

ADDENDUM TO REPORT

ARCHAEOLOGICAL IMPACT ASSESSMENT THE PROPOSED SOLAR CAPE 100 MW PHOTOVOLTAIC ENERGY GENERATION FACILITY NEAR KENHARDT NORTHERN CAPE PROVINCE

Prepared for:

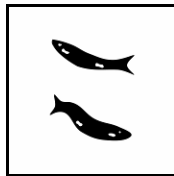
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1. Introduction

The following report is an Addendum to the report that was submitted by the Agency for Cultural Resource Management (ACRM), to the South African Heritage Resources Agency (SAHRA) in March, 2011 (Kaplan 2011a)¹.

In March 2011, ACRM was requested by Cape Lowlands Environmental Services to conduct an Archaeological Heritage Scoping Assessment for the proposed Solar Cape Photovoltaic (PV) Energy Generation Facility, on the Farm Olyvenkolk 187/3, near Kenhardt in the Northern Cape Province.

The proposed site for the solar farm is located next to the Eskom Aries substation, which is about 40 kms south west of Kenhardt (Figures 1 & 2). A smaller, 10 MW solar energy facility is also planned on the same property (Kaplan 2011b²), but does not form part of the current application.

The proposed activity for the 100 MW solar power facility entails the construction of ± 34 blocks of photovoltaic solar panels covering an area of about 160 ha. The PV panels will be mounted on pedestals. Associated infrastructure includes single track access roads and underground cables. Extensive bedrock excavations are not envisaged. The electricity that will be generated from the project will be fed directly into the national grid at Aries substation. The proposed facility will use the old Sishen Saldanha railway line construction camp, as a construction camp site that will include operational buildings, guest house, self catering cottages, a visitor centre, a research centre, worker cottages and parking facilities.

The archaeological study forms part of the Environmental Impact Assessment (EIA) process that is being conducted by independent environmental consultants, Cape Lowlands Environmental Services.

A 2-day Scoping Study (of Section A) of the proposed site was undertaken by the archaeologist in March, in which 25 Scoping Location Sites were searched for archaeological remains (refer to Figure 3).

The following observations were made:

- Low density scatters of Stone Age tools were documented at each of the 25 Scoping Location Sites.
- The majority of the finds are assigned to the Middle Stone Age, where most of the tools comprise blunted and pointed flakes, flaked chunks, radial and prepared

¹ Kaplan, J. 2011a. Archaeological Heritage Scoping Assessment the proposed Solar Cape 100 MW Photovoltaic Energy Generation Facility near Kenhardt, Northern Cape Province. Report prepared for Cape Lowlands Environmental Services. ACRM Cape Town

² Kaplan, J. 2011b. Archaeological Impact Assessment the proposed Solar Cape 10 MW photovoltaic energy generation facility near Kenhardt, Northern Cape Province. Report prepared for Cape Lowlands Environmental Services. ACRM Cape Town.

cores. Several retouched and utilised parallel sided flake blades, and retouched points were also found, while several end and convex scrapers were counted.

- A rare, hollow-based point in indurated shale was also found, indicating a date of a least about 40 000 years old. This is an exciting, as to date hollow-based points have only been recorded from two caves in KwaZulu Natal.
- Only a few Early Stone Age tools were documented, including three handaxes and one cleaver.
- Later Stone Age tools including a few small round cores, flakes and chunks in chalcedony and opaline were documented.
- No organic remains such as bone, pottery or ostrich eggshell was found
- MSA tools were found near the drainage channel in the south eastern boundary of the proposed footprint area. The site, known as knh14 comprises a medium-high, density scatter of pointed and blunted flakes, blades tools, points, cores, hammerstones and chunks and probably represents a settlement site, with activity areas. The range of tool types, the context of the site (alongside the drainage channel) and the fact that the tools appear to be in-situ has meant that knh14 has been rated as having potentially high archaeological significance.



Figure 1. Locality map

In September 2011, ACRM was requested by Cape Lowlands Environmental Services to investigate two additional land parcels (Section B and Section C) for the proposed Solar Cape PV project (refer to Figures 2 & 3).

Section B measures 46.5 ha in extent and Section C 48.9 ha in extent.

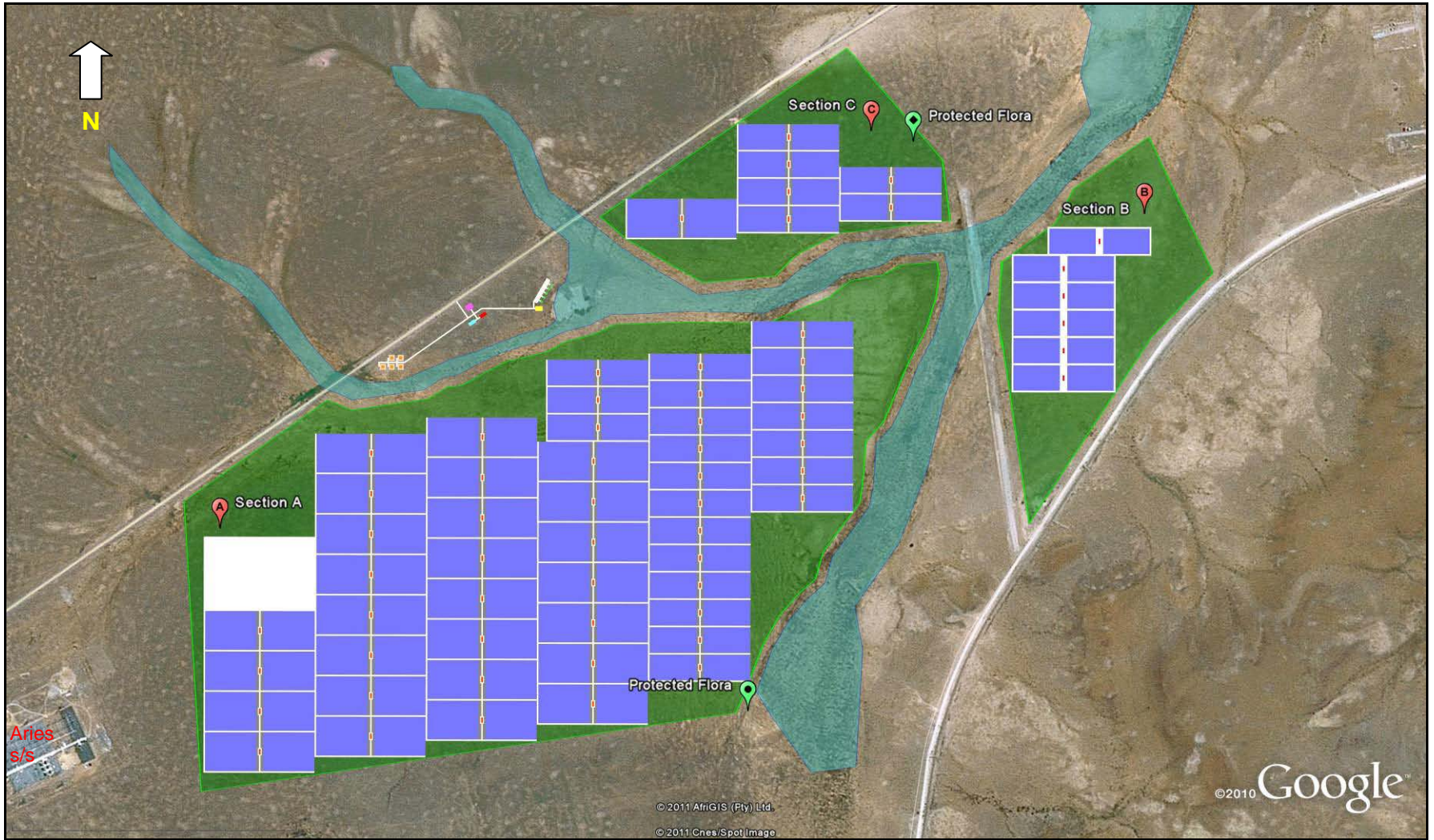


Figure 2. The proposed Solar Cape Power Generation project: proposed layout for the 100 MW Solar Power Plant overlaid onto Google Earth.



Figure 3. Aerial photograph of the study site illustrating the approximate boundaries of Sections A, B and C. A Heritage Scoping Assessment of Section A was undertaken by the archaeologist in March 2011 (refer to Kaplan 2011a).

2. Description of the affected environment

2.1 Section B

Section B is located alongside the Sishen-Saldanha Railway line and Spoornet Road, and north east of an abandoned gravel airstrip. The proposed site is a flat, featureless piece of land that is bound by an extensive drainage channel in the north (Figures 4-10). There are no significant landscape features on the proposed site. The site is covered in loose stone and rocks and slopes gently toward the north. There are a few small clusters of round dolerite boulders close to the eastern boundary of the site. Several old gravel farm tracks intersect the property. The site has been quite heavily grazed. There is no existing infrastructure on the proposed site, which is quite degraded.

2.2 Section C

Section C is located alongside the gravel road (P2988) to Pofadder and slopes gently south toward an extensive drainage channel. A small dolerite covered hillock dominates the site alongside P2988. Existing infrastructure includes an Eskom transmission line and servitude that crosses the northern boundary of the proposed site, alongside P2988. There is an old gravel farm road that runs alongside the drainage channel. The site is covered in small pebbles and stone and is also quite heavily overgrazed and degraded (Figures 11-15).



Figure 4. Section B View facing north west



Figure 5. Section B View facing north west



Figure 6. Section B View facing west



Figure 7. Section B View facing north east



Figure 8. Section B View facing north east



Figure 9. Section B View facing east



Figure 10. Section B View facing east



Figure 11. Portion C View facing west



Figure 12. Portion C View facing south west



Figure 13. Portion C View (from the hillock) facing south west

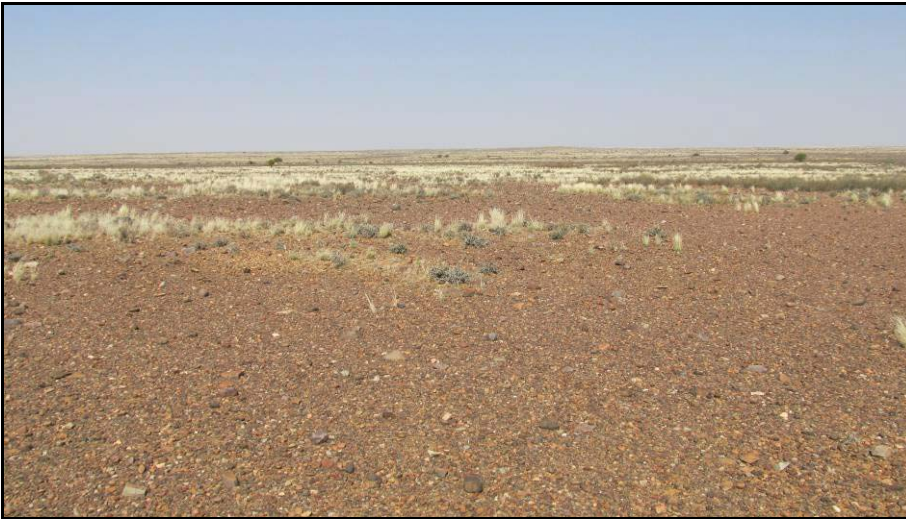


Figure 14. Portion C View facing south west



Figure 15. Portion C View facing east

3. Approach to the study

3.1 Method of survey

A three day, systematic, baseline study of the two land parcels (Sections B & C) took place on the 7-9 September, 2011.

The site was searched for archaeological remains.

The dolerite boulders were also searched for rock engravings.

All archaeological remains documented during the study have been mapped using a hand-held Garmin Oregon 300 GPS unit set on the map datum WGS 84.

A track path of the archaeological study was also created (refer to Figures 47 & 48 in the Appendix).

3.2 Constraints and limitations

There were no constraints or limitation associated with the proposed study. While there is some natural vegetation present in Sections B and C, archaeological visibility was still very good.

3.3 Identification of potential risks

Based on the results of the study there are no significant archaeological risks associated with the construction of a solar power facility on the Farm Olyvenkolk 187 (Sections A, B and C).

While relatively large numbers of Middle Stone Age implements have been documented on the affected land parcels, these are spread very thinly and unevenly over the surrounding landscape.

It is, however important to note that higher densities of different types of tools do appear to cluster alongside the drainage channels (in Section B and C), and nearer to the Eskom servitude in the north western portion of Section C, but these scatters of tools are located outside the proposed layout area of the solar power facility and within an established and protected ecological buffer zone.

It is unlikely but unmarked human remains and buried ostrich eggshell caches may be uncovered during excavations for the solar panel footings. Extensive bedrock excavations are not envisaged, however.

4. Results of the study

A Google aerial photograph indicating the waypoints of archaeological occurrences documented during the study is illustrated in Figures 46-48 in the Appendix.

A spreadsheet of the waypoints and description of the archaeological finds is also illustrated in Table 1 in the Appendix.

4.1 Section B

One hundred and twenty one archaeological occurrences, numbering more than 200 stone tools were documented in Section B. More than 99% of the tools are assigned to the Middle Stone Age (MSA). Only one Early Stone Age (ESA) flake (331) was counted. No obvious Later Stone Age tools were recorded. No pottery, ostrich eggshell, or other organic remains such as bone were found. No graves were found and no rock engravings were located on any of the dolerite boulders searched.

The majority of the MSA tools documented during the study comprise pointed (i.e. triangular shaped), and blunted, flat and chunky flakes, chunks, and flaked chunks (sometimes referred to as minimal cores). Sixteen cores were also counted, with the majority (n = 12) being large and smaller round cores, and only one (366) flattened prepared core found. Nine retouched flakes and blades were counted, including one pointed retouched and utilised blade (334).

Five 'points' were also found. These include one pressure-flaked bifacial point (394), one side retouched point (425), two bifacial points (412 & 414), and one broken bifacial point (332). One Miscellaneous Retouched Piece (MRP)/scraper (393) was also found.

One of the more interesting and enigmatic finds include an anvil (398) and a combined anvil/hammerstone/upper grindstone (403) found alongside a minor drainage channel in the south east of the proposed site.

More than 95% of the tools are in quartzite and the remainder in indurated shale, most of which are very weathered. Less than 1.0% of the tools are in chalcedony/opaline.

While the majority of the finds are spread very thinly and unevenly over the surrounding landscape, a few smaller coherent but dispersed scatters of tools (310, 315, 316, 337 & 364) were also documented in the footprint area. These include low density scatters of up to 10 implements on extensive (overgrazed) patches of loose stone and gravels.

Higher densities of tools were, (perhaps predictably) documented closer to, or alongside the large drainage channel in the south. These include 346 – where more than 40 flake tools were counted, 355, 364, 383, 391-393 and 395. In effect these occurrences may be treated as one larger site, comprising many implements spread out alongside the drainage channel. The floodplain area would clearly have attracted people in the past as it offered a range of accessible resources (such as small and larger game), as well as water, and material for (possibly) shelter and fuel.

A collection of tools and the context in which some of them were found is illustrated in Figures 16-35.



Figure 16. Collection of tools from Section B. Scale is in cm



Figure 19. Collection of tools from Section B. Scale is in cm



Figure 17. Collection of tools from Section B. Scale is in cm



Figure 20. Collection of tools from Section B. Scale is in cm



Figure 18. Collection of tools from Section B. Scale is in cm



Figure 21. Context in which the tools (Fig. 21) were found



Figure 22. Collection of tools from Section B. Scale is in cm



Figure 25. 346. Scale is in cm

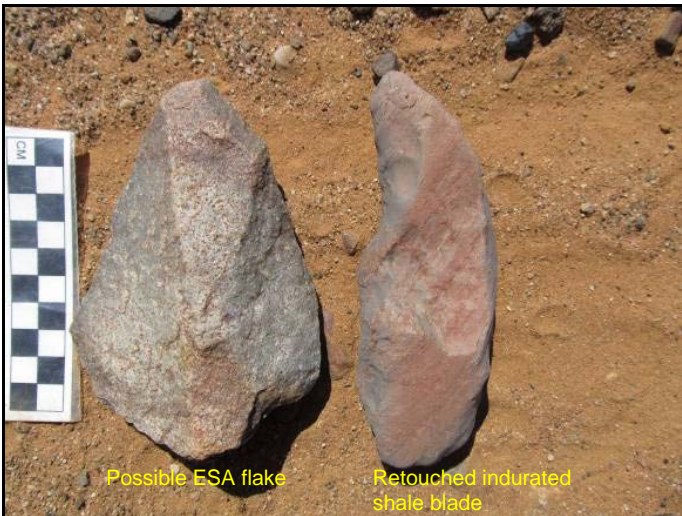


Figure 23. 331 Scale is in cm



Figure 26. Context in which the tools (346) were found



Figure 24. Collection of tools from Section B. Scale is in cm



Figure 27. Collection of tools from Section B. Scale is in cm



Figure 28. Collection of tools from Section B. Scale is in cm



Figure 31. Context in which finds (381) were made



Figure 29. 377. Large indurated shale flake. Scale is in cm



Figure 32. Anvil/grindstone/hammerstone Scale is in cm



Figure 30. Collection of tools from Section B. Scale is in cm



Figure 33. Collection of retouched points and utilised/retouched flake blades from Section B. Scale is in cm

4.2 Section C

One hundred and nineteen archaeological occurrences, numbering more than 200 stone tools were documented during the study of Section C. More than 99% of the tools are assigned to the MSA. Three ESA implements, including one possible incomplete handaxe (450), one flake (512) and one cleaver (519) were counted. No Later Stone Age tools were found. No organic remains such as pottery, bone, or ostrich eggshell were found. No graves were found in the footprint area and no rock engravings were located on the boulder strewn hillock alongside P2988.

The majority of the MSA tools documented during the study comprise blunted and triangular shaped pointed flakes, large parallel-sided flake blades, chunks, and flaked chunks/minimal cores. Eighteen cores were counted, including 16, round and two flat. Two hammerstones (498 & 515) were also found. Twenty-five retouched and pointed flakes, and blades were counted, and three unifacial points (470 & 524) were found, including one bifacial point (515).

More than 95% of the tools are in quartzite and the rest in indurated shale. Less than 1.0% of the tools are in chalcedony/opaline.

While most of the tools are spread fairly unevenly and randomly over the surrounding landscape, a few, dispersed, low density scatters of tools were also documented in the footprint area. These include 439, 470, 516, 525, 543 and 546 and include a representative sample of the remains that has been described above, including fat and chunky triangular shaped flakes, weathered indurated shale flakes, chunks, flaked chunks/minimal cores, retouched and utilised blades/flakes, points and cores. Low density scatters of tools were also documented on the prominent hillock (484) alongside P2988, as well as on a large patch of stony ground at the southern toe of the hill (485).

Low density scatters of tools were also documented alongside the drainage channel in the north, and are far less prominent than those described in Section B where the frequency and range of tools was much higher. These include 447-448, 472-474, 491-493, 498 & 499, 511, 515, 524 and 533 & 534. In effect, these scatters should be seen as one larger site.

Several low density scatters of tools were also found close to the Eskom powerline and servitude in the north western portion of Section C. These include 463, 495, 518-520, 526 and 541, where relatively larger numbers of smaller quartzite and indurated shale flakes, chunks, cores, blade tools, and flaked chunks were found. Some of the small outcroppings of quartzite near the Eskom servitude also appear to have been fractured and flaked (519), with several unmodified flakes lying about in a discreet area which may indicate an activity/knapping area. One ESA cleaver (519) was also found here.

A collection of tools and the context in which some of them were found is illustrated in Figures 34-45.



Figure 34. Tools (438) from Section C. Scale is in cm



Figure 37. Tools (450) from Section C. Scale is in cm



Figure 35. Tools (439) from Section C. Scale is in cm



Figure 38. Collection of tools from Section C. Scale is in cm



Figure 36. Context in which the tools (439) were found



Figure 39. Tools (470) from Section C. Scale is in cm



Figure 40. Tools (470) from Section C. Scale is in cm



Figure 43. Early Stone Age cleaver. Scale is in cm



Figure 41. Context in which the tools (470) were found.



Figure 44. Tools (515) from Section C. Scale is in cm



Figure 42. Context in which the tools (519) were found.



Figure 45. Collection of tools from Section C. Scale is in cm

5. Predicted impacts

The results of the archaeological study of Sections A, B and C on the Farm Olyvenkolk 187 indicates that the impact of the construction and operation of the proposed Solar Cape Power Generation Facility on important archaeological remains is rated as being low.

Apart from knh14 in Section A, no significant archaeological heritage was documented. It should be noted that a 75 m buffer has been established around this potentially important site as recommended by the archaeologist in the May 2011 study.

In addition, a fixed 35-70 m ecological buffer has also been set around the drainage channels in Sections B and C that should provide protection to the low density scatter of tools in this area.

The mostly low density scatters of tools that have been documented closer to the Eskom servitude in the north western portion of Section C, including the small activity area (519), are located outside of the proposed layout area of the solar power facility, and therefore should not be impacted by the proposed activity.

6. Conclusion

Based on the results of the study there are no significant archaeological risks associated with the construction of a solar power facility on the Farm Olyvenkolk 187 (Sections A, B and C).

While relatively large numbers of MSA tools were documented in Section B and Section C of the proposed footprint area, these are mostly spread thinly and unevenly over the surrounding landscape. Apart from possibly 519 (in Section C), no activity areas or evidence of human settlement was noted. No rock engravings were documented among the many dolerite boulders searched. No graves were found, either.

Predictably higher frequencies of different types of tools occur alongside the drainage channels (particularly in Section B) but these scatters are located outside the proposed layout of the solar power facility and have been contained within a 35-70 m ecological buffer.

A few coherent scatters of tools were also documented near the Eskom servitude in the north western portion of Section C, but these remains also fall outside the proposed layout area of the solar power farm.

Comparison between Sections A, B and C indicate that there are no compelling differences in the range and types of artefacts recorded over the three land parcels. The tools in all three Sections are dominated by blunted and pointed MSA quartzite flakes, round and flatter prepared cores, large retouched and utilised parallel sided flake blades, and a handful of retouched unifacial and bifacial points. Smaller numbers of large, weathered indurated shale flakes were also counted in all three sections. Enigmatic pieces that were found include a rare hollow-based point in Section A, and an anvil/hammerstone/grindstone in Section B.

No pottery, bone, or ostrich eggshell was found on any of the three land parcels.

No rock engravings were found and there are no visible graves in Sections A, B or C.

Very few ESA implements were found in all three Sections, and included three handaxes and two cleavers.

No obvious LSA elements were found in Sections B and C, and only a few LSA remains (flakes and chunks) were found in Section A.

It is maintained that the AIA of Sections B and C has captured good information on the archaeological heritage present that is representative of the proposed footprint area and surrounding areas (including Section A).

It should be noted that the total extent of the farm Olyvenkolk 187 is more than 2200 ha, while Sections A, B and C represent about 17% of total area

Scoping of Section A, and a more detailed and systematic AIA of Sections B and C indicate that the proposed development of a 100 MW photovoltaic power generation facility on the Farm Olyvenkolk 187/3 near Kenhardt will not have an impact of great significance on these and potentially other archaeological remains.

Indications are that in terms of the archaeological heritage, the proposed construction of the Solar Cape PV facility near Kenhardt is viable, and impacts are expected to be limited. PV panels will be mounted on pedestals that are built above ground and extensive bedrock excavations are not envisaged.

In archaeological terms, no fatal flaws have been identified.

7. Recommendations

With regard to the two additional land parcels (Section B and Section C) that have been identified for the proposed construction and operation of the 100 MW Solar Cape Power Generation Facility, the following recommendations are made:

1. The project is deemed to be viable
2. The ecological buffer alongside the drainage channel in Section B must be extended to include the sites known as 355, 364, 383, 391, 392, 393 and 395.
3. The ecological buffer between the drainage channel and the physical (development) footprint area (in Sections A, B & C) must be maintained at all times (refer to Figure 3).

Appendix

Name of site	Name of Farm	Lat/Long	Description of finds
	Olyvenkolk 187/3		
Section B			
303		S29 29.108 E20 49.802	Several chunks, and flaked chunks, and small opaline flaked chunk
304		S29 29.061 E20 49.773	Several quartzite flakes, 1 weathered indurated shale flake.
305		S29 29.030 E20 49.729	Flake
306		S29 29.005 E20 49.700	Chunk and flake
307		S29 28.971 E20 49.679	MSA bifacial flake and core
308		S29 28.922 E20 49.673	3 or 4 Quartzite MSA flakes, chunk, core
309		S29 28.885 E20 49.675	3-4 Quartzite flakes, large flakes, Chalcedony chunk, quartzite retouched flake
310		S29 28.833 E20 49.680	Dispersed scatter of 3-4 large flakes, a few chunks and weathered indurated shale flake and large chunk on flat stony piece of ground
311		S29 28.834 E20 49.709	Quartzite chunk, flake and flaked chunk
312		S29 28.984 E20 49.753	3 – 4 quartzite flakes, quartzite core , chunk and flake
313		S29 29.024 E20 49.821	X 2 quartzite MSA flakes
314		S29 28.991 E20 49.805	MSA quartzite flake
315		S29 28.953 E20 49.771	Low density scatter of quartzite flakes, inc. large flakes, chunks, core , indurated shale flake and blade, on very stony area
316		S29 28.890 E20 49.736	Low density scatter of large quartzite flake, large weathered indurated shale flake, on stony ground
317		S29 28.851 E20 49.712	Large flaked chunk, large indurated shale MSA re-touched blade
318		S29 28.842 E20 49.729	Large flaked chunk
319		S29 28.819 E20 49.696	Re-touched and utilized indurated shale flake/blade
320		S29 28.801 E20 49.692	Large chunky rectangular blade tool miscellaneous re-touched and round core
321		S29 28.808 E20 49.696	Weathered core
322		S29 28.817 E20 49.706	3 flakes, chunk, flaked chunk, chalcedony utilized chunk on stony ground
323		S29 28.823 E20 49.713	MSA Quartzite flake
324		S29 28.830 E20 49.721	MSA Quartzite flake
325		S29 28.856 E20 49.744	Large flaked rock
326		S29 28.885 E20 49.761	MSA Quartzite flake and flat core and utilized re-touched quartzite flake
327		S29 28.938 E20 49.794	MSA Quartzite flake
328		S29 28.944 E20 49.799	Flake chunk
329		S29 28.989 E20 49.865	MSA flake
330		S29 28.957 E20 49.839	Weathered indurated shale flake, 2 – 3 Quartzite flakes, chunk, on flat stony ground
331		S29 28.882 E20 49.792	ESA flake, weathered retouched indurated shale blade , x 2 MSA quartzite flakes

332		S29 28.863 E20 49.779	Broken MSA point?
333		S29 28.847 E20 49.771	Flakes and chunk
334		S29 28.812 E20 49.746	Re-touched pointed MSA quartzite flake , x 2 quartzite flakes, several chunks, indurated shale flake
335		S29 28.792 E20 49.732	X 2 MSA quartzite flakes
336		S29 28.775 E20 49.729	4 – 5 MSA quartzite flakes
337		S29 28.760 E20 49.732	Thin scatter of quartzite flakes, round weathered quartzite core, weathered indurated shale flake
338		S29 28.782 E20 49.759	Quartzite MSA flake
339		S29 28.813 E20 49.792	Quartzite MSA flake
340		S29 28.848 E20 49.810	Quartzite MSA flake
341		S29 28.860 E20 49.813	Flat quartzite flake
342		S29 28.879 E20 49.811	Large chunky re-touched and utilized quartzite blade
343		S29 28.890 E20 49.873	Large chunky rectangular utilized quartzite blade
344		S29 28.879 E20 49.878	Round core
345		S29 28.750 E20 49.798	Quartzite MSA flake
346		S29 28.724 E20 49.781	Thin, wide scatter of 30 – 40 white quartzite flakes, flat core on stony ground near drainage channel
347		S29 28.801 E20 49.845	Large weathered indurated shale
348		S29 28.828 E20 49.860	Flat core
349		S29 28.864 E20 49.887	Quartzite flake
350		S29 28.942 E20 49.912	Large burnished indurated shale flake
351		S29 28.891 E20 49.943	Round core
352		S29 28.837 E20 49.914	2 – 3 quartzite flakes chunk, indurated shale flake on stony area
353		S29 28.739 E20 49.835	Large quartzite flake MSA
354		S29 28.673 E20 49.803	Thin scatter of quartzite flakes, chunks, flake chunk, round core (extension of 346)
355		S29 28.665 E20 49.820	Thin scatter of quartzite flakes, round flat core , flaked chunk, x 2 indurated flakes, blade/flake
356		S29 28.692 E20 49.857	Quartzite MSA flake
357		S29 28.750 E20 49.906	Quartzite MSA flake and core
358		S29 28.890 E20 49.946	Quartzite flake and chunk
359		S29 28.768 E20 49.891	Quartzite MSA flake
360		S29 28.750 E20 49.880	Indurated shale blade
361		S29 28.727 E20 49.858	X2 quartzite MSA flakes
362		S29 28.685 E20 49.830	Large weathered indurated shale blade/flake and quartzite flake
363		S29 28.668 E20 49.820	Large flat weathered flake in indurated shale
364		S29 28.635 E20 49.794	X 6 MSA quartzite flakes, flaked chunk, snapped flake, large round core
365		S29 28.628 E20 49.814	Large round core
366		S29 28.657 E20 49.849	Prepared core , x 2 quartzite flakes, chunk
367		S29 28.673 E20 49.875	Large flat MSA side struck quartzite flake

368		S29 28.724 E20 49.936	Quartzite flake
369		S29 28.732 E20 49.937	Round core
370		S29 28.817 E20 50.020	Re-touched indurated shale flake
371		S29 28.771 E20 49.956	MSA quartzite flake
372		S29 28.770 E20 49.931	MSA quartzite flake
374		S29 28.792 E20 50.031	Flaked chunk
375		S29 28.757 E20 50.019	MSA quartzite flake
376		S29 28.701 E20 49.976	MSA quartzite flake
377		S29 28.695 E20 49.967	Large indurated shale flake
378		S29 28.692 E20 49.965	MSA quartzite flake
379		S29 28.686 E20 49.954	MSA quartzite flake
380		S29 28.632 E20 49.893	MSA quartzite flake
381		S29 28.629 E20 49.892	Thin scatter of \pm 7-8 quartzite flakes, 4 - 5 chunks, x 3 indurated flakes on large stony ground, round core alongside drainage channel
382		S29 28.622 E20 49.850	X 2 MSA quartzite flakes
383		S29 28.614 E20 49.842	Thin scatter including MSA quartzite flake, quartzite blade, x 2 weathered indurated shale flakes and chunk, x 2 large flake blades
384		S29 28.727 E20 49.998	MSA quartzite flake
385		S29 28.774 E20 50.046	X 2 MSA quartzite flakes
386		S29 28.769 E20 50.050	X 2 MSA quartzite flakes
387		S29 28.761 E20 50.045	X 3 MSA quartzite flakes
388		S29 28.746 E20 50.031	Chunk
389		S29 28.703 E20 49.994	Large flaked chunk/flat core
390		S29 28.683 E20 49.980	X 2 MSA quartzite flakes
391		S29 28.620 E20 49.928	Low density scatter of quartzite flakes and chunks, and weathered indurated shale lake on stony ground
392		S29 28.595 E20 49.903	X 2 quartzite flakes, chunk, indurated shale flake, indurated shale chunk/core, x 2 MSA blades stony ground close to drainage channel
393		S29 28.568 E20 49.891	Thin scatter of quartzite flakes, chunk, indurated shale flake, indurated shale chunk/core, x 2 MSA blades, round core , re-touched scraper/MRP on stony ground between 50-70 cm from drainage channel
394		S29 28.557 E20 49.964	Pressure flaked MSA bifacial point – broken
395		S29 28.561 E20 49.967	Small scatter of quartzite flakes, a few chunks, one flaked chunk, indurated shale flake
396		S29 28.586 E20 49.980	2 – 3 triangular shaped quartzite flakes
397		S29 28.708 E20 50.031	MSA flake
398		S29 28.771 E20 50.100	Anvil
399		S29 28.769 E20 50.099	Quartzite flake
400		S29 28.760 E20 50.097	Large flaked chunk, indurated shale flake and several quartzite flakes

401		S29 28.757 E20 50.090	Utilized MSA quartzite flake and core
402		S29 28.751 E20 50.088	Weathered indurated shale flake
403		S29 28.748 E20 50.086	Hammer-stone/grind-stone/anvil
404		S29 28.754 E20 50.072	Indurated shale flaked chunk
405		S29 28.742 E20 50.099	Utilized indurated shale flake
406		S29 28.749 E20 50.066	Large quartzite flake
407		S29 28.725 E20 50.077	Indurated shale chunk
408		S29 28.683 E20 50.086	Flat quartzite flake
409		S29 28.551 E20 50.118	3 – 4 quartzite flakes, chunk, flaked chunk
410		S29 28.533 E20 50.112	Quartzite flake
411		S29 28.515 E20 50.096	Quartzite flake
412		S29 28.487 E20 50.045	Bifacial point , 2 flakes and flaked chunk
413		S29 28.503 E20 50.051	Large flaked chunk/core
414		S29 28.551 E20 50.092	Bifacial point
415		S29 28.572 E20 50.099	Large quartzite flake
416		S29 28.491 E20 50.017	X 2 quartzite flakes, one chunk
417		S29 28.513 E20 50.013	Quartzite flake and chunk
418		S29 28.686 E20 50.019	MSA quartzite flake
419		S29 28.741 E20 50.022	Chunky flake
420		S29 28.728 E20 49.996	Large MSA blade in indurated shale
421		S29 28.724 E20 49.993	Snapped MSA flake
422		S29 28.681 E20 49.953	Large flat chunky MSA flake
423		S29 28.664 E20 49.936	Large indurated shale weathered flake
424		S29 28.619 E20 49.899	Large worked out core/flake
425		S29 28.731 E20 49.714	Large chunky Quartzite blade, side re-touched point
428		S29 28.939 E20 49.750	Large indurated shale core
Section C			
430		S29 28.318 E20 49.447	Broken quartzite flake
431		S29 28.321 E20 49.445	MSA quartzite flake
432		S29 28.325 E20 49.445	MSA quartzite flake
433		S29 28.346 E20 49.450	Large weathered indurated shale lake
434		S29 28.354 E20 49.452	Large weathered indurated shale flake
435		S29 28.357 E20 49.454	Quartzite flake and chunk
436		S29 28.370 E20 49.461	X 3 quartzite flakes and 1 chunk
437		S29 28.384 E20 49.468	Quartzite flake
438		S29 28.408 E20 49.477	Low-density scatter, including 2 quartzite flakes, 1 re-touched blade , 1 chunk, 1 large pointed indurated shale flake , 1 large re-touched indurated flake
439		S29 28.453 E20 49.493	Low density scatter, indurated shale flake, quartzite chunk and flake, large chunk x 2 blade flakes, chunks and flake
440		S29 28.510 E20 49.502	Re-touched indurated shale blade , MSA quartzite flake X2 and chunks
441		S29 28.544 E20 49.509	X 2 quartzite flakes, large quartzite flake blade
442		S29 28.550 E20 49.489	Flaked chunk/minimal core
443		S29 28.549 E20 49.499	X 2 quartzite flakes, chunk, quartzite blade
444		S29 28.562 E20 49.504	Large quartzite flake, large re-touched

			flake , pointed quartzite flake/blade
445		S29 28.572 E20 49.507	X 7 quartzite flakes, x 2 large quartzite flakes
446		S29 28.574 E20 49.520	Low density scatter, quartzite flakes, chunk, weathered indurated shale flake, quartzite pointed flake
447		S29 28.636 E20 49.536	quartzite flake, indurated shale flake, chunks in gravel road near drainage channel
448		S29 28.641 E20 49.518	Extension of '447', flakes and chunks on stony ground near drainage channel, including weathered indurated shale flake,
449		S29 28.540 E20 49.485	MSA quartzite flake and chunk, large flake chunk, indurated shale flake
450		S29 28.517 E20 49.472	Quartzite flake, indurated shale, flake, incomplete ESA hand-axe? Large re-touched flake on stony ground
451		S29 28.499 E20 49.466	Re-touched quartzite flake , large weathered indurated shale miscellaneous re-touched flake
452		S29 28.491 E20 49.459	Large quartzite flake
453		S29 28.485 E20 49.458	Low density scatter of small and larger quartzite flakes, weathered indurated shale flake
454		S29 28.487 E20 49.456	MSA quartzite flake
455		S29 28.433 E20 49.431	Weathered indurated shale flake, smaller quartzite flake
456		S29 28.414 E20 49.426	X 3 quartzite flakes
457		S29 28.400 E20 49.422	Quartzite flake
458		S29 28.395 E20 49.419	Quartzite flake
459		S29 28.395 E20 49.419	Quartzite chunk, x 2 flakes, 1 flaked chunk, 1 re-touched pointed flake , round core
460		S29 28.391 E20 49.415	Round core
461		S29 28.381 E20 49.409	Large side-struck quartzite flake, several chunks and quartzite flakes, weathered snapped indurated shale flake
462		S29 28.379 E20 49.404	Large quartzite core
463		S29 28.371 E20 49.401	Low density scatter of a few quartzite flakes and chunks on stony ground near ESKOM servitude
464		S29 28.364 E20 49.382	Quartzite flake on stony ground
465		S29 28.416 E20 49.398	Large weathered re-touched indurated shale flake , large quartzite flake, flaked chunk, flat re-touched unifacial flake
466		S29 28.457 E20 49.424	Several large weathered indurated shale flakes
467		S29 28.498 E20 49.434	Quartzite chunk, flaked chunk/minimal core and pointed quartzite utilized flake
468		S29 28.509 E20 49.433	X 2 quartzite flakes
469		S29 28.523 E20 49.433	Quartzite flake
470		S29 28.550 E20 49.446	Low density scatter, large and smaller quartzite flakes, weathered indurated shale flakes, large quartzite flake, large

			indurated shale flake, x 2 triangular shaped flakes, large minimal core, quartzite blade, large re-touched point
471		S29 28.587 E20 49.446	Long 'blady' quartzite flake, large side-struck flake
472		S29 28.636 E20 49.475	Large flat re-touched quartzite flake, quartzite blade, weathered indurated shale flake and chunk, flaked quartzite chunk on stony ground near drainage channel
473		S29 28.676 E20 49.489	Extension of '472', low density scatter of flakes, flaked blade, 1 – 2 pointed flakes, core , indurated shale flakes including re-touched flake
474		S29 28.646 E20 49.460	Extension of '472' and '473'
475		S29 28.634 E20 49.430	3 - 4 Quartzite flakes, chunk, large flaked cobble
476		S29 28.615 E20 49.407	Chunk and flake
477		S29 28.594 E20 49.418	Large side-struck re-touched quartzite flake
478		S29 28.574 E20 49.420	Quartzite flake
479		S29 28.508 E20 49.400	Large Quartzite flake, large core , long blade, x 2 quartzite flakes, flaked chunk
480		S29 28.481 E20 49.399	Quartzite blade and flaked cobble
481		S29 28.439 E20 49.376	Long quartzite blade, quartzite flake
482		S29 28.405 E20 49.354	Quartzite flake/re-touched blade , round core
483		S29 28.398 E20 49.351	2 – 3 quartzite flakes, chunk, flaked chunk
484		S29 28.436 E20 49.300	Low density scatter of quartzite flakes and blades and chunks on hillock <u>outside</u> footprint area
485		S29 28.479 E20 49.349	Low density scatter of quartzite flakes, chunks, large quartzite flake on stony ground
486		S29 28.498 E20 49.356	Flat quartzite flake
487		S29 28.518 E20 49.368	Quartzite flake
488		S29 28.571 E20 49.386	Flaked nodule
489		S29 28.626 E20 49.419	Several flakes and chunks, large round flaked cobble/core
490		S29 28.630 E20 49.407	X 2 weathered indurated shale flakes, quartzite flake and chunk
491		S29 28.692 E20 49.427	Low density scatter near drainage channel including quartzite flakes, indurated shale flakes, core , 1 – 2 pointed flakes and blades, large chunk, chalcedony flake
492		S29 28.699 E20 49.399	Extension of '491'
493		S29 28.686 E20 49.379	Extension of '491'
494		S29 28.644 E20 49.384	Several quartzite flakes and chunks, large weathered indurated shale flake
495		S29 28.644 E20 49.415	Low density scatter of about 20 – 30 quartzite flakes on stony ground near ESKOM servitude, flake blade, flaked cobble
496		S29 28.509 E20 49.319	Large weathered indurated shale flake

497		S29 28.596 E20 49.344	Indurated shale flake and quartzite flake
498		S29 28.659 E20 49.366	Low density scatter, quartzite flakes on stony ground near drainage channel including hammerstone , 1 – 2 blades, weathered indurated shale flake, round core , flaked chunk
499		S29 28.688 E20 49.352	Extension of '498'
500		S29 28.647 E20 49.341	Large weathered indurated shale flake
501		S29 28.625 E20 49.333	Thin scatter of quartzite flakes, chunk, blade on stony ground
502		S29 28.620 E20 49.344	Large quartzite flake, chunk and flaked chunk on stony ground
503		S29 28.590 E20 49.336	Round core
504		S29 28.528 E20 49.278	Large re-touched quartzite blade
505		S29 28.575 E20 49.259	Quartzite flake, flat core , flaked chunk
506		S29 28.558 E20 49.230	Flat core and flake
507		S29 28.608 E20 49.275	Large quartzite flake
508		S29 28.667 E20 49.304	Large quartzite flake
509		S29 28.662 E20 49.328	Large quartzite flake
510		S29 28.678 E20 49.344	Large quartzite flake
511		S29 28.688 E20 49.341	Thin scatter of flakes and chunks, blade flake, weathered indurated shale flake on edge of drainage channel
512		S29 28.673 E20 49.322	Large quartzite ESA flake and MSA flake
513		S29 28.659 E20 49.303	Quartzite flake
514		S29 28.726 E20 49.325	Quartzite blade
515		S29 28.709 E20 49.315	Thin scatter on edge of drainage channel including quartzite flakes, large triangular point, flaked chunk, and bifacial point? Side-struck flake, weathered blade, hammerstone?
516		S29 28.662 E20 49.309	Several quartzite flakes, indurated shale flake, side re-touched quartzite blade, large re-touched quartzite flake , high round core , indurated shale flake near Kokerboom
517		S29 28.610 E20 49.249	Large side-struck quartzite flake and smaller weathered flake blade
518		S29 28.582 E20 49.227	Medium-low density scatter, 30 – 40 quartzite flakes, weathered indurated shale flake, miscellaneous re-touched blade , x 2 retouched pointed flakes , about 50m from ESKOM servitude
519		S29 28.573 E20 49.220	Scatter of large quartzite flakes dispersed among outcropping of quartzite some of which have been fractured and flaked. Possible activity area. ESA cleaver
520		S29 28.559 E20 49.208	Thin dispersed scatter of quartzite flakes, weathered indurated shale flakes, core , flaked chunk, x 2 chunks near ESKOM servitude
521		S29 28.654 E20 49.264	X 4 quartzite flakes
522		S29 28.695 E20 49.281	Large quartzite flake, chunk, re-touched

			blade
523		S29 28.680 E20 49.265	Thin scatter of quartzite flakes, flaked chunk, round core , quartzite blade, weathered indurated shale flake
524		S29 28.646 E20 49.250	Closer to drainage channel in the west, thin scatter of large and smaller quartzite flakes, weathered flake, weathered blade, unifacial point , large weathered re-touched quartzite flake
525		S29 28.602 E20 49.193	Low density scatter, x 2 weathered re-touched & utilized blades , large quartzite blade/flake, flake chunk, weathered flake, flaked chunk
526		S29 28.580 E20 49.157	Low density scatter near ESKOM servitude including quartzite flakes, flaked cobble, blade-tools, round core , weathered indurated shale flake
527		S29 28.673 E20 49.228	Thin scatter, 1 – 2 blade-tools, flaked chunk and chunk
528		S29 28.717 E20 49.254	Side-struck MSA flake
529		S29 28.739 E20 49.267	Large quartzite flake
530		S29 28.765 E20 49.222	Snapped chalcedony flake, one side re-touched flake in quartzite
531		S29 28.748 E20 49.155	Quartzite flake and 2 weathered indurated shale flakes
532		S29 28.733 E20 49.080	X 2 quartzite flakes, one pointed quartzite flake
533		S29 28.726 E20 49.022	Thin scatter of quartzite flakes and chunks on stony ground alongside drainage channel, including blade-tools x 2, weathered indurated shale flake, one round core, one flat core , large quartzite flakes, weathered quartzite flakes, flaked chunk
534		S29 28.720 E20 49.055	Extension of 533 including quartzite flakes and indurated shale flakes, flaked cobble/core, 1 – 2 blade-tools
535		S29 28.735 E20 49.105	Flat quartzite flake (cortex)
536		S29 28.736 E20 49.181	2 – 3 quartzite flakes, indurated shale flakes
537		S29 28.721 E20 49.167	Several quartzite flakes and chunks
538		S29 28.702 E20 49.131	Snapped weathered quartzite re-touched pointed flake , 2 – 3 quartzite flakes
539		S29 28.695 E20 49.118	Large weathered indurated shale flake, large side-struck quartzite flake
540		S29 28.681 E20 49.084	Several large quartzite flakes
541		S29 28.648 E20 49.027	Low density scatter of quartzite flakes and chunks, flaked chunk, x 2 weathered indurated shale flakes, near ESKOM servitude
542		S29 28.706 E20 49.097	X 2 quartzite flakes, weathered indurated shale chunk
543		S29 28.699 E20 49.047	+10 quartzite flakes, 1 flat core , 2 – 3 chunks

544		S29 28.678 E20 49.151	X 2 quartzite flakes
545		S29 28.656 E20 49.202	Large quartzite flake and blade, smaller flakes
546		S29 28.635 E20 49.174	Low density scatter of a few large quartzite flakes and several smaller flakes, chunks, flaked chunk, weathered indurated shale flakes
547		S29 28.629 E20 49.165	2 – 3 quartzite flakes, flaked chunk, chunk, snapped blade
548		S29 28.610 E20 49.158	Long re-touched quartzite blade (broken)
549		S29 28.587 E20 49.179	Large broken weathered quartzite re-touched blade.

Table 1. Spreadsheet of waypoints and description of the archaeological finds

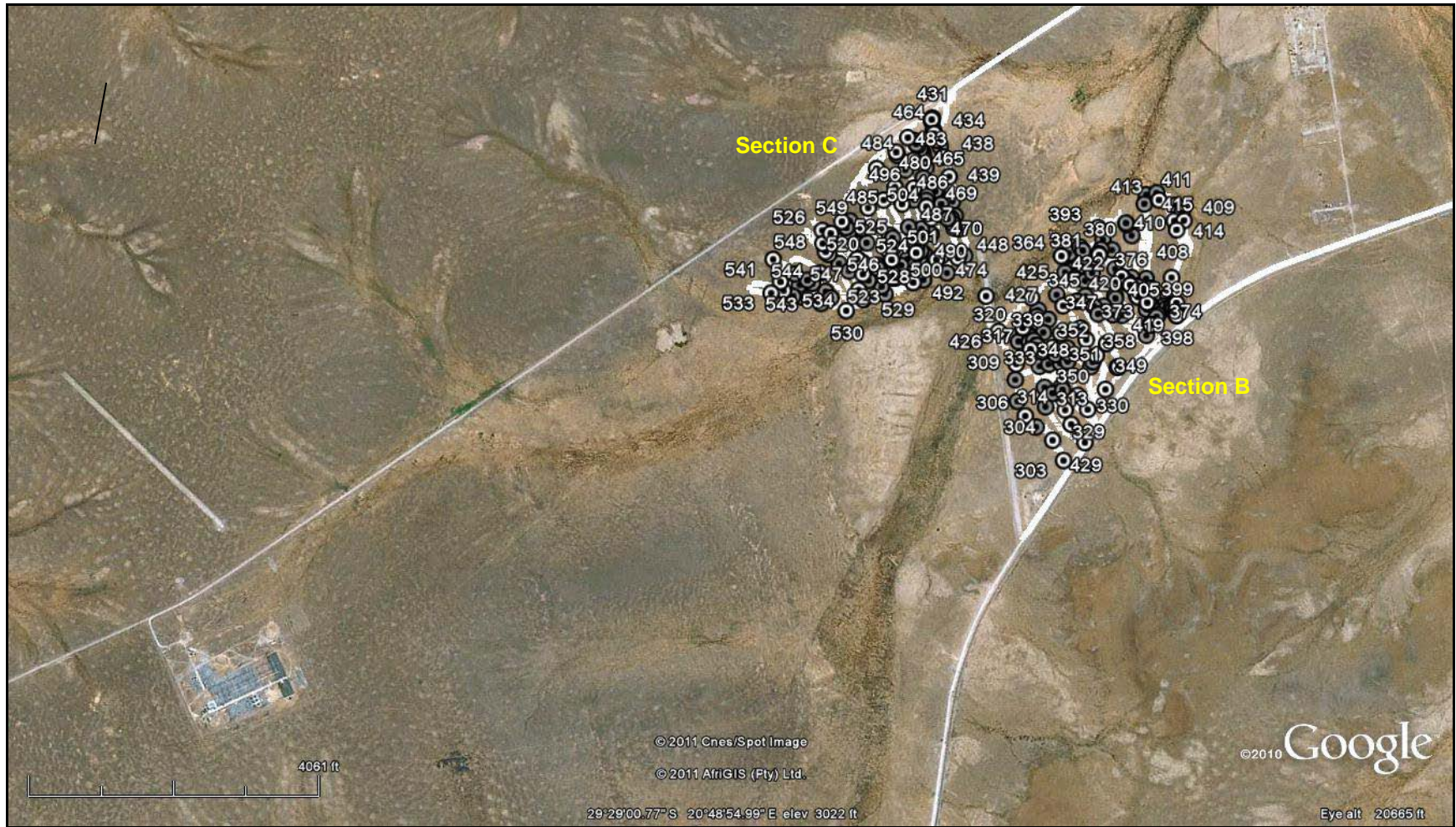


Figure 46. Waypoints of archaeological occurrences in Section B and C

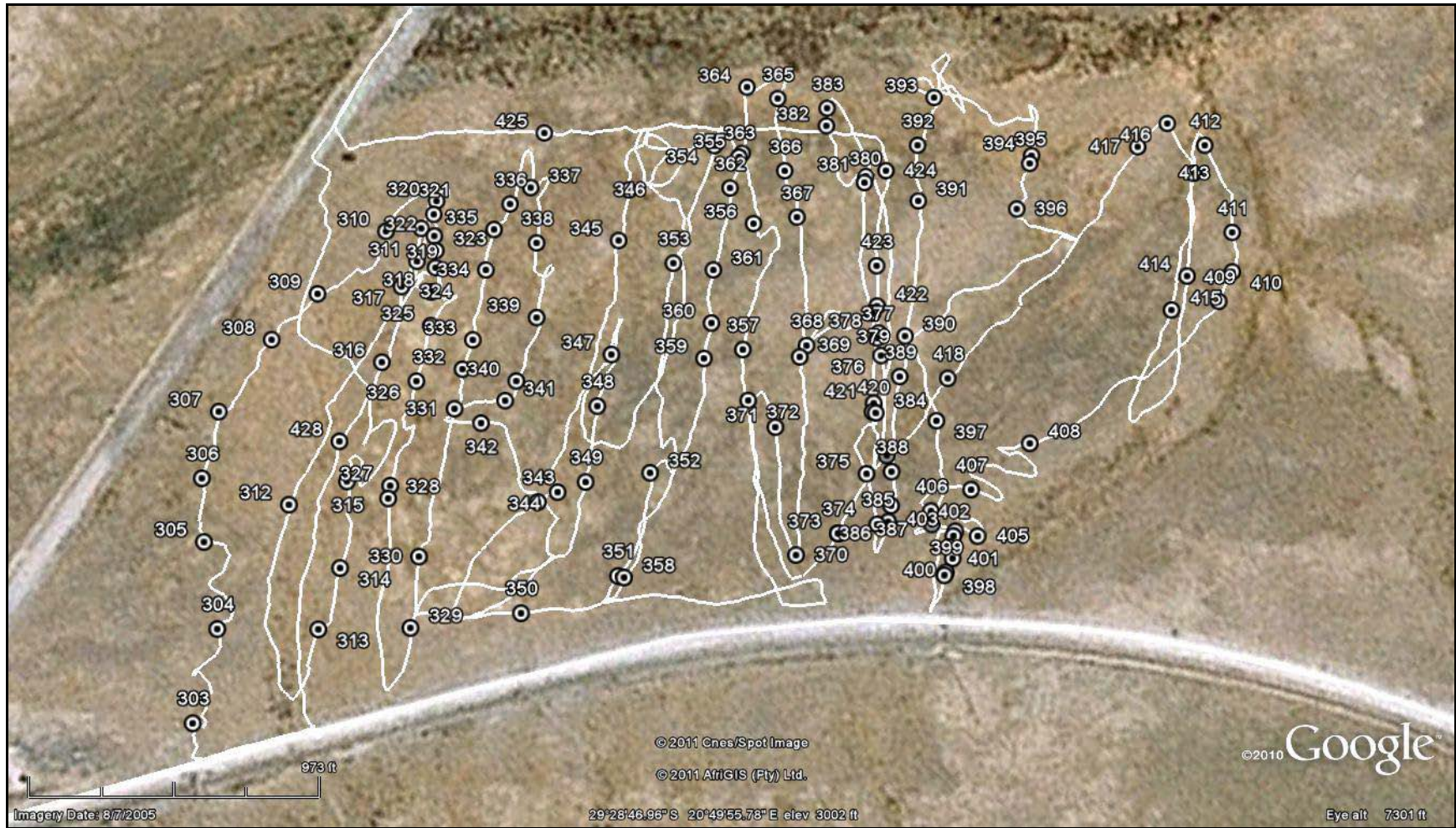


Figure 47. Waypoints of archaeological occurrences, and track paths in Section B

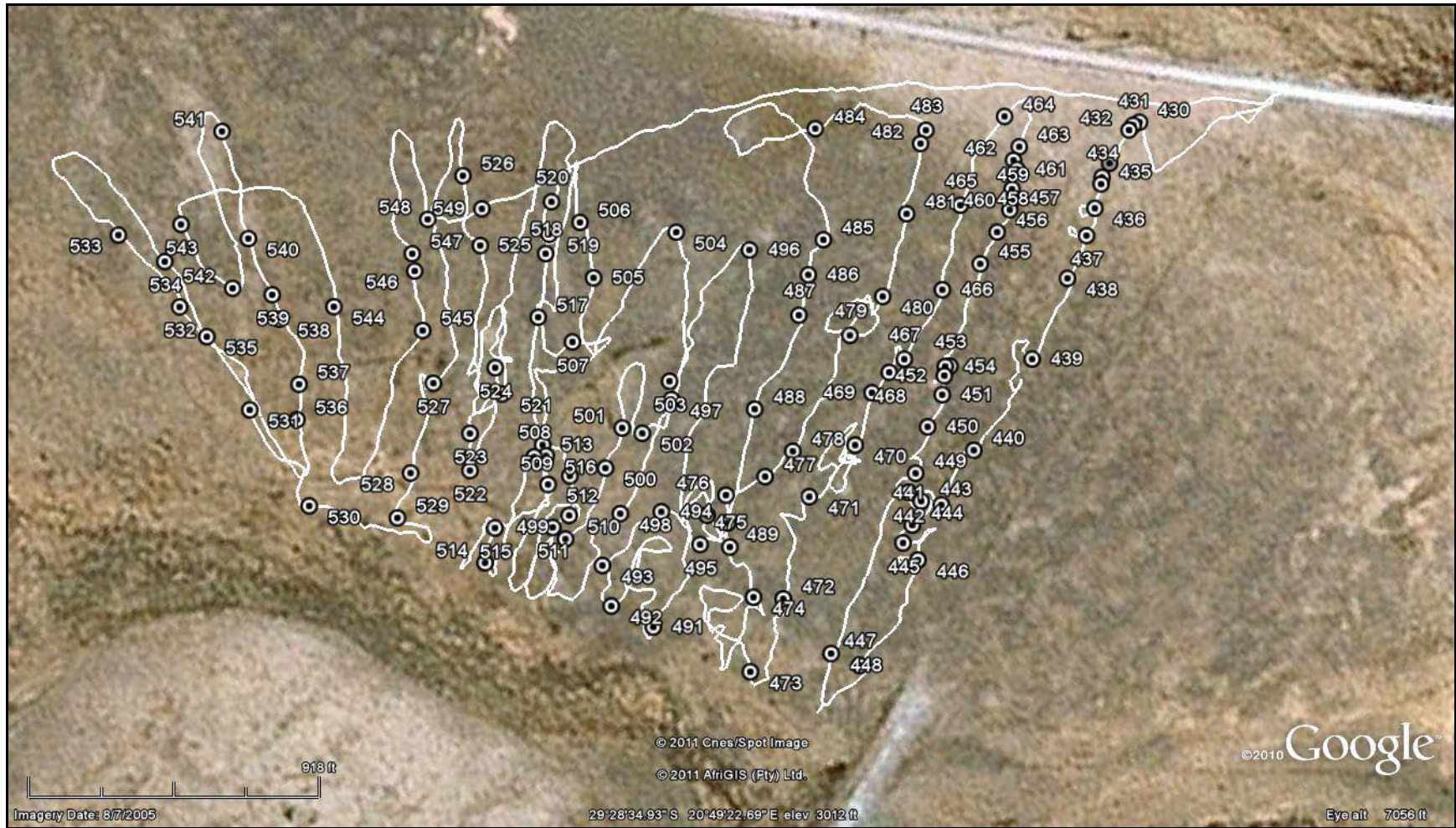


Figure 47. Waypoints of archaeological occurrences and track paths in Section C