



ASHA Consulting (Pty) Ltd

40 Brassie Street

Lakeside

7945

28 December 2022

Attention: Project Directors
Unit B1 Mayfair Square
Century Way
Century City
Western Cape
7441

RE: CONFIRMATION THAT THE HERITAGE SPECIALIST ASSESSMENT OF THE SPRINGHAAS-ARTEMIS LINE 1 GRID CONNECTION PROJECT HAS MET THE REQUIREMENTS OF THE STANDARD FOR THE DEVELOPMENT AND EXPANSION OF POWER LINES AND SUBSTATIONS WITHIN IDENTIFIED GEOGRAPHICAL AREAS, 2022

This letter is presented as a preface to the specialist report:

HERITAGE IMPACT ASSESSMENT: PROPOSED POWERLINE FROM THE SPRINGHAAS COLLECTOR SUBSTATION A TO THE AUTHORISED ARTEMIS SUBSTATION NEAR DEALESVILLE, FREE STATE (J. Orton, December 2022)

PURPOSE OF THIS LETTER

This letter serves to confirm and demonstrate that the specialist assessment undertaken for the above project has met the requirements of the Standard for the Development and Expansion of Power Lines and Substations within Identified Geographical Areas, 2022 (Revision 2), as gazetted by GN 2313 of 2022 and promulgated under the National Environmental Management Act (Act 107 of 1998), as amended.

BACKGROUND

The above-mentioned "Standard" was promulgated on 27 July 2022, and saw certain listed activities, as listed in Environmental Impact Assessment Regulations Listing Notices 1 and 2, become no longer applicable under certain conditions, and instead be replaced by the need to register certain qualifying developments in terms of the Standard, and demonstrate compliance with the provisions of the Standard. The project described above is affected by this change. The site is located within the Kimberley Renewable Energy Development Zone and is also located within the Central Strategic Transmission Corridor.

The heritage impact assessment mentioned above was prepared in compliance with the National Heritage Resources Act (Act No. 25 of 1999) and thus does not specifically reference the Standard, noting also that the Standard itself requires that an HIA be undertaken in compliance with Section 38(1) to 38(4) of NHRA. This letter, which serves as a preface to the specialist report, presents information demonstrating that the specialist has considered this Standard.

CONSIDERATION OF THE STANDARD

The Standard presents four key sections relevant to specialist assessments:

- Procedural Requirements (Chapter 2). These are the procedural steps that are to be followed in the registration process,

- General Environmental Principles (Chapter 3). These are principles that must be adhered to when planning a powerline route or locating a substation position,
- Environmental Specifications (Appendix A). These actions need to be carried out to verify the environmental sensitivity of the site,
- Specialist Confirming Statements (Appendix B). A statement by the specialist confirming that certain key aspects have been considered. As per the requirements of the Standard, this statement is to be prepared after the public participation process, as it references input from Interested & Affected parties (I&APs).

The tables below indicate how the requirements of these four sections have been considered in the specialist study:

Table 1. Procedural Requirement that must be followed when planning a powerline or sub-station. Note, only those applicable to specialists are listed.

No.	Requirement	Comment
7	The proponent must ensure that the EAP and <u>specialists</u> identify through their specialist knowledge and site verifications/walkthrough as necessary, a proposed route and/or the substation location/s (where a substation or substations are relevant) within the <i>preliminary corridor</i> based on: <ul style="list-style-type: none"> a) consideration and implementation of the mitigation hierarchy, b) environmental sensitivity identified using the methodologies or processes as stipulated in Chapter 3 of this Standard, and c) engineering constraints. 	<p>The specialist has considered the location of the site through site verifications and walkthroughs.</p> <ul style="list-style-type: none"> a) The mitigation hierarchy has been considered: <ul style="list-style-type: none"> • Avoid: The footprint of Line 1 avoids sensitive heritage resources. Avoidance of high sensitivity areas has been achieved. • Minimise: No known resources will be impacted. The specialist has provided recommendations to minimise the impact of the development on heritage resources at all stages of the development. These measures have been incorporated into the generic EMPr. • Rehabilitate: No specific rehabilitation measures, in relation to heritage impacts, have been deemed necessary. • Offset: No offsets are required as no high sensitivity heritage resources are impacted by Line 1. b) Sensitivities were identified using methodologies as stipulated in Chapter 3, General Environmental Processes. This is demonstrated in Table 2 below. c) Engineering constraints were considered through the optimal routing of a line which simultaneously avoids heritage sensitivities. <p>The overall grid connection corridor is considered appropriate, and the location of the project therein is also acceptable for the following key reasons:</p> <ul style="list-style-type: none"> - No known resources will be impacted. - The landscape is not particularly sensitive.
10. (e)	A discussion by the <u>specialists</u> and/or EAP of the process used to confirm that the proposed route and/or substation location has applied the principles stipulated in Chapter 3, and the process used to confirm that the site sensitivity of the proposed route and/or substation location is of low or medium environmental sensitivity.	<p>A field survey was carried out. Sensitivity data was provided to the developer so that a layout that was sensitive to the heritage constraints could be developed. In this way, all known resources on site were successfully avoided.</p> <p>Furthermore, Table 2 below lists the principles stipulated in Chapter 3 and confirms that the process of confirming the proposed route, and the site sensitivity, has considered the General environmental Principle stipulated in Chapter 3.</p>

Table 2. General Environmental Principles that must be adhered to when planning a powerline.

No.	Requirement	Comment
22	There must be no removal of threatened plant species.	Not applicable to the heritage assessment
23	There must be no impact on Tier 1 plant species identified through the screening process and site verification process	Not applicable to the heritage assessment
24	Clear-cutting during construction must be kept to a maximum of 8 m.	Not applicable to the heritage assessment

No.	Requirement	Comment
25	Wetlands must be avoided or, where wetland crossing is unavoidable, the power line should be routed over the narrowest part of the wetland. For the most part, wetlands and rivers can be traversed by the power line with little to no impact by placing the pylons outside of the wetland	Not applicable to the heritage assessment
26	Avoid all known Blue Swallow breeding habitat by a 2.5 km buffer. Should the full extent of the buffering not be practically possible, a thorough investigation must be conducted by a suitably experienced avifaunal specialist with experience of Blue Swallows to identify any potential nesting holes, which must then be appropriately buffered, in consultation with Ezemvelo KwaZulu-Natal Wildlife and BirdLife South Africa to prevent destruction of the nest holes.	Not applicable to the heritage assessment
27	Avoid Cape Vulture and White-backed Vulture breeding colonies by a 5 km buffer. In addition, it would require management of the potential impacts on the breeding birds once construction commences, which would necessitate the involvement of the avifaunal specialist and the environmental control officer (ECO).	Not applicable to the heritage assessment
28	Avoid Lappet-faced Vulture and Bearded Vulture restaurants by a 5 km buffer. Should the full extent of the buffering at vulture restaurants not be practically possible, the vulture restaurant should be relocated in consultation with the owner of the restaurant	Not applicable to the heritage assessment
29	The power line alignment or substation footing shall not be located within 500m of the edge of waterbodies found to be suitable for Greater Flamingo, Black Stork, Blue Crane, Great White Pelican, Lesser Flamingo and African Marsh-harrier	Not applicable to the heritage assessment
30.	The power line alignment or substation shall not be located within 1 km of major piggeries and poultry farms.	Not applicable to the heritage assessment

Table 3. Specifications required to of the Standard for the Development and Expansion of Power Lines and Substations within Identified Geographical Area (DFFE, 2022)

Standard No.	Specification	Comment
18	Where required, a heritage impact assessment (HIA) will be undertaken in compliance with Section 38(1) to 38(4) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) as well as any Minimum Standards or Guidelines published in relation to Section 38(3) .	A HIA has been undertaken by the specialist.
19	The HIA must be submitted to the South African Heritage Resources Agency and applicable Provincial Heritage Authorities for decision making procedures.	The HIA report will submitted to the South African Heritage Resources Agency and applicable Provincial Heritage Authorities for decision making procedures.
20	The applicable recommendations or requirements from the South African Heritage Resources Agency and applicable Provincial Heritage Authorities must be documented in the final environmental sensitivity report.	The applicable recommendations from these authorities are to be documented in the final environmental sensitivity report.

Table 4. Confirming Statement by specialist

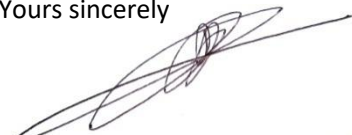
No.	Requirement	Comment
51	A description of the affected environment in terms of heritage resources and palaeontology, and an indication of existing heritage and palaeontological impacts within the preliminary corridor based on the site verification inspection and walk through.	The heritage environment is described in Section 5 of the HIA and existing impacts are considered in Section 6.6.
52	Identification of heritage resources and palaeontological areas to be avoided within the preliminary corridor, including buffers;	Addressed in specialist report (see Appendix 3)
53	A heritage sensitivity map overlaid with the proposed development footprint (i.e. pylon placement and power line route, as well as supporting infrastructure) based on most recently obtainable and available desktop data, such as the information on the screening tool and the South African Heritage Resources Information System, site verification inspection and walk through (where necessary);	Addressed in specialist report (see Section 5.2.2) – the entire footprint is of low sensitivity
54	Where required, a written comment or letter of no objection from the South African Heritage Resources Agency and/or applicable provincial heritage authority confirming that there is no unacceptable impact on heritage resources and palaeontology;	The HIA will be uploaded to SAHRIS and SAHRA and the Free State Provincial Heritage Resources Authority (FSPHRA) will both be informed of the application. Any comment received from SAHRA or FSPHRA will be included in the final Environmental Sensitivity Report.
55	Confirmation that any recommendations as required by the South African Heritage Resources Agency and/or applicable provincial heritage authority have been incorporated and considered;	To be completed after receipt of SAHRA and/or FSPHRA comment.
56	A description on how the identified environmental sensitivity pertaining to heritage resources and palaeontology has been considered in determining the proposed route;	All heritage resources have been avoided. The grassland areas in general are of very low sensitivity and no further resources are expected to occur in the proposed footprint.
57	A description of the implementation of the mitigation hierarchy in order to determine the proposed route and/or substation location;	See Table 1
58	How the inputs of I&APs were considered when determining the final pre-negotiated route and/or substation location; and	To be updated post Public Participation Process.
59	A statement confirming that: a. impact management actions as contained in the pre-approved Generic EMPr template are sufficient for the avoidance, management and mitigation of impacts and risks; or b. where required, specific impact management outcomes and actions are required and have been provided as part of the site specific EMPr.	Additional mitigation measures have been proposed in Section 7 of the HIA. These will be incorporated into the generic EMPr.

CONCLUDING STATEMENT

The proposed project, in the location specified and assessed in the report, is supported.

Should you have any queries, feel free to contact the undersigned.

Yours sincerely



Jayson Orton
28 December 2022

SPECIALIST DETAILS –

Table 5. Specialist Details

No.	Requirement	Comment
1	Contact Information	See Appendix 1
2	Relevant qualifications	See Appendix 1
3	Curriculum vitae	See Appendix 1
4	Description of expertise in preparing the statement;	Dr Orton has been a professional heritage consultant since 2004 with experience across the western half of South Africa. He has conducted assessments for a large number of renewable energy facilities and associated electrical infrastructure. See report Section 1.4 and CV in Appendix 1.

APPENDIX 1 – SPECIALIST DECLARATION TEMPLATE

APPENDIX D - SPECIALIST DECLARATION TEMPLATE

Specialist Company Name:	ASHA Consulting (Pty) Ltd		
Specialist name:	Dr Jayson Orton		
Specialist Qualifications:	D.Phil (Archaeology, Oxford, UK) MA (Archaeology, UCT)		
Professional affiliation/registration ³² :	ASAPA CRM member No. 233 APHP member No. 043		
Physical address:	40 Brassie Street, Lakeside, 7945		
Postal address:	40 Brassie Street, Lakeside, 7945		
Postal code:	7945	Cell:	083 272 3225
Telephone:	021 788 1025	Fax:	n/a
E-mail:	jayson@asha-consulting.co.za		

DECLARATION BY THE SPECIALIST

I, JAYSON ORTON, declare that –

- I act as the independent specialist in this Standard registration process;
- I have performed the work relating to the specialist assessment and/or route or substation location confirmation in an objective manner;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist input and confirming statement relevant to this request for registration, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the proponent all material information in my possession that reasonably has or may have the potential of influencing compliance with the Standards registration process; and
- all the particulars furnished by me in this form are true and correct.

Signature of the Specialist:

Name of Company:

ASHA CONSULTING (PTY) LTD

Date:

28 DECEMBER 2022

³² A copy of the most recent registration certificate must be appended to this declaration.

APPENDIX 2 – SPECIALIST CV (SHORT)



Curriculum Vitae

Jayson David John Orton

ARCHAEOLOGIST AND HERITAGE CONSULTANT

Contact Details and personal information:

Address: 40 Brassie Street, Lakeside, 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, Afrikaans, basic French

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) [First Class]	1998
University of Cape Town	M.A. (Archaeology)	2004
University of Oxford	D.Phil. (Archaeology)	2013

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
- ASAPA CRM Section member with the following accreditation:
 - Principal Investigator: Coastal shell middens (awarded 2007)
Stone Age archaeology (awarded 2007)
Grave relocation (awarded 2014)
 - Field Director: Rock art (awarded 2007)
Colonial period archaeology (awarded 2007)
- Association of Professional Heritage Practitioners (APHP) membership number: 43
 - Accredited Professional Heritage Practitioner

Memberships and affiliations:

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

Fieldwork and project experience:

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

Feasibility studies:

Heritage feasibility studies examining all aspects of heritage from the desktop

Phase 1 surveys and impact assessments:

- | | |
|---------------------|---|
| ➤ Project types | <ul style="list-style-type: none"> ○ Notification of Intent to Develop applications ○ Heritage Impact Assessments <ul style="list-style-type: none"> ▫ Self-standing assessments under Section 38(1) of the NHRA ▫ Assessments under NEMA and Section 38(8) of the NHRA ○ Archaeological specialist studies ○ Strategic assessments ○ Phase 1 archaeological test excavations in historical and prehistoric sites ○ Archaeological research projects |
| ➤ Development types | <ul style="list-style-type: none"> ○ Mining and borrow pits ○ Roads (new and upgrades) ○ Residential, commercial and industrial development ○ Agricultural developments ○ Dams and pipe lines ○ Power lines and substations ○ Renewable energy facilities (wind, solar and hydro-electric) |

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:

1998: Frank Schweitzer memorial book prize for an outstanding student.

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



Association of Professional Heritage Practitioners

MEMBERSHIP CERTIFICATE

THIS CERTIFIES THAT

Dr. Jayson Orton

MEMBERSHIP NUMBER: 0043

has been awarded membership as a
PROFESSIONAL HERITAGE PRACTITIONER (PHP)

This membership is subject to the *Standards for Membership and Code of Conduct*, referred to in Sections 2 and 3 of the APHP Constitution respectively. The definition of a PHP may be found at: www.aphp.org.za/membership

Please contact us via info@aphp.org.za should further information be required.

THIS CERTIFICATE IS VALID FROM **1 JUNE 2022 – 1 JULY 2023**


CHAIRPERSON

[Issued by the Association of Professional Heritage Practitioners Executive Committee]
Image Source: Photographer G McLachlan at central Kouga Mountains


Association of Professional Heritage Practitioners
info@aphp.org.za
www.aphp.org.za

<< archaeologists

THE ASSOCIATION OF SOUTHERN AFRICAN PROFESSIONAL ARCHAEOLOGISTS



Dr Jayson Orton
CRM
233



Accredited professional archaeologist for the SADC region

Further CRM accreditation

Level	Specialist areas
Principal Investigator	Coastal shell middens; Stone Age archaeology
Field Director	Rock art; Colonial period archaeology; Grave relocation

This card is subject to the conditions issued to the card holder. The card remains the property of ASAPA and must be surrendered on request. If found please return to: ASAPA, P.O. Box 172, Wits, 2050, RSA

ASHA Consulting (Pty) Ltd

Reg. no.: 2013/220482/07 | Directors: Jayson Orton & Carol Orton

23 Dover Road, Muizenberg, 7945 | T: 021 788 1025 | C: 083 272 3225

Jayson@asha-consulting.co.za | Carol@asha-consulting.co.za | www.asha-consulting.co.za

**HERITAGE IMPACT ASSESSMENT: PROPOSED
POWERLINE FROM SPRINGHAAS COLLECTOR SUBSTATION A
TO THE AUTHORISED ARTEMIS SUBSTATION NEAR DEALESVILLE,
FREE STATE**

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

SAHRA Case No: TBC

Report for:

GIBB Environmental (Pty) Ltd
P.O. Box 63703, Greenacres, 6057
Email: kflood@gibbenvironmental.co.za

On behalf of:

ABO Wind renewable energies (Pty) Ltd



Dr Jayson Orton
ASHA Consulting (Pty) Ltd
23 Dover Road, Muizenberg, 7945
Tel: (021) 788 1025 | 083 272 3225
Email: jayson@asha-consulting.co.za

1st draft: 12 November 2022
Final report: 28 December 2022

SUMMARY

ASHA Consulting (Pty) Ltd was appointed by the ABO Wind renewable energies (Pty) Ltd (the Applicant) to conduct an assessment of the potential impacts to heritage resources that might occur through the proposed development of a powerline connecting the proposed Springhaas Solar PV facility/ies to the authorised Artemis Substation, southwest of Dealesville, Free State (Figures 1 to 3). The powerline will connect the proposed Springhaas Collector Substation A to the proposed Artemis Substation. The connection is required in order to evacuate power generated by the Springhaas Solar PV facility/ies to the national electricity grid. Approximate end points for the proposed corridor are:

- S28° 47' 42.7" E25° 37' 48" (south-western end at the Springhaas PV facility/ies); and
- S28° 40' 07.0" E25° 43' 31.5" (north-eastern end at the Artemis Substation).

Because other surveys had already covered parts of the corridor, a field survey focused on those areas not yet examined. The survey revealed few Stone Age resources with these all being likely Middle and Later Stone Age background scatter. A small and very overgrown area informally paved with calcrete and dolerite was also seen. This is likely related to historical farming activities. The landscape is of limited concern due to the other electrical infrastructure already occurring as well as the several solar facilities due for construction in the near future.

It is recommended that the proposed powerline from Springhaas Collector Substation A to the Artemis Substation (Line 1) should be registered/approved but subject to the conditions shown below.

- No materials may be removed from any of the ruined and/or demolished structures anywhere in the broader area;
- 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.

Glossary

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

Handaxe: A bifacially flaked, pointed stone tool type typical of the Early Stone Age Acheulian Industry. It is also referred to as a large cutting tool.

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

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

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

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

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

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

Abbreviations

APHP: Association of Professional Heritage Practitioners

ASAPA: Association of Southern African Professional Archaeologists

BA: Basic Assessment

BESS: Battery Energy Storage System

CRM: Cultural Resources Management

DFFE: Department of Forestry, Fisheries and the Environment

EA: Environmental Authorisation

EGI: Electricity Grid Infrastructure

GP: General Protection

GPS: global positioning system

HIA: Heritage Impact Assessment

HV: High Voltage

LiLo: Loop In-Loop Out

LSA: Later Stone Age

MSA: Middle Stone Age

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

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

OHL: overhead line

REDZ: Renewable Energy Development Zone

SAHRA: South African Heritage Resources Agency

SAHRIS: South African Heritage Resources Information System

REDZ: Renewable Energy Development Zone.

Contents

SUMMARY	ii
Glossary	iii
Abbreviations	iv
1. INTRODUCTION	1
1.1. The proposed project	3
1.1.1. Project description	3
1.1.2. Identification of alternatives	4
1.1.3. Aspects of the project relevant to the heritage study	4
1.2. Terms of reference	5
1.3. Scope and purpose of the report	5
1.4. The author	5
1.5. Declaration of independence	5
2. LEGISLATIVE CONTEXT	6
2.1. National Heritage Resources Act (NHRA) No. 25 of 1999	6
3. METHODS.....	7
3.1. Literature survey and information sources	7
3.2. Field survey	8
3.3. Specialist studies.....	9
3.4. Impact assessment	9
3.5. Grading	10
3.6. Consultation.....	10
3.7. Assumptions and limitations	10
4. PHYSICAL ENVIRONMENTAL CONTEXT	10
4.1. Site context	10
4.2. Site description	11
5. FINDINGS OF THE HERITAGE STUDY	15
5.1. Palaeontology	15
5.2. Archaeology	16
5.2.1. Desktop study.....	16
5.2.2. Site visit	17
5.3. Graves	20
5.4. Historical aspects and the Built environment	20
5.4.1. Desktop study.....	20
5.4.2. Site visit	21
5.5. Cultural landscapes and scenic routes	21
5.6. Statement of significance and provisional grading	21
5.7. Summary of heritage indicators	22
6. ASSESSMENT OF IMPACTS	22
6.1. Construction Phase.....	22
6.2. Impacts to archaeology	22
6.2.1. Impacts to the cultural landscape	23

6.3. Operation Phase	25
6.3.1. Impacts to the cultural landscape	25
6.4. Decommissioning Phase	26
6.4.1. Impacts to the cultural landscape	26
6.5. Cumulative impacts	27
6.6. Evaluation of impacts relative to sustainable social and economic benefits.....	30
6.7. Existing impacts to heritage resources	30
6.8. The No-Go alternative	31
6.9. Levels of acceptable change	32
7. INPUT TO THE ENVIRONMENTAL MANAGEMENT PROGRAM	32
8. CONCLUSIONS	32
8.1. Reasoned opinion of the specialist.....	33
9. RECOMMENDATIONS	33
10. REFERENCES	33
APPENDIX 1 – Curriculum Vitae	37
APPENDIX 2 – Site Sensitivity Verification	39
APPENDIX 3 – Compliance with Appendix 6 of the 2014 EIA Regulations	41

1. INTRODUCTION

ASHA Consulting (Pty) Ltd was appointed by the ABO Wind renewable energies (Pty) Ltd (the Applicant) to conduct an assessment of the potential impacts to heritage resources that might occur through the proposed development of a powerline connecting the proposed Springhaas Solar PV facility/ies to the authorised Artemis Substation, southwest of Dealesville, Free State (Figures 1 to 3). The connection is required in order to evacuate power generated by the Springhaas Solar PV facility/ies to the national electricity grid. Approximate end points for the proposed powerline are:

- S28° 47' 47" E25° 37' 50" (south-western end at the Springhaas PV facilities); and
- S28° 40' 07" E25° 43' 31" (north-eastern end at the Artemis Substation).

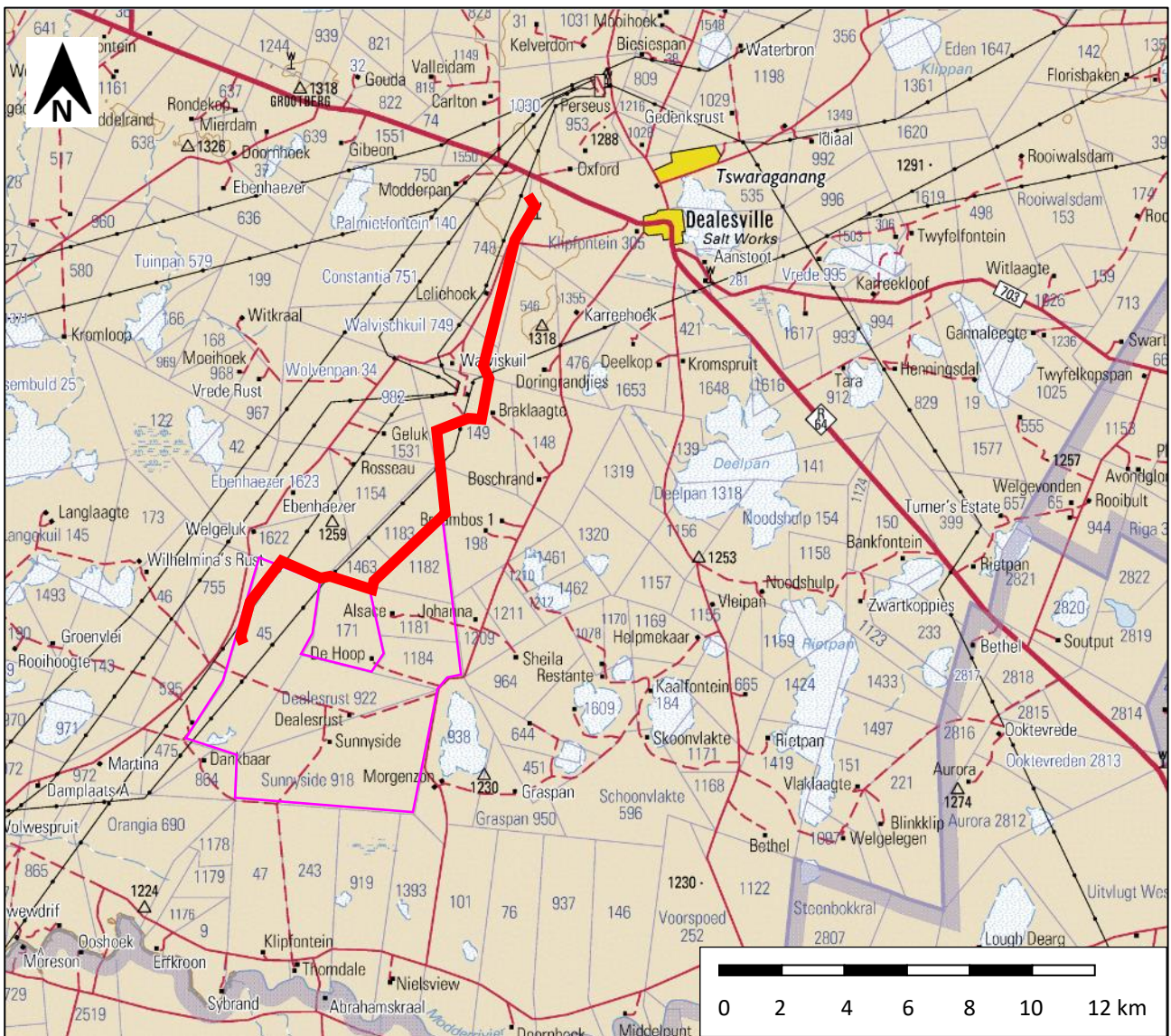


Figure 1: Extract from 1:250 000 topographic map 2824 showing the location of the proposed powerline (red line) relative to Dealesville and the R64 to the northeast and the Modder River along the southern edge of the map. The Springhaas Solar PV study area is shown in pink for context. Source of basemap: Chief Directorate: National Geo-Spatial Information. Website: www.ngi.gov.za.

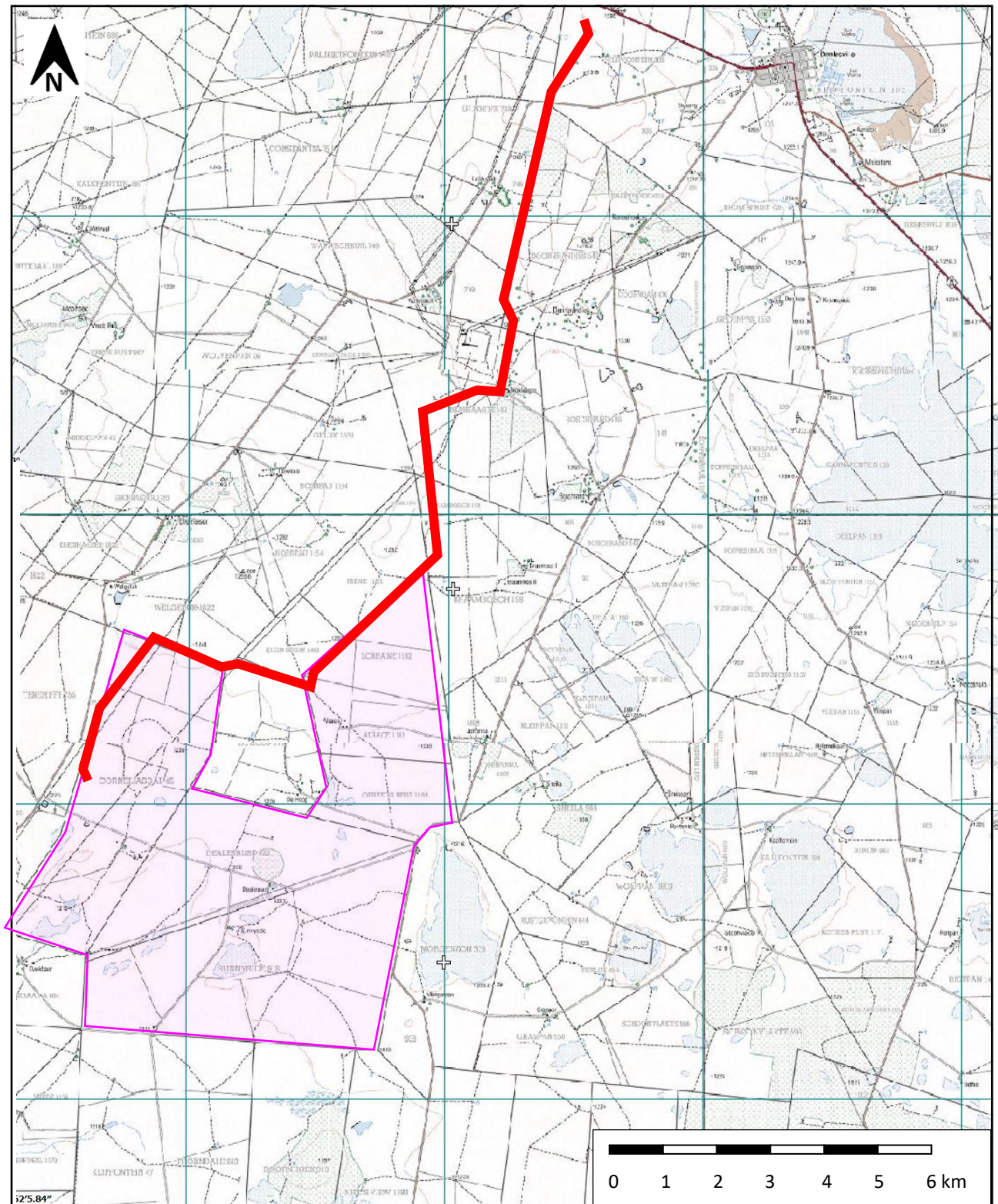


Figure 2: Extract from 1:50 000 topographic maps 2825DA, 2825DB, 2825DC and 2825DD showing the location of the proposed powerline (red line). The PV area is shown in pink for context. Source of basemap: Chief Directorate: National Geo-Spatial Information. Website: www.ngi.gov.za.

Although the Applicant intends to register Line 1 under the National Environmental Management Act, 1998 (NEMA; Act No. 107 of 1998) and the *Standard for the Development and Expansion of Power Lines and Substation within Identified Geographical Areas Revision 2*, a full heritage impact

assessment (HIA) is still required under the National Heritage resources Act (NHRA; Act No. 25 of 1999).

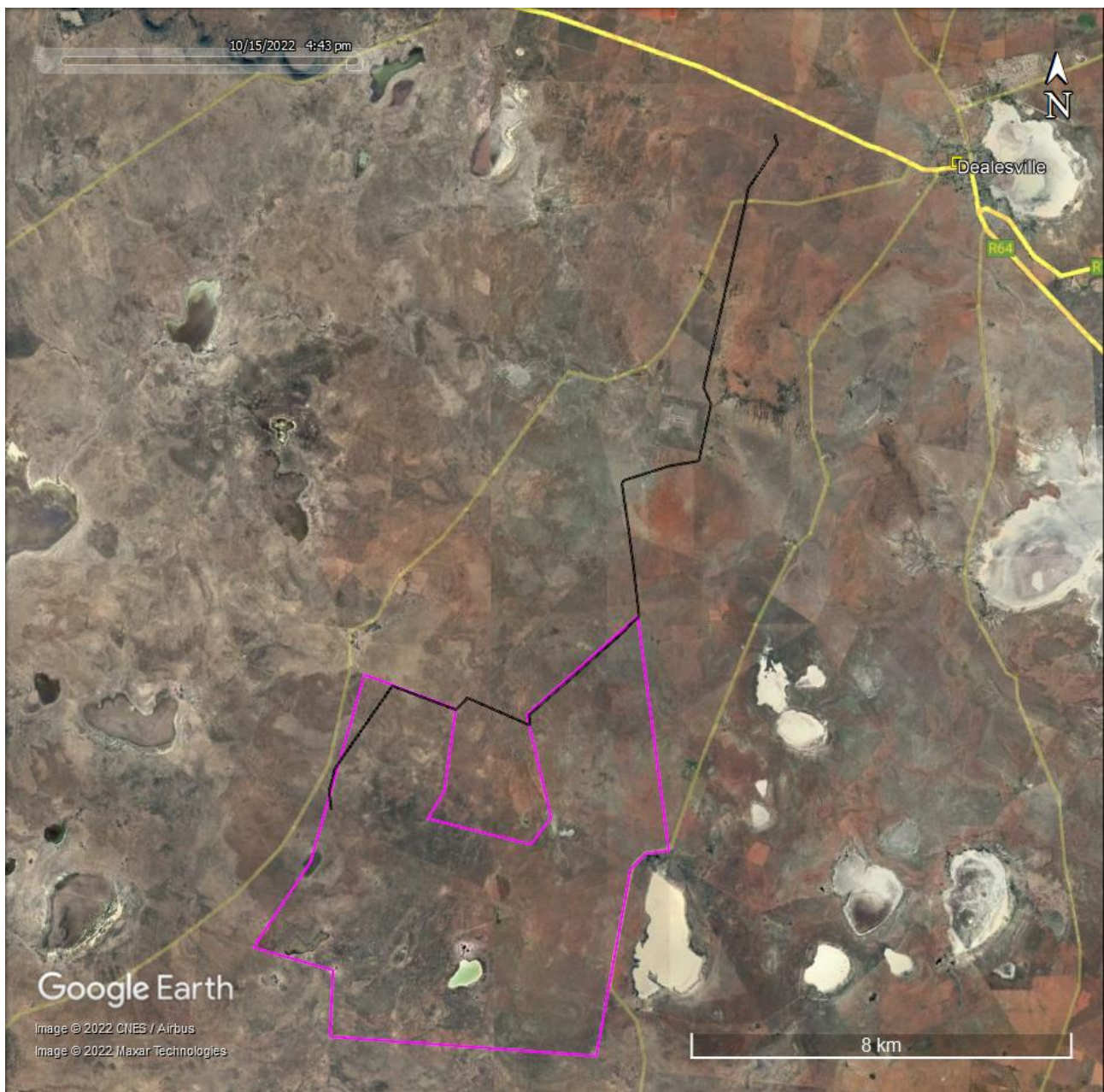


Figure 3: Aerial view of the study area showing the proposed 18 m servitude (black outline; the powerline route to be registered will be centred within this corridor), and the boundary of the Springhaas Solar PV study area (pink polygon; shown only for context) relative to Dealesville.

1.1. The proposed project

1.1.1. Project description

ABO Wind energy renewables (Pty) Ltd, the proponent, intends to register the proposed Grid Connection Line 1 from the proposed Springhaas Collector Substation As to the authorised Artemis Substation, near Dealesville, Bloemfontein, Free State Province (Line 1).

The project is known as the Springhaas to Artemis Grid Connection and would involve the development of up to two (2) grid connections consisting of an overhead powerline each up to 275kV in capacity connecting the Springhaas Solar PV Facilities to the authorised Artemis substation, via single/double-circuit up to 275kV, mono pole lines, complete with structures, foundations, conductor, fibre layout, insulation, and assemblies.

Two grid connection corridors were provided for assessment:

- Line 1: An overhead powerline up to approximately 21.5km in length with a capacity of up to 275kV and would connect Springhaas Solar facilities/y from Collector Substation A to the Artemis sub-station
- Line 2: An overhead powerline up to approximately 16km in length with a capacity of up to 275kV and would connect Springhaas Solar facilities/y from Collector Substation B to the Artemis sub-station.

Each of the powerlines is subject to a separate registration process. This report covers Line 1.

Table 1: Line 1 details.

Name	Proposed overhead powerlines up to 275kV in capacity from Collector Substation A to Artemis Substation
Location	Farm Teneriffe No. 755, Remainder of Farm Corneliasdal No. 45, Portion 1 (Olimpia) of the Farm Corneliasdal No. 45, Remaining Extent of the Farm De Hoop No. 171, Portion 0 of the Farm Alsace No. 1181, Portion 0 of the Farm Lorraine No. 1182, Portion 0 (Remaining Extent) of the Farm Braambosch No. 198, Remainder of the Farm Braklaagte No. 149, Portion 0 (Remaining Extent) of Farm Doornrandjes No. 546, Portion 1 of the Farm Walvischkuil No. 749, Portion 0 of the Farm Leliehoek No. 748, Portion 0 (Remaining Extent) the Farm Klipfontein No. 305
Connection	Would connect Springhaas Solar PV Facility/ies via Collector Substation A to the authorised Artemis Substation (on Portion 0 (Remaining Extent) the Farm Klipfontein No. 305)
Capacity	Up to 275kV
Length	Up to approximately 21.5km
Width	Within the corridor which is up to 410m in width at its widest point, noting that the final corridor would be kept to the limits of the Standard
Height	Up to approximately 40m
Servitude	Up to 60m wide
Access	Service road - There would be a jeep track (up to 4m wide) within the development footprint/ servitude of the line (underneath the line), where possible/required.

1.1.2. Identification of alternatives

Because the project is following a registration process, no alternatives are assessed. It is noted, however, that the layout of the project was determined after provision of environmental sensitivities by the specialists and it has responded to the sensitivities en-route.

1.1.3. Aspects of the project relevant to the heritage study

All aspects of the proposed development are relevant, since excavations for foundations and/or services may impact on archaeological and/or palaeontological remains, while all above-ground

aspects create potential visual (contextual) impacts to the cultural landscape and any significant heritage sites that might be visually sensitive.

1.2. Terms of reference

ASHA Consulting was asked to conduct a limited field survey focusing on areas not yet visited in the past and to provide sensitivity data that could guide the development of a layout within the corridor. The survey was to consider all relevant aspects of heritage. The findings should be presented in a report that meets the requirements of the heritage authorities and also serves to inform the environmental sensitivity report for the purposes of the registration process.

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 can be issued by them for consideration by the National Department of Forestry, Fisheries and Environment (DFFE) who will review the application for registration and either grant or refuse a registration for Line 1. 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. The author

Dr Jayson Orton has an MA (UCT, 2004) and a D.Phil (Oxford, UK, 2013), both in archaeology, and has been conducting Heritage Impact Assessments and archaeological specialist studies in South Africa (primarily in the Western Cape and Northern Cape provinces) since 2004 (please see curriculum vitae included as Appendix 1). He has also conducted research on aspects of the Later Stone Age in these provinces and published widely on the topic. He is an accredited heritage practitioner with the Association of Professional Heritage Practitioners (APHP; Member #43) and also holds archaeological accreditation with the Association of Southern African Professional Archaeologists (ASAPA) CRM section (Member #233) as follows:

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

1.5. Declaration of independence

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

2. LEGISLATIVE CONTEXT

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

The NHRA protects a variety of heritage resources as follows:

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

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

- Structures: “any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith”;
- Palaeontological material: “any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace”;
- Archaeological material: a) “material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures”; b) “rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation”; c) “wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the Republic, as defined respectively in sections 3, 4 and 6 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation”; and d) “features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found”;
- Grave: “means a place of interment and includes the contents, headstone or other marker of such a place and any other structure on or associated with such place”; and
- Public monuments and memorials: “all monuments and memorials a) “erected on land belonging to any branch of central, provincial or local government, or on land belonging to any organisation funded by or established in terms of the legislation of such a branch of government”; or b) “which were paid for by public subscription, government funds, or a public-spirited or military organisation, and are on land belonging to any private individual.”

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

- a) its importance in the community, or pattern of South Africa’s history;
- b) its possession of uncommon, rare or endangered aspects of South Africa’s natural or cultural heritage;
- c) its potential to yield information that will contribute to an understanding of South Africa’s natural or cultural heritage;

- d) its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- f) its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- g) its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- h) its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
- i) sites of significance relating to the history of slavery in South Africa.

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

Section 38(8) of the NHRA states that if an impact assessment is required under any legislation other than the NHRA then it must include a heritage component that satisfies the requirements of S.38(3). Furthermore, the comments of the relevant heritage authority must be sought and considered by the consenting authority prior to the issuing of a decision. Under the National Environmental Management Act (No. 107 of 1998; NEMA), as amended, the project is subject to a registration process. The present report provides the heritage component. Free State Heritage Resources Authority (FSHRA; for built environment and cultural landscapes) and the South African Heritage Resources Agency (SAHRA; for archaeology and palaeontology) are required to provide comment on the proposed projects in order to facilitate final decision making by the DFFE.

3. METHODS

3.1. Literature survey and information sources

A survey of available literature was carried out to assess the general heritage context into which the development would be set. The information sources used in this report are presented in Table 4. Data were also collected via a field survey. The data used is deemed of suitable quality to provide meaningful input into the study.

Table 4: 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

Data / Information	Source	Date	Type	Description
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	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. Refer to Section 10 for further details
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. Refer to Section 10 for further details

3.2. Field survey

The present consultant has undertaken many heritage surveys in the vicinity of the proposed powerline since 2014 and thus the foot survey carried out for this application aimed only to target areas not yet surveyed and covered about 50% of the corridor provided for assessment. Much of the remainder had been covered in the past. This allowed for an excellent understanding of the distribution of heritage resources in the area, although a section had to be shifted after the survey. Nevertheless, there is a high degree of confidence in the assessment. The 2022 survey was done on 7 to 9 October 2022 by archaeologist Steve van den Heever. This was during spring and before the summer rains had set in which meant that ground visibility for the archaeological survey was slightly better than in summer when the grass gets dense. Other heritage resources are not affected by seasonality. During the survey the positions of finds and survey tracks were recorded on a hand-held Garmin Global Positioning System (GPS) receiver set to the WGS84 datum (Figure 4). Photographs were taken at times in order to capture representative samples of both the affected heritage and the landscape setting of the proposed development.

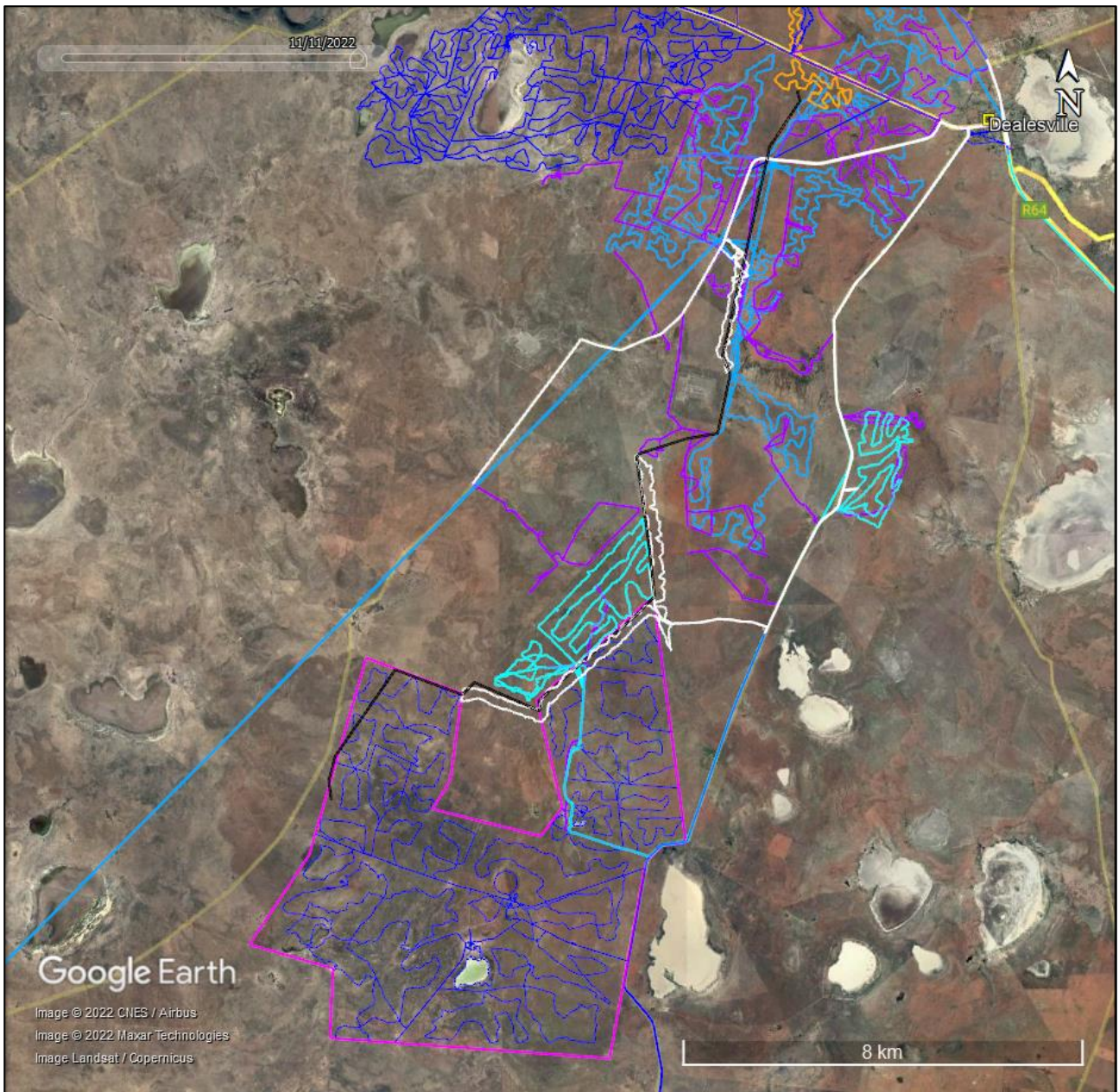


Figure 4: Aerial view of the study area (corridor provided for survey in black) showing the accumulated survey tracks from various projects with those from the present assessment in white.

It should be noted that amount of time between the dates of the field inspections and final report do not materially affect the outcome of the report and the confidence in the findings remains high.

3.3. Specialist studies

A separate palaeontological specialist study was commissioned. The palaeontological report is submitted separately but should be read in tandem with the present report.

3.4. Impact assessment

The impact assessment was conducted through application of a scale supplied by GIBB Environmental.

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 system¹ for use in provinces where it has commenting authority. In this system sites of high local significance are given Grade IIIA (with the implication that the site should be preserved in its entirety) and Grade IIIB (with the implication that part of the site could be mitigated and part preserved as appropriate) while sites of lesser significance are referred to as having 'General Protection' (GP) and rated as GP A (high/medium significance, requires mitigation), GP B (medium significance, requires recording) or GP C (low significance, requires no further action).

3.6. Consultation

The NHRA requires consultation as part of an HIA but, since the present study falls within the context of a NEMA application which includes a public participation process (PPP), no dedicated consultation was undertaken as part of the HIA. Interested and affected parties would have the opportunity to provide comment on the heritage aspects of the project during the PPP. Any comments received related to the HIA will be included in the final HIA.

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 grass limits visibility and there is always the chance that some materials may have been missed. Nonetheless, the level of confidence in the findings remains high.

4. PHYSICAL ENVIRONMENTAL CONTEXT

4.1. Site context

The site lies in a rural context dominated by the raising of livestock. Farm complexes and their associated tree clusters occur sporadically in the landscape, and local roads south of the R64 are all gravel. Electrical infrastructure is abundant and consists of many high voltage (HV) powerlines and two large substations. Beta Substation is located adjacent to the proposed powerline, while Perseus Substation is approximately 3.5 km to the north of the northern end where the authorised Artemis Substation will be constructed (Figure 5). The study area falls entirely within a Renewable Energy

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

Development Zone (REDZ) and an Electricity Grid Infrastructure (EGI) corridor (Central Strategic Transmission Corridor).

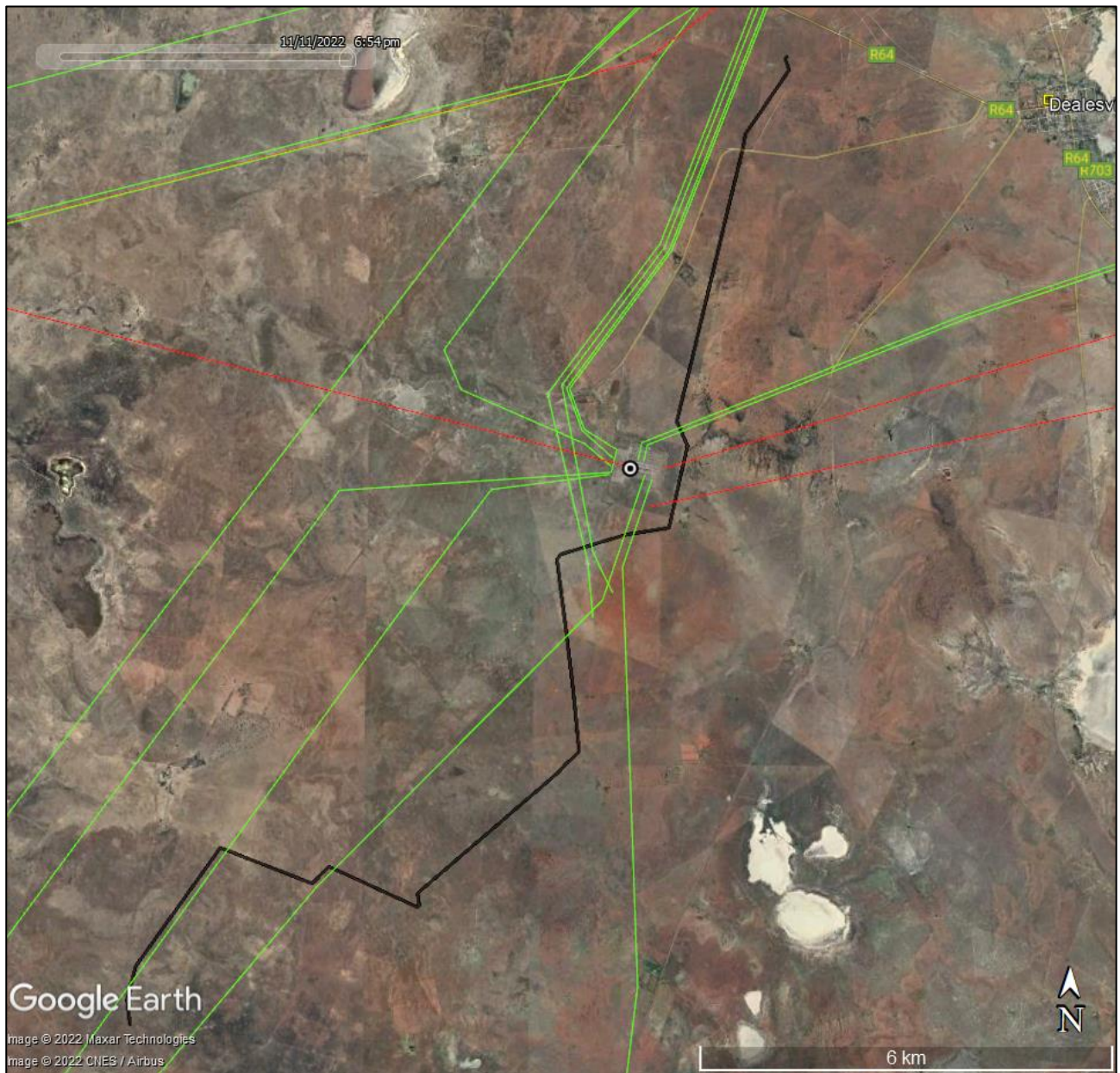


Figure 5: Existing HV lines (green/red) in the vicinity of the proposed powerline (servitude in black).

4.2. Site description

The wider corridor is generally flat and coated in grass. Trees are largely absent from the area but dense clusters do occur at the farm complexes, two of which lie within 500 m of the corridor. Rock outcrops are largely absent from the corridor (the exception being in the far north) with occasional patches of ephemeral dolerite gravel visible at the surface in places. Several pans occur in the vicinity but there are none close to the corridor. Figures 6 to 11 show a selection of views within the overall grid connection corridor from various recent field trips (each is dated in its caption).



Figure 6: View towards the southwest in the south-western part of the corridor (05 October 2021). The arrow indicates approximate alignment of the corridor.



Figure 7: View towards the northeast immediately outside of but parallel to the south-eastern part of the corridor (06 October 2021). The arrow indicates the alignment of the corridor with the final footprint being just outside of this view.



Figure 8: View towards the east from within the central part of the corridor (06 October 2021). The arrow indicates the alignment of the corridor with the final footprint being just outside of this view.



Figure 9: Looking towards the southwest from within the central part of the corridor, just south of the Beta Substation. The corridor runs to the right (west) out of picture, then turns south among the lines in the distance (11 February 2022). The arrow indicates the alignment of the corridor with the final footprint being just outside of this view.



Figure 10: View towards the south down the northern part of the corridor with the Beta Substation visible in the background (09 October 2022). The arrow indicates approximate alignment of the corridor.



Figure 11: View towards the southwest from the very northern end of the corridor showing dolerite boulders in the soil (02 October 2021). The arrow indicates approximate alignment of the corridor behind the small powerline. The Artemis Substation would be just to the right of the viewer.

5. FINDINGS OF THE HERITAGE STUDY

This section describes and illustrates a selection of the heritage resources recorded in the broader study area during the course of the project.

5.1. Palaeontology

The SAHRIS PalaeoSensitivity map shows the site to be largely of medium (green shading) or zero (grey shading) palaeontological sensitivity, but there is a section of high sensitivity in the southwest (Figure 12). This latter sensitivity is likely linked to the calcrete that underlies the surface in places. No fossils were seen on site with the surface being sandy throughout (with the exception of the few dolerite boulders in the far north). It is extremely unlikely that any fossils would be visible at the surface in this environment. A desktop palaeontological study has been undertaken to determine what measures may need to be incorporated into the Environmental Management Program (EMPr) for the project.

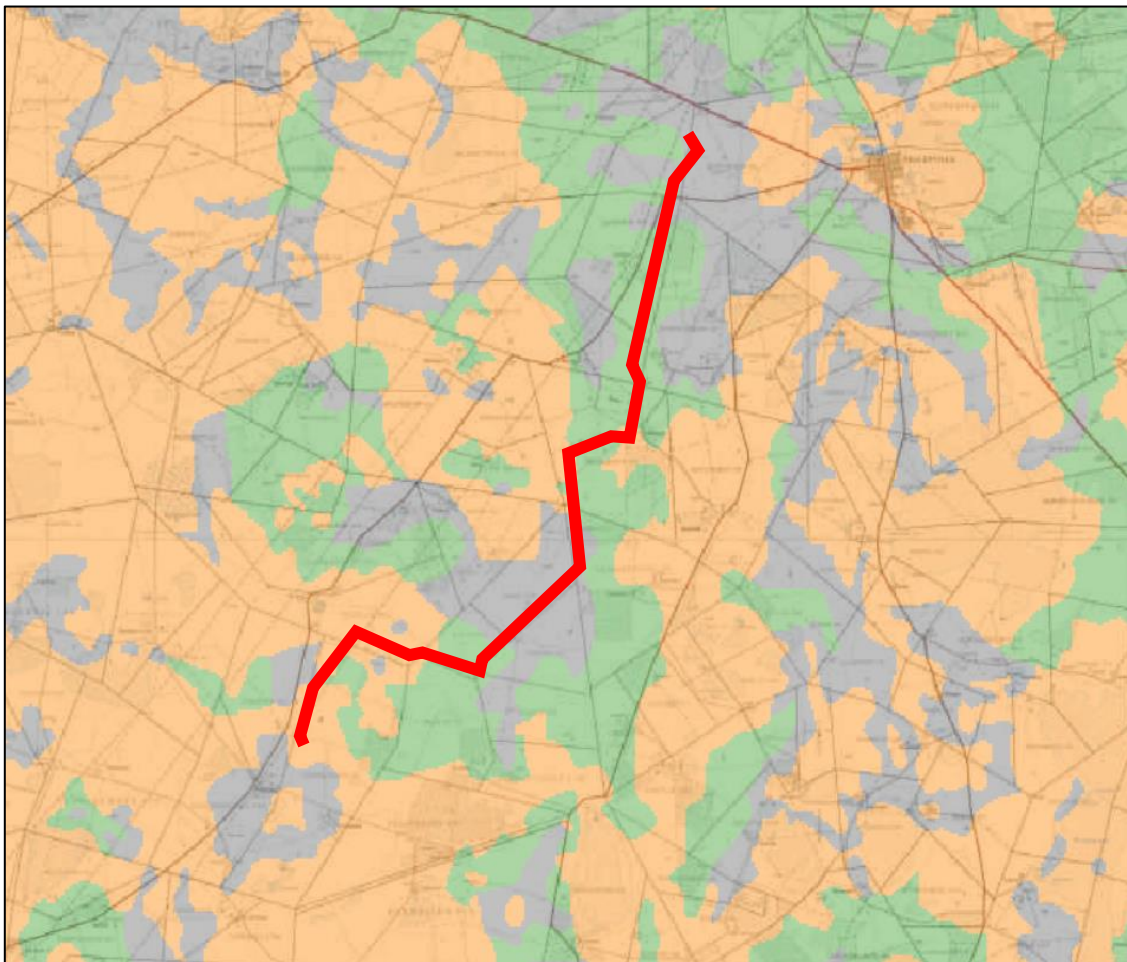


Figure 12: Extract from the SAHRIS PalaeoSensitivity map showing the proposed powerline (red line) to be of variably zero (grey), moderate (green) and high (orange) sensitivity (source: <https://sahris.sahra.org.za/map/palaeo>).

5.2. Archaeology

5.2.1. Desktop study

Stone Age material occurs widely across southern Africa, while the Iron Age, which only occurred within the last 2000 years, is present only in the eastern parts where summer rainfall allowed for the cultivation of summer crops. Stone-walled settlements dating to the Iron Age have been widely documented in parts of the Free State and adjacent Northern Cape (Maggs 1976a, 1976b) but, from the many Cultural Resources Management (CRM) surveys in the area, the Iron Age appears to be absent from the vicinity of Dealesville. Later Stone Age stone-built dwellings are known from along the Riet River about 100 km to the southwest (Humphreys 1972, 2009). With the exception of the rich Middle Stone Age (MSA) deposits of Florisbad (36 km east of the present study area; Kuman *et al.* 1999) and the MSA and Later Stone Age (LSA) stone artefact assemblages from Erfkroon (along the Modder River some 9 km south of the southern end of the proposed powerline, Churchill *et al.* 2000), significant archaeological resources appear to be quite rare in this flat, open and well-grassed landscape. Archaeological material is, however, more common along the major rivers where artefacts are revealed in the river terrace gravels (e.g. Erfkroon).

Webley (2010) surveyed an area to the east of the present development area and reported a complete absence of archaeological material. She further noted that stone suitable for the manufacture of flaked tools was not present and that the quantity of other rock available on the surface was insufficient to allow for the construction of stone dwellings. Hutten's (2011) survey of land to the north of Boshof showed similar results but in that case a pan was present with a large scatter of MSA and LSA artefacts present alongside it. The same applied to a survey close to the R64 to the northwest of the present study area where many thousands of artefacts were found adjacent to a pan (Orton 2016a). This demonstrates the preference to settle close to water sources that is prevalent across much of the relatively dry interior of southern Africa. Orton's (2015) survey of large areas to the north of the present development area showed heritage resources to be quite common. They included built structures, artefact scatters and a number of rock engravings. The vast majority of resources were located in close proximity to the rock outcrop areas to the south and southwest of Dealesville, while further south into the grasslands (through which the presently proposed powerline runs) the archaeology dropped off significantly. The majority of artefacts located by Orton (2015; 2022) were attributable to Pleistocene-aged MSA background scatter and were associated with gravel exposures. They did not constitute *in situ* living sites. However, some relatively unpatinated artefacts dating to the Holocene LSA were also noted in some areas. Just north of the R64, Orton (2021) located a scatter of artefacts that appeared to be from the early part of the MSA since it included several small handaxes. This early part of the MSA is often referred to as the 'Fauresmith' period, and is generally thought to be characterised by small handaxes (Underhill 2011). The site lay at the edge of a wide, low dolerite hill. Even further north, Kaplan (2020, 2021) also found artefacts ascribable to the MSA, with higher densities being present alongside pans.

Rock engravings occur widely in the interior of South Africa where suitable rock exists. Many sites are located in the Free State with the National Museum, Bloemfontein (2014) listing numerous examples that may be visited by the public. However, no sites seemed to be on record for the Dealesville area prior to Orton's (2015; see also Orton 2016b) survey. He located engravings dating within the last 2000 years and attributable by their geometric style to the Khoekhoe as well as figurative engravings done by the San. The former were found on a small dolerite hill 11.5 km north of the present study area where flaked stone artefacts and ground patches on the dolerite were

also recorded. Dolerite rocks with shallow grinding grooves and ground cupules have also been recorded in the area (Orton 2016a, 2016b).

The remains of a historical stone-walled kraal also occur alongside the engraved outcrop described above (Orton 2015). Another stone-walled kraal and house ruin were recorded by Orton (2016a, b) close to the R64, while Kaplan (2020) found historical stone-walled ruins further to the north. To the southeast of the southern end of the powerline Orton (2022) noted a number of historical stone-walled features associated with abandoned (and now archaeological) farmsteads.

5.2.2. Site visit

Table 2 lists and describes all resources found within the original corridor provided for assessment and they are mapped in Figure 13. None of them fall within the 18 m servitude now proposed for the powerline. Although the desktop study shows that heritage resources are generally common in the wider area, it is evident that they are focused on dolerite outcrops and at abandoned or occupied farmsteads. This pattern was certainly evident for the present study area with no significant finds made. Two occurrences of background scatter artefacts were seen (Figures 14 & 15). All artefacts were made from hornfels and there was a variable degree of weathering which shows variable age. The least patinated artefacts are likely from the LSA, while the rest are almost certainly from various times within the MSA. These artefacts are of no consequence.

Also within the corridor was a small, heavily overgrown area that was informally paved with pieces of calcrete and dolerite (Figure 16). The function of this feature was indeterminate but it no doubt relates to the historical agricultural landscape. It, too, is of no consequence.

Table 2: List of heritage resources recorded within the original corridor.

Waypoint	Location	Description	Significance Grade
030	S28 42 47.2 E25 42 40.7	A few heavily patinated background scatter hornfels artefacts in a sandy area.	Very Low GPC
722	S28 43 22.8 E25 42 40.5	Light background scatter with variable weathering and hence probably variable age. The scatter was associated with a very small area of exposed calcrete.	Very Low GPC
723	S28 43 38.7 E25 42 37.1	An area that has been informally 'paved' with calcrete and dolerite stones. It is close to a wind pump and dam (c. 230 m away) so must be connected to farming activities.	Very Low GPC

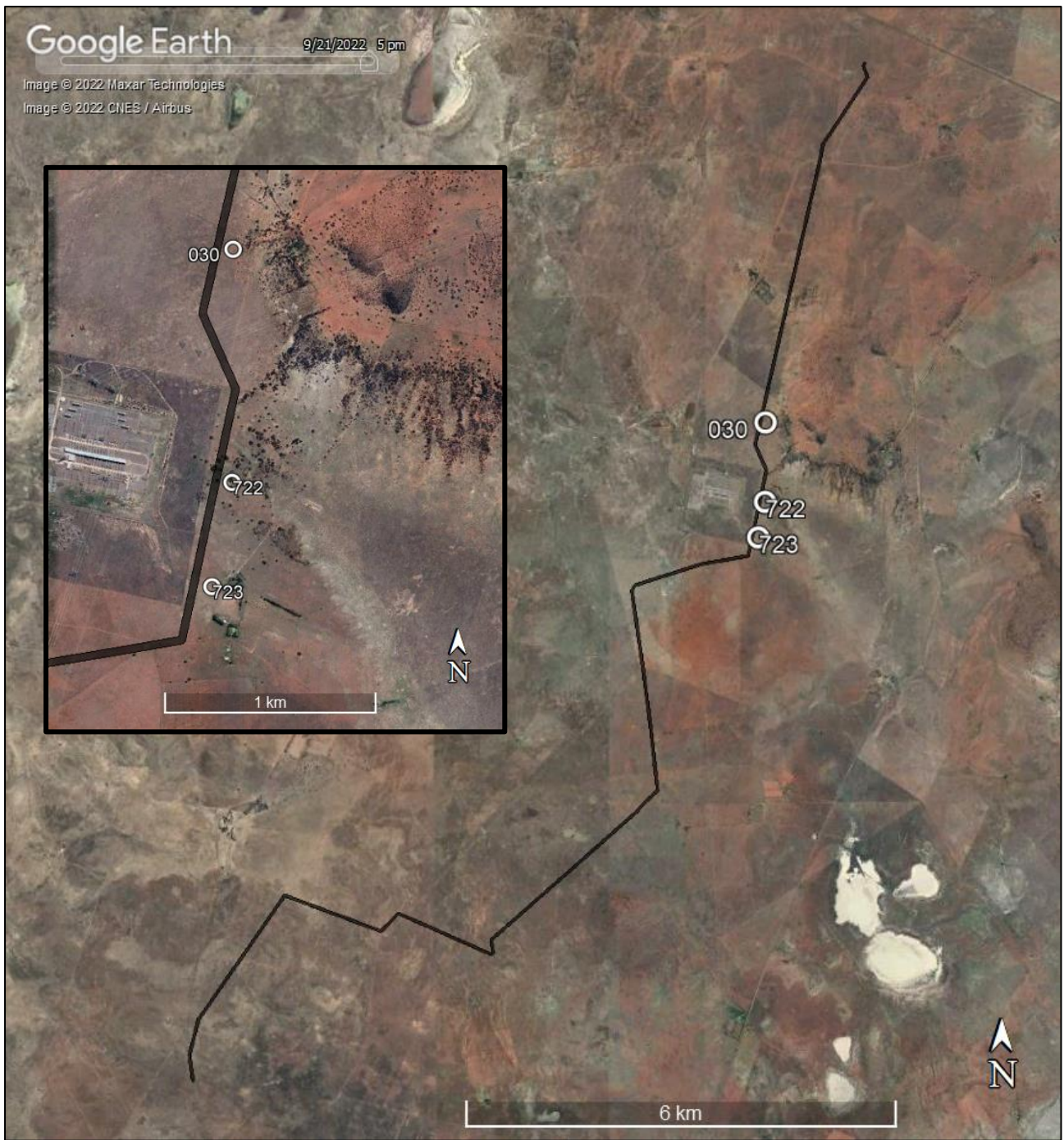


Figure 13: Map showing the locations of the heritage finds in relation to the powerline servitude (black line).



Figure 14: Stone artefacts from waypoint 030. Scale in cm.



Figure 15: Stone artefacts from waypoint 722.



Figure 16: *An area with a loosely ‘paved’ surface of dolerite and calcrete rocks at waypoint 723.*

5.3. Graves

Graves have been recorded in various places in the area (Orton 2016a, 2016b, 2022) but none were seen anywhere close to the assessment corridor. The chances of isolated graves occurring in the grass are very small but not zero.

5.4. Historical aspects and the Built environment

5.4.1. Desktop study

Historical resources will be primarily associated with farmsteads, although most are likely to be fairly recent, perhaps dating to the late 19th or early 20th centuries. Many such resources – buildings, ruins and artefact scatters (the latter two both covered under archaeology) were located in the area by Orton (2015, 2022). Orton (2022) found ruins built with a combination of dolerite and calcrete with these rocks placed to create striking patterns in the stonework. The town of Dealesville is relatively recent, dating to 1899 (Raper n.d.). It was laid out on the farm Klipfontein belonging to John Henry Deale and was awarded municipal status in 1914.

The second Anglo-Boer War (1899-1902) played a significant role in South African History, particularly in the interior of the country. Many battles were fought between the British and Boer forces. Significant battles in proximity to the present development area include the Battles of Modder River and Magersfontein 100 km to the southwest and west respectively, the Battle of Paardeberg 60 km to the southwest and the Battle of Driefontein just outside Bloemfontein, some

60 km to the southeast. Graves, graveyards and memorials across the central interior of South Africa serve as reminders of the war.

5.4.2. Site visit

No historical sites or structures were found within the powerline corridor. Several of those noted in the desktop study are located in the vicinity but all are far enough away from the corridor to be of no concern to this assessment, especially given the many other powerlines already present in the area.

5.5. Cultural landscapes and scenic routes

As described above, the landscape is strongly rural in nature. Occasional arable lands occur, including a centre pivot field 3.5 km southeast of the southern end of the corridor, but the vast majority is grassland used for grazing. Aerial imagery indicates that many areas in the vicinity were ploughed in the recent past and have probably been left to recover naturally due to drought conditions during the 2010s. There are currently no active arable lands less than 3 km from the corridor. The cultural landscape features scattered homesteads – either occupied, unoccupied and derelict, or completely ruined archaeological sites – in a sea of grass. These homesteads are often, but not always, marked by groves of trees. Two farmsteads will be passed by the powerline but in both instances there are other HV powerlines in the vicinity.

As noted above, the proposed powerline falls within a REDZ and within an EGI corridor. With the approval of many solar energy facilities in the area and the current existence of two large substations and many HV powerlines, electrical infrastructure should thus be an expected component of the landscape. There is going to be an inevitable shift in the nature of the landscape towards one increasingly dominated by electrical infrastructure.

The R64 is located just north of the northern end of the proposed powerline (i.e. immediately north of the authorised Artemis Substation). However, as the road approaches Dealesville the many existing electrical facilities (substations and HV lines) come into view and detract from this section of the route. In addition, several solar energy facilities have been approved on both sides of the road. The small, private Nielsview Nature Reserve lies some 5 km away to the south of the southern end of the proposed powerline but, because the powerline would not be built if the SEFs between it and Nielsview do not get built, this reserve is of no concern.

5.6. Statement of significance and provisional grading

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

The archaeological resources within the corridor are deemed to have very low cultural significance at the local level for their scientific value. They cannot be graded any higher than GPC.

Graves are deemed to have high cultural significance at the local level for their social value. They are allocated a grade of IIIA. None occur within the corridor or proposed development footprint but should any chance finds be made then they should be treated as high significance.

The cultural landscape is a rural landscape with aesthetic value and is rated as having medium cultural significance at the local level. Closer to Dealesville where the density of electrical infrastructure increases, the landscape is of lesser significance.

5.7. Summary of heritage indicators

- Indicator: No significant archaeological sites should be damaged or destroyed prior to appropriate study and recording as appropriate beforehand.
- Indicator: All graves should be avoided with a buffer of at least 50 m around them.
- Indicator: The proposed infrastructure should not dominate views from multiple viewpoints.

6. ASSESSMENT OF IMPACTS

Only two aspects of heritage require assessment here. Archaeological materials are known to occur in the vicinity of the final project footprint and could be disturbed during the construction phase, while the cultural landscape will be altered during all phases.

6.1. Construction Phase

6.1.1. Impacts to archaeology

Impacts to archaeological resources would occur during the construction phase when equipment is brought onto site and excavations begin. The material seen and expected is of very low cultural significance so although impacts are likely to occur, the intensity is very low and the significance is **very low negative**. No mitigation is suggested so the post-mitigation rating remains **very low negative**.

Table 3: Construction phase impacts to archaeology.

IMPACTS TO ARCHEOLOGY				
PROJECT PHASE	Construction Phase			
DIRECT IMPACT	Destruction of archaeological materials			
INDIRECT IMPACT	n/a			
CUMULATIVE IMPACT	Destruction of archaeological materials			
DIMENSION	RATING	MOTIVATION	CONSEQUENCE	LIKELIHOOD
PRE-MITIGATION				
DURATION	4	The duration of the activity associated with the impact will last more than 5 years and as such is rated as Long Term	-5	1
EXTENT	1	The extent of the impact is rated as footprint as it only affects the area in which the proposed activity will occur		

SEVERITY	-1	<i>The severity of the impact is rated as Low negative as the impact affects the environment in such a way that natural, cultural and social functions and processes are minimally affected</i>	Negligible	Unlikely
IMPACT ON IRREPLACEABLE RESOURCES	0	<i>No irreplaceable resources will be impacted.</i>		
SIGNIFICANCE	-5	Very Low Negative		
PROPOSED MITIGATION MEASURES				
<i>No mitigation is required.</i>				
POST-MITIGATION				
DURATION	4	<i>The duration of the activity associated with the impact will last more than 5 years and as such is rated as Long Term</i>	-5	1
EXTENT	1	<i>The extent of the impact is rated as footprint as it only affects the area in which the proposed activity will occur</i>		
SEVERITY	-1	<i>The severity of the impact is rated as Low negative as the impact affects the environment in such a way that natural, cultural and social functions and processes are minimally affected</i>	Negligible	Unlikely
IMPACT ON IRREPLACEABLE RESOURCES	0	<i>No irreplaceable resources will be impacted.</i>		
SIGNIFICANCE	-5	Very Low Negative		
CONFIDENCE LEVEL				
<i>High</i>				

6.1.2. Impacts to the cultural landscape

Because no landscape features such as hills and pans will be impacted by the project, the impacts relate to the presence in the rural landscape of construction equipment and vehicles, as well as to all the expected activity. Impacts to the cultural landscape will occur during the construction phase and last as long as construction lasts (anticipated to be about 12 months). Because of the flat terrain, the impacts would not be experienced over great distances because intervening vegetation and buildings would offer partial screening. Nonetheless, the immediately surrounding area will experience a change in landscape character and sense of place. The impact significance is rated to **very low negative** before mitigation, largely because all the existing electrical infrastructure means the severity of the impact is very low. Mitigation measures essentially only involve best practice measures such as minimising construction duration and ensuring that rehabilitation of any areas not needed during operation happens timeously and effectively. These measures are not expected to lower the significance which thus remains **very low negative** after mitigation (Table 4). Because of the many electrical features already in the landscape (substations and powerlines) and the fact that the study area falls within a REDZ and EGI Corridor (with the implication that such features are to be expected), the cumulative impacts are of limited concern. There are no fatal flaws in terms of construction phase impacts to the landscape.

Table 4: Construction phase impacts to the cultural landscape.

CULTURAL LANDSCAPE IMPACTS				
PROJECT PHASE	Construction Phase			
DIRECT IMPACT	Alteration of the rural landscape character through the introduction of construction equipment and vehicles and all the associated activities on site			
INDIRECT IMPACT	None			
CUMULATIVE IMPACT	Impacts will be greater with multiple components of the broader project being constructed at once			
DIMENSION	RATING	MOTIVATION	CONSEQUENCE	LIKELIHOOD
PRE-MITIGATION				
DURATION	2	The duration of the activity associated with the impact will last 6-18 months and as such is rated as Short term	-5	3
EXTENT	3	The extent of the impact is rated as Local as it affects the development area and adjacent properties		
SEVERITY	-1	The severity of the impact is rated as Low negative as the impact affects the environment in such a way that natural, cultural and social functions and processes are minimally affected	Negligible	Definite
IMPACT ON IRREPLACEABLE RESOURCES	0	No irreplaceable resources will be impacted.		
SIGNIFICANCE	-15	very low negative		
PROPOSED MITIGATION MEASURES				
Keep construction period as short as possible.				
Rehabilitate any areas not needed during operation as soon as possible.				
POST-MITIGATION				
DURATION	2	The duration of the activity associated with the impact will last 6-18 months and as such is rated as Short term	-5	3
EXTENT	3	The extent of the impact is rated as Local as it affects the development area and adjacent properties		
SEVERITY	-1	The severity of the impact is rated as Low negative as the impact affects the environment in such a way that natural, cultural and social functions and processes are minimally affected	Negligible	Definite
IMPACT ON IRREPLACEABLE RESOURCES	0	No irreplaceable resources will be impacted.		
SIGNIFICANCE	-15 very low negative			
CONFIDENCE LEVEL				

6.2. Operation Phase

6.2.1. Impacts to the cultural landscape

Because any physical impacts to the landscape would already have occurred during the construction phase, landscape impacts relate only to the presence of the project in what is otherwise a rural landscape. Impacts to the cultural landscape will occur during the operation phase and last as long as the lifetime of the project. Because of the flat terrain, the impacts would not be experienced over great distances because intervening vegetation and buildings would offer partial screening. Nonetheless, the immediately surrounding area will experience a change in landscape character and sense of place. The impact significance is rated to **low negative** before mitigation because despite the low severity, the duration will be long. Mitigation measures essentially only involve best practice measures such as ensuring that all maintenance work remains within the authorised footprint and minimising night-time light pollution. These measures are not expected to lower the significance which thus remains **low negative** after mitigation (Table 5).

Table 5: Assessment of operation phase impacts to the cultural landscape.

CULTURAL LANDSCAPE IMPACTS				
PROJECT PHASE	Operation Phase			
DIRECT IMPACT	Alteration of the rural landscape character through the presence of a powerline			
INDIRECT IMPACT	None			
CUMULATIVE IMPACT	Impacts will be greater with multiple facilities and powerlines being present			
DIMENSION	RATING	MOTIVATION	CONSEQUENCE	LIKELIHOOD
PRE-MITIGATION				
DURATION	4	The duration of the activity associated with the impact will last more than 5 years and as such is rated as Long Term	-7	3
EXTENT	3	The extent of the impact is rated as Local as it affects the development area and adjacent properties		
SEVERITY	-1	The severity of the impact is rated as Low negative as the impact affects the environment in such a way that natural, cultural and social functions and processes are minimally affected	Slightly Detrimental	Definite
IMPACT ON IRREPLACEABLE RESOURCES	0	No irreplaceable resources will be impacted.		
SIGNIFICANCE	-21	low - negative		
PROPOSED MITIGATION MEASURES				
Keep all maintenance work within the authorised footprint.				
Minimise night-time light pollution in the area (visual recommendations to be followed to achieve this).				
POST-MITIGATION				
DURATION	4	The duration of the activity associated with the impact will last more than 5 years and as such is rated as Long Term	-7	3
EXTENT	3	The extent of the impact is rated as Local as it affects the development area and adjacent properties		
SEVERITY	-1	The severity of the impact is rated as Low negative as the impact affects the environment in such a way that natural, cultural and social	Slightly Detrimental	Definite

		<i>functions and processes are minimally affected</i>		
IMPACT ON IRREPLACEABLE RESOURCES	0	<i>No irreplaceable resources will be impacted.</i>		
SIGNIFICANCE	-21	low - negative		
CONFIDENCE LEVEL				
<i>High</i>				

6.3. Decommissioning Phase

6.3.1. Impacts to the cultural landscape

Decommissioning phase impacts relate to the presence in the rural landscape of construction equipment and vehicles, as well as to all the expected activity. Impacts to the cultural landscape will occur during the decommissioning phase and last as long as decommissioning lasts (anticipated to be less than 12 months). Because of the flat terrain, the impacts would not be experienced over great distances because intervening vegetation and buildings would offer partial screening. Nonetheless, the immediately surrounding area will experience a change in landscape character and sense of place. The impact significance is rated as **low negative** before mitigation. Mitigation measures essentially only involve best practice measures such as minimising decommissioning duration and ensuring that full and effective rehabilitation takes place with the present land use being reinstated. Because of the return to the current rural landscape, these measures are expected to lower the significance to **very low negative** after mitigation (Table 6). There are no cumulative impact concerns. There are no fatal flaws in terms of decommissioning phase impacts to the landscape.

Table 6: Decommissioning phase impacts to the cultural landscape.

CULTURAL LANDSCAPE IMPACTS				
PROJECT PHASE	<i>Decommissioning Phase</i>			
DIRECT IMPACT	<i>Alteration of the rural landscape character through the presence of construction equipment and vehicles and all the associated activities on site</i>			
INDIRECT IMPACT	<i>None</i>			
CUMULATIVE IMPACT	<i>Impacts will be greater with multiple facilities and powerlines being decommissioned at once</i>			
DIMENSION	RATING	MOTIVATION	CONSEQUENCE	LIKELIHOOD
PRE-MITIGATION				
DURATION	1	<i>The duration of the activity associated with the impact will last 0-6 months and as such is rated as Temporary</i>	-4	3
EXTENT	3	<i>The extent of the impact is rated as Local as it affects the development area and adjacent properties</i>		
SEVERITY	-1	<i>The severity of the impact is rated as Low negative as the impact affects the environment in such a way that natural, cultural and social functions and processes are minimally affected</i>	Negligible	Definite
IMPACT ON IRREPLACEABLE RESOURCES	0	<i>No irreplaceable resources will be impacted.</i>		
SIGNIFICANCE	-12	very low negative		

PROPOSED MITIGATION MEASURES				
Keep decommissioning period as short as possible.				
Remove all infrastructure and foundations and rehabilitate all areas on completion of decommissioning.				
Reinstate the present land use (grazing and/or agriculture).				
POST-MITIGATION				
DURATION	1	The duration of the activity associated with the impact will last 0-6 months and as such is rated as Temporary	-4	3
EXTENT	3	The extent of the impact is rated as Local as it affects the development area and adjacent properties		
SEVERITY	-1	The severity of the impact is rated as Low negative as the impact affects the environment in such a way that natural, cultural and social functions and processes are minimally affected	Negligible	Definite
IMPACT ON IRREPLACEABLE RESOURCES	0	No irreplaceable resources will be impacted.		
SIGNIFICANCE	-12	very low negative		
CONFIDENCE LEVEL				
High				

6.4. Cumulative impacts

Cumulative impacts can occur to all types of heritage during any phase of development and are considered as occurring up to 30 km from the project footprint (projects considered are listed in Table 7), but note that the related Line 2 project currently also under assessment was also considered. There are two main concerns: archaeology and the cultural landscape.

Table 7: List of approved renewable energy projects (including their grid connections) considered for the assessment of cumulative impacts (Springhaas Solar PV facilities shown in italics)

No	EIA Reference No	Classification	Status of application	Distance from proposed area (km)
1	14/12/16/3/3/1/2156	Solar PV	Approved	21.2
2	14/12/16/3/3/2/726	Solar PV	Approved	3.7
3	14/12/16/3/3/2/718	Solar PV	Approved	8.8
4	14/12/16/3/3/2/721	Solar PV	Approved	15
5	12/12/20/1972/2	Solar PV	Approved	26.2
6	14/12/16/3/3/1/2155	Solar PV	Approved	21.2
7	14/12/16/3/3/2/719	Solar PV	Approved	11.3
8	14/12/16/3/3/2/728	Solar PV	Approved	0
9	14/12/16/3/3/2/720	Solar PV	Approved	15.6
10	14/12/16/3/3/2/851	Solar PV	Approved	11.7
11	14/12/16/3/3/1/2154	Solar PV	Approved	21.2
12	12/12/20/1972/1	Solar PV	Approved	27.3
13	14/12/16/3/3/2/855	Solar PV	Approved	11.5
14	14/12/16/3/3/2/717	Solar PV	Approved	7.5
15	14/12/16/3/3/2/722	Solar PV	Approved	3.8
16	14/12/16/3/3/2/854	Solar PV	Approved	11.7
17	12/12/20/1972	Solar PV	Approved	26.2
18	14/12/16/3/3/2/727	Solar PV	Approved	3.7
19	14/12/16/3/3/2/852	Solar PV	Approved	11.5
20	14/12/16/3/3/2/723	Solar PV	Approved	19.3
21	14/12/16/3/3/2/755	Solar PV	Approved	15
22	14/12/16/3/3/2/724	Solar PV	Approved	3.7
23	14/12/16/3/3/2/853	Solar PV	Approved	11.7
24	14/12/16/3/3/1/2523	Solar PV	Approved	0.1
25	14/12/16/3/3/1/2524	Solar PV	Approved	1
26	14/12/16/3/3/1/2525	Solar PV	Approved	0.4
27	14/12/16/3/3/1/2526	Solar PV	Approved	1.8
28	14/12/16/3/3/1/2527	Solar PV	Approved	3.9
29	14/12/16/3/3/1/2528	Solar PV	Approved	0
30	14/12/16/3/3/1/2529	Solar PV	Approved	2.5

The potential cumulative impacts to archaeology are assessed in Table 8. The impacts are assessed as **very low negative** and with mitigation the calculated rating will reduce but the level is still **very low negative**.

Table 8: Cumulative impacts to archaeology.

IMPACTS TO ARCHEOLOGY				
PROJECT PHASE	Construction Phase			
DIRECT IMPACT	Destruction of archaeological materials			
INDIRECT IMPACT	n/a			
CUMULATIVE IMPACT	Destruction of archaeological materials			
DIMENSION	RATING	MOTIVATION	CONSEQUENCE	LIKELIHOOD
PRE-MITIGATION				
DURATION	4	The duration of the activity associated with the impact will last more than 5 years and as such is rated as Long Term	-8	2
EXTENT	3	The extent of the impact is rated as Local as it affects the development area and adjacent properties		

SEVERITY	-1	<i>The severity of the impact is rated as Low negative as the impact affects the environment in such a way that natural, cultural and social functions and processes are minimally affected</i>	Slightly Detrimental	Likely
IMPACT ON IRREPLACEABLE RESOURCES	1	<i>Irreplaceable resources will be impacted.</i>		
SIGNIFICANCE	-16	Very Low Negative		
PROPOSED MITIGATION MEASURES				
<i>No mitigation is required in relation to this project but ensuring that significant sites are sampled or avoided on other projects will reduce cumulative impacts.</i>				
POST-MITIGATION				
DURATION	4	<i>The duration of the activity associated with the impact will last more than 5 years and as such is rated as Long Term</i>	-8	1
EXTENT	3	<i>The extent of the impact is rated as Local as it affects the development area and adjacent properties</i>		
SEVERITY	-1	<i>The severity of the impact is rated as Low negative as the impact affects the environment in such a way that natural, cultural and social functions and processes are minimally affected</i>	Slightly Detrimental	Unlikely
IMPACT ON IRREPLACEABLE RESOURCES	1	<i>Irreplaceable resources will be impacted.</i>		
SIGNIFICANCE	-8 Very Low Negative			
CONFIDENCE LEVEL				
High				

Cumulative impacts to the cultural landscape are assessed in Table 9 and found to be **moderate negative** before mitigation. With mitigation the assessed impact drops to **low negative**. The low ratings are largely because the landscape is already dominated by electrical infrastructure which means it is an expected component of the local landscape.

Table 9: Cumulative impacts to the cultural landscape.

HERITAGE IMPACTS				
PROJECT PHASE	All phases			
DIRECT IMPACT	Alteration of the cultural landscape			
INDIRECT IMPACT	None			
CUMULATIVE IMPACT	With multiple developments in a small area there is the potential to lose a larger number of heritage resources and for the landscape to be overwhelmingly altered.			
DIMENSION	RATING	MOTIVATION	CONSEQUENCE	LIKELIHOOD
PRE-MITIGATION				
DURATION	4	The duration of the activity associated with the impact will last more than 5 years and as such is rated as Long Term	-14	3
EXTENT	3	The extent of the impact is rated as Local as it affects the development area and adjacent properties		

SEVERITY	-2	The severity of the impact is rated as Moderate negative as the affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way; and valued, important, sensitive or vulnerable systems or communities are negatively affected	Moderately Detrimental	Definite
IMPACT ON IRREPLACEABLE RESOURCES	0	No irreplaceable resources will be impacted.		
SIGNIFICANCE	-42	moderate - negative		
PROPOSED MITIGATION MEASURES				
Minimise construction periods as far as possible.				
Ensure effective rehabilitation of any areas not needed during operation and after decommissioning.				
POST-MITIGATION				
DURATION	4	The duration of the activity associated with the impact will last more than 5 years and as such is rated as Long Term	-7	3
EXTENT	3	The extent of the impact is rated as Local as it affects the development area and adjacent properties		
SEVERITY	-1	The severity of the impact is rated as Low negative as the impact affects the environment in such a way that natural, cultural and social functions and processes are minimally affected	Slightly Detrimental	Definite
IMPACT ON IRREPLACEABLE RESOURCES	0	No irreplaceable resources will be impacted.		
SIGNIFICANCE	-21	low - negative		
CONFIDENCE LEVEL				
High				

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

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

The project would provide jobs to the local community during the construction period but operation and maintenance will be conducted by Eskom and it is unknown whether any further people would need to be employed for this. This power line is required as supporting infrastructure for the approved Springhaas solar PV facilities to evacuate power to the national grid. The provision of a more reliable and diverse electricity supply is of considerable economic benefit to the country as a whole and, given the relatively limited expected impacts to heritage resources, these socio-economic benefits outweigh the impacts.

6.6. Existing impacts to heritage resources

There are currently no obvious threats to heritage resources on the site aside from the natural degradation, weathering and erosion that will affect archaeological materials. Trampling from grazing animals and/or farm/other vehicles could also occur. These impacts would be of **negligible negative** significance. There are existing electrical features in the landscape (substations and high voltage powerlines) and these do alter the sense of place to some degree. This impact can be considered to be of **low negative** significance.

6.7. The No-Go alternative

If the project were not implemented then the site would stay as it currently is with permitted agricultural uses continuing. This would not affect the landscape but stone artefacts might get trampled and damaged by animals or farm vehicles (impact significance of **very low negative**; Table 11). Although the heritage impacts with implementation would be greater than the existing impacts (but still generally very low), the loss of socio-economic benefits is more significant and suggests that the No-Go option is less desirable.

Table 11: Assessment of the No-Go option.

HERITAGE IMPACTS				
PROJECT PHASE	n/a			
DIRECT IMPACT	Damage of stone artefacts			
INDIRECT IMPACT	n/a			
CUMULATIVE IMPACT	n/a			
DIMENSION	RATING	MOTIVATION	CONSEQUENCE	LIKELIHOOD
PRE-MITIGATION				
DURATION	4	The duration of the activity associated with the impact will last more than 5 years and as such is rated as Long Term	-5	1
EXTENT	1	The extent of the impact is rated as footprint as it only affects the area in which the proposed activity will occur		
SEVERITY	-1	The severity of the impact is rated as Low negative as the impact affects the environment in such a way that natural, cultural and social functions and processes are minimally affected	Negligible	Unlikely
IMPACT ON IRREPLACEABLE RESOURCES	0	No irreplaceable resources will be impacted.		
SIGNIFICANCE	-5	very low negative		
PROPOSED MITIGATION MEASURES				
None required				
POST-MITIGATION				
DURATION	4	The duration of the activity associated with the impact will last more than 5 years and as such is rated as Long Term	-5	1
EXTENT	1	The extent of the impact is rated as footprint as it only affects the area in which the proposed activity will occur		
SEVERITY	-1	The severity of the impact is rated as Low negative as the impact affects the environment in such a way that natural, cultural and social functions and processes are minimally affected	Negligible	Unlikely
IMPACT ON IRREPLACEABLE RESOURCES	0	No irreplaceable resources will be impacted.		
SIGNIFICANCE	-5	very low negative		
CONFIDENCE LEVEL				

6.8. Levels of acceptable change

Any impact to an archaeological or palaeontological resource or a grave is deemed unacceptable until such time as the resource has been inspected and studied further if necessary. Impacts to the landscape are difficult to quantify but in general a development that visually dominates the landscape from many publicly accessible vantage points is undesirable. Because of the relatively limited use of the nearby gravel roads, such an impact to the landscape is not envisaged.

7. INPUT TO THE ENVIRONMENTAL MANAGEMENT PROGRAM

The actions recorded in Table 12 should be included in the environmental management program (EMPr) for the project. Conditions for the registration are included in Section 10 (Recommendations).

Table 12: Heritage considerations for inclusion in the construction phase EMPr.

Impact	Mitigation / management objectives & outcomes	Mitigation / management actions	Monitoring		
			Methodology	Frequency	Responsibility
Impacts to archaeology and graves					
Impacts to archaeological sites or graves	Rescue information, artefacts or burials before extensive damage occurs	Reporting chance finds as early as possible, protect <i>in situ</i> and stop work in immediate area	Inform staff and carry out Inspections of new excavations	Ongoing basis	Construction Manager or Contractor
				Whenever on site (at least weekly until excavations and surface disturbances are complete)	ECO
Impacts to the cultural landscape					
Visible landscape scarring	Minimise landscape scarring	Ensure disturbance is kept to a minimum and does not exceed project requirements. Rehabilitate areas not needed during operation.	Monitoring of surface clearance relative to approved layout	Ongoing basis	Construction Manager or Contractor
				As required	ECO

8. CONCLUSIONS

Due to the heritage survey being undertaken prior to the development of project layouts, all heritage resources have been avoided by the project. There are no significant heritage concerns for the project. Table 12 indicates how the project has responded to the heritage indicators.

Table 12: Heritage indicators and project responses.

Indicator	Project Response
No significant archaeological sites should be damaged or destroyed prior to appropriate study and recording as appropriate beforehand.	None occur within the project area and so this is not applicable.
All graves should be avoided with a buffer of at least 50 m around them.	None occur within the project area and so this is not applicable.
The proposed infrastructure should not dominate views from multiple viewpoints.	Given the flat landscape and presence of so much other electrical infrastructure, such impacts are not expected.

8.1. Reasoned opinion of the specialist

The project has avoided all known heritage resources in the area and impacts to the landscape would be minimal in the context of the existing infrastructure and the PV projects that the powerline is intended to support. Significant heritage impacts are therefore not expected to occur and it is thus the opinion of the heritage specialist that the proposed powerline may be registered.

9. RECOMMENDATIONS

It is recommended that the proposed Line 1 should be authorised but subject to the following conditions, applicable to the construction phase of the proposed development:

- No materials may be removed from any of the ruined and/or demolished structures anywhere in the broader area;
- 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.

10. REFERENCES

- Brink, J.S. 1987. The archaeozoology of Florisbad, Orange Free State. *Memoirs of the National Museum, Bloemfontein* 24: 1-151.
- Churchill, S.E., Brink, J.S., Hutchison, R.A., Rossouw, L., Stynder, D., Hancox, P.J., Brandt, D., Woodborne, S., Looek, J.C., Scott, L. & Ungar, P. 2000. Erfkroon: a new Florisian fossil locality from fluvial contexts in the western Free State, South Africa. *South African Journal of Science* 96: 161-163.
- Dreyer, T.F. 1935. A human skull from Florisbad, Orange Free State, with a note on the endocranial cast, by C.U. Ariens Kappers. *Koninklijke Akademie van Wetenschappen te Amsterdam* 38: 3-12.

- Dreyer, T.F. 1938. The archaeology of the Florisbad deposits. *Archeologiese Navorsing van die Nasionale Museum, Bloemfontein* 1: 65-77.
- Heritage Western Cape. 2015. Guide to grading in terms of the NHRA. Version 13, 10th June 2015.
- Herries, A.I. 2011. A Chronological Perspective on the Acheulian and its Transition to the Middle Stone Age in Southern Africa: the Question of the Fauresmith. *International Journal of Evolutionary Biology* Volume 2011, Article ID 961401.
- Humphreys, A.J.B. 1972. The Type R settlements in the context of the later prehistory and early history of the Riet River valley. MA thesis, University of Cape Town.
- Humphreys, A.J.B. 2009. A Riet River retrospective. *Southern African Humanities* 21: 157-175.
- Hutten, M. 2011. Heritage Impact Assessment for the Proposed Boshof Solar Park on the farm Rabenthal north of Boshof, Free State Province. Unpublished report prepared for Africa Geo-Environmental Services. Louis Trichardt: Hutten Heritage Consultants.
- Kaplan, J. 2020. Archaeological Impact Assessment: Environmental Impact Assessment for the proposed Visserspan Solar PV Facility on the farm Visserspan No. 40 near Dealesville, Tokologo Local Municipality, Free State Province. Report prepared for Enviroafrica CC. Rondebosch: Agency for Cultural Resource Management.
- Kaplan, J. 2021. Archaeological Impact Assessment: proposed Visserspan Grid Connection on the farms Visserspan No. 40, Mooihoek No. 1547, Vasteveld No. 1548 and Kinderdam No. 1685, near Dealesville, Tokologo Local Municipality, Free State Province. Report prepared for Enviroafrica CC. Rondebosch: Agency for Cultural Resource Management.
- Kuman, K., Inbar, M. & Clarke, R.J. (1999) Palaeoenvironment and cultural sequence of the Florisbad Middle Stone Age Hominid site, South Africa. *Journal of Archaeological Science* 26:1409-1425.
- Kuman, K., Lotter, M.G. & Leader, G.M. 2020. The Fauresmith of South Africa: A new assemblage from Canteen Kopje and significance of the technology in human and cultural evolution. *Journal of Human Evolution* 148 (2020) 102884.
- Maggs, T.M.O'C. 1976a. Iron Age Communities of the Southern Highveld. Occasional Publications of the Natal Museum No 2.
- Maggs, T.M.O'C. 1976b. Iron Age patterns and Sotho history on the southern Highveld: South Africa. *World Archaeology* 7: 318-332.
- National Museum, Bloemfontein. 2014. Public rock art sites. <http://www.nasmus.co.za/departments/rock-art/public-rock-art-sites>. Website accessed 15th August 2014

- Orton, J. 2015. Heritage impact assessment for the proposed construction of twelve solar PV facilities near Dealesville, Boshof Magisterial District, Free State. Unpublished report prepared for CSIR. Muizenberg: ASHA Consulting (Pty) Ltd.
- Orton, J. 2016a. Heritage Impact Assessment: Scoping and Environmental Impact Assessment for the proposed development of the Edison PV 100 MW Photovoltaic Facility near Dealesville, Free State. Unpublished report prepared for CSIR. Muizenberg: ASHA Consulting (Pty) Ltd.
- Orton, J. 2016b. Heritage Impact Assessment: Scoping and Environmental Impact Assessment for the proposed development of the Watt PV 100 MW Photovoltaic Facility near Dealesville, Free State. Unpublished report prepared for CSIR. Muizenberg: ASHA Consulting (Pty) Ltd.
- Orton, J. 2021. Heritage Impact Assessment: proposed 132kV/400kV on-site Main Transmission Substation (MTS) and associated infrastructure near Dealesville, Boshof Magisterial District, Free State.
- Orton, J. 2022. Heritage Impact Assessment: Proposed Development of the Springhaas Solar PV Facilities Consisting of Nine New Solar PV Facilities and Associated Infrastructure near Dealesville in the Free State Province. Report prepared for ABO Wind renewable energies (Pty) Ltd. Muizenberg: ASHA Consulting (Pty) Ltd.
- Orton, J. & Webley, L. 2012. Heritage impact assessment for the proposed Kangnas Wind and Solar Energy Facilities, Namakwa Magisterial District, Northern Cape. Unpublished report prepared for Aurecon South Africa (Pty) Ltd. Diep River: ACO Associates cc.
- Raper, P.E. n.d. Dictionary of Southern African Place Names. Accessed online on 24 July 2014 at: <https://ia600407.us.archive.org/17/items/DictionaryOfSouthernAfricanPlaceNames/SaPlaceNames.pdf>.
- Rightmire, P. 1978. Florisbad and Human Population Succession in Southern Africa. *American Journal of Physical Anthropology* 48: 475-486.
- Rossouw, L. 2016. Palaeontological Desktop Assessment of 5 new Solar Photovoltaic facilities to be established over nine farms near Dealesville, Free State Province. Unpublished report prepared for ASHA Consulting (Pty) Ltd. Langenhoven Park: Palaeo Field Services.
- SAHRA. 2007. Minimum Standards: archaeological and palaeontological components of impact assessment reports. Document produced by the South African Heritage Resources Agency, May 2007.
- SAHRIS. n.d. Archaeological site, Florisbad, Brandfort District. <http://www.sahra.org.za/node/33185>. Website accessed 24th July 2014.
- Underhill, D. 2011. The Study of the Fauresmith: a review. *South African Archaeological Bulletin* 66: 15–26.
- Walton, J. & Pretorius, A. 1998. *Windpumps in South Africa: wherever you go, you see them; whenever you see them, they go*. Cape Town: Human & Rossouw.

Webley, L. 2010. Heritage impact assessment: proposed Southdrift Solar Farm, Free State. Unpublished report prepared for Environmental Resource Management. St James: ACO Associates cc.

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 – Site Sensitivity Verification

A site sensitivity verification was undertaken in order to confirm the current land use and environmental sensitivity of the proposed project area. The details of the site sensitivity verification are noted below:

Date of Site Visit	7 to 9 October 2022
Specialist Name	Steven van der Heever on behalf of Dr Jayson Orton
Professional Registration Number	ASAPA: 233 (JO); APHP: 043 (JO)
Specialist Affiliation / Company	ASHA Consulting (Pty) Ltd

- Provide a description on how the site sensitivity verification was undertaken using the following means:

- (a) desk top analysis, using satellite imagery;
- (b) preliminary on -site inspection; and
- (c) any other available and relevant information.

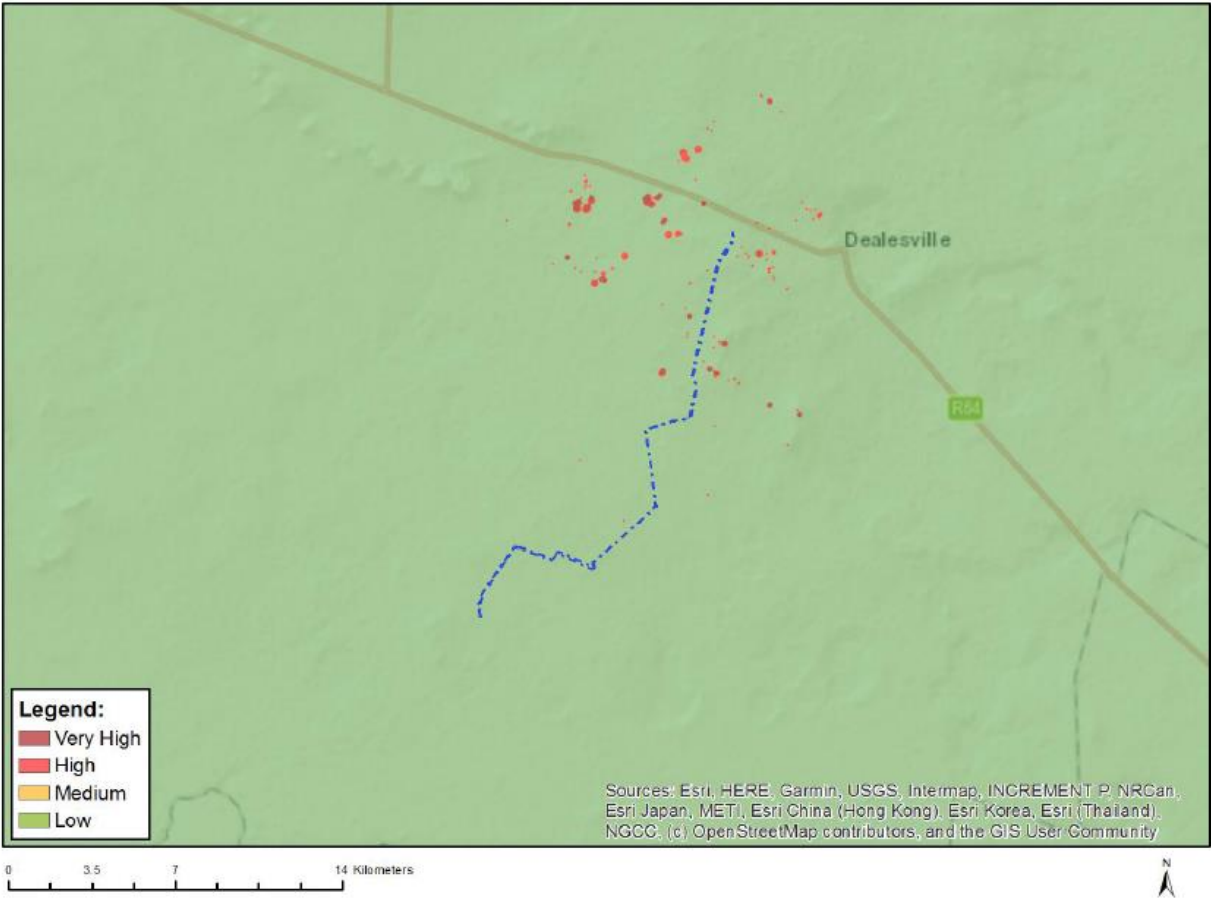
Initial work was carried out using satellite aerial photography in combination with the author's accumulated knowledge of the local landscape. This was used to identify potentially sensitive locations in the landscape. Subsequent fieldwork served to ground truth the site, including those areas identified as potentially sensitive. Desktop research was also used to inform on the heritage context of the area. Both the field and desktop data are presented in the report (Section 5).

- Provide a description of the outcome of the site sensitivity verification in order to:

- (a) confirm or dispute the current use of the land and the environmental sensitivity as identified by the screening tool, such as new developments or infrastructure, the change in vegetation cover or status etc.; and
- (b) include a motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity.

The map below is extracted from the screening tool report and shows the archaeological and heritage sensitivity to be low, but with scattered spots of high sensitivity in the surrounding area. The site visit showed that in fact the entire corridor provided for assessment – and hence the final project footprint – is of low sensitivity. Those finds made within the corridor are of very low cultural significance and hence low sensitivity. A photographic record and description of the relevant heritage resources are contained within the impact assessment report (Section 5). The heritage specialist thus confirms the screening tool report sensitivity.

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY



APPENDIX 3 – Compliance with Appendix 6 of the 2014 EIA Regulations

Requirements of Appendix 6 – GN R326 (7 April 2017)	Addressed in the Specialist Report
1. (1) A specialist report prepared in terms of these Regulations must contain-	Section 1.4 Appendix 1
a) details of- <ul style="list-style-type: none"> i. the specialist who prepared the report; and ii. the expertise of that specialist to compile a specialist report including a curriculum vitae; 	
b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	See separate document
c) an indication of the scope of, and the purpose for which, the report was prepared;	Section 1.3
(cA) an indication of the quality and age of base data used for the specialist report;	Section 3
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Sections 6.6, 6.4 & 6.8
d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 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;	Section 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 alternatives;	Sections 1.1.3 & 5 Appendix 2
g) an identification of any areas to be avoided, including buffers;	n/a
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;	Figure 13
i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 3.7
j) a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Section 5 Section 9
k) any mitigation measures for inclusion in the EMPr;	Section 7
l) any conditions for inclusion in the environmental authorisation;	Section 9
m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Section 7
n) a reasoned opinion- <ul style="list-style-type: none"> i. whether the proposed activity, activities or portions thereof should be authorised; (iA) regarding the acceptability of the proposed activity and 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; 	Sections 8.1 & 9
o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	n/a
p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	n/a
q) any other information requested by the competent authority.	n/a
2. Where a government notice gazetted by the Minister provides for any protocol of minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply	Part A of the Assessment Protocols published in Government Notice No. 320 on 20 March 2020 is applicable (i.e. Site sensitivity verification requirements where a specialist assessment is required but no specific assessment protocol has been prescribed).