HERITAGE IMPACT ASSESSMENT:

PROPOSED MURA ELECTRICAL GRID INFRASTRUCTURE, BEAUFORT WEST MAGISTERIAL DISTRICT, WESTERN CAPE AND VICTORIA WEST MAGISTERIAL DISTRICT, NORTHERN CAPE

Required under Section 38(8) of the National Heritage Resources Act (No. 25 of 1999)

HWC Case No.: 22101903AM1019E

Report for:

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1st draft: 11 December 2022
Final report: 15 December 2022

SUMMARY

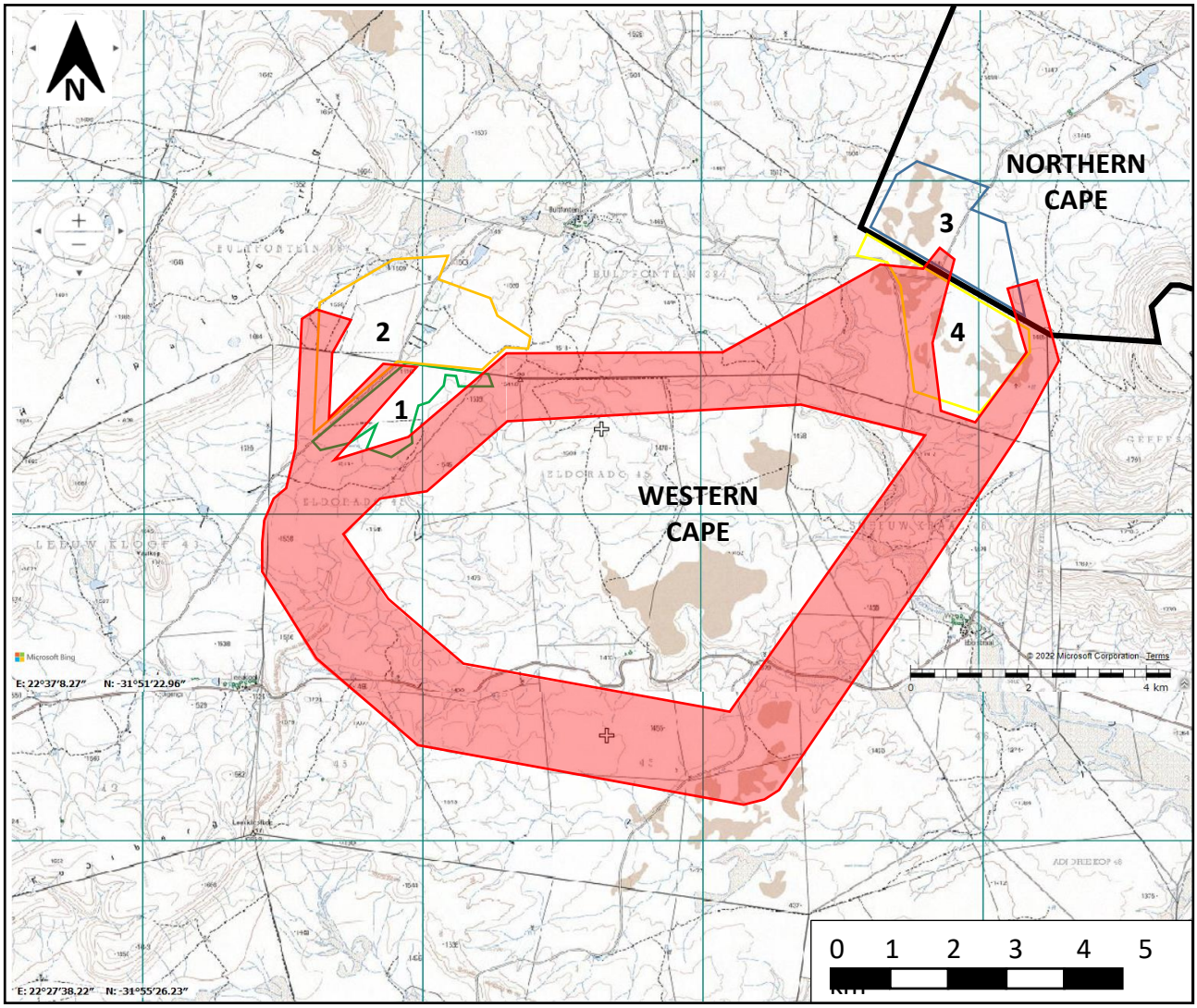
1. Site Name

Mura PV Development Electricity Grid Infrastructure

2. Location

Off R381, DR02317 and local gravel farm roads
Farm 11, Farm 13, Farm 43, Remainder of Portion 3 of Farm 45, Portion 4 of Farm 45, Remainder of Farm 45, Farm 46, Portion 2 of Farm 49, Remainder of Farm 206, Farm 12
Centre point: S 31° 50‘ 40“ E 22° 31‘ 45“

3. Locality Plan



Extract from 1:50 000 mapsheet 3122CD showing the location of the proposed corridor (red shaded polygon). The Mura 1 to 4 sites (numbered polygons) are shown for context.

4. Description of Proposed Development

Electrical Grid Infrastructure (EGI) Corridor Components:

- Eight Eskom Switching stations:
  - Located adjacent to the solar farm substations within the solar area footprint;
  - Maximum height of 12m;
  - Footprint of up to 150 m x 75 m.
- Four additional up to 150 m x 75 m switching stations located within the corridor;
- ~70 km of overhead 132 kV lines (~40 km will be single overhead 132 kV lines and ~30 km will be up to two overhead 132 kV lines running in parallel running between the switching stations supported by monopole pylons with a maximum height of 38m); and
- Access tracks.

5. Heritage Resources Identified

The palaeontological study found that fossils were very limited in the area and that the corridor should be considered as of low palaeontological sensitivity. A number of archaeological sites are known from within the corridor. The sites include ephemeral scatters of Stone Age artefacts and several historical stone-walled ruins and features. Historical artefacts were rare or absent from all but one of the ruins which had a light scatter of glass, ceramic and metal items. The landscape is also a heritage resource but the site is in a very remote area with public access only in the southern part of the corridor (it crosses a road twice).

6. Anticipated Impacts on Heritage Resources

Because of the corridor approach being taken, a pre-construction survey will be required. This should ensure than any further sites found in or close to the alignment can be avoided through micrositing. Significant landscape impacts are not expected because the powerline would only be built if the associated PV facilities are built. This means that an electrical use of the landscape will already have been approved.

7. Recommendations

It is recommended that the proposed Mura Electricity Grid Infrastructure should be authorised but subject to the following recommendations which should be included as conditions of authorisation (these conditions apply equally to both Western Cape and Northern Cape):

- A Fossil Chance Finds Procedure (as supplied in the palaeontological specialist study) must be included in the project EMPr;
- Known sites should be avoided by the final layout;
- A pre-construction archaeological survey must be undertaken during the EMPr approval stage;
- No stones may be removed from any archaeological site; and
- If any archaeological material or human burials are uncovered during the course of development, work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.

8. **Author/s and Date**

Heritage Impact Assessment: Jayson Orton, ASHA Consulting (Pty) Ltd, 09 December 2022
Archaeological specialist study: Jayson Orton, ASHA Consulting (Pty) Ltd, 09 December 2022
Palaeontological specialist study: John Almond, Natura Viva cc, November 2022
Visual Assessment: Quinton Lawson and Bernard Oberholzer, 5 December 2022

Glossary

Background scatter: Artefacts whose spatial position is conditioned more by natural forces than by human agency.

Early Stone Age: Period of the Stone Age extending approximately between 2 million and 200 000 years ago.

Flake: a piece of stone intentionally removed from a core. Flakes are identifiable by certain features related to the point at which the core was struck.

Holocene: The geological period spanning the last approximately 10-12 000 years.

Hominid: a group consisting of all modern and extinct great apes (i.e. gorillas, chimpanzees, orangutans and humans) and their ancestors.

Later Stone Age: Period of the Stone Age extending over the last approximately 20 000 years.

Middle Stone Age: Period of the Stone Age extending approximately between 200 000 and 20 000 years ago.

Patina: The weathered surface of an artefact which has changed colour and/or texture (patinated, patination).

Pleistocene: The geological period beginning approximately 2.5 million years ago and preceding the Holocene.

Abbreviations

APHP: Association of Professional Heritage Practitioners

ASAPA: Association of Southern African Professional Archaeologists

BA: Basic Assessment

CRM: Cultural Resources Management

DFFE: Department of Forestry, Fisheries and the Environment

EA: Environmental Authorisation

ECO: Environmental Control Officer

EGI: Electricity Grid Infrastructure

EIA: Environmental Impact Assessment

EMPr: Environmental Management Program

ESA: Early Stone Age

GP: General Protection

GPS: global positioning system

HIA: Heritage Impact Assessment

HWC: Heritage Western Cape

LSA: Later Stone Age

MSA: Middle Stone Age

NBKB: Ngwao-Boswa Ya Kapa Bokoni

NCW: Not Conservation Worthy

NEMA: National Environmental Management Act (No. 107 of 1998)

NHRA: National Heritage Resources Act (No. 25) of 1999

NID: Notification of Intent to Develop

PPP: Public Participation Process

PV: Photovoltaic

REDZ: Renewable Energy Development Zone

SAHRA: South African Heritage Resources Agency

SAHRIS: South African Heritage Resources Information System

Contents

1. INTRODUCTION

ASHA Consulting (Pty) Ltd was appointed by Mura 1 (Pty) Ltd to conduct an assessment of the potential impacts to heritage resources that might occur through the proposed development of a number of powerlines within an electrical grid infrastructure (EGI) corridor to be located between Beaufort West and Loxton, in the Western and Northern Cape Provinces (Figures 1 & 2). The vast majority of the project falls into Western Cape with only two very small sections being in Northern Cape. The powerlines would be to support four solar energy projects (Mura 1, Mura 2, Mura 3 and Mura 4) which are being assessed in separate impact assessment processes. Co-ordinate locations and property details are as shown in Table 1.

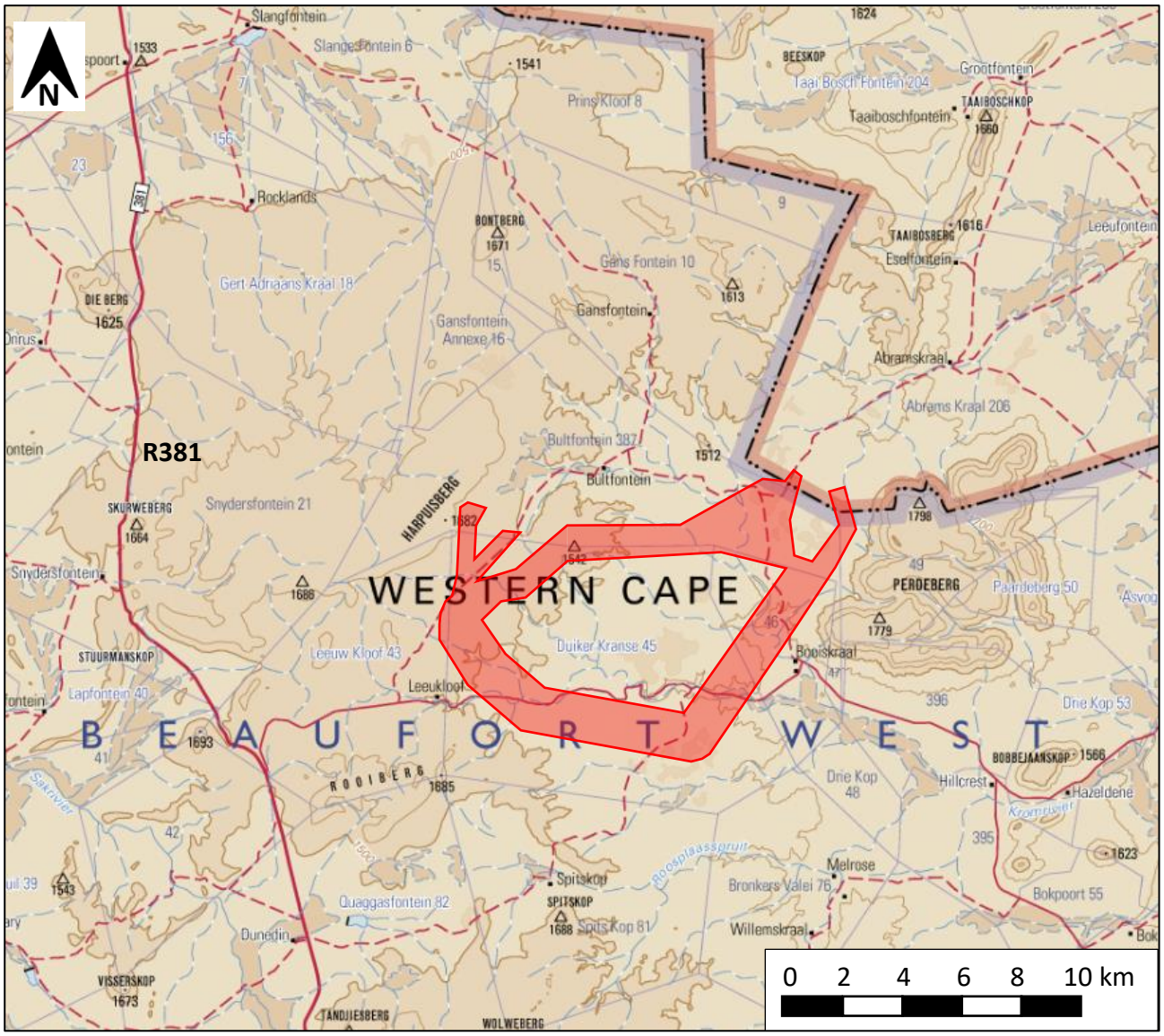


Figure 1: *Extract from 1:250 000 mapsheet 3122 showing the location of the proposed corridor (red shaded polygon) relative to the R381 and the provincial boundary. The R381 at left runs north to Loxton and south to Beaufort West. Source of basemap: Chief Directorate: National Geo-Spatial Information. Website: www.ngi.gov.za.*

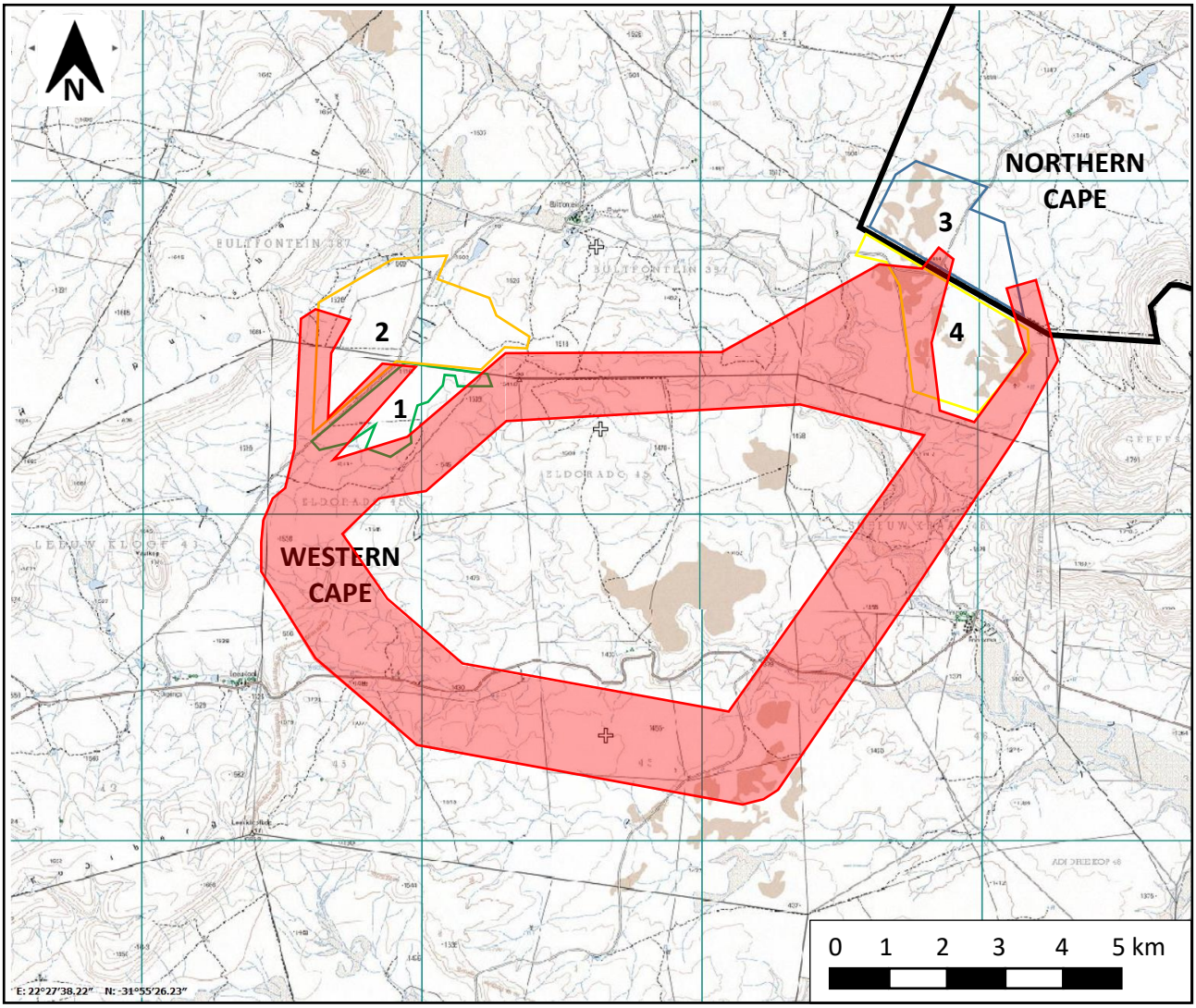


Figure 2: *Extract from 1:50 000 mapsheet 3122CD showing the location of the Mura 1, Mura 2, Mura 3 and Mura 4 sites (numbered shaded polygons). Source of basemap: Chief Directorate: National Geo-Spatial Information. Website: www.ngi.gov.za.*

1.1. The proposed project

1.1.1. Project description

Red Cap Energy (Pty) Ltd is proposing to develop four solar facilities and associated grid connections, on behalf of four separate Project Applicants, collectively known as the Mura PV Development between Loxton and Beaufort West in the Beaufort West Local Municipality and Ubuntu Local Municipality and the Central Karoo District Municipality and Pixley ka Sema District Municipality. The proposed Mura PV projects are located in close proximity to the approved Nuweveld Wind Farm Development.

The sites will be accessed via the R381, DR02317 and existing access roads.

For the grid connection, an Electrical Grid Infrastructure (EGI) Corridor is proposed. The grid corridor includes multiple connection routes of up to two 132 kV overhead lines running in parallel and

switching stations to enable the connection of Mura Solar Developments to the approved Nuweveld Collector Substation. The Corridor includes a "collector ring line". This implies that it is a circular grid line and not just a single line between the Nuweveld Collector Substation. The use of a circular "collector ring line" is an approach used by Eskom and others to improve the grid stability and to ensure that if the grid line is damaged on one side of the "collector ring line", that the solar facilities can still export their energy along the other side of the ring line while the fault is repaired. This allows these facilities to be better integrated into the national grid and to better reduce risks of downtime which enables these solar facility projects to be better adapted to potential amendments to future bidding requirements or to potentially give them a competitive advantage over other similar projects.

Electrical Grid Infrastructure (EGI) Corridor Components:

- Eight Eskom Switching stations:
  - Located adjacent to the solar farm substations within the solar area footprint;
  - Maximum height of 12m;
  - Footprint of up to 150 m x 75 m.
- Four additional up to 150 m x 75 m switching stations located within the corridor;
- ~70 km of overhead 132 kV lines (~40 km will be single overhead 132 kV lines and ~30 km will be up to two overhead 132 kV lines running in parallel running between the switching stations supported by monopole pylons with a maximum height of 38m); and
- Access tracks.

Table 1: *Location details for the proposed EGI corridor.*

Farm portion	Province	Extent
Leeukloof Farm 43	Western Cape	4833 ha
Aangrensend Abramskraal 11	Western Cape	905 ha
Bultfontein 12	Western Cape	2163 ha
Bultfontein 13	Western Cape	3849 ha
Remainder of Portion 3 of Duiker Kranse 45	Western Cape	3840 ha
Portion 4 of Duiker Kranse 45	Western Cape	3857.5 ha
RE of Duiker Kranse 45	Western Cape	1010 ha
Sneeuwkraal 46	Western Cape	1983 ha
Portion 2 of Paardeberg 49	Western Cape	687 ha
RE of Abram's Kraal 206	Northern Cape	

1.1.2. Identification of alternatives

No alternative locations for the grid corridor are assessed. However, the corridor is wide enough to allow considerable variation in the potential final routing so that micrositing of the alignment can take place within the corridor to achieve the lowest possible environmental impact. It should also be noted that the applicant had a large body of sensitivity data available from previous assessments in the area and was able to avoid most sensitive locations while planning the corridor.

1.1.3. Aspects of the project relevant to the heritage study

All aspects of the proposed development are relevant, since excavations for foundations and/or services may impact on archaeological and/or palaeontological remains, while all above-ground aspects create potential visual (contextual) impacts to the cultural landscape and any significant heritage sites that might be visually sensitive.

1.2. Terms of reference

ASHA Consulting was asked to:

- Provide a desktop-based screening assessment;
- Conduct a field survey to search for sensitive areas and sites of heritage significance;
- Describe regional and local heritage features of the receiving environment;
- Map sensitive features and provide spatial data to inform the final project layout;
- Assess the potential impacts on identified heritage resources;
- Identify relevant legislation and legal requirements; and
- Provide recommendations on possible mitigation measures and management guidelines.

A Notification of Intent to Develop (NID) was submitted to Heritage western cape (HWC) for that portion of the project that fell within Western Cape. HWC responded with the following:

RESPONSE TO NOTIFICATION OF INTENT TO DEVELOP: HIA REQUIRED
In terms of Section 38(8) of the National Heritage Resources Act (Act 25 of 1999) and the Western Cape Provincial Gazette 6061, Notice 298 of 2003

NOTIFICATION OF INTENT TO DEVELOP: PROPOSED DEVELOPMENT OF FOUR SOLAR FACILITIES AND ASSOCIATED GRID CONNECTIONS (ELECTRICAL GRID INFRASTRUCTURE) ON VARIOUS FARMS, BEAUFORT WEST, SUBMITTED IN TERMS OF SECTION 38(1) OF THE NATIONAL HERITAGE RESOURCES ACT (ACT 25 OF 1999)

CASE NUMBER: 22101903AM1019E

The matter above has reference.

Heritage Western Cape is in receipt of your application for the above matter received. This matter was discussed at the Heritage Officers' Meeting held on 31 October 2022.

You are hereby notified that, since there is reason to believe that the proposed development of four solar facilities and associated grid connections, in particular electrical grid infrastructure, on various farms, Beaufort West will impact on heritage resources, HWC requires that a Heritage Impact Assessment (HIA) that satisfies the provisions of Section 38(3) of the NHRA be submitted. Section 38(3) of the NHRA provides

(3) The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2)(a): ***Provided that the following must be included:***

(a) The identification and mapping of all heritage resources in the area affected;
(b) an assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7;
(c) an assessment of the impact of the development on such heritage resources;
(d) an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;
(e) the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;
(f) if heritage resources will be adversely affected by the proposed development, The consideration of alternatives; and
(g) plans for mitigation of any adverse effects during and after the completion of the proposed development.

This HIA must in addition have specific reference to the following:

- Archaeological impact assessment &
- Palaeontological assessment.

The HIA must have an overall assessment of the impacts to heritage resources which are not limited to the specific studies referenced above.

The required HIA must have an integrated set of recommendations.

The comments of relevant registered conservation bodies; all Interested and Affected parties; and the relevant Municipality must be requested and included in the HIA where provided. Proof of these requests must be supplied.

Please note, should you require the HIA to be submitted as a Phased HIA, a written request must be submitted to HWC prior to submission. HWC reserves the right to determine whether a phased HIA is acceptable on a case-by-case basis.

If applicable, applicants are strongly advised to review and adhere to the time limits contained the Standard Operational Procedure (SOP) between DEADP and HWC. The SOP can be found using the following link http://www.hwc.org.za/node/293

Kindly take note of the HWC meeting dates and associated agenda closure date in order to ensure that comments are provided within as Reasonable time and that these times are factored into the project timeframes.

HWC reserves the right to request additional information as required.
Should you have any further queries, please contact the official above and quote the case number.

.....
Colette Scheermeyer
Deputy Director

Heritage Western Cape
Erfenis Wes-Kaap
ILifa leMveli leNtshona Koloni

4 November 2022

1.3. Scope and purpose of the report

A heritage impact assessment (HIA) is a means of identifying any significant heritage resources before development begins so that these can be managed in such a way as to allow the development to proceed (if appropriate) without undue impacts to the fragile heritage of South Africa. This HIA report aims to fulfil the requirements of the heritage authorities such that a comment can be issued by them for consideration by the National Department of Forestry, Fisheries and Environment (DFFE) who will review the Basic Assessment (BA) and grant or refuse authorisation. The HIA report will outline any management and/or mitigation requirements per project that will need to be complied with from a heritage point of view and that should be included in the respective conditions of authorisation should these be granted.

1.4. The author

Dr Jayson Orton has an MA (UCT, 2004) and a D.Phil (Oxford, UK, 2013), both in archaeology, and has been conducting Heritage Impact Assessments and archaeological specialist studies in South Africa (primarily in the Western Cape and Northern Cape provinces) since 2004 (please see curriculum vitae included as Appendix 1). He has also conducted research on aspects of the Later Stone Age in these provinces and published widely on the topic. He is an accredited heritage practitioner with the Association of Professional Heritage Practitioners (APHP; Member #43) and

also holds archaeological accreditation with the Association of Southern African Professional Archaeologists (ASAPA) CRM section (Member #233) as follows:

- Principal Investigator: Stone Age, Shell Middens & Grave Relocation; and
- Field Director: Colonial Period & Rock Art.

1.5. Declaration of independence

ASHA Consulting (Pty) Ltd and its consultants have no financial or other interest in the proposed development and will derive no benefits other than fair remuneration for consulting services provided.

2. LEGISLATIVE CONTEXT

2.1. National Heritage Resources Act (NHRA) No. 25 of 1999

The NHRA protects a variety of heritage resources as follows:

- Section 34: structures older than 60 years;
- Section 35: prehistoric and historical material (including ruins) more than 100 years old as well as military remains more than 75 years old, palaeontological material and meteorites;
- Section 36: graves and human remains older than 60 years and located outside of a formal cemetery administered by a local authority; and
- Section 37: public monuments and memorials.

Following Section 2, the definitions applicable to the above protections are as follows:

- Structures: “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”;
- Palaeontological material: “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”;
- Archaeological material: a) “material 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”; b) “rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation”; c) “wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the Republic, as defined respectively in sections 3, 4 and 6 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation”; and d) “features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found”;
- Grave: “means a place of interment and includes the contents, headstone or other marker of such a place and any other structure on or associated with such place”; and

- Public monuments and memorials: “all monuments and memorials a) “erected on land belonging to any branch of central, provincial or local government, or on land belonging to any organisation funded by or established in terms of the legislation of such a branch of government”; or b) “which were paid for by public subscription, government funds, or a public-spirited or military organisation, and are on land belonging to any private individual.”

Section 3(3) describes the types of cultural significance that a place or object might have in order to be considered part of the national estate. These are as follows:

a) its importance in the community, or pattern of South Africa’s history;
b) its possession of uncommon, rare or endangered aspects of South Africa’s natural or cultural heritage;
c) its potential to yield information that will contribute to an understanding of South Africa’s natural or cultural heritage;
d) its importance in demonstrating the principal characteristics of a particular class of South Africa’s natural or cultural places or objects;
e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
f) its importance in demonstrating a high degree of creative or technical achievement at a particular period;
g) its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
h) its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
i) sites of significance relating to the history of slavery in South Africa.

While landscapes with cultural significance do not have a dedicated Section in the NHRA, they are protected under the definition of the National Estate (Section 3). Section 3(2)(c) and (d) list “historical settlements and townscapes” and “landscapes and natural features of cultural significance” as part of the National Estate. Furthermore, some of the points in Section 3(3) speak directly to cultural landscapes.

2.2. Approvals and permits

2.2.1. Assessment Phase

Section 38(8) of the NHRA states that if an impact assessment is required under any legislation other than the NHRA then it must include a heritage component that satisfies the requirements of S.38(3). Furthermore, the comments of the relevant heritage authority must be sought and considered by the consenting authority prior to the issuing of a decision. Under the National Environmental Management Act (No. 107 of 1998; NEMA), as amended, this project is subject to a BA HWC and Ngwao-Boswa Ya Kapa Bokoni (Heritage Northern Cape; for built environment and cultural landscapes) and the South African Heritage Resources Agency (SAHRA; for archaeology and palaeontology) are required to provide comment on the proposed project in order to facilitate final decision making by the DFFE.

2.2.2. Construction Phase

If archaeological or palaeontological mitigation is required prior to construction, then the appointed archaeologist or palaeontologist would need to obtain a permit from SAHRA for work in Northern cape or a workplan approval from HWC for work in Western Cape. This would be issued in their name. This is so that the heritage authority can ensure that the appointed practitioner has proposed an appropriate methodology that will result in the mitigation being done properly. In the case of Northern Cape, a built environment permit, if required, would need to be obtained from the Ngwao-Boswa Ya Kapa Bokoni.

2.3. Guidelines

SAHRA have issued minimum standards documents for archaeological and palaeontological specialist studies and HWC have done the same for HIAs and specialist studies. There is also a Western Cape Provincial guideline for heritage specialists working in an EIA context and which is generally useful. The reporting has been prepared in accordance with these guidelines. The relevant documents are as follows:

- Heritage Western Cape. 2016. Grading: purpose and management implications.
- Heritage Western Cape. 2019. Public consultation guidelines.
- Heritage Western Cape. 2021. Guide for Minimum Standards for Archaeology and Palaeontology reports submitted to Heritage Western Cape.
- Heritage Western Cape. 2021. Notification of Intent to Develop, Heritage Impact Assessment, (Pre-Application) Basic Assessment Reports, Scoping Reports and Environmental Impact Assessments, Guidelines for submission to Heritage Western Cape.
- Winter, S. & Baumann, N. 2005. Guideline for involving heritage specialists in EIA processes: Edition 1. CSIR Report No ENV-S-C 2005 053 E. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs & Development Planning, Cape Town.
- SAHRA. 2007. Minimum Standards: archaeological and palaeontological components of impact assessment reports. Document produced by the South African Heritage Resources Agency, May 2007.

2.4. Application timeline

The applications to DFFE under NEMA are currently in the pre-application phase with submission of the final BA estimated to be in mid-2023.

3. METHODS

3.1. Literature survey and information sources

A survey of available literature was carried out to assess the general heritage context into which the development would be set. The information sources used in this report are presented in Table 1 with relevant dates of each source referenced in the text as needed. Data were also collected via a field survey. The data quality is suitable for the purpose of informing this report.

Table 1: *Information sources used in this assessment.*

Data / Information	Source	Date	Type	Description

Maps	Chief Directorate: National Geo-Spatial Information	Various	Spatial	Historical and current 1:50 000 topographic maps of the study area and immediate surrounds
Aerial photographs	Chief Directorate: National Geo-Spatial Information	Various	Spatial	Historical aerial photography of the study area and immediate surrounds
Aerial photographs	Google Earth	Various	Spatial	Recent and historical aerial photography of the study area and immediate surrounds
Cadastral data	CapeFarmMapper (http://gis.elsenburg.com/apps/cfm/#)	Current	Spatial	Cadastral boundaries, extents and aerial photography (Western Cape only)
Cadastral data	Chief Directorate: National Geo-Spatial Information	Various	Survey diagrams	Historical and current survey diagrams, property survey and registration dates
Background data	South African Heritage Resources Information System (SAHRIS)	Various	Reports	Previous impact assessments for any developments in the vicinity of the study area
Palaeontological sensitivity	South African Heritage Resources Information System (SAHRIS)	Current	Spatial	Map showing palaeontological sensitivity and required actions based on the sensitivity.
Background data	Books, journals, websites	Various	Books, journals, websites	Historical and current literature describing the study area and any relevant aspects of cultural heritage.
Screening Tool maps	DFFE	Current	Spatial	Potential sensitivity of the study area

3.2. Field survey

Due to the width of the corridor and uncertainty over where the powerline would be placed within it, the study area was not specifically surveyed with reliance being placed on other surveys done in the immediate vicinity (Figure 4). These other surveys included the Nuweveld Wind Farms surveyed in 2019 (Orton 2019b, 2019c, 2019d) and the Mura PV facilities that are related to the present project. The latter surveys covered parts of the current EGI study area on 4th, 13th and 14th July 2022. The July 2022 survey was during winter but, in this very dry area, the season makes no meaningful difference to vegetation covering and hence the ground visibility for the archaeological survey. Other heritage resources are not affected by seasonality. During the survey the positions of finds and survey tracks were recorded on a hand-held Garmin Global Positioning System (GPS) receiver set to the WGS84 datum (Figure 3). Photographs were taken at times in order to capture representative samples of both the affected heritage and the landscape setting of the proposed development.

It should be noted that the amount of time between the dates of the field inspection and final report do not materially affect the outcome of the report.

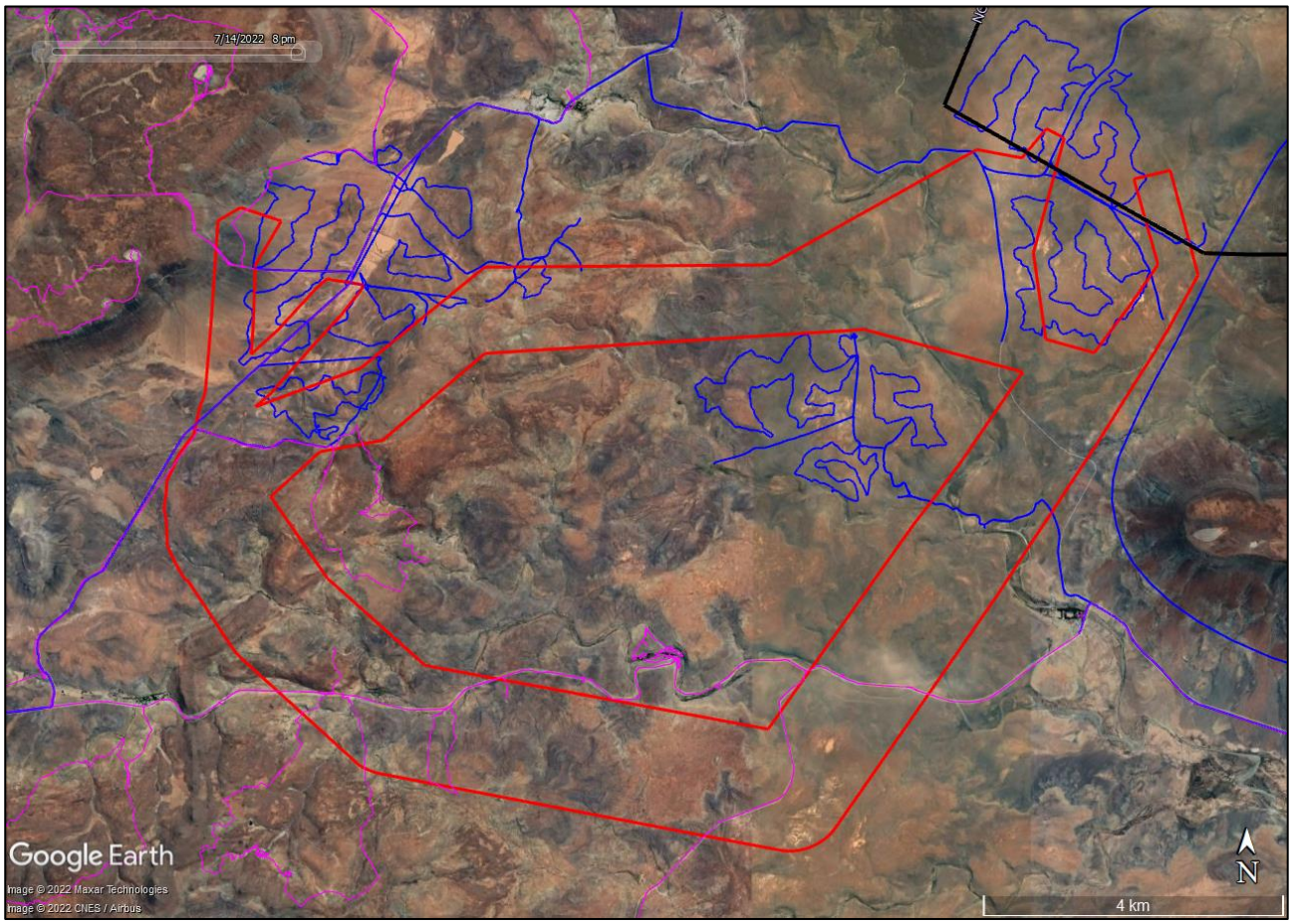


Figure 3: *Aerial view of the study area (red polygon) showing the survey tracks from 2019 (Nuweveld wind farm surveys, pink lines) and 2022 (Mura PV surveys; blue lines).*

3.3. Specialist studies

Specialist studies of archaeology and palaeontology were carried out. While the former is included within the HIA, the latter was undertaken by Dr John Almond of Natura Viva cc. It is summarised in the HIA and included in full as Appendix 3.

3.4. Impact assessment

For consistency among specialist studies, the impact assessment was conducted through application of a methodology supplied by WSP.

3.5. Grading

S.7(1) of the NHRA provides for the grading of heritage resources into those of National (Grade I), Provincial (Grade II) and Local (Grade III) significance. Grading is intended to allow for the identification of the appropriate level of management for any given heritage resource. Grade I and II resources are intended to be managed by the national and provincial heritage resources authorities

respectively, while Grade III resources would be managed by the relevant local planning authority. These bodies are responsible for grading, but anyone may make recommendations for grading.

It is intended under S.7(2) that the various provincial authorities formulate a system for the further detailed grading of heritage resources of local significance but this is generally yet to happen. Heritage Western Cape (2016), however, uses a system in which resources of local significance are divided into Grade IIIA, IIIB and IIIC. These approximately equate to high, medium and low local significance, while sites of very low or no significance (and generally not requiring mitigation or other interventions) are referred to as Not Conservation Worthy (NCW).

SAHRA (2007) has formulated its own system[1] for use in provinces where it has commenting authority, including Northern Cape. In this system sites of high local significance are given Grade IIIA (with the implication that the site should be preserved in its entirety) and Grade IIIB (with the implication that part of the site could be mitigated and part preserved as appropriate) while sites of lesser significance are referred to as having 'General Protection' (GP) and rated as GP A (high/medium significance, requires mitigation), GP B (medium significance, requires recording) or GP C (low significance, requires no further action).

3.6. Consultation

The NHRA requires consultation as part of an HIA. Since the present study falls within the context of an EIA which includes a public participation process (PPP), no full consultation was undertaken as part of the HIA. Interested and affected parties would have the opportunity to provide comment on the heritage aspects of the project during the PPP. In the case of Western Cape, however, it is required by HWC (see NID response) that heritage conservation bodies listed on their database as well as the local municipalities be approached directly with a request to comment on HIAs. The draft HIA was thus submitted to the relevant parties.

3.7. Assumptions and limitations

The field study was carried out at the surface only and hence any completely buried archaeological sites would not be readily located. Similarly, it is not always possible to determine the depth of archaeological material visible at the surface. Although there was no dedicated survey for this project, the accumulated information from other proximate projects allows an excellent understanding of the spatial distribution of archaeological resources and hence a reliable assessment of the potential impact significance.

Cumulative impacts are difficult to assess due to the variable site conditions that would have been experienced in different areas and in different seasons. Survey quality is thus likely to be variable. As such, some assumptions need to be made in terms of what and how much heritage might be impacted by other developments in the broader area.

[1] The system is intended for use on archaeological and palaeontological sites only.

4. PHYSICAL ENVIRONMENTAL CONTEXT

4.1. Site context

The sites lie within a predominantly natural landscape with minimal infrastructure. The land is used for small stock and game rearing and the main signs of these activities are farm fences and jeep tracks. There are also some farm dams in the immediate area. The corridor is largely within the Beaufort West Renewable Energy Development Zone (REDZ; DEFF 2021) and wholly within the Central Electrical Grid Infrastructure (EGI; DEA 2016) Corridor (Figure 5). Several wind energy facilities have been proposed and approved in the surrounding area but none have yet been constructed.

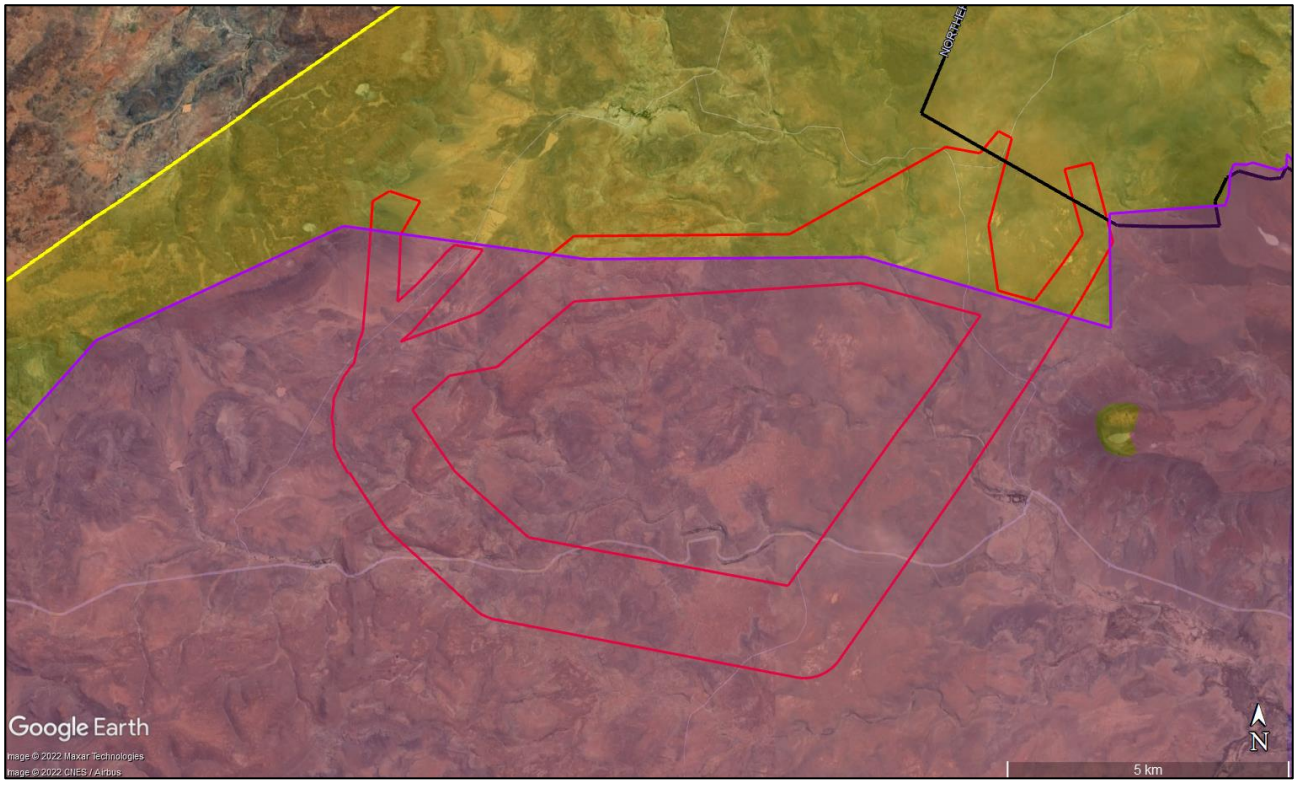


Figure 5: *Aerial view of the four study areas showing the extent of the Beaufort West REDZ (purple shading) and the Central EGI Corridor (yellow shading).*

4.2. Site description

The study area lies within a broad valley flanked by the Perdeberg Massif to the east, Rooiberg to the south and the Harpuisberg to the northwest. Within this valley are a number of smaller hills and the floor is also carved by rivers to create a number of valleys that cut down into the otherwise broadly level plain. While the surrounding mountains and hills are of dolerite, the plains are a mixture of hard rock geology capped with much sand and gravel. Vegetation is sparse but present almost everywhere. Figures 6 to 10 show the characteristics of the corridor.

Figure 6: *Looking north in the western part of the corridor (July 2022).*

Figure 7: *Looking east along the northern section of the corridor (July 2022).*

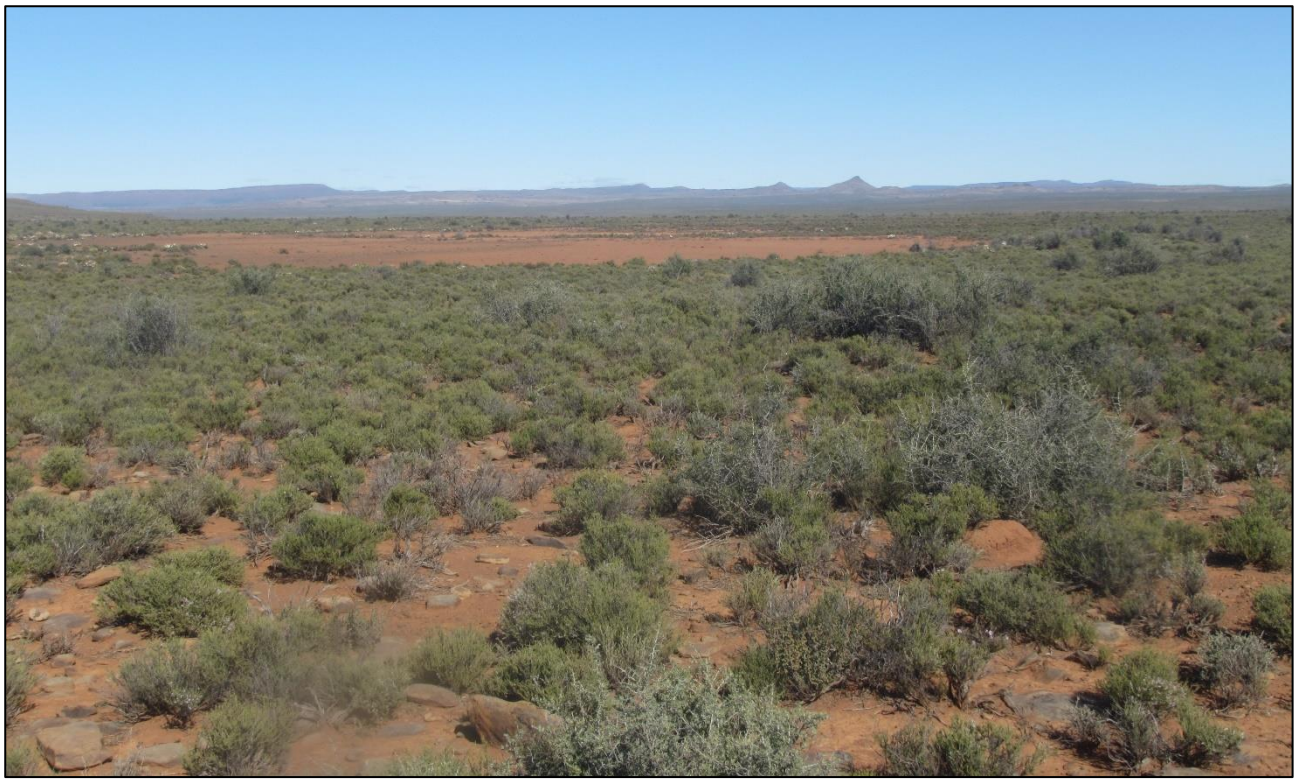


Figure 8: *Looking south in the north-eastern part of the corridor showing an ephemeral pan feature (July 2022).*

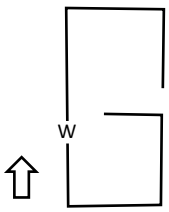
Figure 9: *Looking east in the southern part of the corridor (September 2019).*

Figure 10: *Looking south in the southern part of the corridor (September 2019).*

5. FINDINGS OF THE HERITAGE STUDY

This section describes the heritage resources recorded in the study area during the course of the project. Table 2 lists the heritage resources recorded within the corridor during the 2022 survey. Table 3 lists those sites recorded during the survey for the Nuweveld East Wind Farm and that fall within the corridor (Orton 2021b). Note than many lie outside of the corridors and are not listed here but are included in the mapping (Appendix 3).

Table 2: *List of finds from the 2022 heritage survey. All fall within Western Cape.*

Waypoint	Location	Description	Significance Grade
1320	S31 50 16.5 E22 30 02.5	A two-room stone ruin built with slabs and no mortar. The ruin is about 2 m wide and 3.5 m long. The door faces east and a window faces west. There is an ephemeral scatter of historical material around the ruin but no dump. There was aqua and clear glass and a few fragments of refined white earthenware, one of which was lined industrial ware. 	Medium IIIB
1321	S31 50 37.0 E22 29 28.3	A very ephemeral artefact scatter in an area that has minimal gravel. They are on local sandstone-type rocks, some of which is likely tuff. There are	Very low NCW

Waypoint	Location	Description	Significance Grade
		no diagnostic pieces but the freshness of the artefacts suggests that they relate to the LSA.	
1322	S31 50 34.6 E22 29 15.5	A very ephemeral artefact scatter in an area that has minimal gravel. They are on local sandstone-type rocks, some of which is likely tuff. There are no diagnostic pieces but the freshness of the artefacts suggests that they relate to the LSA.	Very low NCW
1325	S31 49 33.4 E22 31 10.2	This is a point on a small dolerite dyke where rocks have been cleared to the side to make way for a track/road. The road is no longer visible.	Very low NCW
1390	S31 51 18.6 E22 35 03.9	An old agricultural implement of some sort. It would be considered a heritage object.	Medium IIIB
1391	S31 51 10.7 E22 34 43.9	A small square stone-walled ruin of about 2 m by 2 m and with its door opening towards the east. It is right adjacent to the road and one corner has been damaged or possibly deliberately removed to make way for the road.	Very Low IIIC
1396	S31 50 08.1 E22 28 57.2	A small accumulation of bedrock slabs that may have been arranged in position. The base of a black glass wine bottle was seen nearby.	Very Low NCW
1398	S31 49 36.9 E22 36 23.9	A scatter of just nine large stone artefacts on a well-cemented sandstone. These may be from the ESA but do not appear to be very weathered.	Very Low NCW

Table 3: *List of finds from the Nuweveld heritage surveys that fall within the proposed EGI corridor. There are many other sites falling outside this corridor that are included in the mapping but are not listed here.*

Waypoint	Location	Description	Significance Grade
1658	S31 50 43.5 E22 29 38.9	A small scatter of fragments of a single broken plate.	NCW
1659	S31 50 40.9 E22 29 42.5	A stone foundation of indeterminate function. Given its proximity to a modern wind pump and an older wind pump base it may not be archaeological.	IIIC*
1660	S31 50 40.4 E22 29 45.9	The remains of a small stone and earth dam wall.	
1661	S31 50 39.2 E22 29 48.1	A square ruin of about 3 m x 3 m with two circular features alongside it.	
1806	S31 52 32.7 E22 29 40.4	Two small stone ruins. One is circular and the other is oval with an entrance facing towards the east.	IIIC
1807	S31 52 32.7 E22 29 42.6	Stone barn ruin and a few other associated features of varying age. One wall is largely gone, but the other three are still full height.	
1808	S31 52 33.9 E22 29 43.8	A small two-roomed stone ruin with glass, ceramics and metal alongside it. A smaller stone feature and a small stone quarry occur just to the south.	
1795	S31 52 23.6 E22 33 52.2	Long, low rock shelter with ostrich eggshell fragments, bones, hornfels artefacts and a hammerstone.	IIIC

5.1. Palaeontology

The SAHRIS Palaeosensitivity Map shows the site to be of largely very high sensitivity, although a large portion of the Mura 2 footprint is shown as of moderate sensitivity (Figure 11). It must be noted that these ratings are theoretical and based on the known potential of the rock types in the wider region. Almond (2022:1) has found that the study area "is underlain by continental sediments

of the Teekloof Formation (Poortjie and Hoedemaker Members) within the Lower Beaufort Group, Karoo Supergroup). Fossil assemblages of the *Endothiodon* Assemblage Zone of latest Middle to earliest Late Permian age are associated with the Lower Beaufort Group beds mapped within most or all of the combined project area; however, representatives of the older *Tapinocephalus* Assemblage Zone might also be present within the lower parts of the Poortjie Member (unconfirmed). These fossils record the recovery phase on land from the end-Middle Permian Mass Extinction Event of c. 260 million years ago."

Almond's (2022) site visit showed that exposures of suitable sedimentary rocks were very rare, especially on the flat areas, and that covering sediments (which contained no fossils) and alteration of the bedrock by dolerite intrusions meant that significant fossils are unlikely to be present. He rates the entire corridor as of low palaeontological sensitivity.

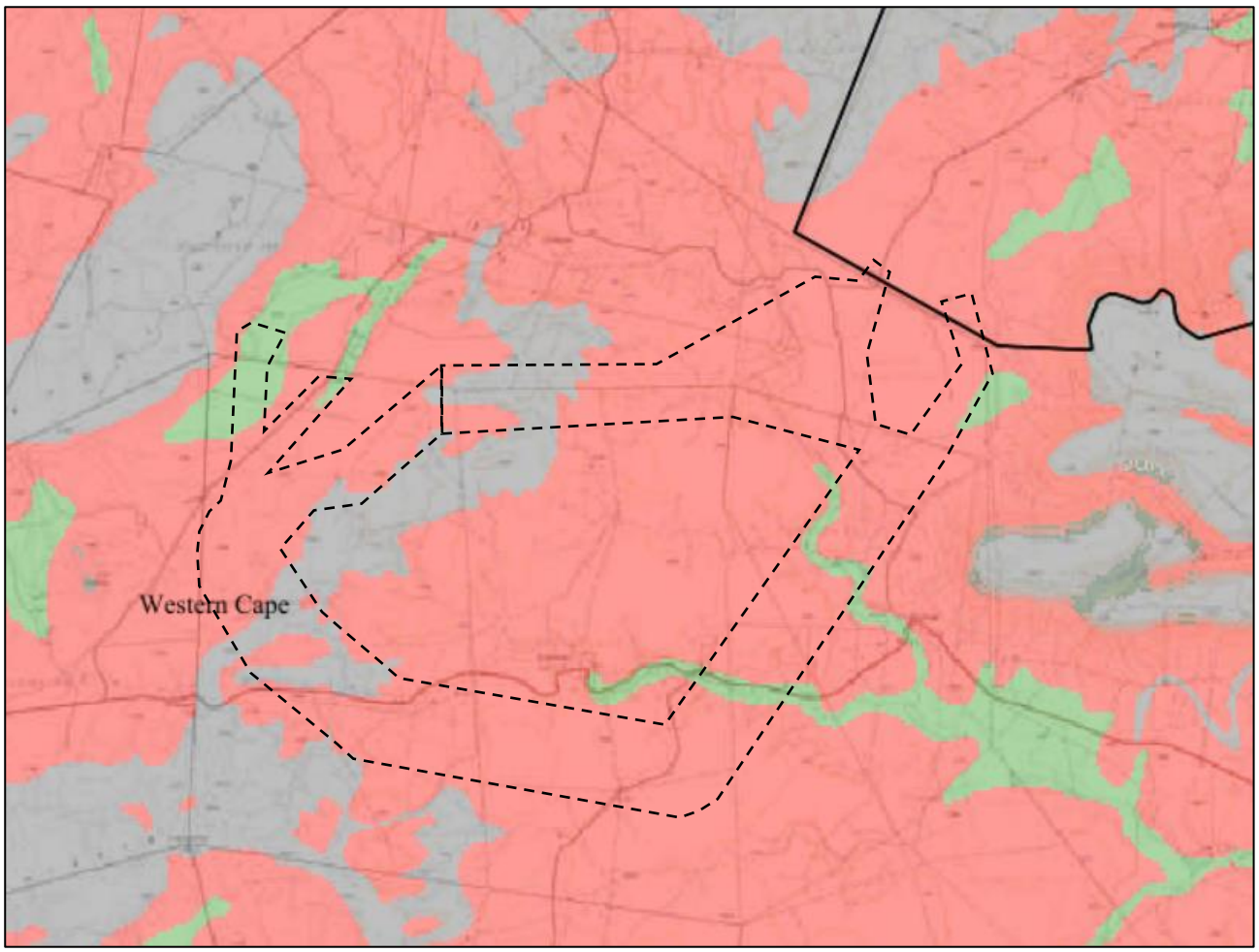


Figure 11: *Extract from the SAHRIS Palaeosensitivity Map showing the corridor (black dashed polygon) to be of largely very high sensitivity (red shading) but small areas of moderate (green) and zero (grey) sensitivity.*

5.2. Archaeology

5.2.1. Desktop study

The broader Karoo region generally contains sparse archaeological traces from the Early (ESA), Middle (MSA) and Later Stone Ages (LSA). The vast majority of material tends to be what is referred to as background scatter. This can be defined as "widespread isolated artefacts whose distribution results from either primary or secondary causes" (Orton 2016:121).

ESA and MSA materials were found to be very rare in this mountain environment, but not absent (Orton 2022a). In this dry landscape, LSA archaeological sites are well-known to be focused most strongly on water sources. Where dolerite outcrops are close to water sources then these are strongly favoured for occupation. This pattern was well demonstrated locally by Orton (2021a, 2021b, 2021c, 2021d, 2022a, 2022b), but the density of sites found was quite low. These sites are usually scatters of stone artefacts (strongly dominated by hornfels with other materials being rare), often accompanied by ostrich eggshell fragments and sometimes pottery, but may also include fragments of bone and even archaeological deposits (the latter are unknown from the Nuweveld area though). Ostrich eggshell beads and lower grindstone are also rarely seen. Occasionally, the scatters were very dense and those sites must have either been occupied for a long period of time, or on many occasions. The flat plains that lack landscape features tend to also lack significant archaeological heritage resources. Webley and Hart (2010) examined a site to the east of Loxton and located just two flakes that they considered to be of MSA origin. Two WEF projects have been assessed to the north and northeast of the Mura study areas but these projects do not appear on SAHRIS and their reports could thus not be consulted.

An interesting aspect of Karoo archaeology is rock gongs. These are (usually) dolerite rocks that are naturally perched in such a way that when struck they release a ringing musical note. The gongs are identified by heavily worn patches where they have been repeatedly struck. Parkington *et al.* (2008) have studied a number of gongs from Nelspoort and Vosburg, some 55 km to the southeast and 140 km to the north-northeast of the present study area respectively, but Orton (2021b) recorded two further examples in the Nuweveld within about 15 km to the west of the Mura study area, both of which were surrounded by extensive stone artefact scatters indicating occupation of the area.

Rock art sites occur in low density through the wider area, with three painted 'geometric tradition' sites and several engraved 'fine line' tradition sites on record from the Nuweveld (Orton 2021a, 2021b, 2021c, 2021d, 2022a, 2022b). Geometric tradition art is thought to have been produced by the Khoekhoen and the new records expand the known distribution of this tradition in the area (***Figure 1*** 12). Parkington *et al.* (2008) have documented many engravings in the Karoo region. They do not map their work but do provide a historical map of engraving distribution which shows the densest concentration being to the northeast around the Kimberley region.

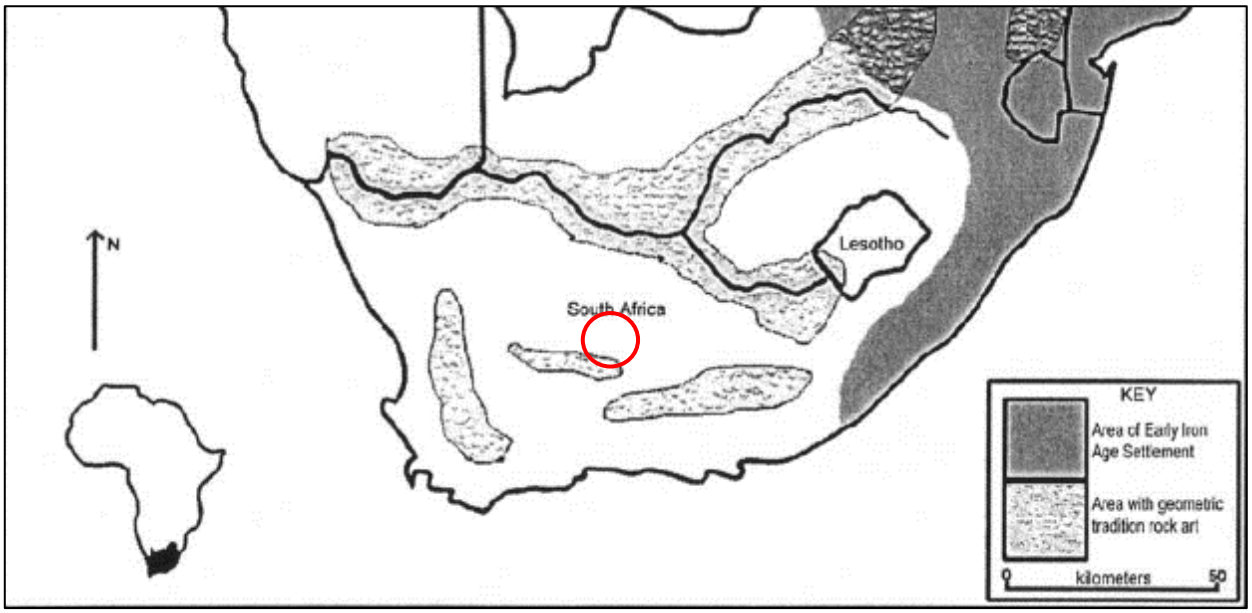


Figure 12: *Extract from a map showing the distribution of geometric tradition rock art. Source: Smith & Ouzman (2004: fig. 9). The present study area is approximately within the red circle.*

Until Orton's (2021a, 2021b, 2021c, 2021d) recent surveys in the area, historical archaeological resources, too, were little known from the Nuweveld area. These surveys showed that 19th century occupation of the area was widespread with many small abandoned and ruined stone-walled farmsteads scattered along the water courses of the area. The structures included houses (both formal rectangular flat roofed houses and lobed dwellings that might have had temporary roofs), kraals, and various small outbuildings of unknown function but likely including storage spaces and chicken coops. At the southern end of the Nuweveld Mountains, in the Karoo National Park (KNP), Kaplan (2005, 2006) recorded several small, ruined stone structures which were said to be kraals, a homestead and shepherd's huts. One of them had a small scatter of late 19th to early 20th century historical artefacts associated with it. A stone-built lime kiln and some animal traps are also on record there (SANParks 2017). Other stone walled ruins are known from the KNP and, according to Anonymous (2016) some were demolished in order to reuse the stone to build the Klipspringer Pass. This pass was built from 1986 to 1992 (Goetze 1993).

These early packed stone structures are invariably collapsed reducing them to archaeological sites in terms of the NHRA definitions. While some with taller walls may have had a formal or informal and/or temporary roof over them, others may have been hartebeeshuise with A-frame-type roofs made of branches and reeds placed above low stone or mud walls. Governor van Plettenberg, during his travels east to inspect the Colony, noted near the Sneeuwberg Mountains that the houses of the colonists consisted only of one room structures with low walls and straw roofs (Theal 1896-1911 cited in Böeseken 1975). In 1811 William Burchell illustrated a trekboer farmhouse (Van Zyl 1975), while Schoeman (2013) shows an image of such a historical stone dwelling still in use in the early 20th century (Figure).

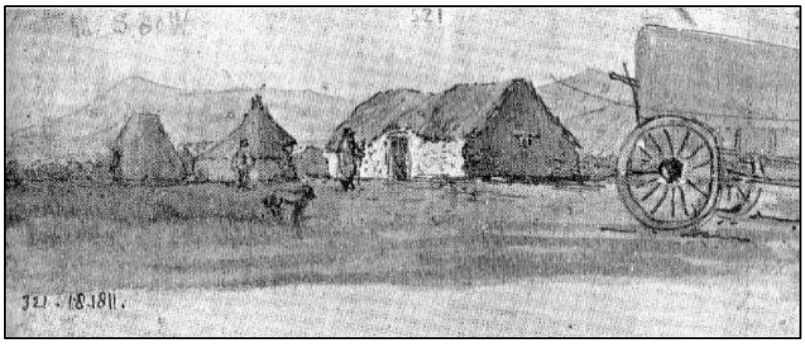


Figure 13: *Drawing of an early 19th century trekboer farmhouse by William Burchell. Source: Van Zyl (1975:103).*

Figure 14: *A shepherd's hut photographed near Beaufort West in the early 20th century. Note the low, narrow doorway and informal roof structure. Source: Schoeman (2013:48).*

The engraving tradition in the Karoo continued beyond the Stone Age as testified to by the many recent 'scratched' engravings that are known to occur. Horses are an extremely common subject in these recent engravings. Morris (1988) has reviewed the engravings of the Karoo and notes that they have been attributed by Battiss (1948) to Europeans and Griquas and by Fock (1979) to 'Hottentots'. Morris (1988) suggests that some were almost certainly made by early Baster and Trekboer immigrants and that the tradition continued into the 20th century. He also notes the inclusion of wagons and human figures in western clothing. Recent work in the Nuweveld has revealed a scattering of such images but with a very dense concentration located 43 km west-southwest of the Mura study area (Orton 2022a, 2022b). Notably, subject matter in the latter area included many Nine Men's Morris boards, a Morris Minor car and dates of 1924 and 1934 (the latter written as 30.7.34 but assumed to be 20th century). While some of these engravings are clearly less than 100 years old and not legally archaeological, they demonstrate a continuity of the engraving tradition and the sites can thus be considered as places associated with living heritage.

The Karoo has been a highly contested landscape at various times in the past. The Khoekhoen first migrated into South Africa about 2000 years ago. That they lived in the Karoo in precolonial times is testified to by the presence of geometric tradition rock art and precolonial kraals, while many historical records of their presence also exist. The only study to attempt to date the Khoekhoe

occupation was by Sampson (2010) in an area about 160 km northeast of the Mura study area. Through dating potsherds associated with kraals he determined that the kraals – and by implication herding – dated to between about AD 1000 and AD 1750, shortly before the arrival of the Trekboers. Sampson (2010:847) suggests that there would have been tension between the indigenous San and the incoming Khoekhoen but considers that their interactions resulted in "a millennium of (probably uneasy) space-sharing with the locals."

5.2.2. Site visit

Stone Age materials were generally found to be rare. The only finds made were ephemeral scatters of artefacts. The most interesting was a scatter of nine large artefacts made in what is probably wacke. The artefacts are patinated brown and seem likely, based on their size, to relate to the ESA (Figure 15). They were in an area with several ephemeral pans.

Figure 15: *A scatter of ESA flakes from waypoint 1398 within the eastern edge of Mura 4. Scale = 25 cm.*

In one area in the western part of the corridor there was a very light scattering of artefacts that were only lightly patinated and may be from the LSA (Figures 16 & 17). There was nothing else associated with them. In the southeast, overlooking a streambed, a low rock shelter as found to contain a small number of hornfels artefacts, a hammerstone and some ostrich eggshell fragments and bones (Figure 18). Elsewhere in the corridor, Stone Age finds were limited to a few isolated background scatter artefacts of Pleistocene and/or Holocene age.

Figure 16: *Stone artefacts from waypoint 1321. Scale = 20 cm.*

Figure 17: *Stone artefacts from waypoint 1322. Scale = 20 cm.*

Figure 18: *The low rock shelter at Nuweveld waypoint 1795 (Orton 2021b).*

Historical archaeological sites were somewhat more common than Stone Age sites. The smallest was a small cluster of rocks which may have been a cairn of some sort but whose function could not otherwise be determined. It did not seem like a grave and had a wine bottle base located alongside it (Figures 19 & 20).

Figure 19: *Small stone cairn/feature at waypoint 1396. This is just within the Mura 2 study area.*

Figure 20: *The base of a black glass wine bottle from waypoint 1396.*

A number of stone-walled sites were found. These included some small house ruins, a stone barn, and other features of unknown function. These sites relate to early European occupation of the area. Very few artefacts were found with them. Only one of the house ruins (Figure 21) had a light scatter of glass, ceramics and metal associated with it (Figures 22 & 23). Another small ruin that is likely to have been a domestic shelter has been slightly damaged owing to a farm road having been built immediately adjacent to it (Figure 24). A small farm outpost along the main gravel rod in the south contained a few stone-walled features of indeterminate function (Figure 25) as well as what was assumed to have been a barn whose stone walls are far better preserved (Figure 26).

Figure 21: *Stone house run at waypoint 1320.*

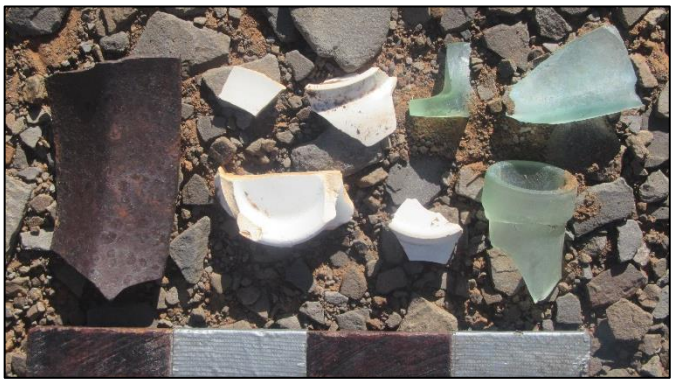


Figure 22: *Artefacts from waypoint 1320. They include refined white earthenware, glass and a fragment of iron potjie. Scale = 20 cm.*

Figure 23: *Lined industrial ware and other refined white earthenware from waypoint 1320. Scale = 10 cm.*

Figure 24: *Small stone-walled ruin adjacent to a farm track at waypoint 1391.*

Figure 25: *Two small stone-walled features in the southern part of the corridor (Nuweveld waypoint 1806).*

Figure 26: *Stone-walled ruin in the southern part of the corridor (Nuweveld waypoint 1807).*

5.3. Graves

No graves were seen in the corridor and, given the often hard substrate and general lack of occupation debris, none are expected to occur.

5.4. Historical aspects and the Built environment

5.4.1. Desktop study

For various reasons including changes to the structure of the Cape Colony, and the desire to seek new grazing and independence from Dutch East India Company (VoC) rule, farmers started to leave the Cape Colony during the 18th century. This process ultimately had its beginnings with the

creation of a class of farmers referred to as free burghers who moved into the region surrounding Cape Town (e.g. Wellington, Paarl, Stellenbosch and Franschhoek). Willem Adriaan van der Stel, governor of the Colony from 1699 to 1707, abused his power as governor by favouring his own farming activities when supplying ships with food, thereby making the free burgher farmers unhappy. The Colonists were also initially not allowed to trade with the Khoekhoen but this rule was changed in February 1700. Around this time Van der Stel gave grazing licences further from the Colony in order to increase pastoral production (Penn 2005). These factors were the ultimate start of Colonial expansion after the Colony had remained confined to the Cape Town area for the first several decades and in fact perpetuated it during the following decades.

The colonists soon realised that the best way to survive in the relatively arid interior was to be as close to the year-round rainfall zone as possible. This allowed for seasonal movement into the summer rainfall region to the northeast or the winter rainfall region to the southwest. In this way they could maximise the availability of water and grazing for their livestock. The mountains lying within this zone – essentially the escarpment edge – were also better watered due to their elevated rainfall and more frequent permanent springs. Between about 1740 and 1770 there was a rapid expansion into this zone which extended from the Kamiesberg of Namaqualand, through the Onder Bokkeveld and the Hantam, to the Roggeveld Mountains, but possibly not yet as far northeast as the northern Nuweveld where the Mura study area is situated (
Figure). This, then, along with the Nuweveld Mountains just east of the Roggeveld constituted the mid-18th century northern frontier zone. The Nuweveld saw 75 farms being granted in this 30 year period (Penn 2005). According to Botha (1926), the Nuweveld was so named because it was a new area to be colonised. Note also that the limits of the area under discussion are unknown. It seems likely, though, that it did not extend very much beyond (north of) the crest of the escarpment. Walker (1928) maps the 1798 colonial boundary as being just north of the crest of the escarpment (Figure).

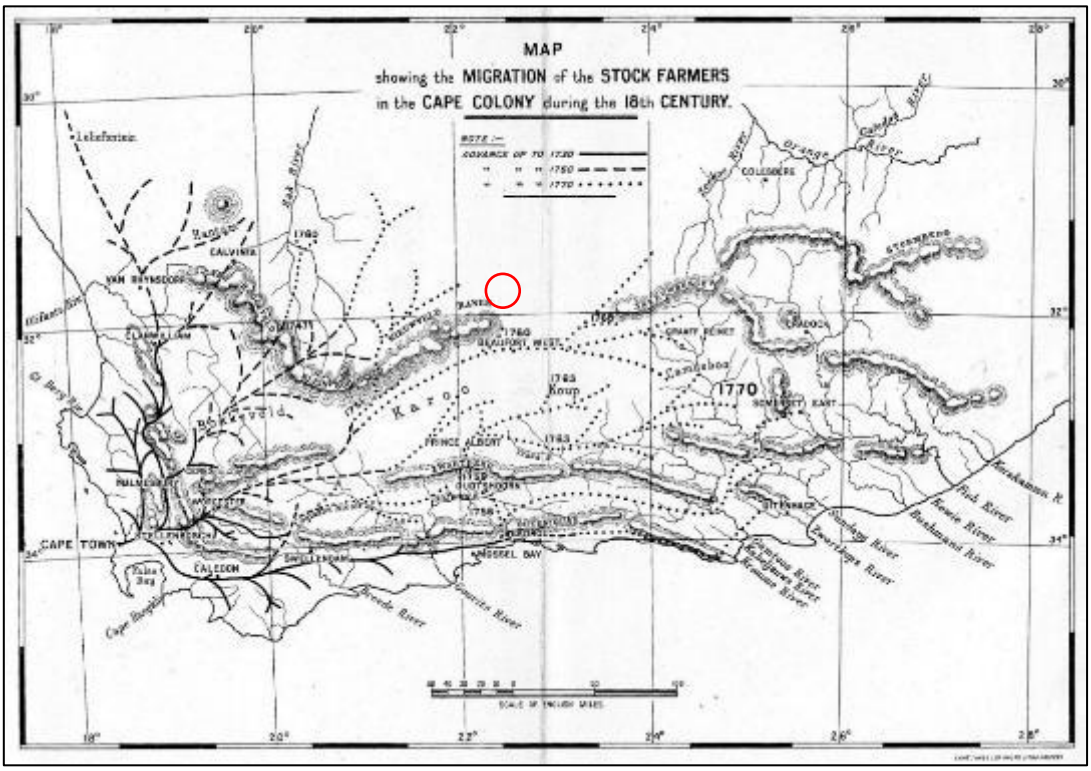


Figure 27: *Map showing the mid-18th century trekboer expansion in the Karoo. Source: Botha (1926: opposite preface). The EGI corridor study area is indicated by the red circle.*

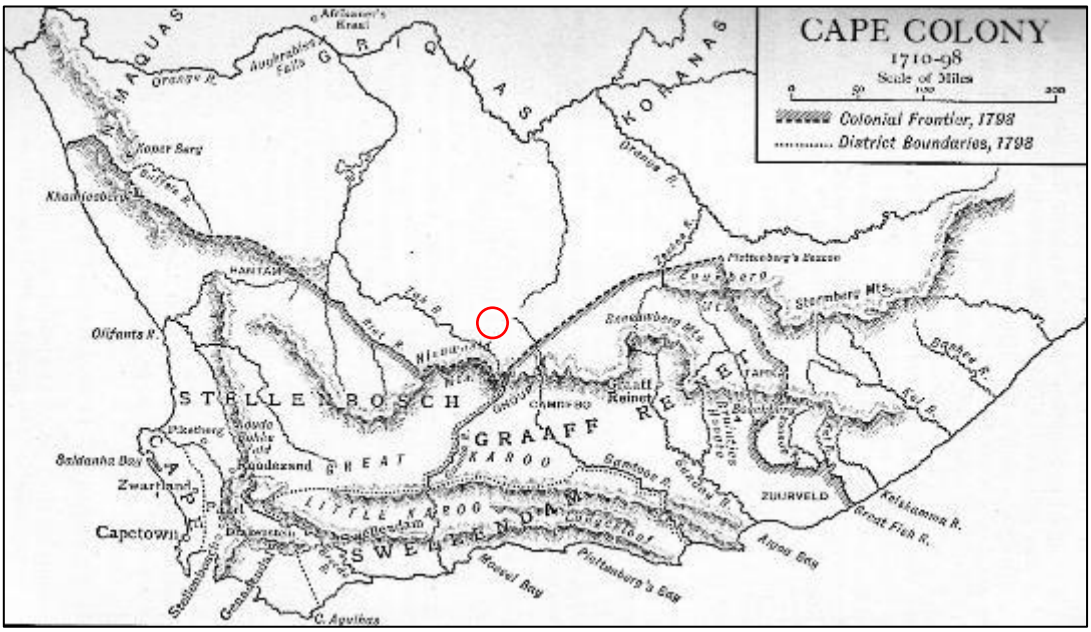


Figure 28: *Map showing the extent of the Cape Colony by 1798. Source: Walker (1928:201). The EGI corridor study area is indicated by the red circle.*

The Nuweveld Mountains were actually within the summer rainfall area which made occupation slightly more tenuous because trekking west into the winter rainfall Roggeveld Mountains meant moving into areas already occupied by other trekboers. The Nuweveld area was thus never properly occupied by colonists during the 18th century with the local San and Khoekhoen frequently stealing livestock from the colonists. A series of robberies in December 1775 and January 1776 in the Camdeboo and Swartruggens areas (some 200 km southeast of the present study area) resulted in a vicious commando being led against the San and Khoekhoen. Forty-five people were killed and thirty-six prisoners taken by the commando. This attack resulted in the passing of a resolution by the landdrost that no further commandos be undertaken without his express permission. Soon afterwards, many hostile San and Khoekhoen began assembling in the Koup, Sak River and Nuweveld areas, protecting themselves in fortified rock shelters. Although a request was made to mount a commando, the Nuweveld farmers could not await the outcome but found their small commando to be too weak to make any impact. A commando from the Sneeuwberg came to their assistance and the two together killed 111 San and Khoekhoen. Despite this success, many farmers vacated the Nuweveld area (Penn 2005).

In July of 1779 a group of twelve farmers decided to risk moving back into the Nuweveld area. The result was an increased intensity of San raids and commando activity that resulted in many deaths. This fighting continued and by September 1781 the farmers had too few cattle left to be able to sell to the VoC butchers. Commando activity also ceased because of a shortage of ammunition. By 1786 drought and San resistance resulted in the colonists once again vacating the Nuweveld and leaving it almost completely free of trekboers until 1793 (Penn 2005).

In June 1792 a large group of about 300 people – described as San by the colonists – attacked the Van Reenen brothers (who had the contract to deliver livestock to Cape Town) and stole about 600

sheep and 253 cattle. This act finally prompted the Government to take more serious action and two very well organised commandos were raised under the direction of two proven local leaders (N. Smit & J. van der Walt) and sent to the Nuweveld region where they killed more than 500 San. Owing to the lack of surface water, the area was still seen as marginal and could not support sufficient farmers to withstand or expel the San and/or Khoekhoen. In 1793 Van der Walt was permitted to move into the Nuweveld and was given two farms rent-free and the power to send out commandos as he saw fit (Penn 2005).

By the time the British took control of the Cape, the trekboers "had already acquired the characteristics of an embryo nation" (Van Zyl 1975:125). This was because the VoC had largely left them to look after themselves which resulted in them becoming quite independent of the Company and its rather weak rule. Due to various changes implemented under British rule, a growing unease developed amongst the colonists and this eventually led to a large-scale migration of farmers further north and east, beyond the borders of the Colony; this was the so-called 'Great Trek' of 1834 to 1854 (Muller 1975). Walker (1928), however, comments that this event could actually be seen merely as an acceleration of a process that had long been underway. The Cape Colony meanwhile expanded as shown in Figure 29 with the study area fully incorporated by 1825.

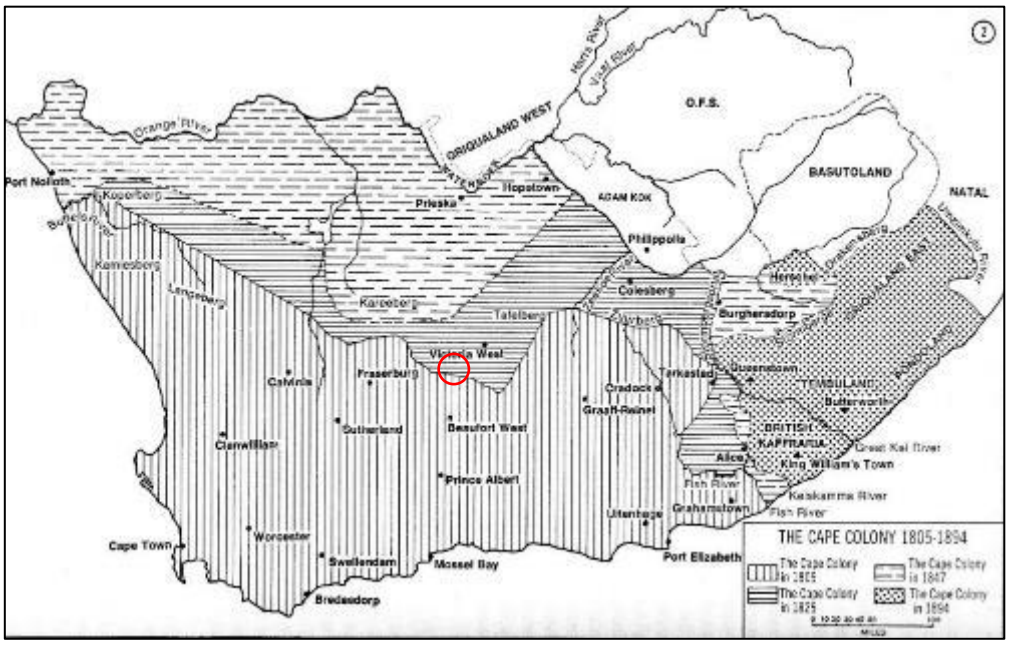


Figure 29: *Map showing the expanding boundaries of the Cape Colony under British Rule. Source: Van Zyl (1975:102). The EGI corridor study area is indicated by the red circle.*

There appears to have been limited action in the Nuweveld area during the Second South African War (Anglo-Boer War). Lieutenant-Colonel EMS Crabbe made use of a farm called Waterval along the R381 and just north of the crest of the escarpment. On 5th February 1902 he moved west to join Major H.W.G. Crofton at Uitspannen but found that Crofton had been killed by the Boers and his force captured (Watt 2013). This action occurred some 20 km southwest of the study area. A skirmish is known to have occurred near the farm Oorlogsfontein (some 30 km east of the study area) on 17 February 1902. This resulted in the wounding of the distinguished 25 year old Commandant Henry Hugo who was then captured and died the next day (Willis 2021). No other information about this event could be found. The nearest Anglo-Boer War fort lies 7 km south of the corridor edge, to the southwest of Three Sisters (Green 2022).

Historical buildings occur widely across the Karoo with most dating to the 19th century. *Orton et al.* (2016:15-8) noted the following:

> "In the harsh, resource-scarce Karoo environment with its restricted range of materials, necessity often was the mother of invention when it came to constructing shelter, resulting in a unique regional vernacular building tradition that displays the creative and technical achievement required to fashion an existence there. This relied on both traditional and conventional artisanal skills since buildings were hand-crafted from sun-baked bricks, locally occurring timber and quarried or collected stone. The result was a variety of local styles that we refer to collectively as Karoo vernacular."

This varied architecture is evident not only in the towns but also in remote areas. Two building traditions are unique to the Karoo. Corbelled buildings, which mainly occur to the north and west of the present study area and date between about 1813 and 1870, evolved from the need to build roofs without wooden beams (Kramer 2012). Isolated examples are mapped to the west and southwest of the present study area. The second tradition is known as Karoostyle and has been described by Marincowitz (2006). These buildings are typically simple rectangular structures with flat roofs and parapets. Flat roofs were often of the type referred to as 'brakdak' which consists of beams overlaid by sticks, reeds and then mud mixed with other materials such as manure or vegetation (Fagan 2008).

In rural areas buildings tend to be clustered into farm complexes with relatively few isolated structures. The complexes can include a variety of styles, while isolated structures are often small Karoostyle labourer's cottages. Due to the consolidation of farms into larger holdings in order to increase commercial viability, there are far fewer occupied farmsteads today than would have been the case in the past. Archaeological farm complexes generally outnumber historical ones showing that further back in time there were many more farming units.

The Molteno Pass, which lies along the R381 between Beaufort West and Loxton, serves as the primary access to the area above the escarpment. It was built by Thomas Bain from 1875 to 1880. Another section through a steep valley – also built by Bain – is referred to as the Roseberg Pass. These passes lie well south of the Mura study area. The route is known to have been in use since 1830 when it was just a path. In 1837 local farmers improved the route to allow for the passage of wagons (Willis 1994 cited in Ross 2013). Storrar (1984) suggests that the entire route was originally called Rose's Berg Pass. The R381 has had a number of sections realigned during modern upgrades but the steepest section through the Molteno Pass is almost unchanged – just one obvious short realignment is evident. De Jager's Pass lies along the DR2311 further to the east. It too was built by Thomas Bain with completion in 1880 and was known as Wagenaar's Kloof until 1899 when it was reconstructed and renamed. It had its origins in an early wagon track, also dating back to about 1830 (Ross 2013). The track ran past Wagenaarskraal and onwards into the interior (Schoeman 2013).

5.4.2. Site visit

Some farmsteads occur in the area but since all structures have been avoided by more than 1 km none were formally recorded. It was noted, however, that the complexes included various historical structures, kraals, arable lands and clusters or lines of trees. Examples of structures in the two nearest farmsteads to the corridor, Leeukloof in the south and Booiskraal in the southeast, and shown in Figures 30 to 32. Another unusual historical find was an agricultural implement that had been long abandoned and left outdoors (Figure 33).

Figure 30: *Structure in the Leeukloof Farm complex at Waypoint 1850. Source: Orton (2021a: fig. 49).*

Figure 31: *Structure in the Leeukloof Farm complex at Waypoint 1850. Source: Orton (2021a: fig. 50).*

Figure 32: *An unusual double story structure in the Booiskraal Farm complex at Waypoint 1794. Source: Orton (2021a: fig. 51).*

Figure 33: *An old agricultural implement from waypoint 1390 that is assumed to be old enough to be a heritage object.*

5.5. Cultural landscapes and scenic routes

Cultural landscapes are the product of the interactions between humans and nature in a particular area. Sauer (1925) defined them thus: “The cultural landscape is fashioned from a natural landscape by a cultural group. Culture is the agent, the natural area is the medium, the cultural landscape the result”. The proposed corridor is a largely natural landscape with minimal anthropogenic input. It is very remote and isolated with a large part only accessible by the landowners. A public road crosses the southern part of the corridor in two places, with the implication that the proposed powerline would also cross the road in two places. The earliest layers to the cultural landscape are the archaeological traces of pre-colonial occupation and early farming, but these are very light. Aside from the three farmsteads that occur in the area (but all at least about 1 km outside the corridor), modern farming has only resulted in the addition of some jeep tracks and fences to the study area but these are not noticeable from a distance. As a result, the landscape in the vicinity of the corridor is currently a largely natural one with its cultural significance being due to its scenic qualities.

Although a visual impact assessment was not required by HWC for the project because of its very remote location, it is notable that the viewshed mapping shows that visibility of the proposed developments is largely restricted to within the greater valley with the mountains providing screening further afield (Lawson & Oberholzer 2022: map 5). Due to the height of the pylons, visibility within the valley will be widespread. Although the local road through the southern part of the study area will be visually exposed to the powerline, especially at the two road crossing points, the R381 to the west will be entirely within the view shadow.

5.6. Statement of significance and provisional grading

Section 38(3)(b) of the NHRA requires an assessment of the significance of all heritage resources. In terms of Section 2(vi), ‘‘cultural significance’’ means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. The reasons that a place may have cultural significance are outlined in Section 3(3) of the NHRA (see Section 2 above).

Although archaeological resources of up to grade IIIB occur within the corridor, it is likely that all will be avoided by the final alignment. These resources have variable cultural significance at the local level for their historical, social and scientific values.

Graves are deemed to have high cultural significance at the local level for their social value. They are allocated a grade of IIIA but are unlikely to occur.

The cultural landscape is largely a natural landscape with aesthetic value and is rated as having medium cultural significance at the local level. It can be graded IIIB.

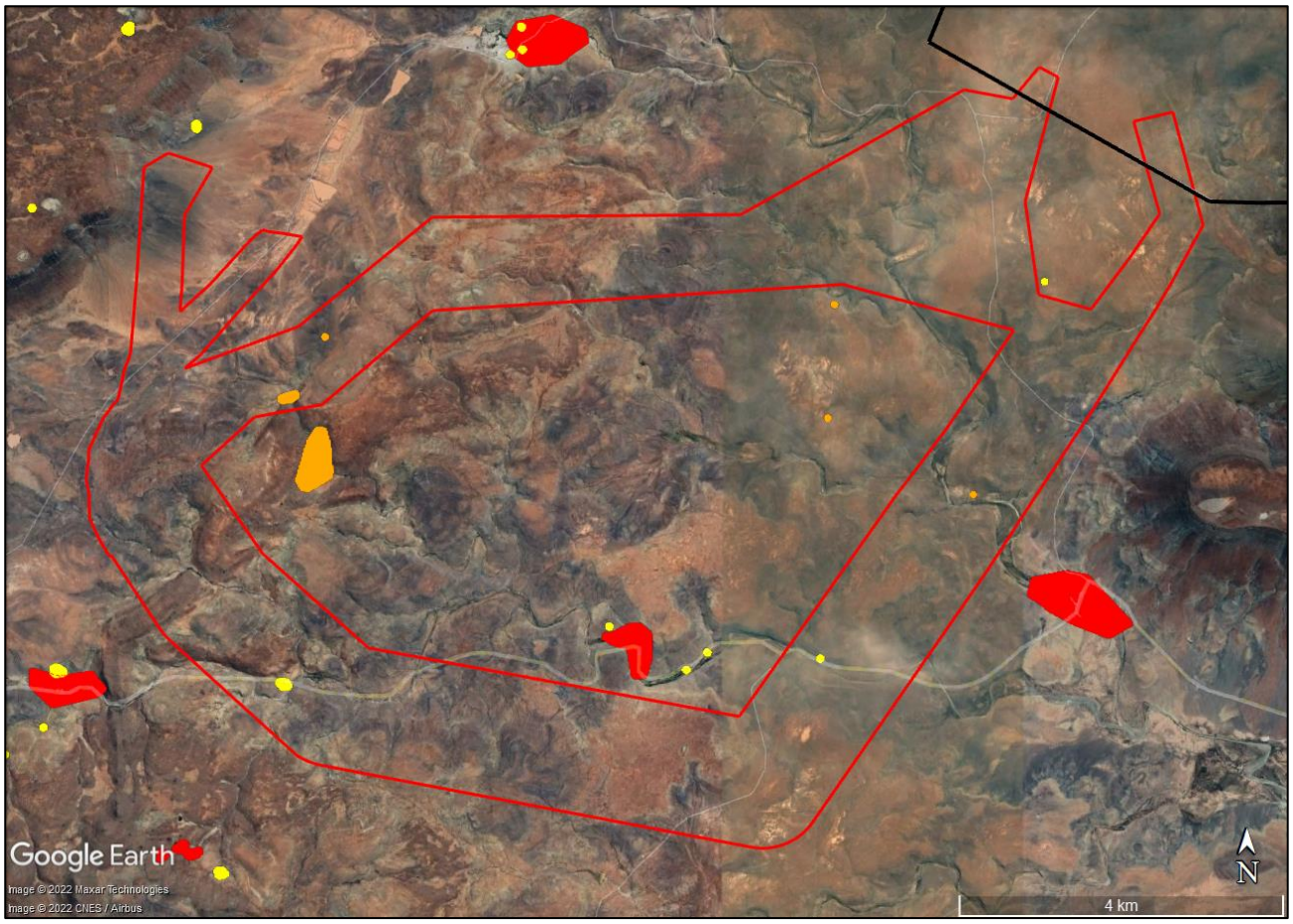


Figure 34: *Grade map of the corridor and surrounds. Note that it is constructed using data from several projects but that only those sites within the mapped corridor appear in this report. Red = IIIA, orange = IIIB, yellow = IIIC.*

5.7. Summary of heritage indicators

- Indicator: Uncontrolled damage to fossils should be minimised as far as possible.
- Indicator: Direct damage to archaeological sites should be avoided as far as possible and, where some damage to significant sites is unavoidable, scientific/historical data should be rescued.
- Indicator: Buffers of at least 30 m should be maintained around known archaeological sites as far as possible.
- Indicator: The powerline should cross the DR02317 road in locations approved by the visual specialists.

6. SITE SENSITIVITY VERIFICATION

As required in Part A of the Government Gazette 43110, GN 320, a site sensitivity verification was undertaken in order to confirm the current land use and environmental sensitivity of the proposed project area as identified by the National Web-Based Environmental Screening Tool. The details of the site sensitivity verification are noted below:

Date of Site Visit	4th, 13th and 14th July 2022, as well as previous surveys in 2019
Specialist Name	Dr Jayson Orton
Professional Registration Number	ASAPA: 233; APHP: 043
Specialist Affiliation / Company	ASHA Consulting (Pty) Ltd

Method of the Site Sensitivity Verification

Initial work was carried out using satellite aerial photography in combination with the author's accumulated knowledge of the local landscape. This was used to provide sensitivity data for screening phase. Subsequent fieldwork focused on the associated PV project areas because no powerline alignment was available for study. Between that and previous surveys, a good understanding of the distribution of heritage resources was obtained. Desktop research was also used to inform on the heritage context of the area. This information is presented in the report (Sections 5.2.1 and 5.4.1).

Outcome

The DFFE screening tool maps for the project show the archaeological and heritage sensitivity to be low throughout (Figure 35). The site visit showed that while the majority of the land is in fact of low sensitivity, there are several areas considered to be of medium to high sensitivity (Figure 34). Most notable are the various farmsteads in the area and the large, ruined farm complex along the DR02317, all of which lie outside of the corridor. There are also several other small areas of medium sensitivity. Figure 34 shows the heritage sensitivity as currently known. A photographic record and description of the relevant heritage resource is contained within Section 5 of the impact assessment report.

The heritage specialist thus disputes the uniform low sensitivity of the broader study area noting that several areas of medium to high sensitivity are present. Also, the wider landscape can be considered as at least medium sensitivity. **In sum, the overall sensitivity is best considered to be medium.** Note that the maps following the heritage grading requirements. Grade IIIA (red) is regarded as No-Go, grade IIIB (orange) is high sensitivity, grade IIIC/GPA/GPB (yellow) are medium, NCW/GPC (not mapped) are low.

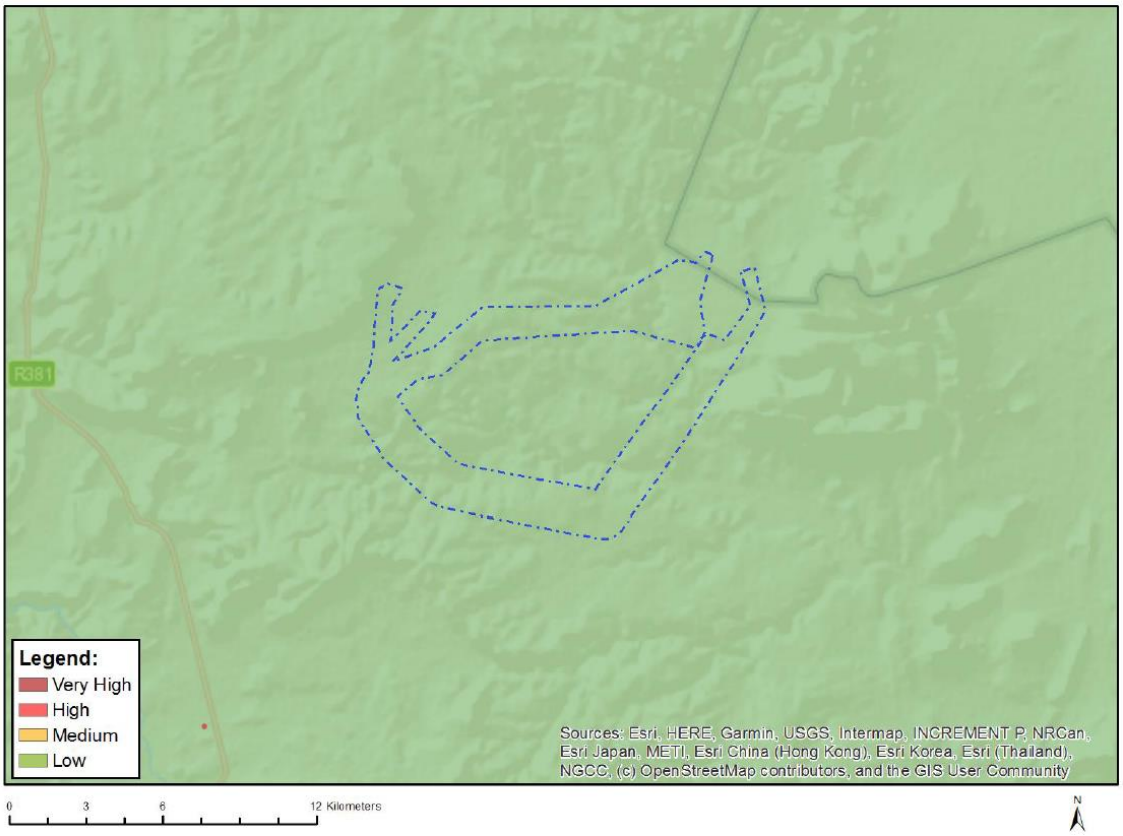


Figure 35: *Site sensitivity according to the DFFE Screening Tool Report.*

7. ASSESSMENT OF IMPACTS

The impacts identified for the EGI corridor are:

- *Construction phase:*
  - Impacts to palaeontology
  - Impacts to archaeology
  - Impacts to graves
  - Impacts to the cultural landscape
- *Operation phase:*
  - Impacts to the cultural landscape
- *Decommissioning phase:*
  - Impacts to the cultural landscape

While palaeontological heritage is assessed in the separate specialist study (Appendix 4), all the other impacts are considered here.

7.1. Construction Phase

7.1.1. Impacts to archaeological resources

Direct impacts to archaeological resources would occur during the construction phase when equipment is brought onto site and excavations for foundations, services and roadworks

commence. Because significant archaeological sites are rare within the corridor and expected to be easily avoided by the final alignment, the impact magnitude is very low. There is still a small chance that archaeological materials may be impacted though and the significance calculates to **low negative** (Table 4). Mitigation measures entail commissioning a pre-construction survey of the final alignment to check for sites that may need to be avoided or excavated and ensure than any chance finds are reported during construction. This will reduce the probability of impacts and the resultant significance post-mitigation is **very low negative**.

There are no fatal flaws in terms of construction phase impacts to archaeology.

7.1.2. Impacts to graves

Direct impacts to graves would occur during the construction phase when equipment is brought onto site and excavations for foundations, services and roadworks commence. Because graves are not known or expected within the corridor, the impact magnitude is very low. The chances of graves being present and impacted are very low and the significance calculates to **very low negative** (Table 4). The main mitigation requirement is to ensure than any chance finds are reported, although the pre-construction archaeological survey may still locate graves that would need to be avoided. This would reduce the probability of impacts, although this cannot be reflected in the ratings and the significance post-mitigation remains **very low negative**.

There are no fatal flaws in terms of construction phase impacts to archaeology.

7.1.3. Impacts to the cultural landscape

Direct impacts to the cultural landscape would occur during the construction phase when construction equipment is brought onto the site and construction activity commences. The very remote location means that the magnitude is low but because impacts would definitely occur if the project goes ahead the significance calculates to **moderate negative** (Table 4). Mitigation would entail (1) keeping the construction duration as short as possible, (2) reusing existing farm tracks where possible, (3) ensuring that the smallest area possible is cleared for construction and (4) ensuring that any areas not required during operation are rehabilitated. This would not affect the ratings, however, and the significance remains **moderate negative** after mitigation.

There are no fatal flaws in terms of construction phase impacts to the cultural landscape.

7.2. Operation Phase

7.2.1. Impacts to the cultural landscape

Direct impacts to the cultural landscape would occur during the operation phase due to the presence of the facility in the landscape. The magnitude is again low because of the remoteness of the site and, despite the long duration of impact (for the lifetime of the project), the significance calculates to **moderate negative** (Table 4). Mitigation would entail (1) ensuring that all maintenance activities remain within the approved footprint and (2) ensuring that night time light pollution from substations is minimised. This would not alter the significance rating which remains at the **moderate negative** level.

There are no fatal flaws in terms of operation phase impacts to the cultural landscape.

7.3. Decommissioning Phase

7.3.1. Impacts to the cultural landscape

Direct impacts to the cultural landscape would occur during the decommissioning phase when construction equipment is brought onto the site and decommissioning activities commence. The very remote location means that the magnitude is low but because impacts would definitely occur if the project is decommissioned the significance calculates to **moderate negative** (Table 4). Mitigation would entail (1) keeping the decommissioning duration as short as possible, and (2) ensuring that the site is fully rehabilitated after the facility has been removed. This would reduce the magnitude rating, but the significance remains **moderate negative** after mitigation.

There are no fatal flaws in terms of decommissioning phase impacts to the cultural landscape.

7.4. Cumulative impacts

Cumulative impacts would occur through the construction, operation and decommissioning of many projects in the same area. Figure 36 shows the projects within 30km considered in the assessment of cumulative impacts and the assessment is provided in Table 7. In terms of archaeology, the magnitude and probability would increase but mitigation would still bring the significance down from **moderate negative** to **very low negative**. Graves are unlikely to be impacted and mitigation would reduce the impact significance from **low negative** to **very low negative**. Cumulative impacts to the landscape are likely to be **moderate negative** both before and after mitigation for both the construction and decommissioning phases. The operation phase impact significance could potentially be high negative before mitigation but with a slight reduction in intensity after mitigation this drops to **moderate negative**.

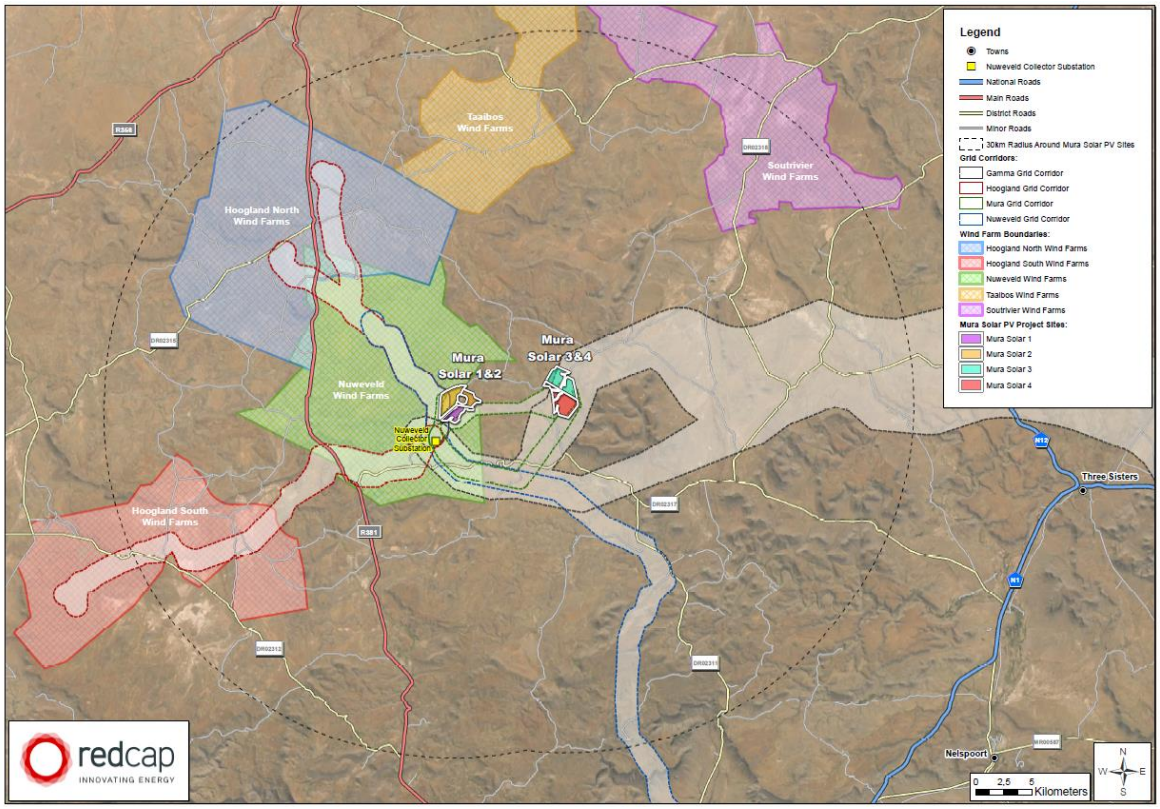


Figure 36: *Map showing other projects in the area considered during the assessment of potential cumulative impacts.*

Table 4: *Impact Assessment.*

Impact number	Aspect	Description	Stage	Character	Ease of Mitigation	Pre-Mitigation							Post-Mitigation						
						(M+	E+	R+	D)x	P=	S	Rating	(M+	E+	R+	D)x	P=	S	Rating
Impact 1:	Archaeology	Damage to or destruction of sites	Construction	Negative	High	1	1	5	5	2	**24**	**N2**	1	1	5	5	1	**12**	**N1**
					Significance	**N2 - Low**							**N1 - Very Low**						
Impact 2:	Graves	Damage to or destruction of graves	Construction	Negative	High	1	1	5	5	1	**12**	**N1**	1	1	5	5	1	**12**	**N1**
					Significance	**N1 - Very Low**							**N1 - Very Low**						
Impact 3:	Cultural landscape	Alteration of landscape character	Construction	Negative	Low	2	2	3	2	5	**45**	**N3**	2	2	3	2	5	**45**	**N3**
					Significance	**N3 - Moderate**							**N3 - Moderate**						
Impact 4:	Cultural landscape	Alteration of landscape character	Operation	Negative	Low	2	2	3	4	5	**55**	**N3**	2	2	3	4	5	**55**	**N3**
					Significance	**N3 - Moderate**							**N3 - Moderate**						
Impact 5:	Cultural landscape	Alteration of landscape character	Decommissioning	Negative	Low	2	2	3	2	5	**45**	**N3**	1	2	3	2	5	**40**	**N3**
					Significance	**N3 - Moderate**							**N3 - Moderate**						

Table 7: *Cumulative Impact Assessment.*

Impact number	Aspect	Description	Stage	Character	Ease of Mitigation	Pre-Mitigation							Post-Mitigation						
						(M+	E+	R+	D)x	P=	S	Rating	(M+	E+	R+	D)x	P=	S	Rating
Impact 1:	Archaeology	Damage to or destruction of sites	Construction	Negative	High	2	1	5	5	3	**39**	**N3**	1	1	5	5	1	**12**	**N1**
					Significance	**N3 - Moderate**							**N1 - Very Low**						
Impact 2:	Graves	Damage to or destruction of graves	Construction	Negative	High	1	1	5	5	2	**24**	**N2**	1	1	5	5	1	**12**	**N1**
					Significance	**N2 - Low**							**N1 - Very Low**						
Impact 3:	Cultural landscape	Alteration of landscape character	Construction	Negative	Low	3	3	3	2	5	**55**	**N3**	2	2	3	2	5	**45**	**N3**
					Significance	**N3 - Moderate**							**N3 - Moderate**						
Impact 4:	Cultural landscape	Alteration of landscape character	Operation	Negative	Low	3	3	3	4	5	**65**	**N4**	2	2	3	4	5	**55**	**N3**
					Significance	**N4 - High**							**N3 - Moderate**						
Impact 5:	Cultural landscape	Alteration of landscape character	Decommissioning	Negative	Low	3	3	3	2	5	**55**	**N3**	1	2	3	2	5	**40**	**N3**
					Significance	**N3 - Moderate**							**N3 - Moderate**						

7.5. Evaluation of impacts relative to sustainable social and economic benefits

Section 38(3)(d) of the NHRA requires an evaluation of the impacts on heritage resources relative to the sustainable social and economic benefits to be derived from the development.

The project will provide construction phase jobs but more importantly – and because it will be supporting PV facilities – it will help alleviate the ongoing electricity supply problems which are hampering economic growth in South Africa. Stabilising the electricity supply will thus have significant socio-economic benefits as a growing economy means more jobs and better income overall. These are clear economic and social benefits and, if mitigation is applied as suggested above, then the socio-economic benefits outweigh the residual impacts.

7.6. Existing impacts to heritage resources

There are currently no obvious threats to heritage resources within the EGI corridor from the natural degradation, weathering and erosion that will affect archaeological materials. Trampling from grazing animals and/or farm/other vehicles could also occur. These impacts would be of **negligible negative** significance. The cultural landscape is unspoilt and existing landscape impacts are rated as **neutral**.

7.7. The No-Go alternative

If the project were not implemented then the site would stay as it currently is (impact significance of **neutral**). Although the heritage impacts with implementation would be greater than the existing impacts, the loss of socio-economic benefits is more significant and suggests that the No-Go option is less desirable in heritage terms.

7.8. Levels of acceptable change

Any impact to an archaeological or palaeontological resource or a grave is deemed unacceptable until such time as the resource has been inspected and studied further if necessary. Impacts to the landscape are difficult to quantify but in general a development that visually dominates the landscape from many publicly accessible vantage points is undesirable. Because of the remoteness of the areas proposed for development such an impact would only occur from the two road crossing points with the majority of the powerline unlikely to be prominent in the landscape.

8. INPUT TO THE ENVIRONMENTAL MANAGEMENT PROGRAM

The actions recorded in Table 8 should be included in the environmental management program (EMPr) for the project.

Table 8: *Heritage considerations for inclusion in the EMPr.*

Impact	Mitigation / management objectives & outcomes	Mitigation / management actions	Monitoring		
			Methodology	Frequency	Responsibility

Damage or destruction of archaeological sites or graves	Locate sites that need to be avoided	Commission a pre-construction survey of the final alignment	Ensure survey is completed and HWC comment received.	Once off, preferably at least 6 months before construction	Developer
Damage or destruction of archaeological sites or graves	Rescue information, artefacts or burials before extensive damage occurs	Reporting chance finds as early as possible, protect in situ and stop work in immediate area.	Inform staff to be vigilant and carry out inspections of new excavations	Ongoing basis	Construction Manager or Contractor
				Whenever on site (at least weekly)	ECO
Impacts to the cultural landscape					
Visible landscape scarring	Minimise landscape scarring	Ensure disturbance is kept to a minimum and does not exceed project requirements. Rehabilitate areas not needed during operation.	Monitoring of surface clearance relative to approved layout	Ongoing basis	Construction Manager or Contractor
				As required	ECO

9. CONSULTATION WITH HERITAGE CONSERVATION BODIES

As required by HWC in their response to the NID, this report is submitted to the local municipality for heritage comment. There are no registered conservation bodies with an interest in this area.

10. CONCLUSIONS

At this point there are no significant concerns for the proposed powerline project. A few sites are known to occur within the corridor, but given the size of the corridor, it is expected that these will be easily avoided, as would any further sites discovered during the recommended pre-construction survey. It is notable that the powerlines would not be constructed unless some or all of the associated Mura 1 to 4 PV facilities are built. As such, landscape impacts from the powerlines would only occur if the electrical use of the landscape for PV power generation is already approved.

Table 9 lists the heritage indicators and the project responses.

Table 9: *Heritage indicators and project responses.*

Indicator	Project Response
Uncontrolled damage to fossils should be minimised as far as possible	Significant fossils are not expected in the study area but a Chance Finds Protocol has been supplied for inclusion in the EMPr.
Direct damage to archaeological sites should be avoided as far as possible and, where some damage to significant sites is unavoidable, scientific/historical data should be rescued.	A pre-construction survey will be required once the final alignment has been chosen and authorised.

Buffers of at least 30 m should be maintained around known archaeological sites as far as possible.	This cannot be determined at this stage as no final alignment is available. It is nonetheless expected that this indicator will be easily met since sites tend to be low in density.
The powerline should cross the DR02317 road in locations approved by the visual specialists.	The crossing locations will be informed by the visual specialists work in order to minimise visual impacts to the landscape and road users.

10.1. Reasoned opinion of the specialist

Given that there are no significant concerns for this project because it is expected that impacts will be easily avoided through micrositing following a pre-construction survey, it is the opinion of the heritage specialist that the project should be authorised in full.

11. RECOMMENDATIONS

It is recommended that the proposed Mura Electrical Grid Infrastructure should be authorised but subject to the following recommendations which should be included as conditions of authorisation (these conditions apply equally to both Western Cape and Northern Cape):

- A Fossil Chance Finds Procedure (as supplied in the palaeontological specialist study) must be included in the project EMPr;
- Known sites should be avoided by the final layout;
- A pre-construction archaeological survey must be undertaken during the EMPr approval stage;
- No stones may be removed from any archaeological site; and
- If any archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.

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APPENDIX 1 – Curriculum Vitae

Curriculum Vitae

Jayson David John Orton

ARCHAEOLOGIST AND HERITAGE CONSULTANT

Contact Details and personal information:

Address: 23 Dover Road, Muizenberg, 7945
Telephone: (021) 788 1025
Cell Phone: 083 272 3225
Email: jayson@asha-consulting.co.za

Birth date and place: 22 June 1976, Cape Town, South Africa
Citizenship: South African
ID no: 760622 522 4085
Driver's License: Code 08
Marital Status: Married to Carol Orton
Languages spoken: English and Afrikaans

Education:

SA College High School	Matric	1994
University of Cape Town	B.A. (Archaeology, Environmental & Geographical Science)	1997
University of Cape Town	B.A. (Honours) (Archaeology)*	1998
University of Cape Town	M.A. (Archaeology)	2004
University of Oxford	D.Phil. (Archaeology)	2013

*Frank Schweitzer memorial book prize for an outstanding student and the degree in the First Class.

Employment History:

Spatial Archaeology Research Unit, UCT	Research assistant	Jan 1996 – Dec 1998
Department of Archaeology, UCT	Field archaeologist	Jan 1998 – Dec 1998
UCT Archaeology Contracts Office	Field archaeologist	Jan 1999 – May 2004
UCT Archaeology Contracts Office	Heritage & archaeological consultant	Jun 2004 – May 2012
School of Archaeology, University of Oxford	Undergraduate Tutor	Oct 2008 – Dec 2008
ACO Associates cc	Associate, Heritage & archaeological consultant	Jan 2011 – Dec 2013
ASHA Consulting (Pty) Ltd	Director, Heritage & archaeological consultant	Jan 2014 –

Professional Accreditation:

Association of Southern African Professional Archaeologists (ASAPA) membership number: 233
CRM Section member with the following accreditation:

- Principal Investigator: Coastal shell middens (awarded 2007)
  Stone Age archaeology (awarded 2007)
  Grave relocation (awarded 2014)
- Field Director: Rock art (awarded 2007)
  Colonial period archaeology (awarded 2007)

Association of Professional Heritage Practitioners (APHP) membership number: 43

- Accredited Professional Heritage Practitioner

➢ *Memberships and affiliations:*

South African Archaeological Society Council member	2004 – 2016
Assoc. Southern African Professional Archaeologists (ASAPA) member	2006 –
UCT Department of Archaeology Research Associate	2013 – 2017
Heritage Western Cape APM Committee member	2013 –
UNISA Department of Archaeology and Anthropology Research Fellow	2014 –
Fish Hoek Valley Historical Association	2014 –
Kalk Bay Historical Association	2016 –
Association of Professional Heritage Practitioners member	2016 –

Fieldwork and project experience:

Extensive fieldwork and experience as both Field Director and Principle Investigator throughout the Western and Northern Cape, and also in the western parts of the Free State and Eastern Cape as follows:

Feasibility studies:

- Heritage feasibility studies examining all aspects of heritage from the desktop

Phase 1 surveys and impact assessments:

- Project types
  - Notification of Intent to Develop applications (for Heritage Western Cape)
  - Desktop-based Letter of Exemption (for the South African Heritage Resources Agency)
  - Heritage Impact Assessments (largely in the Environmental Impact Assessment or Basic Assessment context under NEMA and Section 38(8) of the NHRA, but also self-standing assessments under Section 38(1) of the NHRA)
  - Archaeological specialist studies
  - Phase 1 archaeological test excavations in historical and prehistoric sites
  - Archaeological research projects
- Development types
  - Mining and borrow pits
  - Roads (new and upgrades)
  - Residential, commercial and industrial development
  - Dams and pipe lines
  - Power lines and substations
  - Renewable energy facilities (wind energy, solar energy and hydro-electric facilities)

Phase 2 mitigation and research excavations:

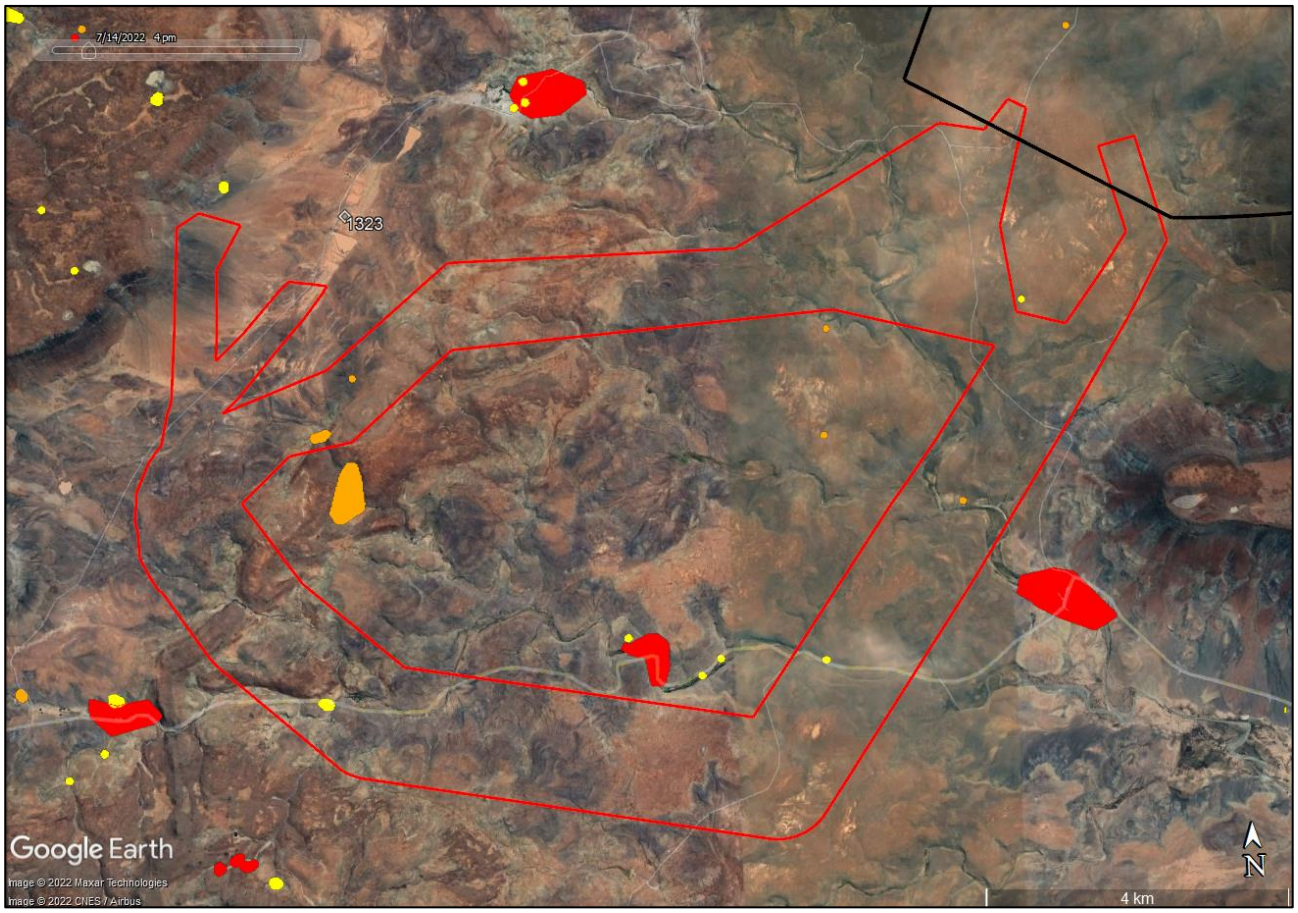
- ESA open sites
  - Duinefontein, Gouda, Namaqualand
- MSA rock shelters
  - Fish Hoek, Yzerfontein, Cederberg, Namaqualand
- MSA open sites
  - Swartland, Bushmanland, Namaqualand
- LSA rock shelters
  - Cederberg, Namaqualand, Bushmanland
- LSA open sites (inland)
  - Swartland, Franschhoek, Namaqualand, Bushmanland
- LSA coastal shell middens
  - Melkbosstrand, Yzerfontein, Saldanha Bay, Paternoster, Dwarskersbos, Infanta, Knysna, Namaqualand
- LSA burials
  - Melkbosstrand, Saldanha Bay, Namaqualand, Knysna
- Historical sites
  - Franschhoek (farmstead and well), Waterfront (fort, dump and well), Noordhoek (cottage), variety of small excavations in central Cape Town and surrounding suburbs
- Historic burial grounds
  - Green Point (Prestwich Street), V&A Waterfront (Marina Residential), Paarl

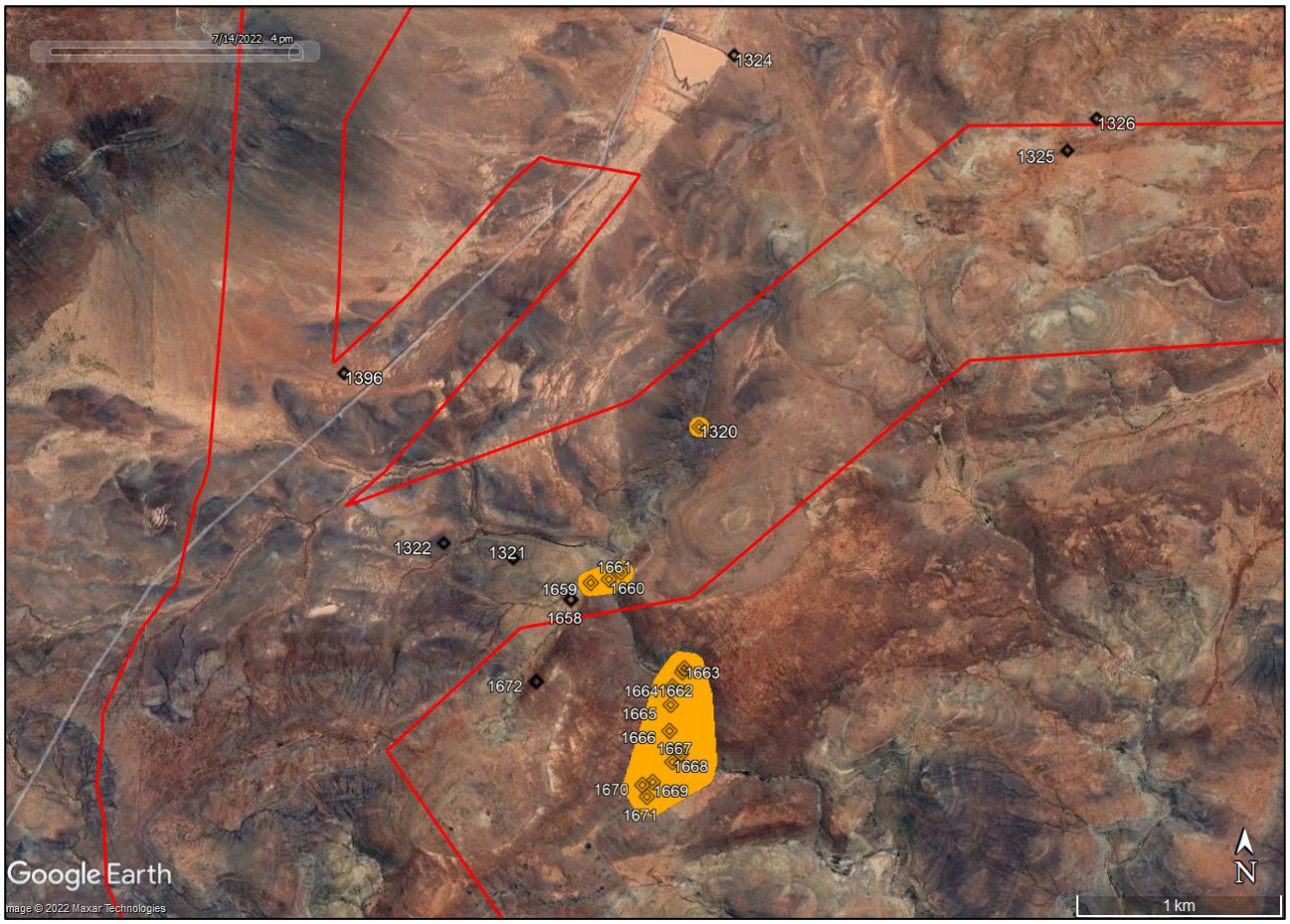
Awards:

Western Cape Government Cultural Affairs Awards 2015/2016: Best Heritage Project.

APPENDIX 2 – Mapping

In the first map the heritage gradings are shown, all with 50 m buffers. Red = IIIA, Orange = IIIB, Yellow = IIIC/GPA.
In the remaining smaller scale maps the waypoint numbers are added but note that these are from multiple projects with only those located within the current corridor listed in this report. Black symbols = NCW and no buffers are provided.

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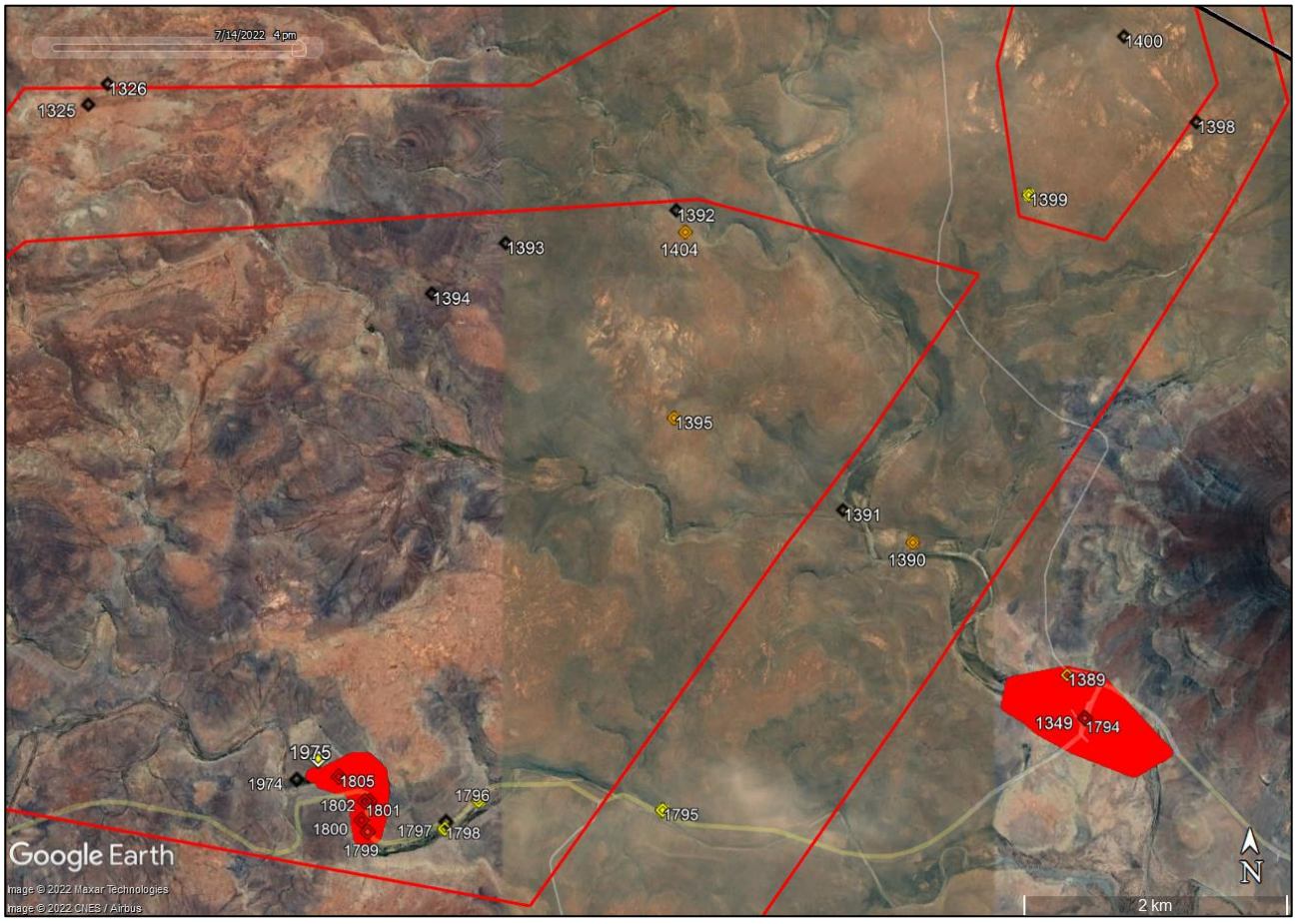
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APPENDIX 3 – Palaeontological specialist study