

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

Prepared for

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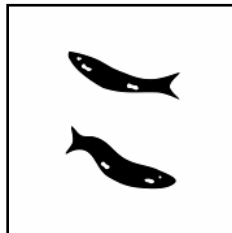
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Executive summary

1. Introduction

ACRM was appointed by Enviroafrica to conduct an Archaeological Impact Assessment (AIA) for the proposed Visserspan Solar PV facility on the Farm Visserspan No. 40, near Dealesville, Tokologo Local Municipality, in the Free State.

Visserspan is located \pm 10kms northwest of Dealesville, and about 70kms northwest of Bloemfontein. The farm is located about 1.5kms from the Eskom Perseus Substation, one of the largest substations in South Africa, and a suitable connection point for any solar PV plant that may be built in the area.

The entire farm is 1190ha in extent. The topography is mostly flat and featureless, and covered in thick grassland vegetation. The current land use is cattle grazing. There is virtually no surface stone covering the farm. Several shallow, dry seasonal pans occur, but these have been screened out of the development proposal.

The footprint area of the proposed development (4 solar PV projects are envisaged), is about 800ha. Each stand-alone facility would have a maximum generating capacity of 100MW, with solar panels covering an area of about 200ha each. The PV arrays will be raised approximately 500mm above ground level and will have single axis tracking systems. Supporting infrastructure for each facility include overhead transmission and distribution power lines for connection to the Perseus substation, inverter-transformer stations on concrete pads, unit buildings, an operational control centre, offices, workshops, maintenance sheds, ablution facilities, security fencing, etc.

Enviroafrica is the appointed independent Environmental Assessment Practitioner responsible for facilitating the Environmental Impact Assessment (EIA) process for Environmental Authorisation.

2. Aim

The overall purpose of the study is to assess the sensitivity of archaeological resources in the four proposed development sites, to determine the potential impacts on such resources, and to avoid and/or minimise such impacts by means of management and/or mitigation measures.

A field based Palaeontological Impact Assessment (or PIA) has been undertaken by Dr John Almond of Natura Viva cc.

3. Constraints and limitations

The study site was covered in thick grassland vegetation resulting in poor archaeological visibility. However, the results of the study indicate that the four proposed development sites is not a sensitive archaeological landscape.

4. Findings

A field assessment of the proposed Visserspan Solar PV facility took place between the 30th of November and the 3rd December 2019, in which the following observations were made.

4.1 Solar PV Project 1

No archaeological resources were recorded in the proposed development footprint area.

4.2 Solar PV Project 2

A few weathered, hornfels Middle Stone Age (MSA) flakes and chunks were recorded on eroded patches of ground, below the thin top soils. A few weathered MSA hornfels flake tools were also noted alongside a heavily trampled berm on the edge of a dry pan. A MSA unifacial point was also found. A broken elliptical grindstone was found in a small cattle footpath. A silcrete flake was found in the north western corner of the study area.

4.3 Solar PV Project 3

A broken grindstone fragment was found near the north western boundary fence. A small scatter of MSA tools (flakes, chunks & a core) in weathered hornfels were recorded on an eroded land surface on the edge of a small pan, outside the footprint area of the proposed solar PV facility.

4.4 Solar PV Project 4

A dispersed scatter of weathered hornfels MSA tools (flakes, blades, chunks, cores) was recorded on an eroded and heavily trampled land surface, on the margin of a large pan near the south eastern boundary of the proposed development site. A very thin scatter of MSA hornfels flakes and chunks were also recorded on patches of hard sand below the coversands near the southern boundary of the proposed site.

4.5 Grading of archaeological resources

Overall, the relatively small numbers, isolated and disturbed context in which they were found, mean that the archaeological remains have been rated as having *LOW* (Grade IVC) significance.

No evidence of any Late Iron Age archaeological heritage were noted during the field assessment, which appears to be absent from the study area.

No evidence of any Anglo-Boer War battlefield sites (1899-1904), war graves or memorials were encountered during the study.

4.6 Graves/graveyards

A small, abandoned graveyard containing five graves was recorded in the footprint area of proposed Solar PV Project 4. Graves are rated as having high (3B) local significance because of their social value.

5. Potential impacts

MSA flake tools may be buried below the coversands, but overall, the impact of the proposed Visserspan Solar PV Facility on pre-colonial archaeological resources is rated as being very low.

The small graveyard (Solar PV Project 4) will be impacted by proposed construction activities.

Well preserved (c. 1899), calcrete and clay, sheep and cattle enclosures in the Visserspan farm werf will not be impacted by the proposed Solar PV Facility. The farm werf has been entirely screened out of the development proposal.

The cultural landscape, primarily agriculture (i. e. grazing), with farm fences, small concrete reservoirs, windmills, tracks and woodlots, being the main tangible evidence of the landscape, has low heritage significance.

6. Conclusion

The study has identified no significant impacts to pre-colonial archaeological heritage that will need to be mitigated prior to proposed construction activities commencing. The field survey has shown that the archaeological landscape is dominated by isolated and dispersed scatters of mostly MSA lithics of *LOW* (Grade IVC) archaeological significance. Scatters of tools tend to cluster around pans/depressions which show a preference for Stone Age people to settle close to water sources in this dry interior region of the country. The assessment has shown that the proposed site for the Visserspan Solar PV facility (Solar PV Project 1-4) is not a sensitive archaeological landscape.

The overall impact significance of the proposed Visserspan Solar PV facility on archaeological heritage is assessed as *LOW* and therefore there are no objections, on archaeological grounds, to the proposed development proceeding.

The graveyard (proposed Solar PV Project 4) is graded as having *HIGH* (3B) local significance because of its social value. and must be protected throughout the Construction, Operational and Decommission Phase of the proposed development. The graveyard must be avoided in the final layout of the solar arrays.

Transmission line corridors were not assessed by the heritage specialist as proposed alignments were not provided, but indications are that proposed route corridors will not impact on important pre-colonial archaeological resources.

The study has shown that there are no fatal flaws in the development proposal.

7. Recommendations:

1. No mitigation of archaeological resources is required is required prior to construction activities commencing.
2. The pan/dispersed scatter of archaeological resources in proposed Solar PV Project 4 (waypoint 2715) must be screened out of the development proposal.

3. A buffer of 10m must be established around the small grave yard (waypoint 623) in proposed Solar PV Project 4. The site must be fenced off. The applicant must establish 'ownership' of the graves, and consult with surviving family members. The graveyard must be protected throughout the Construction, Operational and Decommission Phase of the proposed development.

4. Historic (c. 1899), calcrete and clay, sheep and cattle enclosures within the farm werf must not be disturbed, damaged or altered in any way by development activities. The structures are protected under Section 34 of the National Heritage Resources Act (No. 29 of 1999) and cannot be disturbed in any way without a permit issued by SAHRA.

5. If any human burials are uncovered during construction activities then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and will require inspection by a professional archaeologist.

6. The above recommendations must be included in the Environmental Management Plan (EMP) for the proposed development.

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1. INTRODUCTION

ACRM was appointed by Enviroafrica, on behalf of Ventura Renewable Energy (Pty) Ltd to conduct an Archaeological Impact Assessment (AIA) for the proposed Visserspan Solar PV facility on the Farm Visserspan No. 40, near Dealesville, Tokologo Local Municipality, in the Free State (Figures 1 & 2).

Visserspan is located ± 10 kms northwest of Dealesville, and about 70kms northwest of Bloemfontein. The farm is located 1.5kms north of the Eskom Perseus Substation, one of the largest substations in South Africa, and a suitable connection point for any solar PV plant that may be built in the area.

The entire farm is 1190ha in extent, where the topography is flat and featureless and covered in thick grassland vegetation. There is virtually no surface stone covering the farm, which has not been utilized for many years due to the poor agricultural quality of the soils. A few seasonal pans/depressions occur, but these have been screened out of the development proposal.

The footprint area of the proposed development (4 Solar PV projects are envisaged), is about 800ha. Each stand-alone facility would have a maximum generating capacity of 100MW, with solar panels covering an area of about 200ha each.

Enviroafrica is the appointed independent Environmental Assessment Practitioner responsible for facilitating the Environmental Impact Assessment (EIA) process for Environmental Authorisation.

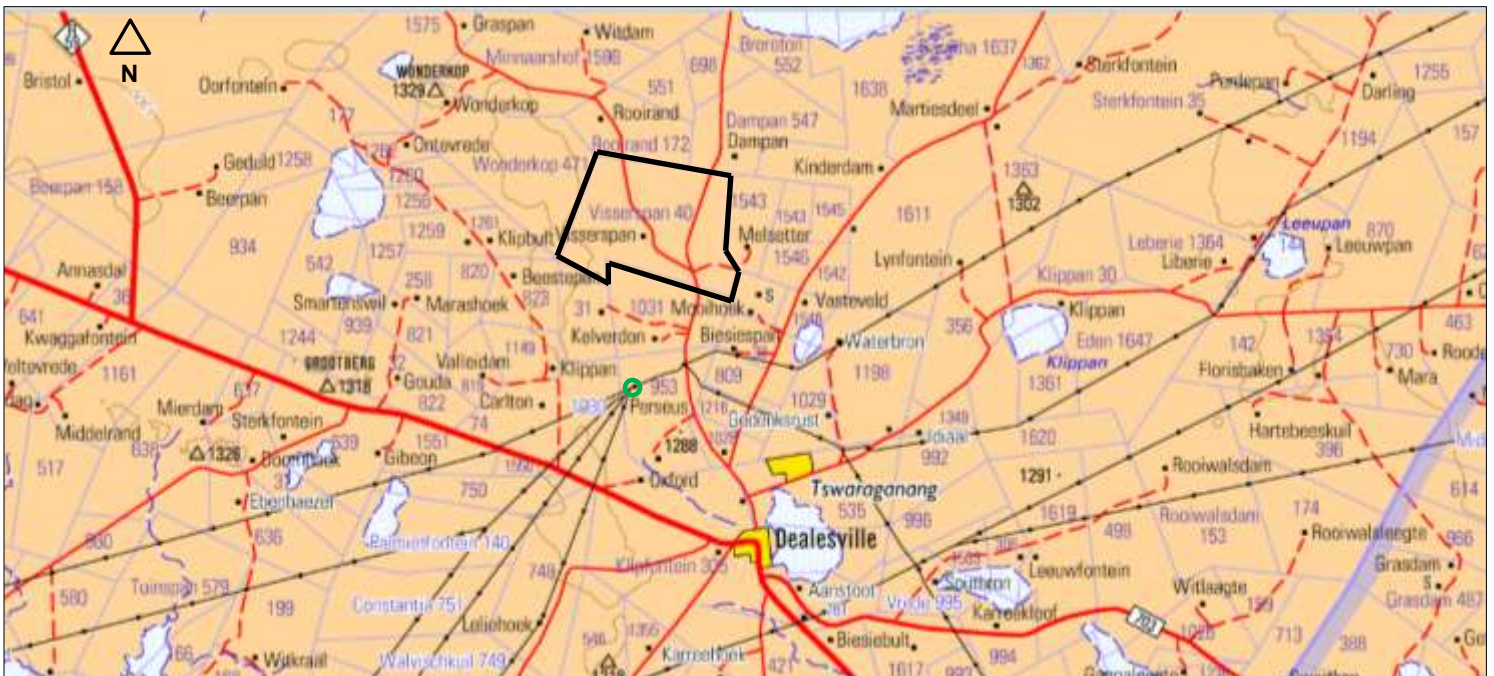


Figure 1. 1:250 000 map sheet (2824 Kimberley) showing the location (black polygon) of the proposed Visserspan Solar PV facility, northwest of Dealesville. The small green polygon indicates the position of the Eskom Perseus substation

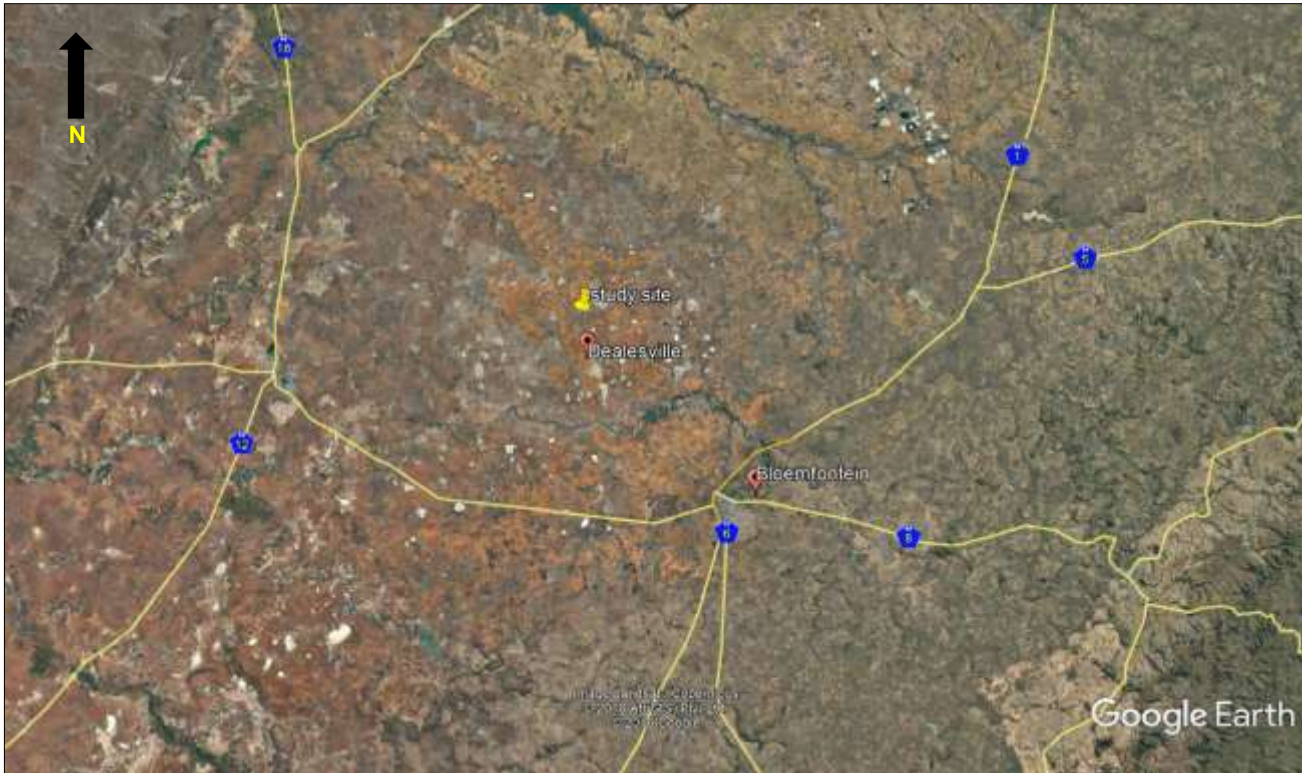


Figure 2. Google satellite map indicating the location of the proposed Visserspan Solar PV facility (yellow pin) near Dealesville (regional context)



Figure 3. Google satellite map indicating the location of the proposed Visserspan Solar PV facility (red polygon) near Dealesville (local context)

3. THE DEVELOPMENT PROPOSAL

Four, solar PV projects are proposed on the Farm Visserspan No. 40 near Dealesville (Figure 4).

Each stand-alone facility will have a maximum generating capacity of 100MW and include the following infrastructure:

- Solar panels covering an area of about 200ha. The solar arrays will be raised approximately 500mm above ground level and will have single axis tracking systems
- Transmission and distribution lines for connection to the Eskom Perseus substation;
- Invertor-transformer stations on concrete beds;
- Offices, workshops, stores, maintenance sheds, ablution facilities, and
- Security/fencing



Figure 4. Position of the 4 Solar PV facilities on Visserspan No. 40 near Dealesville. Note the farm werf and pans (yellow circles) have been screened out of the development proposal.

3. HERITAGE LEGISLATION

The National Heritage Resources Act (NHRA No. 25 of 1999) protects archaeological and palaeontological sites and materials, as well as graves/cemeteries, battlefield sites,

public monuments and buildings, structures and features over 60 years old. The South African Heritage Resources Agency (SAHRA) administers this legislation nationally, with Heritage Resources Agencies acting at provincial level.

According to the Act (Sect. 35), it is an offence to destroy, damage, excavate, alter or remove from its original place, or collect, any archaeological, palaeontological and historical material or object, without a permit issued by the South African Heritage Resource Agency (SAHRA) or applicable Provincial Heritage Resources Agency.

Notification of SAHRA is required for proposed developments exceeding certain dimensions (Sect. 38), upon which they will decide whether or not the development must be assessed for heritage impacts (an HIA) that may include an assessment of archaeological (a AIA) or palaeontological heritage (a PIA).

4. TERMS OF REFERENCE

The terms of reference for the study were to:

- Identify and map archaeological resources that might be impacted by proposed development activities;
- Assess the sensitivity of archaeological within the proposed development site;
- Assess the significance of any impacts resulting from the proposed development, and
- Identify measures to protect any valuable archaeological resources that may exist within the proposed development site.

5. DESCRIPTION OF THE RECEIVING ENVIRONMENT

Visserspan is located about 10kms northwest of the small farming town of Dealesville. The entire farm is 1190ha in extent. The topography of the farm is generally flat and covered in open grassland (Figures 5-17). There is virtually no surface stone covering the farm, but dispersed gravels of calcrete and dolerite do occur. The current land use is cattle grazing. Several, shallow depressions/pans occur on the farm (refer to Figure 4) but these have been screened out of the development proposal. Sporadic trees occur in places. Termite mounds are scattered across the farm and are a characteristic feature of the landscape. Burrowing is also quite extensive. The soils are mostly fine, loamy and orange-coloured. A few shallow outcroppings of calcrete occur. There are no significant landscape features on the farm, apart from a small outcropping of dolerite in the far southwestern corner of the farm, outside the proposed development site.

Existing infrastructure on the Visserspan comprises gravel farm roads and tracks, farm fencing, a few windmills and small concrete dams, and several scattered boreholes (proposed Solar PV Project 4). Apart from the shallow pans/depressions, there are no springs, streams, wetlands, or any other source of natural water. Several borrow pits occur in Solar PV Project 3. No erosion gullies, or any other excavations were noted during the study.

The Visserspan farm werf is surrounded by a circle of large Blue Gum trees, and includes the main, partially ruined and modified/alterd farmhouse (c. 1899), and several modern 20th Century concrete outbuildings (Figures 18-21). The farm werf has been entirely screened out of the development proposal.

Two historic (c. 1899) structures also occur within the farm werf. These include a well-preserved calcrete and dry mud, sheep enclosure (Figures 22-24) and a well preserved, but partially collapsed, calcrete rock and mud, cattle enclosure with attached feed store building and dwelling (Figures 25-28). None of these structures will be impacted by the proposed solar PV facility. The ruins of two demolished modern, 20th C farm laborer houses with scattered domestic debris (ash dumps, rusted tins, rusted farm equipment, fencing, old tyres, etc), were noted on the north eastern edge of Solar PV Project 2 alongside the farm access road (Figures 29 & 30).



Figure 5. Solar PV Project 1. View facing south east



Figure 6. Solar PV Project 1. View facing south east



Figure 7. Solar PV Project 1 & Project 2. View facing north east



Figure 8. Solar PV Project 1 & Project 2. View facing north



Figure 9. Solar Project 2. View facing south/south west



Figure 10. Solar PV Project 2. View facing south



Figure 11. Solar PV Project 3. View facing south



Figure 12. Solar PV Project 3. View facing south



Figure 13. Solar PV Project 4. View facing north



Figure 14. Solar PV Project 4. View facing south west



Figure 15. Solar PV Project 4. View facing south



Figure 16. Solar PV Project 4. View facing south east



Figure 17. Solar PV Project 4. View facing north



Figure 18. Partially ruined main farmhouse (c. 1899)



Figure 19. Farmhouse. Note the alternations and additions to the left of the building



Figure 20. Farmhouse (main entrance). Note the alterations on the front stoep and steel windows. The enclosed stoep is a Victorian type feature.



Figure 21. Back of the farmhouse. Note the later additions on either side of the building



Figure 22. Historic (c. 1899) calcrete stone and mud sheep enclosure



Figure 23. Historic calcrete stone and mud sheep enclosure



Figure 24. Interior of sheep enclosure, with dipping tank



Figure 25. Historic (c. 1899) cattle enclosure.



Figure 27. Cattle enclosure with dwelling attached



Figure 26. Cattle enclosure



Figure 28. Dwelling attached to cattle enclosure



Figure 29. Demolished laborer houses on edge of PV4



Figure 30. Demolished laborer houses on edge of PV4

6. STUDY APPROACH

6.1 Method

The purpose of the study is to assess the sensitivity of archaeological resources in the study area, to determine the potential impacts on such resources, and to avoid and/or minimize such impacts by means of management and/or mitigation measures.

A field based paleontological impact assessment (PIA) has been undertaken by Dr John Pether of Natura viva cc (Almond 2020).

The significance of archaeological remains was assessed in terms of their content and context. Attributes considered in determining significance include artefact and/or ecofact types, rarity of finds, exceptional items, organic preservation, potential for future research, density of finds, and the context in which archaeological traces occur.

A field assessment was undertaken between the 30th November and the 2nd December 2019. The survey was carried out on foot. The position of identified archaeological resources, were plotted using a hand held GPS device set on the map datum wgs 84. A track path of the survey was also captured. 86kms ground surface was covered by the archaeologist over the course of the field survey.

A desktop study was carried out to assess the heritage context surrounding the proposed development site. The literature survey included unpublished commercial reports sourced primarily from the South African Heritage Resources Information System (SAHRIS). Dr Jayson Orton, who has conducted 16 HIAs for proposed PV solar facilities in the Dealesville area, was also consulted.

6.2 Constraints and limitations

The extensive grass cover posed a severe limitation during the survey and it is likely that isolated artefacts could have gone unnoticed. Orton (2015), however, suggests that such material is unlikely to be of high significance.

6.3 Identification of potential risks

The results of the study, as well as information generated from the literature survey indicate that the proposed development of four Solar PV Projects on Visserspan No. 40 will not impact on significant archaeological resources. MSA flake tools may be buried below the coversands, but overall, the impact of the proposed development on pre-colonial archaeological remains is rated as being very low.

Construction of solar arrays across the footprint area of Solar PV Project 4 will impact on a small graveyard.

6.4 Archaeological context

Until 2015, no archaeological work had been undertaken in the Dealesville area. However, with the emergence of a growing alternative energy industry, a number of Heritage Impact Assessments (HIAs) have been conducted on farms surrounding

Dealesville. Orton (2015, 2016a, b, c, d, e) has undertaken 16 HIAs for proposed PV Solar projects in the Dealesville area, to the west, north west and south west of the small town. Four of these proposed solar farms are located immediately to the south of Visserspan 40, with three bordering the property on its southern boundary. The work carried out by Orton has shown that across all 16 projects, the archaeological landscape is dominated by tools assigned to the Middle Stone Age (MSA), with few Later Stone Age (LSA) elements occurring. No Early Stone Age (ESA) tools were recorded. The majority of remains comprise, dispersed (i. e. low density) scatters of weathered hornfels, encountered on eroded patches of soil below the thin coversands. Larger scatters of tools were recorded on the edges of shallow seasonal pans (see also Hutton 2011).

Orton (2015) further notes that archaeological resources appear to be quite rare in these flat, open and well-grassed landscapes, where such material is more common along the major rivers where artefacts are revealed in river terrace gravels. Orton (2016a, b, c, d, e) survey of numerous farms in the Dealesville area also showed that the majority of archaeological resources were located in close proximity to the rock outcrops, while archaeology 'dropped off massively' in the open grasslands. Where rocky outcrops of dolerite occur (near Dealesville), rock engravings have also been recorded (Orton 2015).

According to Orton (2015), the Late Iron Age, which documents the history of Black farming communities in South Africa within the last 1000 years, is absent from the study area.

The second Anglo-Boer War (1899-1902) also played a significant role in South African History, particularly in the interior of the country, where many battles were fought between the British and Boer forces. Significant battles in proximity to Dealesville include the Battles of Modder River and Magersfontein some 100kms to the southwest and west respectively, the Battle of Paardeberg 60km to the southwest and the Battle of Driefontein just outside Bloemfontein, some 60 km to the southeast (Orton 2015). Graves, graveyards and memorials across the central interior of South Africa also serve as reminders of the war.

7. RESULTS

Trackpaths and waypoints of archaeological resources recorded during the study are illustrated in Figure 31.

A spreadsheet of waypoints and description of finds is indicated in Table 1.

The overall observation is that the cultural landscape is dominated by isolated and dispersed (i. e. low density) scatters of tools mostly assigned to the Middle Stone Age (MSA), and Later Stone Age (LSA). No Early Stone Age (ESA) lithics were recorded during the study. Scatters of tools were mostly recorded on the edges of shallow pans (waypoints 1917, 2017, 2315 & 2814), which have been screened out of the development proposal. More than 98% of the tools are in hornfels, with the remainder in quartzite, dolerite and silcrete. The source of the raw materials is unknown. Webley (2010) has noted that archaeological resources appear to be absent or rare in the flat, dry, open landscapes of the northern Orange Free State, where raw materials for making tools appear to be quite limited.

No evidence of any Late Iron Age heritage such as stone walling, cattle dung floors, pottery, metal items such as spears or hoes, smelting furnaces, or slag, etc, were noted during the field assessment. According to Orton (2015) Later Iron Age traces appear to be absent from the surrounding area.

No evidence of any Anglo-Boer War battlefield sites, war graves, or memorials were encountered during the study.

7.1 Solar PV Project 1

No archaeological resources were recorded in the study area.

7.2 Solar PV Project 2

A few weathered hornfels flakes and chunks, including a broken elliptical grindstone (waypoint 1717) were recorded on eroded patches of ground, and in a small cattle footpath below the top soils. Several weathered hornfels flakes and chunks (waypoints 1917 & 2017) were recorded on the edge of a dry pan, below a sand berm. An isolated silcrete flake (waypoint 2515) was recorded in the north western corner of the study site. A burnished MSA flake (waypoint 3812), a unifacial MSA flake (waypoint 3613) and a weathered hornfels flake (waypoint 3712) were recorded on hard patches of ground below the coversands in the southern portion of the study site.

7.3 Solar PV Project 3

A broken grindstone fragment (waypoint 2115) was found alongside an ant hill in the north western corner of the study site, close to the fence line. A dispersed scatter of hornfels (flakes, chunks & a core) were recorded on an eroded land surface alongside a small shallow pan (waypoint 2315), outside the footprint area of the proposed solar PV facility. A dispersed scatter of hornfels flakes and chunks (waypoint 721) were recorded on a large patch of compact red soil, below the coversands. A single weathered hornfels flake (waypoint 2415) was found in a small animal track. A weathered hornfels chunk (waypoint 1120) was found alongside an ant hill.

7.4 Solar PV Project 4

A dispersed scatter of weathered hornfels MSA and a few LSA tools (waypoint 2814) including flakes, chunks, blades and cores, was recorded below the coversands, and on heavily trampled soils on the edge of a large pan near the south eastern boundary of the study area. A few isolated, hornfels flakes and chunks (waypoints 2614 & 2715) were recorded on patches of hard sand below the top soils. A very thin scatter of weathered hornfels flakes and chunks (waypoints 227, 327, 427 & 524) were also found on patches of hard red sand close to the southern boundary of the study site.

7.5 Grading

The small numbers and mostly isolated and disturbed context, in which they were found, mean that the archaeological remains have been rated as having *low* (Grade IVC) significance. Indications are that the remains most likely represent discarded flakes and flake tools. Dispersed scatters of tools alongside shallow seasonal pans may represent activity areas and/or brief settlement sites.

A collection of implements and the context in which they were found is illustrated in Figures 32-42.

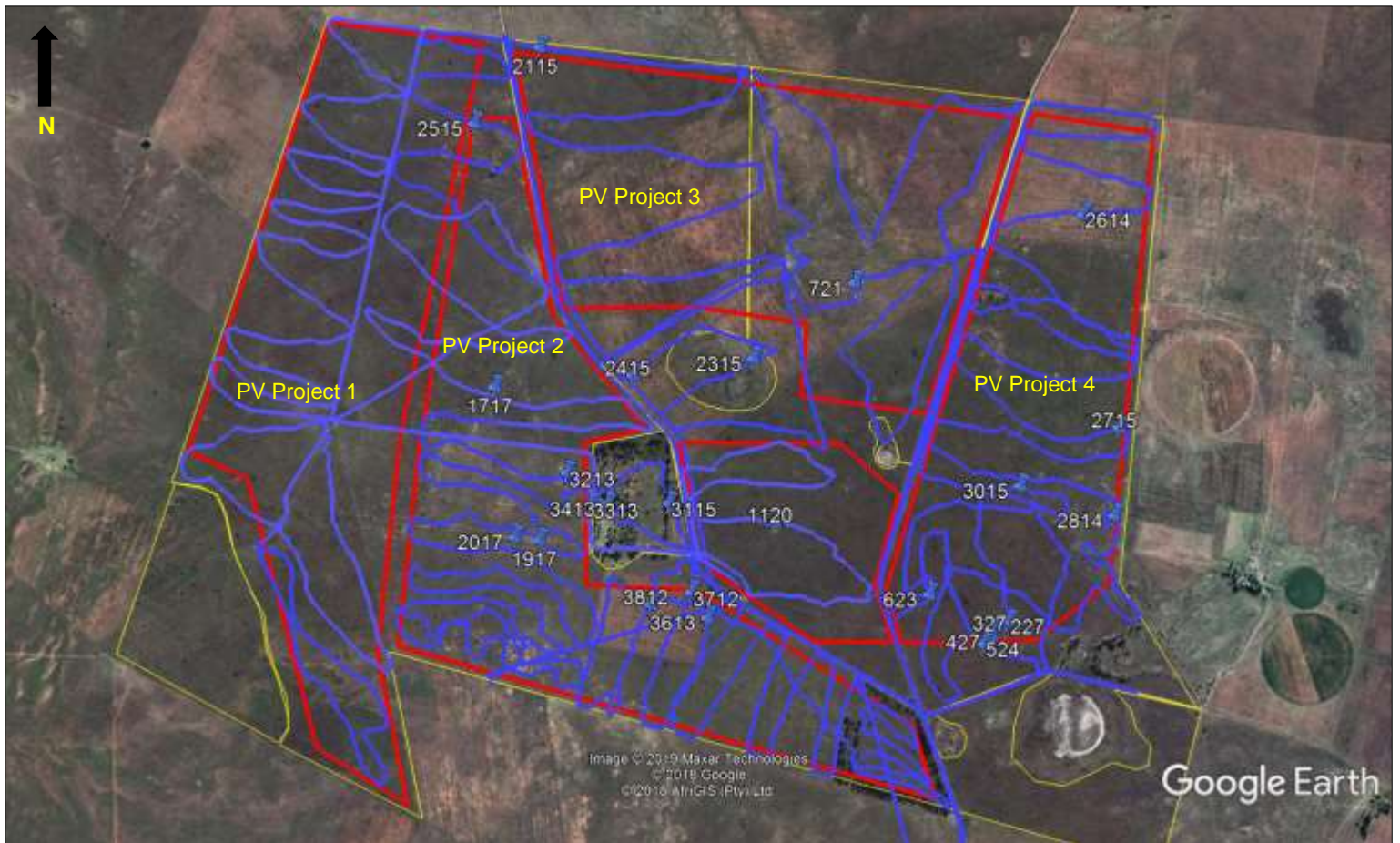


Figure 31. Track paths in blue and waypoints of archaeological finds

GPS Point	Name of Farm	Lat/Long	Description of finds	Grading	Mitigation
	Visserspan 40		All hornfels, unless otherwise indicated		
227		S28° 36.307' E25° 45.182'	A few isolated, weathered, flakes & chunks on eroded patch of ground	Low IVC	None required
327		S28° 36.329' E25° 45.144'	A few isolated weathered flakes & chunks on eroded patch of ground	Low IVC	None required
427		S28° 36.344' E25° 45.137'	Several weathered flakes & chunks on eroded patch of ground	Low IVC	None required
524		S28° 36.361' E25° 45.114'	Several weathered flakes & chunks on eroded patch of ground	Low IVC	None required
623		S28° 36.242' E25° 44.967'	Formal graveyard with 5 Christian graves, including 2 mounds of calcrete stone blocks. Headstones and footstones present on 4 of the graves.	High 3B	Avoid 10m buffer, & fence to be constructed around the graveyard
721		S28° 35.502' E25° 44.768'	A few isolated weathered flakes & chunks on large patch of eroded	Low IVC	None required

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			ground		
1120		S28° 36.069' E25° 44.549'	Weathered flake on patch of ground	Low IVC	None required
1717		S28° 35.746' E25° 43.793'	A few isolated flakes and chunks on eroded patch of ground alongside small footpath. Broken double-sided elliptical grind stone in footpath	Low IVC	None required
1917		S28° 36.103' E25° 43.845'	A few isolated flakes & chunks alongside berm & in small footpath and eroded patch of ground alongside pan	Low IVC	None required
2115		S28° 34.939' E25° 43.918'	Broken quartzite miscellaneous grindstone fragment	Low IVC	None required
2315		S28° 35.680' E25° 44.493'	Low density scatter of flakes, chunks, core on edge of dry pan – outside study area	Low IVC	None required
2415		S28° 35.719' E25° 44.166'	Isolated weathered flaked	Low IVC	None required
2515		S28° 35.120' E25° 43.740'	Large, quartzite MSA flake	Low IVC	None required
2614		S28° 35.342' E25° 45.387'	Isolated, weathered flake	Low IVC	None required
2715		S28° 35.848' E25° 45.483'	Isolated flake	Low IVC	None required
2814		S28° 36.057' E25° 45.470'	Low density scatter of weathered hornfels flakes, chunks, pointed flakes, blades, core on edge of large, eroded and heavily trampled, pan	Low IVC	Avoid Pan to be screened out of the development proposal
3015		S28° 35.985' E25° 45.215'	Single flake in footpath	Low IVC	None required
3115		S28° 36.023' E25° 44.263'	Well preserved calcrete stone and mud sheep enclosure within farm werf	High 3B	Will not be impacted
3213		S28° 35.950' E25° 43.988'	Demolished labourer's house	Low IVC	None required
3313		S28° 36.025' E25° 44.052'	Well preserved calcrete stone and mud, cattle enclosure, herder dwelling and feed store within farm werf	High 3B	Will not be impacted
3413		S28° 36.024' E25° 44.096'	Farm house	Low IVC	None required
3613		S28° 36.296' E25° 44.366'	Weathered MSA unifacial point	Low IVC	None required
3712		S28° 36.236' E25° 44.322'	MSA flake	Low IVC	None required
3812		S28° 36.264' E25° 44.213'	Burnished MSA flake	Low IVC	None required

Table 1. Spreadsheet of waypoints and description of archaeological finds



Figure 32. Collection of mostly weathered hornfels flake tools. Ruler scale is in cm



Figure 34. Collection of weathered hornfels flake tools. Ruler scale is in cm



Figure 33. Collection of weathered hornfels flake tools. Ruler scale is in cm



Figure 35. Collection of weathered hornfels flake tools. Ruler scale is in cm



Figure 36. Broken elliptical grindstone (waypoint 1717). Ruler scale is in cm



Figure 38. Collection of weathered hornfels modified and unmodified flake tools. Ruler scale is in cm



Figure 37. Miscellaneous grindstone fragment (waypoint 2115). Ruler scale is in cm



Figure 39. Quartzite flake (waypoint 2515), unifacial point (waypoint 3613), MSA flake (waypoint 3812 & 3712). Ruler scale is in cm



Figure 40. Collection of weathered hornfels, modified and unmodified MSA flake tools alongside seasonal pan (Site 2814) Ruler scale is in cm

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Figure 41. Collection of weathered hornfels, modified and unmodified MSA flake tools alongside seasonal pan (Site 2814) Ruler scale is in cm



Figure 42. Waypoint/Site 3812. View facing south



Figure 43. Waypoint/Site 3812. View facing north east



Figure 44. Small collection of weathered, modified and unmodified hornfels flakes on edge of dry pan, outside the study area (waypoint/Site 2315). Ruler scale is in cm



Figure 45. Waypoint/Site 2315. View facing south west. The Visserspan farm werf is located behind the line of trees in the background of the plate

7.6 Graves

A small, partially fenced off, abandoned graveyard (waypoint 623), containing five graves was encountered in a flattened open area surrounded by grassland in the footprint area of proposed Solar PV Project 4 (Figures 46-53). Two of the graves comprise mounds of calcrete blocks, while one of the graves has a rusted metal headstone. The remaining three graves belong to the Kopi's/Koopi's family, while it is assumed that the two calcrete graves belong to the Seipati family (refer to Figure 53). It appears that the graveyard has not been visited for some time. Several piles of calcrete lie scattered about, possibly placed there for future burials. Graves are rated as having high (3B) significance because of their social value.



Figure 46. Graveyard at waypoint 623. View facing north



Figure 47. Graveyard at waypoint 623. View facing south



Figure 48. Grave of Mrs Ennie Kopie (07-06-1899 – 15-03-1981) & Januari Kopi (died 22 February 1976)



Figure 50. Headstone of Mrs Ennie Kopie



Figure 49 Grave of Piet Kopi died 03-04-1974



Figure 51. Headstone of Januari Koopi



Figure 52. Headstone of Piet Kopie



Figure 53. Grave and metal headstone of Elisa Seipati (date unknown).

8. IMPACT STATEMENT

The results of the study indicate that the proposed development of four Solar PV projects on Farm Visserspan No. 40 near Dealesville will not have an impact of great significance on pre-colonial archaeological heritage. The majority of the remains comprise MSA tools spread very thinly and unevenly across the landscape.

The small graveyard (proposed Solar PV Project 4) will be impacted by proposed construction activities.

Well preserved, historic (c. 1899), calcrete block and mud, sheep and cattle enclosures within the Visserspan farm werf will not be impacted by the proposed solar PV project. The farm werf has been entirely screened out of the development proposal.

The cultural landscape, primarily agriculture (i. e. grazing), with farm fences, tracks, small concrete dams, windmills, woodlots, being the main tangible evidence of the landscape, has low heritage significance.

9. CONCLUSION

The study has identified no significant impacts to pre-colonial archaeological heritage that will need to be mitigated prior to proposed construction activities commencing. The field survey has shown that the archaeological landscape is dominated by isolated and dispersed scatters of mostly MSA lithics of *LOW* (Grade IVC) archaeological significance. Scatters of tools tend to cluster around pans/depressions which show a

preference for Stone Age people to settle close to water sources in this dry interior region of the country. The assessment has shown that the proposed site for the Visserspan Solar PV facility (Solar PV Project 1-4) is not a sensitive archaeological landscape.

The overall impact significance of the proposed Visserspan Solar PV facility on archaeological heritage is assessed as LOW and therefore there are no objections, on archaeological grounds, to the proposed development proceeding.

The graveyard (proposed Solar PV Project 4) is graded as having *HIGH* (3B) local significance because of its social value and must be protected throughout the Construction, Operational and Decommission Phase of the proposed development. The graveyard must be avoided in the final layout of the solar arrays.

Transmission line corridors were not assessed by the heritage specialist as proposed alignments were not provided, but indications are that proposed route corridors will not impact on important pre-colonial archaeological resources.

The study has shown that there are no fatal flaws in the development proposal.

10. RECOMMENDATIONS

It is recommended that the proposed Visserspan PV Facility on Farm No. 40 Visserspan should be authorised, but subject to the following conditions which must be incorporated into the Environmental Authorisation:

1. No mitigation of archaeological resources is required is required prior to construction activities commencing.
2. The pan/dispersed scatter of archaeological resources in proposed Solar PV Project 4 (waypoint 2715) must be screened out of the development proposal.
3. A buffer of 10m must be established around the small grave yard (waypoint 623) in proposed Solar PV Project 4. The site must be fenced off. The applicant must establish 'ownership' of the graves, and consult with surviving family members. The graveyard must be protected throughout the Construction, Operational and Decommission Phase of the proposed development.
4. Historic (c. 1899), calcrete and clay, sheep and cattle enclosures within the farm werf must not be disturbed, damaged or altered in any way by development activities. The structures are protected under Section 34 of the National Heritage Resources Act (No. 29 of 1999), and cannot be disturbed in any way without a permit issued by SAHRA.
5. If any human burials are uncovered during construction activities then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and will require inspection by a professional archaeologist.
6. The above recommendations must be included in the Environmental Management Plan (EMP) for the proposed development.

11. REFERENCES

Almond, J. 2020. Palaeontological Specialist Study: Combined Desktop and Field Based Assessment. Four Proposed Solar PV Projects on Farm Visserspan 40 near Dealesville, Tokologo Local Municipality, Free State Province. Natura Viva cc. Cape Town

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

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. Report prepared for the CSIR – Environmental Management Services. Asha Consulting, Cape Town

Orton, J. 2016b. Heritage Impact Assessment, Scoping and Environmental Impact Assessment for the proposed development of the Watt PV 100MW Photovoltaic Facility near Dealesville, Free State. Report prepared for the CSIR – Environmental Management Services. Asha Consulting, Cape Town.

Orton, J. 2016c. Heritage Impact Assessment, Scoping and Environmental Impact Assessment for the proposed development of the Marconi PV 100MW Photovoltaic Facility near Dealesville, Free State. Report prepared for the CSIR – Environmental Management Services. Asha Consulting, Cape Town.

Orton, J. 2016d. Heritage Impact Assessment, Scoping and Environmental Impact Assessment for the proposed development of the Faraday PV 100MW Photovoltaic Facility near Dealesville, Free State. Report prepared for the CSIR – Environmental Management Services. Asha Consulting, Cape Town.

Orton, J. 2016e. Heritage Impact Assessment, Scoping and Environmental Impact Assessment for the proposed development of the Maxwell PV 100MW Photovoltaic Facility near Dealesville, Free State. Report prepared for the CSIR – Environmental Management Services. Asha Consulting, Cape Town.

Orton, J. 2015. Eleven Solar PV Facilities and Supporting Electrical Infrastructure near Dealesville in the Free State Province Proposed by Mainstream Renewable Power Development (Pty) Ltd. Report prepared for the CSIR. Asha Consulting, Cape Town

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