

HERITAGE IMPACT ASSESSMENT: PROPOSED ROAD UPGRADE TO ACCESS THE SUTHERLAND WIND ENERGY FACILITY, SUTHERLAND MAGISTERIAL DISTRICT, NORTHERN CAPE

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

SAHRA Case No.: TBC

Report for:

Nala Environmental (Pty) Ltd
Kikuyu Waterfall,
Corner Of Maxwell Drive and Old Pretoria Main Road
Midrand, 2090
Email: arlene@veersgroup.com

On behalf of:

South Africa Mainstream Renewable Power Developments (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: 30 June 2021
Final report: 25 July 2021

SUMMARY

ASHA Consulting (Pty) Ltd was appointed by Nala Environmental to conduct an assessment of the potential impacts to heritage resources that might occur through the proposed upgrading of an approximately 10 km long section of a secondary road off the R354 to the southeast of Sutherland. The road is intended to facilitate access to the Sutherland Wind Energy Facility (WEF). The road lies within a servitude over the Remainder of Lange Kuil 136 and Portion 1 of Nooitgedacht 148. Start and end points for the proposed upgrade are S32° 32' 02.5" E20° 58' 22.3" and S32° 36' 12.5" E21° 00' 38.2" respectively. From the southern end of the upgrade section the road will join the internal access roads for the authorised Rietrug WEF and proceed through that site to the authorised Sutherland WEF site immediately to the south.

The study area is an existing gravel road. Some parts cross flat terrain but the central portion runs along the western side of the Riet River and is placed on a cut terrace in the slope overlooking the river. A low drystone wall supports the road along some of this distance and a number of stone-walled structures (kraals and domestic spaces) were found along the road in this area. In addition, one concrete road culvert that is assumed to be older than 60 years is present at a stream crossing. The cultural landscape is also considered to be a heritage resource. None of these heritage resources has high heritage significance, although it is noted that a farm complex of high local significance occurs just south of the southern end of the study area.

The only potentially significant heritage concern for this proposed road upgrade project is the stone-walled archaeological sites and associated artefacts that lie along the edge of the road overlooking the Riet River. Although the area between these sites and the road is sometimes quite small, with adequate marking of No-Go areas it is likely that the activity can proceed as planned without significantly impacting on any of these sites. It is suggested that a minimum of 5 m be respected between the sites and the proposed new road surface edge, although it is acknowledged that a smaller buffer may be required at waypoint 578. It might even be necessary to effect archaeological mitigation at this point if the site cannot be protected and avoided. If there is a danger that the stone walling may be undermined through later erosion after the completion of roadworks then the site should be properly recorded just in case.

It is recommended that the proposed project be authorised but subject to the following recommendations:

- An archaeologist should, in conjunction with the ECO, mark out the no-go areas around the archaeological sites with a minimum 5 m buffer where possible;
- These areas must be monitored by the ECO;
- If avoidance is not possible in any areas (as may be the case at waypoint 578), then an archaeologist will need to be contracted to record the structure in detail as well as any artefacts associated with it;
- Landscape scarring, especially in the area along the Riet River, must be minimised;
- To protect the drystone walling, no work may take place east of the current road surface along the Riet River;
- Excavated materials from the road cuttings should not be disposed of over the eastern edge of the road; and
- If any archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such

heritage is the property of the state and may require excavation and curation in an approved institution.

Glossary

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

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

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

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

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

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

Abbreviations

APHP: Association of Professional Heritage Practitioners

ASAPA: Association of Southern African Professional Archaeologists

BA: Basic Assessment

CRM: Cultural Resources Management

DEFF: Department of Environment, Forestry and Fisheries

EA: Environmental Authorisation

ECO: Environmental Control Officer

ESA: Early Stone Age

GP: General Protection

GPS: global positioning system

HIA: Heritage Impact Assessment

LSA: Later Stone Age

MSA: Middle Stone Age

NBKB: Ngwao-Boswa Ya Kapa Bokoni

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

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

PPP: Public Participation Process

SAHRA: South African Heritage Resources Agency

SAHRIS: South African Heritage Resources Information System

WEF: Wind Energy Facility

Contents

Glossary.....	iv
Abbreviations	iv
1. INTRODUCTION	1
1.1. The proposed project	2
1.1.1. Project description	2
1.1.2. Identification of alternatives.....	3
1.1.3. Aspects of the project relevant to the heritage study	3
1.2. Terms of reference	3
1.3. Scope and purpose of the report	4
1.4. The author	4
1.5. Declaration of independence	4
2. LEGISLATIVE CONTEXT	4
2.1. National Heritage Resources Act (NHRA) No. 25 of 1999	4
3. METHODS.....	6
3.1. Literature survey and information sources	6
3.2. Field survey.....	7
3.3. Impact assessment	7
3.4. Grading	8
3.5. Consultation.....	8
3.6. Assumptions and limitations	8
4. PHYSICAL ENVIRONMENTAL CONTEXT	8
4.1. Site context.....	8
4.2. Site description	9
5. FINDINGS OF THE HERITAGE STUDY	10
5.1. Palaeontology	10
5.2. Archaeology	10
5.2.1. Desktop study.....	10
5.2.2. Site visit	14
5.3. Graves	17
5.4. Historical aspects and the Built environment	17
5.4.1. Desktop study.....	17
5.4.2. Site visit	19
5.5. Cultural landscapes and scenic routes	21
5.6. Statement of significance and provisional grading	22
5.7. Summary of heritage indicators	22
6. ASSESSMENT OF IMPACTS	22
6.1. Impacts to archaeological resources	22
6.2. Impacts to built heritage resources.....	23
6.3. Impacts to the cultural landscape	24
6.4. Existing impacts to heritage resources.....	24
6.5. The No-Go alternative	24

6.6. Cumulative impacts	25
6.7. Levels of acceptable change	25
7. INPUT TO THE ENVIRONMENTAL MANAGEMENT PROGRAM	25
8. EVALUATION OF IMPACTS RELATIVE TO SUSTAINABLE SOCIAL AND ECONOMIC BENEFITS.....	26
9. CONCLUSIONS	26
9.1. Reasoned opinion of the specialist.....	27
10. RECOMMENDATIONS	27
11. REFERENCES	27
APPENDIX 1 – Curriculum Vitae	30
APPENDIX 2 – Site Sensitivity Verification.....	32

1. INTRODUCTION

ASHA Consulting (Pty) Ltd was appointed by Nala Environmental to conduct an assessment of the potential impacts to heritage resources that might occur through the proposed upgrading of an approximately 10 km long section of a secondary road off the R354 to the southeast of Sutherland (Figures 1 & 2). The road is intended to facilitate access to the Sutherland Wind Energy Facility (WEF). The road lies within a servitude over the Remainder of Lange Kuil 136 and Portion 1 of Nooitgedacht 148. Start and end points for the proposed upgrade are S32° 32' 02.5" E20° 58' 22.3" and S32° 36' 12.5" E21° 00' 38.2" respectively. From the southern end of the upgrade section the road will join the internal access roads for the authorised Rietrug WEF and proceed through that site to the authorised Sutherland WEF site immediately to the south.

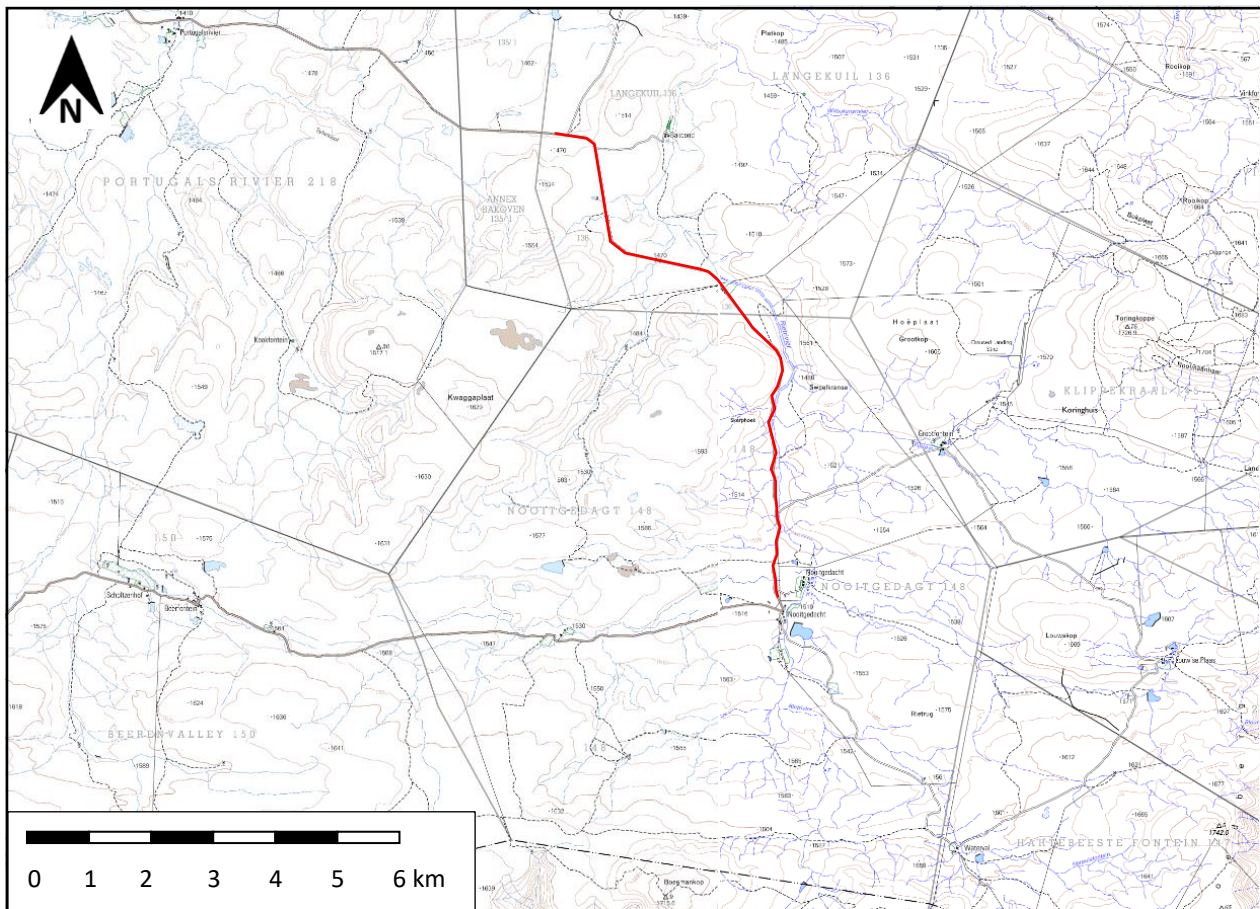


Figure 1: Extract from 1:50 000 topographic mapsheets 3220DB and 3221CA showing the location of the site (red line). Source of basemap: Chief Directorate: National Geo-Spatial Information. Website: www.ngi.gov.za.

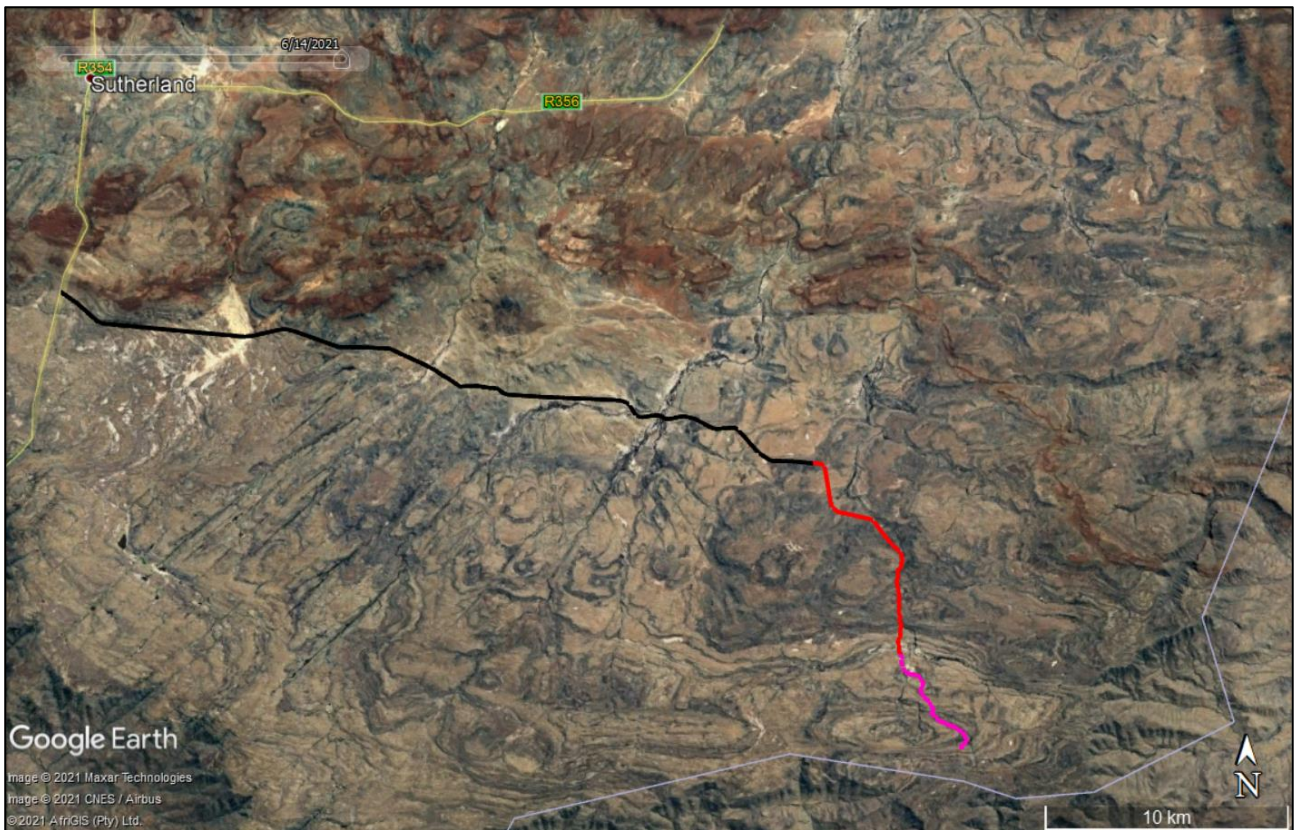


Figure 2: Aerial view of the wider area showing the location of the study area (red line) relative to the rest of the same secondary road (black line), the internal wind farm access road (pink line), the R354 (yellow line in the west), Sutherland (in the northwest) and the provincial boundary with Western Cape (purple line in the southeast).

1.1. The proposed project

1.1.1. Project description

South Africa Mainstream Renewable Power Developments (Pty) Ltd has been granted the Environmental Authorisations (EAs) for the 140MW Sutherland (12/12/20/1782/2) and 140MW Rietrug (12/12/20/1782/1) Wind Energy Facilities. Following receipt of the EAs it was determined that the co-ordinates of the existing access road or the width have not been specified within the authorisations for both these wind energy facilities.

The EAs for the Sutherland and Rietrug WEF's specify that access to each wind energy facility will be via the Secondary Road off the R354, however the start, middle and end co-ordinates of the existing access road has not been specified. The EIA report indicated that the impacts associated internal access roads for the WEF's had been considered in the assessment, however the upgrade to external roads fell outside the scope of the EIA.

As the activities have already been authorised in each EA and the route remains unchanged from the EIA phase a Part 2 amendment is proposed for the inclusion of the co-ordinates on the existing access road and to assess the impacts associated with upgrading and widening of the road to allow for facilitation of abnormal loads during the transport of Wind Turbines during construction.

The existing access road will be upgraded as follows:

- Approximately 10km length to be upgraded;
- Road surface to consist of gravel (i.e. no change);
- Road surface width of up to 7 m plus shoulders and stormwater drains; and
- Where the full width cannot be attained due to physical constraints (specifically the steep slopes and road cuttings in the east) then the minimum road surface width of 7 m will be created by expanding the cuttings above the existing road surface. No work will take place between the road and the adjacent river below these cuttings.

The Part 2 Amendment Application will also include the addition of the start, middle and end co-ordinates of the access road being upgraded for each wind energy facility.

Please note that the pink coloured part of the road in Figure 2 is within the authorised wind farm boundary and is not part of this assessment. Similarly, the black portion is an existing public road which is already suitable for use as is.

1.1.2. Identification of alternatives

No alternatives have been identified because there is already an existing public road and upgrading this road will almost certainly result in less significant impacts than constructing an entirely new road. As such, the only alternative considered by this assessment is the No-Go option.

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 (Pty) Ltd was asked to compile a heritage impact assessment (HIA) report that was based on desktop research and fieldwork already conducted for an earlier assessment in the area. The report was to include:

- an indication of the methodology used in determining the significance of potential environmental impacts;
- a description of all environmental issues that were identified during the environmental impact assessment process;
- an assessment of the significance of direct, indirect and cumulative impacts;
- a description and comparative assessment of all alternatives identified during the environmental impact assessment process;
- recommendations regarding practical mitigation measures for potentially significant impacts, for inclusion in the Environmental Management Programme (EMPr)
- an indication of the extent to which the issue could be addressed by the adoption of mitigation measures
- a description of any assumptions, uncertainties and gaps in knowledge

- an environmental impact statement which contains:
 - a summary of the key findings of the environmental impact assessment;
 - an assessment of the positive and negative implications of the proposed activity.

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 the Environment (DFFE) who will review the Part 2 Amendment Application and grant or refuse authorisation. The HIA report will outline any management and/or mitigation requirements that will need to be complied with from a heritage point of view and that should be included in the conditions of authorisation should this be granted.

1.4. 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 BA. The present report provides the heritage component. Ngwao-Boswa Ya Kapa Bokoni (Heritage Northern Cape; for built environment and cultural landscapes) and the South African Heritage Resources Agency (SAHRA for archaeology and palaeontology) are required to provide comment on the proposed project in order to facilitate final decision making by the DFFE.

3. METHODS

3.1. Literature survey and information sources

A survey of available literature was carried out to assess the general heritage context into which the development would be set. The information sources used in this report are presented in Table 1. Data were also collected via a field survey.

Table 1: Information sources used in this assessment.

Data / Information	Source	Date	Type	Description
Maps	Chief Directorate: National Geo-Spatial Information	Various	Spatial	Historical and current 1:50 000 topographic maps of the study area and immediate surrounds
Aerial photographs	Chief Directorate: National Geo-Spatial Information	Various	Spatial	Historical aerial photography of the study area and immediate surrounds
Aerial photographs	Google Earth	Various	Spatial	Recent and historical aerial photography of the study area and immediate surrounds
Cadastral data	Chief Directorate: National Geo-Spatial Information	Various	Survey diagrams	Historical and current survey diagrams, property survey and registration dates
Background data	South African Heritage Resources Information System (SAHRIS)	Various	Reports	Previous impact assessments for any developments in the vicinity of the study area
Palaeontological sensitivity	South African Heritage Resources Information System (SAHRIS)	Current	Spatial	Map showing palaeontological sensitivity and required actions based on the sensitivity.

Background data	Books, journals, websites	Various	Books, journals, websites	Historical and current literature describing the study area and any relevant aspects of cultural heritage.
-----------------	---------------------------	---------	---------------------------	--

3.2. Field survey

The site was examined on 15 and 18 November 2016 (Figures 3 & 4). This was during early summer but, in this dry area, the season makes no meaningful difference to vegetation covering and hence the ground visibility for the archaeological survey. Other heritage resources are not affected by seasonality. Most of the road was examined from the vehicle but in places where heritage was seen along the road these resources were checked on foot. During the survey the positions of finds and survey tracks were recorded on a hand-held Global Positioning System (GPS) receiver set to the WGS84 datum. Photographs were taken at times in order to capture representative samples of both the affected heritage and the landscape setting of the proposed development.

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



Figures 3 & 4: Northern and southern parts of the study area with survey tracks in green.

3.3. Impact assessment

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

3.4. 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).

3.5. Consultation

The NHRA requires consultation as part of an HIA but, since the present study falls within the context of an EIA 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.

3.6. 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. Because the survey was mostly done from the vehicle, archaeological materials on the ground would not be readily visible. However, it is likely that sites on the immediate periphery of the existing road would have been disturbed by earlier roadworks and this limitation is thus not likely to have affected the outcome of the assessment.

4. PHYSICAL ENVIRONMENTAL CONTEXT

4.1. Site context

The site is located in a predominantly natural landscape, although pockets of land could better be described as rural where farming occurs. The area is used predominantly for livestock grazing, but does lie within the Komsberg Renewable Energy Development Zone (REDZ) and the Central Power Corridor.

¹ The system is intended for use on archaeological and palaeontological sites only but is extended to built heritage for convenience.

4.2. Site description

The road itself is a gravel road that winds through undulating terrain. The section to be upgraded runs through a flat area before dropping slightly towards the Riet River (Figure 5). Here it is largely situated on a cutting above the river (Figure 6). Once out of the river valley it again crosses open, flat country.



Figure 5: View towards the north in the north-eastern part of the study area where the road comes off the high ground and follows the Riet River (visible to the right).



Figure 6: View towards the south in the northern part of the area where the road is cut into the embankment alongside the Riet River.

5. FINDINGS OF THE HERITAGE STUDY

This section describes the heritage resources recorded in the study area during the course of the project. Table 2 lists the finds made during the survey and their locations are mapped in Figures 7 to 9.

Table 2: List of heritage resources recorded during the field survey.

Waypoint	Co-ordinates	Description	Grade	Cultural significance
556	S32 36 21.3 E21 00 39.2	Farm complex with many stone kraals and historical structures. This complex lies just beyond the southern end of the study area and within the authorised WEF area.	III A	High
557	S32 34 45.6 E21 00 33.5	A historical settlement that includes a few small structures and a large kraal. The large kraal has various walls that do not form regular shapes and it covers an area of some 60 m by 68 m. There is a fair amount of historical material (glass and ceramics) and bone present on the ground and focused on the eastern area near 557 and 558.	GP A	Medium
558	S32 34 45.4 E21 00 33.0			
559	S32 34 45.4 E21 00 32.6			
560	S32 34 21.2 E21 00 35.5	Drystone retaining wall along the edge of the road where it cuts into a steep slope. It is in poor condition.	GP C	Low
561	S32 33 09.8 E20 59 20.2	Substantial culvert under road with four arched tunnels running beneath the road.	GP C	Low
578	S32 34 46.9 E21 00 34.3	Semi-circular kraal against a rock scarp. There are two very small enclosures within the main one.	GP B	Low-Medium
579	S32 35 36.0 E21 00 38.8	Stone-packed kraal of some 26 m by 19 m and located some 16 m from the edge of the road. The eastern edge of the kraal (nearest the road) has already been impacted by borrow pit excavation alongside it. There is also a telephone pole inside the kraal.	GP B	Low-Medium

5.1. Palaeontology

Palaeontological heritage has been studied by a separate specialist and the report is submitted with the present HIA. Palaeontology is not considered further in the present report.

5.2. Archaeology

5.2.1. Desktop study

Prior to the colonial incursion into the interior of southern Africa the Bushmen and, within the last two millennia, the Khoekhoen occupied the area. Very little archaeological research has been undertaken in the area, although a number of impact assessments have been carried out, especially in connection with proposed renewable energy facilities in the surrounding Roggeveld Mountains. Most surveys show that Stone Age material is generally quite sparse on the landscape, although scatters of Early (ESA), Middle (MSA) and Late Stone Age (LSA) material have been reported (Hart *et*

al. 2010; Halkett & Webley 2011). Occasional small rock shelters are known from the area (e.g. Evans *et al.* (1985), Hart (2005), Orton & Halkett 2011)) with one having been excavated. This one yielded a typical Later Stone Age assemblage with small scrapers, thin-walled potsherds, ostrich eggshell beads and some *Nassarius kraussianus* beads (Evans *et al.* 1985). The latter are estuarine shells that must have been obtained from the coast.



Figure 7: Aerial view of the study area showing the heritage resources recorded along the route.

A very important aspect of the pre-colonial archaeology of the area is the many stone-built *kraals* (livestock enclosures) that have been recorded in various areas. The vast majority are in the Seacow River valley to the east (Hart 1989; Sampson 1985, 2008), but an excellent example has also been reported from the southern edge of Sutherland (Hart 2005). This example was a complex of 13 interlocking enclosures. Just to the south of the present study area and in fact bisected by the internal access road, is a very important kraal complex with some 27 enclosures (Orton 2017a, 2017b, 2017c). Artefactual and other related materials were very rare with just eight stone artefacts

and eight ostrich eggshell fragments being found across the complex. A number of other examples are on record from the area, largely from the top of the escarpment. Some had stone artefacts, red burnished, thin-walled pottery, and ostrich eggshell associated with them. Stone Age *kraals* are important sites and are as yet poorly understood (Hart *et al.* 2010).

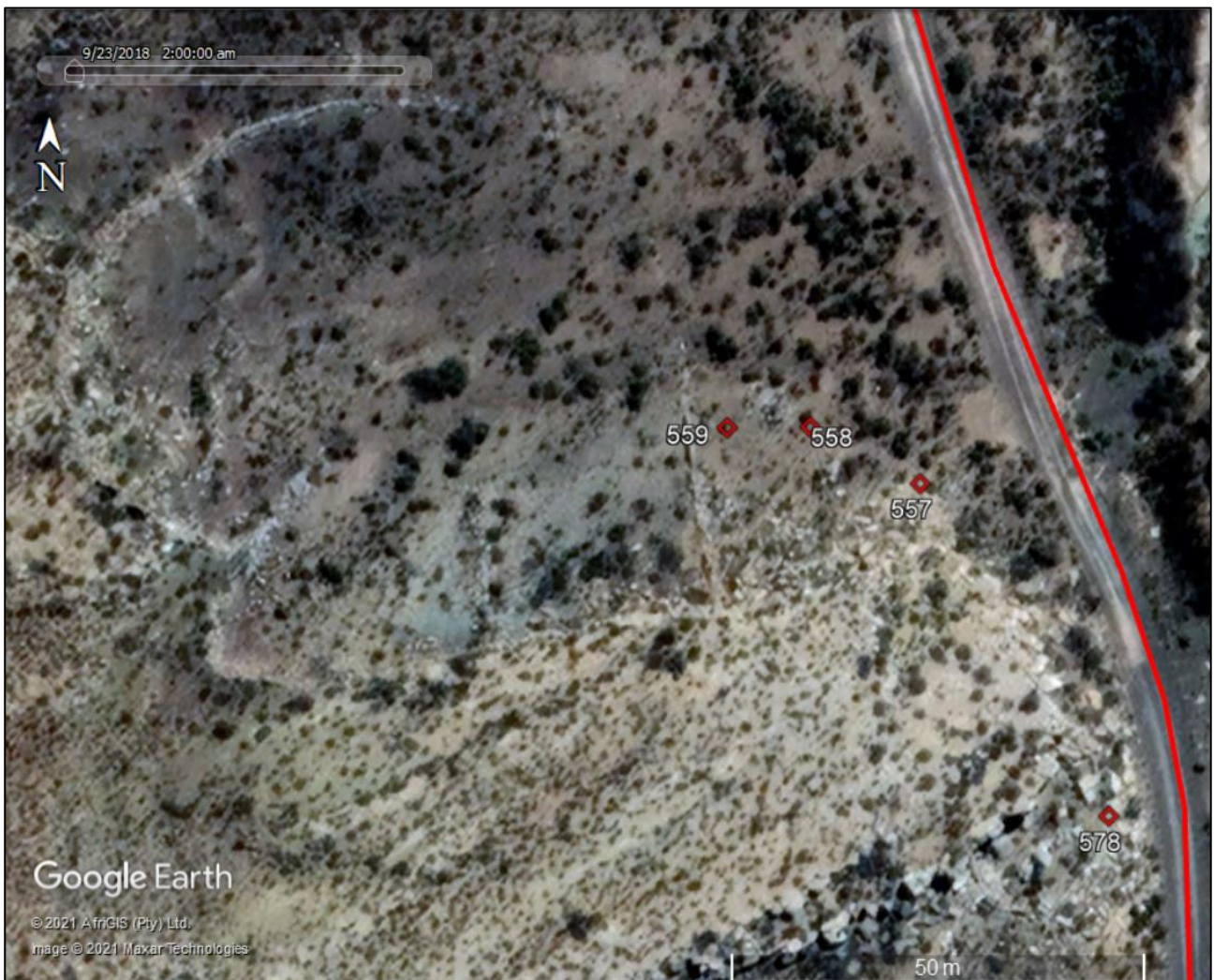


Figure 8: Aerial view of the area in which waypoints 557, 558, 559 and 578 were recorded. The stone walling stretching west of waypoint 559 is evident.

Along the dry riverbeds at the base of the escarpment Hart *et al.* (2010) also identified sites which they thought were large Khoekhoen encampments situated among the Kameeldoring trees in the bottom of valleys. The sites contained thin-walled, burnished pottery, stone features, stone artefacts, grinding surfaces and graves, some of which have broken grinding stones on them. Also evident were discreet ash middens and animal bone. Hart *et al.* (2010) noted colonial period artefacts (19th century glass and ceramics) on some of the sites, possibly indicating continuous use of the area by Khoekhoen herders into the colonial period.



Figure 9: Aerial view of the area in which waypoint 579 was recorded. The stone kraal can be seen against the scarp to the west of the waypoint.

Although geometric rock art has been mapped by researchers across large swathes of South Africa, there is a gap in the distribution surrounding the study area (Orton 2013; Russell 2012; Smith & Ouzman 2004). Nevertheless, geometric rock art has been documented in the area. One site lies along the subject road but outside the study area close to its intersection with the R354 (Orton & Halkett 2011). Two others lie some 22 km and 32 km southwest of the study area, just below the escarpment edge (Halkett & Webley 2011). One of these has an indeterminate image that may be a human figure. Another site lies 25 km southeast of the present study area at the base of the escarpment (Orton 2017a, 2017b, 2017c). It contains a number of finger smears.

Historical archaeology abounds in the area with many ruined stone-built structures being present (e.g. Hart *et al.* 2010; Hart & Kendrick 2014; Halkett & Webley 2011; Kaplan 2009; Orton 2017a, 2017b, 2017c). These often have artefactual material (broken ceramics and glass, metal items, etc) scattered about them. Occasionally a refuse midden is found alongside an old farmstead. These middens are largely early 18th to late 19th century in age and reflect the material remains of domestic life on the early frontier farms.

5.2.2. Site visit

All of the archaeological sites recorded lay along the margins of the Riet River in the eastern part of the study area (where the road runs north to south on the western side of the river). They consist of a few historical sites with stone walling. They include a complex of enclosures around a small rocky headland and in an adjacent shallow valley to the north (waypoints 557-559 & 578). The subject road passes between the headland and the river. Most of the walling is more than 10 m from the road edge but that at waypoint 578 is closer at about 5 m from the road edge. On the north side of the headland is a large *kraal* (waypoint 559; Figures 10 & 11) that is visible on aerial photography (Figure 8), a few smaller enclosures and features and a scatter of historical artefacts (waypoints 557 & 558; Figure 12). It is likely that the smaller features and associated artefacts represent a domestic occupation area. Immediately around the corner, to the south, is another semi-circular enclosure with two very small enclosures inside it (Figure 14; waypoint 578). All are built against the low cliff line.



Figure 10: View towards the northeast from the rocky headland showing the eastern end of the large kraal (waypoint 559). The domestic area and smaller features lie in the background between the kraal and the gravel road.



Figure 11: View towards the southwest showing the stone walling stretching up the side of the shallow valley onto the edge of the headland (waypoint 559).



Figure 12: View towards the southeast showing some of the smaller enclosures with associated historical domestic refuse at the foot of the low cliff (waypoint 557).



Figure 13: Compilation of some of the historical artefacts seen in the vicinity of waypoints 557 and 558.



Figure 14: View towards the west showing the enclosure on the southern side of the headland (578; walling arrowed). The road is visible in the foreground.

Some 1.5 km to the south there is a single, approximately rectangular piled stone *kraal*. It has been slightly impacted by the excavation of a shallow borrow pit between it and the road and the installation of a telephone pole within the *kraal* (Figure 15).



Figure 15: View towards the west showing the square piled stone kraal located at waypoint 579. Its corners are approximately indicated by the yellow dots. The edge of the subject road is in the immediate foreground at lower left.

5.3. Graves

No graves were seen along this section of the road and none are expected within the area in which road widening would need to happen. The nearest known graves are in the farm graveyard some 290 m southwest of the southern end of the study area.

5.4. Historical aspects and the Built environment

5.4.1. Desktop study

Schoeman (1986) has described the early settlement of the Roggeveld and Sutherland area from about 1750 onwards. The escarpment area, with its higher rainfall, was found to be good for small stock farming in summer but the extreme winter cold forced people down into the valleys and plains to the south. Initially, the European population remained small because many early loan farms were used merely as “stock posts” – the owners lived elsewhere and often had more than one loan farm. The early days of colonial settlement were conflict-ridden because indigenous groups, called “Boschiesman Hottentoten” (Khoekhoen and San/Bushmen) were unhappy about losing their traditional lands and attempted to force the Europeans to flee what can best be described as ‘guerrilla warfare’. Livestock theft was rife and attacks on farmers and indigenous populations were commonplace. From the late 18th century commando groups (comprised of local farmers) were called up to attack the *kraals* of local Khoekhoen and Bushmen groups. Although they defended their positions with bow and arrow, the firearms of the farmers generally resulted in many indigenes being killed (Schoeman 1986). These commandos were initiated in response to the so-called

“Roggeveld Rebellion” of 1772 when many Khoekhoe labourers left their farms and banded together in response to a rumour that all Khoekhoe living in kraals would be killed (Penn 2005). They were defeated and the San and Khoekhoen were gradually driven northwards from the Roggeveld. By 1809 there was reported to have been only one Bushman *kraal* left in the area. Penn (2005:21) notes that “Without access to the resources on both sides of the escarpment, and the water of the escarpment itself, both pastoralists and hunter-gatherers were doomed; hence the desperate fighting of the 1770s, 1780s and 1790s. These were years of intense commando activity and Khoisan resistance.”

The early 19th century saw an increase in permanent European settlement, although the farmers’ main source of income was still small stock – wheat could only be grown with great difficulty in isolated and protected valleys and there was very little standing water and grazing suitable for cattle. The early settlers were responsible for the construction of the well-known stone corbeled houses of the Northern Cape (Kramer 2012). The nearest known corbeled house lies about 9 km northeast of the study area. While two more lie 19 km and 27 km to the west.

Schoeman (1986) notes that during the early years of settlement in the Roggeveld, many of the Trekboers lived in grass huts or Matjies houses, or even in tents. The use of Matjies houses was reported as late as 1839. Attempts at constructing more permanent structures were inhibited by the lack of wood suitable for building. One technique that was often used to overcome this difficulty was to use drystone walling to half height and then construct a wooden framework to support a reed roof on top of it. These were tiny houses and were known as *Hartebeeshuise*. Sometimes they were made without the stone courses and looked like a tent made of vegetation. Examples were reported below the escarpment to the southwest of the study area by Almond (pers. comm. 2016 in Orton 2016).

During the South African War (a.k.a. Anglo-Boer War), the British forces built fortifications at a number of strategic passes through the Roggeveld. Two stone blockhouses guard a pass on the farm Gunsfontein (Discover Sutherland 2017). With the Boer leader Manie Maritz active in the Calvinia District, many young men from the Roggeveld joined the Boer cause. In 1901 there appear to have been some skirmishes in the vicinity of Skietfontein, a farm through which the Komsberg Pass runs.

Various types of built structures have been recorded in the area. Because many are ruined and in a state of disuse, they would generally fall into the category of archaeological resources rather than built environment heritage resources. The types of structures included here include:

- Various boundary markers, cairns and beacons (e.g. Hart *et al.* 2010; Orton & Halkett 2011). They may have been built when the original farm surveys took place in the 19th century;
- Military structures occur in places, most notably on Jakkalsvalley, the farm at the western end of the subject road where it meets the R354 (Orton & Halkett 2011). Many of these are ruined and would technically be archaeological sites;
- Farmhouses, outbuildings and farm workers dwellings occur widely, sometimes built from dressed stone; and
- Dry stone *kraals* and boundary walls.

Hart *et al.* (2010) and Halkett & Webley (2011) recorded numerous graveyards, generally associated with homesteads and with abandoned settlements.

There are also many tracks which are likely to have their origins in the 19th century wagon routes between farms, although these are perhaps better regarded as elements of the cultural landscape.

5.4.2. Site visit

The main historical built environment resources relevant to this project relate to the road itself. The first is a concrete culvert with 4 arched openings and which is showing signs of deterioration (Figures 16 & 17). Its age is unknown but it could well be older than 60 years.



Figures 16 & 17: View of the largest built structure along the road (waypoint 561). It has been built of modern concrete and is showing signs of deterioration.

The second aspect is along the section of road built on a cutting above the Riet River. This section has a low and somewhat informal drystone retaining wall running along below the carriageway for much of its length (Figures 18 & 19). It would appear as though later roadworks have resulted in much gravel spilling over the edge of the road and creating a scree slope over and below the walling. Figure 20 shows that the road pre-dates 1960 and this implies that the drystone walling is greater than 60 years of age. The concrete culvert could have been a later addition but there is no way to confirm this.



Figure 18: View towards the north showing the road cutting in the slope above the Riet River (waypoint 560).



Figure 19: View towards the south of a section of the drystone walling supporting the road above the Riet River (waypoint 560).

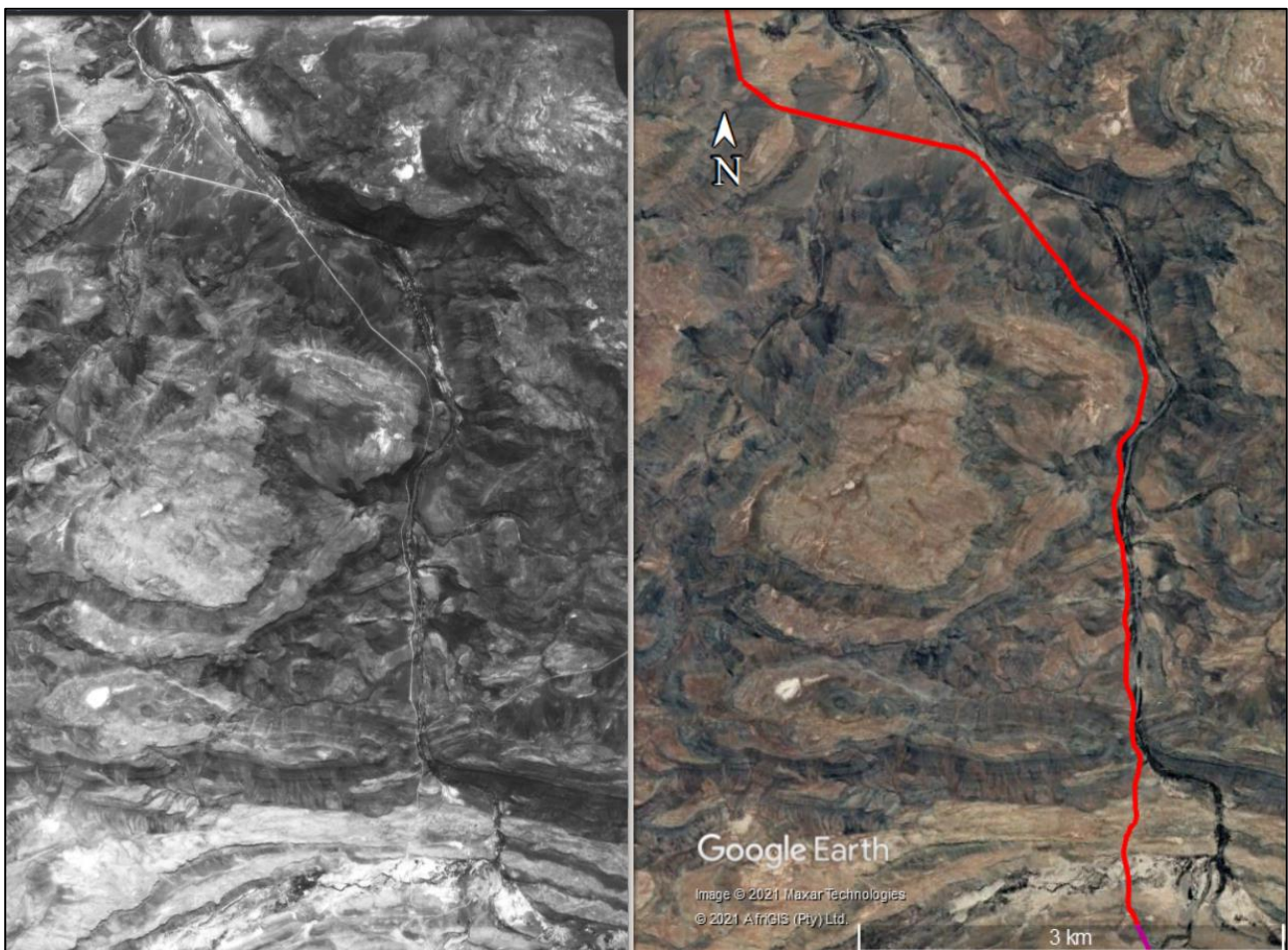


Figure 20: Aerial view (Job 450, Strip 11, photograph 4622) of almost the entire length of the upgrade section in 1960 (left) and 2020 (right). Importantly, the road cutting and dry-stone walling must have already been in place before 1960.

The farm complex at the southern end of the upgrade section is an important heritage resource (Figures 21 & 22). It will not be affected in any way by the presently proposed project which ends about 130 m north of the complex. The complex includes historical houses as well as many drystone-walled features.



Figure 21: View into the farmstead (waypoint 556).



Figure 22: Stone-walled kraal in the complex at waypoint 556.

5.5. Cultural landscapes and scenic routes

Winter and Oberholzer (2013) regard the escarpment as a significant natural landscape at the local level. It is a very extensive landscape extending for many hundreds of kilometres through central South Africa, often providing very long and aesthetically pleasing views which afford a cultural aspect to its significance. It can also be regarded as a cultural landscape, perhaps not so much in the regular sense of a 'landscape shaped by man' but in the opposite way where we find a landscape that has determined how and where human settlement and activities have taken place. Farmsteads are relatively few and far between, often tied to natural water sources. The landscape, although

best described as a rural one, frequently has a strong feeling of emptiness and remoteness. It is used almost exclusively for small stock grazing and the many small historic stone features scattered across the landscape are indicative of this use in times gone by. In some remote areas the only indicators of human intervention for many kilometres are occasional fences and vehicle tracks. The road past the site is remote and effectively only provides access to local farms. Although the landscape is generally scenic, the road cannot be regarded as a scenic route in the typical sense.

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 are deemed to have up to medium cultural significance for their historical, scientific, social and technological values.

Graves are deemed to have high cultural significance for their social value but none are currently known from the immediate study area and none are expected.

The built heritage resources in the farm complex are regarded as being of high cultural significance for their aesthetic, architectural, historical and social values.

5.7. Summary of heritage indicators

The main heritage concerns are:

- Impacts to archaeological resources which could be damaged or even destroyed during construction of the road;
- Impacts to built heritage features forming part of the existing road; and
- Impacts to the cultural landscape which would be impacted through the creation of a larger road than is generally expected in such a rural area.

6. ASSESSMENT OF IMPACTS

Impacts to palaeontological heritage are assessed in a separate specialist report. The other aspects of heritage identified as being of concern and requiring assessment are archaeology, built environment and the cultural landscape. The chances of graves being found are virtually zero and because the locations of unmarked graves cannot be predicted they can only be dealt with if found.

6.1. Impacts to archaeological resources

Direct impacts to archaeological resources would occur during the construction phase. Impacts during operation (when maintenance would occur) are not expected since the maximum disturbance width would have already been established during construction. Because the cultural significance is rated as only being up to medium at the local level the extent and magnitude have been rated as local and low. Because the known sites are all at least several meters from the current road edge impacts are probable. Overall, the impact significance before mitigation is **medium**

negative (Table 3). Mitigation is possible. The most desirable would be to ensure protection and avoidance of the sites. Should this not be possible in some instances then archaeological work can be done on site to record the structural components and excavate and collect artefactual material. With mitigation the significance drops to **low negative**. There are no fatal flaws in terms of archaeology.

Table 3: Assessment of archaeological impacts.

Nature: Potential impacts on the cultural landscape through enlarging road cuttings and widening the road surface		
Extent	Local (2)	Local (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Low (4)	Small (1)
Probability	Probable (3)	Very improbable (1)
Significance	Medium (33)	Low (7)
Status	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes	
Mitigation:	<ul style="list-style-type: none"> • Demarcate, avoid and protect all archaeological sites. • Should this not be possible then commission an archaeologist to study the sites, record the walling and sample the artefactual materials. 	
Residual impacts	It is likely that isolated artefacts may be present and unseen along the margins of the road and these may be damaged or destroyed. Such isolated materials are of no cultural significance and are of no further concern.	

6.2. Impacts to built heritage resources

Only built elements related to the road itself are considered here. Direct impacts would occur during the construction phase. Given the low cultural significance of the built parts of the road, the extent and magnitude of impacts are expected to be local and low. Because the impacts are unavoidable (for the culvert), the probability is definite which leads to a **medium negative** significance rating (Table 4). This is probably an over-estimation of the significance. Mitigation will be possible for the drystone walling which can easily be avoided and protected and doing this would result in a reduction of the impact significance but because of the permanence of the impact it is still rated as medium. Again, the methodology has resulted in an over-estimation of significance which is not in accord with the low cultural significance of the heritage resources themselves. There are no fatal flaws in terms of impacts to built heritage.

Table 4: Assessment of impacts to built heritage.

Nature: Potential impacts to built heritage through enlarging road cuttings and widening the road surface		
Extent	Local (2)	Local (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Low (4)	Minor (2)
Probability	Definite (5)	Definite (5)
Significance	Medium (55)	Medium (40)
Status	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Partially	
Mitigation:	<ul style="list-style-type: none"> • Keep all expansion of the road surface in the area next to the river to above the existing carriageway so as to avoid damaging walling below the road. 	

	<ul style="list-style-type: none"> Do not dispose of cutting material down the slope towards the river.
Residual impacts	There are no residual impacts for this aspect of heritage.

6.3. Impacts to the cultural landscape

Direct impacts to the cultural landscape will occur during construction and operation but the severity of the impacts will reduce over time as the newly widened road ‘settles in’ and vegetation regrows along the verges. The impacts will not be visible over long distances so extent is low. The changes would, as noted, eventually become an acceptable part of the landscape so duration is regarded as long term. Because the widened road will not have much effect on the cultural landscape the magnitude is rated as low. The impact significance calculates to **medium negative** (Table 5). Mitigation would entail reducing landscape scarring as far as possible with a particular emphasis on the cuttings above the Riet river. With mitigation the impact significance reduces to **low negative**. There are no fatal flaws in terms of the cultural landscape.

Table 5: Assessment of impacts to the cultural landscape.

Nature: Potential impacts on the cultural landscape through enlarging road cuttings and widening the road surface		
Extent	Local (1)	Local (1)
Duration	Long term (4)	Medium (3)
Magnitude	Low (4)	Minor (1)
Probability	Definite (5)	Definite (5)
Significance	Medium (45)	Low (25)
Status	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes, partially.	
Mitigation:	<ul style="list-style-type: none"> Minimise cutting into the slope above the river. Minimise landscape scarring throughout the project area and ensure effective rehabilitation of areas not required during operation. 	
Residual impacts	The wider road will remain present and will change the character of the area regardless of mitigation measures but this is not of any further concern.	

6.4. 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 can also damage artefacts. Such impacts can be rated **negligible negative**.

6.5. The No-Go alternative

The No-Go alternative would entail not upgrading the road. This would have considerable negative impacts in terms of electricity supply, since it would be impossible to get construction materials and turbine parts onto site for construction of the WEF. From a heritage point of view there would be no discernible change to the environment and impacts from the No-Go option are considered negligible.

6.6. Cumulative impacts

This section considers the overall impacts to heritage resources from all other developments anticipated in the area. These are predominantly renewable energy development with their associated electrical infrastructure. Many such facilities have been proposed in the Roggeveld Mountains surrounding the study area and access roads between turbines will likely result in the most impacts. While powerlines traverse all parts of the landscape and might impact upon resources in various areas, the majority of infrastructure for the renewable energy facilities is proposed on exposed ridges and flat open areas where heritage resources are not typically found. Although many sites have been recorded (see desktop study above), these are over large areas of land and the actual density of significant heritage resources (largely archaeological materials) on the landscape is patchy and often quite low. The proposed road will have only very limited impacts and because the most significant sites are generally the easiest seen and most likely to be found and avoided, the cumulative impacts are considered to be of **low negative** significance. The ratings are a synthesis of all the expected heritage impacts as described in Sections 6.1 to 6.3. When all potential development projects in the area are examined together a potential impacts significance of **medium negative** is calculated. The proposed road upgrades will make very little contribution to this though.

Table 6: Assessment of cumulative impacts to all heritage resources.

Nature: Potential impacts on the cultural landscape through enlarging road cuttings and widening the road surface		
	Overall impact of the proposed project considered in isolation	Cumulative impact of the project and other projects in the area
Extent	Local (1)	Local (1)
Duration	Long term (4)	Long term (4)
Magnitude	Minor (2)	Low (3)
Probability	Probable (3)	Highly probable (4)
Significance	Low (21)	Medium (32)
Status	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes, partially.	
Mitigation:	<ul style="list-style-type: none">Minimise cutting into the slope above the river.Minimise landscape scarring throughout the project area and ensure effective rehabilitation of areas not required during operation.	
Residual impacts	The wider road will remain present and will change the character of the area regardless of mitigation measures but this is not of any further concern.	

6.7. 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 vantage points is undesirable. The proposed road upgrade is unlikely to result in such an impact.

7. INPUT TO THE ENVIRONMENTAL MANAGEMENT PROGRAM

The project environmental control officer (ECO) will need to ensure that the eastern edges of the archaeological sites are marked as no-go areas and that all work remains outside of these areas.

Given the relatively small distances between the sites and the road edge in some cases, it is recommended that a buffer of 5 m be respected around the visible archaeology. This will protect the sites but also allow for some working space to allow the project to proceed. It is recommended that an archaeologist mark out the area that should be avoided so as to be sure that all relevant areas have been adequately protected. An alternative would be to demarcate a maximum distance from the road that is required for the proposed upgrade and then check whether this needs to be reduced in certain areas.

Project components	Road surface
Potential impacts	Damage to and destruction of archaeological resources
Activity/risk source	Road works and earthmoving
Mitigation: target/objective	Ensure protection of archaeological sites

Mitigation: action/control	Responsibility	Timeframe
Demarcate No-Go areas	ECO/archaeologist	Before construction starts

Performance indicator	Archaeological sites successfully protected
Monitoring	Weekly (or more frequent) monitoring by the ECO to ensure that No-Go areas are being respected

8. 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 proposed road upgrade will have no particular intrinsic benefits. However, the upgrade is needed in order to facilitate construction of the various WEFs proposed in the area. These facilities will have a positive socio-economic benefit in that they will assist with providing energy to the national electricity grid. This, in turn, will help economic development and social upliftment in South Africa. The heritage impacts are very limited and the potential socio-economic benefits are considered more significant than the expected negative impacts.

9. CONCLUSIONS

The only potentially significant heritage concern for this proposed road upgrade project is the stone-walled archaeological sites and associated artefacts that lie along the edge of the road overlooking the Riet River. Although the area between these sites and the road is sometimes quite small, with adequate marking of No-Go areas it is likely that the activity can proceed as planned without significantly impacting on any of these sites. It is suggested that a minimum of 5 m be respected between the sites and the proposed new road surface edge, although it is acknowledged that a smaller buffer may be required at waypoint 578. It might even be necessary to effect archaeological mitigation at this point if the site cannot be protected and avoided. If there is a danger that the stone walling may be undermined through later erosion after the completion of roadworks then the site should be properly recorded just in case.

9.1. Reasoned opinion of the specialist

Given that the impact significance after mitigation is low and that mitigation can be easily effected, it is suggested that, from a heritage point of view, the proposed road upgrade may be authorised in full.

10. RECOMMENDATIONS

It is recommended that the proposed project be authorised but subject to the following recommendations:

- An archaeologist should, in conjunction with the ECO, mark out the no-go areas around the archaeological sites with a minimum 5 m buffer where possible;
- These areas must be monitored by the ECO;
- If avoidance is not possible in any areas (as may be the case at waypoint 578), then an archaeologist will need to be contracted to record the structure in detail as well as any artefacts associated with it;
- Landscape scarring, especially in the area along the Riet River, must be minimised;
- To protect the drystone walling, no work may take place east of the current road surface along the Riet River;
- Excavated materials from the road cuttings should not be disposed of over the eastern edge of the road; and
- If any archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.

11. REFERENCES

- Discover Sutherland. 2021. <https://discoversutherland.co.za/see-do/>. Website accessed 29th June 2021.
- Evans, T.L., Thackeray, A.I. & Thackeray, J.F. 1985. Later Stone Age Rescue Archaeology in the Sutherland District. *The South African Archaeological Bulletin* 40:106-108.
- Halkett, D. & Webley, L. 2011. Heritage Impact Assessment proposed renewable energy facility at the Sutherland site, Western and Northern Cape Provinces. Unpublished report prepared for ERM SA. University of Cape Town: Archaeology Contracts Office.
- Hart, T.J.G. 1989. Haaskraal and Volstruisfontein: Later Stone Age events at two rockshelters in the Zeekoe Valley, Great Karoo, South Africa. Unpublished M.A. dissertation, University of Cape Town.

- Hart, T. 2005. Heritage Impact Assessment of a proposed Sutherland Golf Estate, Sutherland, Northern Cape Province. University of Cape Town: Archaeology Contracts Office.
- Hart, T. & Kendrick, N. 2014. Heritage Impact Assessment: Karteebosch Wind Farm (Phase 2 of Roggeveld Wind Farm). Unpublished report for Savannah Environmental (Pty) Ltd. St James: ACO Associates cc.
- Hart, T., Bluff, K., Halkett, D & Webley, L. 2010. Heritage Impact Assessment: Proposed Suurplaat Wind Energy facility near Sutherland, Western Cape and Northern Cape. Unpublished report for Savannah Environmental (Pty) Ltd. University of Cape Town: Archaeology Contracts Office.
- Kaplan, J. 2009. Phase 1 Archaeological Impact Assessment of the Proposed Driefontein Resort (Driefontein Farm No. 127), Sutherland, Northern Cape Province. Unpublished report for EnviroAfrika. Riebeeck West: Agency for Cultural Resource Management.
- Kramer, P. 2012. The history, form and context of the 19th century corbelled buildings of the Karoo. MPhil dissertation. Rondebosch: University of Cape Town.
- Orton, J. 2013. Geometric rock art in western South Africa and its implications for the spread of early herding. *South African Archaeological Bulletin* 68: 27-40.
- Orton, J. 2016. Heritage Impact Assessment for the proposed Brandvalley Wind Energy Facility, Sutherland, Ceres and Laingsburg Magisterial Districts, Northern Cape and Western Cape. Unpublished report prepared for Brandvalley Wind Farm (Pty) Ltd. Muizenberg: ASHA Consulting (Pty) Ltd.
- Orton, J. 2017a. Heritage Impact Assessment: proposed construction of a substation and 132 kV distribution line to support the proposed Sutherland WEF, Sutherland and Laingsburg Magisterial Districts, Northern and Western Cape. Unpublished report prepared for CSIR. Lakeside: ASHA Consulting (Pty) Ltd.
- Orton, J. 2017b. Heritage Impact Assessment: proposed construction of a substation and 132 kV distribution line to support the proposed Sutherland 2 WEF, Sutherland and Laingsburg Magisterial Districts, Northern and Western Cape. Unpublished report prepared for CSIR. Lakeside: ASHA Consulting (Pty) Ltd.
- Orton, J. 2017c. Heritage Impact Assessment: proposed construction of a substation and 132 kV distribution line to support the proposed Rietrug WEF, Sutherland and Laingsburg Magisterial Districts, Northern and Western Cape. Unpublished report prepared for CSIR. Lakeside: ASHA Consulting (Pty) Ltd.
- Orton, J. & Halkett, D. 2011. Heritage impact assessment for the proposed photovoltaic solar energy facility on the remainder of farm Jakhalsvalley 99, Sutherland Magisterial District, Northern Cape. Unpublished report prepared for The Environmental Evaluation Unit. University of Cape Town: Archaeology Contracts Office.

- Penn, N. 2005. *The forgotten frontier: colonist and Khoisan on the Cape's northern frontier in the 18th century*. Cape Town: Double Storey Books.
- Russell, T. 2012. The position of Rock Art. A consideration of how GIS can contribute to the understanding of the age and authorship of rock art. In: Smith, B., Morris, D. & Helskog, K. (eds) *Working with Rock Art*: 36–45. Johannesburg: Wits University Press.
- SAHRA. 2007. Minimum Standards: archaeological and palaeontological components of impact assessment reports. Document produced by the South African Heritage Resources Agency, May 2007.
- Sampson, C.G. 1985. Atlas of Stone Age settlement in the central and upper Seacow Valley. *Memoirs of the National Museum (Bloemfontein)* 20: 1-116.
- Sampson, CG 2008. Chronology and dynamics of Later Stone Age herders in the upper Seacow River valley, South Africa. *Journal of Arid Environments* 74: 842–848.
- Schoeman, K. 1986. *Die wereld van die digter: 'n boek oor Sutherland en die Roggeveld ter ere van N.P. van Wyk Louw*. Human & Rousseau: Cape Town.
- Smith, B.W. & Ouzman, S. 2004. Taking stock: identifying Khoekhoen herder rock art in southern Africa. *Current Anthropology* 45: 499–526.
- Winter, S. & Oberholzer, B. 2013. Heritage and Scenic Resources: Inventory and Policy Framework for the Western Cape. Report prepared for the Provincial Government of the Western Cape Department of Environmental Affairs and Development Planning. Sarah Winter Heritage Planner, and Bernard Oberholzer Landscape Architect / Environmental Planner, in association with Setplan.

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	15 th and 18 th November 2016
Specialist Name	Dr Jayson Orton
Professional Registration Number	ASAPA: 233; APHP: 043
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. Subsequent fieldwork served to ground truth the site, including areas identified as potentially sensitive. The road margins were not examined in detail; rather, the road was driven with any visible heritage sites being examined on foot. Desktop research was also used to inform on the heritage context of the area. This information is presented in the report (Sections 5.2.1 and 5.4.1).

- 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 throughout the study area. The site visit showed that the majority of the site is indeed of low sensitivity with only a few specific locations (where archaeological resources were found) considered to be of higher sensitivity. Figures 7 to 9 in the report show the areas considered to be archaeologically sensitive. Since the sites are not of high cultural significance, these can be considered as medium sensitivity areas. A photographic record and description of the relevant heritage resource is contained within the impact assessment report. The specialist thus generally agrees with the screening tool sensitivity rating but noting that the low sensitivity is not uniform.

