are included below.

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Recommendations

There is no objection to the proposed development of the Karreebosch overhead powerline in terms of impacts to archaeological heritage and there is no preferred alternative on condition that:

- Should any buried archaeological resources or burials be uncovered during the course of development activities, work must cease in the vicinity of these finds. The relevant heritage authority (the South African Heritage Resources Agency (SAHRA) in the Northern Cape and Heritage Western Cape (HWC) in the Western Cape) must be contacted immediately in order to determine an appropriate way forward.

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7. REFERENCES

Heritage Impact Assessments				
Nid	**Report Type**	**Author/s**	**Date**	**Title**
44934	AIA Desktop	Celeste Booth	01/08/2011	An archaeological desktop study for the proposed establishment of the Hidden Valley wind energy facility and associated infrastructure on a a site south of Sutherland, Northern Cape Province
44935	AIA Phase 1	Celeste Booth	01/02/2012	A Phase 1 AIA for the proposed HIdden Valley Wind Energy Facility, near Sutherland, Northern cape Province
44936	PIA Desktop	Lloyd Rossouw	01/03/2012	Palaeontological desktop assessment of the proposed Hidden Valley Wind Energy Facility near Sutherland, Northern Cape Province
53187	HIA Phase 1	Timothy Hart, Lita Webley	01/03/2011	HERITAGE IMPACT ASSESSMENT PROPOSED WIND ENERGY FACILITY
152531	HIA Phase 1	Timothy Hart, Lita Webley	20/12/2013	Heritage Impact Assessment Report for the Phase 1 Roggeveld Wind Farm
183350	HIA Phase 1	Natalie Kendrick	27/10/2014	Heritage Impact Assessment for the Karreebosch Wind Farm (Phase 2 Roggevelt Wind Farm)
353483	AIA Phase 1	Jonathan Kaplan	1/12/2015	ARCHAEOLOGICAL IMPACT ASSESSMENT Proposed borrow pit (Karusa R354) on the Farm Karreebosch 200/1 near Sutherland, Northern Cape Assessment conducted under Section 38 (3) of the National Heritage Resource Act (No. 25 of 1999)

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