HERITAGE IMPACT ASSESSMENT: PROPOSED HOOGLAND 3 WIND FARM AND HOOGLAND 4 WIND FARM, BEAUFORT WEST MAGISTERIAL DISTRICT, WESTERN CAPE AND FRASERBURG MAGISTERIAL DISTRICT, NORTHERN CAPE

Required under Section 38(8) of the National Heritage Resources Act (No. 25 of 1999) as part of a Heritage Impact Assessment.

	HWC Case Numbers:	SAHRA Case Numbers:
HOOGLAND 3	21060103SB0818E	TBC
HOOGLAND 4	21060104SB0818E	N/A

Report for:

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On behalf of:

Red Cap Energy (Pty) Ltd

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1st draft: 17 January 2022
Final report: 29 January 2022

SUMMARY

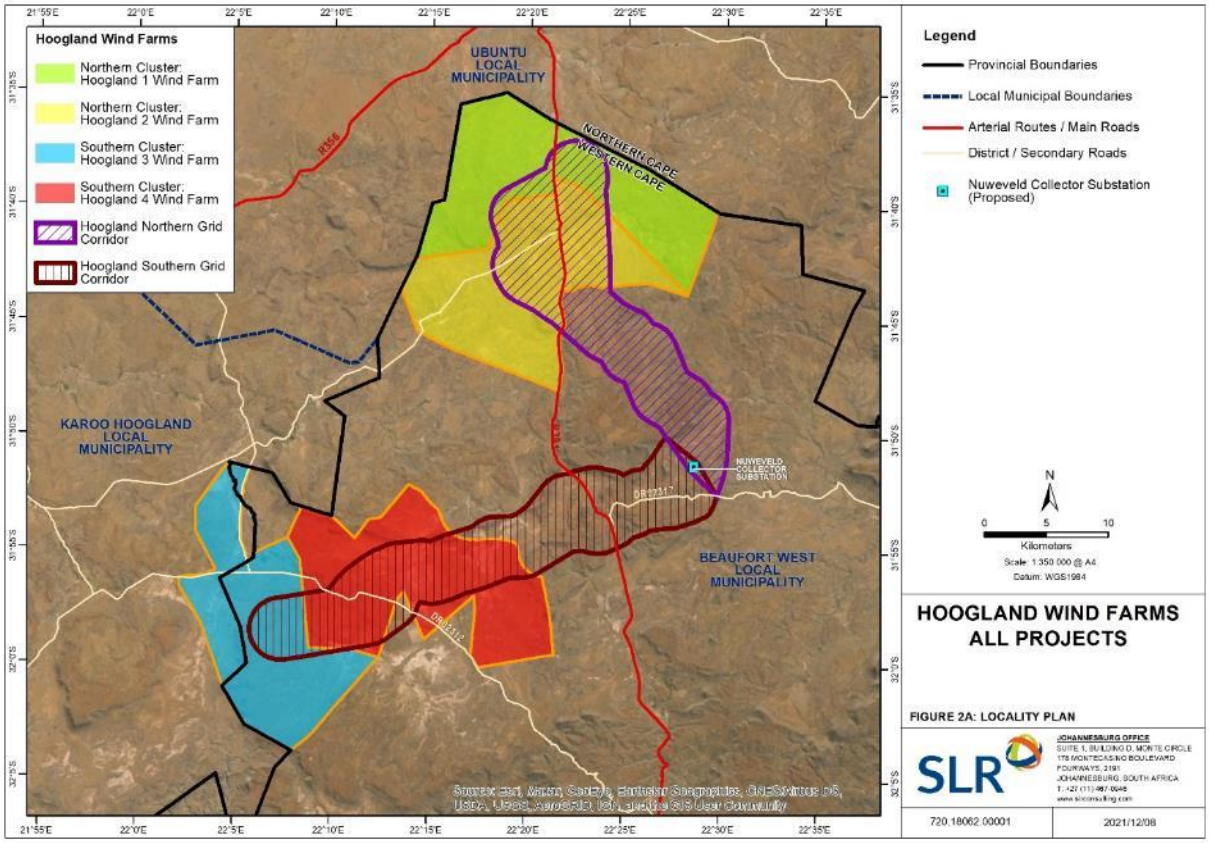
1. Site Name

Hoogland 3 Wind Farm & Hoogland 4 Wind Farm

2. Location

	Hoogland 3 (in Northern & Western Cape as indicated)	**Hoogland 4 (all in Western Cape)**
Off	Local road off R381	Local road off R381
Erven	Remainder of Groenbergs Vlakte 334 (Northern Cape) Portion 3 of Groenbergs Vlakte 334 (Northern Cape) Remainder of Portion 1 of Kalkfontein 335 (Northern Cape)Portion 3 of Kalkfontein 335 (Northern Cape) Remainder of Fonk Fontein 336 (Northern Cape) Portion 1 of Fonk Fontein 336 (Northern Cape) Portion 2 of Fonk Fontein 336 (Northern Cape) Remainder of Groenbergs Vlakte 400 (Northern Cape) Portion 1 of Groenbergs Vlakte 400 (Northern Cape) Remainder of Portion 1 of Platfontein 28 (Western Cape) Portion 3 of Platfontein 28 (Western Cape) Portion 4 of Platfontein 28 (Western Cape) Remainder of Portion 5 of Platfontein 28 (Western Cape) Portion 7 of Platfontein 28 (Western Cape) Portion 8 of Platfontein 28 (Western Cape) Remainder of Platfontein 28 (Western Cape) Swart Rug 88 (Western Cape)	Remainder of Portion 1 of Platfontein 28 Portion 2 of Platfontein 28 Portion 3 of Platfontein 28 Portion 1 of The Rosary 32 Annex Karoo Plaats 33 Remainder of Driefontein 37 Remainder of Portion 1 of Eyerkuil 39 Remainder of Portion 2 of Eyerkuil 39 Portion 3 of Eyerkuil 39 Remainder of Adjoining Quaggas Fontein 83
Centre point	31°58'23.64"S, 22° 6'31.47"E	31°56'29.28"S, 22°14'23.12"E

3. Locality Plan



The southern polygons show the projects covered by the present report.

4. Description of Proposed Development

It is proposed to develop two wind farms with up to 60 turbines each. Each would include powerlines (mostly underground, but overhead where physical constraints occur), access roads, substation, battery storage facility, laydown area, site camp and batching plant.

5. Heritage Resources Identified

Large numbers of heritage resources occur in the area with the majority being historical archaeological sites and engravings. The former include ruined stone-walled structures of varying types and functions, ash and rubbish middens and other features related to historical occupation. The engravings include a variety of images but with horses and other animals the most common. Geometric images, carts and cars, people and Nine men's morris gameboards also occur in the engravings. Other resources include fossils, Stone Age artefact scatters (mostly LSA but also rare ESA/MSA), Stone Age rock engravings, graves and graveyards, buildings, the cultural landscape and places associated with living heritage (the latter are mostly recent engraving sites).

6. Anticipated Impacts on Heritage Resources

Due to the iterative design process that was followed, very few heritage resources will be directly impacted, although, partly because of the density of rock engravings in the HL03 area, there are a few sites there that are within the footprint, largely where roads or turbines are planned but also in

one instance where a cable will be laid along a road that is very close to a ruin. A number of buffers are also intersected. In HL04 several site buffers will be intersected and in one instance a road to be reused runs within 3 m of an old threshing floor.

7. Recommendations

Hoogland 3

It is recommended that the proposed project be approved but subject to the following recommendations which must be captured in the EA, should one be issued:

- The various sites that will be directly impacted must be considered for protection through micrositing or else, if unavoidable, archaeological mitigation (recording, tracing and photography of engravings; excavation and sampling of artefacts) must be implemented. This affects waypoints 123, 124, 128, 131-132, 135, 168, 173 & 1835;
- The various sites whose buffers will be intersected and where this is not acceptable must be considered for protection through micrositing. This affects waypoints 123,124, 136, 137, 139, 182-186, & 1567-1570;
- At waypoint 1586 the cable must be laid on the northwest side of the road;
- A pre-construction survey of the entire authorised footprint must be undertaken in order to determine whether any further archaeological sites may need mitigation or protection through micrositing (if possible);
- The final layout must be evaluated by a palaeontologist to determine which areas, if any, need a pre-construction survey. These will be previously unsurveyed and potentially sensitive areas;
- If necessary, and subject to the agreement of Heritage Western Cape, a Workplan application should be submitted prior to the palaeontological survey to allow for sample collection during the survey;
- A palaeontological chance finds procedure must be incorporated into the EMPr;
- Landscape scarring must be minimised during construction;
- If road surfacing is required then low contrast materials such as concrete with brown exposed aggregate should be used, where possible;
- All areas not required during operation must be rehabilitated in accordance with the Rehabilitation and Revegetation Plan;
- If a CAA-approved warning system which only requires the red lights to come on when an aircraft is in the vicinity exists at the time of construction, then such a system must be used to reduce the night-time impacts to the sense of place;
- If such a warning system is not approved for use at the time of construction, then the proponent must investigate the development of a system and, if/when approved, it must be retro-fitted to the wind farm;
- Visually sensitive skylines, rock outcrops and steep slopes must be avoided as per the recommendations of the visual impact assessment;
- Temporary laydown and areas and batching plants should be located in areas approved by the visual specialists;
- Substations and O&M Buildings to be located in unobtrusive low-lying areas away from provincial and district roads where possible;
- On-site signage to be discrete, and billboards prohibited. Signage to be fixed as low as possible, preferably against a backdrop to avoid intrusion on the skyline;

- Security and other outdoor lighting to be fitted with reflectors to conceal the light source;
- In the event of decommissioning, the site must be rehabilitated in accordance with the Rehabilitation and Revegetation Plan;
- If the wind farm is approved and the final layout does not need all approved turbine locations to ensure a maximum of 60 turbines, then where a choice exists between turbines to be dropped, and all other factors are equal, priority should be given to dropping turbines in the high visual sensitivity areas, as well as Turbines 85, 90, 91, 92, 93 and/or 94 which are within the main part of the rock art landscape; 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.

Hoogland 4

It is recommended that the proposed project be approved but subject to the following recommendations which must be captured in the EA, should one be issued:

- The farm road to be reused adjacent to waypoint 1807 may not be widened towards the north;
- A pre-construction survey of the entire authorised footprint must be undertaken in order to determine whether any further archaeological sites may need mitigation or protection through micrositing (if possible);
- The final layout must be evaluated by a palaeontologist to determine which areas, if any, need a pre-construction survey. These will be previously unsurveyed and potentially sensitive areas;
- If necessary, and subject to the agreement of Heritage Western Cape, a Workplan application should be submitted prior to the palaeontological survey to allow for sample collection during the survey;
- A palaeontological chance finds procedure must be incorporated into the EMPr;
- Landscape scarring must be minimised during construction;
- If road surfacing is required then low contrast materials such as concrete with brown exposed aggregate should be used, where possible;
- All areas not required during operation must be rehabilitated in accordance with the Rehabilitation and Revegetation Plan;
- If a CAA-approved warning system which only requires the red lights to come on when an aircraft is in the vicinity exists at the time of construction, then such a system must be used to reduce the night-time impacts to the sense of place;
- If such a warning system is not approved for use at the time of construction, then the proponent must investigate the development of a system and, if/when approved, it must be retro-fitted to the wind farm;
- Visually sensitive skylines, rock outcrops and steep slopes must be avoided as per the recommendations of the visual impact assessment;
- Temporary laydown and areas and batching plants should be located in areas approved by the visual specialists;
- Substations and O&M Buildings to be located in unobtrusive low-lying areas away from provincial and district roads where possible;

- On-site signage to be discrete, and billboards prohibited. Signage to be fixed as low as possible, preferably against a backdrop to avoid intrusion on the skyline;
- Security and other outdoor lighting to be fitted with reflectors to conceal the light source;
- In the event of decommissioning, the site must be rehabilitated in accordance with the Rehabilitation and Revegetation Plan;
- If the wind farm is approved and the final layout does not need all approved turbine locations to ensure a maximum of 60 turbines, then where a choice exists between turbines to be dropped, and all other factors are equal, priority should be given to dropping turbines in the high visual sensitivity areas and within 1 km of the R381; 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.

8. **Author/s and Date**

Heritage Impact Assessment: Jayson Orton, ASHA Consulting (Pty) Ltd, 31 October 2021
Archaeological specialist study: 31 October 2021
Palaeontological specialist study: November 2021
Visual Impact Assessment: December 2021

NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998) AND ENVIRONMENTAL IMPACT REGULATIONS, 2014 (AS AMENDED) - REQUIREMENTS FOR SPECIALIST REPORTS (APPENDIX 6)

Regulation GNR 326 of 4 December 2014, as amended 7 April 2017, Appendix 6	**Section of Report**
1. (1) A specialist report prepared in terms of these Regulations must contain- a) details of- i. the specialist who prepared the report; and ii. the expertise of that specialist to compile a specialist report including a curriculum vitae;	1.4 Appendix 1
b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	viii
c) an indication of the scope of, and the purpose for which, the report was prepared;	1.3
(cA) an indication of the quality and age of base data used for the specialist report;	n/a
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	7.7 7.5 7.9
d) the date and season of the site investigation and the relevance of the season to the outcome of the assessment;	3.2
e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	3
f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	1.1.8
g) an identification of any areas to be avoided, including buffers;	6
h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	6
i) a description of any assumptions made and any uncertainties or gaps in knowledge;	3.7
j) a description of the findings and potential implications of such findings on the impact of the proposed activity, (including identified alternatives on the environment) or activities;	5 7
k) any mitigation measures for inclusion in the EMPr;	8
l) any conditions for inclusion in the environmental authorisation;	11
m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	8 11
n) a reasoned opinion- i. (as to) whether the proposed activity, activities or portions thereof should be authorised; (iA) regarding the acceptability of the proposed activity or activities; and ii. if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	10.3 11
o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	9
p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	9
q) any other information requested by the competent authority.	n/a
2) Where a government notice *gazetted* by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	n/a

SPECIALIST DECLARATION

See separate document

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.

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.

Leiwater: an irrigation channel.

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

Patination: Colour and/or texture changes on the surface of an artefact or rock art as a result of physical and chemical weathering of the substrate.

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

CA: Competent Authority

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

GPS: global positioning system

HIA: Heritage Impact Assessment

HWC: Heritage Western Cape

KNP: Karoo National Park

LSA: Later Stone Age

MSA: Middle Stone Age

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

REDZ: Renewable Energy Development Zone

SAHRA: South African Heritage Resources Agency

SAHRIS: South African Heritage Resources Information System

VoC: Dutch East India Company

CONTENTS

TABLES

FIGURES

1. INTRODUCTION

ASHA Consulting (Pty) Ltd has been appointed by SLR South Africa Consulting (Pty) Ltd, on behalf of Red Cap Energy (Pty) Ltd and their affiliate companies (Red Cap Hoogland 1 (Pty) Ltd, Red Cap Hoogland 2 (Pty) Ltd, Red Cap Hoogland 3 (Pty) Ltd and Red Cap Hoogland 4 (Pty) Ltd), hereafter referred to as "Red Cap", to undertake a Heritage Impact Assessment (HIA) for the proposed construction of four wind farms and associated grid connections (together known as the Hoogland Projects) in an area located between Loxton and Beaufort West in the Northern and Western Cape Provinces (Figure 1 to Figure 3).

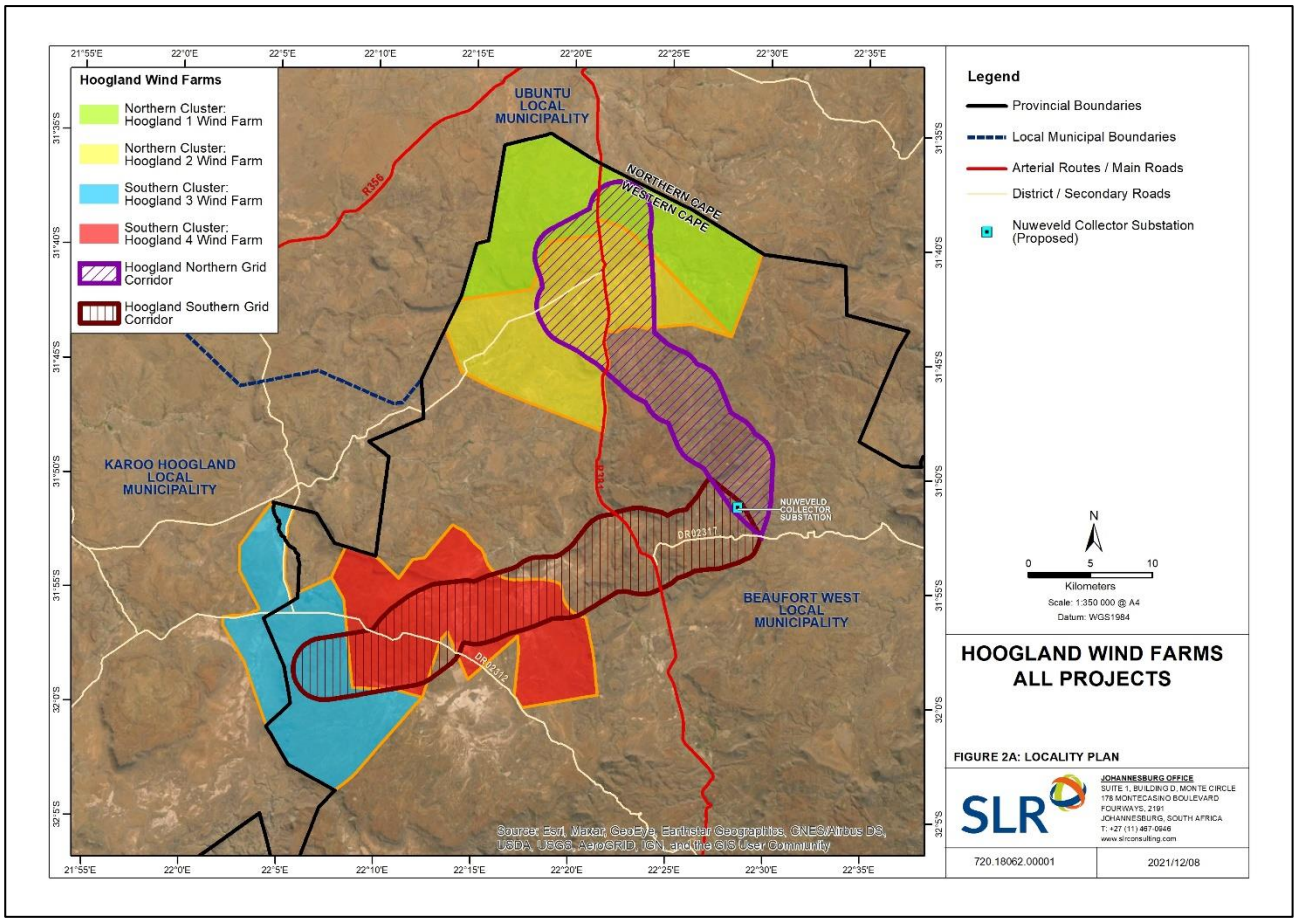


Figure 1: Regional Map showing the project sites in relation to Loxton, Beaufort West and Karoo National Park.

Hoogland 1 Wind Farm (HL01) and Hoogland 2 Wind Farm (HL02) are located to the north closer to Loxton and form the Northern Cluster of wind farms which will share a grid connection, named the Hoogland Northern Grid Connection. Hoogland 3 Wind Farm and Hoogland 4 Wind Farm are located closer to Beaufort West and comprise the Southern Cluster which will similarly share a separate grid connection, named the Hoogland Southern Grid Connection. The two Grid Connections are each in the form of 132 kV overhead power lines and will connect the Hoogland Wind Farms to the Nuweveld Collector Substation on Red Cap's adjacent Nuweveld Wind Farms Project. Power will then be fed into the Eskom Droërivier Substation located near Beaufort West via the proposed Nuweveld Gridline.

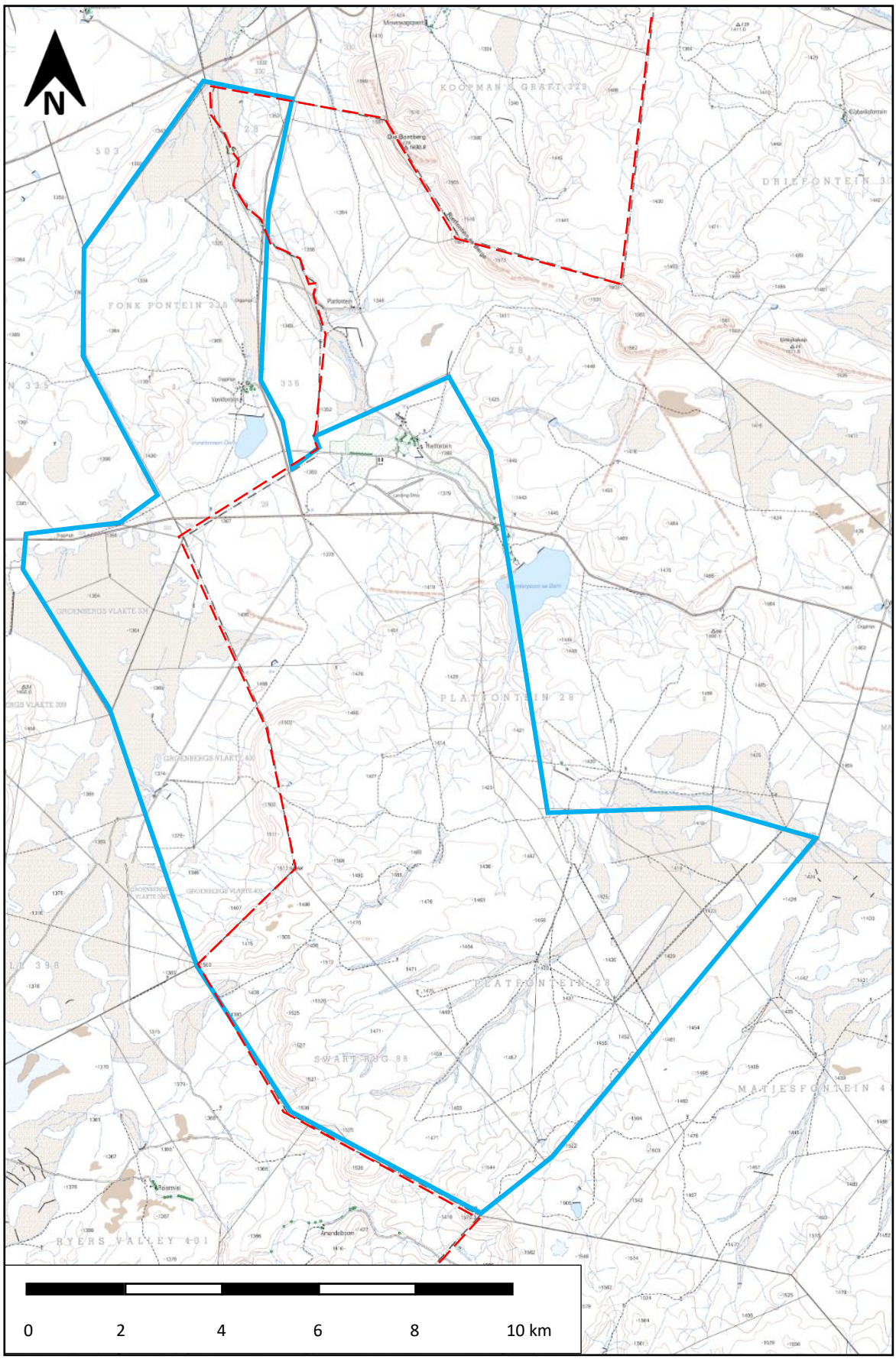


Figure 2: Extract from 1:50 000 mapsheets 3122cc &3222aa showing the location of the HL03 site (turquoise polygon) relative to the provincial boundary. Source of basemap: Chief Directorate: National Geo-Spatial Information. Website: www.ngi.gov.za.

In terms of the Environmental Impact Assessment (EIA) Regulations various aspects of the proposed development may have an impact on the environment and are considered to be listed activities. These activities require authorisation from the National Competent Authority (CA), namely the Department of Forestry, Fisheries and the Environment (DFFE), prior to the commencement thereof. Specialist studies have been commissioned to verify the sensitivity and assess the impacts of the wind farms under the Gazetted specialist protocols (GN R 320 and GN R 1150 of 2020).

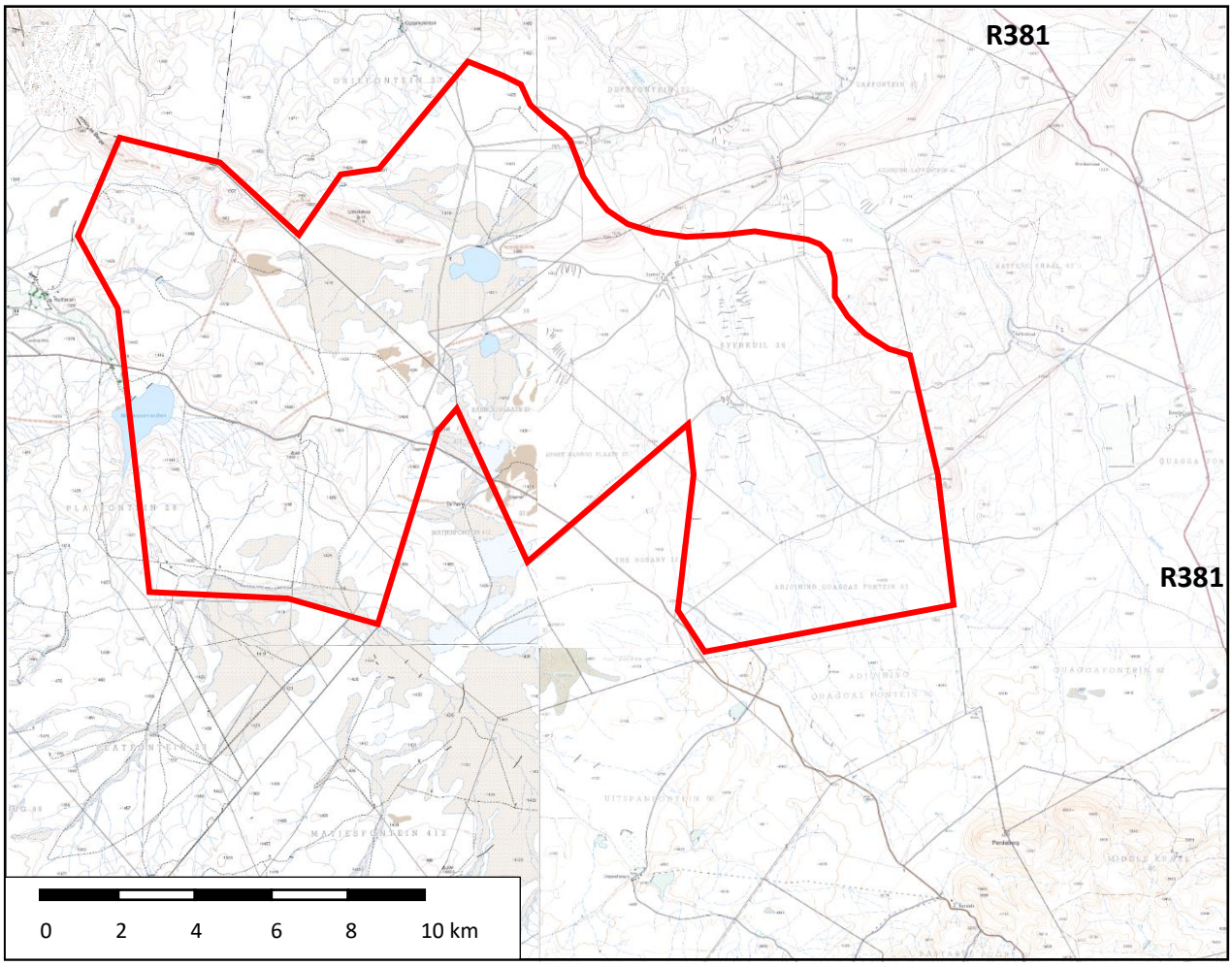


Figure 3: Extract from 1:50 000 mapsheets 3122cc, 3122cd, 3222aa & 322ab showing the location of the HL04 site (red polygon) relative to the R381 road that links Beaufort West and Loxton (running north-south to the east of the site). Source of basemap: Chief Directorate: National Geo-Spatial Information. Website: www.ngi.gov.za.

The scope of this report is the Hoogland 3 Wind Farm and Hoogland 4 Wind Farm (the Southern Wind Farm Cluster). Even though these are two separate applications they will be considered in the same specialist report. Approximate centre points for these two projects are as follows:

- Hoogland 3: S31° 58’ 23.64” E22° 06’ 31.47”; and
- Hoogland 4: S31° 56’ 29.28” E22° 14’ 23.12”.

The farm portions affected by each are as follows:

- Hoogland 3 (Northern and Western Cape as indicated):
    - Remainder of Groenbergs Vlakte 334 (Northern Cape)
    - Portion 3 of Groenbergs Vlakte 334 (Northern Cape)

    - Remainder of Portion 1 of Kalkfontein 335 (Northern Cape)Portion 3 of Kalkfontein 335 (Northern Cape)
    - Remainder of Fonk Fontein 336 (Northern Cape)
    - Portion 1 of Fonk Fontein 336 (Northern Cape)
    - Portion 2 of Fonk Fontein 336 (Northern Cape)
    - Remainder of Groenbergs Vlakte 400 (Northern Cape)
    - Portion 1 of Groenbergs Vlakte 400 (Northern Cape)
    - Remainder of Portion 1 of Platfontein 28 (Western Cape)
    - Portion 3 of Platfontein 28 (Western Cape)
    - Portion 4 of Platfontein 28 (Western Cape)
    - Remainder of Portion 5 of Platfontein 28 (Western Cape)
    - Portion 7 of Platfontein 28 (Western Cape)
    - Portion 8 of Platfontein 28 (Western Cape)
    - Remainder of Platfontein 28 (Western Cape)
    - Swart Rug 88 (Western Cape)
- Hoogland 4 (all in Western Cape):
    - Remainder of Portion 1 of Platfontein 28
    - Portion 2 of Platfontein 28
    - Portion 3 of Platfontein 28
    - Portion 1 of The Rosary 32
    - Annex Karoo Plaats 33
    - Remainder of Driefontein 37
    - Remainder of Portion 1 of Eyerkuil 39
    - Remainder of Portion 2 of Eyerkuil 39
    - Portion 3 of Eyerkuil 39
    - Remainder of Adjoining Quaggas Fontein 83.

1.1. Project description

1.1.1. Wind farms

Each wind farm requires several key components to facilitate the generation of electricity at a large scale. These include:

- Wind turbines;
- Roads;
- Underground cables and overhead medium voltage power lines (up to 33 kV);
- A substation (including buildings for operations and maintenance, workshop, storage); and
- A battery storage facility in the vicinity of the substation.

Table 1 lists these various wind farm components and their specifications, as well as a detailed breakdown of their impact footprints or sizes per wind farm. Temporary areas necessary for construction are also included. The location of these components in relation to each wind farm site is shown on Figure 4 and Figure 5 respectively.

Table 1: Project components.

Project Components	Description	Hoogland 3	Hoogland 4
Location	Central coordinates:	31°58'23.64"S, 22° 6'31.47"E	31°56'29.28"S, 22°14'23.12"E
Access	For commuter traffic and some small loads, access from the south would be via Beaufort West via the N1 and R381 travelling between Beaufort West and Loxton. For abnormal loads the main access routes for each wind farm are as follows:	Through Loxton, via R356 and south along the DR02314 and DR02312 towards HL03 and HL04	
Extent	The total area of the site being considered for developing each wind farm:	15 937 ha	18 609 ha
Number of wind turbines and generation capacity	Up to a maximum of 60 wind turbines per wind farm will be developed. The targeted nameplate generation capacity for each wind farm is up to a maximum of 420 MW.	60	60
	However, the number of turbines included in the layout for approval for each wind farm is as follows:	98	74
Wind turbine specifications	● Rotor diameter: 100 m to 195 m (50 m to 97.5 m blade / radius) ● Hub height: 80 m to 150 m ● Rotor top tip height: 130 m to 247.5 m (maximum based on 150 m hub + 97.5 m blade = 247.5 m) ● Rotor bottom tip height: minimum of 20 m (and not lower). See Figure 6.		
Turbine Foundations	Each turbine will have a circular foundation with a diameter of up to 35 m, alongside the 40 m hardstand (1400 m^2). The permanent total footprint is as follows:	8.4 ha (permanent)	8.4 ha (permanent)
Turbine Hardstands and Laydown Areas	Each turbine will have a permanent crane pad of 80 m x 40 m placed adjacent to each turbine foundation. The total permanent footprints are as follows:	19.2 ha (permanent)	19.2 ha (permanent)
	An additional 20 m x 40 m of temporary hardstand area will also be required near each of the crane pads. Further, a blade laydown area of 104 m x 20 m and an additional embankment area (where necessary due to slopes) of approximately 104 m x 5 m will be required. A temporary crane boom assembly area of 120 x 15 m will also be accommodated. Temporary areas are up to a maximum of a maximum of 5,200 m^2 per turbine. The total temporary footprints per wind farm are as follows:	31.2 ha (temporary)	31.2 ha (temporary)
Cabling	Turbines to be connected to on-site substation via up to 33 kV cables. Cables to be laid underground in trenches mainly adjacent to proposed wind farm roads (as part of the temporary impact of 'Site roads' below) but in some instances the cables will deviate from the road.	5.3 km 3.2 ha (temporary)	7 km 4.2 ha (temporary)

Project Components	Description	Hoogland 3	Hoogland 4
	Such sections of off-road cables amount to the following length and footprint:		
	Where it has been possible, cables have been routed along existing local roads. Note that cables running next to public roads will not be able to run within the road reserve, but as close as possible to the road reserve in the adjacent privately owned land. These have the following length and footprint:	24.2 km 14.5 ha (temporary)	11.5 km 6.9 ha (temporary)
Internal wind farm overhead power lines	In limited instances, overhead monopole lines will be used where burying is not possible due to technical, geological, environmental or topographical constraints. Up to 33 kV overhead power lines supported by 132 kV monopole style pylons of up to 20 m high will be required, as well as tracks for access to the pylons. The total length of the line and the footprint of the pylons and tracks are as follows:	2.7 km 1.6 ha (permanent)	5 km 3 ha (permanent)
	Where possible, to reduce areas of new impact, sections of overhead line have been routed next to proposed Eskom overhead lines. Such sections of overhead lines have the following additional length and footprint:	0 km 0 ha (permanent)	6.7 km 4.0 ha (permanent)
Site roads	The total road network for each wind farm is as follows:	112.6 km	106.1 km
	Permanent roads will be 6 m wide and over above this may require side drains on one or both sides depending on the topography. Many roads will have underground cables running next to them. The permanent footprint of the road network for each wind farm is as follows:	*90.1 ha (permanent)	* 84.9 ha (permanent)
	An up to 15 m wide road corridor may be temporarily impacted during construction and rehabilitated to allow for a 6 m road surface after construction. The temporary footprint of the road network for each wind farm is as follows:	*101.3 ha (temporary)	*95.5 ha (temporary)
Wind farm Substations	Each wind farm will have a 150 m x 75 m substation yard that will include an Operation and Maintenance (O&M) building, Substation building and a High Voltage Gantry. The area for the substation yards are as follows:	1.1 ha (permanent)	1.1 ha (permanent)
Battery energy storage system (BESS)	Each wind farm will also potentially have a ±3.5 ha area for a battery energy storage system (BESS) which may be adjacent or slightly removed from the substation depending on the local constraints. The BESS may either be connected to the wind farm substation by an underground or overhead cable or may	3.5 ha (permanent)	3.5 ha (permanent)

Project Components	Description	Hoogland 3	Hoogland 4
	require its own substation which would be located within the BESS footprint and would be connected directly to the Eskom switching station via a short 132 kV overhead line.		
Operations and maintenance (O&M) area	The O&M area will include all offices, stores, workshops and laydown area. The substation building will be housed in the substation yard.	Forms part of substation yard	Forms part of substation yard
Security	Security gate and hut to be installed at most entrances to each wind farm site (estimated as 4 entrances each at 20 m^2). No fencing around individual turbines, existing fencing shall remain around perimeter of properties. Temporary and permanent yard areas to be enclosed (with access control) with an up to 2.4 m high fence.	80 m^2	80 m^2
Temporary areas required for the construction / decommissioning phase	Each wind farm will have the following temporary construction areas: ● Temporary site camp/s areas of ±20,000 m2 ● Batching plant area of ±2,000 m2 ● General laydown area of ± 36,000 m2 ● Each wind farm will have a bunded fuel & lubricants storage facility at the site camp. Individual turbine temporary laydown areas including crane boom laydown areas, blade laydown areas and other potential temporary areas are detailed above under " turbine hardstands".	6 ha (temporary)	6 ha (temporary)
Total disturbance footprint based on a maximum of 60 turbines		156.2 ha temporary and 123.9 ha permanent	143.8 ha temporary and 124.1 ha permanent

*Note these areas represent more than will be impacted given the road values are based on all the turbines shown in the layout for each individual wind farm being constructed wherein reality only 60 of these turbines will be developed per wind farm.

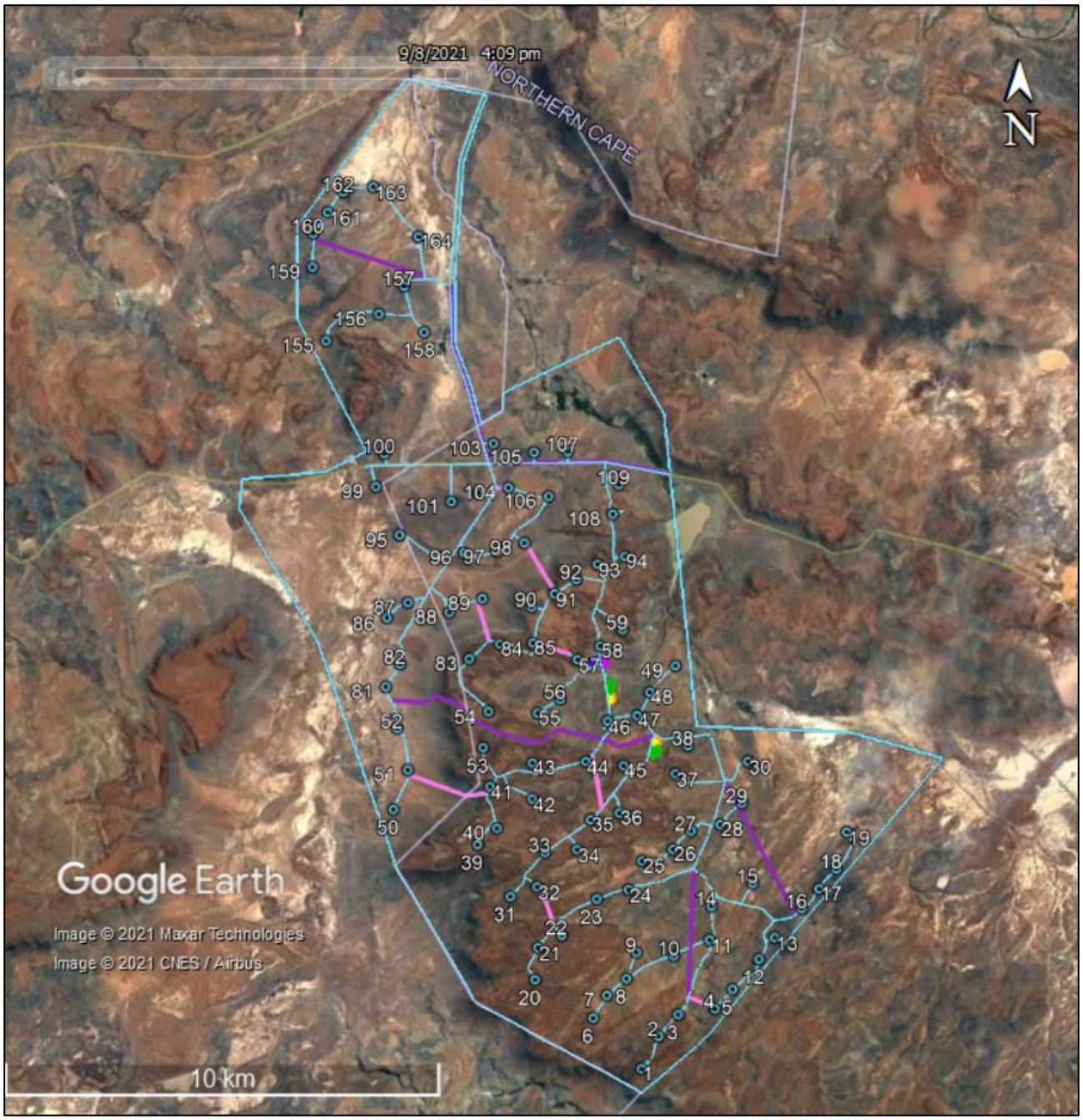


Figure 4: Layout of Hoogland 3.

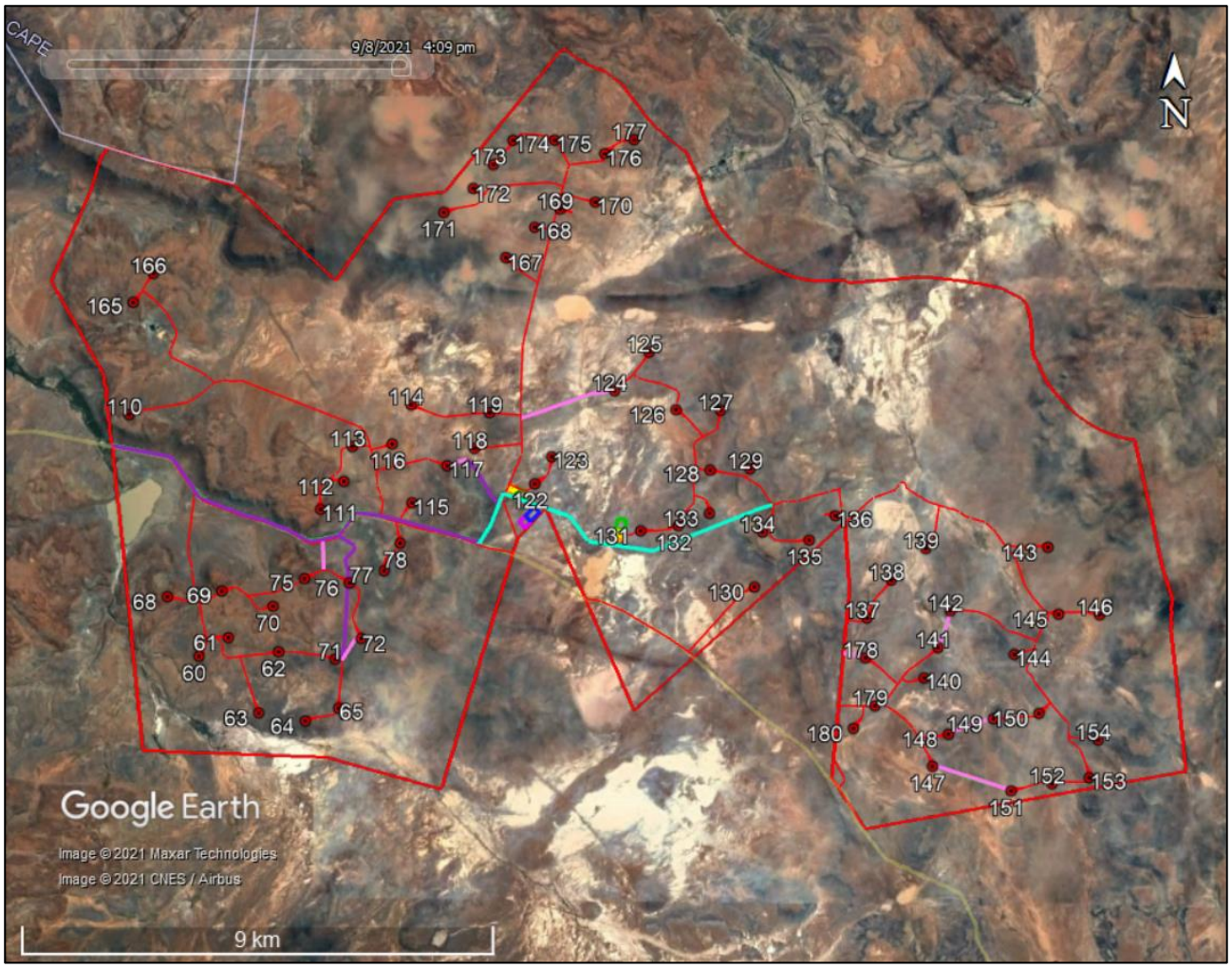


Figure 5: Layout of Hoogland 4.

1.1.2. Turbine specifications

Since the turbine technology is continually evolving it is not possible for the developer, at this early stage in the development process, to specify the exact turbine model and specification (or even know what would be available in the marketplace).

Assumptions have been made as to the maximum possible area of impact by the potential turbine blades based on a range of turbine sizes. This area of impact is referred to as the “exaggerated rotor swept area envelope”, as it 1) takes into account multiple turbine size scenarios at once, and 2) assumes each turbine has the largest blade it can from the lowest hub height and extends this all the way up to the highest hub height. This reflects an exaggerated worst-case area of impact that would never be realised in any scenario of turbine model. These specifications are described in Table 1 and illustrated in Figure 6.

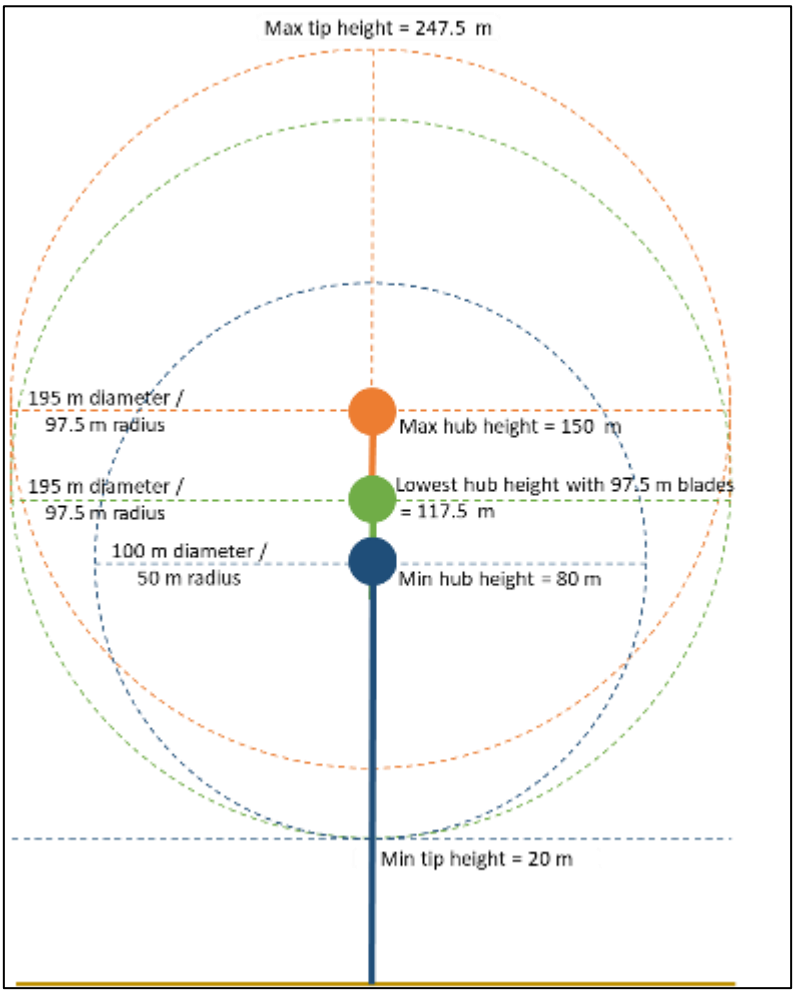


Figure 6: Exaggerated rotor swept area envelope.

1.1.3. Power transmission

Cables

Each turbine will be connected to their respective Wind Farm substation via medium voltage power lines (~33 kV lines). For the most, part cables will be laid underground in trenches (~1 m deep), generally running alongside existing or proposed internal roads, but sometimes deviating from these. In limited instances, where burying of cables is not possible due to technical, geological, environmental or topographical constraints, then short overhead power lines will be erected to traverse these constrained areas.

Internal overhead power lines will be spanned using short 132 kV type monopoles of not more than 20 m in height. The typical design for the proposed internal overhead power line monopoles is depicted in Figure 7below.

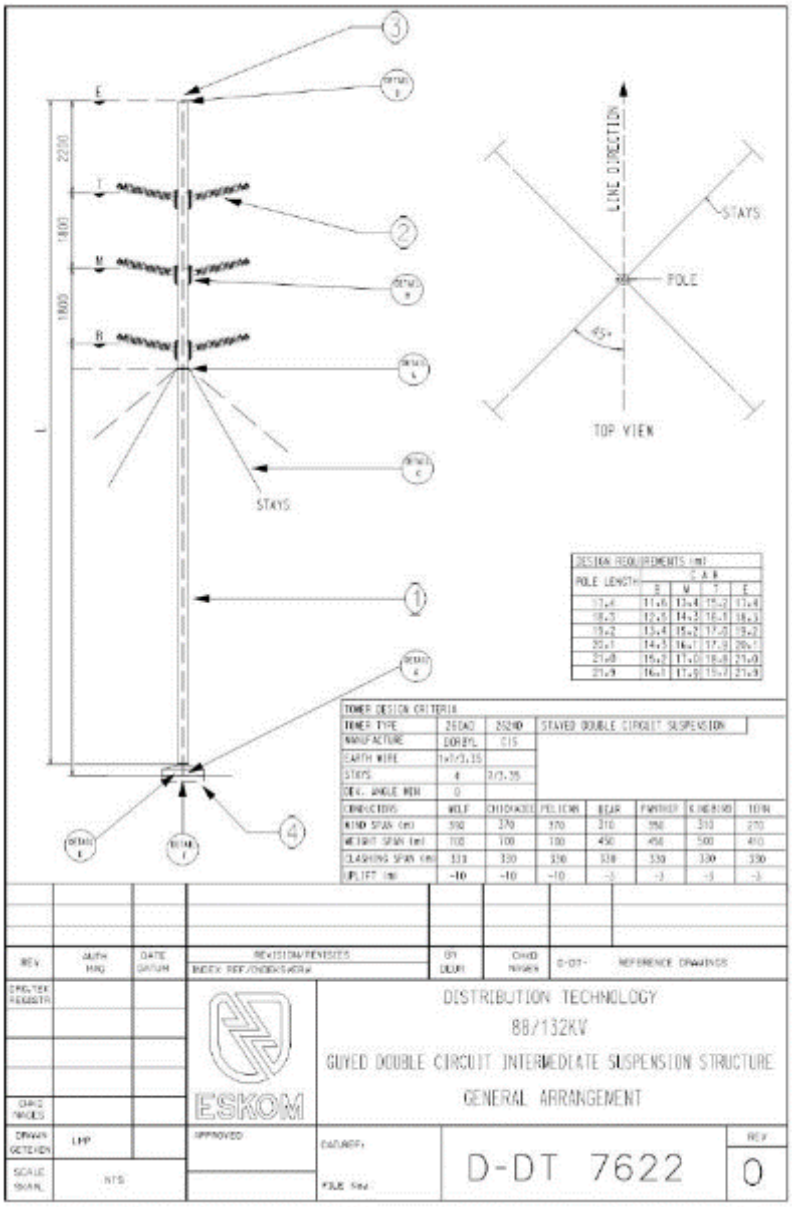


Figure 7: Typical design of the proposed monopoles to be used for the up to 33kV internal overhead power lines (where trenching is not possible)

Figure 4 and Figure 5 differentiate between 'Roads and Cables' where cables run alongside proposed or existing roads, 'Off-road Cables' where cables will not run alongside proposed or existing roads, and the 'Internal Overhead Power Lines' where trenching is not possible and overhead cables must be spanned.

Substations

The medium voltage (~33 kV) cables described above will collect at the Wind Farm Substation (with transformer) where the power will be stepped-up to 132 kV. The substation yard will house Operation and Maintenance (O&M) buildings, substation building and a High Voltage Gantry. The substation would typically include an area with a subterranean earthing mat onto which a number of concrete plinths are constructed. This, together with several earthing rods, will provide an earth for lightning and possible short circuit currents. Switching gear, step-up transformers and protection equipment are also mounted on concrete plinths as part of the substation.

1.1.4. Battery facility

Each wind farm proposal includes the possibility for the development of a battery energy storage system (BESS). This will allow for a more continuous source of electricity to the grid as battery facilities can help to smooth out the fluctuations in energy generation from the renewable energy sources and allow them to be closer to conventional generation systems in this regard.

The BESS will be located in close proximity to the wind farm substation, will be fenced off and will be linked to the substation via up to 33 kV cables. They will not have any additional office/ operation/ maintenance infrastructure. However, the BESS may require its own substation, and if this is the case this substation would include typical substation components and be located within the BESS footprint. If the BESS does have its own substation, then it will not have an up to 33 kV cable connection to the wind farm substation but would rather have a short 132 kV connection from the BESS substation to the Eskom switching station (which is situated next to the wind farm substation) and this would use monopole pylons up to 32 m in height.

The battery facility will either be Lithium Ion or Redox Flow and both technologies will be assessed as it is unknown which technology will be selected. The physical footprint regardless of technology and grid connection will be approximately 3.5 ha with a peak discharge value of 140 MWac. A brief description of each technology is provided below.

Lithium-Ion

Charged lithium ions are carried via electrolytes between anode (negative electrode) and cathode (positive electrode) within each Lithium-Ion battery cell. There are a number of different battery chemistries that are available. These cells are combined into battery modules, which are housed in battery racks, a number of which are collectively enclosed in sealed containers. These are all assembled in factories and no electrolytic liquid is handled on site. In addition to the battery racks, other components within the containers includes a HVAC or air conditioning system, a fire detection and suppression system (that normally uses inert gas), battery management system and other electrical components required to manage the batteries. The containers are normally a standard size of about 12 m long x 2.5 m wide x 2.7-3 m high. The BESS on the wind farm site will comprise multiple containers (e.g. approximately 240, with an extra 3-5 containers for electrical connections and controls), refer to Figure 4 3 for an example of an installation. The main risk to health and the environment relating to for Lithium-Ion BESS is overheating that leads to spontaneous ignition and subsequent explosion i.e. fire. Since the batteries arrive on site sealed and kept in racks inside sealed containers the risk of chemical spills is extremely low. Figure 8 illustrates this system.

Figure 8: Example of a 15-container Lithium-Ion BESS installation.

Redox Flow

Redox flow batteries are charged and discharged by means of the oxidation–reduction reaction of a chemical whereby ions are transferred from one element to another. Redox flow batteries therefore comprise an electrochemical battery cell and a flowable electrolyte which is pumped through the cell for charging or discharging electricity and is stored in electrolyte tanks (one tank acting as a cathode and one as an anode). The most common Flow battery electrolytes are based on a water solution including vanadium, zinc or iron salts. Electrolyte storage tanks and cells are typically installed in specially designed steel containers providing secondary and tertiary containment measures (double wall). The containers are filled with electrolyte on site during project installation. Adjacent to this is another container housing the conversion systems and auxiliary systems necessary for the operation of the system (these include HVAC, fire detection and suppression, leak detection and suppression, BESS management), refer to Figure 9. The height of the installation will not exceed 3 m. The main environmental risk specific to Flow batteries during construction and operation is the accidental leak or spillage to the environment of the liquid electrolyte. The risk of fire and explosion is low. Figure 9 illustrates this system.

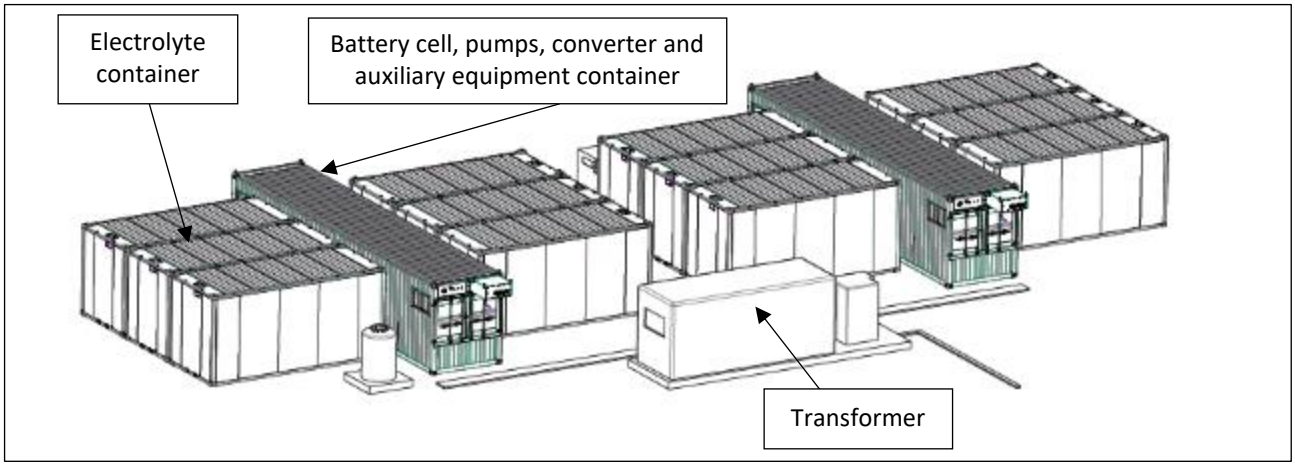


Figure 9: Indicative layout of a Flow battery of approximately 0.1 ha.

1.1.5. Grid Connection (not included in this report)

The remaining electrical infrastructure is not part of the Hoogland Wind Farm applications and is subject to a separate environmental authorisation process. This includes switching stations (adjacent to each wind farm substation) and a 132 kV line supported largely by 132 kV monopole pylons that connects to the Nuweveld Collector Substation. This will be transferred to Eskom once operational.

1.1.6. Timeframes

The formal EIA process typically takes 1 to 2 years to complete and if authorised the developer / applicant would then prepare the project for submission to the REIPPPP during a forthcoming bidding window. It is currently unknown when the future bidding windows will be. It must be noted that with the energy market in South Africa being deregulated, there is also a possibility that wind farms will be developed for private off-take (energy sold to private entities).

Should the project be selected and given “preferred bidder” status the project would then move into the next phase which includes obtaining other permits, licenses, including Water Use Licences, Rezoning permission, and other consents before reaching financial close which is normally less than 1 year after preferred bidder status is announced. Thus, construction is likely to commence no earlier than about 1 to 1.5 years after the issuing of an EA, but this is all dependent on how soon after obtaining the EA the next bidding window is and what the requirements are in the bidding round. The construction period for the facility is estimated to be between 18 to 24 months.

The operational life of a wind energy facility is typically around 20 years where after it could be refurbished / upgraded, or decommissioned depending on the situation at the time, and all subject to the relevant environmental processes and authorisations.

1.1.7. Identification of alternatives

A comprehensive iterative design process has been undertaken to inform the respective Wind Farm layouts and associated Grid Connection infrastructure for the Hoogland Projects.

Integrating the screening and assessment of environmental and social constraints alongside the technical components of the project early in a project lifecycle allowed for the reduction of risks to the project and supported the application of the mitigation hierarchy by demonstrating the avoidance and minimisation of impacts. This integrated design approach negates the need for the assessment of alternatives in the detailed EIA process (as per NEMA) because it is unlikely that there will any fatal flaws.

However, the preferred layouts of the Hoogland Wind Farms, and respective Grid Corridors, will each be assessed against the 'no-go' alternative. The 'no-go' alternative is the option of not constructing the Project where the status quo of the current farming activities on the site would prevail.

1.1.8. 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 conduct desktop research and a field assessment of the study areas to identify heritage sites. All sites were to be recorded with spatial data provided to the developer to facilitate the design of a sensitive layout. Subsequent deliverables include:

- Screening study (whole project)
- Site Sensitivity Verification reports (one per cluster and one per grid connection);
- Pre-application assessment reports (one per cluster and one per grid connection);
- Scoping report (Hoogland Northern cluster only); and
- Final impact assessment reports (one per cluster and one per grid connection).

NID applications were submitted for each of the six projects. The responses for Hoogland 3 and Hoogland 4 are relevant here and are shown below.

NOTIFICATION OF INTENT TO DEVELOP: PROPOSED HOOGLAND 3 WIND FARM AND ASSOCIATED GRID CONNECTIONS, BETWEEN LOXTON AND BEAUFORT WEST IN THE NORTHERN AND WESTERN CAPE PROVINCES ON REMAINDER OF PLATFONTEIN 28, REMAINDER OF PORTION 1 OF PLATFONTEIN 28, PORTION 3 OF PLATFONTEIN 28, PORTION 4 OF PLATFONTEIN 28, REMAINDER OF PORTION 5 OF PLATFONTEIN 28, PORTION 7 OF PLATFONTEIN 28, PORTION 8 OF PLATFONTEIN 28, SWART RUG 88, BEAUFORT WEST, SUBMITTED IN TERMS OF SECTION 38(1) OF THE NATIONAL HERITAGE RESOURCES ACT (ACT 25 OF 1999)

CASE NUMBER: 21060103SB0818E

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 30 August 2021.

You are hereby notified that, since there is reason to believe that the proposed Hoogland 3 Wind Farm And Associated Grid Connections, Between Loxton And Beaufort West In The Northern And Western Cape Provinces On Remainder Of Platfontein 28, Remainder Of Portion 1 Of Platfontein 28, Portion 3 Of Platfontein 28, Portion 4 Of Platfontein 28, Remainder Of Portion 5 Of Platfontein 28, Portion 7 Of Platfontein 28, Portion 8 Of Platfontein 28, Swart Rug 88, 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.

(Our emphasis)
This HIA must in addition have specific reference to the following:

- Visual impact assessment study
- Archaeology impact assessment study
- Palaeontological impact assessment study

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.

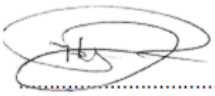
The comments of relevant registered conservation bodies; all Interested and Affected parties; and the relevant Municipality must be requested and included in the HIA where provided. Proof of these requests must be supplied.

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.



Michael Janse van Rensburg
Chief Executive Officer: Heritage Western Cape

NOTIFICATION OF INTENT TO DEVELOP: PROPOSED HOOGLAND 4 WIND FARM AND ASSOCIATED GRID CONNECTIONS, BETWEEN LOXTON AND BEAUFORT WEST IN THE NORTHERN AND WESTERN CAPE PROVINCES. REMAINDER OF PORTION 1 OF PLATFONTEIN 28, PORTION 2 OF PLATFONTEIN 28, PORTION 3 OF PLATFONTEIN 28, PORTION 1 OF THE ROSARY 32, ANNEX KAROO PLAATS 33, REMAINDER OF DRIEFONTEIN 37, REMAINDER OF PORTION 1 OF EYERKUIL 39, REMAINDER OF PORTION 2 OF EYERKUIL 39, PORTION 3 OF EYERKUIL 39, REMAINDER OF ADJOINING QWAGGAS FONTEIN 83, BEAUFORT WEST, SUBMITTED IN TERMS OF SECTION 38(1) OF THE NATIONAL HERITAGE RESOURCES ACT (ACT 25 OF 1999)

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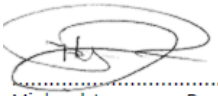


Michael Janse van Rensburg
Chief Executive Officer: Heritage Western Cape

1.3. Scope and purpose of the report

An 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/comments can be issued by them for consideration by DFFE who will review the EIA and grant or refuse authorisation. The HIA report will outline any management and/or mitigation requirements that will need to be complied with from a heritage point of view and that should be included in the conditions of authorisation should this be granted.

1.4. Specialist credentials

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.

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/authorities 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, the HL03 project is subject to an EIA, while the HL04 project is subject to a Basic Assessment. The present report provides the heritage component for both. SAHRA (for HL03 only) and HWC (for HL03 and HL04) are required to provide comment on the proposed project in order to facilitate final decision making by the DFFE.

2.2. Application timeline

The application to DFFE under NEMA is currently in the pre-application phase with submission of an Application for Environmental Authorisation estimated to be mid-2022.

3. APPROACH

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 2. Data were also collected via a field survey.

Table 2: 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
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

Data / Information	Source	Date	Type	Description
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.

3.2. Field survey

The site was subjected to a detailed foot survey on 29-31 March, 18 and 22 May and 21-23 September 2021. Three of the days had two archaeologists (Anja Huisamen and the author) on site. A helicopter flight around the broader study area was also undertaken in May 2021 to familiarise specialists with the landscape. Observations from earlier (2019) work in the area have also been included in this report where relevant. The surveys were during various seasons but, in this 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 Global Positioning System (GPS) receiver set to the WGS84 datum (Figure 10). Photographs were taken at times in order to capture representative samples of both the affected heritage and the landscape setting of the proposed developments.

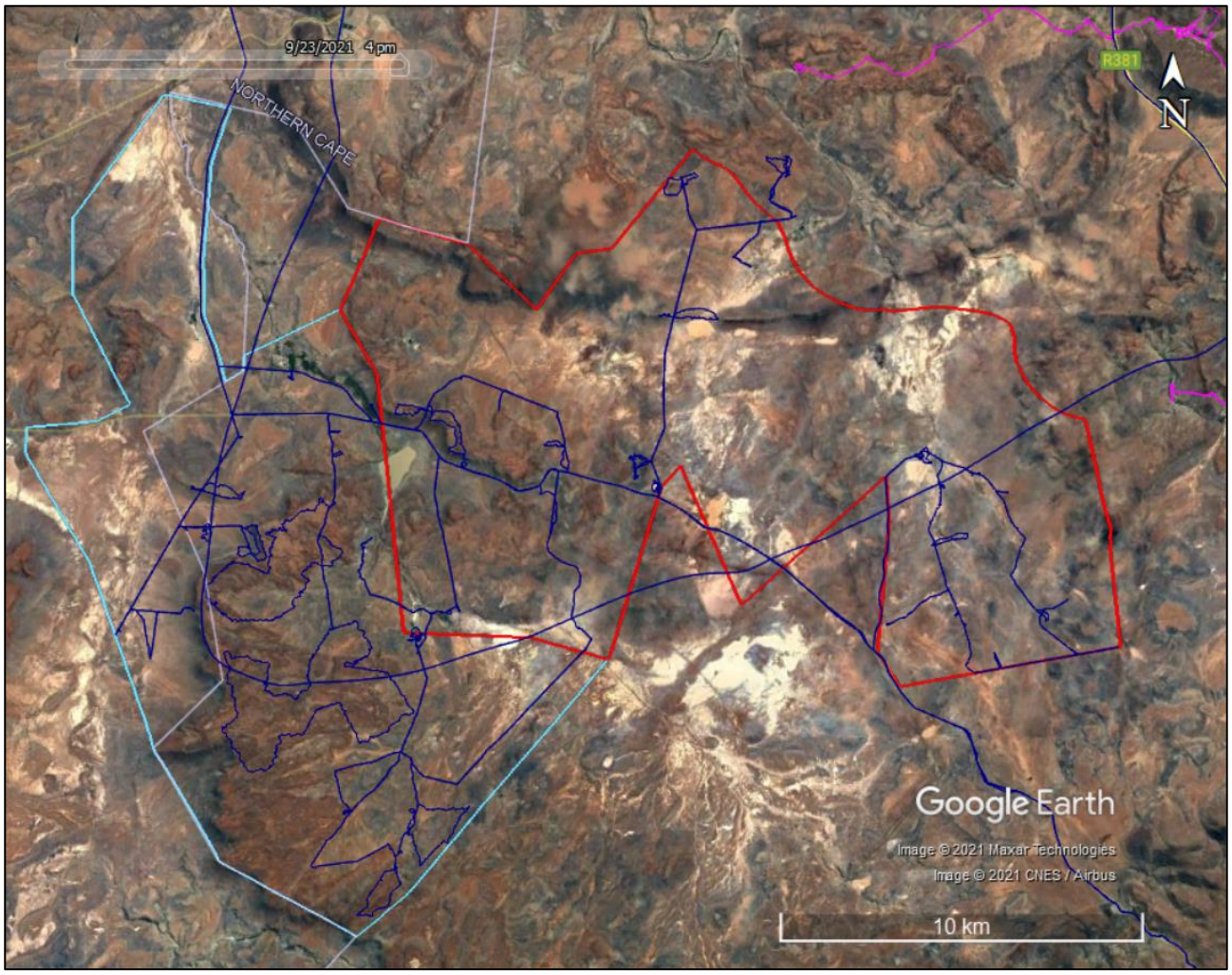


Figure 10: Aerial view of the study areas (turquoise polygon = HL03, red = HL04) showing the survey tracks (blue [2021] and purple [2019] lines).

Early surveys aimed to document as many heritage resources as possible so as to be able to produce the required sensitivity data for screening purposes. Subsequent surveys focused more strongly on turbine locations and also aimed to fill in any gaps in coverage in areas favourable for development. Because of the technical process followed to design a wind farm layout, turbines are more difficult to move during the preconstruction micrositing than roads. For this reason, more focus was placed on turbines than on roads. Areas not under consideration for development received minimal or no survey coverage. Survey coverage was also generally less dense on the open plains because they were found to be less sensitive than the hilly areas and valleys.

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

3.3. Specialist studies

As per the HWC NID responses, each of the projects required specialist studies of archaeology, palaeontology and visual impacts. While the former is conducted by the present author and included within the body of the HIA, palaeontology is being considered by Dr John Almond of Natura Viva cc and visual impacts are assessed by Bernie Oberholzer and Quinton Lawson of QARC.

3.4. Impact assessment

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

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. SAHRA (2007) has formulated its own system[1] for use in provinces where it is a 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). 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).

3.6. Consultation

The draft HIA was submitted to relevant interested and affected parties as required by HWC in their response to the NID application (Section 1.2). The report was also included in the main public participation process (PPP) required under NEMA as part of the EIA. SAHRA only requires the latter.

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. The site is very extensive and a comprehensive survey was impossible. It is assumed that the adopted survey methodology (as described in Section 3.2) has recorded a good sample of the area's heritage and allowed for a reliable assessment of the potential impacts of the development. It is further assumed that the layouts provided for assessment are an accurate reflection of the final proposal.

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

4. PHYSICAL ENVIRONMENTAL CONTEXT

4.1. Site context

The wind farm sites are located in a rural/natural context used for livestock (sheep and cattle) and game rearing, although small patches of land either are cultivated or have been cultivated at some point in the last several decades. All local roads are gravel and farm complexes are few and far between. Human modification of the environment, aside from roads and occasional farm complexes, some of which have associated agricultural lands, is limited to wind pumps, reservoirs, dams and farm fences. The HL04 site is within the recently gazetted Beaufort West Renewable Energy Development Zone (REDZ), while HL03 falls only partly within this zone (Figure 11). The Central Electricity Grid Infrastructure (EGI) corridor covers parts of both study areas.

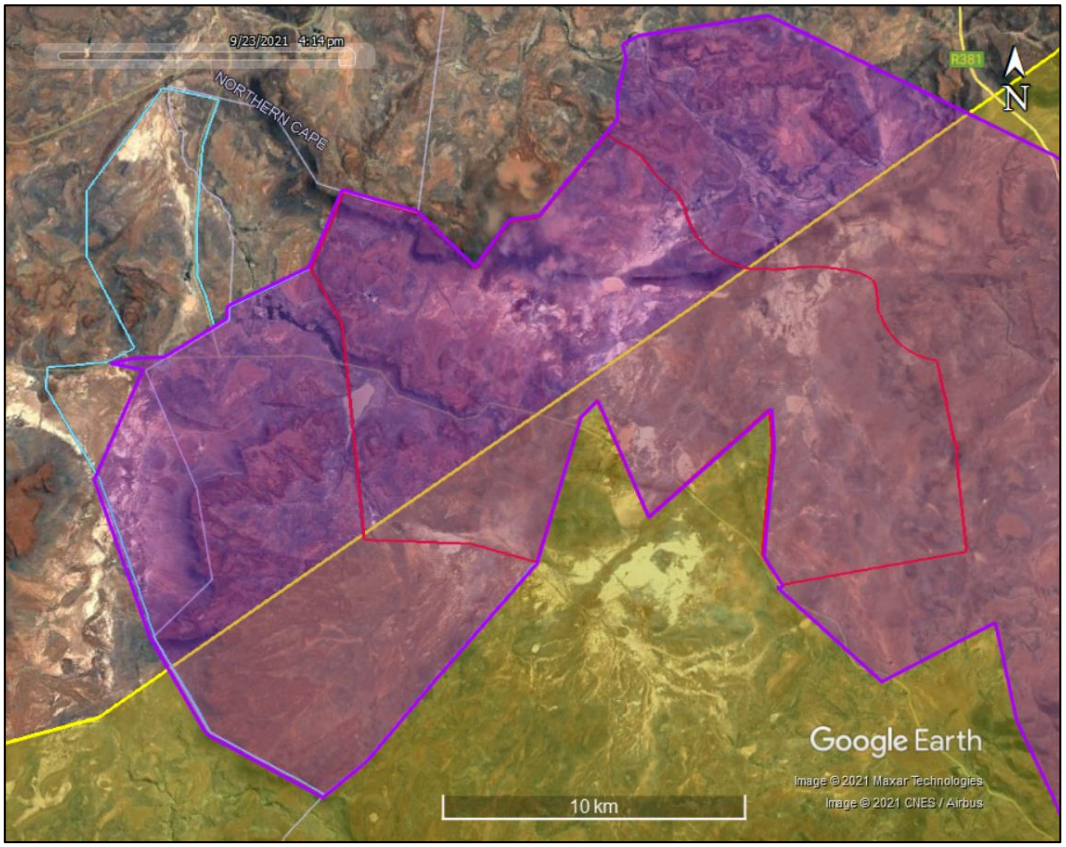


Figure 11: Aerial view of the HL03 and HL04 study areas showing the location of the Beaufort West REDZ covering all of HL04 but only part of HL03 (purple shaded polygon) and the Central EGI corridor covering parts of both study areas (yellow shaded polygon).

4.2. Site description

The wind farm sites are located north of the highest part of the Great Escarpment on land varying in elevation from 1400 m above mean sea level (amsl) to 1550 m amsl. Large parts of the overall study area lie on extensive flat, silty plains and these are bounded variably by dolerite dykes that form small or large ridges or hills and low sandstone scarps. In places shale is visible on the surface but this is largely limited to riverbeds. It is generally very hilly and rocky, although the majority of the rocks do not form cliffs but break into pieces through erosion and weathering. The exception is the bands of sandstone that occur in places and are more resistant to weathering. These create low

cliffs (in the order to 1 to 5 m high and sometimes result in the formation of rock shelters. Narrow, incised valleys with well-defined rivers are rare. Vegetation tends to be relatively sparse due variably to the elevation and exposure, limited rainfall and sometimes very rocky substrates. Figure 12 to Figure 16 and Figure 17 to Figure 20 provide a series of views across the HL03 and HL04 study areas respectively to show the general character of the landscape.

Figure 12: Looking south along a dolerite ridge in the centre of the HL03 site.

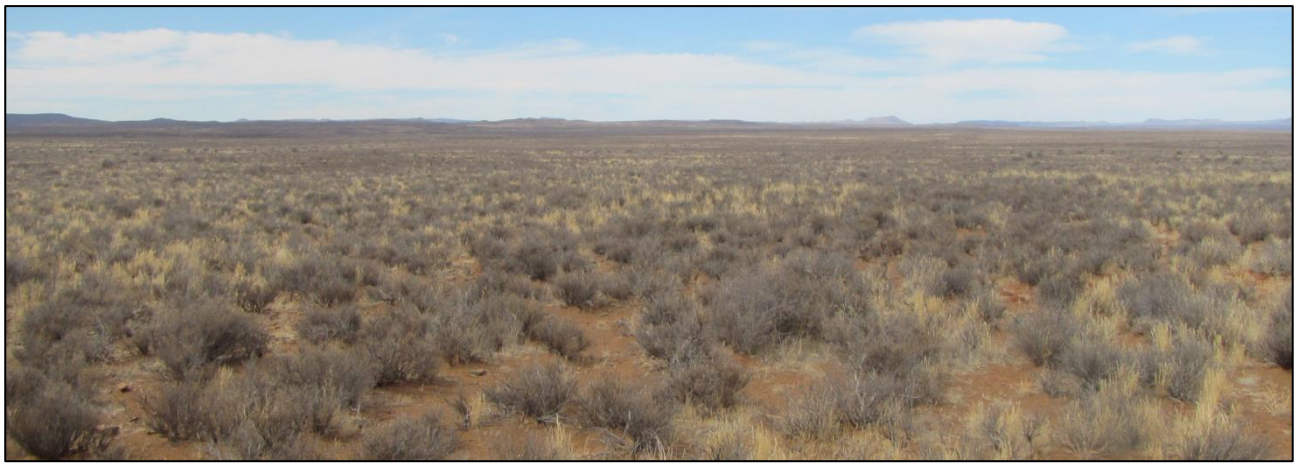


Figure 13: Looking east across the flat plains above (i.e. east of) the dolerite escarpment in the centre of the HL03 site.

Figure 14: Looking north across the flat plains above (i.e. east of) the dolerite escarpment in the southern part of the HL03 site. The pale grass marks a very ephemeral watercourse/floodplain.

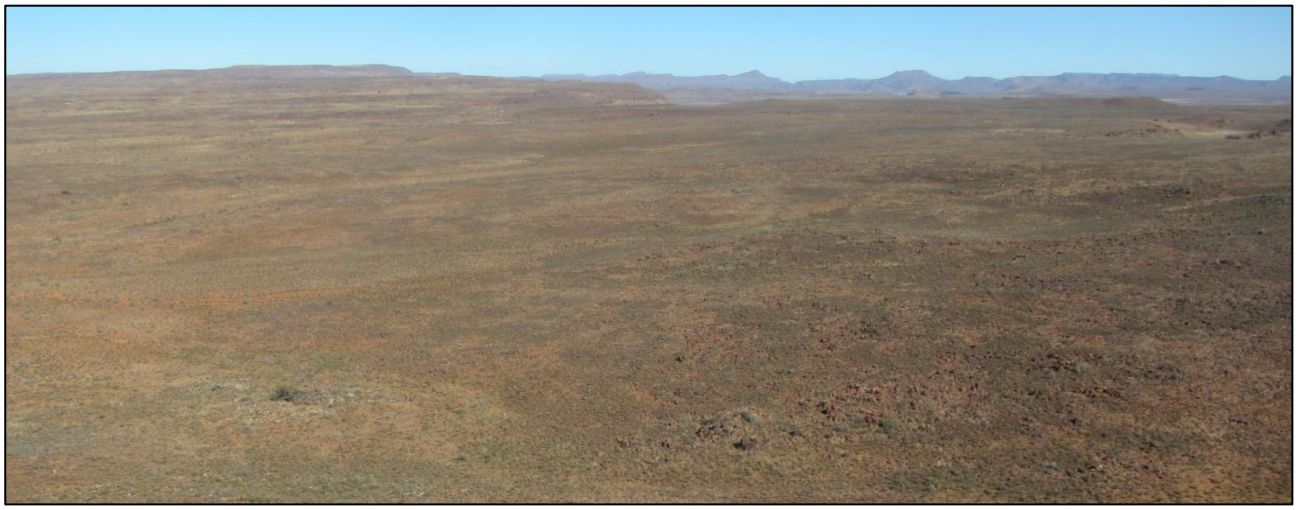


Figure 15: Aerial view towards the south across the high-lying dolerite escarpment in the southern part of the HL03 site.

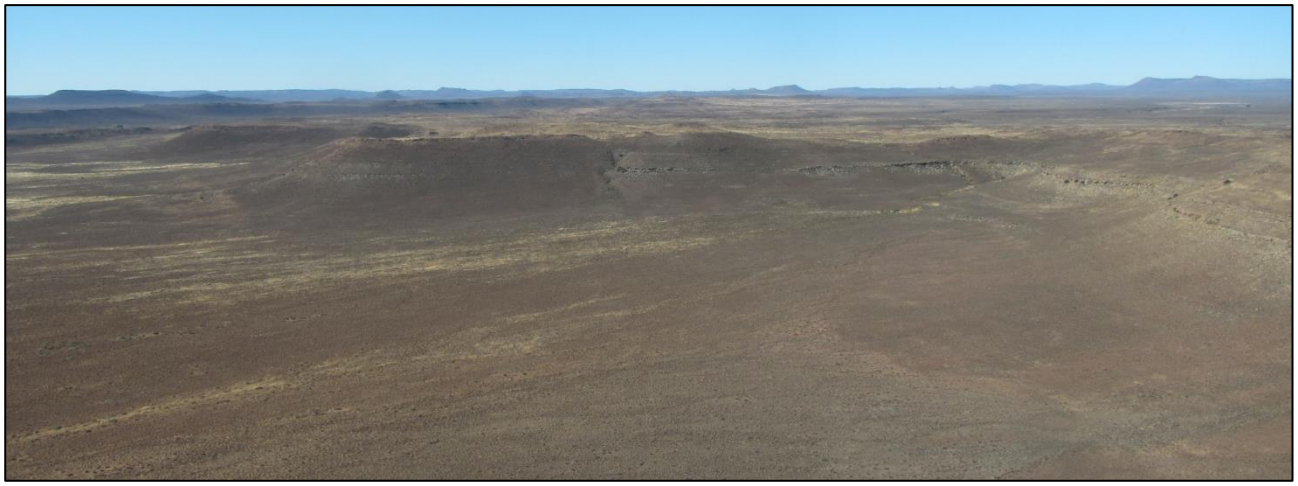


Figure 16: Aerial view towards the east in the central part of the HL03 site along a valley and showing the higher-lying dolerite hills in the middle ground.

Figure 17: Looking east along a sandstone scarp in the far western part of the HL04 site.

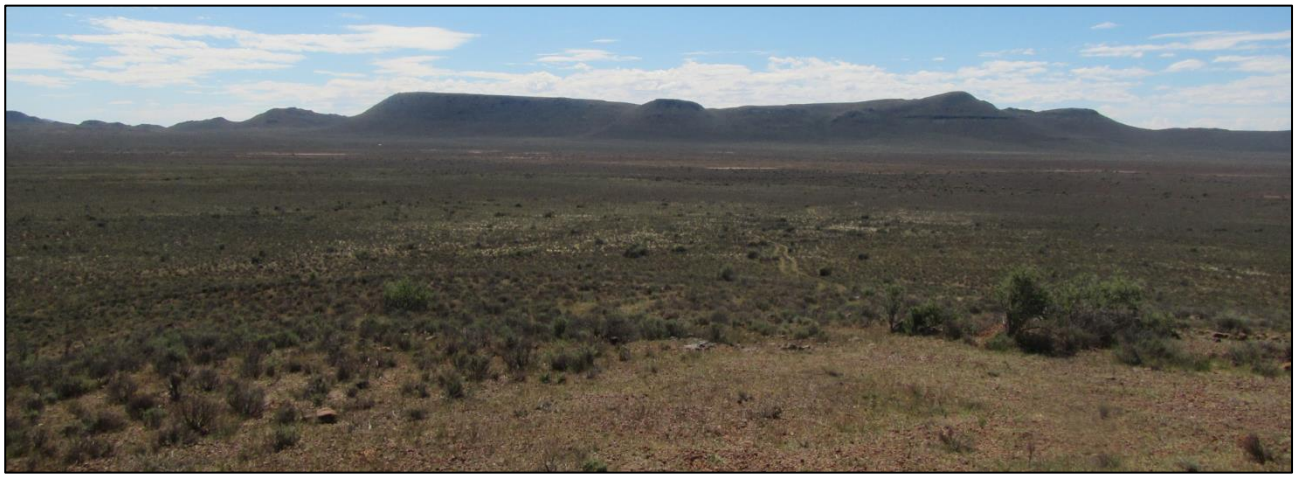


Figure 18: Looking north in the western part of the HL04 site across a plain towards the dolerite escarpment at the northern edge of the site.

Figure 19: Looking southwest across a plain in the far northern part of the HL04 site.

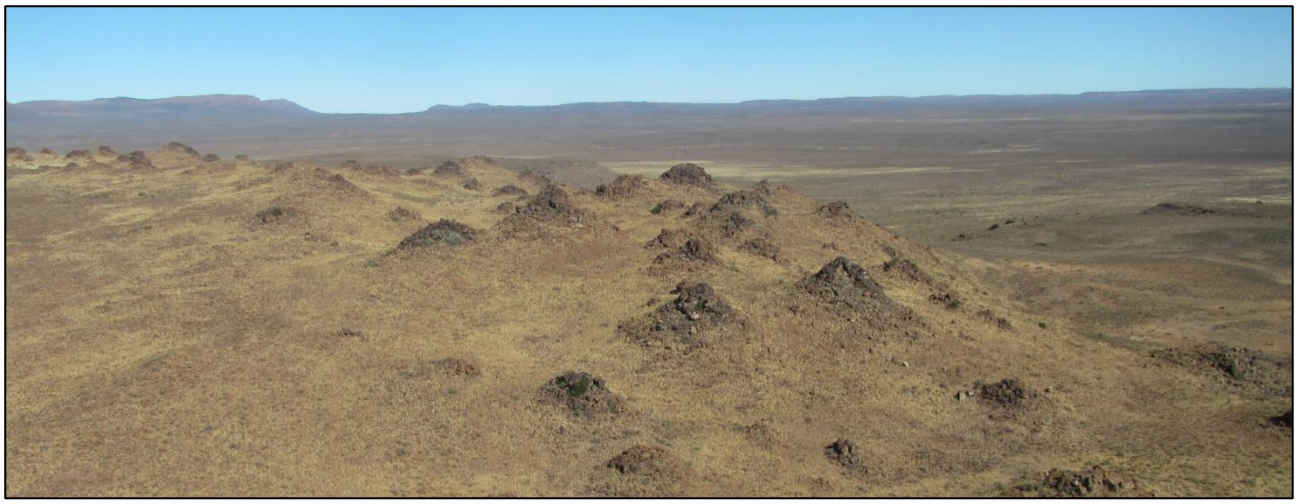


Figure 20: Aerial view towards the south through the eastern part of the HL04 site across the top of a dolerite ridge with an extensive plain towards the southwest.

5. FINDINGS OF THE HERITAGE STUDY

This section describes the heritage resources recorded in the study area during the course of the project.

5.1. Palaeontology

The SAHRIS Palaeosensitivity map shows both study areas to be of largely very high sensitivity but with patches of moderate and zero sensitivity (Figure 21 and Figure 22).

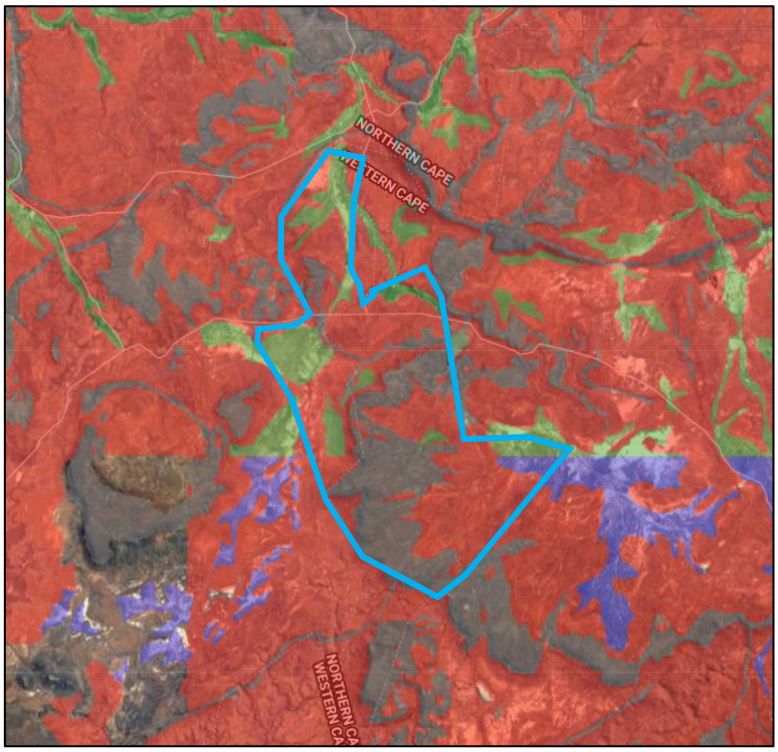


Figure 21: Extract from the SAHRIS Palaeosensitivity map showing the HL03 study area to be of very high, moderate and zero palaeontological sensitivity (red, green and grey shading respectively). Note that the discordance between blue and green is due to a mapping error within SAHRIS.

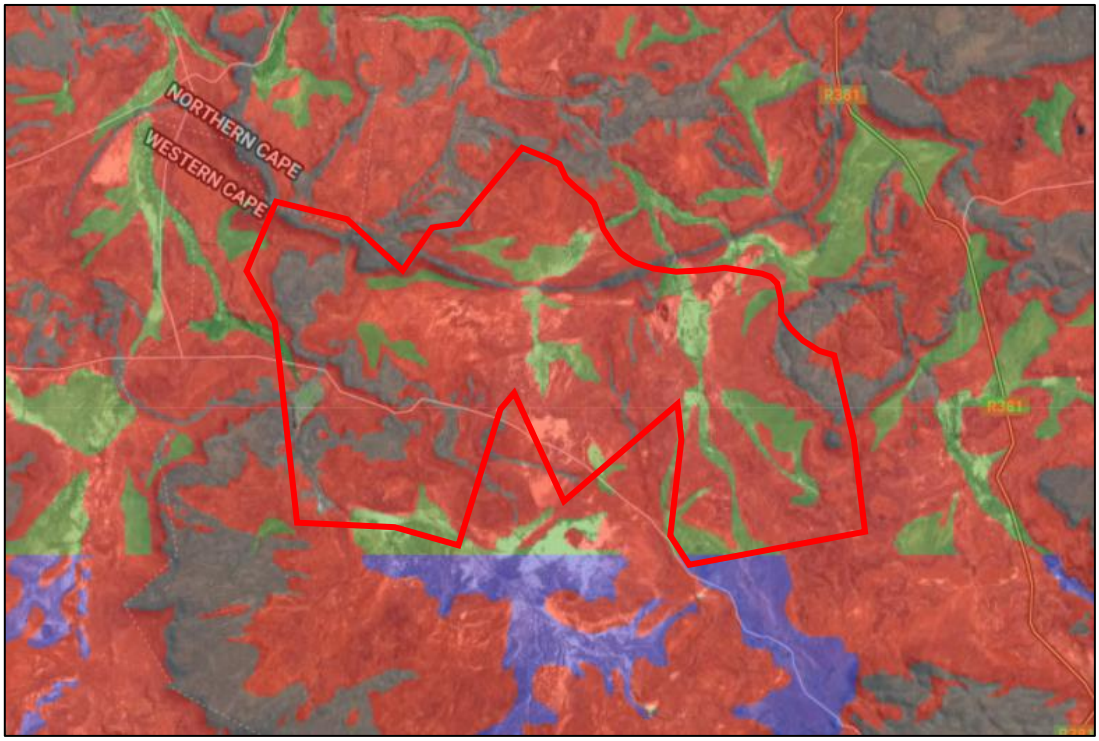


Figure 22: Extract from the SAHRIS Palaeosensitivity map showing the HL04 study area to be of very high, moderate and zero palaeontological sensitivity (red, green and grey shading respectively).

Almond (2021:i) found that the study area "is underlain by continental sediments of the Lower Beaufort Group (Karoo Supergroup) of Middle to Late Permian age." He notes that existing records of fossil sites are rare from the area and that his surveys produced relatively few new sites. Finds included several tetrapod skulls and post-cranial skeletal remains with these being mostly "small-bodied therapsids such as dicynodonts and therocephalians, numerous tetrapod burrow casts, as well as low diversity trace fossil assemblages but only rare, poorly-preserved fossil wood with no other plant material."

He concludes that "well-preserved fossils of scientific and conservation interest are remarkably rare within the project area as a whole. This is attributed to (a) poor levels of bedrock exposure associated with generally low relief and pervasive cover by largely unfossiliferous superficial sediments; (b) extensive dolerite intrusion which has "sterilized" large volumes of potentially fossiliferous bedrocks through thermal metamorphism, leaching and secondary mineralisation, while the large dolerite outcrop areas in the uplands are completely fossil-free; (c) highly impoverished fossil biotas within the Poortjie Member (lowermost Teekloof Formation) stratigraphic interval that are associated with the catastrophic end Middle Permian Mass Extinction Event of ~260 Ma."

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). In this dry landscape, LSA archaeological sites are well-known to be focused most strongly on water sources. This pattern was well demonstrated locally by Orton (2021a, 2021b, 2021c, 2021d), but the density of sites found was quite low. These sites are usually scatters of stone artefacts, 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).

The Roggeveld Mountains in the Komsberg REDZ, some 150 km along the escarpment to the southwest, have been extensively studied and also show a very limited amount of Stone Age archaeology. Van der Walt (2016) found an area just above the escarpment to have very few stone artefacts. Hart (2015), working just south of the escarpment edge, noted in his study that precolonial remains were entirely absent and cited the lack of suitable stone for artefact manufacture as the main reason. Orton (2017) working both above and below the escarpment (north and east of Hart's (2015) study area) also noted a remarkable paucity of Stone Age materials but did record a very impressive precolonial kraal complex with minimal associated LSA materials on high ground above the escarpment, and one small geometric tradition rock painting at the base of the escarpment closer to Merweville. 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. Some 95 km northeast of the present study area, Halkett and Webley (2011) noted fairly widespread background scatter artefacts all of which they attributed to the MSA. Further east, Hart (2016) found Stone Age traces (other than rock art) to be generally quite rare and generally limited to artefact scatters close to rivers.

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 75 km to the east-southeast and 155 km to the north-northeast of the present study area respectively, but Orton (2021b) recorded two further examples in the Nuweveld, 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 three engraved 'fine line' tradition sites on record from the Nuweveld (Orton 2021a, 2021b, 2021c, 2021d). 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 23). Van der Walt (2016) found a rock shelter with fineline paintings at the head of a river valley leading off the escarpment in the Komsberg. About 120 km east of the present study area, Hart (2016) noted that hundreds, if not thousands, of rock art sites occurred in his study area. Most were engravings on dolerite outcrops with many of them being heavily patinated. However, younger images extending into the recent historical past were also documented. He also found an exceptional painted site that was layered with paintings of various ages. Unusually, this site also included engravings on its walls. 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 23: Extract from a map showing the distribution of geometric tradition rock art. Source: Smith & Ouzman (2004: fig. 9). The present study area is in the red circle, while Hart's (2016) observation lies to the east of the 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). To the west, in the Komsberg REDZ, Hart (2015) found the remains of stone ruins to be very common. He attributed these to the Trekboers who colonised the area in the 18th and 19th centuries. He noted kraals, stockposts and occasional farmsteads. Also in that area, Van der Walt (2016) found very few ruins but some were the remains of Anglo-Boer War fortifications. Not far to the east, Orton (2017) recorded stone-built ruined structures including two small farm complexes at the foot of the escarpment and a few other indeterminate small structures that were likely shepherd's huts both above and below the escarpment.

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 24 and Figure 25).

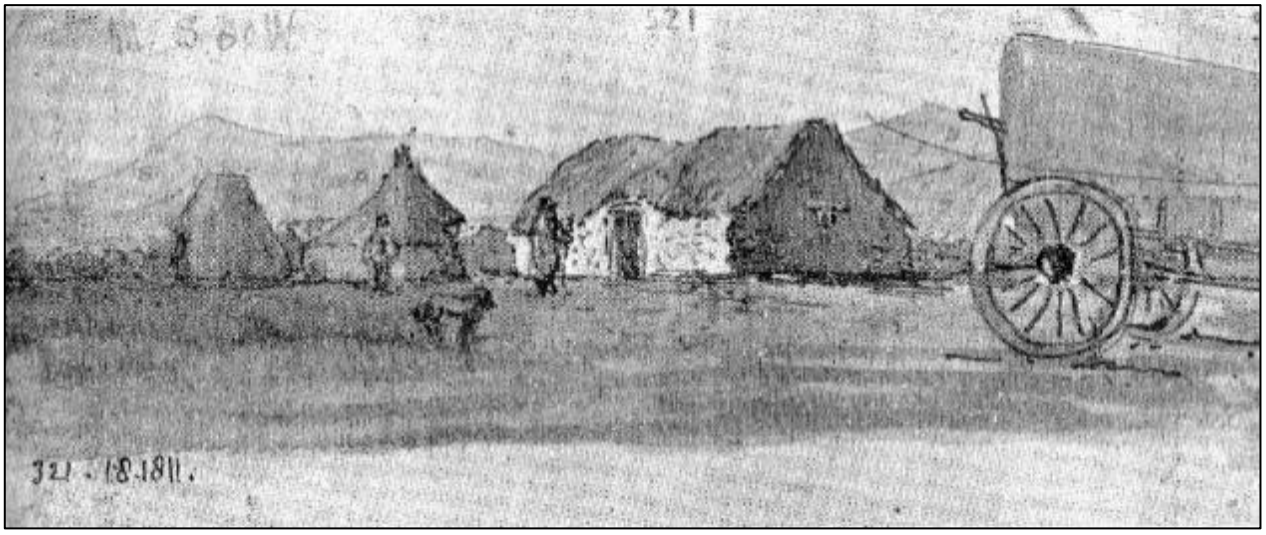


Figure 24: Drawing of an early 19th century trekboer farmhouse by William Burchell. Source: Van Zyl (1975:103).

Figure 25: 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 (Figure 26 & Figure 27). 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.

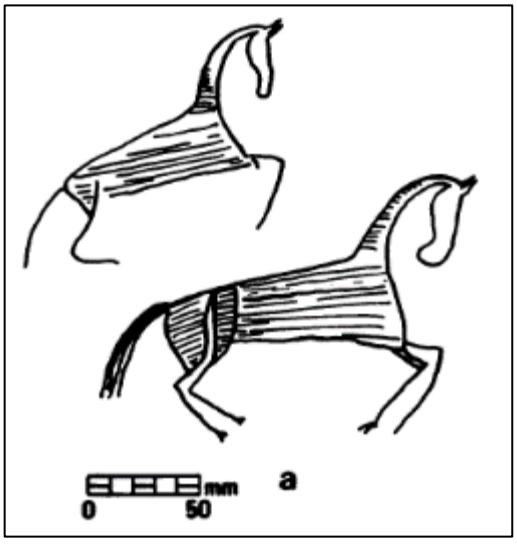


Figure 26: Horse engravings from the Beaufort West area. Source: Morris (1988: fig. 3a).

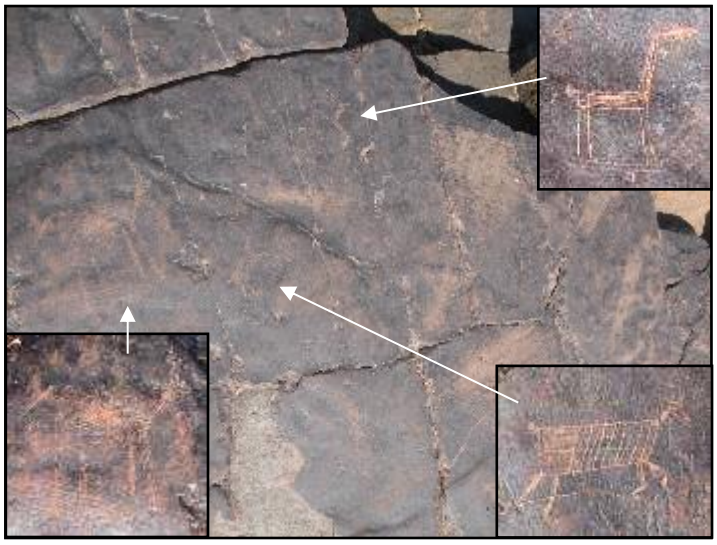


Figure 27: Horse engravings from east of Beaufort West. Source: Orton (2010: fig. 44).

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 Hoogland 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

The study area has been found to be rich in archaeology, but with sites being in clusters that are often quite far apart. The vast majority of the recorded archaeology dates to the colonial period but Stone Age sites were also present. Appendix 2 lists and describes all the finds with the highlights being presented and illustrated in this section.

The vast majority of the Stone Age finds were from the LSA, although occasional finds of older stone artefacts were also noted. One such scatter in HL04 was at the base of a sandstone scarp with the heavy patination on the artefacts indicating their relatively great age – the artefacts no doubt include MSA pieces, but some of the larger flakes could well indicate an ESA origin (waypoint 1550; Figure 28). Background scatter artefacts (essentially precolonial litter) were generally uncommon, but when such artefacts were found they tended to be in areas with a light gravel covering and were very ephemeral. These materials are all likely to be of Pleistocene age and, because of their small numbers, are of no consequence. One such ephemeral scatter was found on a flat, silty area in HL04 at waypoint 1796 and included a clear handaxe which dates from the ESA (Figure 29).

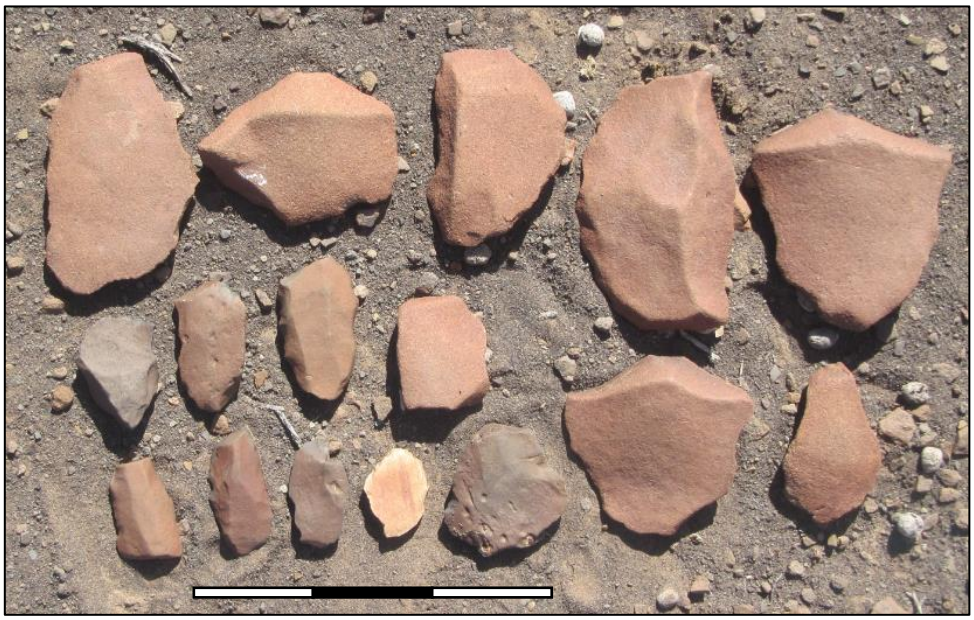


Figure 28: Collection of very well-patinated sandstone flaked stone artefacts dating to the MSA and ESA (waypoint 1796 in HL04). Scale = 5 cm.

Figure 29: Collection of very well-patinated sandstone flaked stone artefacts dating to the MSA and ESA (waypoint 1796 in HL04). The central artefact in the bottom row is a handaxe. Scale = 5 cm.

A few proper LSA occupation sites were found, but most were surface scatters. Figure 30 shows artefacts from a dense scatter located at a gap in a dolerite dyke in HL04. A dam has been built behind the dyke now, but presumably in the past an ephemeral stream flowed through the gap making this location attractive for settlement. Another very dense scatter was found on the bank of a larger stream in HL04 but, due to it being very late in the day, it could not be properly examined (Figure 31). A large boulder at the foot of a larger-than-usual sandstone scarp in HL04 had some historical stone walling (Figure 32) but more importantly there was a large scatter of LSA material (Figure 33). Most artefacts were of hornfels and a very dense scatter of ostrich eggshell was seen in one place. The third site highlighted here was a large, dense scatter some 25 m across. It was located on the edge of a river floodplain, but about 170 m away from the riverbed itself. The scatter included many stone artefacts, mostly in hornfels, a potsherd, some ostrich eggshell beads (Figure 34) and a lower grindstone with a light groove in it (Figure 35).

Figure 30: LSA artefact scatter at waypoint 1613 in HL04.

Figure 31: LSA artefact scatter at waypoint 1675 in HL04.

Figure 32: The sandstone boulder with LSA artefacts at waypoint 1549 in HL04. Historical walling also occurs here.

Figure 33: Finds alongside the boulder at waypoint 1549 in HL04.

Figure 34: Stone artefacts, ostrich eggshell fragments, and bead from waypoint 211 in HL04. Scale in 1 cm intervals.

Figure 35: A lower grindstone at waypoint 211 in HL04. Scale in 1 and 5 cm intervals.

A rock shelter was located at waypoint 1652 in the scarp above the boulder site at waypoint 1549 in HL04. It too had some stone walling in it which was likely historical (Figure 36). However, within the shelter there was some pottery, including a large fibre-tempered sherd (Figure 37), and ostrich eggshell along with rare stone artefacts. An ostrich eggshell fragment had cross-hatched engraving on its inner surface (Figure 38). The talus slope, however, was littered with many thousands of ostrich eggshell fragments (Figure 39).

Figure 36: The rock shelter and walling at waypoint 1549 in HL04.

Figure 37: Fibre-tempered potsherd at waypoint 1549 in HL04. Scale in cm.

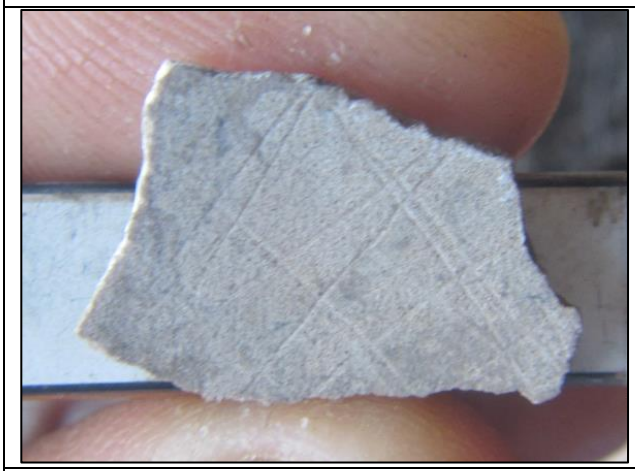


Figure 38: Ostrich eggshell with cross-hatching on its inner surface at waypoint 1549 in HL04.

Figure 39: Abundant ostrich eggshell on the talus slope at waypoint 1549 in HL04. Scale in cm.

A number of engravings deemed to be from the LSA have also been located. Many are poorly preserved and difficult to photograph adequately. Figure 40 shows a dolerite slab at waypoint 1574 from HL03 with many engravings on it. The majority are historical but a very clear scraped eland engraving dating to the LSA is clearly visible. It is overprinted by the later historical scratched images. Figure 41 to Figure 43 show three further LSA engravings, all of the from HL03.

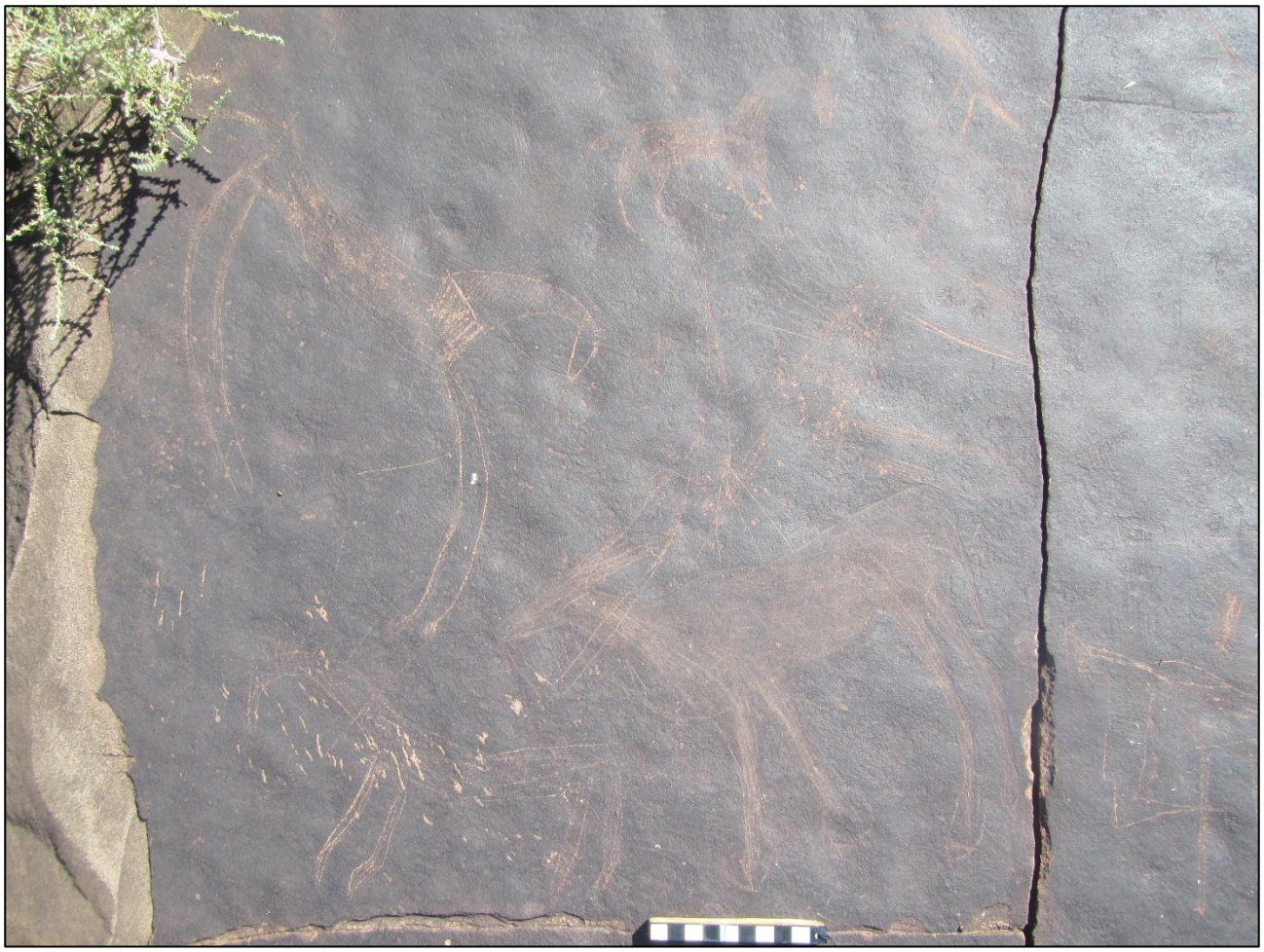


Figure 40: Dolerite boulder with many engraved animals on it (waypoint 1574 in HL03). The majority are historical scratchings and depict horses, but a scraped eland occurs in the centre. Scale in cm.

Figure 41: : An enigmatic scraped animal engraving with head to the left and a bifurcated tail from waypoint 1859 in HL03. Scale in cm.

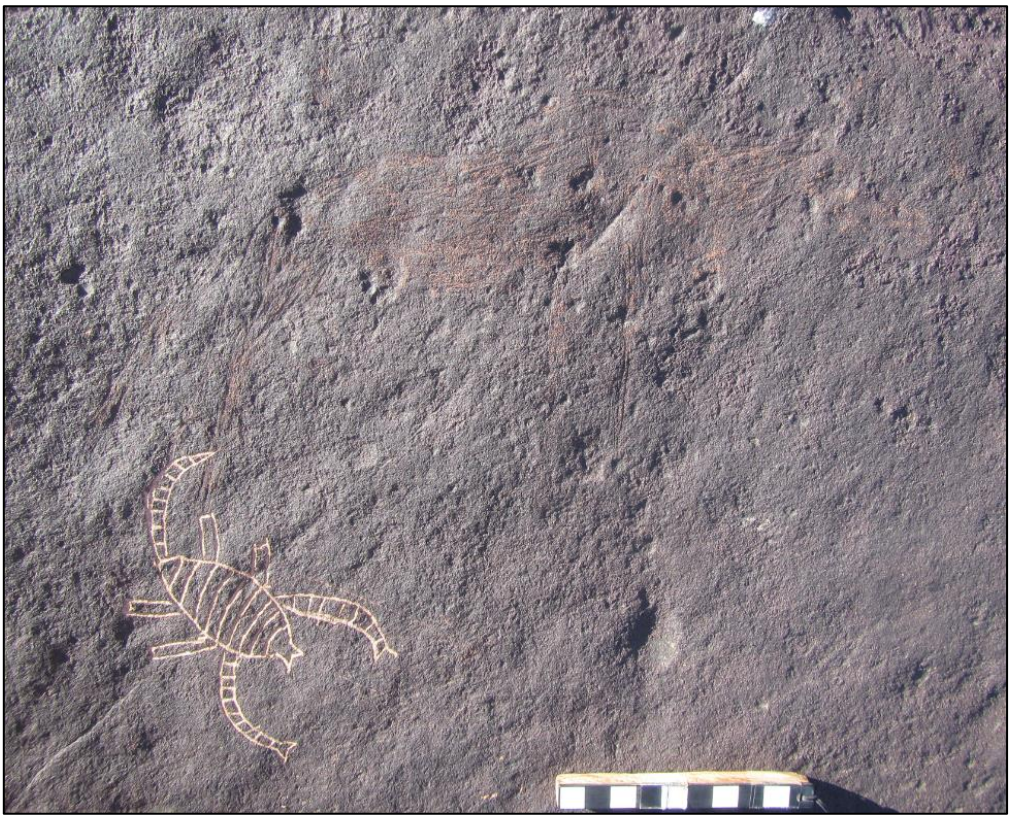


Figure 42: A scraped eland engraving with a very recently scratched scorpion overprinted from waypoint 1860 in HL03. Scale in cm.

Figure 43: A scraped eland engraving with its back arched downwards from waypoint 1862 in HL03. Scale in cm.

The colonial period archaeological sites would have been made by the trekboers who colonised this area during the 18th and 19th centuries but evidence of occupation of these sites into the early 20th century was also found in a few instances. These sites are stone-built farm complexes with livestock enclosures (kraals), houses, cooking shelters (kookskerms), rare threshing floors (trapvloere), various other unidentifiable stone structures and graves. Importantly, they sometimes have associated ash and rubbish dumps which contain extensive material evidence relating to day-to-day life during occupation of these sites. These sites are invariably located along rivers and, for this reason, should largely be protected from harm. Figure 25 above shows an example of a stone-built house photographed in the early 20th century while still in use. The roof would have been of poles, branches, sacking, sheepskins, or other suitable materials. This is probably what many of the less formal stone houses in the area looked like. More formal rectangular houses would have had flat roofs, brakdak during earlier times with corrugated iron coming later.

One such complex lies in the far south of Platfontein 28. It is not marked or named on the 1:50 000 map (Figure 2) and is recorded as waypoints 182 to 187 (HL03). Several ruined structures were present (Figure 44 & Figure 45). Some internal architectural detailing such as a muurkas and a corner shelf were present (Figure 46). No dump was found but a light scattering of glass, ceramics and metal was noted (Figure 47).

Figure 44: Stone-walled structures at a ruined farm werf at waypoint 182 in HL03.

Figure 45: Stone-walled structures at a ruined farm werf at waypoint 183 In HL03.

Figure 46: Architectural details in the ruin at waypoint 185 in HL03.

Figure 47: Artefacts from an ephemeral ash dump at waypoint 183 in HL03. Scale in 1 and 5 cm intervals.

No highly significant ash and rubbish dumps were found in the study area with most being relatively ephemeral examples with few artefacts (e.g. waypoint 1792 in HL04; Figure 48). In one case, however, a large dump was found but it had almost no artefacts (waypoint 157 in HL03; Figure 49).

Figure 48: Artefacts from an ephemeral dump at waypoint 1792 in HL04. Scale in cm.

Figure 49: The large ash dump with minimal artefacts at waypoint 157 in HL03.

Elsewhere, in HL03, a walled valley was noted (Figure 50). The site was not examined in detail due to time constraints but a threshing floor with an associated square stone structure (Figure 51) and a kraal (Figure 52) were noted amongst other features.

Figure 50: A walled valley in the southwestern corner of HL04. Yellow arrows mark two ends and two corners of the main wall system.

Figure 51: A threshing floor and associated structure at waypoint 1673 in HL04.

Figure 52: A stone kraal at waypoint 1671 in HL04.

A very interesting small ruined house lay in an isolated position well away from any other historical remains. This house has end gables containing a door and window respectively (Figure 53 & Figure 54) with the roof having been created in a corbelled manner with overlapping rock slabs gradually closing the gap. There is still a space in the middle and it is unclear how this last piece would have been closed (Figure 55). A small number of artefacts were associated (Figure 56).

Figure 53: Gable with low entrance door in the house at waypoint 1585 in HL03. The figure is on her knees.

Figure 54: The opposite end gable with a small window at waypoint 1585 in HL03.

Figure 55: The interior of the house at waypoint 1585 in HL03.

Figure 56: Artefacts associated with the house at waypoint 1585 in HL03, including a small dolerite upper grindstone.

Some historical stone-walled sites are far smaller and less obvious on the landscape. These smaller sites are perhaps small herder camps where a low circle of stones was built up and covered by, for example, sticks and skins. Some of these structures occurred in very remote areas, while others were close to ruined farm complexes (e.g. that at waypoint 1663 in HL03; Figure 57). Other even smaller features include small cairns and stone clusters such as that at waypoint 1659 which lay in the middle of a small, ephemeral pan in HL03 and was thus certainly not a grave (Figure 58).

Figure 57: A small stone feature some 2 m in diameter at waypoint 1663 in HL03.

Figure 58: A stone feature in an ephemeral pan at waypoint 1659 in HL03.

Another aspect of historical archaeology is the many scratched engravings found in clusters in various places on dolerite ridges. The main subject matter is horses. This is not unexpected; Morris (1988:116) notes that "recently incised engravings, including distinctive horse motifs, are found in great numbers in the Karoo and areas just north of the Orange River." Figure 59 shows two typically stylised horses, one with a rider and another hitched to a wagon that seems not to be complete (waypoint 1576 in HL03). Figure 60 to Figure 73 show a selection of the many other historical engravings, with the last two showing some text. The majority were within the HL03 study area but some were in HL04 and a cluster was recorded just outside the northern edge of HL04.

Figure 59: Historical scratched engraving of a horse and chariot and a horse and rider at waypoint 1576 in HL03. The chariot looks incomplete. Scale in cm.

Figure 60: Historical scratched engraving of an ostrich and some crude carriages at waypoint 1573 in HL03. Scale in cm.

Figure 61: Historical scratched engraving of what appear to be plants at waypoint 1573 in HL03. Scale in cm.

Figure 62: Historical scratched engraving of a horse 1577 in HL03. Scale in cm.

Figure 63: Historical scratched engraving of a line of ladies in dresses at waypoints 1579 in HL03. Scale in cm.

Figure 64: Historical scratched engraving of what may be plants and some lettering at waypoint 1580 in HL03. Scale in cm.

Figure 65: Historical scratched engraving at waypoint 1644 in HL04. Scale in cm.

Figure 66: Historical scratched engraving of a bird and some antelope at waypoint 1646 in HL04. Scale in cm.

Figure 67: Historical scratched engraving of an ostrich at waypoint 1624 just outside HL04. Scale in cm.

Figure 68: Historical scratched engraving of a horse and rider at waypoint 1639 just outside HL04. Scale in cm.

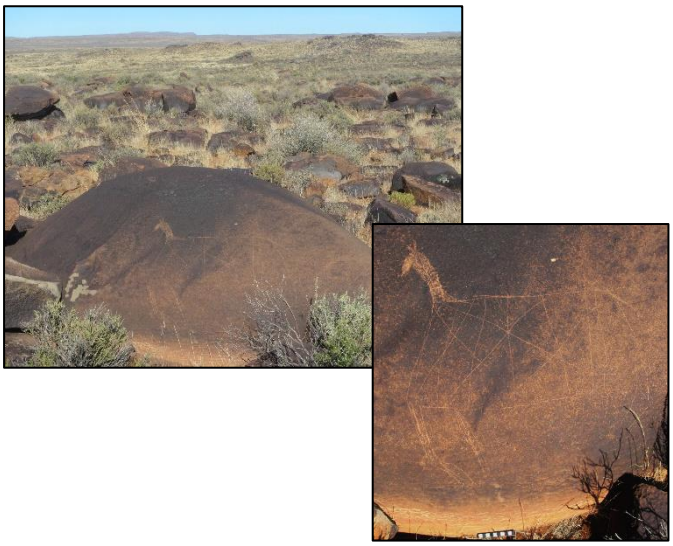


Figure 69: Historical scratched engraving of a horse at waypoint 1832 in HL03. Scale in cm.

Figure 70: A historical scratched Nine men's morris gameboard at waypoint 1838 in HL03. Scale in cm.

Figure 71: A historical scratched engraving of a Cape Cart at waypoint 1857 in HL03. Scale in cm.

Figure 72: Writing at waypoint 146 in HL03. Scale in 1 and 5 cm intervals.

Figure 73: Writing at waypoint 146 in HL03. Scale in 1 and 5 cm intervals.

5.3. Graves

Graves seemed to be remarkably rare in the study area with just two possible grave cairns (waypoints 139 & 196) and two clear graves (waypoint 188) having been recorded (Figure 73 & Figure 74). A farm graveyard appears to be visible on aerial photography at the Rietfontein homestead on Platfontein 28, while another is very clear at the Eyerkuil farmstead on Eyerkuil 39. Neither of these sites were visited.

Figure 74: A likely grave cairn at waypoint 139 in HL03.

Figure 75: Two graves at waypoint 188 in HL03.

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 Hoogland study area (Figure 76). 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 77).

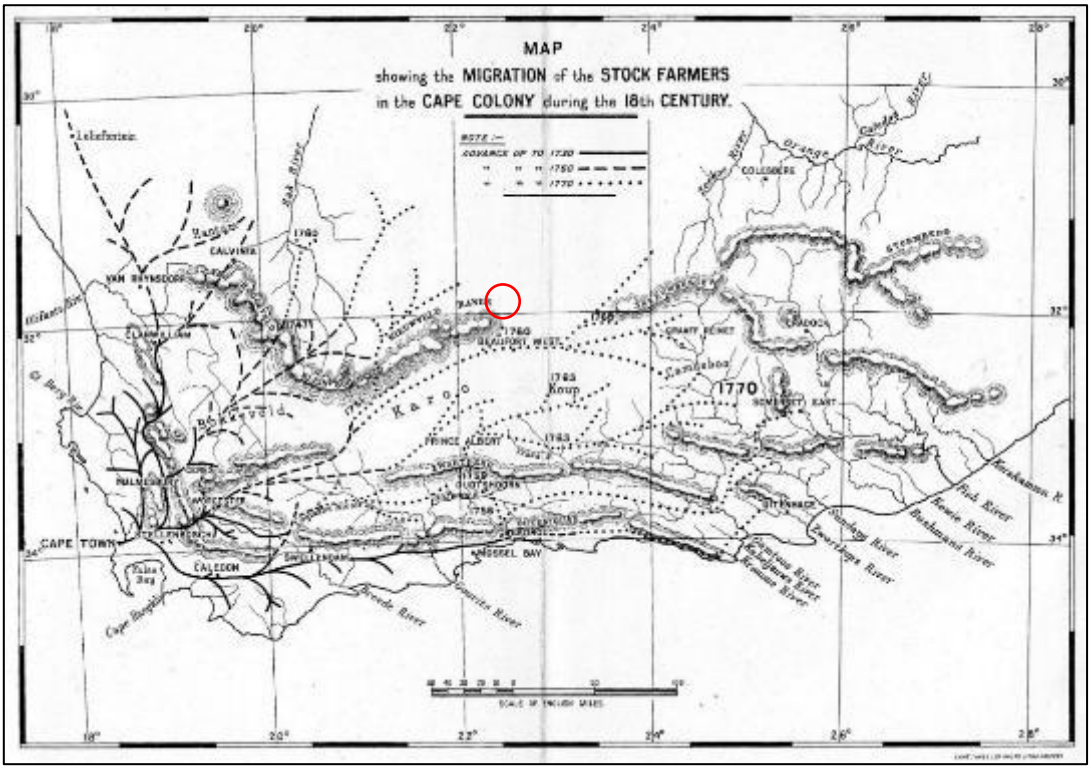


Figure 76: Map showing the mid-18th century trekboer expansion in the Karoo. Source: Botha (1926: opposite preface). The wind farm study area is indicated by the red circle.

Figure 77: Map showing the extent of the Cape Colony by 1798. Source: Walker (1928:201). The wind farm 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 78 with the study area fully incorporated by 1825.

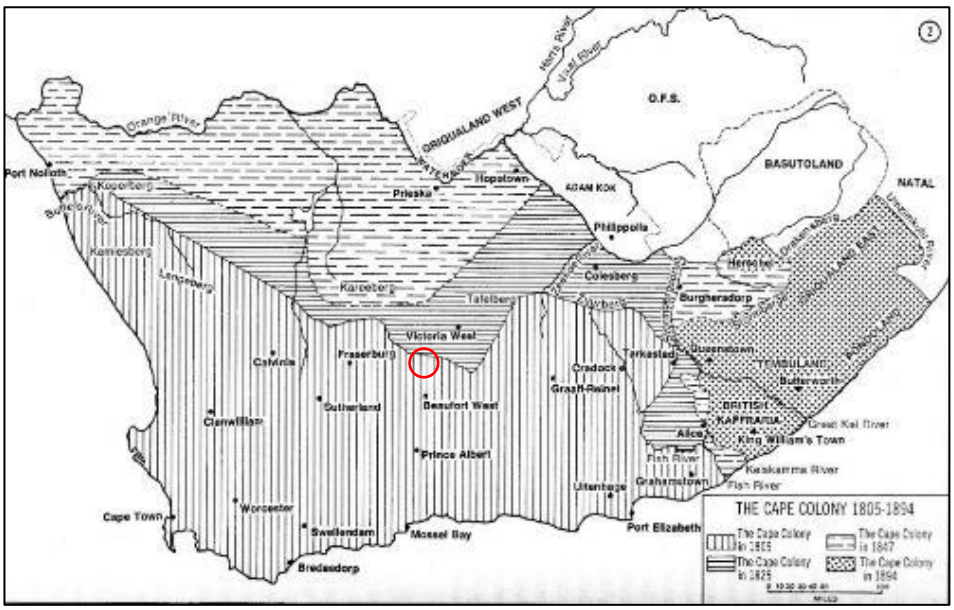


Figure 78: Map showing the expanding boundaries of the Cape Colony under British Rule. Source: Van Zyl (1975:102). The wind farm study area is indicated by the red circle.

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.

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 in the KNP and just to the west of HL03 and north of HL04 but none are known from within the 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.

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 southeast of the Hoogland 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 into the interior, also dating back to about 1830 (Ross 2013).

5.4.2. Site visit

Relatively few farmsteads occur in the study area which means that historical buildings are few in number. Some are occupied and others are not. A few examples are presented here with all being unoccupied since the three farmsteads in the study area known to be occupied were not specifically visited. Another occurs just outside the northern edge of the study area. At waypoint 1552 in HL03 there is a horse stable complex said to have been built soon after 1954, but not present on the 1960 aerial photograph (see below) and which thus may or may not be a heritage resource. They are built in a Cape Dutch Revivalist style with many gables, and a stable manager's cottage lies adjacent (Figure 79 to Figure 81). The farm (Rietfontein) was once used as a stud farm but the stables now stand empty.

Figure 79: View of the stable complex at waypoint 1552 in HL03.

Figure 80: The mid-20th century stables at waypoint 1552 in HL03.

Figure 81: The stable manager's house at waypoint 1552 in HL03.

A homestead called 'Rosary' has a derelict house at waypoint 1791 in HL04 and likely dating to the very early 20th century. Although a crack has formed through one of its front gables, the rest of the house is largely structurally sound but in poor condition with broken windows in places and at least one room missing its floor. A very beautiful wooden ceiling is present though. Figure 82 to Figure 87 show features of the house. There were many other structures in the homestead area but most are now ruined. Figure 88 shows a large outbuilding that is still intact enough to be considered a structure.

Figure 82: The front of the main house at waypoint 1791 in HL04.

Figure 83: The back of the main house at waypoint 1791 in HL04.

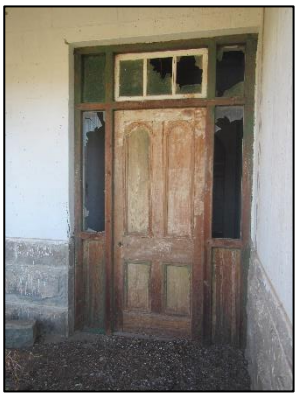


Figure 84 & Figure 85: Porch and front door details at the front of the main house at waypoint 1791 in HL04.

Figure 86: A vandalised floor in the main house at waypoint 1791 in HL04.

Figure 87: An intact ceiling in the main house at waypoint 1791 in HL04.

Figure 88: A derelict outbuilding alongside the main house at waypoint 1791 in HL04.

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". There are several aspects that require discussion here.

The oldest is the landscape inhabited by the indigenous Bushmen hunter-gatherers and Khoekhoen who left little trace of their passing but did mark the landscape with engravings, paintings and rock gongs, only the former known to be present within the present study area. This landscape is essentially a natural or primeval landscape whose components are considered under archaeology.

The second aspect is the Trekboer landscape which includes somewhat more permanent traces in the form of stone-built residential and farming structures (now in ruin) along with related features like threshing floors and graves. The historical engravings of the area are also a component of this landscape, although it seems that an unknown proportion of them are less than 100 years old. They nonetheless demonstrate the continuity of the engraving tradition in the area. These early farmers also fitted into the natural landscape but created small enclaves of "domesticated space" where they chose to place their farm complexes. Some of these complexes, or at least their agricultural lands, are surrounded by stone walls. The earliest trekboers probably left very little trace at all since they would have lived in their ox wagons before eventually settling down and building the stone structures that characterise this aspect of the cultural landscape. Some of these farm complexes are marked by the presence of small forests of grey poplar (*Populus x canescens*). These fast-growing trees were grown for their branches which were used for poles in construction. Once more, this landscape is essentially archaeological and its components have been discussed under archaeology.

The third aspect is the modern cultural landscape of agriculture, livestock and game farming, although in many places the agricultural component is largely disused as a result of the reduction in rainfall that has occurred over several decades. This landscape is comprised of widely spaced farm complexes, and a network of farm fences and tracks. The farm complexes are generally marked by the presence of many trees and some agricultural lands (Figure 79 to **Error! Reference source not found.**). They often contain different layers of heritage and can be thought of as areas of higher density of heritage resources.

Figure 89: View towards the north of the 'Rosary' homestead at waypoint 1791 in HL04 and showing the trees around the complex.

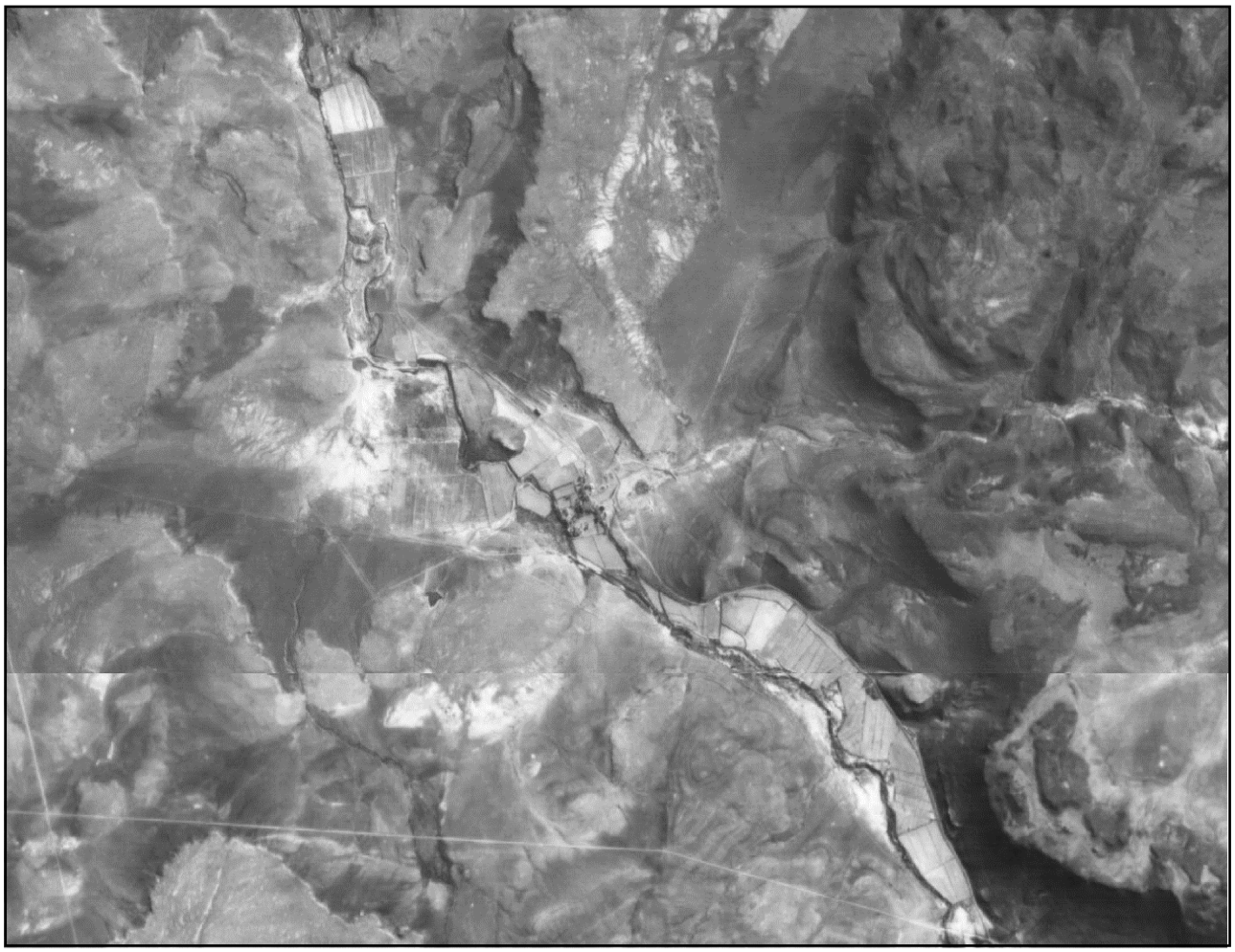


Figure 90: Historical aerial view of the Rietfontein werf on HL03 and associated agricultural landscape from 1960 showing the landscape at that time. The inset shows the location of the stable complex with no buildings evident.

Figure 91: Modern aerial view of the Rietfontein werf on HL03 showing agricultural landscape along the Sak River.

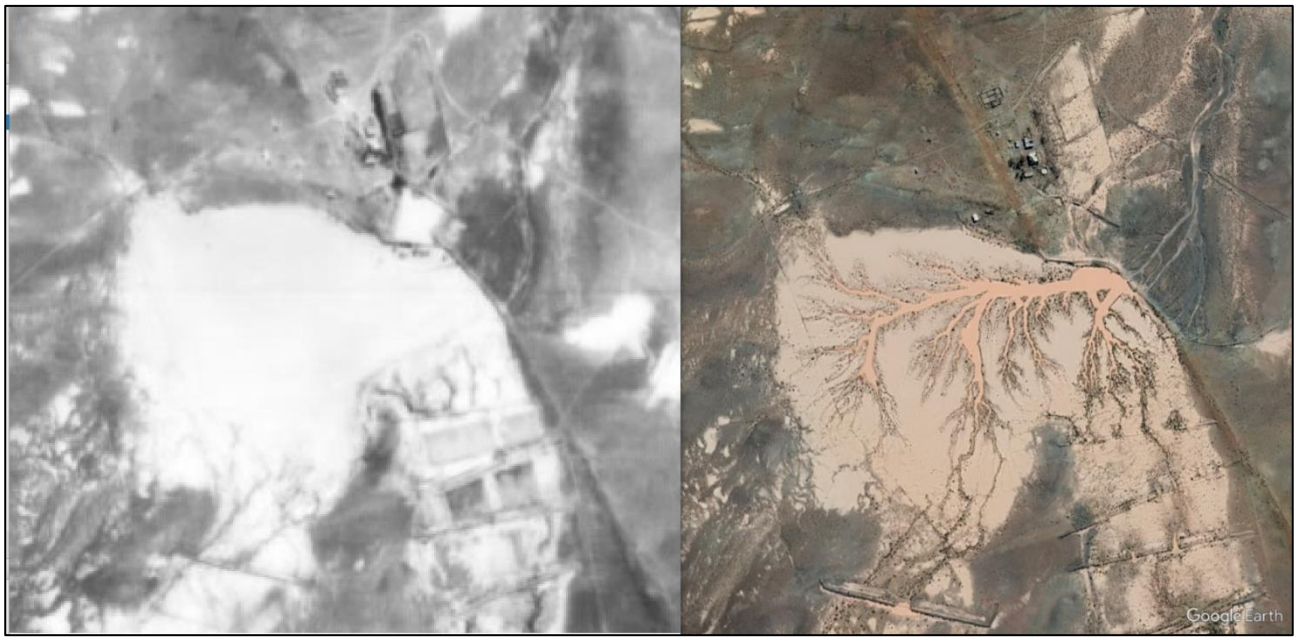


Figure 92: 1960 and modern aerial views of the Rosary werf and surrounds on HL04 showing the agricultural landscape focused on the silts deposited behind a dam wall with only small fields to the east of the werf.

Part of all the above is the relatively undisturbed wilderness atmosphere that pervades the region – this includes the darkness of the night-time sky. Driving its main roads, in this case the R381 which passes through the wider study area, leaves one marvelling at the tremendous sense of wide open space and, away from the hills of the escarpment, the endless Karoo plains. Winter and Oberholzer (2013) have rated the Molteno Pass section of the R381 which goes up the escarpment as being a locally significant route. This rating can certainly be extended to the rest of this road for its scenic value, although it must be noted that parts of the R381 pass through the Beaufort West REDZ and three other wind farms have been approved by HWC in the area. The KNP lies some 11 km and 16 km south of HL03 and HL04 respectively. It is a significant landscape and offers formal protection to a section of the highly scenic escarpment. Although the wind farms might be visible in the distance, the KNP and escarpment are both too far south to be significantly affected by the proposed wind farms. In addition, a ridge forms much of the northern boundary of the KNP offering screening (see Section 5.7).

5.6. Places associated with living heritage

As noted above, the historical engravings of the area demonstrate continuity in the tradition of engraving. This signature is very strongly present in the study area, and especially in HL03. What is perhaps of greatest interest is that the engraving tradition appears to have continued even longer than expected as evidenced by the clearly very recent scorpion engraving described above. Another recorded location only represents a lunch stop for recent farm workers and is not significant but the use of bushes to create a windbreak or kookskerm is a practice rooted in the past (Figure 93).

Figure 93: A small modern brush enclosure at waypoint 192 in HL03 just like the larger *kookskerms* made around residential fireplaces in the past.

5.7. Visual impact assessment

Lawson and Oberholzer (2021) note the project setting to be an expansive semi-arid landscape. Flat-topped hills are seen as a characteristic feature of what is an otherwise fairly featureless landscape. Figure 94 shows a viewshed map for the HL03 and HL04 wind farms together. It is based on blade tip height. With the mixture of hills and open plains around the study area the visual exposure is

relatively similar in all directions but, notably, it is truncated along the boundary of the KNP by a line of hills along its northern boundary.

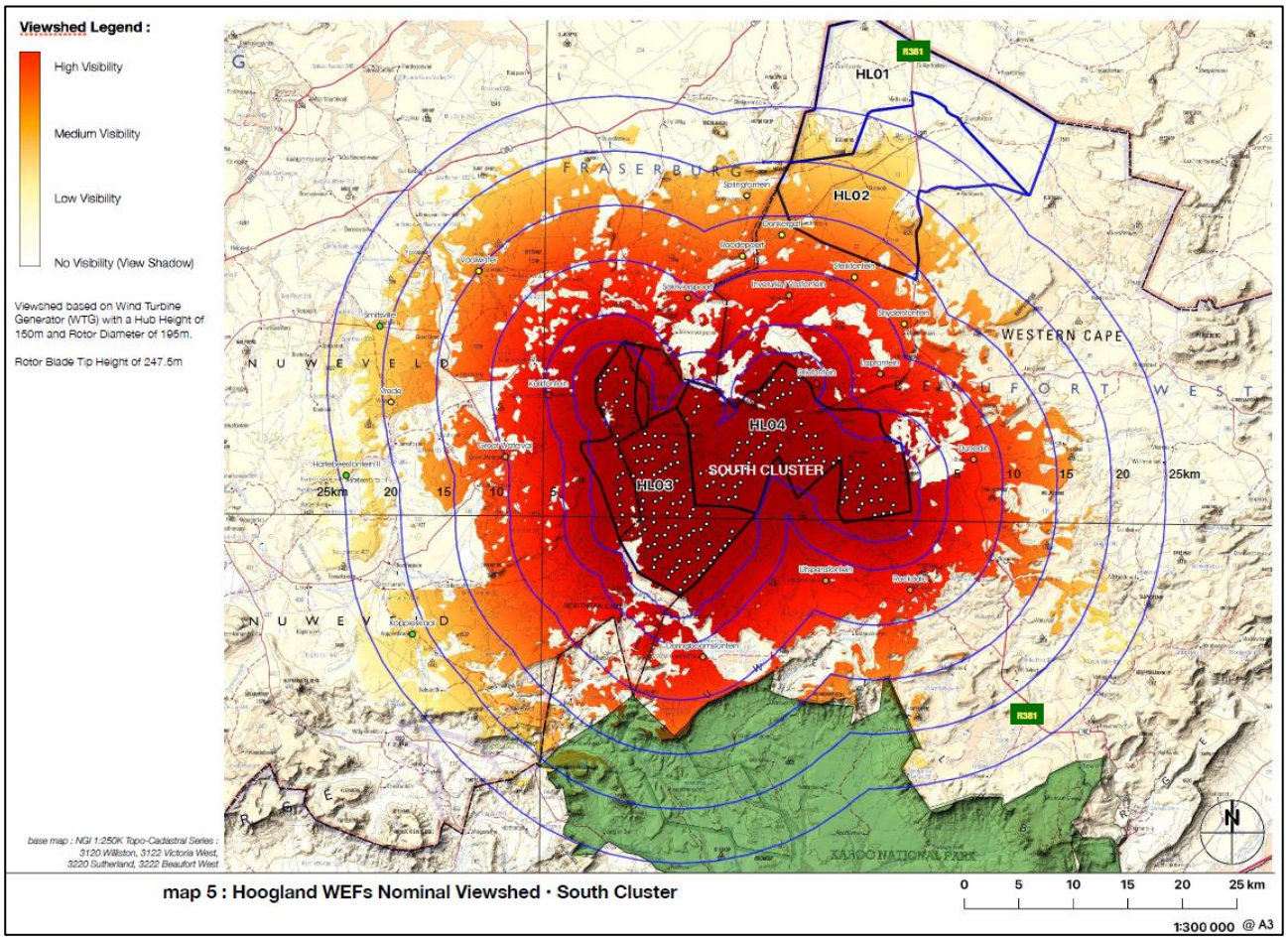


Figure 94: Viewshed map of the study area for both HL03 and HL04. Source: Lawson & Oberholzer (2021: Map 5).

The site is noted to have a high level of integrity with relatively undisturbed and uncluttered rural and natural landscapes. Aside from the cultural features of the landscape, the natural components regarded as visually sensitive are the dolerite dykes, hills and outcrops. The VIA report (included here as Appendix 5) contains several photomontages which provide an idea of the appearance of the landscape after construction of the projects.

5.8. Statement of significance and provisional grading: HL03 & HL04

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).

The palaeontological resources of the study area are variable in their distribution but, although very small areas may be of high cultural significance at the local level for the scientific value of the fossils, the vast majority of the area is considered in practice to be of low significance. The most important areas should be regarded as up to Grade IIIB, although the possibility does exist for Grade IIIA fossil

to occur in the study area. The majority of individual fossils are, however, Not Conservation Worthy (NCW) or Grade IIIC.

The archaeological resources have highly variable significance with most being very low to low (NCW or Grade IIIC [GPC on the SAHRA system]). However, there are many sites of medium to high cultural significance at the local level for their scientific, historical and social values, with most of these being rock engravings. These more important sites are assigned Grade IIIA (in both WC and NC). Despite the wealth of archaeology, there are no individual sites of provincial significance in the study area. However, the entire body of historical and LSA rock engravings taken together can be considered to have regional significance.

Graves are deemed to have high cultural significance at the local level for their social value. They are Grade IIIA.

Most buildings in the study area were not specifically examined but their significance would be variably low to high at the local level for their architectural, historical and social values. A range of grades from NCW to IIIA can be expected.

The broader cultural landscape in the vicinity of the wind farm study area has medium cultural significance at the local level for its aesthetic value and is considered to be Grade IIIB, while the escarpment edge and Karoo National Park are considered to have high significance for the same reason and are assigned Grade IIIA. The immediate areas around the farm werfs, however, are considered as IIIA landscapes due to the generally large number of individual heritage resources they contain.

Places associated with living heritage are archaeological in nature (despite their apparently recent age) and follow the archaeological gradings.

Grading maps of heritage resources are shown in Section 6.

5.9. Summary of heritage indicators: HL03 & HL04

Palaeontological resources are patchily distributed across the study area and will be impacted by the proposed wind farms. Due to their nature (i.e. buried in hard rock), it is accepted that not all fossils can be rescued but a representative sample should be retained from the study area, whether *in situ* or in an institutional collection.

- Indicator: Uncontrolled damage to fossils should be minimised as far as possible.

LSA and particularly historical archaeological sites occur widely across the study area. Engravings (including LSA, historical and recent ones indicating living heritage) are common, particularly in HL03. All such sites and graves should be avoided, although it is acceptable that power lines span above such sites if required. While buffers of at least 30 m from archaeological resources are desirable, linear features (i.e. wind farm roads and electrical cables) can run closer to these sites if absolutely necessary. If existing roads (not jeep tracks) run close to such sites then these can be reused. Because engraving sites are visual in nature, significant examples should be avoided by wider margins. Historical sites are generally more difficult and/or time-consuming to mitigate which makes it strongly desirable to avoid direct impacts.

- 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: Buffers of at least 200 m should be maintained around the most significant rock art sites (i.e. grade IIIA) *as far as possible* but all rock art sites should be buffered by at least 30 m.
- Indicator: Direct impacts to graves must be avoided completely with a 30 m buffer.

The cultural landscape will be impacted and, because of the nature and scale of the proposed development, reducing impacts is generally difficult. The landscape views from the R381 are considered to be the most significant because of their accessibility but that road is at least 7 km east of the nearest proposed turbines. Determination of appropriate buffers for roads can be guided by the visual recommendations that stipulate wider visual buffers in areas of higher scenic value. It is noted that PGWC (2006) provides a buffer of 500 m from local roads as a general guideline. The same should apply to farmsteads.

- Indicator: Clustering of turbines is preferred rather than having them spread out in a linear fashion. No turbines should exist as outliers.
- Indicator: Powerlines should be buried as far as possible.
- Indicator: Road surfacing, where required, should avoid high contrast materials.
- Indicator: Related infrastructure (substation, battery storage facility, buildings) should be in areas of low visibility.

Built heritage resources also exist in the study area, but impacts are unlikely. The minimum distance between turbines and structures will be about 0.5 km, although a wind farm road in HL04 passes through a farm complex.

- Indicator: Buffers of at least 30 m should be maintained around all built elements, but where existing roads are upgraded this distance can be reduced as needed but should still guarantee the integrity of the resource.

6. SENSITIVITY MAPPING

Table 3 shows the way in which heritage sensitivity was determined. This information, together with the graded heritage resource map provided to the developer, was used in the development of the wind farm layouts shown in Figure 95 to Figure 99. Note that heritage is just one of many specialists to have provided sensitivity mapping. The maps show high, medium and low sensitivity buffers. Some of these features are considered to be no-go for turbines and substation (including battery storage facility and buildings). Note that full mapping of archaeological heritage resources is presented in Appendix 3, while palaeontological mapping is contained in the specialist study in Appendix 5. The entire area is regarded as a cultural landscape, although the Karoo National Park and escarpment are the most important parts. These are too far from the study area to require mapping in relation to the potential impacts. The R381 in this area is a local route with lesser significance due to being away from the major topographic landscape features and also lies far enough away to not require specific mapping.

Table 3: Relationship between heritage grades, sensitivity ratings and project components as developed during the early part of the project.

Project component	IIIA		IIIB		IIIC		NCW
	Feature	Buffer	Feature	Buffer	Feature	Buffer	Feature
Turbines	No-go	No-go	High	Medium	Medium	Low	Neutral
Substations, buildings	No-go	No-go	High	Medium	Medium	Low	Neutral
New roads and jeep tracks for upgrade	No-go	No-go	High	Medium	Medium	Low	Neutral
Existing proper gravel roads (not jeep tracks) for upgrade	No-go	High	Medium	Low	Low	Low	Neutral
Pylons	No-go	No-go	High	Medium	Medium	Low	Neutral
Overhead lines (spanning)	No-go	High	Medium	Low	Low	Low	Neutral

- Sensitivity classes are designed to be in line with the HWC grading scheme, since the gradings MUST be used in all HIAs. Although NCW is low sensitivity (the lowest rating in the Red Cap scheme), they are coloured black and called 'neutral' to distinguish low heritage sensitivity from NCW.
- Note that existing roads would obviously not go over point sites but they may pass through larger multi-component sites.
    - Existing roads to be widened/upgraded get a lower level of sensitivity as they are already present and it is more desirable to upgrade than to build a second road nearby.
    - Occasionally very small 'twee-spoor' jeep tracks can pass very close to heritage sites and create minimal existing impacts. For this reason, their upgrades are best treated like building new roads.

  Overhead lines spanning over sites also get lower ratings because there would be no physical damage. BUT there is still a chance of damage during construction so spanning lines are only one sensitivity level lower.

Allocation of protective buffers is as follows:

- <u>Scenic passes, roads and cultural landscapes</u>
    - Buffer to be determined by visual specialist for Grade IIIB linear features.
    - Buffer 50 m around Grades IIIA and IIIB cultural landscapes. Agricultural landscapes were delineated by including all arable lands clearly visible on aerial photography. Note that these are really visual issues and hence different buffers may be proposed by the visual practitioners. The 50 m buffer suggested here should be treated as a minimum.
- <u>Archaeology, Built environment, Graves</u>
    - Buffer 50 m around waypoints for small, single component sites (Grades IIIA to IIIC)
    - Buffer 50 m around outer edge of larger, multi-component sites (Grades IIIA to IIIC)
    - Note that, in line with the relevant heritage indicator and although it may not always be possible due to the multitude of other limitations on turbine layout, buffers of up to 200 m are encouraged for IIIA rock art sites

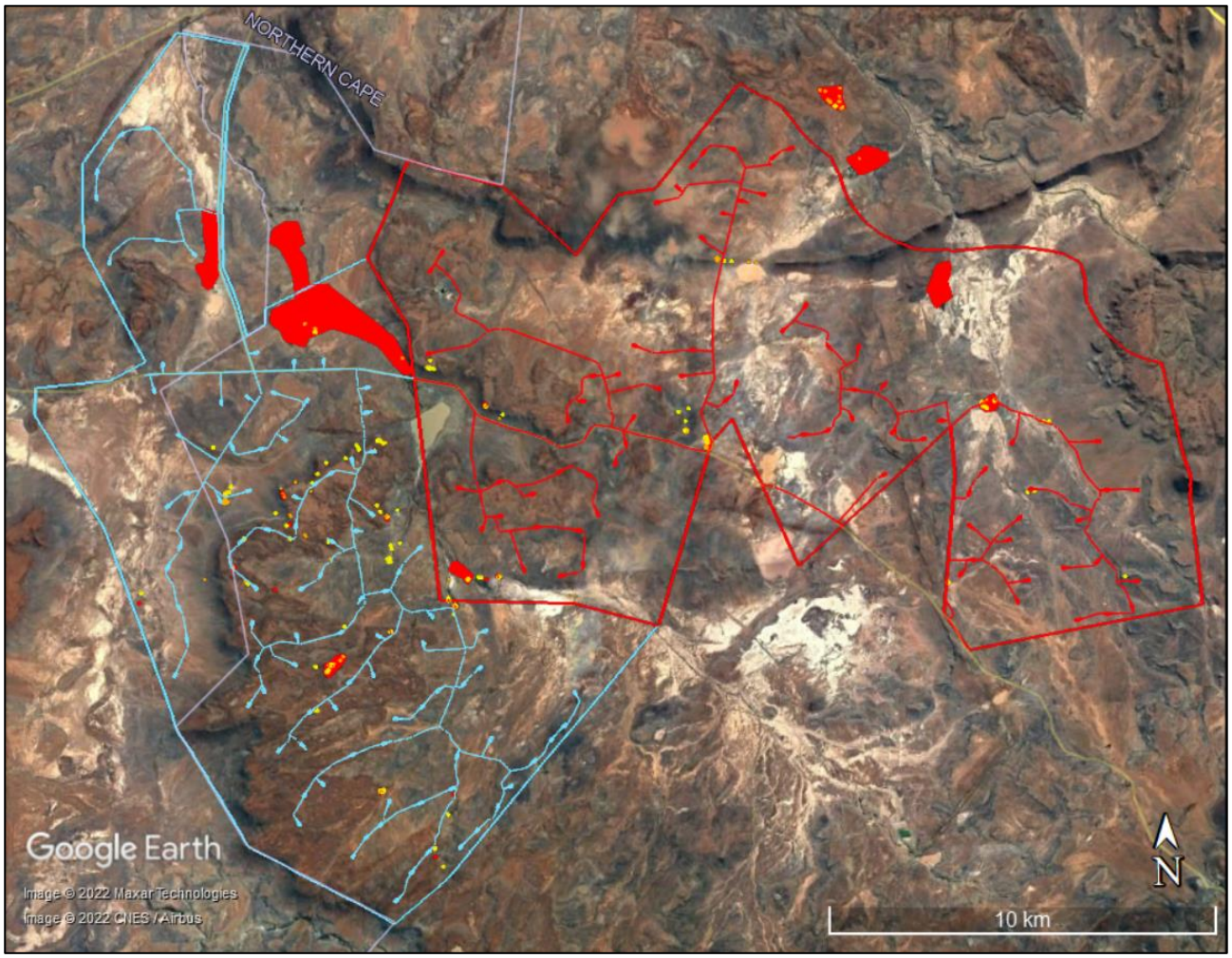


Figure 95: Sensitivity map for the entire HL03 (turquoise layout) and HL04 (red layout) area. Red, orange and yellow shaded areas are high, medium and low sensitivity respectively.

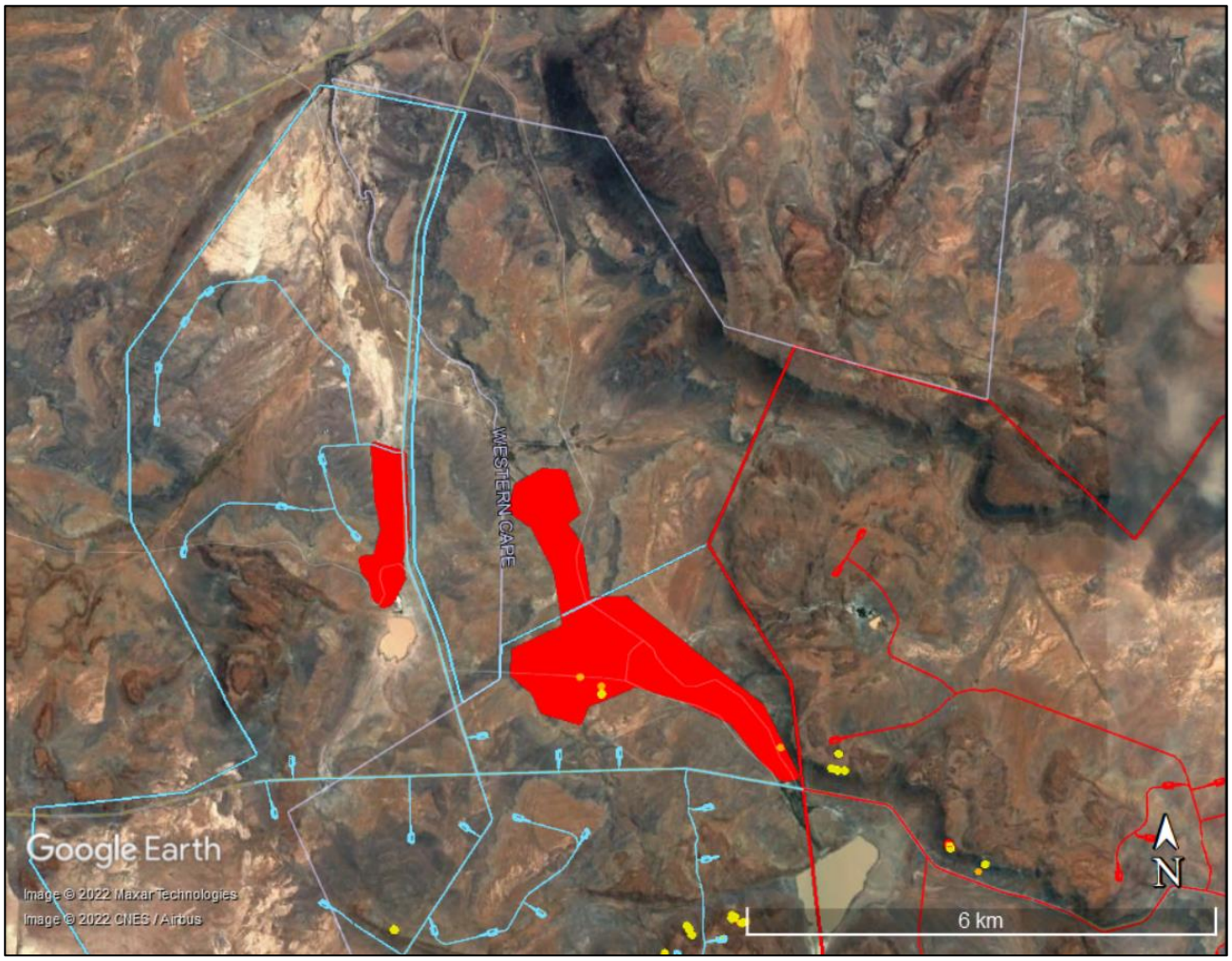


Figure 96: Enlarged sensitivity map showing the north-western part of Figure 95. Key as per Figure 95.

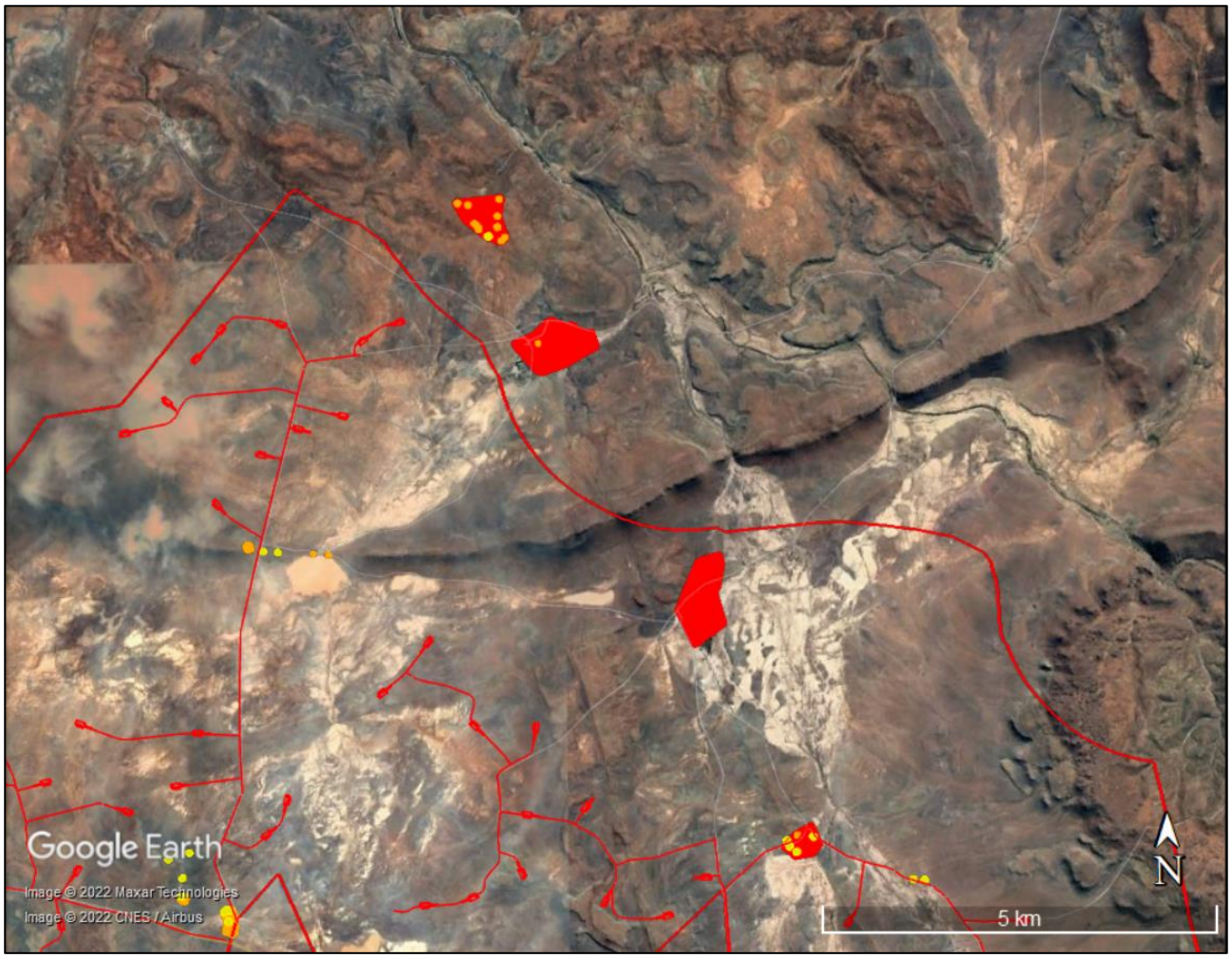


Figure 97: Enlarged sensitivity map showing the north-eastern part of Figure 95. Key as per Figure 95.

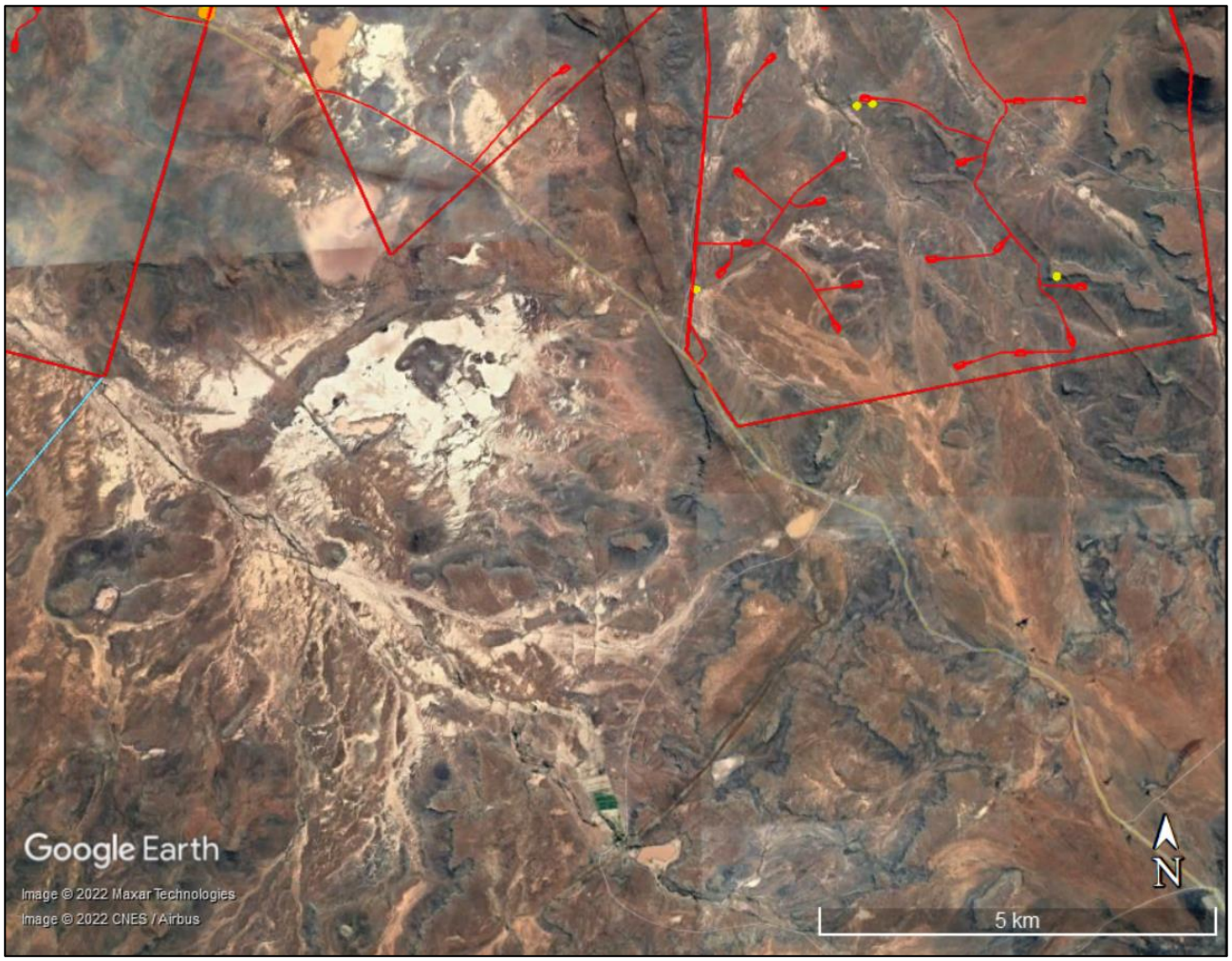


Figure 98: Enlarged sensitivity map showing the south-eastern part of Figure 95. Key as per Figure 95.

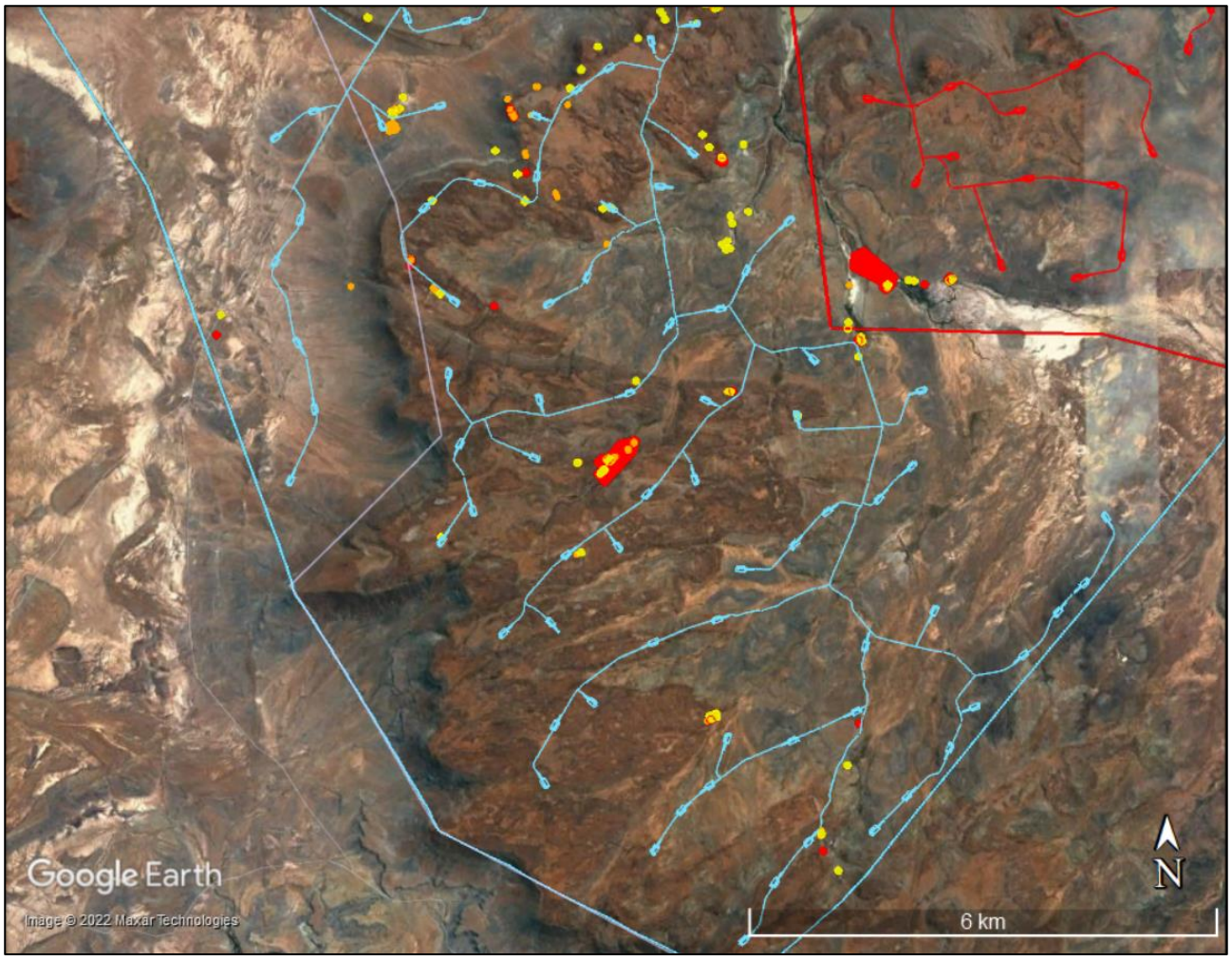


Figure 99: Enlarged sensitivity map showing the south-western part of Figure 95. Key as per Figure 95.

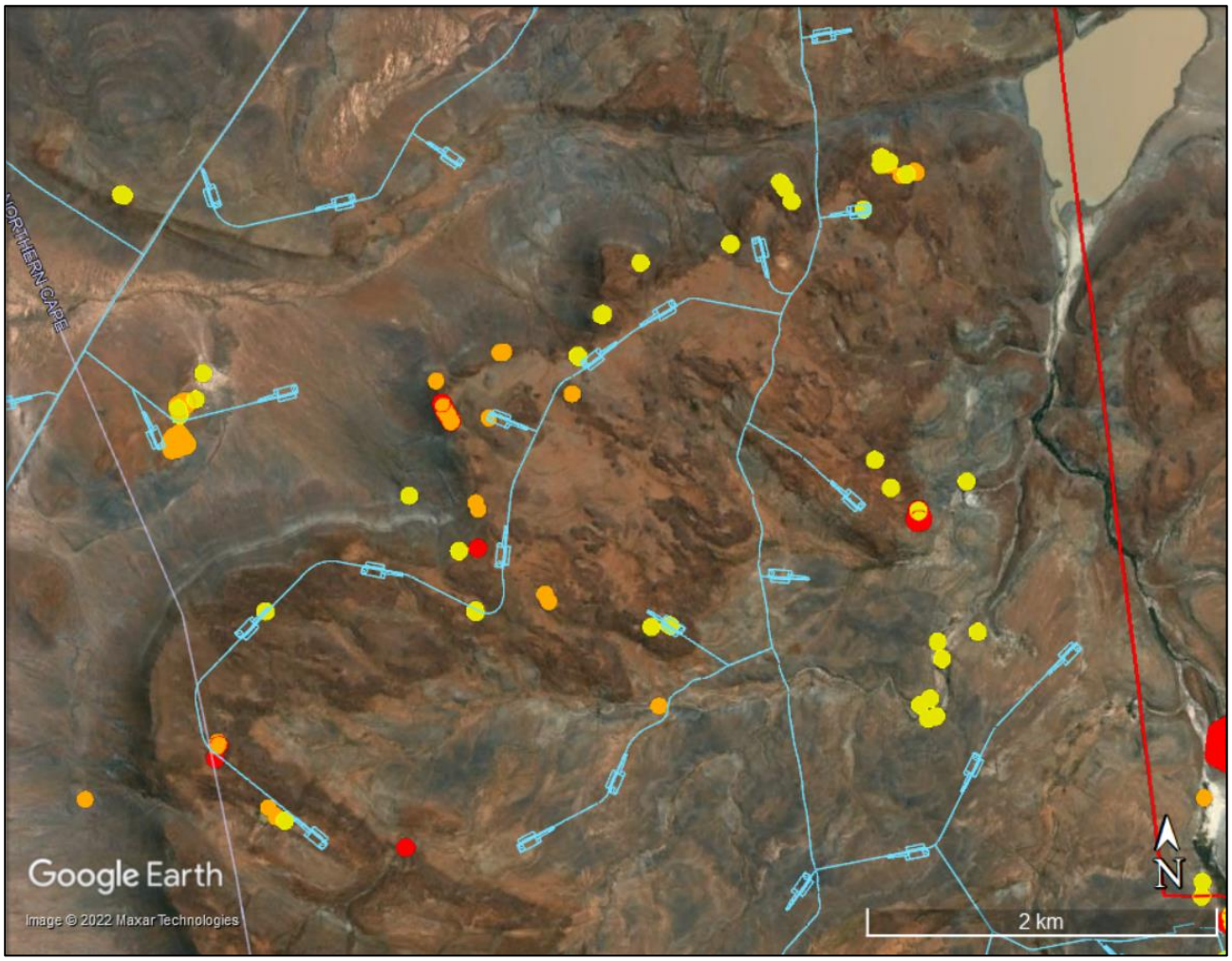


Figure 100: Enlarged sensitivity map showing the central part of HL03 where the ridge containing the main cluster of rock engravings lies (diagonally from southwest to northeast in this map). Key as per Figure 95.

The implications of the mapped sensitivities are discussed in the conclusions. For the most part there are no highly significant concerns requiring major adjustment to the layout as these have mostly been addressed through avoidance. However, in the vicinity of the main concentration of rock engravings on HL03 a number of sites would be affected, some of them directly and some of them through their 30 m buffers. One site whose buffer would be breached is a potential grave cairn. Elsewhere in HL03 the buffer of another potential grave cairn is crossed.

7. ASSESSMENT OF IMPACTS

The main impacts identified for Hoogland 3 are as follows:

- Impacts to palaeontology;
- Impacts to archaeology (including places associated with living heritage); and
- Impacts to the cultural landscape (including visual impacts to historical structures).

The main impacts identified for Hoogland 4 are as follows:

- Impacts to palaeontology;
- Impacts to archaeology (including places associated with living heritage);

- Impacts to built heritage; and
- Impacts to the cultural landscape (including visual impacts to historical structures).

Each of these impacts will be assessed in turn below by project phase.

7.1. Construction Phase: HL03

7.1.1. Impacts to palaeontological resources

Formal assessment of impacts to fossils is contained in the palaeontological specialist study (Almond 2021). It is noted that the impact significance was found to be **medium negative** and **very low negative** before and after mitigation respectively for both wind farms and that pre-construction analysis, survey and fossil collection as necessary were suggested measures to reduce impacts.

7.1.2. Impacts to archaeological resources

Direct impacts to archaeology would occur during the construction phase only, since further impacts will not occur once the layout has been established. The present layout affects several known archaeological resources, and it is likely that some unknown ones could occur within the footprint area. While most occurrences are likely to be of low to very low cultural significance, there is a chance that more significant finds could be revealed, especially where the concentrations of rock engravings occur. An intensity of high has thus been predicted. Because of the high chance of significant heritage resources being impacted, the impact significance calculates to **high negative** (Table 4). Mitigation will entail micrositing in the next layout iteration to avoid impacts as far as possible, commissioning a pre-construction survey to locate any as yet undiscovered archaeology within the footprint, conducting mitigation as needed based on the findings of the survey, and fencing any sites whose buffers will still be intersected during construction. Any sites that require further attention could then either be avoided through micrositing or else mitigated through recording, mapping and collection as necessary under an approved Workplan issued by HWC. Because there will still be a low intensity impact to the greater body of rock engravings in the area after mitigation, the post-mitigation impact significance calculates to **medium negative**, although a significance of **low negative** is perhaps more realistic if direct impacts are avoided. There are no fatal flaws in terms of construction phase impacts to archaeology.

Table 4: Assessment of archaeological impacts (HL03).

Issue	Impacts to archaeological resources	
Description of Impact		
Archaeological materials can be damaged or destroyed during grubbing and excavation of foundations and trenches.		
Type of Impact	Direct	
Nature of Impact	Negative	
Phases	Construction	
Criteria	**Without Mitigation**	**With Mitigation**
Intensity	High	Low
Duration	Permanent	Permanent
Extent	Local	Site
Consequence	High	Medium
Probability	Definite / Continuous	Definite / Continuous

Significance	High -	Medium -
Degree to which impact can be reversed	Low. Heritage resources cannot be replaced or recreated.	
Degree to which impact may cause irreplaceable loss of resources	High. Heritage resources are unique and irreplaceable.	
Degree to which impact can be mitigated	High. Archaeological heritage can very easily be sampled and/or mapped as needed, although in the case of historical sites and rock engravings this can be more time-consuming and/or expensive.	
Mitigation actions		
The following measures are recommended:	Micro-siting to avoid known impacts where possible. Pre-construction survey of the layout followed by micrositing or mitigation as appropriate or possible. Temporary protective fencing of sites whose buffers are transgressed.	
Monitoring		
The following monitoring is recommended:	ECO to ensure that construction activities remain in approved footprint and that all required mitigation has been implemented.	
Cumulative impacts		
Nature of cumulative impacts	Negative	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	Medium -	Very Low -

7.1.3. Impacts to the cultural landscape

Direct impacts to the cultural landscape will occur during construction when large vehicles and equipment are brought into the rural landscape, altering it to one with a more industrial character and potentially removing some rock engravings from the rock art landscape. The activity, dust and noise will also disturb the sense of place. These impacts are rated as being of medium intensity but their duration will be relatively short for the landscape but permanent for impacts to the rock art landscape. The pre-mitigation impact significance calculates to **high negative** (Table 5). This is driven mainly by the rock art landscape with impacts to the cultural landscape seen as medium negative. Mitigation measures will entail minimising the duration of the construction period, minimising and/or reducing the visual disruption to the landscape, micrositing in the next layout iteration to avoid rock art sites and mitigating any that are still affected by the final layout. Because of the scale of the equipment and structures involved, these measures are unlikely to affect the significance rating enough to drop it a level in terms of cultural landscape impacts but with avoidance or mitigation of the rock art the raring drops to **medium negative**. The post-mitigation rating is in agreement with the VIA (Lawson & Oberholzer 2021). There are no fatal flaws in terms of construction phase impacts to the cultural landscape.

Table 5: Assessment of construction phase impacts to the cultural landscape (HL03).

Issue	Visual intrusion into the cultural landscape and disturbance of the setting and context of heritage resources.	
Description of Impact		
Intrusion into the rural landscape of industrial equipment and structures.		
Type of Impact	Direct	
Nature of Impact	Negative	
Phases	Construction	
Criteria	**Without Mitigation**	**With Mitigation**
Intensity	Medium	Medium

Duration	Permanent	Medium-term
Extent	Local	Local
Consequence	High	Medium
Probability	Definite / Continuous	Definite / Continuous
Significance	High -	Medium -
Degree to which impact can be reversed	Medium. In terms of the landscape, once construction is complete all the equipment would be removed but the turbines and related structures would remain present. However, almost all noise and activity would cease. In terms of the rock art landscape, some sites may be missing (although mitigated) and cannot be replaced.	
Degree to which impact may cause irreplaceable loss of resources	Medium. Every landscape setting is unique but similar landscapes do occur widely in the central interior of South Africa.	
Degree to which impact can be mitigated	Low, since concealing the activity and structures is not feasible.	
Mitigation actions		
The following measures are recommended:	Keep construction duration as short as possible. Minimise landscape scarring. Rehabilitate any areas not required during operation. Where road surfacing is required use low contrast materials where possible. Microsite to reduce impacts to the rock art landscape.	
Monitoring		
The following monitoring is recommended:	ECO to ensure that construction activities remain in approved footprint and that engravings to be retained are not impacted.	
Cumulative impacts		
Nature of cumulative impacts	Negative	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	Medium -	Medium -

7.2. Construction Phase: HL04

7.2.1. Impacts to palaeontological resources

Formal assessment of impacts to fossils is contained in the palaeontological specialist study (Almond 2021). It is noted that the impact significance was found to be very low negative after mitigation and that pre-construction surveys and sampling were suggested measures to reduce impacts.

7.2.2. Impacts to archaeological resources

Direct impacts to archaeology would occur during the construction phase only, since further impacts will not occur once the layout has been established. The current layout does not directly affect any archaeological resources but a few buffers are transgressed by wind farm roads and, in one instance, a turbine hardstand. However, it is possible that some unknown ones could occur within the footprint area. While most as yet unknown occurrences are likely to be of low to very low cultural significance, there is a chance that more significant finds could be revealed. An intensity of low has been predicted and because impacts to archaeology are permanent, the impact significance calculates to **medium negative** (Table 6). Mitigation will entail commissioning a pre-construction survey to locate any as yet undiscovered archaeology within the footprint. Any sites found that require further attention could then either be avoided through micrositing or else mitigated through recording, mapping and collection as necessary under an approved Workplan issued by HWC (or a

permit from SAHRA if in NC for HL03). The post-mitigation impact significance is very **low negative**. There are no fatal flaws in terms of construction phase impacts to archaeology.

Table 6: Assessment of archaeological impacts (HL04).

Issue	Impacts to archaeological resources	
Description of Impact		
Archaeological materials can be damaged or destroyed during grubbing and excavation of foundations and trenches.		
Type of Impact	Direct	
Nature of Impact	Negative	
Phases	Construction	
Criteria	**Without Mitigation**	**With Mitigation**
Intensity	Low	Very Low
Duration	Permanent	Permanent
Extent	Site	Site
Consequence	Medium	Low
Probability	Definite / Continuous	Conceivable
Significance	Medium -	Very Low -
Degree to which impact can be reversed	Low. Heritage resources cannot be replaced or recreated.	
Degree to which impact may cause irreplaceable loss of resources	High. Heritage resources are unique and irreplaceable.	
Degree to which impact can be mitigated	High. Archaeological heritage can very easily be sampled and/or mapped as needed, although in the case of historical sites and rock engravings this can be more time-consuming and/or expensive.	
Mitigation actions		
The following measures are recommended:	Pre-construction survey of the layout followed by micrositing or mitigation as appropriate or possible. Temporary protective fencing of sites whose buffers are transgressed.	
Monitoring		
The following monitoring is recommended:	ECO to ensure that construction activities remain in approved footprint and that all required mitigation has been completed.	
Cumulative impacts		
Nature of cumulative impacts	Negative	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	Low -	Very Low -

7.2.3. Impacts to built heritage

Impacts to built heritage are only expected to occur during the construction phase. The chances are small, however, because the layout has been designed to avoid impacts. Only one area remains of concern and that is where a wind farm road passes through the Rosary farm complex. The distances between features, however, are such that the chances of impacts are very low or even negligible. Despite the permanence of any impact, the small chance of it occurring means that the significance is **low negative** (Table 7). Mitigation would entail ensuring that the existing road alignment is taken through the complex since there is sufficient space on either side for it to be upgraded to accommodate large vehicles passing through easily. With mitigation no impacts are expected and the rating is **insignificant**.

Table 7: Assessment of built heritage impacts (HL04).

Issue	Damage to or destruction of built heritage resources

Description of Impact		
Built heritage resources can be physically harmed during construction, either to make way for development or accidentally.		
Type of Impact	Direct	
Nature of Impact	Negative	
Phases	Construction	
Criteria	**Without Mitigation**	**With Mitigation**
Intensity	Low	Very Low
Duration	Permanent	Permanent
Extent	Site	Site
Consequence	Medium	Low
Probability	Conceivable	Unlikely / improbable
Significance	Low -	Insignificant
Degree to which impact can be reversed	Low. Heritage resources are unique and cannot be replaced, although repairs can be made in the event of minor damage.	
Degree to which impact may cause irreplaceable loss of resources	High. Heritage resources are unique and cannot be replaced.	
Degree to which impact can be mitigated	High. Road footprints can be adjusted to avoid sensitive features.	
Mitigation actions		
The following measures are recommended:	Ensure that the existing road between the structures is followed and that necessary upgrades do not put the structures at risk of damage.	
Monitoring		
The following monitoring is recommended:	ECO to ensure that enough space exists between roads and built structures.	
Cumulative impacts		
Nature of cumulative impacts	Negative	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	Low -	Very Low -

7.2.4. Impacts to the cultural landscape

Direct impacts to the cultural landscape will occur during construction when large vehicles and equipment are brought into the rural landscape, altering it to one with a more industrial character. The activity, dust and noise will also disturb the sense of place. These impacts are rated as being of medium intensity but their duration will be relatively short, depending on the duration of the construction period. The pre-mitigation impact significance calculates to **medium negative** (Table 8). Mitigation measures will entail minimising the duration of the construction period and minimising and/or reducing the visual disruption to the landscape. Because of the scale of the equipment and structures involved, these measures are unlikely to affect the significance rating enough to drop it a level. The post-mitigation significance thus remains at the **medium negative**

level. These ratings are in agreement with the VIA (Lawson & Oberholzer 2021). There are no fatal flaws in terms of construction phase impacts to the cultural landscape.

Table 8: Assessment of construction phase impacts to the cultural landscape (HL04).

Issue	Visual intrusion into the cultural landscape and disturbance of the setting and context of heritage resources.	
Description of Impact		
Intrusion into the rural landscape of industrial equipment and structures.		
Type of Impact	Direct	
Nature of Impact	Negative	
Phases	Construction	
Criteria	**Without Mitigation**	**With Mitigation**
Intensity	Medium	Medium
Duration	Short-term	Short-term
Extent	Local	Local
Consequence	Medium	Medium
Probability	Definite / Continuous	Definite / Continuous
Significance	Medium -	Medium -
Degree to which impact can be reversed	Medium. Once construction is complete all the equipment would be removed but the turbines and related structures would remain present. However, almost all noise and activity would cease.	
Degree to which impact may cause irreplaceable loss of resources	Medium. Every landscape setting is unique but similar landscapes do occur widely in the central interior of South Africa.	
Degree to which impact can be mitigated	Low, since concealing the activity and structures is not feasible.	
Mitigation actions		
The following measures are recommended:	Keep construction duration as short as possible. Minimise landscape scarring. Rehabilitate any areas not required during operation. Where road surfacing is required use low contrast materials where possible.	
Monitoring		
The following monitoring is recommended:	ECO to ensure that construction activities remain in approved footprint.	
Cumulative impacts		
Nature of cumulative impacts	Negative	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	Medium -	Medium -

7.3. Operation Phase: HL03 & HL04

7.3.1. Impacts to the cultural landscape

Direct impacts to the cultural landscape will occur during operation as a result of the presence of large wind turbines and associated infrastructure in the landscape. They will result in an industrial character being introduced. These impacts are rated as being of low intensity and it is likely that, in time, the wind farm would gradually become an acceptable component of the local landscape. Note that new direct impacts to the rock art landscape are not expected during operation and it is only the change in character that is of concern at this stage. The impact duration will be long term,

depending on the duration of the operation phase. The pre-mitigation impact significance calculates to **medium negative** for both HL03 and HL04 respectively (Table 9). The VIA rates the impact of the turbines as high negative both before and after mitigation, while other aspects are given a medium negative rating. The negative impact of the bypass road is considered high negative before mitigation in the VIA but this is not a heritage concern. No feasible mitigation measures for reducing daytime visual intrusion from the turbines exist, although it is recommended that in an attempt to reduce night-time impacts to the sense of place from CAA lighting, a warning system that only switches the lights on when an aircraft approaches must be used. If such a system is not yet approved at the time of construction, then the proponent should investigate the development of such a system with a view towards gaining approval and retrofitting the wind farm with it. One best practice mitigation measure suggested is to ensure that all maintenance activities remain in the authorised footprint and that vehicles remain on the approved roads and tacks. This is unlikely to affect the significance rating enough to reduce daytime impacts. The post-mitigation significance thus remains at the **medium negative** level. However, with no red flashing lights at night it is likely that the impacts at night could be seen as **very low negative** because of the substantially reduced visual impacts. Lastly, design phase mitigation is applicable in the event that the wind farm is approved, and the final layout does not need all approved turbine locations to ensure a maximum of 60 turbines. In this case, where a choice exists between turbines to be dropped, and all other factors are equal, priority should be given to dropping turbines in the high visual sensitivity areas. Also, in the case of HL03, Turbines 85, 90, 91, 92, 93 and/or 94 could be given priority when dropping turbines to reduce the intensity of impacts to the rock art landscape, while in HL04 Turbine 110 could be given priority when dropping turbines because of proximity to rock art and its prominent position atop a scarp overlooking a public road. There are no fatal flaws in terms of operational phase impacts to the cultural landscape.

Table 9: Assessment of operation phase impacts to the cultural landscape (HL03 and HL04).

Issue	Visual intrusion into the cultural landscape and disturbance of the setting and context of heritage resources.	
Description of Impact		
Intrusion into the rural landscape of industrial structures.		
Type of Impact	Direct	
Nature of Impact	Negative	
Phases	Operation	
Criteria	**Without Mitigation**	**With Mitigation**
Intensity	Low	Low
Duration	Long-term	Long-term
Extent	Local	Local
Consequence	Medium	Medium
Probability	Definite / Continuous	Definite / Continuous
Significance	Medium -	Medium -
Degree to which impact can be reversed	High. Once the facility is decommissioned and the land rehabilitated, the impacts would be almost entirely gone.	
Degree to which impact may cause irreplaceable loss of resources	Medium. Every landscape setting is unique but similar landscapes do occur widely in the central interior of South Africa. With decommissioning the landscape could be restored.	
Degree to which impact can be mitigated	Low, since concealing the activity and structures is not feasible.	
Mitigation actions		

The following measures are recommended:	No maintenance activities to take place outside of the authorised footprint and all vehicles to remain on authorised roads and tracks. If approved by the CAA at the time, make use of a warning system in which the lights stay off at night until needed. If not yet approved, then investigate such a system and retrofit if/when approval is gained.	
Monitoring		
The following monitoring is recommended:	No specific monitoring other than to ensure the above measure is complied with.	
Cumulative impacts		
Nature of cumulative impacts	Negative	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	Medium -	Medium -

7.4. Decommissioning Phase: HL03 & HL04

7.4.1. Impacts to the cultural landscape

Direct impacts to the cultural landscape will occur during decommissioning when large vehicles and equipment are brought into the rural landscape, altering it to one with a more industrial character. The activity, dust and noise will also disturb the sense of place. These impacts are rated as being of medium intensity but their duration will be relatively short, depending on the duration of the decommissioning period. The pre-mitigation impact significance calculates to **medium negative** (Table 10) for both HL03 and HL04 respectively. Mitigation measures will entail minimising the duration of the decommissioning period and minimising and/or reducing the visual disruption to the landscape. Because of the scale of the equipment and structures involved, these measures are unlikely to affect the significance rating enough to drop it a level. The post-mitigation significance thus remains at the **medium negative** level. These ratings are in agreement with the VIA (Lawson & Oberholzer 2021). There are no fatal flaws in terms of decommissioning phase impacts to the cultural landscape.

Table 10: Assessment of decommissioning phase impacts to the cultural landscape (HL03 and HL04).

Issue	Visual intrusion into the cultural landscape and disturbance of the setting and context of heritage resources.	
Description of Impact		
Intrusion into the rural landscape of industrial equipment and structures.		
Type of Impact	Direct	
Nature of Impact	Negative	
Phases	Decommissioning	
Criteria	**Without Mitigation**	**With Mitigation**
Intensity	Medium	Medium
Duration	Short-term	Short-term
Extent	Local	Local
Consequence	Medium	Medium
Probability	Definite / Continuous	Definite / Continuous
Significance	Medium -	Medium -
Degree to which impact can be reversed	Medium. Once decommissioning is complete all the equipment would be removed and the site would be rehabilitated. Although it would likely take hundreds of years for the landscape to fully recover, the general pre-construction sense of place would be restored.	

Degree to which impact may cause irreplaceable loss of resources	Medium. Every landscape setting is unique but similar landscapes do occur widely in the central interior of South Africa.	
Degree to which impact can be mitigated	Low, since concealing the activity and structures is not feasible.	
Mitigation actions		
The following measures are recommended:	Keep decommissioning duration as short as possible. Ensure effective rehabilitation of all areas.	
Monitoring		
The following monitoring is recommended:	ECO to ensure that construction activities remain in approved footprint.	
Cumulative impacts		
Nature of cumulative impacts	Negative	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	Medium -	Medium -

7.5. Cumulative impacts: HL03 & HL04

In relation to an activity, cumulative impact "means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may be significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities" (NEMA EIA Reg GN R982 of 2014).

Other than the proposed Nuweveld Wind Farms, there are currently no approved renewable energy EA applications within a 30 km (or even 50 km) radius of the project site (Figure 99). The nearest operational wind farm from the site is the Noblesfontein Wind Farm located approximately 97 km east of HL03 and 78 km east of HL04. In addition, the South African Renewable Energy EIA Application Database (REEA) ("REEA_OR_2021_Q3") shows several renewable energy projects (solar) authorised close to Beaufort West. Further research confirmed that none of these projects are going ahead/have a valid EA. The cumulative impact assessed will therefore be the collective impact of the four Hoogland Wind Farms and Grid Connection applications together with the three Nuweveld Wind Farm and Gridline applications (Figure 99).

All of the projects considered here have followed a similar iterative process and have been designed to have minimal impacts to heritage resources. Cumulative impacts to archaeological heritage are expected to be of **medium negative** significance for HL03 because of the engravings and **low negative** significance for HL04 before mitigation (Tables 4 & 6) and would occur during the construction phase of the various projects. There is the possibility that some archaeological resources could still be present within the final authorised footprints. Pre-construction surveys will be required to determine whether any sites require avoidance through micrositing or else archaeological mitigation. Post-mitigation impact significance is expected to be **very low negative** for both projects.

Impacts to the cultural landscape are largely visual and relate to the intrusion of industrial-type structures and equipment in the cultural landscape. These impacts will occur during all phases and are rated as **medium negative** in each case. There is no mitigation that can make a meaningful difference to these ratings since the structures are far too large to hide. Measures that are suggested anyway are as listed in Tables 5 and 8 to 10. With mitigation the rating remains at **medium negative**.

From a visual point of view, the VIA rates these impacts as high negative both before and after mitigation.

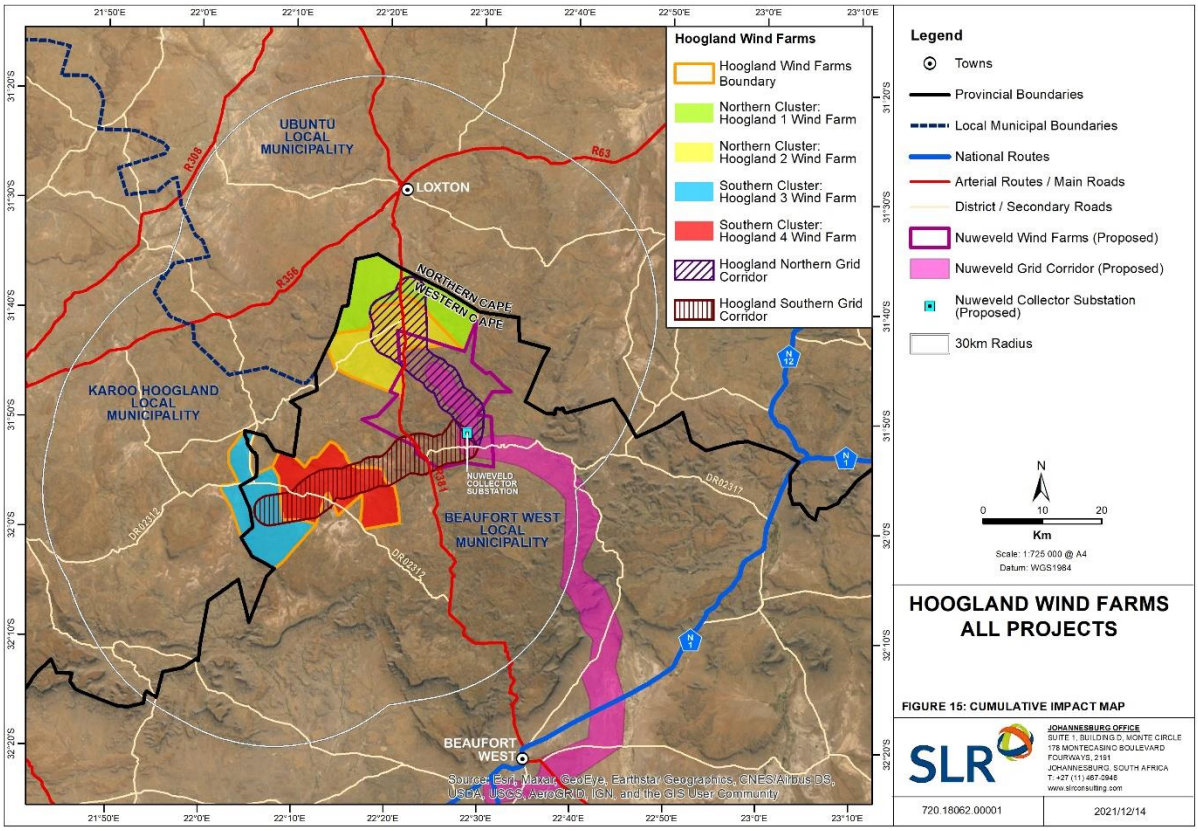


Figure 101: Cumulative Map indicating renewable energy facilities within the 30km buffer of the Hoogland Wind Farms.

7.6. Evaluation of impacts relative to sustainable social and economic benefits: HL03 & HL04

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 proposed WEFs would generate and feed electricity into the national grid. This is something very much needed for economic development in South Africa due to the historical and ongoing problems associated with electricity supply. Economic development has knock-on effects throughout society, but it is also noted that construction and operation phase jobs would be created. This provides a socio-economic benefit. The expected impacts to heritage resources from the development are generally low and are thus outweighed by the potential benefits to be derived.

7.7. Existing impacts to heritage resources: HL03 & HL04

Aside from the natural degradation, weathering and erosion that will affect fossils, archaeological materials and buildings, the only obvious threat to heritage resources on the site is the robbing and reuse of stones and possibly bricks from historical sites. Trampling from grazing animals and/or farm/other vehicles could also occur and is relevant to both artefact scatters and rock engravings. Some of the buildings are unoccupied and unmaintained which is also resulting in accelerated

natural degradation. The impacts to archaeological sites from the removal of building materials is considered to be of **low negative** significance, since these sites are, in any case, likely to be in a ruinous state before being raided. Other existing impacts are generally **insignificant** or **very low negative**. There are no existing impacts to the landscape.

7.8. The No-Go alternative: HL03 & HL04

Due to the comprehensive iterative design process that has been undertaken to inform the Hoogland 3 and Hoogland 4 wind farm layouts and their associated infrastructure, no site or layout alternatives will be assessed. However, it is required that the 'no-go' alternative be assessed. The 'no-go' alternative is the option of not constructing the project where the status quo of the current farming activities on the site would prevail.

Not constructing the facilities means that the study area would remain undeveloped and the status quo would be retained. The impacts that would occur would be as per the existing impacts described above in Section 7.7. Importantly, electricity generation would not take place, which means that this benefit would be lost to society. 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.

7.9. Levels of acceptable change: HL03 & HL04

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. Any uncontrolled impacts to standing heritage structures are unacceptable. 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.

8. MITIGATION AND EMPR REQUIREMENTS

Aside from mitigation of specific sites that cannot be avoided (only for HL03 at this point), the primary mitigation measure that needs to be complied with is to have the final authorised footprint surveyed well before construction starts. This should occur at least six and preferably eight months before construction to allow time for the following sequence of activities:

- Pre-construction survey;
- Survey report;
- Workplan application to HWC or permit application to SAHRA for any archaeological sites that require excavation;
- Consideration, approval and issuing of the Workplan approval or Permit;
- Mitigation excavations and/or rock art recording as needed;
- Reporting; and
- Final approval by HWC and/or SAHRA.

The actions recorded in Table 11 should be included in the environmental management program (EMPr) for the project. Note that palaeontological considerations are contained in the relevant specialist report.

Table 11: Heritage considerations for inclusion in the EMPr (HL03 and HL04).

Impact	Mitigation / management objectives	Mitigation / management actions	Monitoring		
			Methodology	Frequency	Responsibility
Impacts to archaeology and graves					
Damage or destruction of archaeological sites or graves	Avoid impacts (preferred) or locate and sample or rescue sites/burials before disturbance	Pre-construction survey, micrositing of infrastructure where possible	Appoint archaeologist to conduct survey c. 6 months before construction to allow for approval of survey report and workplan application, conducting of mitigation and approval of mitigation report	Once-off	Project developer
		Archaeological excavation and sampling of significant sites that cannot be avoided	Appoint archaeologist to conduct excavations well before construction	Once-off	Project 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 and carry out inspections of excavations	Ongoing basis	Construction Manager or Contractor
				Whenever on site (at least weekly)	ECO
Impacts to built heritage					
Damage or destruction of buildings	Avoid impacts	Ensure all structures on site are no-go areas, using signage if close enough to be at risk.	Inform staff and carry out inspections	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 in accordance with the revegetation and rehabilitation plan.	Monitoring of surface clearance relative to approved layout	Ongoing basis	Construction Manager or Contractor
				As required	ECO

9. CONSULTATION WITH HERITAGE CONSERVATION BODIES

As per the HWC requirements (see section 1.2 above), the final HIA will be sent to the local municipality and registered (with HWC) heritage conservation bodies for 30 days of consultation prior to submission.

Section to be completed prior to final HIA submission.

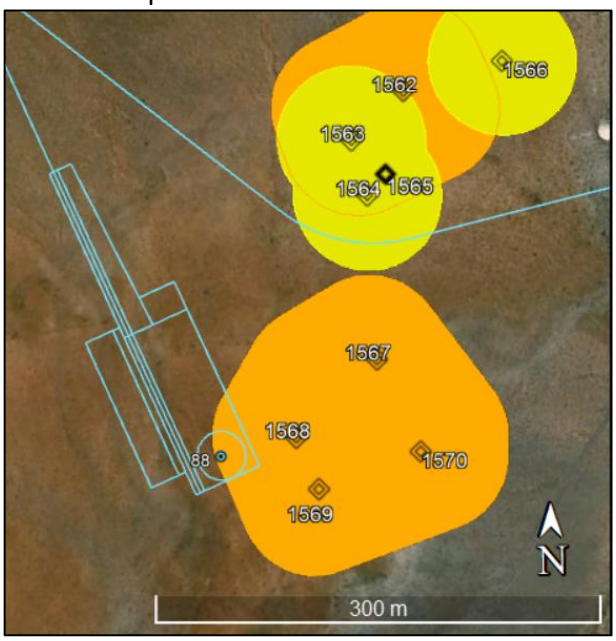
10. CONCLUSIONS

In general, the iterative process followed in the development of the Hoogland 4 Wind Farm layout has meant that, aside from the unavoidable impacts to the wider cultural landscape, impacts to heritage resources are minimal. For Hoogland 3, however, there are still a number of impacts that will require further consideration. This section discusses the various specific instances where heritage buffers have been intersected and lists the project responses to the heritage indicators.

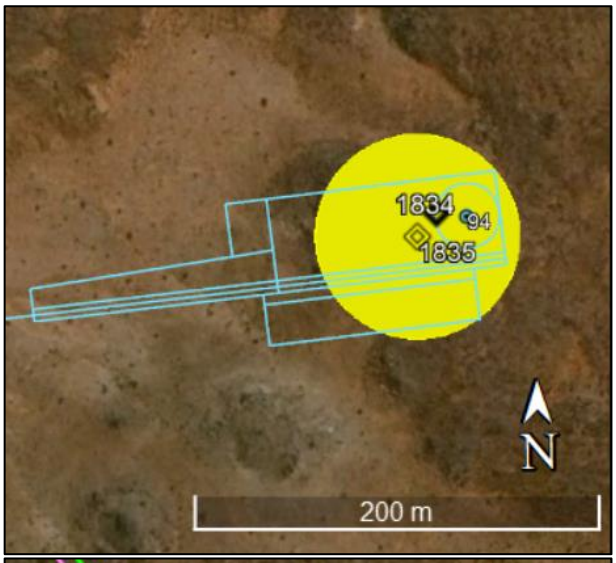
10.1. Hoogland 3 Wind Farm

There are a number of places where the current layout for this project intersects heritage resources. In some instances where the project will impinge on heritage buffers these are found to be acceptable, but micrositing or mitigation will be required for the remainder. While mitigation is perfectly acceptable for Grade IIIC resources that face destruction, it is less preferred for Grade IIIB sites where micrositing should rather be carried out. In the case of Grade IIIA sites, micrositing is strongly advised and mitigation should be seen as a last resort. The heritage indicators are listed and discussed in Table 13. Note that in addition to the listed project responses, recommendations have been made to deal with any as yet unknown sensitive areas.

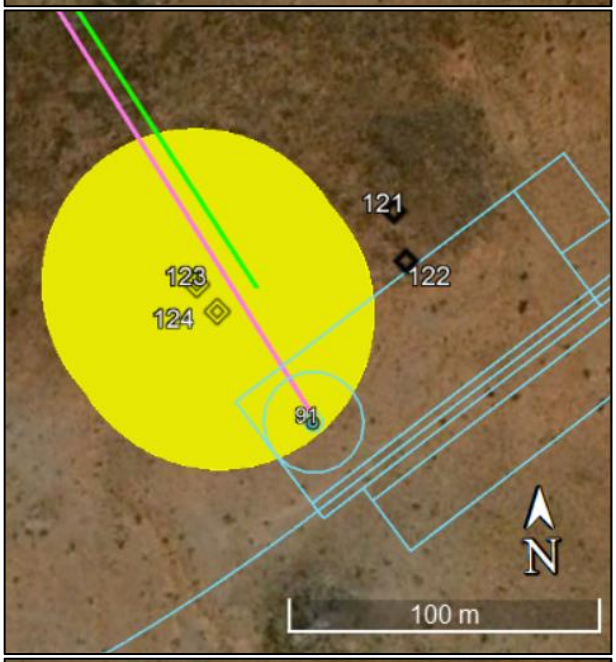
Table 12: Impacts on sites and intersection of buffers in Hoogland 3.



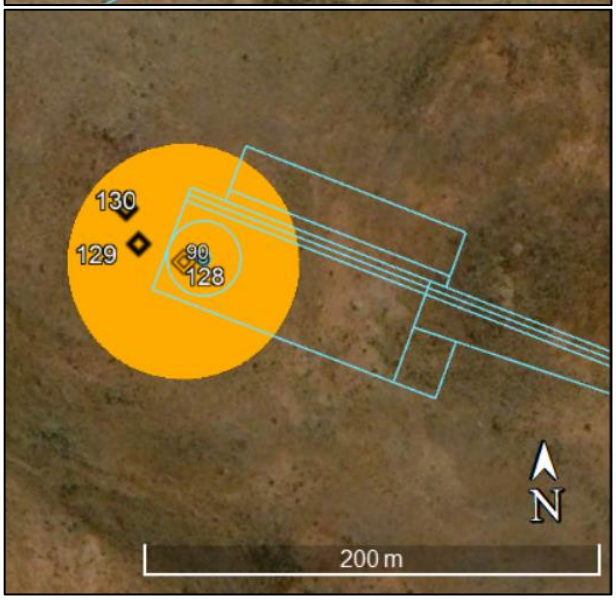
Waypoints 1567-1570 represent a Grade IIIB large stone kraal whose buffer zone has been intersected by turbine 88. Waypoint 1564 is a Grade IIIC stone ruin whose buffer has been intersected by a wind farm road (turquoise line). In both cases the heritage features would be more than 20 m from the new infrastructure. The road is acceptable but micrositing of the turbine hardstand is preferred due to the amount of construction activity that would be occurring there.



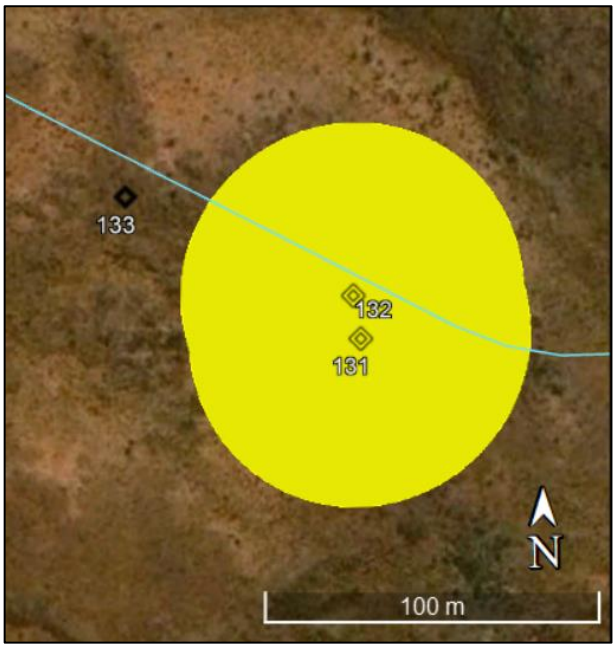
Waypoint 1835 is a Grade IIIC historical engraving of two probable human figures. Micrositing Turbine 94 and its hardstand (possibly towards the south) is preferred.



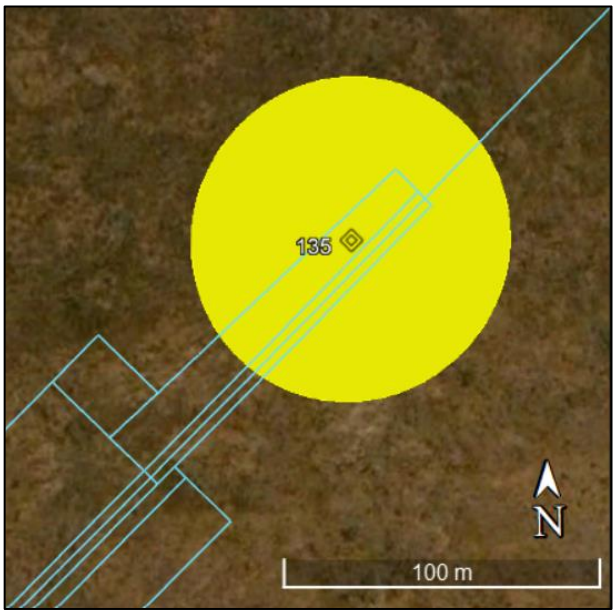
Waypoints 123 and 124 are Grade IIIC historical engravings of animals and other motifs. The features are at least 25 m from the edge of the Turbine 91 hardstand but it is preferred that the turbine be microsited (possibly towards the east or southeast). They would also be very close to the cable (overhead along the pink & green lines and buried along the pink) but this would change if the turbine was moved slightly.



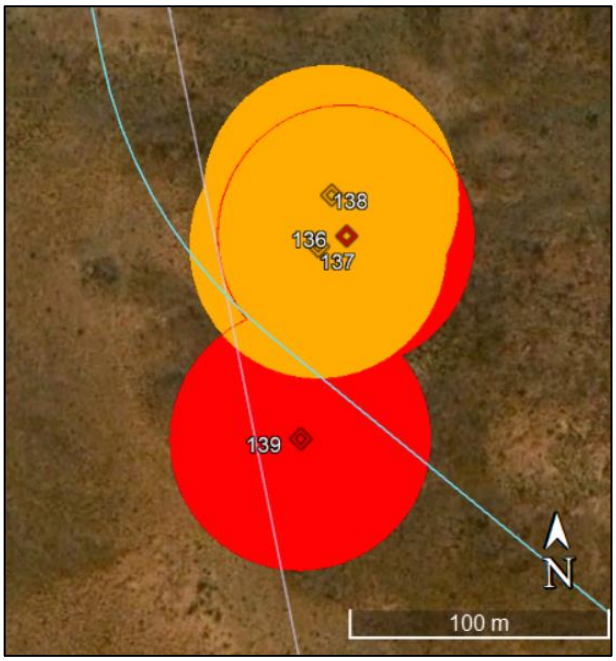
Waypoint 128 represents three engraved rocks that include an LSA animal. It is preferred that Turbine 90 and its hardstand be microsited (possibly towards the southeast).



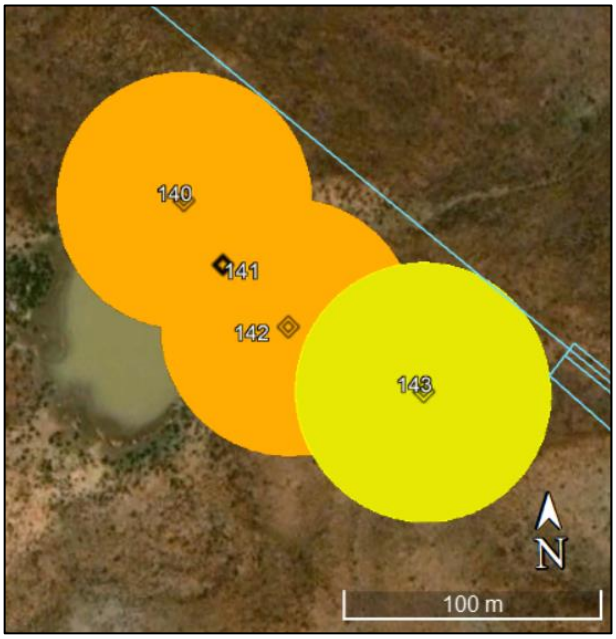
Waypoints 131 and 132 represent a Grade IIIC LSA artefact scatter that would be directly affected by a wind farm road (turquoise line). The road should preferably be microsited.



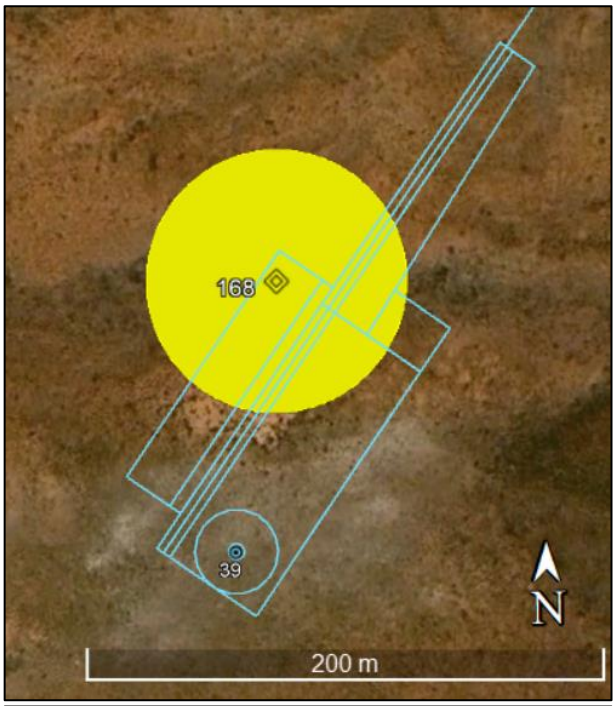
Waypoint 135 is a historical engraving that will be directly affected by Turbine 83. It is preferred that the turbine hardstand and associated road be microsited.



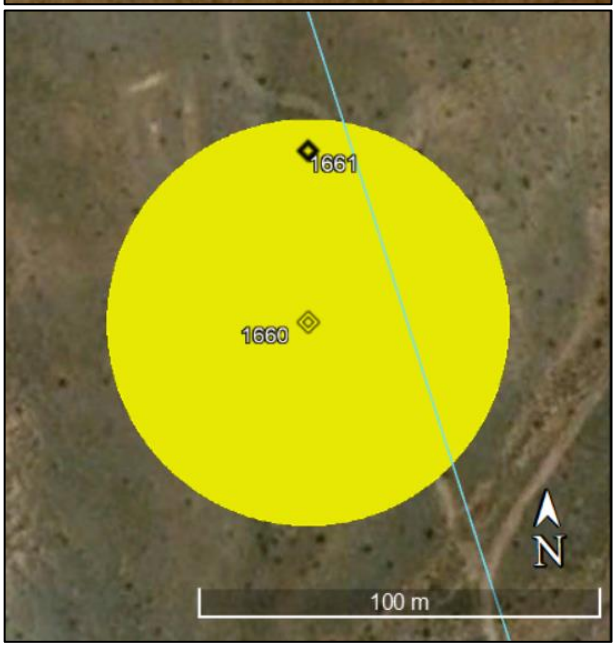
Waypoints 136 and 137 represent Grade IIIB and IIIA historical engravings and waypoint 139 is a possible grave. All of their buffers are intersected by a wind farm road (turquoise line). It is strongly recommended that the road be microsited (possibly towards the east).



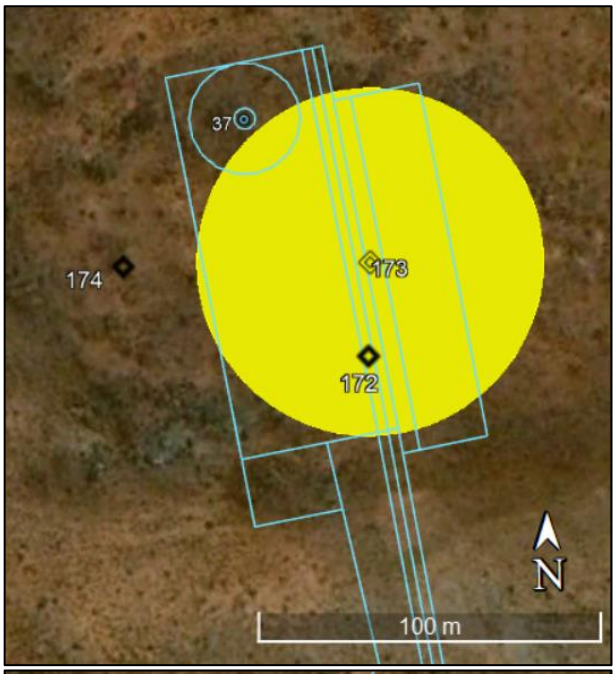
Waypoints 140 and 142 are Grade IIIB historical engravings, while Waypoint 143 is a stone-walled ruin. The ruin would be at least 47 m from the road (turquoise line) and Turbine 54 hardstand which is acceptable.



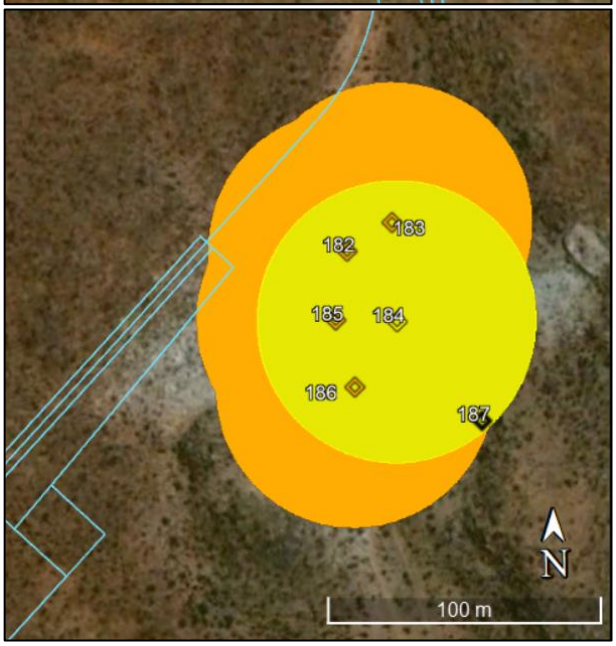
Waypoint 168 is a historical scratched Nine men's morris board that would be directly impacted by Turbine 39. It is preferred that the turbine and its hardstand be microsited.



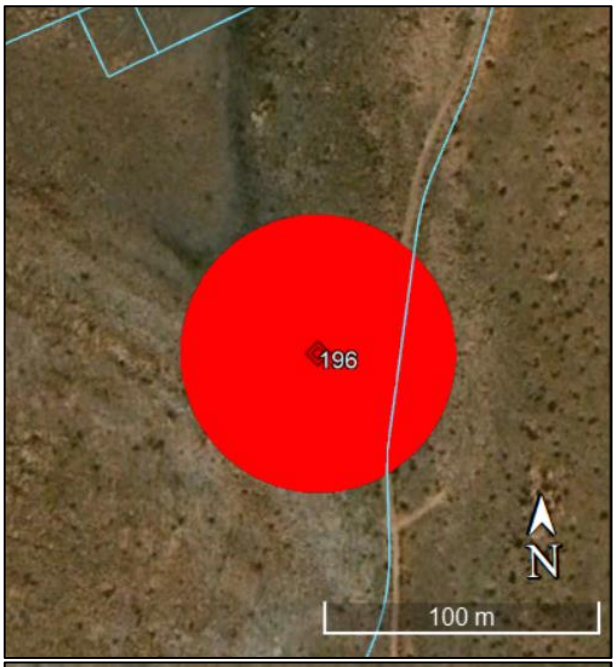
Waypoint 1660 is a small stone-walled ruin and some unrelated LSA artefacts whose buffer is intersected by a wind farm road (turquoise line). The project is reusing an existing farm road which is preferable to building a new one outside the buffer and this is therefore acceptable.



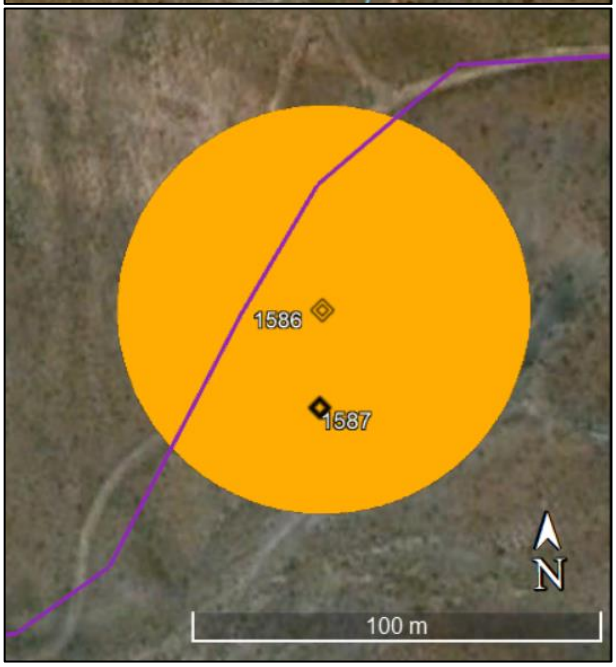
Waypoint 173 is a historical scratched Nine men's morris board that would be directly impacted by Turbine 37. It is preferred that the turbine and its hardstand be microsited.



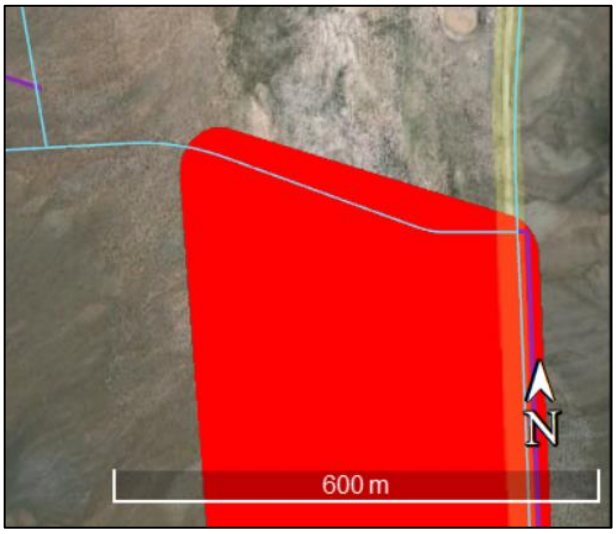
Waypoints 182 to 186 represent a Grade IIIB ruined stone-walled farm complex with one feature graded IIIC. The buffers are intersected by a wind farm road (turquoise line) and the end of the hardstand at Turbine 3. The road leads into the complex using an existing farm road but then angles up the side of the shallow valley. It is preferred that the road and turbine be microsited (possibly to the northwest).



Waypoint 196 is a probable grave cairn just south of Turbine 11 and whose buffer is intersected by a wind farm road (turquoise line). The project is reusing an existing farm road which is preferable to building a new one outside the buffer and this is therefore acceptable.



Waypoint 1586 is a Grade IIIB stone house ruin that lies adjacent to a farm track and whose buffer is intersected by a wind farm cable (purple line) following the track. There is only a 6 m space between the track and the house ruin and while it is preferred that the cable be moved slightly further away, at the minimum the cable must be placed to the northwest of the track.



This red polygon is an agricultural landscape around the Vonkfontein homestead. The wind farm road (turquoise line) follows a fence line on the outside of this landscape and is thus acceptable.

Table 13: Heritage indicators and project responses for Hoogland 3.

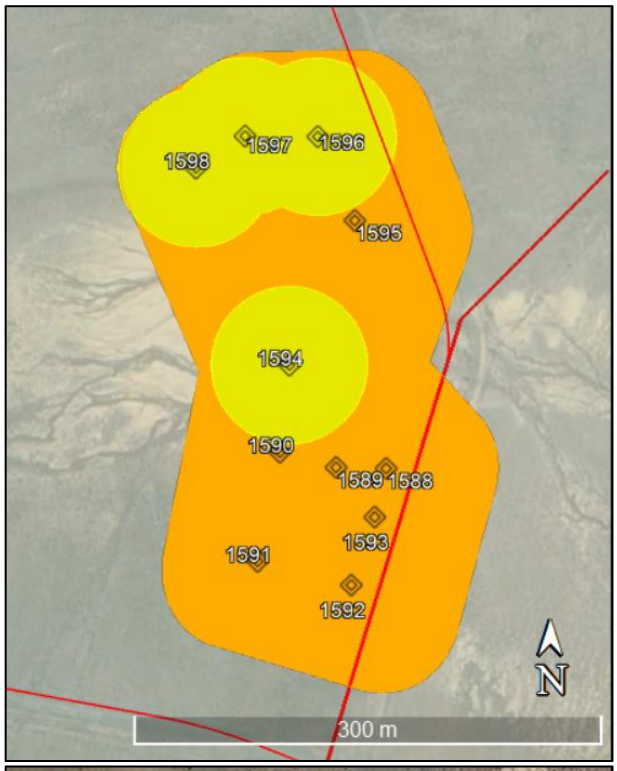
Indicator	Project Response
Uncontrolled damage to fossils should be minimised as far as possible.	The present layout avoids known sensitive areas.
Direct damage to archaeological sites should be avoided as far as possible and, where some damage to significant sites is unavoidable, scientific/historical data should be rescued.	There are a number of places where sites will be affected by the project. These locations will require further attention either in the form of micrositing (Waypoints 128, 131-132, 135 are best preserved through micrositing) or, if unavoidable, archaeological mitigation (Waypoints 123, 124, 168, 173, 1835 could be acceptably mitigated). It must be noted that mitigation is less advisable for the higher graded heritage resources.
Buffers of at least 30 m should be maintained around known archaeological sites as far as possible.	This has been done in most locations but several buffers will be intersected. In some instances this is acceptable (Waypoints 143, 196, 1564, 1660, Vonkfontein landscape), but for some sites (including most higher graded ones) micrositing should be considered (Waypoints 131-2, 136, 137, 139, 182-186, 1567-1570, 1586).
Buffers of at least 200 m should be maintained around the most significant rock art sites (i.e. grade IIIA) as far as possible but lower significance sites should be buffered by at least 30 m.	Most Grade IIIA engravings have been avoided by more than 200 m but three have not as follows: a road will pass 70 m from waypoint 175, a road will pass 40 m from waypoint 137, and a turbine hardstand would be 100 m from waypoint 1581.
Direct impacts to graves must be avoided completely with a 30 m buffer.	This has been done.
Clustering of turbines is preferred rather than having them spread out in a linear fashion. No turbines should exist as outliers.	There are no obvious outliers, although the northernmost turbines form a sub-cluster that, from some angles, would be seen separately to the rest. Nonetheless, there are no obvious outliers.
Powerlines should be buried as far as possible.	This has been done with the only overhead sections being where there are environmental or technical constraints.
Road surfacing, where required, should avoid high contrast materials.	This will be a recommendation, since it is not known yet whether any surfacing will be required.
Related infrastructure (substation, battery storage facility, buildings) should be in areas of low visibility.	All options are in low-lying areas well away from public roads. The current locations have all been approved by the visual specialists with conditions.
Buffers of at least 30 m should be maintained around all built elements, but where existing roads are upgraded this distance can be	This has been done.

Indicator	Project Response
reduced as needed but should still guarantee the integrity of the resource.	

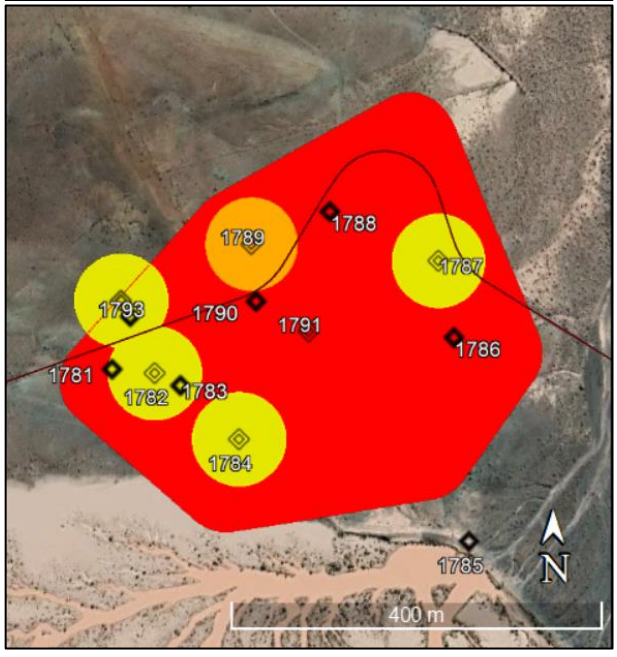
10.2. Hoogland 4 Wind Farm

There is currently just one significant concern for this project, although the layout impinges on heritage buffers in a number of other places, all of which are found to be acceptable. Mitigation will be needed at the one significant place (Table 14). The heritage indicators are listed and discussed in Table 15.

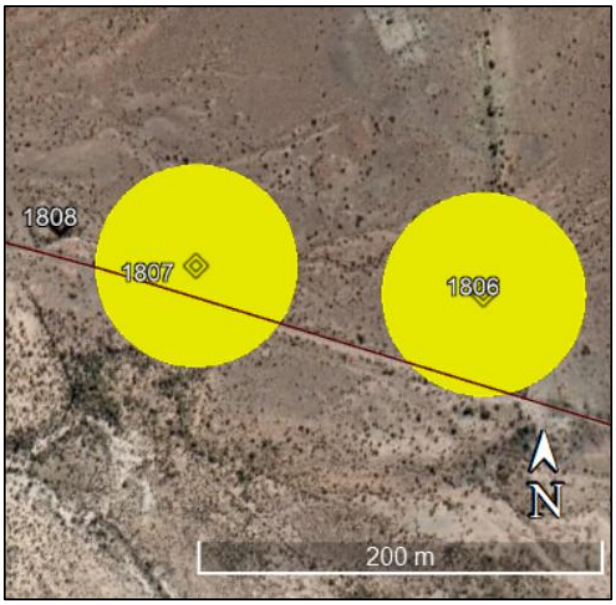
Table 14: Intersection of buffers in Hoogland 4.



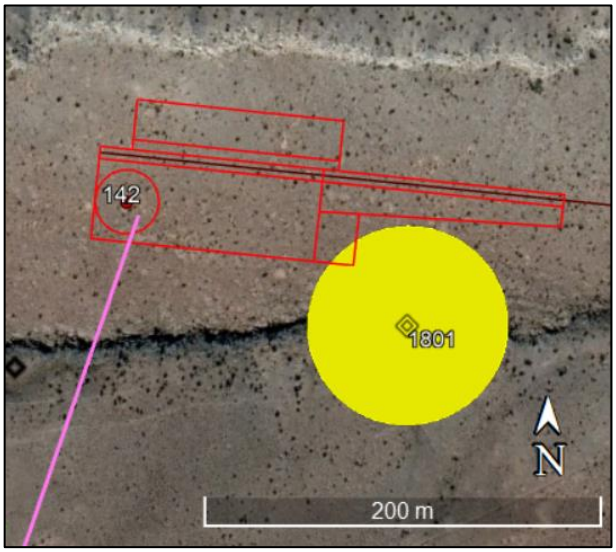
Waypoints 1588 to 1598 represents a complex of historical sites whose buffer is intersected by a wind farm road (red line). The project is reusing an existing farm road which is preferable to building a new one outside the buffer and this is therefore acceptable.



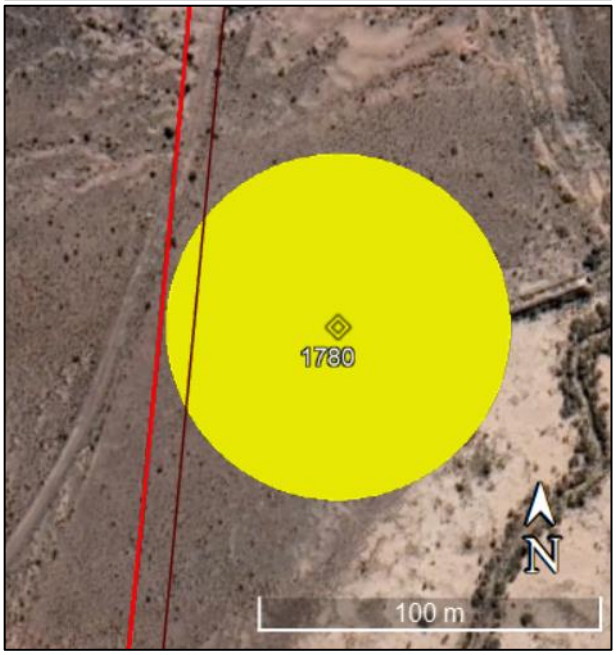
Waypoints 1781-1791 represent a derelict farm complex whose buffer is intersected by a wind farm road (dark red line). The project is reusing an existing farm road (although some realignment of corners will be needed in the north) which is preferable to building a new one outside the buffer and this is therefore acceptable.



Waypoints 1806 and 1807 are a small dam and a stone ruin and threshing floor. The project is reusing an existing farm road which is preferable to building a new one outside the buffer and this is therefore acceptable. However, it is important that the road is not widened to the north adjacent to 1807 as the site comes to within 3 m of the road.



Waypoint 1801 is a small rock shelter under the scarp. Turbine 142 is atop the scarp and it would slightly intersect the site buffer. Given that the site is below the cliff, this is acceptable.



Waypoint 1780 represent a large, breached dam. The project is reusing an existing farm road which is preferable to building a new one outside the buffer and this is therefore acceptable.

Table 15: Heritage indicators and project responses for Hoogland 4.

Indicator	Project Response
Uncontrolled damage to fossils should be minimised as far as possible.	The present layout avoids known sensitive areas.
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.	This has been done, although it is noted that an existing road to be reused runs within 3 m of the site at waypoint 1807.
Buffers of at least 30 m should be maintained around known archaeological sites as far as possible.	This has been done in most locations but several buffers will be intersected. In all instances this is acceptable (Waypoints 1588-1598, 1780, 1781-1791, 1801, 1806, 1807), Although caution is needed adjacent to waypoint 1807.
Buffers of at least 200 m should be maintained around the most significant rock art sites as far as possible but lower significance sites should be buffered by at least 30 m.	N/A – no Grade IIIA rock art occurs in the HL04 site with the nearest Grace IIIA engravings being 1.4 km from HL04 turbines.
Direct impacts to graves must be avoided completely with a 30 m buffer.	This has been done.
Clustering of turbines is preferred rather than having them spread out in a linear fashion. No turbines should exist as outliers.	There are no obvious outliers, although two sub-clusters of turbines occur in the north and northwest. Both are far from accessible viewpoints and thus not of concern.
Powerlines should be buried as far as possible.	This has been done with the only overhead sections being where there are environmental or technical constraints.
Road surfacing, where required, should avoid high contrast materials.	This will be a recommendation, since it is not known yet whether any surfacing will be required.
Related infrastructure (substation, battery storage facility, buildings) should be in areas of low visibility.	These structures are at least 0.5 km from the nearest public road and are in relatively low-lying areas. The current locations have all been approved by the visual specialists.
Buffers of at least 30 m should be maintained around all built elements, but where existing roads are upgraded this distance can be reduced as needed but should still guarantee the integrity of the resource.	This has been done in all but one instance where a wind farm road running along an existing farm track would run some 20 m from a stone-walled kraal at waypoint 1789 but this is acceptable so long as the existing road alignment is used as closely as possible.

10.3. Reasoned opinion of the specialist: HL03 & HL04

Given that the site lies wholly in the case of HL04 and partly in the case of HL03 within a REDZ and that other wind farms have been approved in the area, the proposed land use is deemed acceptable because renewable energy facilities are to be expected in the future. The various other individual impacts highlighted above can easily be dealt with through micrositing or archaeological mitigation as appropriate. It is therefore the opinion of the heritage specialist that the proposed Hoogland 3

Wind Farm and Hoogland 4 Wind Farm should both be authorised in full, but subject to the recommendations listed below.

11. RECOMMENDATIONS

11.1. Hoogland 3

It is recommended that the proposed project be approved but subject to the following recommendations which must be captured in the EA, should one be issued:

- The various sites that will be directly impacted must be considered for protection through micrositing or else, if unavoidable, archaeological mitigation (recording, tracing and photography of engravings; excavation and sampling of artefacts) must be implemented. This affects waypoints 123, 124, 128, 131-132, 135, 168, 173 & 1835;
- The various sites whose buffers will be intersected and where this is not acceptable must be considered for protection through micrositing. This affects waypoints 123-124, 136, 137, 139, 182-186, & 1567-1570;
- At waypoint 1586 the cable must be laid on the northwest side of the road;
- A pre-construction survey of the entire authorised footprint must be undertaken in order to determine whether any further archaeological sites may need mitigation or protection through micrositing (if possible);
- The final layout must be evaluated by a palaeontologist to determine which areas, if any, need a pre-construction survey. These will be previously unsurveyed and potentially sensitive areas;
- If necessary, and subject to the agreement of Heritage Western Cape and/or Northern Cape, a Workplan or Permit application should be submitted prior to the palaeontological survey to allow for sample collection during the survey;
- A palaeontological chance finds procedure must be incorporated into the EMPr;
- Landscape scarring must be minimised during construction;
- If road surfacing is required then low contrast materials such as concrete with brown exposed aggregate should be used, where possible;
- All areas not required during operation must be rehabilitated in accordance with the Rehabilitation and Revegetation Plan;
- If a CAA-approved warning system which only requires the red lights to come on when an aircraft is in the vicinity exists at the time of construction, then such a system must be used to reduce the night-time impacts to the sense of place;
- If such a warning system is not approved for use at the time of construction, then the proponent must investigate the development of a system and, if/when approved, it must be retro-fitted to the wind farm;
- Visually sensitive skylines, rock outcrops and steep slopes must be avoided as per the recommendations of the visual impact assessment;
- Temporary laydown and areas and batching plants should be located in areas approved by the visual specialists;
- Substations and O&M Buildings to be located in unobtrusive low-lying areas away from provincial and district roads where possible;

- On-site signage to be discrete, and billboards prohibited. Signage to be fixed as low as possible, preferably against a backdrop to avoid intrusion on the skyline;
- Security and other outdoor lighting to be fitted with reflectors to conceal the light source;
- In the event of decommissioning, the site must be rehabilitated in accordance with the Rehabilitation and Revegetation Plan;
- If the wind farm is approved and the final layout does not need all approved turbine locations to ensure a maximum of 60 turbines, then where a choice exists between turbines to be dropped, and all other factors are equal, priority should be given to dropping turbines in the high visual sensitivity areas, as well as Turbines 85, 90, 91, 92, 93 and/or 94 which are within the main part of the rock art landscape; 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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11.2. Hoogland 4

It is recommended that the proposed project be approved but subject to the following recommendations which must be captured in the EA, should one be issued:

- The farm road to be reused adjacent to waypoint 1807 may not be widened towards the north;
- A pre-construction survey of the entire authorised footprint must be undertaken in order to determine whether any further archaeological sites may need mitigation or protection through micrositing (if possible);
- The final layout must be evaluated by a palaeontologist to determine which areas, if any, need a pre-construction survey. These will be previously unsurveyed and potentially sensitive areas;
- If necessary, and subject to the agreement of Heritage Western Cape, a Workplan application should be submitted prior to the palaeontological survey to allow for sample collection during the survey;
- A palaeontological chance finds procedure must be incorporated into the EMPr;
- Landscape scarring must be minimised during construction;
- If road surfacing is required then low contrast materials such as concrete with brown exposed aggregate should be used, where possible;
- All areas not required during operation must be rehabilitated in accordance with the Rehabilitation and Revegetation Plan;
- If a CAA-approved warning system which only requires the red lights to come on when an aircraft is in the vicinity exists at the time of construction, then such a system must be used to reduce the night-time impacts to the sense of place;
- If such a warning system is not approved for use at the time of construction, then the proponent must investigate the development of a system and, if/when approved, it must be retro-fitted to the wind farm;
- Visually sensitive skylines, rock outcrops and steep slopes must be avoided as per the recommendations of the visual impact assessment;

- Temporary laydown and areas and batching plants should be located in areas approved by the visual specialists;
- Substations and O&M Buildings to be located in unobtrusive low-lying areas away from provincial and district roads where possible;
- On-site signage to be discrete, and billboards prohibited. Signage to be fixed as low as possible, preferably against a backdrop to avoid intrusion on the skyline;
- Security and other outdoor lighting to be fitted with reflectors to conceal the light source;
- In the event of decommissioning, the site must be rehabilitated in accordance with the Rehabilitation and Revegetation Plan;
- If the wind farm is approved and the final layout does not need all approved turbine locations to ensure a maximum of 60 turbines, then where a choice exists between turbines to be dropped, and all other factors are equal, priority should be given to dropping Turbine 110; 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 –
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:

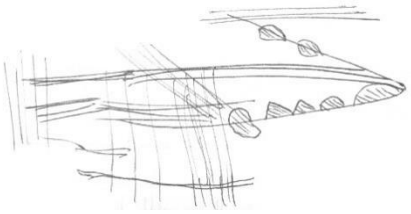
Western Cape Government Cultural Affairs Awards 2015/2016: Best Heritage Project.

APPENDIX 2 – List of finds

Note that NC waypoints have green highlighted numbers and SAHRA grades. All other sites use the HWC grading system.

Project	Waypoint	Co-ordinates	Description	Grade
HL03	1659	S31 59 39.8 E22 11 58.2	A low pile of stones of about 2 m diameter on an extensive silty plain. Seems very unlikely to be a grave.	NCW
HL03	1660	S31 59 33.8 E22 09 04.9	A small stone-walled structure of about 2 m diameter built against a dolerite ridge. Some clear glass and wire seen around it. There is a small stone feature of indeterminate function to the southeast of the structure. There is also some LSA hornfels artefact scatter both below and above the dolerite ridge, but with far more above.	IIIC
HL03	1661	S31 59 32.5 E22 09 04.9	An informal cairn of dolerite rocks on a dolerite ridge.	NCW
HL03	1662	S31 59 27.4 E22 09 06.6	A rectangular house ruin of 4x11 m. It has a stone plinth, but the walls, which were of brick, have been entirely removed down to floor level. Just one or two courses visible in places and many loose bricks lying about on and around the structure. There is a very light scattering of glass (green, blue, aqua, clear), ceramics and metal around the house.	IIIC
HL03	1663	S31 59 26.5 E22 09 05.8	A small, piled stone circular structure on a dolerite ridge. It is about 2x2 m. There are also some LSA hornfels artefacts and ostrich eggshell fragments.	NCW
HL03	1664	S31 59 26.7 E22 09 05.2	A very poorly preserved stone kraal on the west side of a dolerite ridge.	NCW
HL03	1665	S31 59 27.0 E22 09 05.0	A fairly large ash and rubbish midden. It is soft when walked on indicating a decent ash content. A collection of calcrete stone/cobbles lies on the western part of the midden. There is plenty of glass and ceramics on the midden, including a number of quite large pieces. Several dolls head and limb pieces also seen. Also lots of metal, dominated by spent rife cartridges. The ceramics include plain white refined earthenwares, transfer-printed wares, stoneware, lined industrial slipware, hand-painted ware. The glass includes a bottle base embossed with 'JOHN WALKER & SONS LTD KILMARNOCK 1865'. Also a whole bottle with 'CHAMBERLAIN'S COUGH REMEDY, DES MOINS IN U.S.A. and CHAMBERLAINS MED CO' embossed on three sides. Another glass fragment was embossed with 'ESSENSE OF LIFE'. Glass colours include clear, pink, purple, red, light green, aqua. There were two metal buttons, one embossed with 'BEST RING EDGE', a part of a door handle and a plate that fits over a door keyhole.	IIIA
HL03	1666	S31 59 28.5 E22 09 08.3	A small stone and brick feature (just a collection of stones and bricks really) with some glass (2 bottles) and ceramics (1 vessel).	NCW
HL03	1667	S31 59 25.8 E22 09 06.3	Rectangular stone-walled structure in a bushy area on the edge of a wide, ephemeral watercourse. There are two square excavations of about 2.5 m diameter into calcrete alongside the walling and also a smaller square stone-lined hole of just over 1 m diameter. The three square features look like it is water-related infrastructure (i.e. water wells).	IIIC

HL03	1674	S31 58 05.6 E22 08 10.5	A small circular piled stone structure of about 2 m diameter and of unknown function.	IIIC
HL03	504	S31 59 22.3 E22 08 59.9	Small stone structure of about 3x3 m built against a scarp. The door is to the north alongside the scarp. A few fragments of metal see inside the structure.	IIIC
HL03	121	S31 57 40.8 E22 06 49.0	A scratched rock. There are a few other lightly scratched and/or rubbed rocks around this area.	NCW
HL03	122	S31 57 41.3 E22 06 49.2	A scratched rock.	NCW
HL03	123	S31 57 41.6 E22 06 46.6	An historical scratched engraving of an animal and another indeterminate motif.	IIIC
HL03	124	S31 57 41.8 E22 06 46.8	Rock with various historical scratches along with two very stylized animal figures.	IIIC
HL03	125	S31 57 48.5 E22 06 45.3	A patinated rectangular scratched motif filled with scratches. There are also some newer scratches alongside the rectangular image. It is possible that the older patinated one is an LSA image.	IIIB
HL03	126	S31 57 48.7 E22 06 44.9	Two flat rocks each with a patch of scratches on it.	NCW
HL03	127	S31 57 48.7 E22 06 46.2	A rock with a patch of scratches on it.	NCW
HL03	128	S31 57 52.7 E22 06 27.4	Three rocks with scratched engravings of various geometric motifs and animals. One animal is older due to being far more patinated than the rest of the imagery here. It may well be LSA.	IIIB
HL03	129	S31 57 52.5 E22 06 26.6	A scratched rock.	NCW
HL03	130	S31 57 52.0 E22 06 26.4	A scratched rock.	NCW
HL03	131	S31 58 28.2 E22 06 23.8	A large geometric historical scratched engraving covering an entire triangular rock.	IIIC
HL03	132	S31 58 27.7 E22 06 23.7	A historical scratched geometric motif.	IIIC
HL03	133	S31 58 26.8 E22 06 21.2	Two small rocks placed over a solution cavity (so as to almost close the hole) in the top of a dolerite boulder.	NCW
HL03	134	S31 58 22.8 E22 06 11.0	A large scatter of ostrich eggshell at the foot of a small but very prominent dolerite koppie. There was also a lower grindstone (found face-up) and three upper grindstones in varying states of use. No flaked stone seen.	NCW
HL03	135	S31 58 27.3 E22 05 38.9	Historical scratched engravings on two rocks. One is a geometric motif and the other an indeterminate motif.	IIIC
HL03	136	S31 58 51.6 E22 05 27.9	Historical scratched engravings with a circle, a car and a horse. The circle has a central dot suggesting the use of a compass/dividers.	IIIB
HL03	137	S31 58 51.5 E22 05 28.3	Historical scratched engravings on two rocks. One has a person with a hat, shoes and a fat body. He is upside down relative to a perfect rendition of a Morris Minor. There are also some other scratches on this rock. The second rock has a very well executed Cape Cart, a probable small wagon and many circles, some of which have a few lines that look like spokes. On another part of the second rock there is a square motif with lines protruding from the corners.	IIIA
HL03	138	S31 58 51.0 E22 05 28.1	A rock with well-patinated scratches on it as well as some fresher peck marks over it and also on a neighbouring rock. The older scratches form a complex geometric motif as follows:	IIIB

				
HL03	139	S31 58 54.0 E22 05 27.6	A probable grave cairn. It is 1.5m wide and 2.0m long with the long axis aligned east-west. There are no head and foot stones but one smaller rock was seen on the east and west ends of the mound slightly away from the rest of the rocks.	IIIA
HL03	140	S31 59 03.1 E22 05 38.7	Historical scratched engraving of a ship/boat with masts, sails and flags on a boulder very close to a dam. There are also some other indeterminate motifs on the same rock. There is another rock about 3m away with what looks like three top hats (but is not) engraved on it.	IIIB
HL03	141	S31 59 03.9 E22 05 39.2	An earthen-walled dam with rocks packed on the outer face of the wall. A stone wall extends from the southern end, presumably where the overflow is. The dam is in very poor condition, but it not yet reached.	NCW
HL03	142	S31 59 04.7 E22 05 40.2	Historical scratched engraving with a car and a Cape Cart and various other motifs. One looks like it may be a tractor and trailer.	IIIB
HL03	143	S31 59 05.5 E22 05 42.2	A circular piled stone enclosure with opening to the south and a smaller room inside it on the north side. Also some minimal walling to the southeast between the main enclosure and some small boulders. A single bone fragment was seen inside the main enclosure.	IIIC
HL03	144	S31 59 07.0 E22 05 45.9	An ephemeral flaked hornfels artefact scatter (four flakes and one bladelet seen) along with one ostrich eggshell fragment, one dolerite flake and one dolerite hammerstone / upper grindstone.	NCW
HL03	145	S31 59 11.0 E22 06 03.7	A scratched rock.	NCW
HL03	146	S31 59 10.9 E22 06 08.0	A rock with writing on it inside lines that make it look like writing paper as shown below. The last two lines of the second one are illegible due to poor preservation. Graded IIIA due to the possibility of being linked to people in the farm in the past. Albertis Aderjans Mans Albertis Aderjans Mans frydag ??? ???	IIIA
HL03	147	S31 59 10.8 E22 06 09.3	An ephemeral, mixed age artefact scatter near a stream. The artefacts are in hornfels and tuff. Two cores, two flakes and one blade were seen.	NCW
HL03	148	S31 58 45.9 E22 07 03.0	A large exposure of fossils in a river bed. Most are small pieces but some skull and other body parts are recognizable.	IIIB

			In one area there is a multitude of small bone fragments covering about 1 square meter.	
HL03	149	S31 58 35.3 E22 07 11.5	An ephemeral scatter of stone artefacts in hornfels (5 seen) and ostrich eggshell (1 seen) at the foot of a hill.	NCW
HL03	150	S31 58 31.2 E22 07 05.7	A large ostrich eggshell and flaked stone artefact scatter but with relatively few flaked artefacts. The artefacts are in hornfels, but one blade made in tuff was also seen. The surface is sandy and it is likely that further artefacts lie buried within the sand.	IIIC
HL03	151	S31 58 31.1 E22 07 05.5	This a second patch of the above scatter on the other side of a low dolerite outcrop. There are far more flaked artefacts here. There is also a lower grindstone here (found face-up).	IIIC
HL03	152	S31 59 42.5 E22 07 16.3	A cluster of 6 rocks with historical scratched engravings within a 5m diameter area. Most are indeterminate motifs but there is one horse and some geometric motifs.	IIIC
HL03	153	S31 59 42.7 E22 07 16.7	Historical scratched engraving with a horse and another smaller horse pulling a cart. All are in very fine lines which are barely visible.	IIIB
HL03	154	S32 00 07.9 E22 07 15.0	A walled valley with a number of enclosures along the sides, especially in the southwest. Not described in detail due to time constraints and will not be impacted. Waypoints 154 to 165 all belong to this site. 154 is the north-easternmost end of the walling. Overall grade IIIA but individual features are also graded.	IIIB
HL03	155	S32 00 10.7 E22 07 12.1	A stone-walled enclosure inside the main wall. There is a kraal on the outside slightly further to the southeast.	IIIB
HL03	156	S32 00 13.7 E22 07 05.6	Some enclosures occur on the outside here.	IIIB
HL03	157	S32 00 14.5 E22 07 02.8	This is an ash and rubbish dump. It is about 10-12m in diameter and about 1m high. The ash forms a high mound and most artefacts seem to be all around the edges. A modern beer bottle and wine bottle were seen on the dump. There is a variety of 19th century glass, ceramics and metal items, a small white glass button and a charcoal/graphite drawing stick.	IIIA
HL03	158	S32 00 14.4 E22 07 02.4	An oval stone-walled feature of 3x4m.	IIIC
HL03	159	S32 00 14.7 E22 07 01.9	A rectangular stone-walled structure of 3x2m. A car tire, a bucket and an axle lie inside.	IIIC
HL03	160	S32 00 15.0 E22 07 02.1	A stone-walled house ruin with very thick walls for the main room – this is an unusual feature. The door faces northeast and has a wooden lintel and there is a small window with a stone lintel that faces northwest. A small shelf is built into the inside wall. The second room has poorer quality walls except the door and hearth area where dressed stones and some bricks were used.	IIIA
HL03	161	S32 00 15.3 E22 07 02.6	A small stone-walled structure of 0.5x1m. It is built against two rocks and may be for animals – perhaps chickens to keep them safe during the night.	IIIC
HL03	162	S32 00 15.2 E22 07 03.3	There is a ramp/driveway leading up from the fields below to the house. The dolerite boulders have been pushed to the side to clear it but the surface is now badly eroded.	IIIC
HL03	163	S32 00 18.9 E22 07 00.2	A square stone-walled structure of 3x3m located along the side of the main walling.	IIIC
HL03	164	S32 00 20.2 E22 06 58.8	A corner point on one of the several kraal enclosures attached to the south-western corner of the main walling.	IIIC

HL03	165	S32 00 20.6 E22 06 58.3	Several rocks with historical scratched engravings on them and located on a hill overlooking the large stone-walled site at waypoints 154-164. Mostly indeterminate motifs but one horse and rider discernible as well as two cars.	IIIB
HL03	166	S32 00 15.6 E22 06 48.0	A heavily engraved rock with old, well-patinated scratches over-printed by many historical scratched engravings. The engravings include a horse and several people as well as some text “LODEWYK SANNI” but the first N is written back to front.	IIIB
HL03	167	S32 00 15.9 E22 06 47.2	A scratched rock with an indeterminate motif on it. Another rock 5m away has a female figure.	IIIC
HL03	168	S32 00 45.5 E22 05 41.0	A historical scratched geometric engraving. This one is a Nine Men’s Morris board. This site is an isolated find on the remote high-lying ground far from everything else and no doubt relates to some bored shepherds.	IIIC
HL03	169	S32 00 53.4 E22 06 46.4	A historical scratched engraving with lots of scratches and with a ship in the middle. A second rock 5m away has an indeterminate motif.	IIIB
HL03	170	S32 00 52.8 E22 06 48.7	A multi-lobed piled stone structure with some ceramics, glass and metal inside it. There is also a smoothed and scraped stone inside and this may be a lower grindstone. Despite the unusual form, the site is in poor shape and has very few artefacts associated with it. The main circles are about 4m across, while the small one is about 1m. There is no visible entrance to the southern enclosure, though this may have been obscured by tumbling of the rocks. The shared wall between the larger circles is extra fat at the points where the walls meet.	IIIC
HL03	171	S32 00 51.9 E22 06 50.3	Two scratched rocks.	NCW
HL03	172	S31 59 58.6 E22 08 34.8	A scratched rock which is very patinated and thus might be LSA.	NCW
HL03	173	S31 59 57.7 E22 08 34.9	A scratched Nine Men’s Morris board and an indeterminate motif.	IIIC
HL03	174	S31 59 57.7 E22 08 32.2	A scratched rock.	NCW
HL03	175	S31 59 47.4 E22 08 03.6	A rock with plenty of historical scratched engravings on it, including much text. The text is grouped to keep lines together. One reads: “DIE NAG LAMP VAN OOM PIT M TOGWELNWSAMN SIT IN DIE VAMIN SY WORD SIT SOMMER VERBRAN” Another reads: “OEWERJARRE HET EK HARGEVRY” To the right of the above text is: “DIE NAG LAMP VAN OOM PIT WAT TOG OMW…….” Note the inclusion of some elements that are not letters. There is also some more illegible text.	IIIA
HL03	176	S31 59 47.5 E22 08 02.1	A historical scratched engraving with a possible female figure or it could be a ship with sails and flag on one end.	IIIC
HL03	177	S31 59 47.5 E22 08 00.6	A historical scratched engraving with a ship, some indeterminate motifs and many scratches.	IIIB

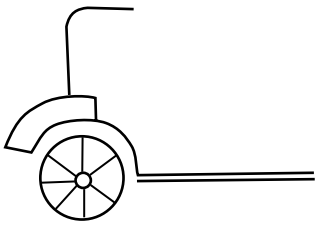
HL03	178	S31 59 03.0 E22 09 32.6	A C-shaped stone structure made with two skins of big blocks filled with fine gravel. The fine gravel filling is unusual. The door opens towards the west which is also unusual. A small indeterminate stone feature of 1x2m lies about 10m to the west.	IIIC
HL03	179	S31 59 02.5 E22 09 29.9	A long, thin kraal against a low, south-facing cliff. It is about 8m wide and 27m long. There is a small rectangular enclosure on the eastern end. One piece of blue and white transfer-printed refined white earthenware was seen.	IIIC
HL03	180	S32 02 21.7 E22 08 56.3	A circular stone structure opening towards the southeast. It is 3m in diameter and has one piece of black glass with it.	IIIC
HL03	181	S32 02 22.3 E22 08 57.5	A badly collapsed stone structure of about 2m diameter.	NCW
HL03	182	S32 02 48.8 E22 08 42.6	A fairly substantial ruin with four rooms. Northern room has no north wall. Only doors are visible in the preserved walls, no window locations evident. This was an outbuilding of a farm complex.	IIIB
HL03	183	S32 02 48.4 E22 08 43.2	A small ash and rubbish dump. Finds include transfer-printed and hand-painted refined white earthenware, stoneware and black, clear, blue, aqua and pink glass.	IIIB
HL03	184	S32 02 49.6 E22 08 43.3	A kraal located on a west-facing slope and very close to the structures listed at waypoints 182 and 185. One corner is “cut off” and built using a natural boulder. A low curved wall leads towards a low retaining wall that runs between the kraal and 182 and 185 structures. There is an opening between these low walls.	IIIC
HL03	185	S32 02 49.6 E22 08 42.4	A fairly substantial house ruin with three rooms. The front door with wooden door frame and stone lintel faces east, there is a shelf in the southwest corner of the main room, a muurkas in the south wall and another that has been filled in in the north wall. Much of this north wall has collapsed. A door in the northeast corner leads to a back room which preserves no other openings, while a door with wooden lintel (partly collapsed) in the northwest corner leads to the kitchen with an internal hearth and its own external door on the south side of the house. There are still roof beams in place over the main room and a large beam over the hearth.	IIIB
HL03	186	S32 02 50.3 E22 08 42.7	An ash heap enclosed by a piled stone wall. The heap is mostly ash with not too many artefacts. These include transfer-printed and hand-painted refined white earthenware, aqua, clear (including a wine glass base), pink and blue glass, some iron, some bullet cases and a hornfels irregular core. There is a small, figure of 8-shaped stone feature on the south side of the dump.	IIIB
HL03	187	S32 02 50.7 E22 08 44.4	A small stone structure that has collapsed. It is about 2x2m and of indeterminate function.	NCW
HL03	188	S32 02 56.6 E22 08 43.8	A packed stone feature of 2x2m on a riverbank and with two clear graves located 6m to its south. These two graves are heavily burrowed but no bones have been removed from the graves.	IIIA
HL03	189	S32 03 04.1 E22 08 46.9	A small indeterminate stone feature of 1m diameter.	NCW
HL03	190	S32 03 04.6 E22 08 46.8	A circular stone-walled feature of 3m diameter. Made with two skins of dolerite cobbles filled with smaller dolerite stones.	NCW
HL03	191	S32 03 04.8 E22 08 51.2	A large earthen-walled dam with stone packing on the wall. It is not breached.	IIIC

HL03	192	S32 03 05.6 E22 08 48.5	A modern 'skerm' made or a windbreak for a fire. Not a heritage resource but demonstrates the living heritage of this practice.	---
HL03	193	S32 03 06.1 E22 08 23.0	A rock with some historical scratches and an indeterminate in very fine lines.	NCW
HL03	194	S32 03 01.7 E22 08 26.6	A scratched rock.	NCW
HL03	195	S32 02 23.5 E22 09 01.1	A small number of fossils in a riverbed.	NCW
HL03	196	S32 02 04.9 E22 09 02.3	A stone feature that is presumed to be a grave but is aligned SW to NE. The probable head end is to the SW so it may have just been sightly misaligned.	IIIA
HL03	197	S32 02 01.3 E22 07 53.0	A C-shaped enclosure of 2m diameter with opening to the east. It has walls extending from it towards the north and east. Another wall runs north-south about 10m to the west of the enclosure. There are occasional green glass fragments present.	IIIC
HL03	198	S32 02 01.1 E22 07 52.0	A collapsed stone feature of 2x1m and of indeterminate function.	NCW
HL03	199	S32 02 01.5 E22 07 52.1	A tiny stone feature built among some rocks on a dolerite outcrop. There is a 4m long wall just to its west. There is a poorly preserved historical engraving on a sandstone slab alongside the small enclosure.	IIIC
HL03	200	S32 02 01.6 E22 07 51.3	A kraal of 8x8m located on a west-facing hill and built against a low scarp. It has a door opening to the north on its short side which is unusual.	IIIC
HL03	201	S32 02 02.1 E22 07 50.7	A poorly preserved scratched engraving of a bird on dolerite. The body is shaded with scratches. All scratches are very fine. There is also a scratched rock nearby.	IIIB
HL03	202	S32 02 02.4 E22 07 50.3	There are five different engraved rocks here with the first four being very close together. They are described in turn. (1) A engraved rock with scratched and scraped markings. It is quite well-patinated. There are many fine lines but also a very elongated figure which is scraped. This engraving is likely LSA. (2) A scratched rock (historical). (3) A scraped animal facing left with long horns and square buttocks. A second scraped animal faces right and is clearly an eland. Both animals are ell-patinated. There is also some writing on the same rock. It includes M D MOSTERT and two other illegible words/phrases/names. (4) This rock has a larger right-facing scraped eland on it. It is very poorly preserved, especially the head. Also some illegible names and partially legible dates. "1924" is clear in one place and "DE… 12 1924" in another. (5) A few meters away there is a scratched rock.	IIIA
HL03	203	S32 02 02.7 E22 07 49.7	A scratched rock. Also a rock with "1946" scratched on it nearby - clearly not heritage.	NCW
HL03	204	S32 02 03.8 E22 07 48.7	An ephemeral rock enclosure in front of a boulder. Walling only built up on one side, the rest has natural rocks. No associated finds.	NCW
HL03	205	S32 02 02.7 E22 07 48.7	A large dolerite slab with two scratched, elongated animals on it. One is filled by scratching and the other by scraping.	IIIB
HL03	206	S32 02 00.5 E22 07 49.9	A stone-alle enclosure of 3x4m with opening towards the east.	IIIC
HL03	207	S32 02 00.3 E22 07 51.2	A collapsed circular enclosure of about 2.5m diameter. It has no visible opening. It was made with two skins and a rubble fill.	IIIC

HL03	208	S32 02 00.1 E22 07 52.8	A rectangular stone-walled structure with door opening to the east. The one end is square and the other end rounded. There is some dark green glass inside. A semi-circular wall encloses the east side and does not appear to have an opening visible.	IIIC
HL03	209	S32 01 59.6 E22 07 53.2	A low density artefact dump with no associated ash deposit. There are not many artefacts but there seems to be a wide variety. There is lined industrial, transfer-printed, hand-painted and sponge-printed refined white earthenware. The glass includes light green, dark green, light blue, dark blue, aqua, clear and brown. The latter includes a beer bottle fragment with "BREWERIES" embossed on it. There are also pieces of iron and brass, some bullet cases and some ostrich eggshell.	IIIB
HL04	217	S31 59 02.9 E22 09 49.9	A kraal of 10x15m with a small enclosure on the east side. The latter has a south-facing door, while the main kraal has no visible entrance. There is also another small collapsed enclosure on the east side, to the north of the first one. There is a red dolerite cobble upper grindstone inside the kraal.	IIIC
HL03	218	S31 55 57.6 E22 08 18.1	A rock shelter with a large talus accumulation of hornfels and ostrich eggshell. There is nothing in the shelter, but the floor is covered by collapsed roof slabs and these could be fairly recent and may be covering deposit. There is also a stone wall running up the hill and meeting the cliff inside the one end of the rock shelter. Two further shelters along the cliff have roof slabs collapsed on their floors as well but no finds on their talus slopes.	IIIB
HL03	1552	S31 55 31.3 E22 06 50.9	A large stable complex built by the Le Riche family just after 1954 (the date at which the Modderpoort Dam was built). The stables are in two 80 m long buildings oriented north-south. They were built in a Cape Dutch Revivalist style with end gables and three more gables along their lengths on the outside facing sides. There are no gables facing each other. A small house in similar style was presumably the stable manager's house and lies at the north-eastern corner of the stable area. The stables are now disused as the farm is no longer in use as a stud farm.	IIIB
HL03	1553	S31 55 34.6 E22 06 51.0	A stone-walled dam built from two stone skins filled with sand and gravel.	IIIC
HL03	1554	S31 55 27.4 E22 06 40.6	A large row of trees along one side of a road that passes through an extensive area of old agricultural lands. There are pepper trees which are still alive and another species which has all died.	IIIB
HL03	1555	S31 57 15.2 E22 05 21.2	An ephemeral scatter of weathered artefacts on a dolerite ridge (7 artefacts seen).	NCW
HL03	1556	S31 57 15.6 E22 05 21.7	An isolated grooved stone made on a dolerite pebble of 90x45x45 mm. It is along a dolerite ridge and rare flaked artefacts and ostrich eggshell fragments occur along the ridge too.	NCW
HL03	1557	S31 57 18.8 E22 05 36.7	A mound of stones of indeterminate function that may have been a small structure at some point but has collapsed, partly due to animals burrowing under it.	NCW
HL03	1558	S31 57 20.5 E22 05 39.1	A tiny, informal stone structure on a dolerite dyke. It is made with a few rocks piled around the outside and a flat slab covering it. It is only about 35 cm high.	NCW
HL03	1559	S31 57 12.4 E22 05 09.8	An ephemeral scattering of artefacts of mixed age along a dolerite dyke.	NCW

HL03	1560	S31 57 10.7 E22 05 08.5	Two small clearings in the dolerite boulders and cobbles with an ephemeral scatter of hornfels and ostrich eggshell alongside them. One looks more convincing than the other and its wall looks more historical.	IIIC
HL03	1561	S31 57 10.5 E22 05 07.8	A collapsed piled stone kraal of 9x7 m on the edge of a dolerite dyke. There is an ephemeral scatter of hornfels flaked artefacts and ostrich eggshell inside it but an association cannot be proved. There are also fragments of a clear wine bottle with "FILLED BY MONIS WINERIES" embossed on the base.	IIIC
HL03	1562	S31 57 49.0 E22 05 20.7	A large rectangular, partly collapsed stone kraal of 49x23 m with two rooms. The smaller room is at the eastern end of the structure and there is an entrance through the north wall of the larger room.	IIIB
HL03	1563	S31 57 50.0 E22 05 19.3	A collapsed stone house ruin with four rooms. It is about 9 m long and has a maximum width of 5 m. It includes curved walls. There is a small partially collapsed stone structure of unknown function and about 1x1x1 m immediately to the west.	IIIC
HL03	1564	S31 57 51.2 E22 05 19.7	A rectangular, single-roomed structure of 5x2 m with a door facing to the east.	IIIC
HL03	1565	S31 57 50.8 E22 05 20.1	Avery badly collapsed structure of indeterminate shape.	NCW
HL03	1566	S31 57 48.4 E22 05 23.2	A house ruin broken down to foundation level. There are low fired red clay bricks lying about. The shape of the house is hard to tell beyond being approximately rectangular with a hearth footing on the north end wall. The overall size is about 3x10 m. There is a small very badly collapsed structure of indeterminate function immediately to the northeast. No ash dump present but a low density scatter of historical materials around the house includes refined white earthenware fragments, some transfer-printed ware and some glass of variable colours.	IIIC
HL03	1567	S31 57 54.8 E22 05 19.8	These four points are the corners of a very large irregularly-shaped stone-walled kraal. There is a small semi-circular structure on the outside of the kraal at 1567. At 1570 there is a presumed house ruin with 4 rooms. It totals about 9x9 m. There are two muurkaste in the north-eastern room (front porch-type area)	IIIB
HL03	1568	S31 57 56.4 E22 05 17.7		
HL03	1569	S31 57 57.5 E22 05 18.2		
HL03	1570	S31 57 56.8 E22 05 20.8		
HL03	1571	S31 57 51.6 E22 05 27.6	Scatter of ostrich eggshell fragments with a few stone artefacts of hornfels and 'other'.	NCW
HL03	1572	S31 57 43.5 E22 05 24.9	A stone-walled dam built from two stone skins filled with sand and gravel.	IIIC
HL03	1573	S31 57 45.8 E22 06 16.0	A number of dolerite rocks on the summit of a dolerite ridge with historical scratched engraving on them. One rock has two ostriches and two wagons. Another has what looks like a plant, while a third has what may be stylized human figures. Further south a single scraped animal figure was found.	IIIB
HL03	1574	S31 57 49.9 E22 06 17.2	A dolerite rock on the summit of a dolerite ridge with scratched historical engraving on it. It includes six scratched animals (including a few obvious horses in varying styles) as well as an eland with the latter being scraped and from the LSA.	IIIA
HL03	1575	S31 57 50.5 E22 06 17.6	Three dolerite rocks on the summit of a dolerite ridge with scratched engraving on them. Two are historical with one	IIIB

			having a human figure and another some triangular scratches. The third rock has fine cross-hatching that is well-patinated and must be older.	
HL03	1576	S31 57 51.2 E22 06 17.7	One dolerite rock with historical scratched engraving on the summit of a dolerite ridge. It includes one fairly clear horse, another animal with a rider on it and a third animal with long ears (possibly a dinkey) that seems to have a stylised wagon attached behind it.	IIIB
HL03	1577	S31 57 52.1 E22 06 18.5	One dolerite rock with a historical scratched horse on the summit of a dolerite ridge. A second rock nearby has well-patinated fine scratches on it.	IIIB
HL03	1578	S31 57 53.2 E22 06 19.1	One dolerite rock with historical scratched engraving on the summit of a dolerite ridge. It has a scratched grid on it but part is well patinated so looks like an older engraving that was 'refreshed' in historical times.	IIIB
HL03	1579	S31 58 08.1 E22 06 24.2	Two dolerite rocks with historical scratched engraving on the summit of a dolerite ridge. One rock has a faint ladder-like design, while the other has a row of stylized male and female human figures, all wearing T-shaped hats. Another figure is on the same rock alongside what may be a person standing on an animal, but this is unclear.	IIIB
HL03	1580	S31 58 09.3 E22 06 24.7	One dolerite rock with historical scratched engraving on the summit of a dolerite ridge. It includes what may be two plants, a clear but stylised ostrich and some writing that includes odd lettering.	IIIB
HL03	1581	S31 58 16.4 E22 06 24.5	One dolerite rock with a scraped engraving of an eland on the summit of a dolerite ridge. A second rock has some historical scratches on it.	IIIA
HL03	1582	S31 58 16.9 E22 06 20.5	One dolerite rock with indeterminate historical scratched engraving on the summit of a dolerite ridge. One scratching looks like a large W.	IIIC
HL03	1583	S31 58 06.7 E22 06 09.6	A small C-shaped stone ruin alongside a stream bed. It is about 2x2 m.	IIIC
HL03	1584 NC	S31 59 12.3 E22 03 54.3	A stone-walled dam built from two stone skins filled with sand and gravel.	GPC
HL03	1585 NC	S31 59 20.7 E22 03 51.9	A small, well-preserved rectangular house with 'gables' on its end walls and the side walls extend inwards to make the roof partly corbelled. There is still a small space in the middle but the lack of a slab inside the house makes it unknown whether this space was closed with rocks or not. The house is 1.5 m high and about 2x3 m in area. It has small windows in the centre of the west and south walls, a door in the east wall and a muurkas in the north wall. A small upper grindstone on a dolerite pebble and rare ceramic and metal fragments occurred on the ground outside the house. Although just a single structure with little associated, I have graded it IIIA because of its intactness and very unusual architectural style.	IIIA
HL03	1586 NC	S31 59 01.7 E22 04 58.1	A small stone house ruin with the main central room being gabled. A courtyard area to the north has a square stone feature in it, while linked enclosures also occur to the south and east. A door to the main room faces east, there is a window to the south which opens into the southern room and there is a muurkas in the north wall of the main room. The southern room has a window opening to the west. Rare ceramic fragments seen on the ground.	IIIB
HL03	1587 NC	S31 59 02.4 E22 04 58.1	Small semi-circular tumbled kraal built against a low scarp.	GPC

HL03	1823	S31 57 06.8 E22 07 52.5	A scratched dolerite rock. There is also a rock nearby with pecking that may or may not be natural. Several others were seen in various places and generally not recorded.	NCW
HL03	1824	S31 57 06.1 E22 07 52.8	A scratched engraving of a probable horse. Not well preserved.	IIIC
HL03	1825	S31 57 07.5 E22 07 52.6	Dolerite rock with scratches on it as well as the letters "JOSOP".	IIIC
HL03	1826	S31 57 07.4 E22 07 53.7	A scratched dolerite rock	NCW
HL03	1827	S31 57 07.6 E22 07 54.2	A scratched engraving of a horse carriage but without its horse. It is very lightly scratched and hence hard to see. It is 25 cm long and 14cm high. There is also a small circle on an adjoining rock. 	IIIB
HL03	1828	S31 57 06.8 E22 07 54.4	A dolerite rock with a scratched comb-like motif. There is also another rock with some unidentifiable scratches about 7 m to the north.	IIIC
HL03	1829	S31 57 08.7 E22 07 59.9	A scratched horse and carriage engraving. The horse has train-track-style hatching on its body (similar to LSA ostrich eggshell engraving). There are also some other scratches on the rock.	IIIB
HL03	1830	S31 57 08.9 E22 08 00.3	A scratched engraving of a probable horse that seems to have a very small rider on its back. Also several circular motifs, some with wheel spokes inside them. Circles have a central dot suggestive of the use of a compass or dividers or similar to draw them.	IIIB
HL03	1831	S31 57 09.3 E22 07 58.0	A large scratched engraving with many square motifs, some train track type designs and some possible lettering.	IIIC
HL03	1832	S31 57 09.5 E22 07 56.9	A scratched engraving of a large-bodied horse with a scraped neck and head and hatching on its body. The back legs are shown only by a line each and the front legs are parallel lines partially filled by scraping.	IIIB
HL03	1833	S31 57 11.0 E22 07 51.8	A scratched dolerite rock with a guitar-like motif.	NCW
HL03	1834	S31 57 15.2 E22 07 49.0	A scratched dolerite rock.	NCW
HL03	1835	S31 57 15.6 E22 07 48.7	A scratched engraving of what looks like two very stylised human figures.	IIIC
HL03	1836	S31 57 33.0 E22 07 51.4	A scratched rock on top of a small dolerite koppie.	NCW
HL03	1837	S31 58 01.4 E22 07 50.5	Two dolerite rocks with various scratched motifs, but none of them recognizable.	IIIC
HL03	1838	S31 58 06.6 E22 07 53.9	A dolerite rock with a scratched rectangular spiderweb-like motif but the centre is hollow (reminiscent of a Nine Men's Morris board). The rectangle follows the geometry created by the natural cracks in the rock. This design is known from elsewhere in the area as well.	IIIC
HL03	1839	S31 58 06.9 E22 07 56.2	A scratched dolerite rock.	NCW

HL03	1840	S31 58 07.3 E22 07 56.7	A scratched dolerite rock.	NCW
HL03	1841	S31 58 10.9 E22 07 59.8	A low circular stone structure of 1.5 m diameter with no opening. Close to the house at waypoint 1842 so likely related.	IIIC
HL03	1842	S31 58 12.4 E22 07 59.8	A quite well-preserved stone-walled house ruin with its door facing towards the east. It is located on a hill with a very fine view over the landscape towards the east. The western room was built first with the eastern one being added later. The western room has two wall cupboards in the western wall and a window facing north. The north-eastern corner of the eastern room is curved and the north wall has collapsed. There is a window in the east wall, just north of the door. The western room had a pitched roof on low gables, while the eastern room seems to have had a flat roof sloping down towards the east. There are rare glass and refined white earthenware fragments around the house.	IIIA
HL03	1843	S31 58 12.5 E22 08 00.4	A small rubbish dump lies about 12 m away from the house directly to the east. It includes a nearly whole dark bottle and also a clear bottle with the neck broken off but still present. Glass colours include clear, aqua, black, blue, pink and brown. Refined white earthenwares include lined industrial ware, hand-painted ware and some transfer prints. There are also a few tins and metal items including a stirrup. Although small and not very dense, dumps seem to be quite rare in the area so it is accorded high significance.	IIIA
HL03	1844	S31 58 29.7 E22 08 08.3	A very ephemeral scatter of LSA hornfels flaked stone artefacts alongside a stream. Only flakes seen.	NCW
HL03	1845	S31 58 33.2 E22 08 12.4	A well-preserved 2 x 3 m rectangular stone structure with a door facing east. The long walls run west-east. There are no other features except for a single row of stones on the floor near the western end. There are two rusty Castle Lager cans inside it.	IIIC
HL03	1846	S31 58 34.9 E22 08 03.6	An excavation into bedrock with bulky walls built on the east and west sides and a narrower wall along the upslope northern side. The southern side is open facing towards the stream. The side walls are up to 2-3 m thick and seem to be more formally built towards the south and become more piled towards the north. The excavation inside is silted up so one cannot tell the depth or function of this feature.	IIIC
HL03	1847	S31 58 36.9 E22 08 04.2	An ephemeral scatter of LSA hornfels artefacts on a riverbank. All artefacts are in hornfels and include one core and several flakes. There are also a few fragments of ostrich eggshell.	NCW
HL03	1848	S31 58 38.1 E22 08 04.6	A moderate density scatter of LSA artefacts n hornfels and tuff. The scatter includes a few cores in both materials and many flakes. There is also some ostrich eggshell and one small quartz crystal.	IIIC
HL03	1849	S31 58 45.2 E22 08 04.2	A widespread ephemeral scatter of LSA hornfels flakes on a river terrace.	NCW
HL03	1850	S31 58 45.3 E22 08 01.8	A possible kraal and related features built against a southeast-facing scarp. The northwestern parts of the main feature are well preserved but the rest is badly tumbled. There is also some walling on the scarp.	IIIC
HL03	1851	S31 58 46.5 E22 07 59.5	A stone house ruin with two doors facing towards the southeast. The house is badly tumbled and the doors are the only discernible features. There is a square hearth on the north-eastern end of the house. There are very rare glass and	IIIC

			ceramic artefacts in the area. No dump was seen. There is a wide, flat river terrace to the southwest of the house and this was almost certainly cultivated.	
HL03	1852	S31 58 49.0 E22 08 01.2	A stone-walled possible kraal against a scarp but it is an unusual shape. Its downslope side is open and one of the side walls has a V-shape on the end. It also has some walling along the scarp. It is poorly preserved.	IIIC
HL03	1853	S31 58 48.5 E22 08 03.0	A low, rectangular stone-walled structure of 2 m east-west x 3 m north-south with its door at the north end of the east-facing wall. The north end wall is tumbled.	IIIC
HL03	1854	S31 58 31.3 E22 07 01.6	A large scatter of ostrich eggshell fragments with several tuff and hornfels flakes in a sandy area between low dolerite outcrops. The flakes are all large.	IIIC
HL03	1855	S31 58 26.3 E22 06 45.5	A dolerite rock with three scratched circles with a central dot suggesting the use of a compass or dividers.	NCW
HL03	1856	S31 58 25.0 E22 06 38.8	A dolerite rock with several wagon wheel engravings (circles also made using compass or dividers), a horse and several other scratches.	IIIB
HL03	1857	S31 58 26.3 E22 06 39.6	A dolerite rock with a scratched engraving of a rectangle with a spider-web design with open centre (reminiscent of a Nine Men's Morris board), also a heavily scratched figure of 8 motif, a horse and carriage with a rider holding the horse's reigns, and a separate carriage. The lone carriage is very detailed and is a clear depiction of a 19th century Cape Cart.	IIIB
HL03	1858	S31 58 25.2 E22 06 37.9	An isolated bored stone fragment. It is about a quarter of the circle and is also split in half.	NCW
HL03	1859	S31 57 40.7 E22 06 29.7	An unidentified animal with a bifurcated tail engraved on a dolerite rock on a ridge. It looks partly patinated and is probably from the LSA.	IIIB
HL03	1860	S31 57 40.7 E22 06 30.1	A well-patinated LSA scratched eland with a very fresh scratched scorpion overlaid and a very fresh horse on the same rock. Another rock 2 m away has a single patinated scraped animal that must be LSA.	IIIB
HL03	1861	S31 57 40.6 E22 06 30.6	An LSA scraped engraving of an eland.	IIIB
HL03	1862	S31 57 40.8 E22 06 30.6	An LSA scraped engraving of an eland with its back heavily arched downwards. This posture is very likely related to ritual.	IIIB
HL03	1863	S31 57 40.1 E22 06 31.5	A dolerite rock with well-patinated scratches on it. Must date from the LSA.	NCW
HL03	1864	S31 57 40.2 E22 06 36.1	A dolerite rock with heavily patinated scratches and no discernible motifs.	NCW
HL03	1865	S31 57 38.3 E22 06 49.1	A heavily scratched dolerite rock.	NCW
HL03	1866	S31 57 34.2 E22 06 51.9	A very small c. 1 x 2 m piled stone enclosure made with only a small number of stones and located on the summit of a hill. It incorporates a small boulder in its wall. Inside the enclosure there is a single brass button with a British/Scottish-type lion or dragon design. There is a loop on the back and a piece of rusty wire is tied through it suggesting the button was being used for something other than clothing when it was lost.	IIIC
HL03	1867	S31 57 34.0 E22 06 52.1	A dolerite rock on the summit of a hill with two heavily patinated LSA animal engravings. The preservation is too poor to determine the species.	IIIC
HL03	1868	S31 57 34.7 E22 06 54.0	A dolerite rock with many peck marks in two patches. One patch is patinated and the other fresh.	NCW

HL03	1869	S31 57 24.6 E22 06 58.6	A well-patinated scratched rock on the summit of a hill.	NCW
HL03	1870	S31 57 24.3 E22 06 59.7	A well-patinated scratched rock on the summit of a hill. About 10 m to the east is another rock with fresh scratches on it.	NCW
HL03	1871	S31 57 24.7 E22 07 00.4	A dolerite rock with a well-patinated elongated motif and also some fresh scratches that include one female figure.	IIIC
HL03	1872	S31 57 26.6 E22 07 00.4	A dolerite rock with well-patinated scratches on it. No motif is discernible.	NCW
HL03	1873	S31 57 21.5 E22 07 19.9	Two dolerite rocks, each with a scratched horse. One is far larger than the other but both are very informal/stylized and follow the same design.	IIIC
HL03	1874	S31 57 10.3 E22 07 30.8	A dolerite rock with some heavily-patinated scratches. 4 m away are two rocks with one horse on one and three horses on the other. The four horses are all stylistically very different.	IIIB
HL03	1875	S31 57 11.5 E22 07 31.9	A heavily-scratched dolerite rock with some scratches being very patinated. The older scratches are in the centre and no motifs are discernible. The fresher scratches are like rays extending to the sides.	IIIC
HL03	1876	S31 57 13.9 E22 07 33.3	A dolerite rock with a scratched engraving of what seems like an imaginary animal or else is something else completely.	IIIC
HL04	210	S31 59 04.3 E22 09 37.5	Two standing stones that are well-buried so not fortuitous. They are oriented north-south so are not a grave. They also seem too tall for a grave and are located alongside a jeep track.	NCW
HL04	211	S31 59 04.5 E22 09 37.7	A large LSA scatter of about 25m diameter. It has mostly hornfels (including an adze, blade and bladelets) and ostrich eggshell (including two beads of about 9mm external diameter) but there is also some quartz (3 seen), a pot sherd (thick-walled with red on both surfaces), some fragmented bones and a fragment of Unio caffer.	IIIA
HL04	212	S31 59 02.4 E22 09 37.5	A collapsed circular stone structure of about 2m diameter whose entrance is no longer visible.	NCW
HL04	213	S31 59 01.7 E22 09 49.8	A collapsed circular stone structure of about 3m diameter. There is also a pile of stones nearby making up another feature.	NCW
HL04	214	S31 59 02.2 E22 09 51.1	A long wall whose overall structure is unclear. It seems to just be one wall with no returns. Related to the adjacent structures though.	IIIC
HL04	215	S31 59 02.5 E22 09 50.8	An intact stone house with a pitched roof of corrugated iron. The iron seems to have been added later onto the original beams, though two sheets have since come loose and blown off. The house has a door to the east in gabled wall and a window to the south. The north and west walls both have internal muurkaste.	IIIA
HL04	216	S31 59 02.9 E22 09 50.8	A circular ruin with a second room added to the southwest. The walls are odd thicknesses and where the wall is preserved highest on the main room it closes in slightly towards the top. The second room had a corbelled roof but the slabs have caved in now. This room has a very small door facing southeast, while the main room's door opens towards the east.	IIIA
HL04	479	S31 54 38.9 E22 13 32.0	South-eastern corner of a large stone kraal. The kraal is about 32 m along its north boundary, 39 m along western side, 36 m on south and 38 m along its east edge. There was some glass (clear, blue, green), two ceramic fragments (RWE, transfer-	IIIB

			printed) on the east side and some metal fragments to the west.	
HL04	480	S31 54 37.6 E22 13 31.6	North-eastern corner of the kraal. There is an added room of about 2x3 m on the corner.	
HL04	481	S31 54 37.8 E22 13 30.3	North-western corner of the kraal.	
LH4	482	S31 54 39.0 E22 13 30.6	South-western corner of the kraal.	
LH4	483	S31 54 38.8 E22 13 28.9	Ephemeral scatter of LSA hornfels and ostrich eggshell fragments. Artefacts are slightly patinated.	NCW
LH4	484	S31 54 38.5 E22 13 28.3	Small stone beacon of about 0.5x0.5x0.5 m.	NCW
LH4	485	S31 54 37.1 E22 13 26.7	Small stone pile of about 1.0x1.3 m and 0.3 m high.	NCW
HL04	487	S31 52 16.0 E22 15 35.3	A dolerite rock on a hill with historical engraving on it. Includes a horse, a second horse with rider, an ostrich and two horses pulling a wagon with driver. There are also some other indeterminate scratches.	IIIB
HL04	1549	S31 56 49.9 E22 09 53.3	Large boulder that has rolled down the slope from the scarp above. There is an extensive scatter of hornfels LSA artefacts and ostrich eggshell around the boulder with most being on the downslope (south) side. There are a few artefacts in other fine-grained materials too. There is also a low stone-walled enclosure at the upslope (north) side and a large mound of rocks to the east of the boulder. These stone features are assumed to be historical.	IIIB
HL04	1550	S31 56 52.9 E22 09 53.6	ESA/MSA artefact scatter in a gravel lag deposit where the cover sands have eroded away. There are large, orange-patinated flakes on sandstone which are assumed to be ESA and other smaller flakes on fine-grained materials are likely MSA.	NCW
HL04	1551	S31 56 53.7 E22 09 55.3	As above but with the addition of some smaller and far less patinated artefacts that must be of LSA origin.	NCW
HL04	1642	S31 56 06.7 E22 09 20.8	A dolerite rock on a ridge with indeterminate historical scratches on it.	NCW
HL04	1643	S31 56 09.6 E22 09 19.1	A dolerite rock on a ridge with indeterminate historical scratches on it.	NCW
HL04	1644	S31 56 37.7 E22 09 38.8	A dolerite rock on a ridge with an LSA engraving on it. The main image is of an eland. There is a grid/net engraved below its chest. Below the hind legs is a second but much smaller antelope (probably not an eland) which is facing at 90 degrees to the eland and has its head right at the lower edge of the rock. 2m away is another rock with heavily patinated indeterminate scratches on it. Next to this is a rock with historical engraving of two horses with their necks bent down so they are looking at their own chests.	IIIA
HL04	1645	S31 56 38.2 E22 09 38.8	A dolerite rock on a ridge with indeterminate historical scratches on it.	NCW
HL04	1646	S31 56 38.5 E22 09 39.0	A dolerite rock on a ridge with historical engravings on it. It has two antelope with horns curving inwards, one bird and one dog-like animal. Also some other indeterminate scratches on this rock. From their faces and horns, the antelope look like red hartebeest. They are 'coloured in' by hatched scratches and have extremely short tails. An odd feature is that both of them have a 'fuzzy patch' on top of their hips. It may be that they have flicked their tails over onto their backs.	IIIB

HL04	1647	S31 56 39.4 E22 09 39.4	A dolerite rock on a ridge with historical engraving of a horse on it.	IIIC
HL04	1648	S31 56 39.8 E22 09 39.5	A larger boulder with a scratched sunburst-type motif on it. It is made by both scratching and pecking and, unusually, is on a vertical face of the boulder.	IIIC
HL04	1649	S31 56 40.3 E22 09 40.3	A dolerite rock on a ridge with historical scratches and pecking on it. Also some more scratches slightly to the left on the same boulder.	NCW
HL04	1650	S31 56 40.8 E22 09 44.4	A dolerite rock on a ridge with indeterminate historical scratches on it.	NCW
HL04	1651	S31 56 46.8 E22 09 55.8	An area along the base of a cliff above the site at 1549 with lots of ostrich eggshell and rare flaked artefacts (two seen, CCS and other).	NCW
HL04	1652	S31 56 46.9 E22 09 56.3	A low rock shelter with piled stone walling around its mouth. The inner roof is about 0.8 m high, while the outer roof above and beyond the walling is about 1.8 m. The floor inside the walling is about 7x3 m. The shelter floor is covered in ostrich eggshell and bone, with plenty of both being burnt. Hornfels artefacts are rare. One burnt ostrich eggshell fragment has criss-cross scratching/engraving on the inner surface. There seems to be a shallow ashy deposit present. There is one large, fibre-tempered pot sherd on the floor and it has a small patch of residue on its inner surface. The talus slope outside the shelter is liberally coated in ostrich eggshell with a fair amount of bone and some stone artefacts. This scatter extends about 30-40 m down the slope. There must be many thousands of pieces of ostrich eggshell in the site altogether.	IIIB
HL04	1653	S31 56 46.8 E22 09 56.2	A small stone cairn built on the cliff edge directly above the rock shelter at 1652.	NCW
HL04	1654	S31 56 46.4 E22 09 56.4	A light LSA scatter of ostrich eggshell, bone fragments, hornfels and sandstone artefacts on top of the cliff above 1652.	IIIC
HL04	1655	S31 55 59.1 E22 09 18.9	An ephemeral scatter of LSA hornfels artefacts alongside a stream.	NCW
HL04	1656	S31 55 35.5 E22 09 52.1	A corbelled house made of cement bricks and cement. Though in poor shape, it is not very old and is recorded more as an illustration of the continuation of the building style, albeit with modern materials.	NCW
HL04	1657	S31 56 35.2 E22 11 20.8	An ephemeral scatter of LSA ostrich eggshell and two hornfels artefacts on a dolerite ridge.	NCW
HL04	1658	S31 56 36.3 E22 11 41.3	An ephemeral LSA scatter of hornfels near a streambed. There is also some older background scatter here.	NCW
HL04	1668	S31 59 22.4 E22 09 11.0	The remains (floor level only) of a tiny stone structure against a low scarp.	NCW
HL04	1669	S31 59 17.4 E22 09 05.6	There are three spots along a scarp that show evidence of quarrying. No tool marks on the rock but there is freshly exposed rock and piles of broken pieces downslope in each case.	NCW
HL04	1670	S31 59 19.6 E22 09 00.1	A stone kraal on the eastern side of a scarp. Its east wall is missing. There is an attached room of about 4x4 m against the scarp on the north side and a room of about 15x4 along the southern edge and also against the scarp. The west-east walls extend downslope at least a few meters beyond the southern room but the distance is unknown due to the missing east wall. There are also some LSA hornfels artefacts located along the scarp suggesting people using its shelter before the kraal was built.	IIIC

HL04	1671	S31 59 05.4 E22 09 19.6	A large stone kraal with length 42 m and ends 28 m in the northwest and 30 m in the southeast. It has three rooms but there are also wire partitions inside it further reducing the rooms and indicating a more recent use of the structure. Not examined in detail but clearly in fairly good condition.	IIIB
HL04	1672	S31 59 04.3 E22 09 19.8	Two ruins about 15m to the north and east of this point. The eastern one is totally collapsed and overgrown with grass and bushes. The other is attached to the long wall stretching down the valley. Not examined in detail.	IIIC
HL04	1673	S31 59 00.0 E22 09 16.6	A stone house and threshing floor within the walled valley. Not visited. Very unusual to see a threshing floor in this area. The house still has a flat roof on it, although this may have been replaced in recent times.	IIIA
HL04	1675	S31 59 04.3 E22 09 00.8	A dense LSA hornfels scatter along a riverbank. Not examined in detail.	IIIB
HL04	488	S31 56 05.5 E22 09 03.4	A dolerite rock with indeterminate patinated scratches on it.	NCW
HL04	489	S31 56 06.7 E22 08 53.5	A dolerite rock with a dense patch of scratches on it.	NCW
HL04	490	S31 56 07.3 E22 08 49.4	A dolerite rock with indeterminate scratches on it. Some are patinated, but others seem fresher.	NCW
HL04	491	S31 56 07.2 E22 08 49.2	A dolerite rock with indeterminate patinated scratches on it. Some seem to form some sort of pattern, others seem totally random.	NCW
HL04	492	S31 56 07.2 E22 08 48.7	A dolerite rock with many scratches on it forming a pattern but what is represents is indeterminate.	IIIC
HL04	493	S31 56 07.0 E22 08 48.5	A dolerite rock with many scratches on it forming a pattern but what is represents is indeterminate.	IIIC
HL04	494	S31 56 07.0 E22 08 47.9	A dolerite rock with indeterminate scratches on it forming a triangular shape.	NCW
HL04	495	S31 56 06.9 E22 08 45.5	A dolerite rock with many short, parallel scratches on it. They look ladder-like but one set has no vertical lines and the other just one.	NCW
HL04	496	S31 56 06.9 E22 08 45.3	A dolerite rock with a scraped engraving of an antelope on it. Might be an eland, but difficult to be sure. There is the suggestion of a hump but the head is very indistinct. The legs look more gracile than usual for an eland.	IIIC
HL04	497	S31 56 07.0 E22 08 45.2	A scraped dolerite rock with an engraving of an indeterminate animal. It either has large ears or else backwards-pointing horns. It seems to have a vertical tail. The body and legs look like those of an antelope.	IIIC
HL04	498	S31 56 06.9 E22 08 45.1	A dolerite rock with many patinated criss-crossing lines engraved on it.	NCW
HL04	499	S31 56 06.8 E22 08 44.1	A dolerite rock with fresh scratches and peck marks on it.	NCW
HL04	500	S31 56 06.6 E22 08 43.9	A dolerite rock with fresh scratches and peck marks on it.	NCW
HL04	501	S31 56 06.1 E22 08 42.4	A dolerite boulder with many patinated curved lines forming an indeterminate shape/pattern and some fresher engravings overlapping the older lines.	IIIC
HL04	502	S31 56 00.1 E22 08 45.8	A dolerite rock with fresh engravings of a grid with many peck/chop marks placed diagonally over it and an image that looks like a centipede. The latter has two long lines meeting at the ends. There are many legs that point towards the ends and the middle is filled with peck marks.	IIIB
HL04	503	S31 56 00.0 E22 08 45.8	A dolerite rock with a freshly scratched grid-like motif on it.	IIIC

HL04	1780	S31 59 12.8 E22 17 15.5	A large stone-walled dam, now breached.	IIIC
HL04	1781	S31 56 44.4 E22 17 50.7	A 20th century brick and cement ruined cottage on a stone plinth. It has steel windows and a wooden door which faces east. There is a hearth and chimney stack on the southern end. The cottage has cement plaster. Similar to 1790.	NCW
HL04	1782	S31 56 44.5 E22 17 52.4	An ash dump of about 10 m diameter with some glass and ceramics. Most artefacts are 20th century but there are a few older pieces present.	IIIC
HL04	1783	S31 56 44.9 E22 17 53.4	A completely collapsed brick structure. Although made with red, fired clay bricks, mud mortar was used.	NCW
HL04	1784	S31 56 46.8 E22 17 55.8	A long cottage that was built in three sections. The western end is oldest followed by the eastern end. The intervening section was made by adding walls to join the end rooms together. The western section has two rooms and a north-facing door and window. Each room has a muurkas and the eastern room also has an internal hearth in the northwest corner. The upper wall of the hearth is built of bricks and mud mortar and is supported on a wooden beam. The eastern room has brickwork around the windows and doors and both it and the central room have south-facing steel windows. They are linked by an internal door and the east room has an east-facing door.	IIIC
HL04	1785	S31 56 50.3 E22 18 05.3	A large earth-walled dam but with some brickwork and a cement overflow structure. A second smaller dam to the north appears to have served to flood irrigate the arable terrace further north in front of the farmhouse.	NCW
HL04	1786	S31 56 43.3 E22 18 04.7	A low stone wall along the downslope side of the arable terrace area.	NCW
HL04	1787	S31 56 40.6 E22 18 04.0	A stone-built sheep dip surrounded by stone slabs. A stone all lies to the west while stone fence poles stand to the south and west.	IIIC
HL04	1788	S31 56 38.9 E22 17 59.6	A stone wall running northeast-southwest and some stone fence posts along the same alignment. Likely just part of the fence around the arable terrace.	NCW
HL04	1789	S31 56 40.0 E22 17 56.3	A huge quite well-preserved stone kraal complex with structure attached to it. There are many modern wooden fences inside the kraal showing recent use. One room is stone paved and two patches of paving lie to the south.	IIIB
HL04	1790	S31 56 42.0 E22 17 56.5	A small 20th century brick and mud mortar cottage on a stone plinth. It has steel window to the north, a door to the east and a hearth and chimney stack on the south end. The cottage has cement plaster. Similar to 1781.	NCW
HL04	1791	S31 56 43.1 E22 17 58.7	This is the central part of the farm complex and contains the primary dwelling and associated outbuildings. A large outbuilding immediately north of the house is divided into a number of rooms and has many doors and windows. It has a corrugated iron roof and some floors are paved with stone slabs. It is mostly built of stone and mud-mortar but some low grade cement is also evident. Some rooms have internal corner hearth supported on log beams. There is a small stone outbuilding to the northwest of the main house. A brick building southwest of the house included a laundry room. The main house faces east and has two gables on its façade. A stoep is under a curved corrugated iron veranda roof. Each gable has two tall, narrow sash windows, as does the stoep, but all other windows are wider. The house has all wooden	IIIA

			joinery and wooden floors and ceilings, but the kitchen in the southwest corner has a stone-paved floor. Some floorboards have been stolen from one room and the ceiling has been stolen from another room. The remainder of the ceiling is in pristine condition. A fireplace occurs on a internal wall but there must have been a Victorian-style iron fireplace which has been removed. There are double doors at the northwest corner (opening to the north) and a dormer doorway is in the back (west) roof just above, but slightly offset from, the back door. Some light switches and door handles have been stolen. Gardens were laid out in front of the house, a round reservoir with supporting stone walls is to the southeast of the house and there is a stone quarry in the hill immediately behind (west of) the house.	
HL04	1792	S31 56 42.0 E22 17 51.0	An ash dump about 10 m diameter with mostly 20th century cultural materials. Also a single Scutellastra cochlear shell (pear limpet) and some ostrich eggshell fragments.	IIIC
HL04	1793	S31 56 42.5 E22 17 51.4	A stone and mud-mortar ruin. All one room. There is a door to the east and a window to the west. The window looks like it was enlarged and some red brick was used in order to add a steel frame (which is no longer there). There was a corner hearth of red brick supported on two metal poles but all the bricks are collapsed onto the floor.	NCW
HL04	1794	S31 57 10.3 E22 18 20.7	Three small, informal stone cairns.	NCW
HL04	1795	S31 57 11.9 E22 18 21.6	A small stone quarry with a second one just to the west over the hill.	NCW
HL04	1796	S31 57 26.8 E22 18 16.6	Background scatter artefacts in a silt and gravel area. Two handaxes included here. No LSA materials, all highly weathered.	NCW
HL04	1797	S31 58 00.2 E22 18 22.1	Background scatter artefacts in a silt and gravel area. One handaxe included here. No LSA materials, all highly weathered.	NCW
HL04	1798	S31 58 00.1 E22 18 24.7	Background scatter artefacts in a silt and gravel area. No LSA materials, all highly weathered.	NCW
HL04	1799	S31 57 58.1 E22 18 34.9	Informal stone cairn/mound on an area of bedrock. Not a grave.	NCW
HL04	1800	S31 57 57.5 E22 18 40.9	A semi-circular kraal against a low south-facing scarp. There is a low mound of stone inside the northwest corner which looks anthropogenic.	IIIC
HL04	1801	S31 57 57.4 E22 18 42.4	A low 1 m high rock shelter with stone walling beneath the lip. The enclosed space is about 1.5 m wide and 4m long. There are many thousands of ostrich eggshell fragments on the talus slope along with rare bones, pottery and stone artefacts. Flaked stone materials include tuff, a pale grey rock (hornfels?), black hornfels and CCS. The pottery has both fibre and mineral temper in the same sherds. Most cultural materials lie to the southeast of the shelter.	IIIC
HL04	1802	S31 59 06.4 E22 18 33.5	Background scatter artefacts in a silt and gravel area. No LSA materials, all highly weathered.	NCW
HL04	1803	S31 59 14.6 E22 18 42.6	Background scatter artefacts in a silt and gravel area. No LSA materials, all highly weathered.	NCW
HL04	1804	S31 59 32.5 E22 18 47.7	Background scatter artefacts in a silt and gravel area. No LSA materials, all highly weathered.	NCW
HL04	1805	S31 59 09.7 E22 20 10.4	A low, south-facing rock shelter with a wide, low mound of rocks immediately in front of it. There are many ostrich	IIIC

			eggshell fragments on the talus slope and three hornfels flakes were seen. Also one modern ceramic fragment.	
HL04	1806	S31 56 59.0 E22 18 57.7	An oval stone-walled dam on flat ground.	IIIC
HL04	1807	S31 56 58.6 E22 18 52.3	A small, tumbled stone and mud mortar ruin adjacent to a 16 m diameter, poorly preserved threshing floor. About 75 m to the southwest there is a cluster of large tree stumps which were part of an associated agrarian landscape. There is also a line of stone fence poles stretching towards the southwest.	IIIC
HL04	1808	S31 56 57.9 E22 18 49.8	An area with several piles/clusters of rocks and/or bricks. There is some order in places (one pile of bricks looks to have been stacked there) but the only thing that looks in any way structural is a small square brick and modern cement feature about 0.8 m across and one brick high.	NCW
HL04	1588	S31 57 14.6 E22 13 21.3	The northeastern corner of a huge historical kraal system. The entire structure covers about 80x60 m. There is an outbuilding on the north side of this corner at 1588. There is an ephemeral scatter of glass (clear, brown, green, aqua), ceramics (transfer-printed, stoneware) and metal (horseshoe, other frags) around the area	IIIB
HL04	1589	S31 57 14.6 E22 13 20.1	At this point are two small rooms built onto the outside of the kraal. One has a curved wall.	
HL04	1590	S31 57 14.2 E22 13 18.7	The north-western corner of the huge kraal.	
HL04	1591	S31 57 16.5 E22 13 18.2	This is the south-western corner of the kraal and it has a curved corner.	
HL04	1592	S31 57 17.0 E22 13 20.5	This is the south-eastern corner and is the location of the kraal entrance. There is a short, angled wall at the corner with the door being on the east face of the structure.	
HL04	1593	S31 57 15.6 E22 13 21.0	This point lies along the northern wall of the kraal and is at the point where the west-east cross wall lies. On the outside at this point and adjacent to the northern room there is a small stone-packed platform/foundation of 3 m by 5 m. The section of kraal wall between here and the north-eastern corner has had its stones robbed.	
HL04	1594	S31 57 12.5 E22 13 18.9	The southern end of a large stone-walled dam that has been breached in the middle. Some stone artefacts and a *Unio caffer* shell were seen on the wall and must have been scraped from the dam basin when the wall was filled with earth and gravel. The lithics are of mixed age.	IIIC
HL04	1595	S31 57 09.5 E22 13 20.5	A stone house ruin located at the northern end of the main dam wall. The northern half is largely preserved but the southern half of the house is gone. There are shelves in both northern corners and a muurkas in the western wall just south of the corner. In between the muurkas and shelf a horn has been buried (point first) into the wall. A fireplace foundation occurs on the southern end of the house. There is a widespread scatter of mostly very small pieces of glass and ceramics around the house but with the majority being to the east. Also some metal present. A wine bottle base looks flaked. There is also some LSA hornfels and ostrich eggshell in this area.	IIIB
HL04	1596	S31 57 07.7 E22 13 19.6	East end of a stone-walled kraal at the northern side of the dam.	IIIC
HL04	1597	S31 57 07.7 E22 13 17.9	West end of a stone-walled kraal at the northern side of the dam. There are two internal rooms in the west end. There is possibly a closed up door in the north wall leading into the	

			northern of these two rooms. Details are hard to discern due to collapsing.	
HL04	1598	S31 57 08.4 E22 13 16.7	Another low section of stone walling runs along the north side of the dam from 1597 and ends at this point.	IIIC
HL04	1599	S31 56 54.2 E22 12 57.2	A three-lobed house ruin at the eastern foot of a scarp. It is very badly tumbled but a door to the east is discernible. There is an ephemeral scatter of glass, ceramics and metal fragments to the east (downslope).	IIIC
HL04	1600	S31 56 59.8 E22 12 56.5	A block of rock with two fossil bones in it.	---
HL04	1601	S31 57 01.6 E22 12 56.6	A small collapsed structure under an overhang along a scarp. There is also a kraal wall leading down the slope to 1602.	IIIC
HL04	1602	S31 57 01.6 E22 12 58.3	A small two and a half lobed house ruin that is badly collapsed. There are two main rooms plus a third curved wall that does not go around far enough to enclose a space. There is an ash heap to the northeast with refined white earthenwares (including transfer-printed willow pattern, sponge-printed, industrial slipware), stone ware, glass (clear, black, pink, green), bone and metal fragments. The north-eastern corner of the kraal would be just behind this structure.	IIIB
HL04	1603	S31 57 03.5 E22 12 58.0	This is the approximate location of the south-eastern corner of the kraal. The walls are unclear because almost all stone has been robbed. Some ostrich eggshell was noted along the scarp in this general area and may be from LSA people staying along the cliff – no artefacts were seen though.	
HL04	1604	S31 57 02.5 E22 12 56.7	A single fossil bone.	---
HL04	1605	S31 56 53.9 E22 12 54.2	A small stone beacon on the scarp above 1599.	NCW
HL04	1606	S31 56 46.2 E22 12 50.6	A moderate density scatter of hornfels artefacts on the crest of a dolerite hill. There are also occasional sandstone and CCS artefacts. The scatter is of mixed age but it is clear that the majority of artefacts are from the LSA even though no fresh, unpatinated hornfels was seen. A cone-shaped single platform bladelet core was seen.	IIIC
HL04	1607	S31 56 43.7 E22 13 00.4	A light scatter of LSA stone artefacts, mostly in hornfels but a few other materials as well. Includes two adzes and a thumbnail scraper.	IIIC
HL04	1608	S31 54 40.1 E22 13 38.0	A light LSA hornfels scatter located along a dolerite dyke.	IIIC
HL04	1609	S31 54 40.5 E22 13 45.2	A light LSA scatter located along a dolerite dyke. Mostly hornfels but includes some other materials too and some ostrich eggshell fragments. Saw a single platform core and a cone-shaped single-platform bladelet core.	IIIC
HL04	1610	S31 54 40.1 E22 13 54.1	An ephemeral scatter of LSA hornfels artefacts and some historical glass and one tin on a dolerite dyke.	NCW
HL04	1611	S31 54 41.3 E22 14 02.5	The west end of a large stone-walled dam. There is stone walling on the inner face only, but the earthen wall is far wider than all the other dams seen. There is a spillway at this point running over bedrock. The dam is intact and still in use.	IIIB
HL04	1612	S31 54 40.9 E22 14 08.6	An area with background scatter artefacts with varying degrees of weathering and hence varying age.	NCW
HL04	1613	S31 54 41.8 E22 14 09.7	The west end of the 1611 dam wall. There is also a spillway here running over bedrock. There is also a fairly dense LSA scatter on the dolerite dyke at this point immediately	IIIB

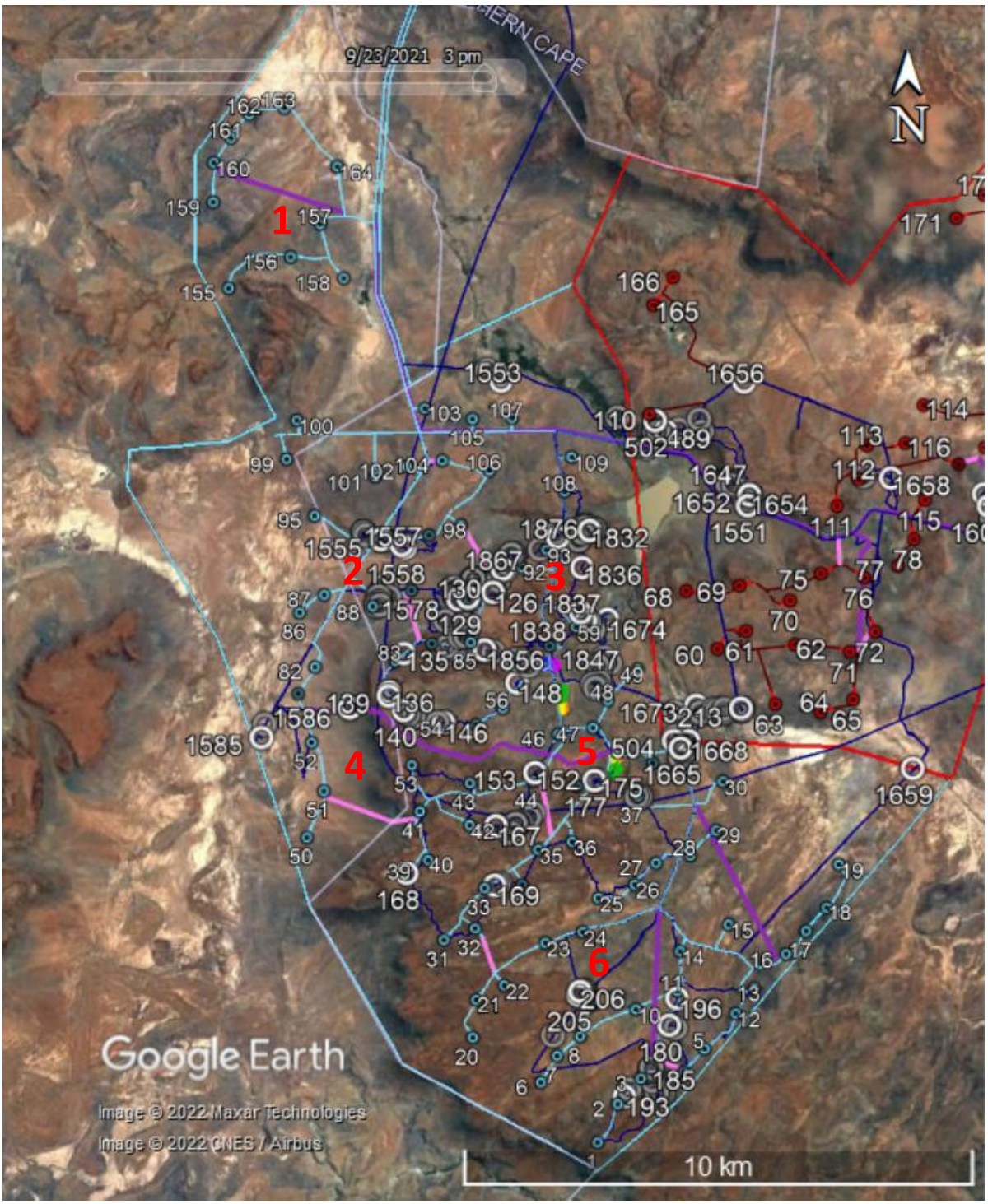
			alongside the spillway. Mostly hornfels but includes other materials as well.	
HL04	1614	S31 54 42.0 E22 14 15.6	A very informal stone beacon (just a few stones) and some glass and metal fragments on the dolerite dyke.	NCW
HL04	1615	S31 54 41.5 E22 14 21.1	A very informal stone beacon (just a few stones) and an ephemeral LSA hornfels scatter on the dolerite dyke.	NCW
HL04	1616	S31 54 37.5 E22 14 19.4	Mixed age background scatter on the mud flats in an area where there is also some gravel present on the surface. It is fairly close to the dolerite dyke (c. 130 m).	NCW
HL04	1617	S31 54 34.5 E22 13 44.7	Mixed age background scatter on the mud flats in an area where there is also some gravel present on the surface. It is fairly close to the dolerite dyke (c. 170 m). It seems that where there is no gravel on the mud flats the background scatter is also absent.	NCW
HL04	1618	S31 52 41.2 E22 13 50.3	Mixed age background scatter on the mud flats in an area where there is also some gravel present on the surface.	NCW
HL04	1619	S31 53 49.3 E22 14 45.5	A disused leiwater ditch running west-east through an area with old ploughed lands.	NCW
(HL04)	1620	S31 52 31.4 E22 15 35.8	A dolerite rock on a hill with indeterminate historical scratches on it.	NCW
(HL04)	1621	S31 52 33.2 E22 15 36.1	Three dolerite rocks on a hill with historical engravings on them. Includes a horse and possibly some stylized human figures.	IIIB
(HL04)	1622	S31 52 31.9 E22 15 37.9	Several dolerite rock on a hill with historical engraving on them. Most have indeterminate scratches, one has some illegible writing and one has several people and a building.	IIIB
(HL04)	1623	S31 52 28.8 E22 15 36.4	Two dolerite rocks on a hill with indeterminate historical scratches on them.	NCW
(HL04)	1624	S31 52 27.5 E22 15 34.1	A dolerite rock on a hill with a historical engraving of an ostrich on it.	IIIB
(HL04)	1625	S31 52 27.5 E22 15 34.5	Two dolerite rocks on a hill with historical engraving on them. One has a scratched horse and some other very faint (but unweathered) scraped images. The second is 2 m away and has a man leading a horse as well as a bird and some writing that is largely illegible.	IIIB
(HL04)	1626	S31 52 27.9 E22 15 35.1	A dolerite rock on a hill with historical scratching on it.	NCW
(HL04)	1627	S31 52 25.5 E22 15 32.8	A dolerite rock on a hill with historical scratching on it.	NCW
(HL04)	1628	S31 52 23.1 E22 15 34.3	Three dolerite rocks on a hill with historical engraving on them. One has a man leading a horse, some illegible writing and some other scratches. Another has some circular motifs linked by lines. The third has a large group of female figures wearing either short or long dresses. The short dress people are all smaller suggesting these to be children.	IIIB
(HL04)	1629	S31 52 18.4 E22 15 20.2	A dolerite rock on a hill with historical engravings on it. It has a horse, four people and a few other scratches.	IIIB
(HL04)	1630	S31 52 19.5 E22 15 20.4	A dolerite rock on a hill with many indeterminate historical scratches on it.	NCW
(HL04)	1631	S31 52 17.6 E22 15 15.1	A dolerite rock on a hill with historical engraving on it. There are several ladies in dresses and two ostriches.	IIIB
(HL04)	1632	S31 52 24.2 E22 15 19.2	A dolerite rock on a hill with indeterminate scratches on it.	NCW
(HL04)	1633	S31 52 24.3 E22 15 19.9	A dolerite rock on a hill with indeterminate scratches on it.	NCW
(HL04)	1634	S31 52 25.0 E22 15 22.5	A dolerite rock on a hill with indeterminate scratches on it.	NCW

(HL04)	1635	S31 52 25.4 E22 15 22.7	A dolerite rock on a hill with indeterminate scratches on it.	NCW
(HL04)	1636	S31 52 26.0 E22 15 23.1	A dolerite rock on a hill with historical engraving on it. There are two horses and a third image which may be a very stylized horse with a rider.	IIIB
(HL04)	1637	S31 52 26.9 E22 15 24.3	Three adjoining dolerite rocks on a hill with historical engraving on it. There is a horse with scratches over it and a second horse with a rider whose hat has blown off. He is holding a crop and looks as though he is looking backwards after his hat. The horse has lifted its tail and is defecating. There are also hoof tracks scratched behind the horse. The other rocks have indeterminate scratches.	IIIB
(HL04)	1638	S31 52 28.0 E22 15 25.3	A few dolerite rocks on a hill with historical engraving on them. There are two horses, one of them with a rider. One rock has some geometric motifs on it and other scratches.	IIIB
(HL04)	1639	S31 52 28.4 E22 15 25.2	A dolerite rock on a hill with historical engraving on it. There is a horse with rider and many other scratches.	IIIB
(HL04)	1640	S31 52 31.3 E22 15 29.8	A dolerite rock on a hill with historical engraving on it. There is a horse with rider (very stylized and poorly preserved) and many other scratches.	IIIC
(HL04)	1641	S31 53 15.7 E22 15 53.2	Farm house that looks to be a T-shaped Cape Vernacular with four gables. Front gable faces east. Some newer buildings in the werf and many trees. The house was not visited.	IIIA

APPENDIX 3a – Mapping: Hoogland 3

The map below shows the entire HL03 study area while the six that follow show larger scale sections centred on the red numbers 1-6.

Key to maps:
Turquoise polygon: Hoogland 3 site
Turquoise numbered dots: turbines
Turquoise lines: roads
Purple/green or pink/green: overhead powerline
Pink lines: off-road powerlines
Blue polygon: laydown area
Purple polygon: site camp & batching plant
Purple lines: powerlines along existing roads
Green square: battery energy storage facility
Yellow rectangle: substation
Orange rectangle: switching station (not part of application)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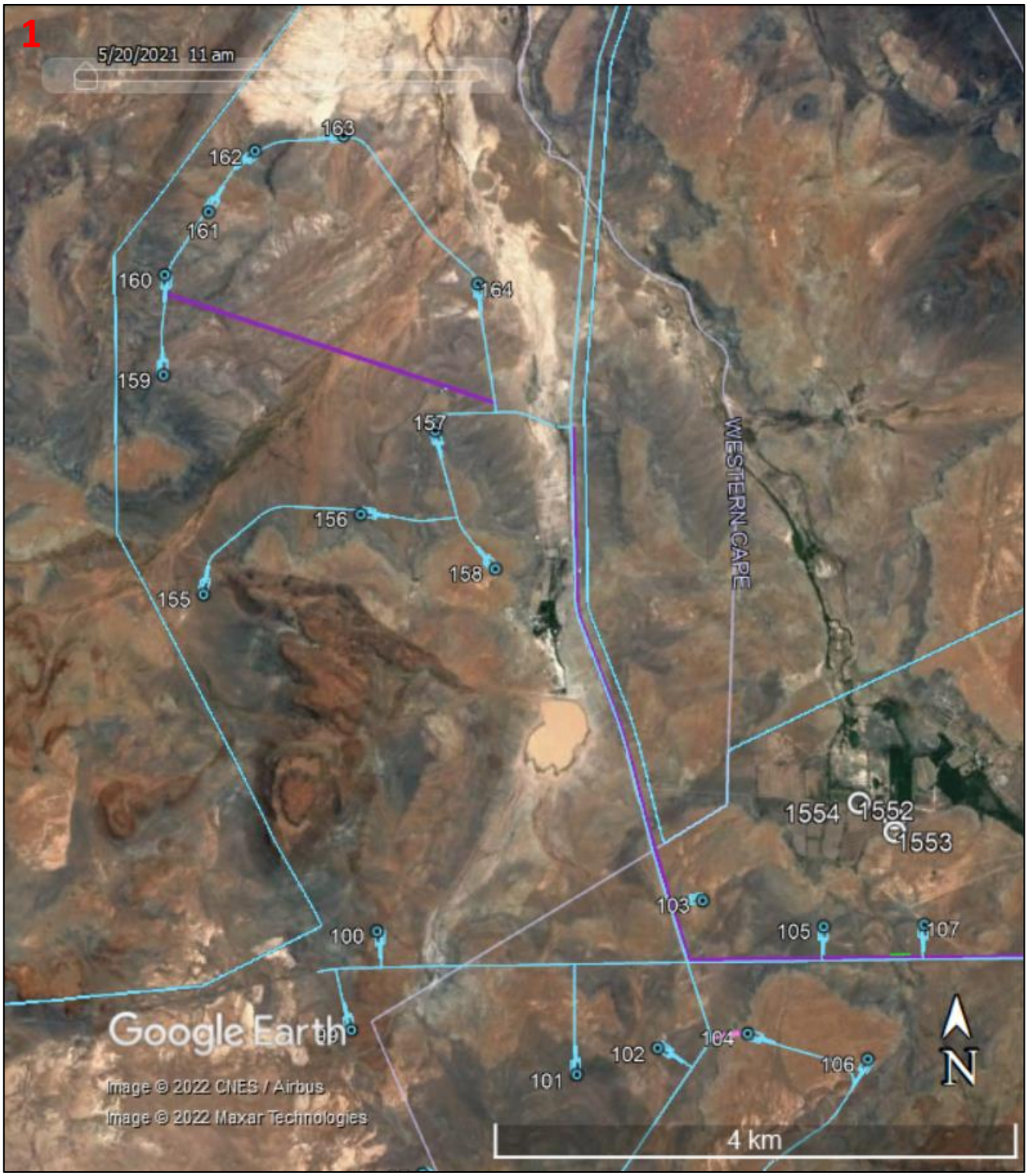
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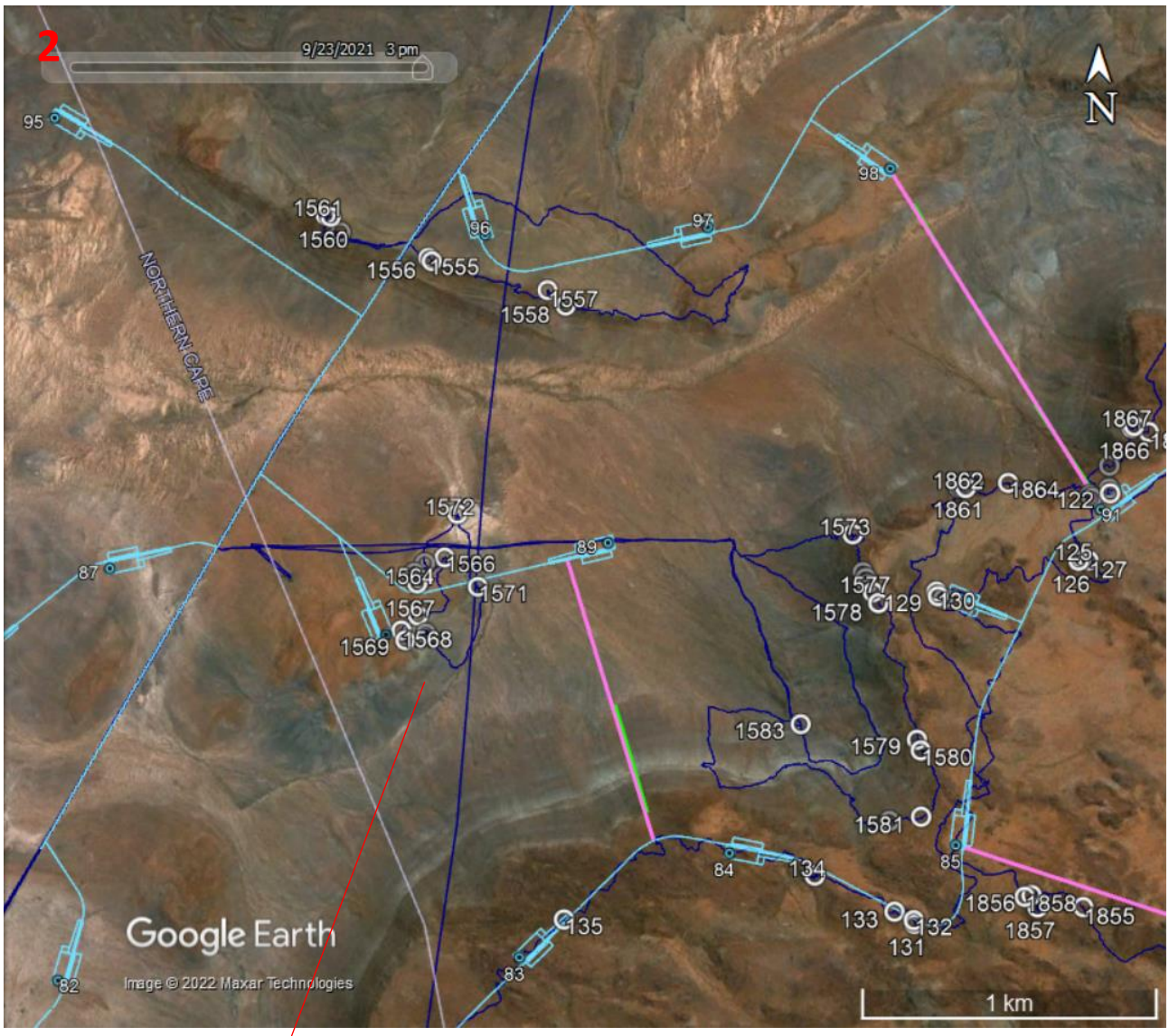
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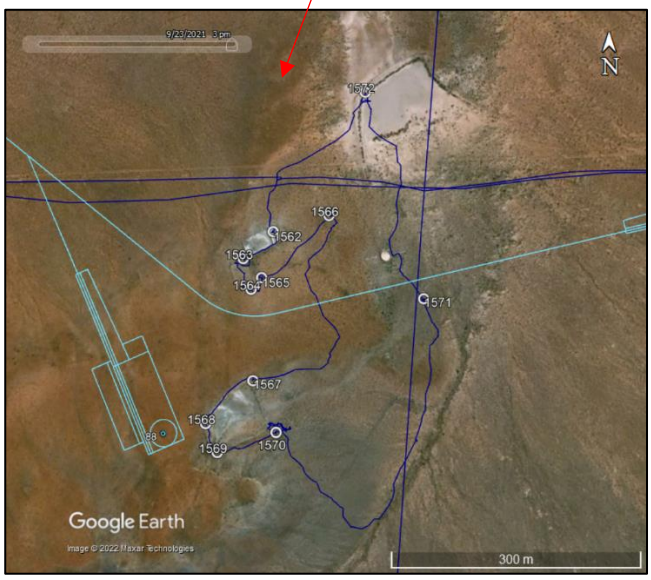
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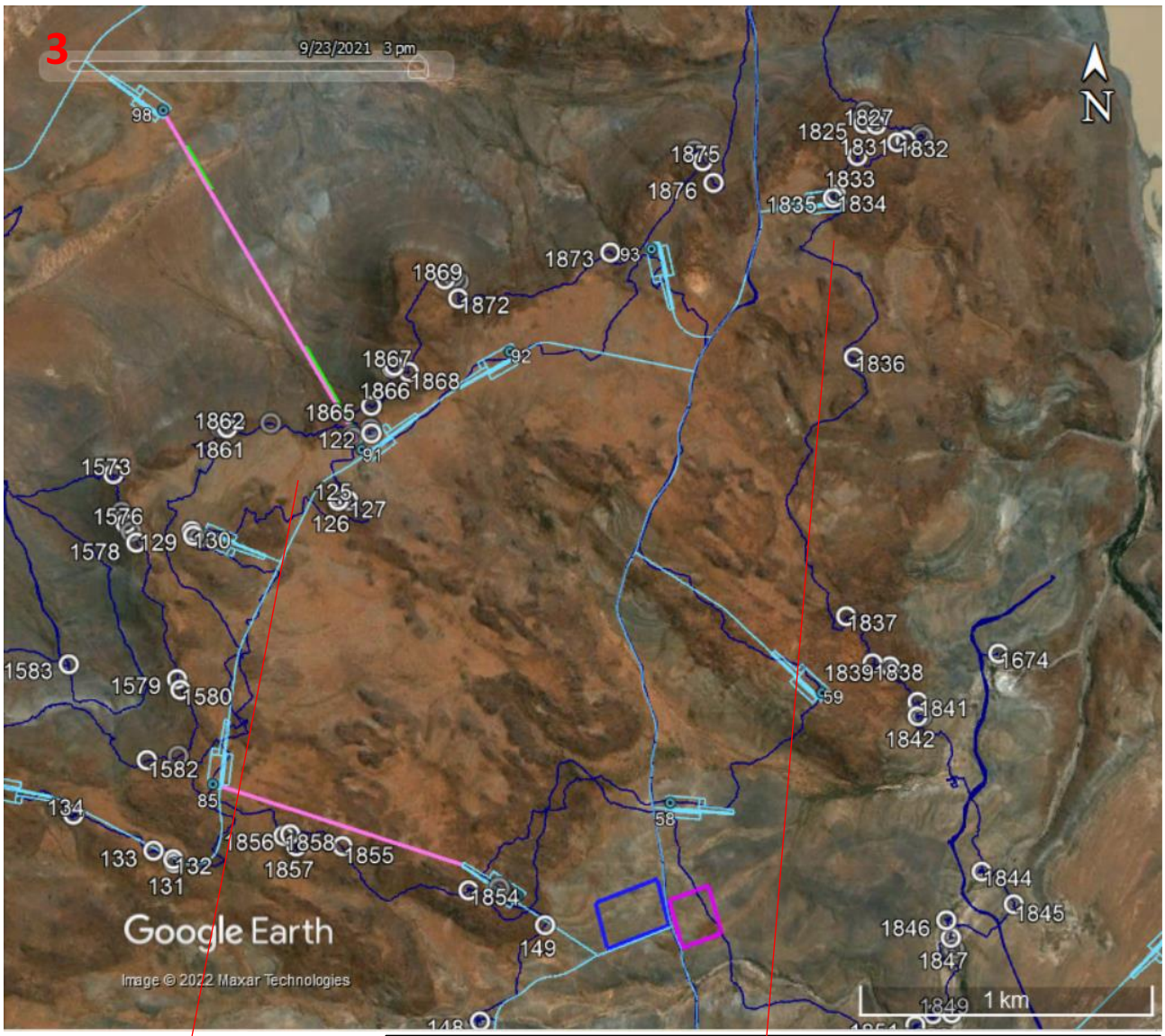
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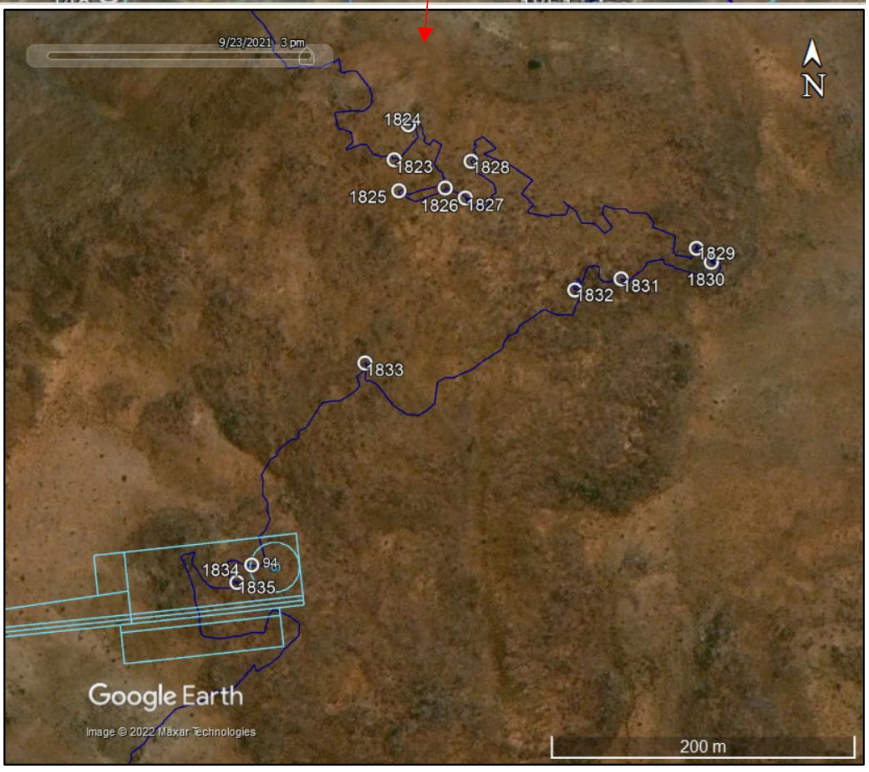
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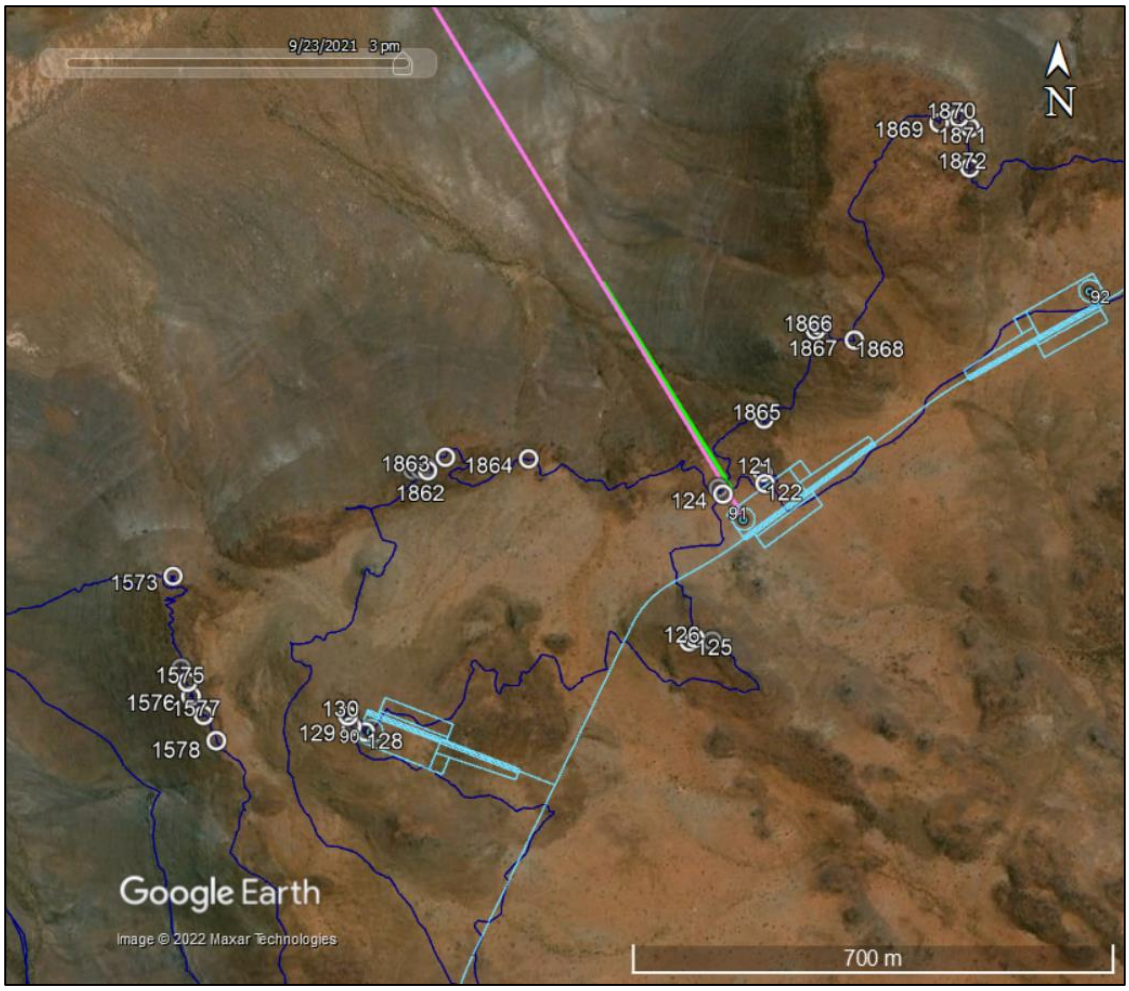
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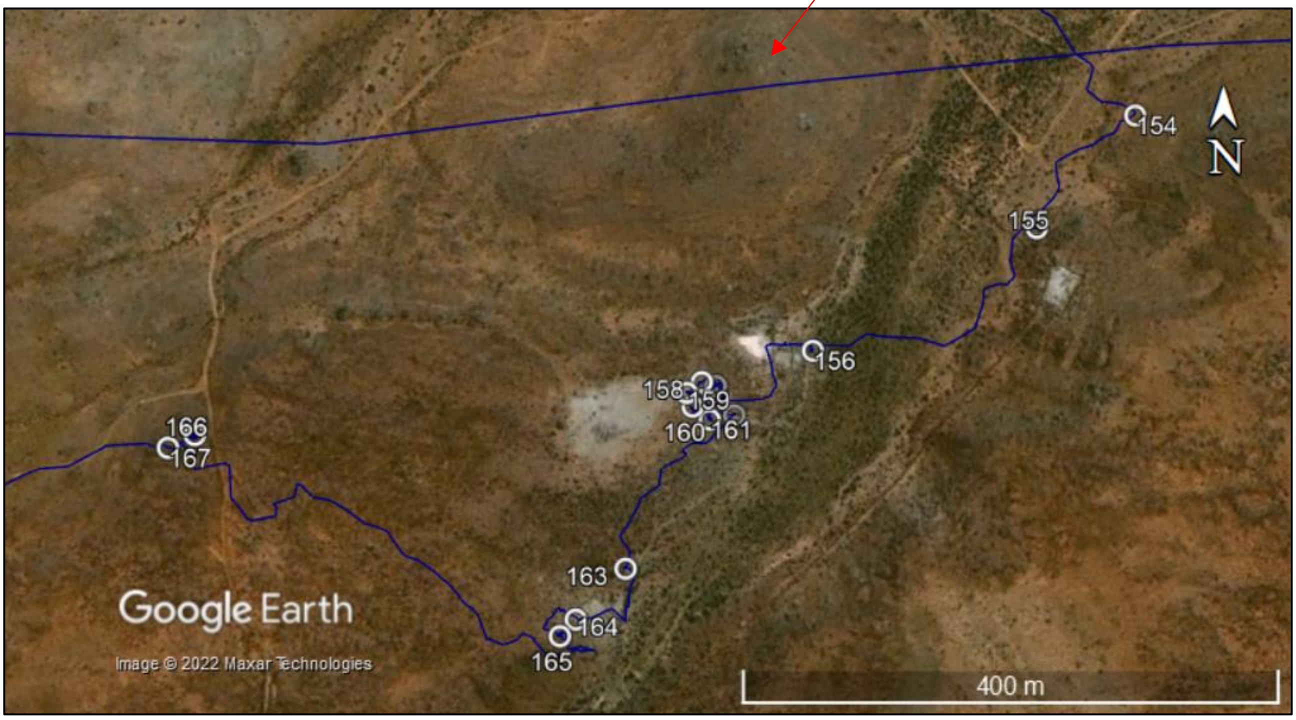
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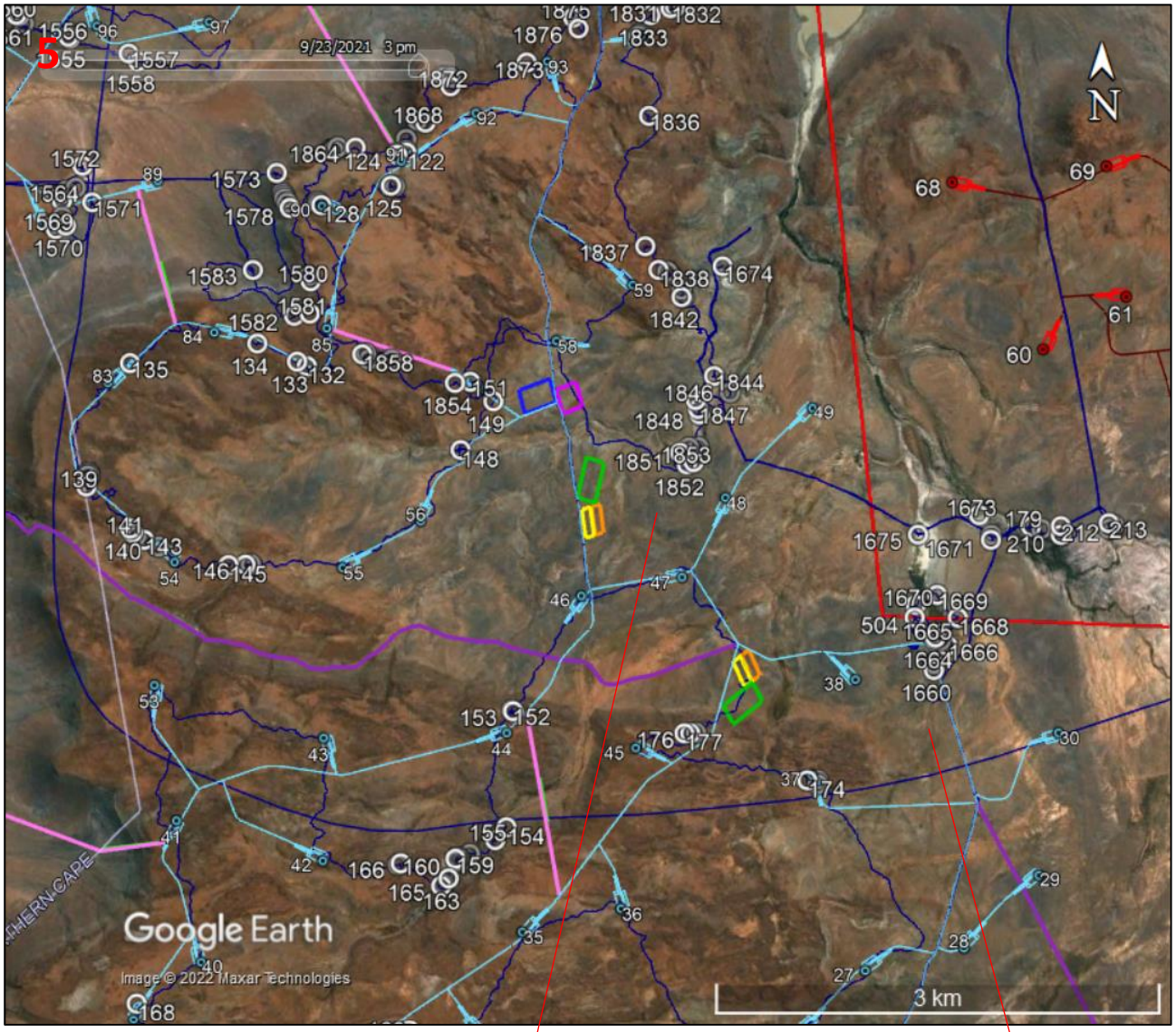
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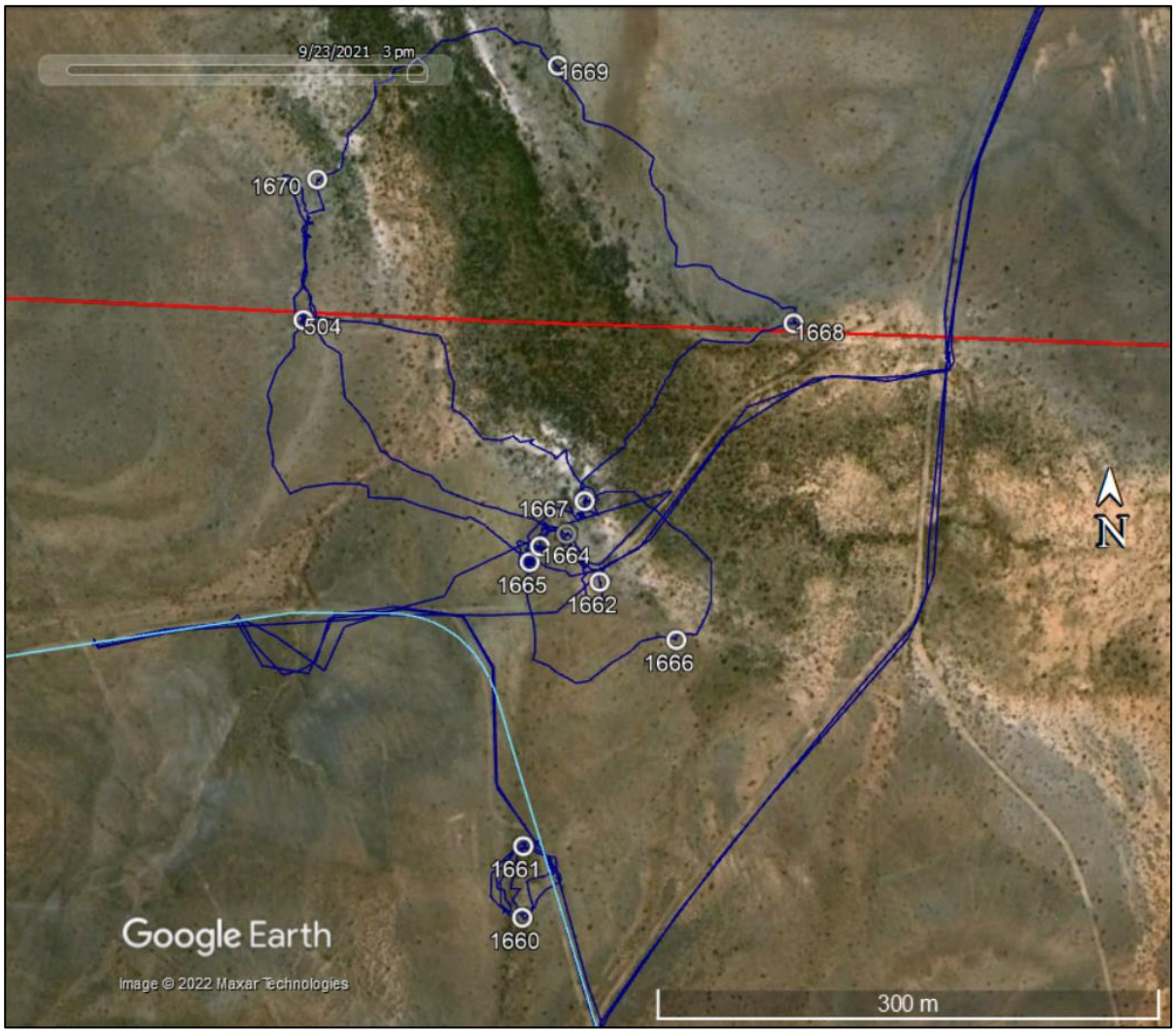
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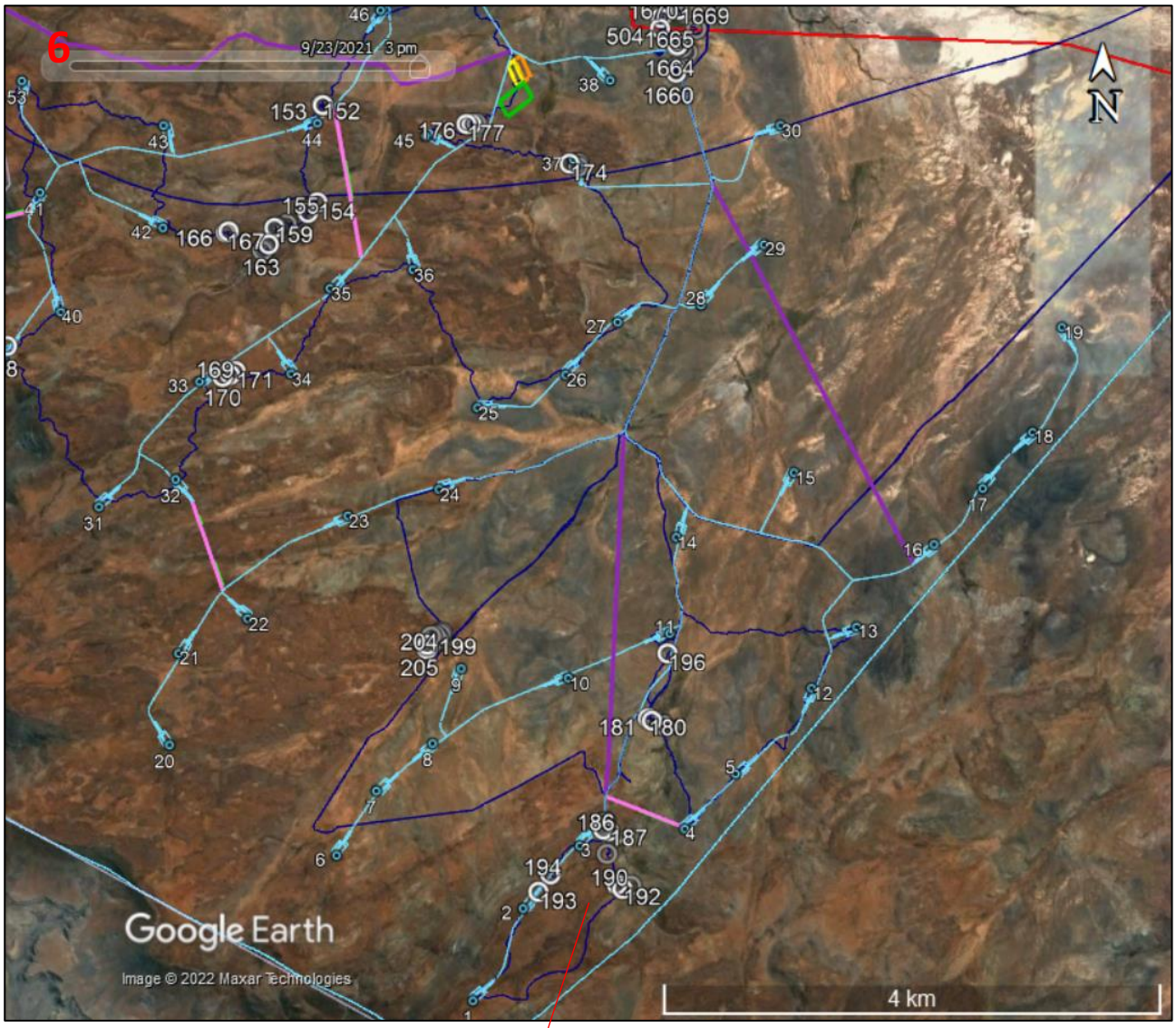
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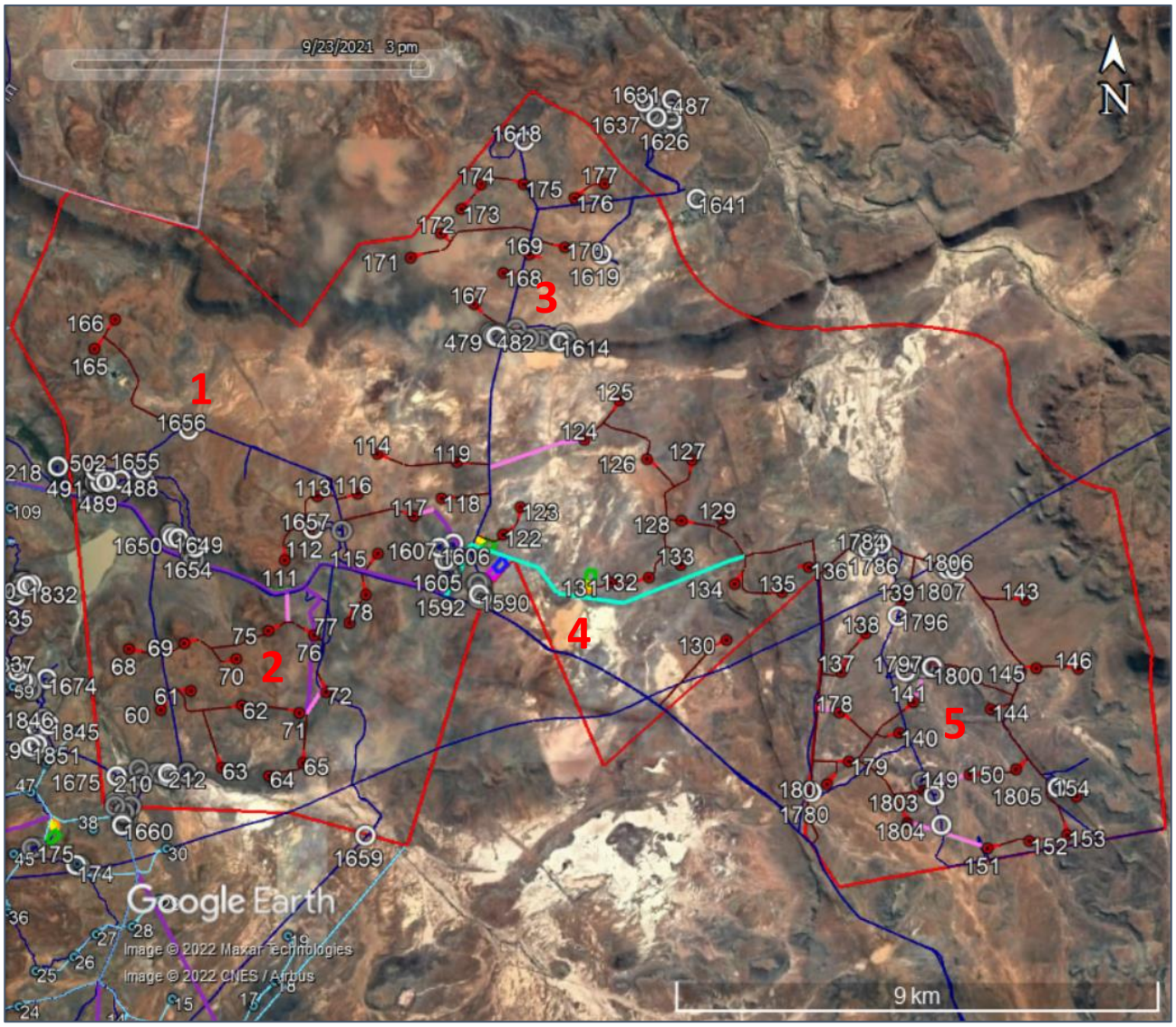
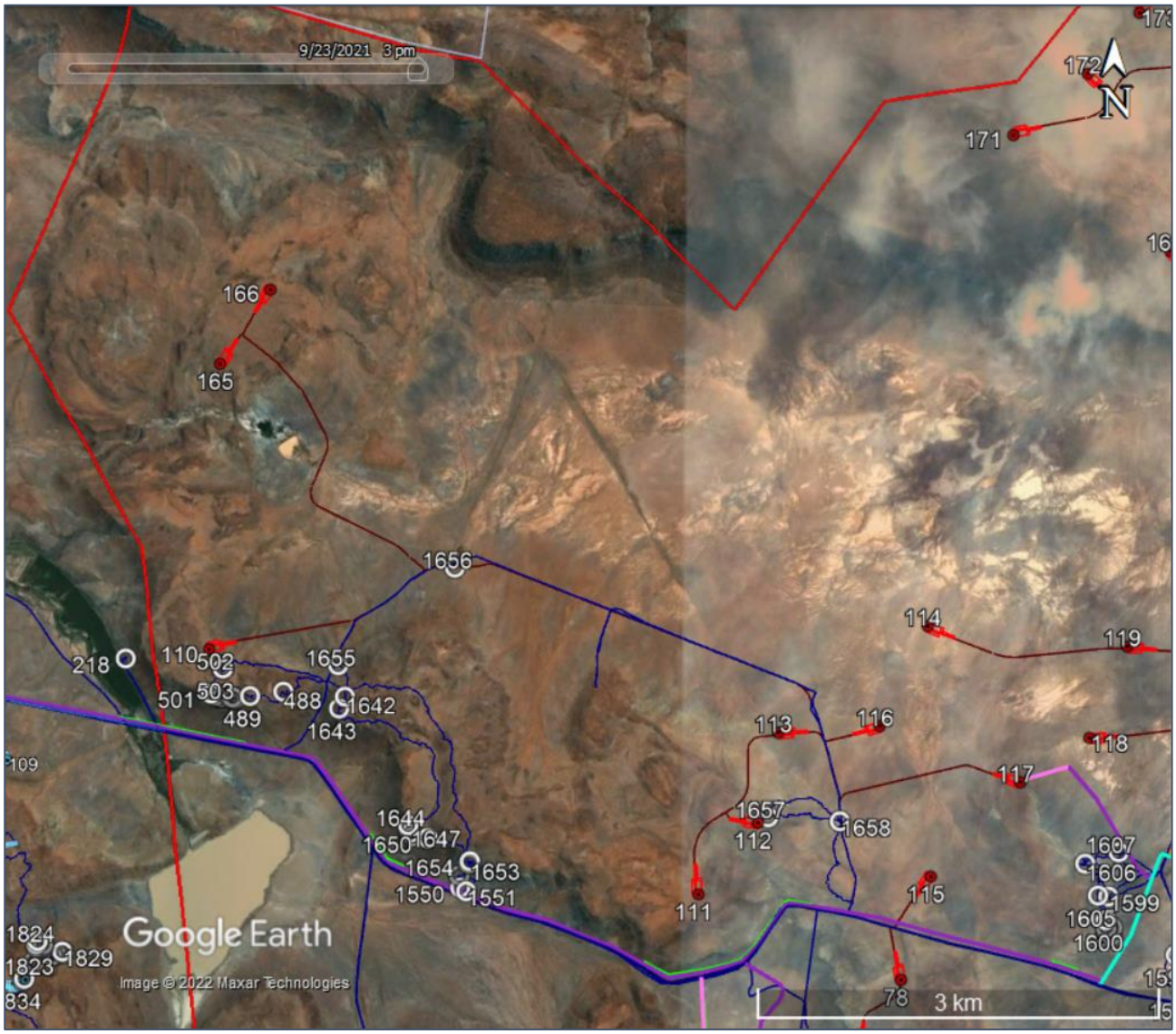
APPENDIX 3b – Mapping: Hoogland 4

The map below shows the entire HL04 study area while the five that follow show larger scale sections centred on the red numbers 1-5.

Key to maps:
Red polygon: Hoogland 4 site
Green numbered dots: turbines
Black lines: roads
Purple/green or pink/green: overhead powerline
Pink lines: off-road powerlines
Blue polygon: laydown area
Purple polygon: site camp & batching plant
Purple lines: powerlines along existing roads
Green square: battery energy storage facility
Yellow rectangle: substation
Orange rectangle: switching station (not part of application)

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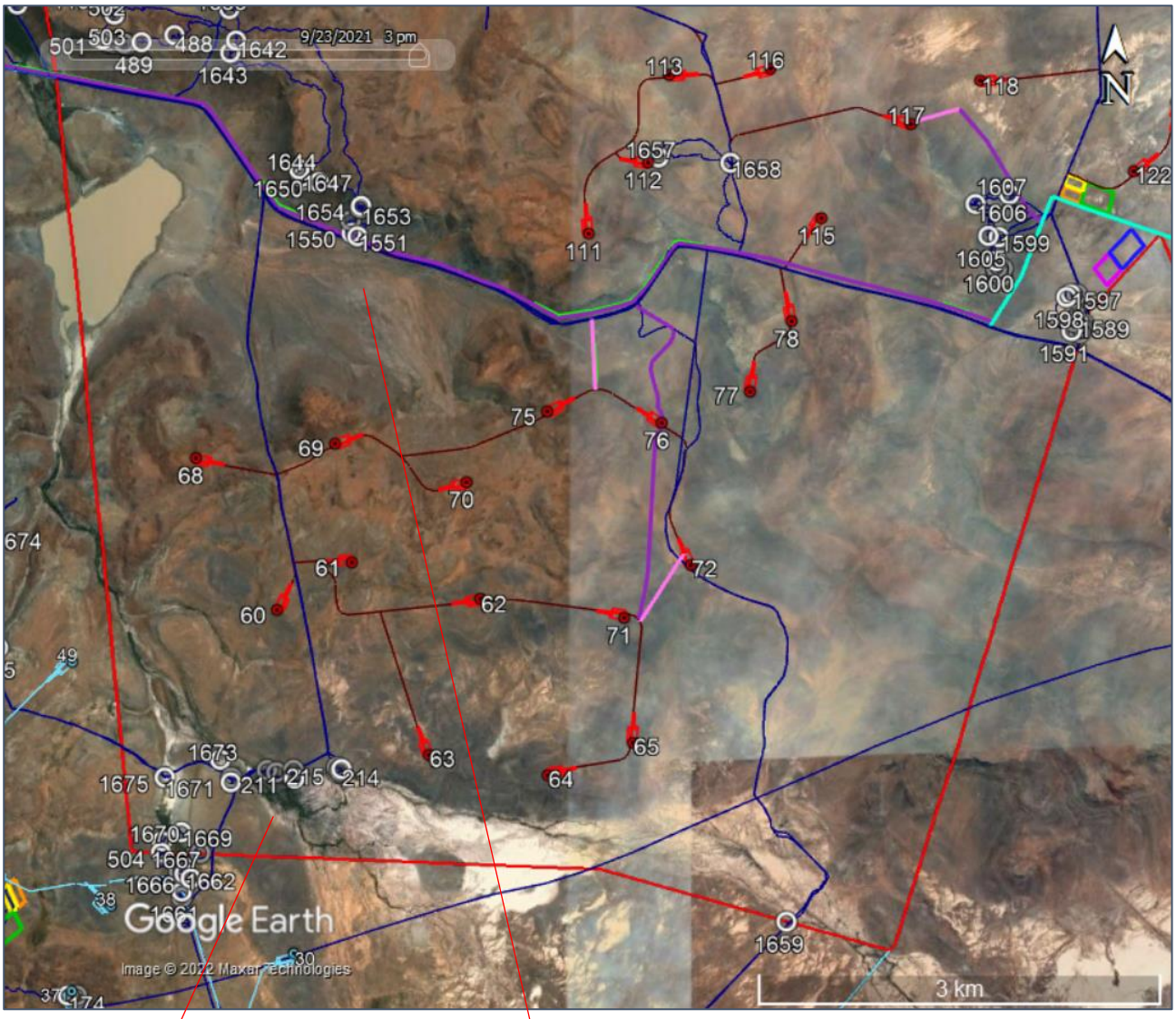
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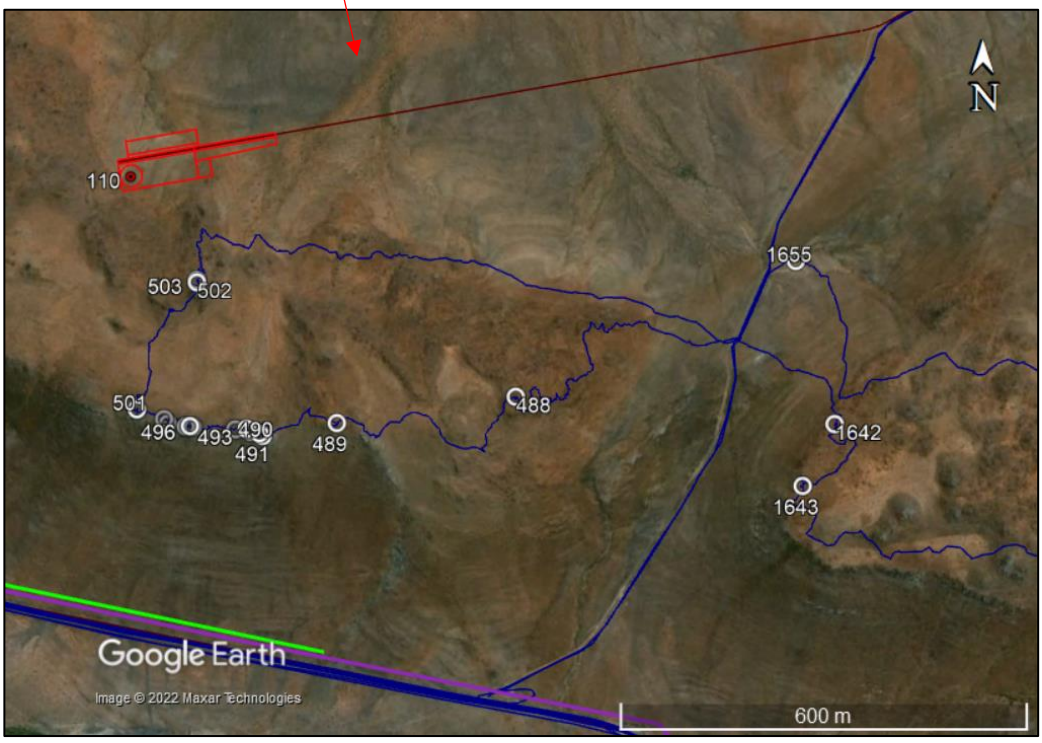
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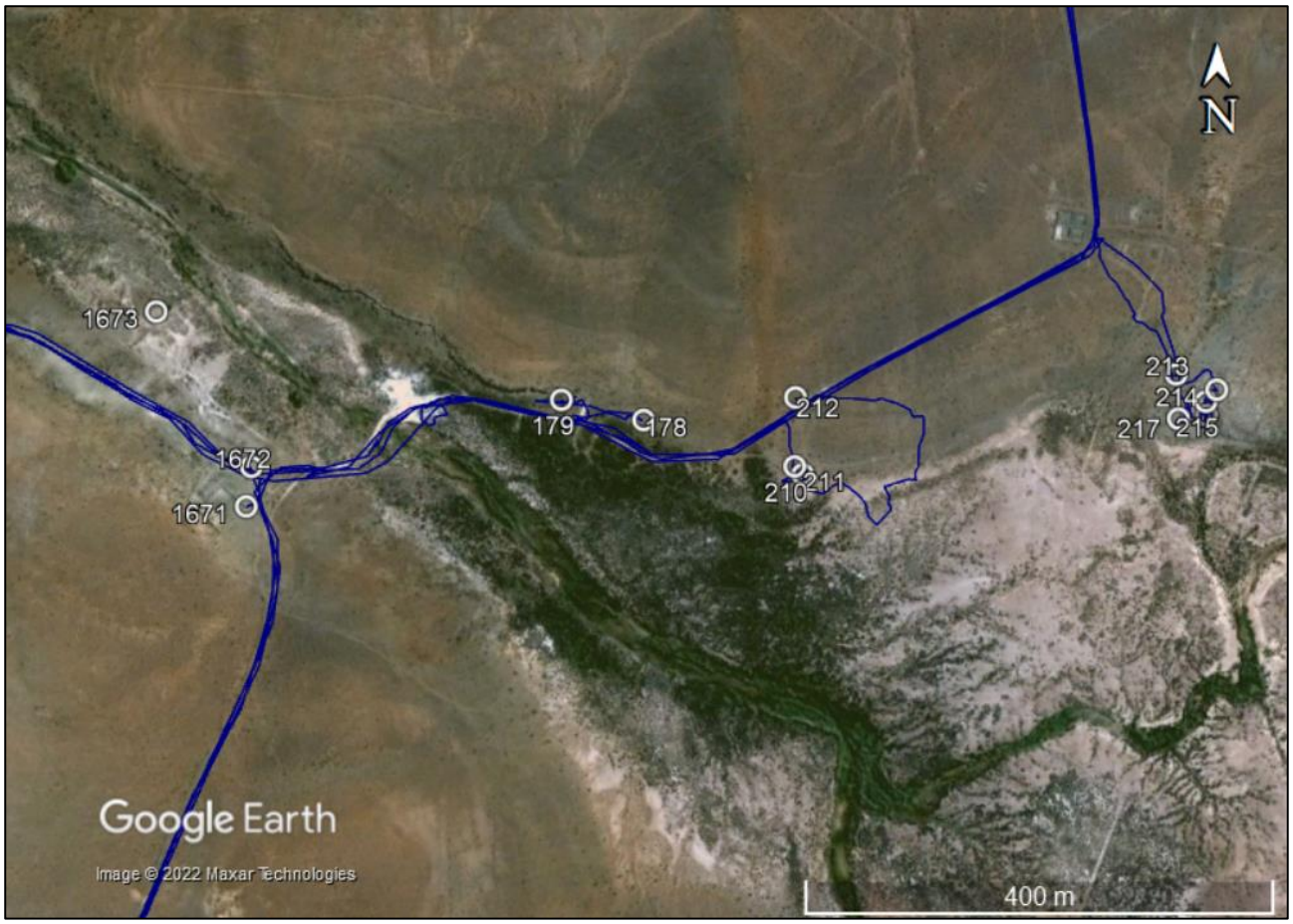
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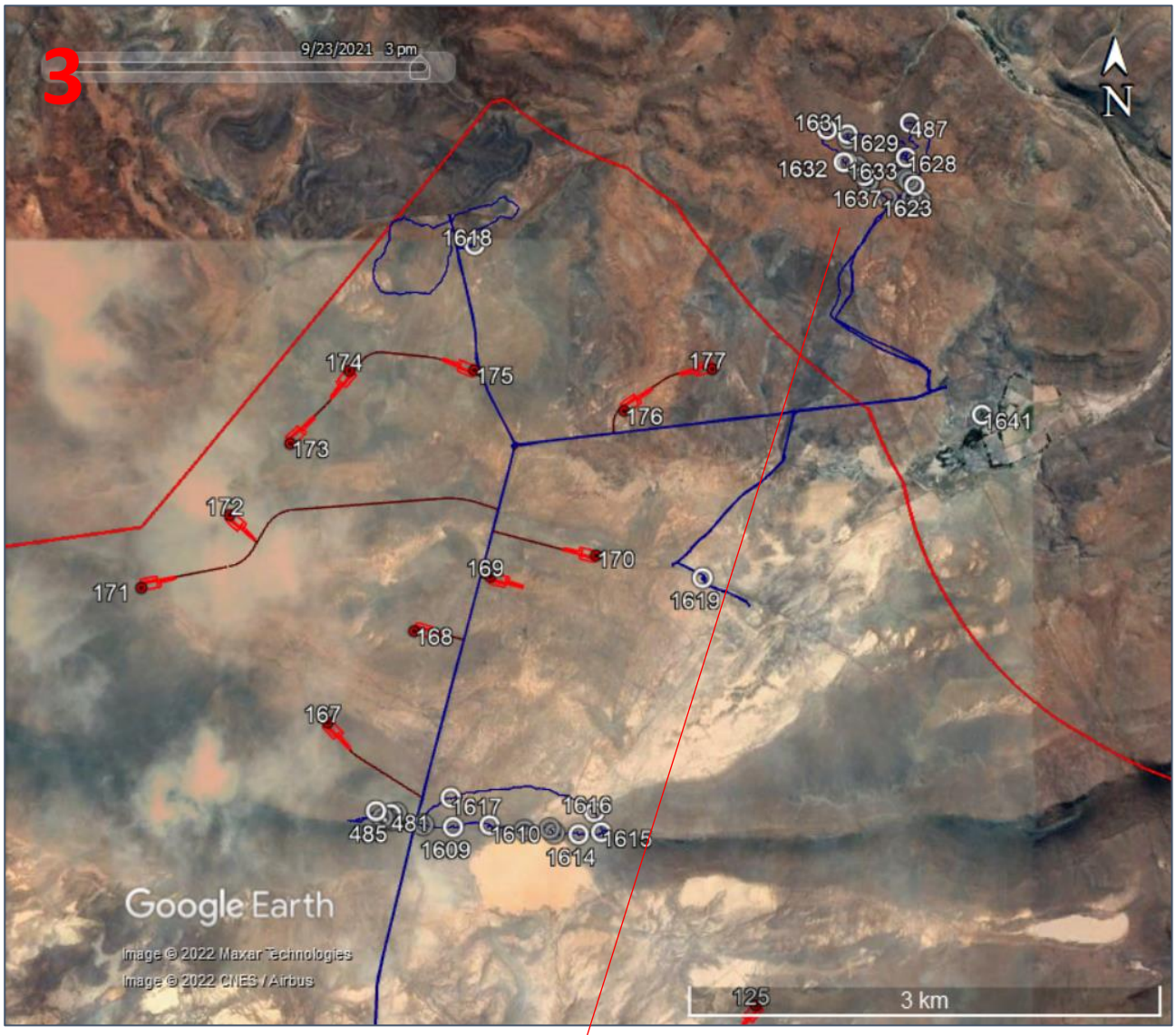
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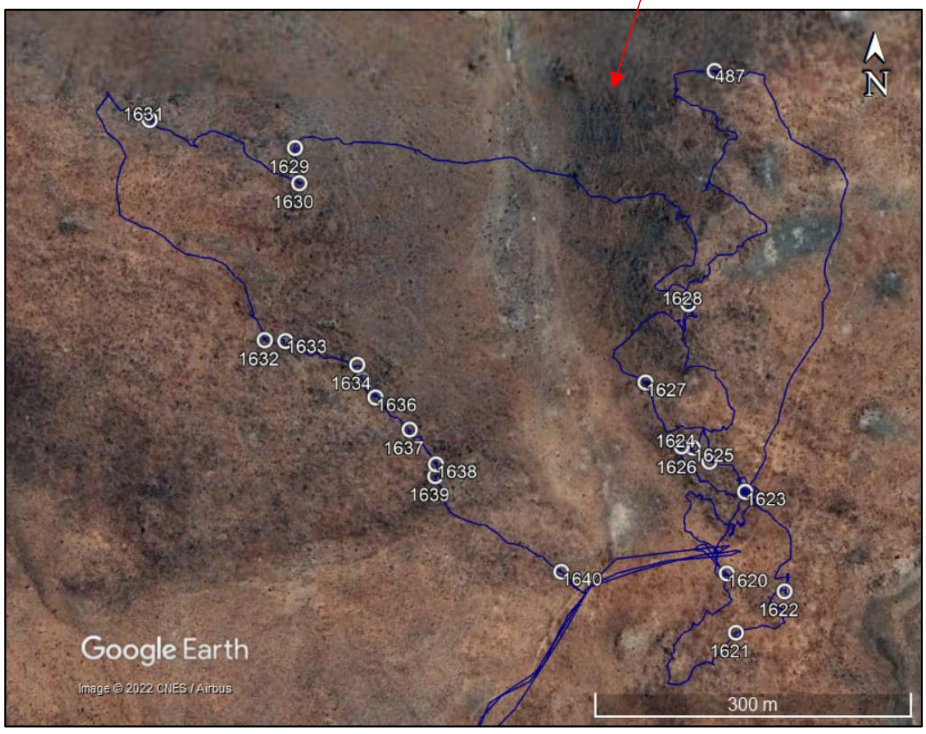
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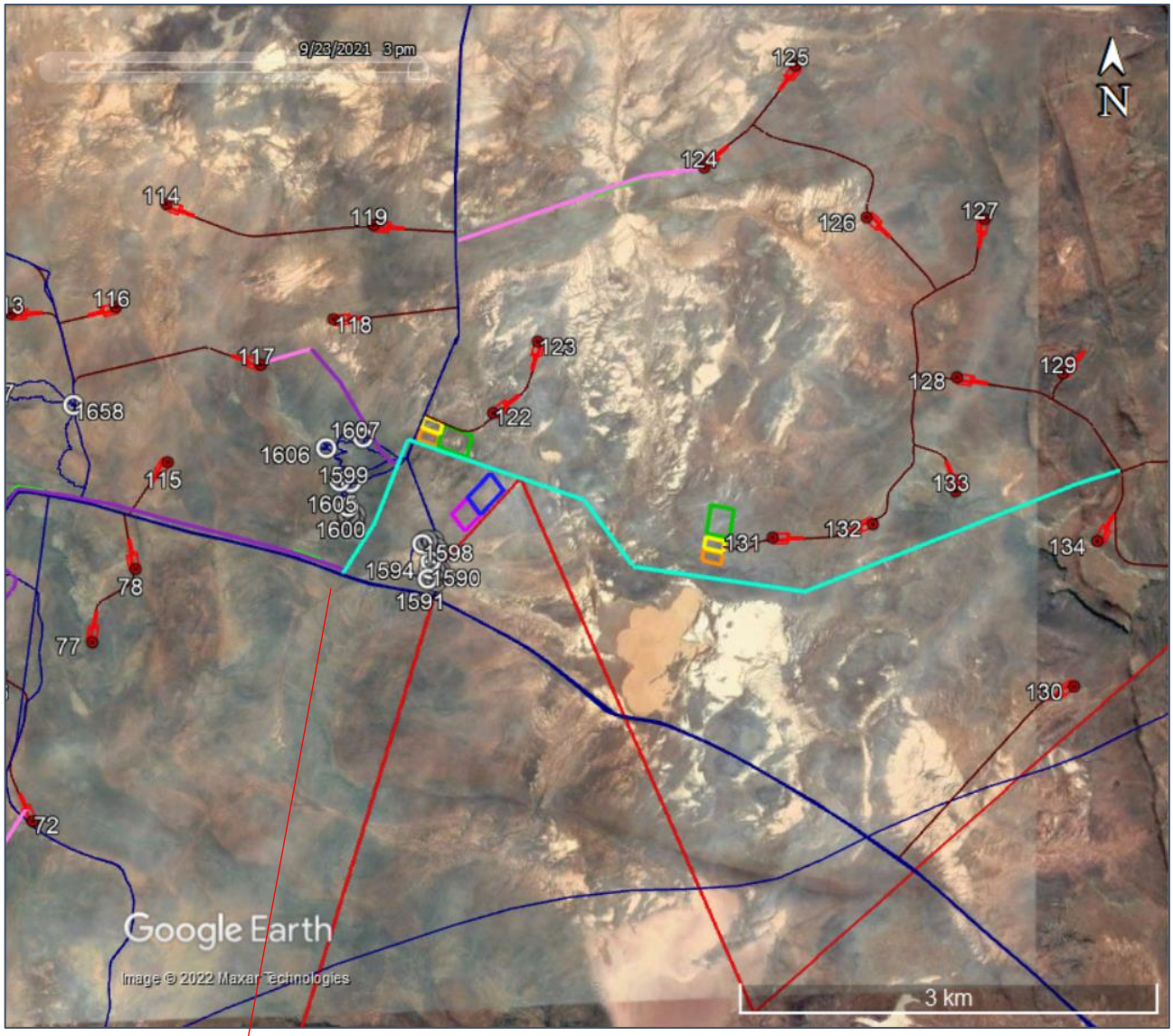
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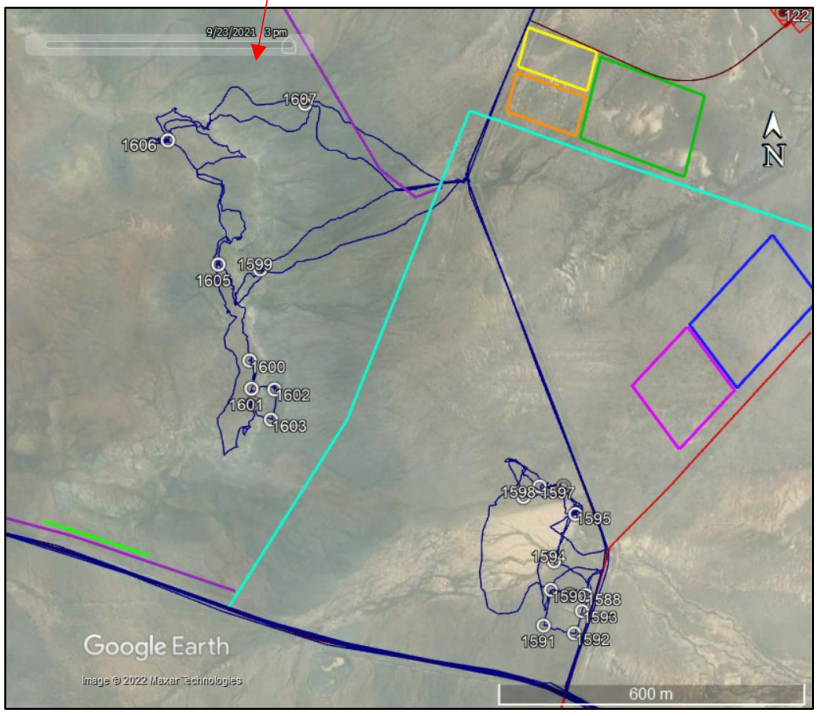
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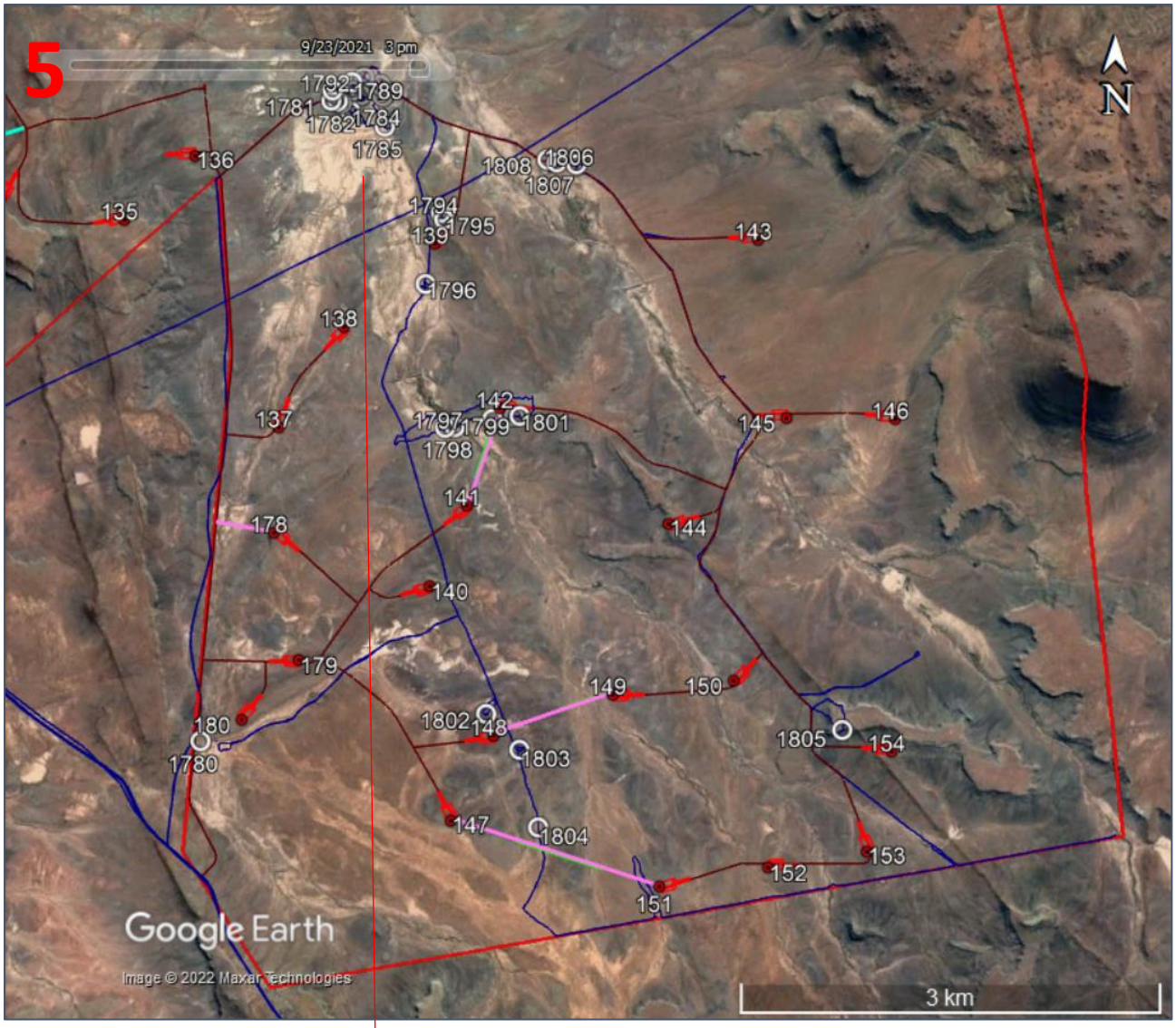
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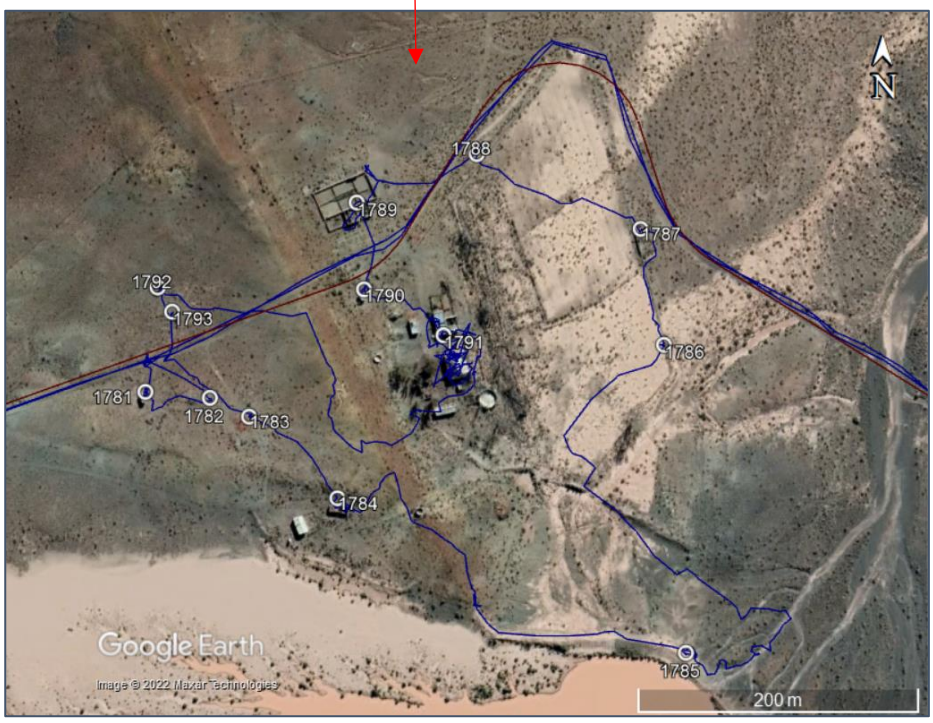
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APPENDIX 4 – Palaeontological specialist study

Please see *Appendix C10 Palaeontology* of the draft BA report.

APPENDIX 5 – Visual Impact Assessment

Please see *Appendix C8 Visual* of the draft BA report.

SITE SENSITIVITY VERIFICATION: HOOGLAND SOUTH CLUSTER

CONTENTS

1. INTRODUCTION

Red Cap Energy (Pty) Ltd ('Red Cap') is proposing to develop four wind farms and associated grid connections (together known as the Hoogland Projects) in an area located between Loxton and Beaufort West in the Northern and Western Cape Provinces. Refer to Figure 1 and Figure 2.

Hoogland 1 Wind Farm and Hoogland 2 Wind Farm are located to the north closer to Loxton and form the Northern Cluster of wind farms which will share a grid connection, named the Hoogland Northern Grid Connection. Hoogland 3 Wind Farm and Hoogland 4 Wind Farm are located closer to Beaufort West and comprise the Southern Cluster which will similarly share a separate grid connection, named the Hoogland Southern Grid Connection. The two Grid Connections are each in the form of 132 kV overhead power lines and will connect the Hoogland Wind Farms to the Nuweveld Collector Substation on Red Cap's adjacent Nuweveld Wind Farms Project. Power will then be fed into the Eskom Droërivier Substation located near Beaufort West via the proposed Nuweveld Gridline.

Each wind farm would have a targeted nameplate capacity of up to a maximum of 420 MW and would involve the construction of no more than 60 turbines each.

In terms of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) Environmental Impact Assessment (EIA) Regulations (4 December 2014, Government Notice (GN) R982, R983, R984 and R985, as amended), various aspects of the proposed development may have an impact on the environment and are considered to be listed activities. These activities require authorisation from the National Competent Authority (CA), namely the Department of Forestry, Fisheries and the Environment (DFFE), prior to the commencement thereof.

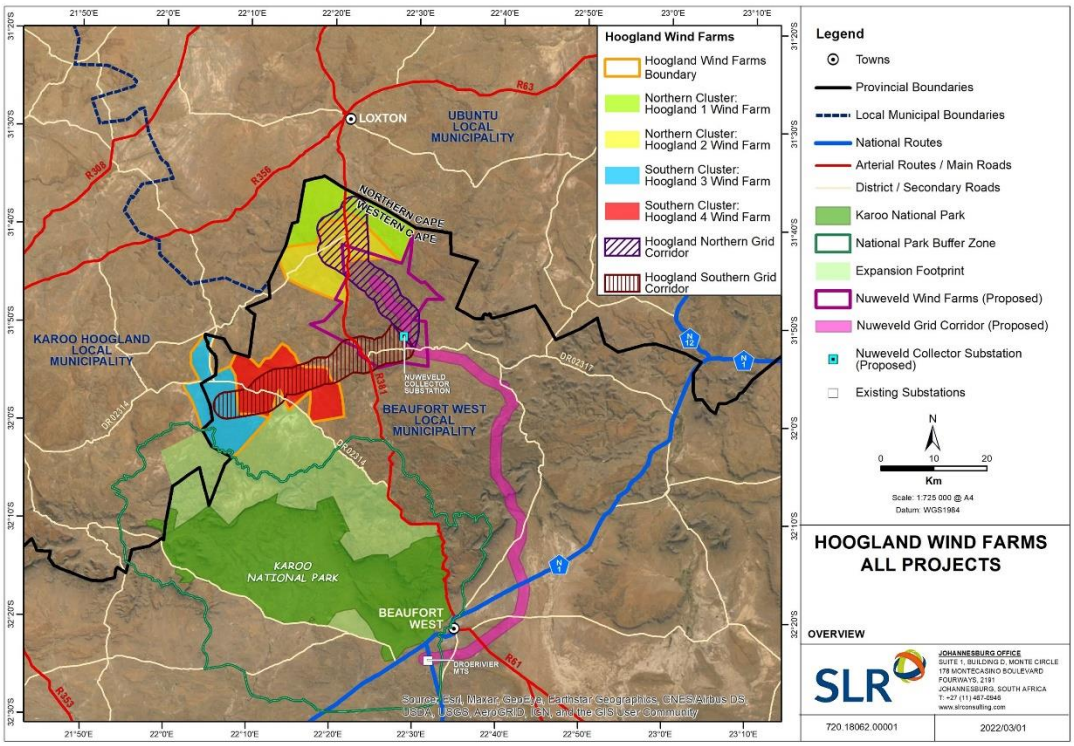

Figure 1: Locality Map of the Proposed Hoogland Wind Farms and associated Grid Corridor showing the adjacent Nuweveld Wind Farms and Grid Connection (part of six separate application processes)

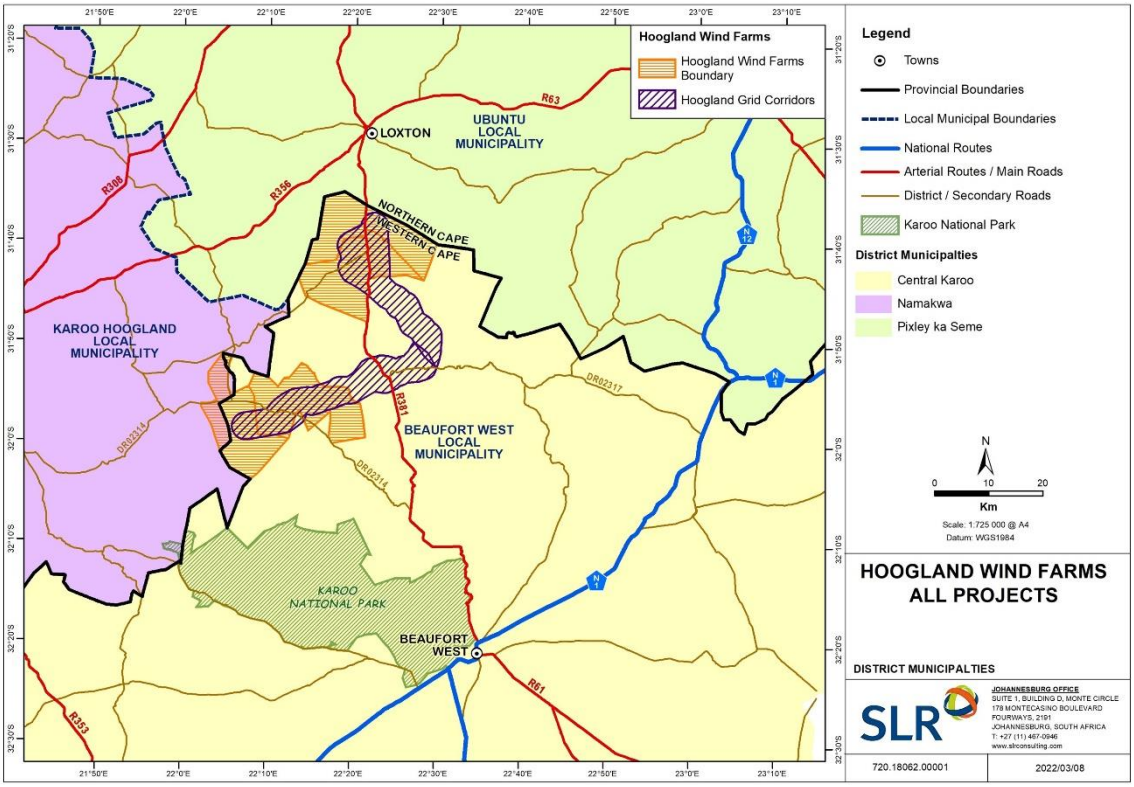

Figure 2: Situational Map of the Proposed Hoogland Wind Farms and associated Grid Connection Corridor (part of 6 separate application processes) within Namakwa and Central Karoo Municipality respectively

In accordance with GN 320 and GN 1150 (20 March 2020) [1] of the NEMA EIA Regulations of 2014, prior to commencing with a specialist assessment, a site sensitivity verification must be undertaken to confirm the current land use and environmental sensitivity of the proposed project area as identified by the National Web-Based Environmental Screening Tool (Screening Tool). ASHA Consulting (Pty) Ltd has been commissioned to verify the heritage sensitivity of the Hoogland Wind Farm and Grid Connection project sites under these specialist protocols.

The scope of this report is the Hoogland 3 Wind Farm and Hoogland 4 Wind Farm (the Southern Wind Farm Cluster) applications. Even though these are two separate applications they will be considered in the same specialist report.

2. SITE SENSITIVITY VERIFICATION METHODOLOGY

The steps followed are as follows:

- Desktop research to determine the kinds of heritage expected to occur in the general area;
- Desktop analysis of satellite imagery to locate any potentially sensitive areas; and
- Extensive fieldwork was conducted. This involved:
    - Driving the roads of the study area to look for likely areas where heritage resources might be present (e.g. water sources, appropriate topography and/or surface conditions);
    - Walking those areas identified from satellite photography and during driving through the area; and
    - Walking strings of turbines in order to randomly (in terms of heritage) sample sections of the landscape suited to development.

3. OUTCOME OF SITE SENSITIVITY VERIFICATION

Figure 3 shows the archaeological and heritage sensitivity according to the Screening Tool. It shows the entire study area and surrounding land to be of low sensitivity. This sensitivity is disputed by the heritage specialist based on the findings of the field surveys. Large numbers of archaeological heritage sites with variable cultural significance have been located in the study area and the various farm complexes are noted to be locally significant landscapes. The result is a large number of small areas of varying sensitivity set within a matrix of low sensitivity land (Figure 4).

The sites include Later Stone Age (LSA) rock art and occupations as well as large numbers of historical sites such as stone-walled settlements and engravings. The Nuweveld was an important area for colonial settlement and many small grazing farms were established close to water sources.

The types of sites recorded are as follows:

- LSA stone artefact scatters (Figures 5 & 6);
- LSA engravings (Figures 7 & 8);
- Stone-walled house ruins and the ruins of many associated outbuildings (Figure 9 & 10);
- Ash and rubbish middens with many artefacts (Figures 11 & 12);
- Abandoned and/or occupied houses and other farm buildings (Figure 13);
- Graves (Figure 14); and
- Historical engravings (Figure 15 & 16).

[1] [1] GN 320 (20 March 2020): Procedures for The Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(A) and (H) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation

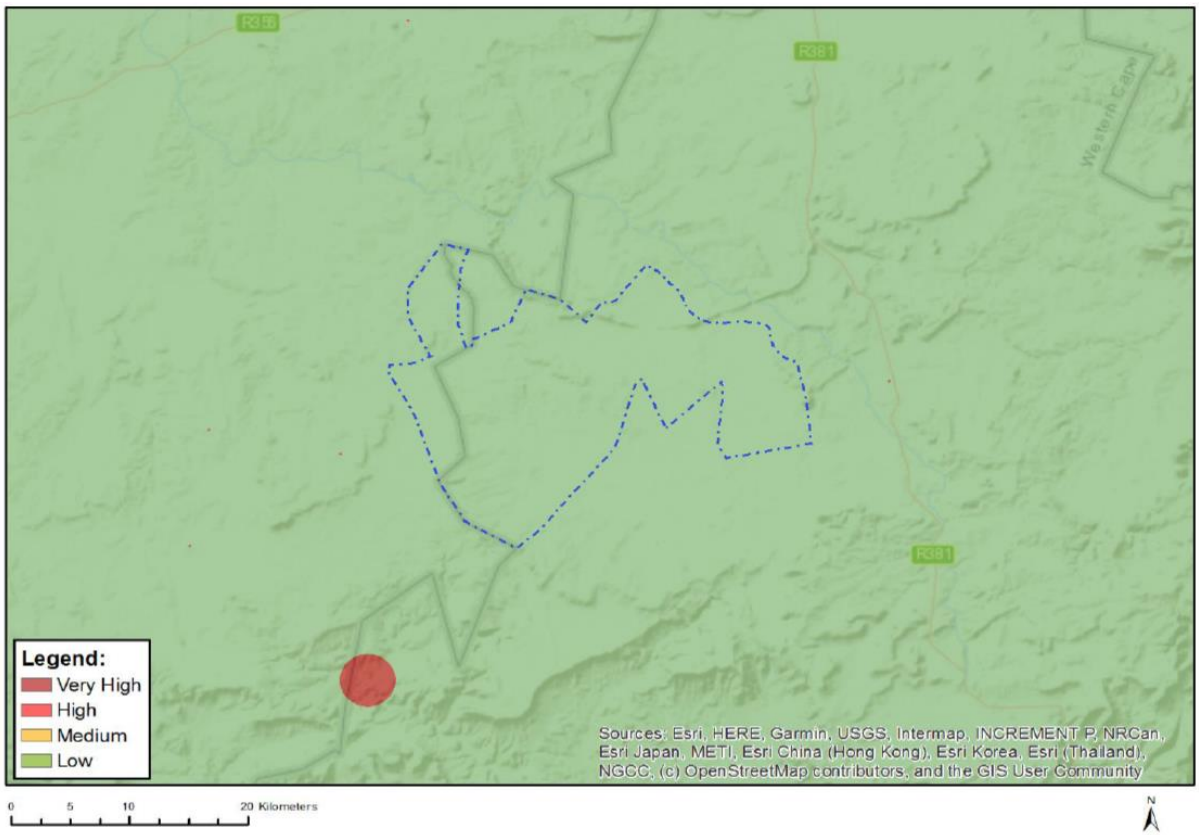

Figure 3: Screening tool map showing the archaeological and heritage sensitivity to be low throughout the study area.

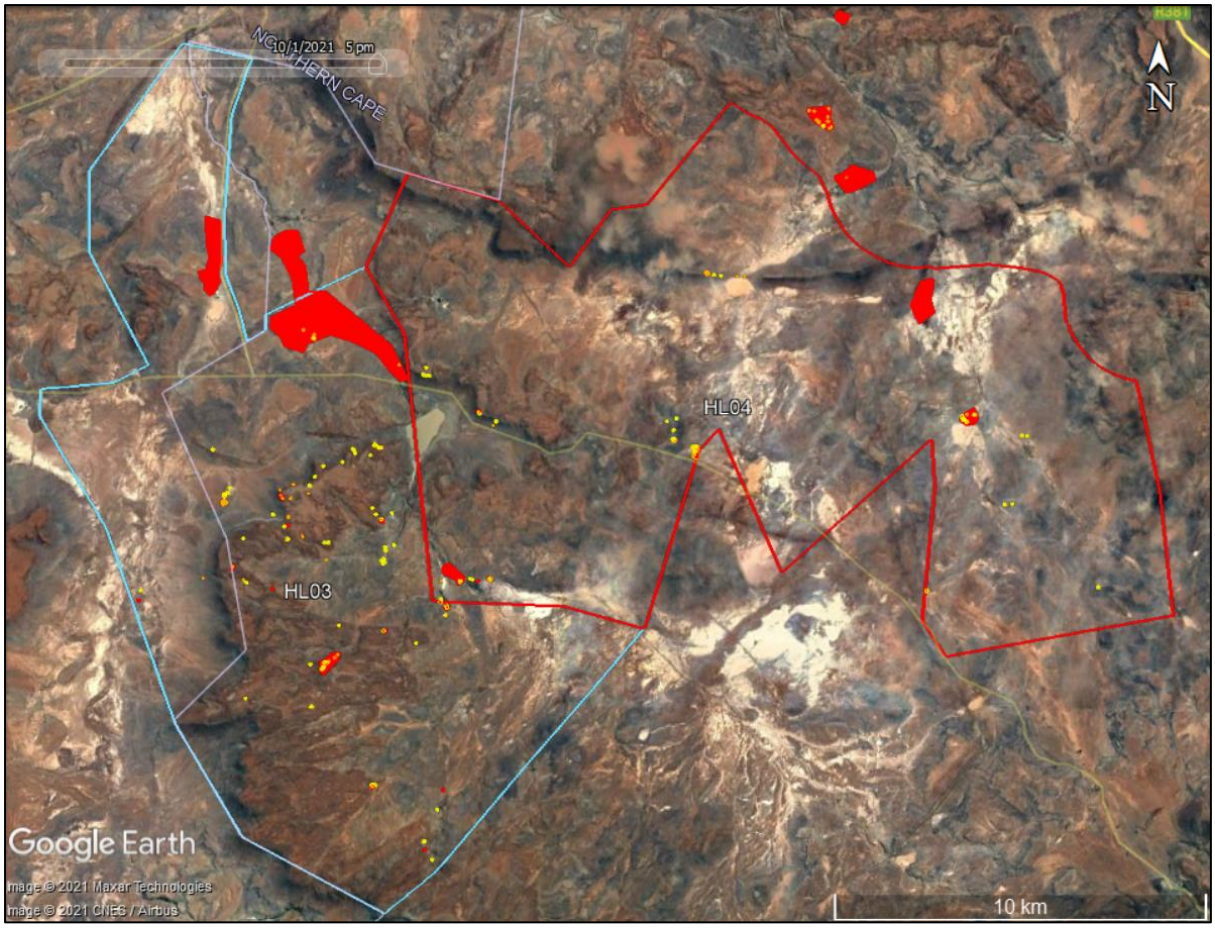

Figure 4: Sensitivity map showing the archaeological and heritage sensitivity to be generally low but with pockets of low (yellow), medium (orange) and high (RED) sensitivity scattered throughout the study area (turquoise polygon = HL03; red polygon = HL04).

Figure 5: LSA stone artefacts and ostrich eggshell fragments at waypoint 1549.

Figure 6: LSA stone artefacts and ostrich eggshell fragments at waypoint 1606. Scale in cm.

Figure 7: LSA engravings at waypoint 1591.

Figure 8: LSA engravings at waypoint 496.

Figure 9: Ruined stone-walled house at waypoint 1599.

Figure 10: Ruined stone-walled kraal at waypoint 1567.

Figures 11: An ash and rubbish midden at waypoint 157.

Figures 12: Artefacts from an ash and rubbish midden at waypoint 183.

Figure 13: Disused stable building with stable manager's house at waypoint 1552.

Figure 14: Probable grave cairn at waypoint 139.

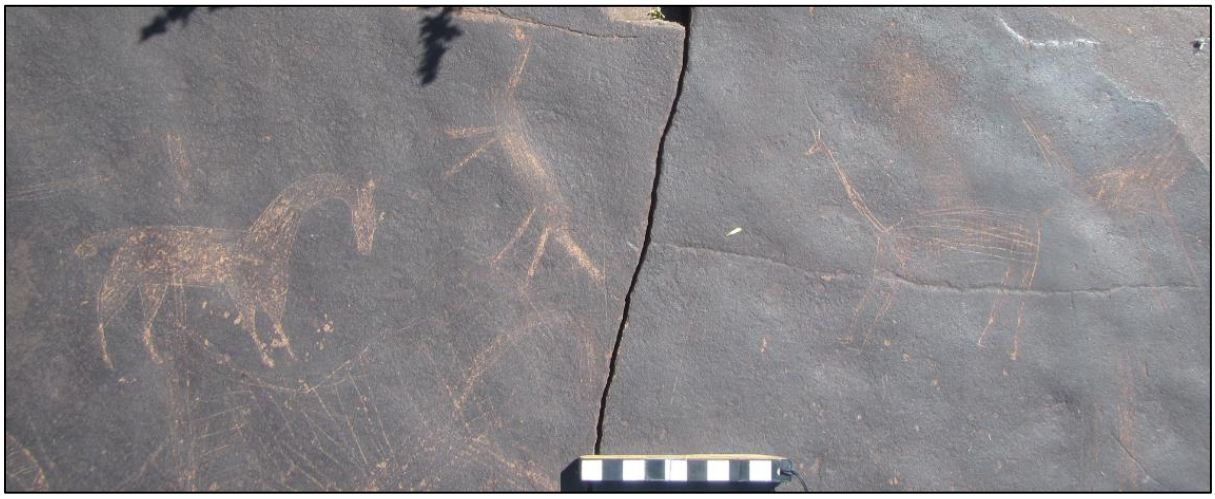

Figure 15: Historical engravings at waypoint 1574. Scale in cm.

Figure 16 & 17: Historical engravings with the car showing a mid-20th century origin and that this component, at least, is not a heritage resource. To the left is a 10th century Cape Cart.

Figure 18: Engravings of a bird and two antelopes from waypoint 1646. Scale in cm.

All these archaeological and built heritage resources provide a wealth of information about the past occupants of the Nuweveld Mountains. The LSA engravings are of high local significance, as are the best preserved historical sites, ash and rubbish dumps and all graves. Heritage sites are strongly focused along water courses, but engravings occur on some dolerite ridges. There is a rich collection of historical engravings in this area, especially within the HL03 area. While at least some are less than 100 years old and thus not heritage resources, they still contribute to the engraved landscape and show the continuity of rock engraving through time in the Nuweveld.

4. CONCLUSION

This report and desktop research shows that there is a wealth of heritage in the Nuweveld Mountains and the area cannot be regarded as of uniformly low sensitivity. It is true that the majority of the land area is of low sensitivity, but many culturally significant heritage sites exist in the area and demand further research.