ARCHAEOLOGICAL IMPACT ASSESSMENT

THE PROPOSED WINE ESTATE CAPITAL MANAGEMENT 75 MW PHOTOVOLTAIC ELECTRICITY GENERATION FACILITY ON PORTION 12 OF THE FARM OLYVENKOLK NO. 187 KENHARDT DISTRICT NORTHERN CAPE PROVINCE

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Executive summary

ACRM was requested by Eco Impact Legal Consulting to conduct an Archaeological Impact Assessment for a proposed 75 MW commercial Photovoltaic (PV) Electricity Generation Facility on Portion 12 of the Farm Olyvenkolk No. 187 near Kenhardt in the Northern Cape Province.

The proposed site for the solar energy farm is located about 37 kms south west of Kenhardt on the gravel road (P2988) to Pofadder. The proposed activity entails the construction of blocks of photovoltaic solar panels covering a footprint area of about 150 ha. The PV panels will be mounted on pedestals drilled and set into the ground. Associated infrastructure includes single track internal access roads, underground cables, and a small substation. Apart from the substation, extensive bedrock excavations are not envisaged. The electricity generated from the project will be fed directly into the national grid at Eskom Aries substation which is located about 4 kms to the south[1]. The proposed facility will use the old Sishen Saldanha railway line construction camp located alongside P2988, as a temporary construction camp site.

The AIA forms part of the Environmental Impact Assessment (EIA) process that is being conducted by independent environmental consultants, Eco Impact.

A 2-day survey of the proposed site was undertaken by J. Kaplan in which the following observations were made:

- 341 archaeological occurrences (numbering more than 1500 stone implements) were documented in the proposed footprint area. Most of the remains are spread unevenly and randomly over the surrounding landscape, but larger numbers of tools tend to cluster alongside/around drainage lines that intersect the site.

- The majority of the finds are assigned to the Middle Stone Age (MSA), which are dominated by triangular shaped flakes, flaked chunks, chunky blade tools, round, flat, and irregular cores. Many of the flakes and blades are utilized, and/or retouched on one or both sides. Seven convex and end scrapers, and six unifacial/bifacial flakes and points, were also recorded.

- With regard to raw material frequencies More than 90% of the lithics are made in quartzite, with smaller numbers in indurated shale. A few implements in exotic chalcedony, silcrete and banded ironstone were also found.

- Early Stone Age (ESA) tools were documented across the site but the numbers are overall quite small. Twelve bifaces/handaxes were counted. Relatively large numbers of large, weathered, retouched flakes in hornfels/indurated shale were also encountered, which appear to be widespread over the surrounding area.

- Later Stone Age (LSA) flakes in chalcedony and opaline were documented, but the numbers are very small. No LSA formal tools were found.

[1] The proposed substation, and proposed 2.5 km long 132 Kv overhead powerline has already been assessed by the archaeologists, and is included in the AIA for the proposed 75 MW solar energy farm located alongside Farm 187/12, on Farm 187/8

- Large numbers of MSA lithics (mainly debitage such as flakes, chunks, flaked chunks/minimal cores, hammerstones and cores) were recorded on a rocky `hilltop' site that provides commanding views of the surrounding landscape. It is clear that this location was intentionally chosen by MSA people, and more than likely represents a stone knapping/quarry site. Outcroppings of Dwyka tillite on the hilltop site were also used as a source of stone for flaking. Diffuse scatters of stone were documented on the lower slopes where these lithics may have been `washed' down. The extent of the main concentration of implements has been captured with a hand held GPS device, and this site has been `Red Flagged' as a No-Go development area.

- A LSA site, comprising large numbers of quartz stone, including utilized and unmodified flakes, chunks, chips, bipolar, and cylindrical cores were found inside the 32 m buffer of a large drainage line. A few modified flakes, chunks and irregular cores in indurated shale were also found, as well as several large pieces of ostrich eggshell and one fragment of weathered, undecorated pottery. An outcropping of vein quartz occurs about 400 m south of the drainage line, which may have been targeted by the inhabitants as a source of raw material.

- Interesting, but isolated finds include two pecked anvils, and a flat piece of shale that may have been intentionally scratched or etched with a sharp (stone) flake.

- No graves were found in the proposed footprint area.

- No stone walling, structures, old buildings, or any other built features such as kraals were found on the proposed site.

While the low density scatter of tools is relatively rich in quantity, they are poor in terms of information that can be constructed from them. Apart from the large in-situ scatter of MSA implements on the hilltop quarry site, there is no obvious or clear patterning in the distribution of any of the finds, where many of the implements are of mixed age and found on eroded surfaces. The proximity to drainage lines (and fresh water) may be one reason for the large numbers of tools documented over the property, however. In addition, all of the finds are lacking in context as no organic remains such pottery or bone, or ostrich eggshell was found. As a result, the majority of the archaeological remains have been rated as having low (Grade 3C) significance

The MSA quarry site and the LSA scatter alongside the drainage line have, however, been rated as having moderate to high Grade 3B significance and will require further investigation, or mitigation action, before development activities, proceed.

It should be noted that much of the archaeological heritage documented on Farm 187/12, is in many ways identical to that which was encountered on Farm 187/8, located alongside the proposed solar energy facility, as well as on Portions 7 and 3 of Farm 187, where three more solar energy farms are planned.

It is maintained, therefore, that the study has captured good information on the archaeological heritage present that is representative of the proposed site and surrounding areas on Farm 187.

Indications are that the proposed development of a 75 MW solar energy farm on the Farm Olyvenkolk 187/12 near Kenhardt will have a limited impact on the archaeological heritage, but that the significant impacts can be easily mitigated.

In archaeological terms, no fatal flaws have been identified and the project is deemed to be viable.

The following recommendations are however, made:

1. The MSA quarry site (Site 260) must be mapped in detail and the material collected for analysis. Alternatively (and perhaps more realistically), a buffer of at least 25 m must be established around this important site and declared a `No-Go' development area. The site must be fenced off and fencing must be done in consultation with, and under the supervision of the archaeologist. A gate must also be provided in case any future research is required. In order to make up for the lost space, the area east of the gravel road can be included in the application area, as this area is not considered to be archaeologically sensitive.

2. Care must be taken to ensure that the LSA site (Site 393) inside the 32 m drainage line buffer is not harmed or disturbed in any way during the construction phase of the proposed development. The site must be secured and no personnel must be allowed in the area. The area of demarcation must be done in consultation with and under the supervision of the archaeologist. No plant equipment or any temporary facilities must be stored or established close to the site.

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1. INTRODUCTION

Eco Impact Legal Consulting, on behalf of Wine Estate Capital Management requested that the Agency for Cultural Resource Management (ACRM) conduct an Archaeological Impact Assessment (AIA) for a proposed 75 MW commercial Photovoltaic (PV) Electricity Generation Facility on Portion 12 of the Farm Olyvenkolk No. 187 near Kenhardt (KAI!GARIB Municipality) in the Northern Cape Province (Figure 1).

The site for the proposed solar energy farm is located about 37 kms south west of Kenhardt on the gravel road (P2988) to Pofadder, where three more solar energy farms are planned (refer to Figure 2). The proposed activity entails the construction of blocks of photovoltaic solar panels covering an area of about 150 ha (Figure 3). The PV panels will be mounted on pedestals drilled and set into the ground. Associated infrastructure includes single track internal access roads, underground cables, and a small substation. Apart from the substation, extensive bedrock excavations are not envisaged, but some vegetation will need to be cleared from the site. The electricity that will be generated from the project will be fed directly into the national grid at Eskom Aries substation which is located about 4 kms to the south, via a new, ± 2.5 km long 132 kV powerline[2]. The proposed facility will use the old Sishen Saldanha railway line construction camp located alongside the P2988, as a temporary construction camp site. An AIA of the proposed construction camp was undertaken in 2011 (Kaplan 2011a).

The AIA forms part of the Environmental Impact Assessment (EIA) process that is being conducted by independent environmental consultants, Eco Impact.

Figure 1. Locality map

[2] The proposed substation, and proposed 2.5 km long 132 Kv overhead powerline has already been assessed by the archaeologists, and is included in the study for a proposed 75 MW solar energy farm located alongside Farm 187/12, on Farm 187/8 (Kaplan 2012a).

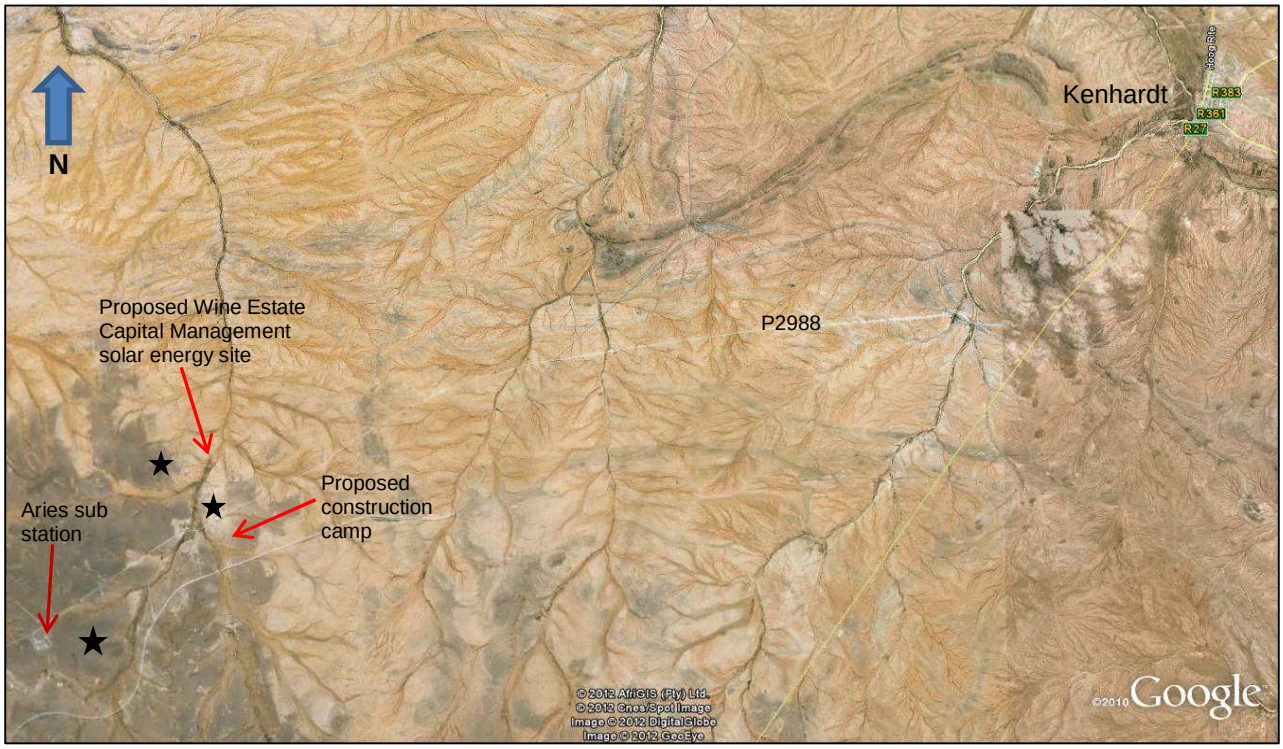

Figure 2. Google photograph illustrating the location site of the proposed Wine Estate Capital Management 75 MW solar energy plant on Olyvenkolk 187/12. Stars indicate the position of three other proposed SEF on Farm 187.

2. HERITAGE LEGISLATION

The National Heritage Resources Act (Act No. 25 of 1999) makes provision for a compulsory Heritage Impact Assessment (HIA) when an area exceeding 5000 m² is being developed. This is to determine if the area contains heritage sites and to take the necessary steps to ensure that they are not damaged or destroyed during development.

The NHRA provides protection for the following categories of heritage resources:

- Landscapes, cultural or natural (Section 3 (3))
- Buildings or structures older than 60 years (Section 34);
- Archaeological sites, palaeontological material and meteorites (Section 35);
- Burial grounds and graves (Section 36);
- Public monuments and memorials (Section 37);
- Living heritage (defined in the Act as including cultural tradition, oral history, performance, ritual, popular memory, skills and techniques, indigenous knowledge systems and the holistic approach to nature, society and social relationships) (Section 2 (d) (xxi)).

3. TERMS OF REFERENCE

The terms of reference for the archaeological study are as follows:

- Determine whether there are likely to be any important archaeological resources that may potentially be impacted by the proposed project, including the erection of the PV solar panels, internal roads, underground cables and associated infrastructure;
- Indicate any constraints that would need to be taken into account in considering the development proposal;
- Identify sensitive archaeological areas, and
- Recommend any further mitigation action.

4. DESCRIPTION OF THE AFFECTED ENVIRONMENT

The site for the proposed Wine Estate Capital Management solar energy farm is situated approximately 37 kms south west of Kenhardt, on the gravel road (P2988) to Pofadder, and about 4 kms north of the Eskom Aries substation. Kenhardt is located 700 kms from Cape Town, and about 200 kms south west of Upington. The total area of Olyvenkolk 187 is 2200 ha, while Farm 187/12 measures 710 ha in extent. Existing infrastructure on the farm includes a gravel landing strip, farm houses, outbuildings and the partly decommissioned Sishen-Saldanha construction yard alongside P2988. The predominant land use is grazing (sheep).

The actual site for the proposed solar energy facility is located about 2 kms north of the Olyvenkolk farmhouse. The proposed site is located mostly on flat plains which slope gently towards the east. The landscape is typical of the broader region within which the study area is located. The plains are situated at an elevation of about 900 m. Several drainage lines drain towards the east, which feed into the upper catchment of the Graafwatersrivier, a non-perennial river located to the north of the study area. The receiving environment is covered in loose stone, reddish brown windblown sands and fluvial sediments. The surrounding veld is open with sparse grass cover dominated by Bushmanland Basin Shrubland (Figures 4-9). While there are no significant landscape features on the proposed site (apart from the drainage lines), the high point on the plain does provide commanding views of the surrounding landscape and it is perhaps not surprising that large numbers of Stone Age implements were found concentrated around this area.

For ease of visual reference, the site has been `split' into two; mainly Portion A and Portion B (refer to Figure 3).

According to Almond (2011), the site (i. e. Olyvenkolk) for the proposed solar energy farm site is directly underlain by Permocarboniferous glacial-related sediments of the Dwyka Group (Mzibane Formation) that are generally of low palaeontological sensitivity. Quaternary aeolian sediments of the Gordonia Formation (Kalahari Group) as well as alluvial gravels and calcretes, both of low palaeontological sensitivity, may also be encountered near-surface in the study area.

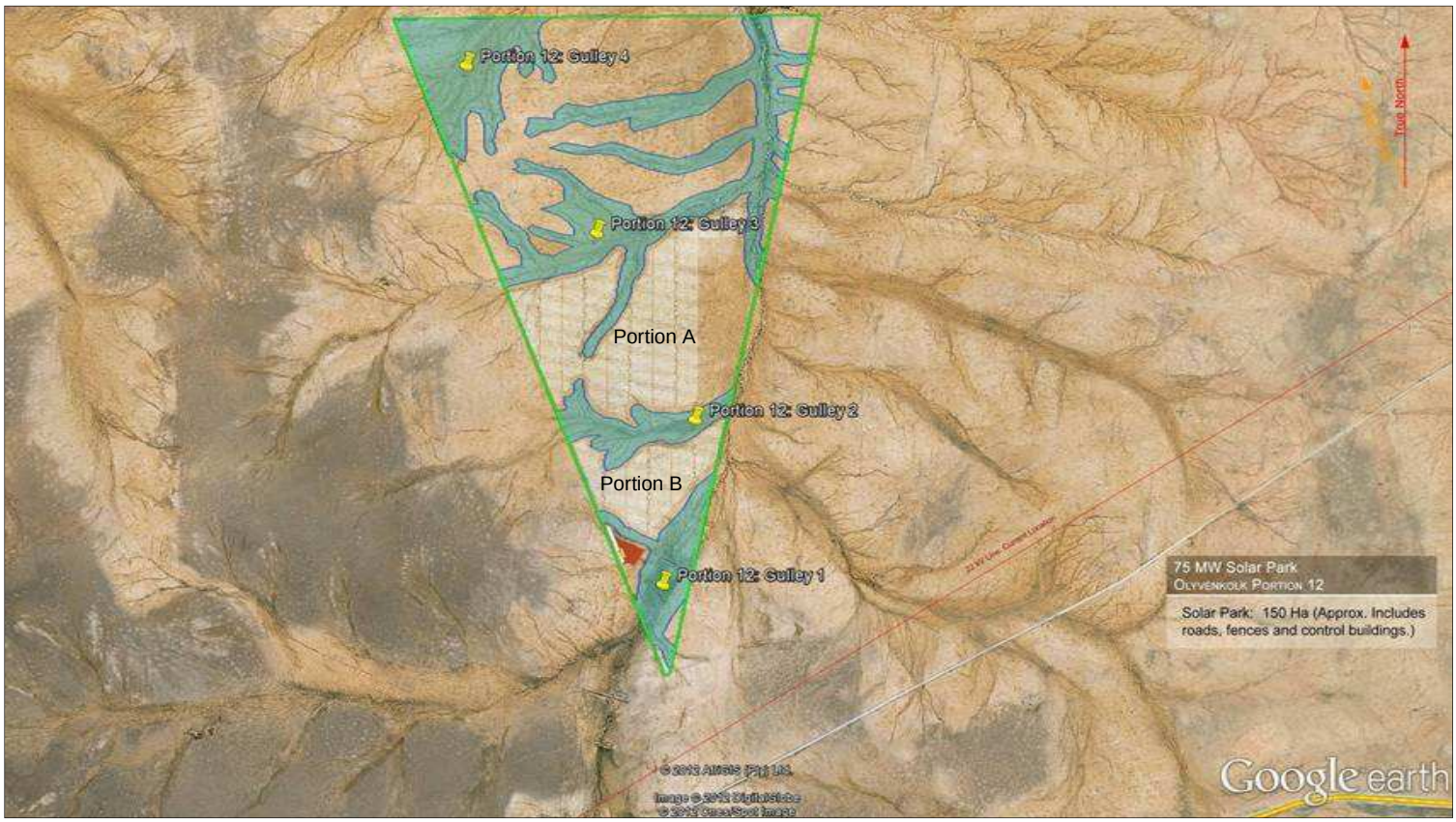

Figure 3. The site for the proposed Wine Estate Capital Management solar energy farm and the layout of the solar panels. The red smudge is the location site for the proposed substation. Blue areas are drainage lines including the 32 m buffer

Figure 4. Portion A. View of the site facing south. Note the windblown red sands

Figure 5. Portion A. View of the site facing north east. Photograph taken from the high point on the plain. Note the outcroppings of Dwyka tillite.

Figure 6. Portion A. View of the site facing south east. Photograph taken from the high point on the plain.

Figure 7. Portion A. View of the site facing north east. Note the fluvial sediments.

Figure 8. Portion A. View of the site facing south.

Figure 9. Portion B. View of the site facing north west

Figure 10. Portion B. View of the site facing north west

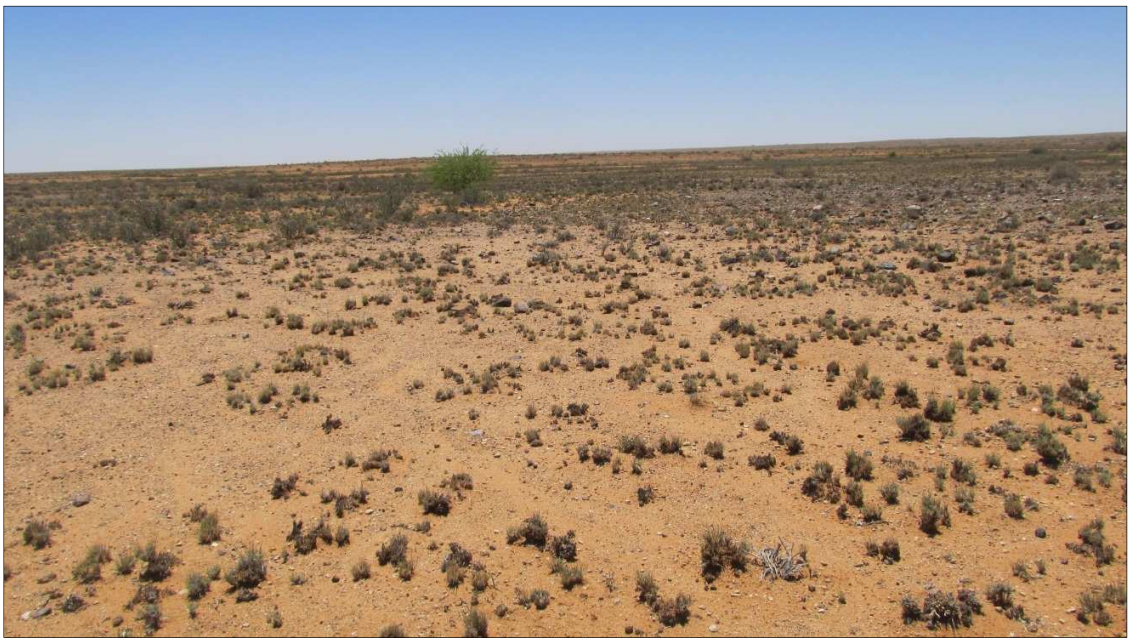

Figure 11. Portion B. View of the site facing south east

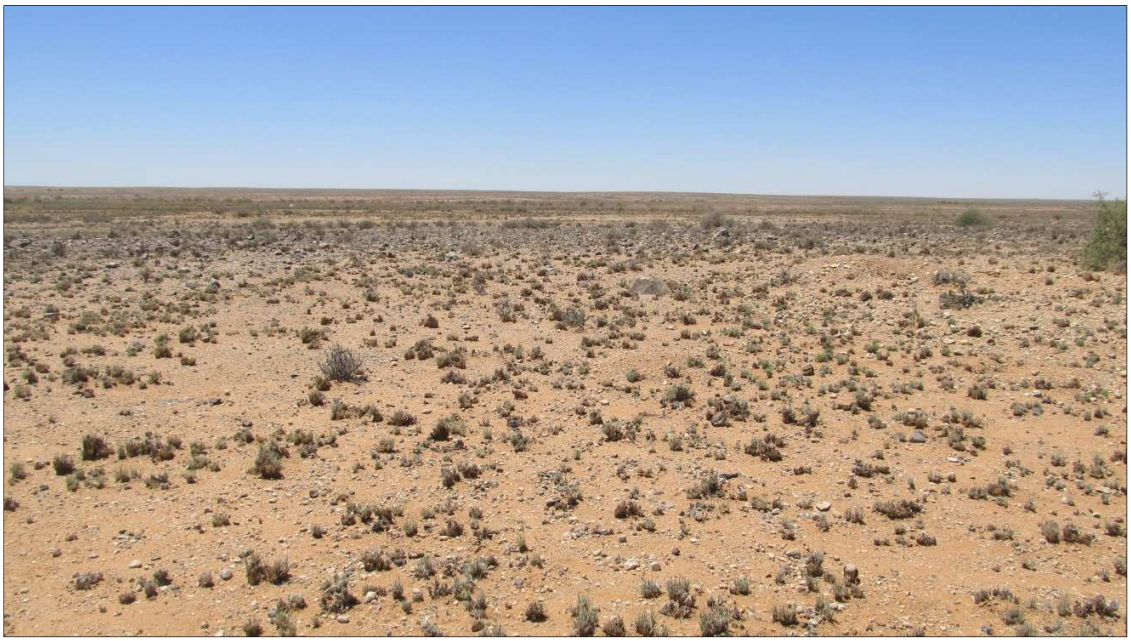

Figure 12. Portion B. View of the site facing east

5. STUDY APPROACH

5.1 Method of survey

A 2 day site visit was undertaken, that was designed to assess the archaeological sensitivity of a proposed 75 MW solar energy site. Most of the 150 ha footprint area was searched by the archaeologist, with a particular focus on the drainage lines and high point of the site. The strip of land east of Portion A (outside the footprint area) was also assessed (refer to Figure 3).

Archaeological occurrences identified during the study were mapped on Google Earth using a hand held GPS device set on the map datum WGS 84. Not all archaeological remains (i. e. stone implements) were point plotted, however. A track path of the survey was also created (refer to Figure 49 in Appendix II).

The site visit and assessment took place on the 29th and 30th October, 2012.

A desk top study was conducted.

The archaeologist also consulted with Dr David Morris of the McGregor Museum in Kimberley.

Heritage resources are graded following the system established by Winter & Baumann (2005) in the guidelines for involving heritage practitioners in EIAs (Table 1).

Grade	Level of significance	Description
1	National	Of high intrinsic, associational and contextual heritage value within a national context, i.e. formally declared or potential Grade 1 heritage resources.
2	Provincial	Of high intrinsic, associational and contextual heritage value within a provincial context, i.e. formally declared or potential Grade 2 heritage resources.
3A	Local	Of high intrinsic, associational and contextual heritage value within a local context, i.e. formally declared or potential Grade 3A heritage resources.
3B	Local	Of moderate to high intrinsic, associational and contextual value within a local context, i.e. potential Grade 3B heritage resources
3C	Local	Of medium to low intrinsic, associational or contextual heritage value within a national, provincial and local context, i.e. potential Grade 3C heritage resources

Table 1. Grading of heritage resources (Source: Winter & Baumann 2005)

5.2 Constraints and limitations

There were no constraints or limitations associated with the study. There is very little natural vegetation covering the footprint area and consequently archaeological visibility was very good.

5.3 Identification of potential risks

Two archaeological sites have been identified which have been rated as having moderate to high (Grade 3B) significance. These include the hilltop MSA quarry site, as well as the LSA site situated inside the 32 m drainage line buffer.

5.4 Results of the desk top study

The archaeology of the Northern Cape is rich and varied covering long spans of human history. According to Beaumont and Vogel (1994:240) “thousands of square kilometres of Bushmanland are covered by a low density lithic scatter”.

Work done by Kiberd (2002, 2006) near Copperton, about 120 kms south east of Kenhardt, recovered archaeological material that included large numbers of Later Stone Age (LSA) tools, Middle Stone Age (MSA) lithics with fauna and Early Stone Age (ESA) tools and fauna in a stratigraphic context, including a possible hearth, which may be older than 300 000 years. Work done by Kaplan (2012a, b) in Kakamas and Keimoes north of Kenhardt documented mostly LSA tools in banded ironstone, with smaller numbers of ESA and MSA lithics in quartzite. Relatively large numbers of LSA implements were encountered in the road reserve, during a survey for a proposed water supply pipeline between Keimoes and Kenhardt, where smaller numbers of MSA and ESA tools were also documented (Kaplan 2008). Webley and Halkett (2010) report that a few quartz chunks were found during a survey of a proposed electrical substation near Kenhardt.

Importantly, and for the purpose of this study, several thousand, MSA tools, including flakes, cores, blade tools, points, and scrapers were documented during Scoping and AIA’s for two solar energy facilities, located on Portions 3 and 7 of Farm 187 (Kaplan 2011a, b, c). A rare, hollow-based bifacial point was also found on 187/7 (Kaplan 2011b). Hollow-based points have only been documented from two cave sites in KwaZulu Natal (Kaplan 1998, Wadley 2005) and are dated to about 40 000 years ago. Microscopic analysis and the morphology of the tools suggest that they were cutting implements, but that some may also have been hafted with plant twine and mastic and used as spear points. Large, heavily weathered and patinated indurated shale ESA flakes were also encountered during the study, including several quartzite bifaces (handaxes). Comparable lithics were also encountered during an AIA for a proposed solar energy facility on Farm 187/8 (Kaplan 2012a), undertaken at the same time as the current study.

The northern Karoo (or Bushmanland) was also one of the last regions of the Cape Province to be settled by early European farmers, partly because it is so dry and partly because it was so far from Cape Town and produce markets. The result was that it became a last outpost of the /Xam Bushman who still hunted and gathered there in the last decades of the 19th Century (Deacon 1986; Morris 1989). Research undertaken by Janette Deacon (1996) suggests that the `Grass Bushmen’ may have lived between

Kenhardt and Brandvlei, while the `Flat Bushmen' lived between Vanwyksvlei and Kenhardt. LSA (or Wilton) microlithic stone implements, pottery and ostrich eggshell litter the occupation areas visited by Deacon (1986) in her quest to locate sites described by /Xam informants in the 1870's and 1880's. Many of the sites visited were documented in this vast, seemingly featureless region, close to pans, springs, and among sand dunes near dry river beds, while the round dolerite boulders scattered over the flat landscape and on mountain tops and kopjes contain many different types of rock engravings. Rock engravings also occur on several farms in Kenhardt which have been visited by the archaeologist in 2011 and 2012.

6. FINDINGS

A spreadsheet of the waypoints and a description of the archaeological finds are indicated in Table 1 (Appendix I).

Location sites were mapped with a hand held GPS unit (refer to Figure 49 in Appendix II), but individual tools were not point plotted.

341 archaeological occurrences (numbering more than 1500 stone implements) were documented in the proposed 150 ha footprint area for the proposed Wine Estate Capital Management solar energy facility on Farm 187/12.

The majority of the finds are assigned to the Middle Stone Age (MSA), which are dominated by triangular shaped flakes with prepared platforms, flaked chunks, large chunky blade tools, round, flat, and irregular prepared cores. Many of the flakes and blades are utilized and/or retouched on one or both sides. A small number of formally retouched tools were recorded, including three end scrapers (335, 438 & 507) and four convex scrapers (318, 375, 377 & 471. Four unifacial flakes/points (206, 303, 337 & 356) and two bifacial flake/points (313 & 333) were also recorded.

With regard to raw material frequencies More than 90% of the lithics are made in locally available quartzite, with smaller numbers in indurated shale. A few implements in exotic chalcedony, silcrete and banded ironstone were also recorded.

Most of the tools are spread fairly unevenly and randomly over the surrounding landscape, but larger concentrations of tools tend to cluster alongside the drainage lines that intersect the site. Most of these remains occur inside the `protected' 32 m drainage line buffer.

Early Stone Age (ESA) tools were also documented across the site, but the numbers are overall quite small. Only a few large quartzite flakes were found, but relatively larger numbers of weathered and patinated, large retouched flakes in hornfels/indurated shale were encountered across the site. Twelve bifaces/handaxes were also counted, but these are isolated and random finds.

Later Stone Age (LSA) flakes in chalcedony and opaline were documented, but the numbers are very small and dispersed. Opaline, chalcedony and silcrete do not occur locally in the surrounding area, and these tools (or the raw materials) must have been brought onto the site from elsewhere.

Two notable sites were identified during the study.

Site 260: Several hundred MSA lithics, mainly debitage, such as unmodified flakes, chunks, flaked chunks/minimal cores, hammerstones, round, irregular and flatter worked out cores, were recorded on a very rocky and stony hilltop that provides commanding views of the surrounding landscape and floodplain (refer to Figures 5 & 6, 30 & 31). It is clear that this location was intentionally chosen by MSA people, and more than likely represents a stone knapping/quarry site, which was perhaps visited over many 10s of thousands of years, as two ESA bifaces were also encountered. Outcroppings of Dwyka tillite on the hilltop were clearly used as a source of stone for flaking (refer to Figure 29). Diffuse scatters of stone were documented on the lower slopes where these lithics may have been `washed' down from the higher slopes. While it is not possible to determine the exact boundary of the site without more detailed, fine scale mapping, the extent of the main concentration of implements has been captured with a hand held GPS device (refer to Figures 13 & 14), and the site has been `Red Flagged' as a No-Go development area.

Site 393: The LSA site, measuring about 25 x 25 m in extent, comprises large numbers of quartz stone, including utilized and unmodified flakes, chunks, chips, bipolar and cylindrical cores found inside the 32 m buffer of a large drainage line in Portion B (refer to Figures 33 & 34). A few modified (i. e. retouched and utilized) flakes, flaked chunks and a few round irregular cores in indurated shale were also found. No formally retouched tools were found, but it should be said that formal tools in quartz are notoriously difficult to identify in the field. While no bone was found, several large pieces of ostrich eggshell, and one small fragment of weathered, sand blasted undecorated pottery were found. An anvil, core and large flaked quartzite cobble (392) was found about 25 m away which may be associated with the scatter (Figure 42). An outcropping of vein quartz (351) also occur about 400 south of the site, which may have been targeted by the inhabitants as a source of raw material.

Several interesting, isolated finds were also made, including two pecked anvils (392 & 402 – Figures 42 & 45), as well as a flat piece of shale (416) which appears to have been randomly scratched or etched with a sharp (stone) implement (Figure 46).

While overall the numbers are very high, many of the more commonly occurring tools encountered on Olyvenkolk 187/12 (such as flakes, cores, blades, points, large indurated shale flakes and ESA bifaces), were also recorded during AIAs for proposed solar facilities on Farm 187, that are also dominated by MSA elements (Kaplan 2012a, 2011a, b, c).

A collection of tools located during the study and the context in which they were found is illustrated in Figures 15-27.

Figure 13. Site 260 – hilltop quarry site. Note the extensive drainage channels. The green boundary is the approximate footprint area of the proposed solar energy farm

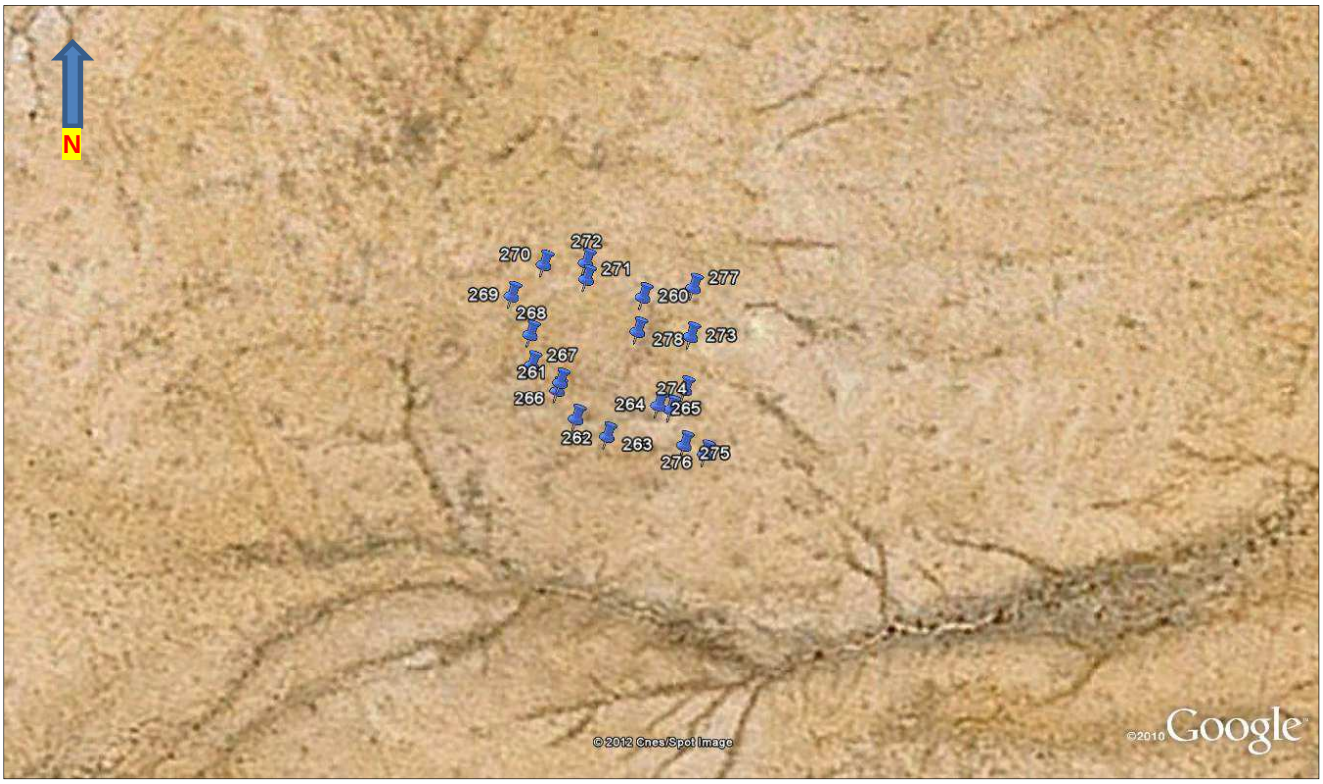

Figure 14, Site 260 – extent of the site has been mapped. This area has been `Red-Flagged'

Figure 15. Collection of tools. Scale is in cm

Figure 18. Collection of tools. Scale is in cm

Figure 16. Context in which the tools were found

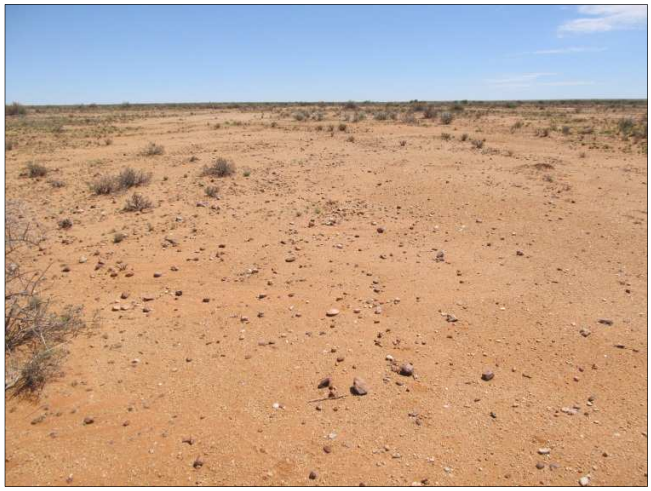

Figure 19. Context in which the tools were found

Figure 17. Collection of tools. Scale is in cm

Figure 20. Collection of tools. Scale is in cm

Figure 21. Context in which the tools were found

Figure 22. Collection of tools. Scale is in cm

Figure 23. Collection of tools. Scale is in cm

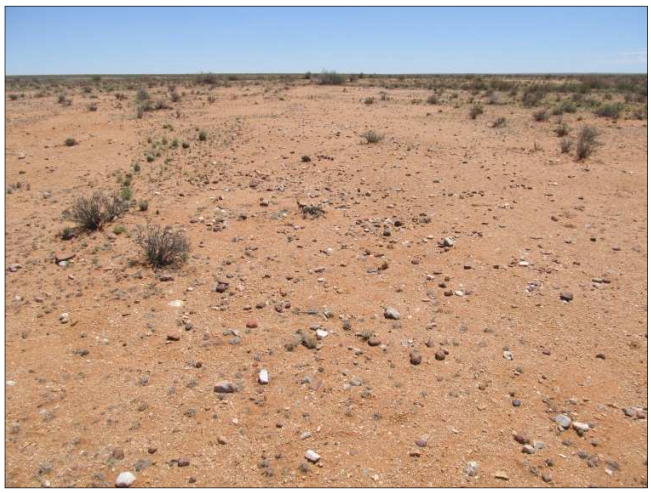

Figure 24. Context in which the tools were found

Figure 25. Context in which the tools were found

Figure 26. Collection of tools. Scale is in cm

Figure 27. Collection of tools. Scale is in cm

Figure 28. Collection of tools. Scale is in cm

Figure 29. Site 260. Arrow indicates `flaked' boulders and cone scars

Figure 30. Site 260. View north

Figure 31. Site 260. View north west

Figure 32. Collection of tools. Scale is in cm

Figure 33. Context in which the tools were found

Figure 34. Collection of tools. Scale is in cm

Figure 35. Collection of tools. Scale is in cm

Figure 36 Portion B. Context in which the tools were found

Figure 37. Portion B. Collection of tools. Scale is in cm

Figure 38 Portion B. Context in which the tools were found

Figure 39. Portion B. Collection of tools. Scale is in cm

Figure 40. Context in which the tools were found

Figure 41. Context in which the tools were found

Figure 42. Site 392. Flaked chunk & anvil

Figure 43. Site 393 inside the 32 m drainage channel buffer. View facing north west.

Figure 44. Site 393. View facing north west

Figure 45. Site 402. Core/hammerstone and anvil.

Figure 46. Collection of tools. Scale is in cm

Figure 47. Collection of tools. Scale is in cm

Figure 48. Context in which the tools were found

6.1 Significance of the archaeological remains

While the scatter of tools on Farm 187/12 is relatively rich in quantity, they are poor in terms of information that can be constructed from them. Apart from the large in-situ scatter of MSA implements on the hilltop quarry site (260) overlooking the floodplain, there is no obvious or clear patterning in the distribution of any of the finds, where many of the implements of are of mixed age and found on eroded surfaces. Larger numbers of tools do tend to concentrate around/alongside the drainage lines that intersect the site, but most of them are located within the 32 m buffer, and will therefore not be directly impacted by the proposed development. The proximity to drainage lines (and fresh water) may be one reason for the larger numbers of tools documented over the property, when compared to the 85 occurrences recorded alongside the proposed site, on Farm 187/8 (Kaplan 2012a).

In addition, all of the finds are lacking in context as no organic remains such pottery, bone, or ostrich eggshell was found. As a result, the majority of the archaeological remains on Farm 187/12 have been rated as having low (Grade 3C) significance

The MSA quarry site (260) and the LSA scatter (393) alongside the drainage line (in Portion B) have, however, been rated as having moderate to high, Grade 3B significance and will require mitigation action, before development activities proceed.

6.2 Graves

No graves were found in the proposed footprint area.

6.3 Engravings

Apart from the enigmatic, possibly scratched/etched piece of flat shale (415), no rock engravings were found in the footprint area for the proposed solar energy farm.

6.4 Structures

No stone walling, structures such as kraals, or any old buildings, or built features occur in the footprint area of the proposed solar energy facility.

7. PREDICTED IMPACTS

In the case of the proposed Wine Estate Capital Management solar energy facility on Farm 187/12 near Kenhardt in the Northern Cape, it is expected that archaeological impacts will be limited to the important quarry site (260) on the high point overlooking the floodplain.

Larger numbers of tools, including Site 393, tend to concentrate or cluster around the drainage lines, but these remains mostly occur within the 32 m buffer and will not be directly impacted by the proposed development.

Archaeological remains occur over the remainder of the footprint area, but the density of remains is overall quite low, and the form and types of tools are fairly homogenous across a vast expanse of space that is not only limited to the site of the proposed solar energy facility.

8. CONCLUSION

It is maintained that the survey has captured good information on the archaeological heritage that is representative of the surrounding area. This is confirmed by the results of studies undertaken on Portions 3 and 7 of Farm 187 (Kaplan 2011a, b, c), as well as the survey of the proposed Green Continent Partners solar energy facility on Farm 187/8 (Kaplan 2012a), undertaken at the same time as the current study.

Indications are that the proposed development of a 75 MW solar energy farm on the Farm Olyvenkolk 187/12 near Kenhardt will have a limited impact on the archaeological heritage, and that potentially significant impacts on Site 260 and Site 393 can be easily mitigated.

9. RECOMMENDATIONS

With regard to the proposed development of the Wine Estate Capital Management 75 MW solar energy facility on Farm 187/12 near Kenhardt, in the Northern Cape, the following recommendations however made.

1. The MSA quarry site (260) must be mapped in detail and the material collected for analysis. Alternatively (and perhaps more realistically), a buffer of at least 25 m must be established around this important site and declared a `No-Go' development area. The site must be fenced off and fencing must be done in consultation with, and under the supervision of the archaeologist. A gate must also be provided in case any future research is undertaken at the site. In order to make up for lost `panel' space, the area east of the gravel road can be included in the application area as this area is not considered to be archaeologically sensitive (refer to Figure 2).

2. Care should be taken to ensure that the LSA site (393) inside the 32 m drainage line buffer is not harmed or disturbed in any way during the construction phase of the proposed project. The site must be secured and no personnel must be allowed in the area. The area of demarcation must be done in consultation with and under the supervision of the archaeologist. No plant equipment or any temporary facilities must be stored or established close to the site.

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Appendix I

Spreadsheet of waypoints and description of archaeological finds

Site	Name of Farm	Lat/long	Description of finds
	Olyvenkolk No. 187/12		
172		S29 25.488 E20 50.957	Weathered quartzite MSA flake
173		S29 25.489 E20 50.954	Quartzite chunk
174		S29 25.496 E20 50.946	Quartzite chunk
175		S29 25.504 E20 50.937	Retouched Quartzite flake
176		S29 25.509 E20 50.934	Quartzite ESA Biface
177		S29 25.520 E20 50.917	Quartzite flake
178		S29 25.527 E20 50.898	Quartzite flake
179		S29 25.531 E20 50.892	Quartzite flake
180		S29 25.537 E20 50.884	Small indurated shale retouched flake
181		S29 25.540 E20 50.876	Broken blade and flake, weathered indurated shale retouched flake and quartzite flake
182		S29 25.556 E20 50.853	Quartzite flake, broken chunk
183		S29 25.580 E20 50.831	Flat **silcrete** MSA flake, chunks and 1 flake quartzite
184		S29 25.596 E20 50.798	Weathered flake chunk and quartzite flake
185		S29 25.602 E20 50.781	Snapped utilised and retouched blade, flake and quartzite minimal core
186		S29 25.612 E20 50.755	Low density scatter including a few flakes, 1 weathered indurated shale flake, 2 round cores, chunks weathered and retouched blade tool in indurated shale
187		S29 25.663 E20 50.733	Quartzite blade
188		S29 25.681 E20 50.758	Long chunky retouched weathered quartzite flake, plus 2 flakes
189		S29 25.699 E20 50.773	Weathered quartzite flake
190		S29 25.710 E20 50.770	2 quartzite flakes
191		S29 25.686 E20 50.737	3 quartzite flakes
192		S29 25.682 E20 50.704	Broken flake
193		S29 25.655 E20 50.699	Retouched flake and large flake chunk
194		S29 25.680 E20 50.693	Small chunk and flake
195		S29 25.716 E20 50.711	Weathered quartzite flake and chunk
196		S29 25.724 E20 50.736	Large quartzite flake chunky flake small flake and chunk
197		S29 25.736 E20 50.760	Large flake broken
198		S29 25.750 E20 50.762	Weathered quartzite blade
199		S29 25.774 E20 50.838	2 quartzite flakes,
200		S29 25.824 E20 50.891	Flake
201		S29 25.822 E20 50.844	Flake
202		S29 25.809 E20 50.832	Flake
203		S29 25.807 E20 50.823	Flake
204		S29 25.801 E20 50.813	Chunk
205		S29 25.793 E20 50.805	Flake
206		S29 25.789 E20 50.798	**Broken unifacial flake/ point**
207		S29 25.782 E20 50.790	Chunk
208		S29 25.763 E20 50.774	Low density, fairly extensive scatter including chunks, flaked chunk, 2 round cores, weathered indurated shale flake, quartzite flake
209		S29 25.804 E20 50.749	Chunk and chunky blade
210		S29 25.831 E20 50.792	Core reduced flake, large patinated indurated shale blade, quartzite chunk, flake and

			chalcedony utilised and retouched flake
211		S29 25.821 E20 50.756	Round core and flake
212		S29 25.867 E20 50.788	Core
213		S29 25.873 E20 50.793	Flake
214		S29 25.885 E20 50.837	Side struck flake
215		S29 25.901 E20 50.884	Broken flake
216		S29 25.925 E20 50.894	Chunky flake
217		S29 25.915 E20 50.857	Flake
218		S29 25.909 E20 50.839	3 flakes and chunk
219		S29 25.901 E20 50.816	**ESA biface/ handaxe**
220		S29 25.882 E20 50.768	Flake
221		S29 25.879 E20 50.757	Pointed flake
222		S29 25.869 E20 50.742	Low density scatter including flakes, chunk and 2 weathered indurated shale flake
223		S29 25.808 E20 50.706	Flake
224		S29 25.788 E20 50.701	Flake
225		S29 25.785 E20 50.699	Flake and chunky core reduced flake
226		S29 25.779 E20 50.693	Low density scatter MSA flakes, chunks, core and 2 flaked chunks/minimal core
227		S29 25.761 E20 50.678	Snapped utilised blade
228		S29 25.737 E20 50.655	**Small biface/ handaxe**
229		S29 25.734 E20 50.651	Weathered indurated shale flake
230		S29 25.727 E20 50.643	Round core
231		S29 25.718 E20 50.631	Pointed flake
232		S29 25.706 E20 50.578	Flake
233		S29 25.722 E20 50.574	**ESA** flake
234		S29 25.728 E20 50.576	Flake
235		S29 25.754 E20 50.587	2 flakes
236		S29 25.791 E20 50.600	Chunk and flake
237		S29 25.802 E20 50.618	Flat flake
238		S29 25.812 E20 50.619	Flake
239		S29 25.814 E20 50.619	Large flake
240		S29 25.825 E20 50.621	Broken flake
241		S29 25.846 E20 50.626	Low density scatter including flakes, chunks, small and large flakes, core, large core, weathered site struck indurated shale flake, weathered flake
242		S29 25.907 E20 50.597	Large indurated shale flake
243		S29 25.904 E20 50.591	Flat flake
244		S29 25.900 E20 50.581	Flake
245		S29 25.890 E20 50.560	Large weathered indurated shale flake
246		S29 25.886 E20 50.552	Large chunky blade, 2 flakes, core
247		S29 25.880 E20 50.529	Large chunky blade
248		S29 25.865 E20 50.505	2 flakes, one chunk
249		S29 25.848 E20 50.470	Low density scatter near drainage channel including flakes, chunks, weathered chunks, core, large weathered flake, **LSA chalcedony flake**
250		S29 25.868 E20 50.425	Flakes, chunk and core near drainage channel
251		S29 25.912 E20 50.488	Weathered flake
252		S29 25.915 E20 50.494	Large weathered flake indurated shale and quartzite flake
253		S29 25.958 E20 50.516	Flake

254		S29 25.962 E20 50.510	Flake and large weathered indurated shale flake
255		S29 25.988 E20 50.501	Flake
256		S29 25.992 E20 50.498	Flake
257		S29 26.013 E20 50.502	Flake
258		S29 26.017 E20 50.500	Core and flake
259		S29 26.034 E20 50.496	Core and flake
260		S29 26.056 E20 50.495	Scatter of stone flakes on hilltop site overlooking drainage channel; probably knapping site, includes large numbers of flakes, chunks, flaked chunks, round cores, flatter worked out cores, Dwyka stone outcroppings used as source for raw material, weathered indurated shale flakes, large chunks blades**, 2 Bifaces, banded ironstone flake**
261		S29 26.105 E20 50.440	Same as above
262		S29 26.126 E20 50.450	Same as above
263		S29 26.136 E20 50.471	Same as above
264		S29 26.119 E20 50.505	Same as above
265		S29 26.109 E20 50.522	Same as above
266		S29 26.110 E20 50.438	Same as above
267		S29 26.095 E20 50.421	Same as above
268		S29 26.077 E20 50.420	Same as above
269		S29 26.055 E20 50.408	Same as above
270		S29 26.037 E20 50.429	Same as above
271		S29 26.046 E20 50.457	Same as above
272		S29 26.036 E20 50.457	Same as above
273		S29 26.079 E20 50.526	Same as above
274		S29 26.121 E20 50.513	Same as above
275		S29 26.142 E20 50.522	Same as above
276		S29 26.147 E20 50.536	Same as above
277		S29 26.051 E20 50.528	Same as above
278		S29 26.076 E20 50.491	**Outcrop of flaked stone**
279		S29 26.082 E20 50.388	Quartzite flakes
280		S29 26.066 E20 50.384	2 cores, low density scatter of flakes and chunks
281		S29 26.048 E20 50.377	flake
282		S29 26.028 E20 50.393	chunk
283		S29 26.012 E20 50.398	Core and flake
284		S29 26.005 E20 50.404	Low density scatter of flakes near drainage channel including flakes and chunks, 2 blades, 7 cores
285		S29 25.996 E20 50.410	Large flaked chunk
286		S29 26.000 E20 50.422	Broken indurated shale utilised and retouched flake
287		S29 25.972 E20 50.423	2flakes
288		S29 25.964 E20 50.420	Round core
289		S29 25.930 E20 50.434	3 flakes and chunk, chunky blade
290		S29 25.903 E20 50.395	Low density scatter including large flake chunks, **2 Biface**, flake chunk, core alongside drainage channel
291		S29 25.970 E20 50.359	2 flakes
292		S29 25.974 E20 50.352	Flake

293		S29 25.984 E20 50.342	Large triangular **shaped ESA** quartzite flake
294		S29 26.003 E20 50.312	Low density extensive scatter flakes chunk weathered flake 2 cores
295		S29 26.013 E20 50.258	Flake
296		S29 25.995 E20 50.219	Chunk
297		S29 25.985 E20 50.202	Flaked chunk
298		S29 25.926 E20 50.142	Low density scatter including quartzite flakes and chunks and core
299		S29 25.926 E20 50.142	Flake
300		S29 25.929 E20 50.204	Flake
301		S29 25.947 E20 50.242	2 flakes
302		S29 25.966 E20 50.293	Flake
303		S29 25.966 E20 50.293	**Broken unifacial point/ flake?**
304		S29 25.866 E20 50.303	Flake
305		S29 25.863 E20 50.302	Flake
306		S29 25.854 E20 50.268	Flake and core
307		S29 25.850 E20 50.317	Large quartzite flake
308		S29 25.886 E20 50.374	Several flakes & indurated shale chunk
309		S29 25.868 E20 50.370	Core
310		S29 25.845 E20 50.352	Flake
311		S29 25.822 E20 50.325	Flake
312		S29 25.819 E20 50.320	Flake
313		S29 25.811 E20 50.342	**Snapped bifacial flake**
314		S29 25.839 E20 50.386	7 MSA flakes
315		S29 25.784 E20 50.396	Flake
316		S29 25.799 E20 50.433	Flake
317		S29 25.806 E20 50.451	Round core
318		S29 25.795 E20 50.461	Large **flake/convex scraper**
319		S29 25.707 E20 50.518	Flake
320		S29 25.744 E20 50.528	Flake
321		S29 25.756 E20 50.571	Core
322		S29 25.699 E20 50.555	Low density scatter near drainage channel, including flakes, weathered flakes and chunks
323		S29 25.723 E20 50.604	Round core
324		S29 25.730 E20 50.622	Flake
325		S29 25.710 E20 50.630	Large quartzite flake
326		S29 25.696 E20 50.627	Flakes
327		S29 25.671 E20 50.618	2 flakes
328		S29 25.691 E20 50.676	Flake
329		S29 25.686 E20 50.677	Core
330		S29 25.643 E20 50.706	2 flakes utilised and retouched on both sides
331		S29 25.621 E20 50.737	Small **biface/ handaxe** and core
332		S29 25.610 E20 50.779	Flake
333		S29 25.607 E20 50.784	**Bifacial MSA point**
334		S29 25.605 E20 50.787	Small scatter including a few flakes and chunks
335		S29 25.604 E20 50.794	Chunk, flakes and **end scraper on blade**
336		S29 25.611 E20 50.814	Blade core
337		S29 25.607 E20 50.823	Flakes, and **unifacial point**
338		S29 25.625 E20 50.816	Flakes alongside small outcropping
339		S29 25.615 E20 50.860	Round cortex core and flake
340		S29 25.619 E20 50.886	Flaked chunk & core reduced flake
341		S29 25.610 E20 50.894	Thick blade, flakes & one chunk

342		S29 26.154 E20 50.705	Large round flake
343		S29 26.148 E20 50.703	Flake
344		S29 26.139 E20 50.702	A few flakes, core, chunk
345		S29 26.127 E20 50.693	Flake
346		S29 26.102 E20 50.702	Miscellaneous retouched flake
347		S29 26.092 E20 50.705	Flat core
348		S29 26.068 E20 50.721	flake
349		S29 26.054 E20 50.734	Low density scatter including flakes, broken flakes, chunks, side struck **retouched/ utilised flake**
350		S29 26.024 E20 50.739	Extension of 349
351		S29 26.040 E20 50.756	Blade alongside outcropping of vein quartz
352		S29 26.021 E20 50.770	Low density scatter on alluvial sand including flakes, large core, large weathered flake
353		S29 25.945 E20 50.821	Flakes, large chunk
354		S29 25.990 E20 50.780	Low density scatter including quartzite flake and chunks
355		S29 26.005 E20 50.764	2 flakes
356		S29 26.022 E20 50.753	**Snapped unifacial flake,** 1 flake
357		S29 26.054 E20 50.737	3 flakes, one chunk
358		S29 26.105 E20 50.709	flake
359		S29 26.117 E20 50.702	Flake, flake chunk and round core
360		S29 26.130 E20 50.694	Weathered retouched blade
361		S29 26.155 E20 50.676	Low density scatter on alluvial sands including flakes, chunks, core, broken flakes in quartzite and indurated shale
362		S29 26.163 E20 50.672	Same as above
363		S29 26.174 E20 50.665	Same as above
364		S29 26.187 E20 50.650	Same as above
365		S29 26.087 E20 50.620	Same as above
366		S29 26.057 E20 50.625	Same as above
367		S29 26.046 E20 50.629	Same as above
368		S29 25.957 E20 50.703	flake
369		S29 25.929 E20 50.752	Flake chunk
370		S29 25.925 E20 50.770	Banded ironstone chunk
371		S29 25.892 E20 50.772	core
372		S29 25.894 E20 50.765	flake
373		S29 25.922 E20 50.737	Large chunk and flake
374		S29 25.917 E20 50.722	Disc core
375		S29 25.885 E20 50.744	**Retouched flake/ convex scarper**
376		S29 25.847 E20 50.758	Several flakes, 1 chunk,**1 Biface,** weathered indurated shale flake
377		S29 25.893 E20 50.725	**Scraper**,
378		S29 25.947 E20 50.694	Core, flake
379		S29 25.949 E20 50.681	Low density scatter including flakes, chunks, flaked chunk, 3 cores,1 blade
380		S29 26.048 E20 50.626	Prepared core
381		S29 26.070 E20 50.617	**Biface**
382		S29 26.188 E20 50.508	Low density scatter alongside drainage channel
383		S29 26.176 E20 50.298	**Banded ironstone flake**
384		S29 26.105 E20 50.272	Low density scatter including flakes and chunks
385		S29 26.181 E20 50.328	3 flakes

386		S29 26.190 E20 50.349	Core
387		S29 26.198 E20 50.377	Large core reduced flake
388		S29 26.200 E20 50.383	Chunky flake, retouched chalcedony flake
389		S29 26.210 E20 50.425	**Banded ironstone utilised and retouched flake/ blade**
390		S29 26.220 E20 50.634	Low density scatter alongside drainage channel including chunks, flakes, core
391		S29 26.206 E20 50.711	Core
392		S29 26.294 E20 50.798	Core, **anvil** and chunk
393		S29 26.285 E20 50.846	High density scatter alongside drainage channel; 25 to 30 metre in extent, including many quartz flakes, chips chunks, bipolar and cylindrical cores, all in vein quartz; small numbers of indurated shale flakes and 1-2 cores, chunks, chalcedony flake , hammerstone, ostrich egg shell, one piece of pottery **inside** 32 metre drainage channel buffer
394		S29 26.269 E20 50.894	Quartzite flake
395		S29 26.269 E20 50.894	Flake and large chunky flake
396		S29 26.249 E20 50.951	2 flakes, 2 chunks
397		S29 26.296 E20 50.925	Weathered quartzite flake
398		S29 26.305 E20 50.921	Core, 2 chunks and flake
399		S29 26.323 E20 50.882	Low-density scatter including quartzite flakes, chunks, indurated shale flakes/retouched
400		S29 26.342 E20 50.912	Same as above
401		S29 26.361 E20 50.882	Same as above
402		S29 26.340 E20 50.851	**Anvil** and chunk
403		S29 26.340 E20 50.839	Quartzite flake
404		S29 26.336 E20 50.801	Flake
405		S29 26.327 E20 50.779	3 flakes
406		S29 26.338 E20 50.734	Cortex core and flakes
407		S29 26.362 E20 50.781	2 flakes
408		S29 26.360 E20 50.803	Flake
409		S29 26.363 E20 50.819	4 or 5 flakes
410		S29 26.367 E20 50.833	Flake
411		S29 26.375 E20 50.854	Flakes and chunks on extensive alluvial deposits alongside drainage channel
412		S29 26.384 E20 50.820	Flakes and chunks on extensive alluvial deposits alongside drainage channel
413		S29 26.351 E20 50.726	Flakes and chunks on extensive alluvial deposits alongside drainage channel
414		S29 26.364 E20 50.712	Flakes and chunks on extensive alluvial deposits alongside drainage channel
415		S29 26.374 E20 50.731	**Flat piece of shale with possible enigmatic scratch/line marks**
416		S29 26.387 E20 50.754	Flakes and chunks on extensive alluvial deposits alongside drainage channel
417		S29 26.389 E20 50.778	Flakes and chunks on extensive alluvial deposits alongside drainage channel
418		S29 26.410 E20 50.862	**Chalcedony chunk**
419		S29 26.429 E20 50.880	Chunk
420		S29 26.429 E20 50.826	Large withered indurated shale core and large chunk

421		S29 26.418 E20 50.788	Low density scatter including flakes, minimal core long blade
422		S29 26.392 E20 50.734	Flake
423		S29 26.366 E20 50.695	Several flakes
424		S29 26.378 E20 50.701	4 flakes
425		S29 26.396 E20 50.720	Flakes
426		S29 26.416 E20 50.776	Flakes
427		S29 26.422 E20 50.814	Flakes
428		S29 26.463 E20 50.809	Flakes
429		S29 26.502 E20 50.852	Flakes
430		S29 26.488 E20 50.816	3 or 4 flakes, long blade, chunk weathered indurated shale flake alongside drainage channel
431		S29 26.460 E20 50.766	Flake
432		S29 26.434 E20 50.727	Flake
433		S29 26.414 E20 50.706	Weathered indurated shale snapped blade
434		S29 26.380 E20 50.669	Flake
435		S29 26.384 E20 50.661	Chunk
436		S29 26.396 E20 50.670	Flake chunk/ minimal core, 3 flakes, **miscellaneous retouched point**
437		S29 26.414 E20 50.689	Large flake
438		S29 26.445 E20 50.756	**Utilised blade/ end scraper** on quartzite flake
439		S29 26.482 E20 50.791	Large chunky flake
440		S29 26.507 E20 50.821	Low density scatter near drainage channel including flakes and chunks
441		S29 26.506 E20 50.780	Large chunky pointed flake/ blade
442		S29 26.501 E20 50.770	Flake
443		S29 26.446 E20 50.683	Large flake
444		S29 26.477 E20 50.725	Flake
445		S29 26.485 E20 50.735	3 or 4 flakes, and chunks
446		S29 26.500 E20 50.746	Flake
447		S29 26.535 E20 50.789	Chunky flake, 4 flakes, chunks, weathered indurated shale flake near drainage channel
448		S29 26.521 E20 50.731	Flake on wide alluvial gravel
449		S29 26.490 E20 50.691	Low density scatter on extensive gravels including flakes, chunks, blade tools in quartzite and indurated shale
450		S29 26.449 E20 50.655	Same as above
451		S29 26.488 E20 50.650	Same as above
452		S29 26.506 E20 50.672	Same as above
453		S29 26.528 E20 50.710	Same as above
454		S29 26.572 E20 50.766	Same as above
455		S29 26.577 E20 50.752	Same as above
456		S29 26.553 E20 50.709	Same as above
457		S29 26.544 E20 50.692	Same as above
458		S29 26.531 E20 50.662	Same as above
459		S29 26.520 E20 50.637	Same as above
460		S29 26.552 E20 50.597	Same as above
461		S29 26.610 E20 50.666	**Long chunky utilised and retouched blade**
462		S29 26.615 E20 50.680	Flake
463		S29 26.618 E20 50.693	Flakes
464		S29 26.640 E20 50.672	Same as above
465		S29 26.639 E20 50.616	Same as above

466		S29 26.630 E20 50.578	Same as above
467		S29 26.626 E20 50.563	Same as above
468		S29 26.653 E20 50.691	Same as above
469		S29 26.656 E20 50.546	Same as above
470		S29 26.636 E20 50.526	Retouched chunky quartzite flake
471		S29 26.619 E20 50.529	**Large round MSA convex scraper**
472		S29 26.542 E20 50.561	Flake
473		S29 26.420 E20 50.634	Flake
474		S29 26.347 E20 50.665	Flake
475		S29 26.269 E20 50.713	Small flake and large flake
476		S29 26.336 E20 50.560	Flake
477		S29 26.319 E20 50.542	Large retouched indurated shale flake
478		S29 26.314 E20 50.511	Scatter of tools between drainage channel and fence including flakes, small **biface/ handaxe,** indurated shale flakes, core, flat core, flakes, chunks, blades, large flake, chunky flake, large blade
479		S29 26.293 E20 50.501	Same as above
480		S29 26.279 E20 50.467	Same as above including large round core and flakes
481		S29 26.267 E20 50.416	Very low density scatter of flakes and chunks
482		S29 26.285 E20 50.357	Same as above
483		S29 26.262 E20 50.352	Low density scatter on stony ground including flakes, chunks weathered indurated shale flakes side struck flake, chunk and core
484		S29 26.286 E20 50.307	Low density scatter on stony ground including flakes and chunks and weathered indurated shale flakes
485		S29 26.325 E20 50.347	Low density scatter on stony ground including flakes and chunks and weathered indurated shale flakes
486		S29 26.321 E20 50.389	Low density scatter on stony ground including flakes and chunks and weathered indurated shale flakes
487		S29 26.326 E20 50.431	Low density scatter on stony ground including flakes and chunks and weathered indurated shale flakes
488		S29 26.328 E20 50.447	**Hammerstone**
489		S29 26.329 E20 50.486	Low density scatter of flakes and chunks on gravel
490		S29 26.338 E20 50.501	Low density scatter on gravel including flat core, flakes chunk large weathered indurated shake flake
491		S29 26.367 E20 50.609	Chunk core**, 1 biface**
492		S29 26.372 E20 50.589	Low density scatter of flake stone alongside small outcropping
493		S29 26.384 E20 50.493	Low density scatter flaks and chunks one **ESA** flake
494		S29 26.401 E20 50.452	Low density scatter including large blade, quartzite flakes and chunks
495		S29 26.368 E20 50.397	Flakes, angular chunks, weathered core, minimal core
496		S29 26.370 E20 50.360	Large flake, angular chunk, flake chunk, large ESA flake

497		S29 26.391 E20 50.433	Flake
498		S29 26.396 E20 50.460	**ESA Biface**
499		S29 26.396 E20 50.510	Large weathered indurated shale flake and chunk
500		S29 26.397 E20 50.541	Prepared core and flakes
501		S29 26.391 E20 50.629	Flat core, side struck flakes and chunks
502		S29 26.410 E20 50.590	Low density scatter on extensive gravels including flakes, chunks and indurated shale flake
503		S29 26.442 E20 50.445	Weathered indurated shale flake, flaked cobble, quartzite flakes chunks and blade alongside fence line
504		S29 26.467 E20 50.450	Same as above including flakes and large indurated shale flake
505		S29 26.460 E20 50.486	Low density scatter on extensive gravels including side struck flake, shale chunk, large flaked chunk
506		S29 26.459 E20 50.567	Same as above
507		S29 26.491 E20 50.515	Same as above including prepared core, flakes in quartzite and indurated shale and **end/ convex scraper**
508		S29 26.522 E20 50.429	Low density scatter on stony gravels including quartzite flaked cobble, large indurated shale flake
509		S29 26.490 E20 50.498	Flakes, large weathered indurated shale flake on stony gravel
510		S29 26.527 E20 50.469	Same as above
511		S29 26.553 E20 50.488	Quartzite flakes, large indurated shale flake, chunk and weathered indurated shale core
512		S29 26.545 E20 50.434	Round core and flake alongside fence line
513		S29 26.495 E20 50.578	**Red opaline retouched chunk**

Table 1. Spreadsheet of waypoints and description of archaeological finds

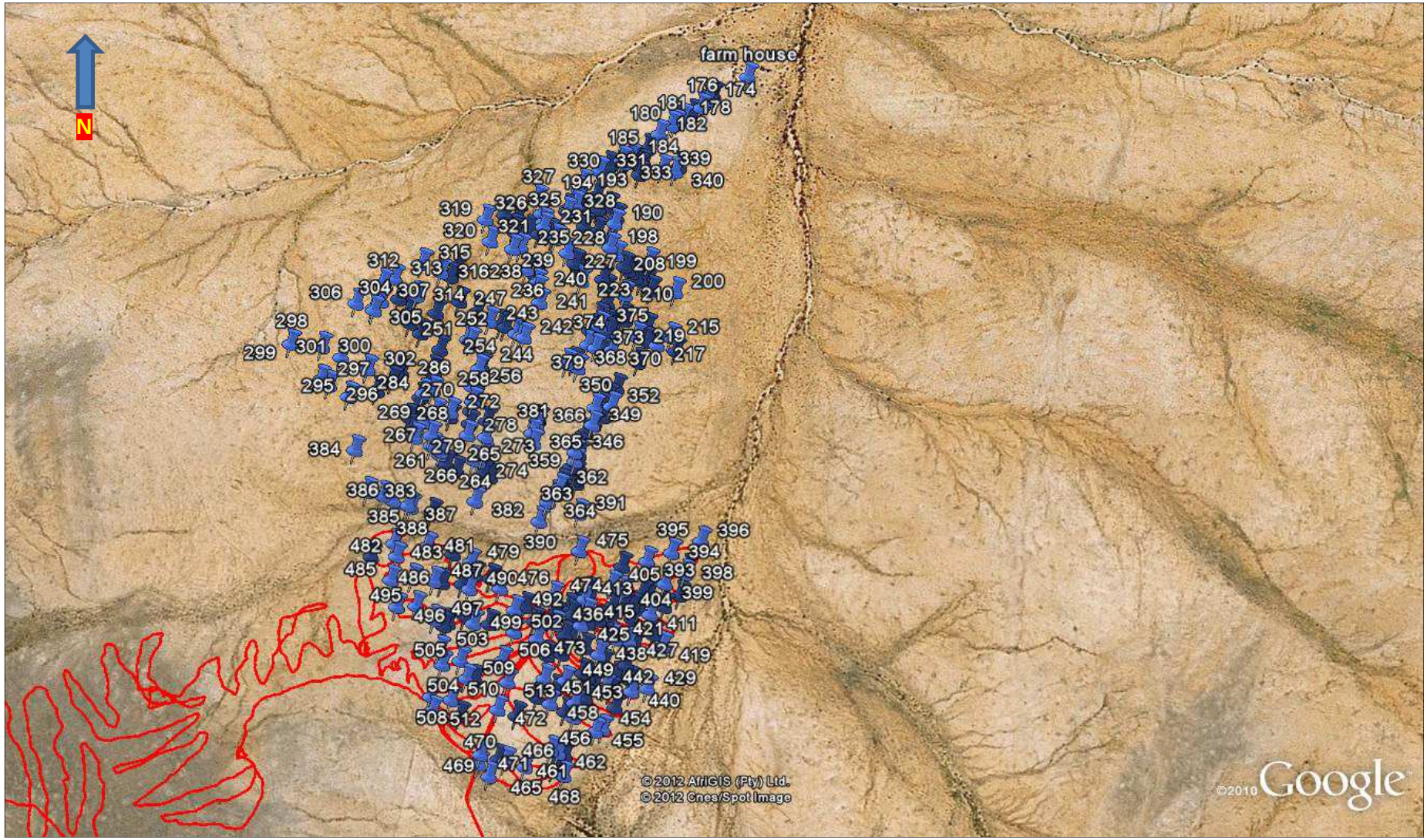

Figure 49. The proposed Wine Estate Capital Management solar energy farm on Farm 187/12. Trackpaths and waypoints of archaeological finds