ARCHAEOLOGICAL IMPACT ASSESSMENT THE PROPOSED UPGRADING OF THE LOUISEVALE ROAD WASTE WATER TREATMENT WORKS IN LOUISEVALE, UPINGTON NORTHERN CAPE PROVINCE

Prepared for:

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Executive summary

ACRM was commissioned to conduct an Archaeological Impact Assessment (AIA) for the proposed upgrading of the Louisevale Road Waste Water Treatment Works on Erf 1036 in Louisevale in Upington, in the Northern Cape Province.

The existing facility is an oxidation pond system, servicing the village of Louisevale Road, which is located a few kilometres south of the Orange River. Due to a sharp growth in the population, the facility is currently operating at flows in excess of the design capacity. The conditions of the existing ponds are also poor, and the system is organically overloaded, leading to a very poor quality effluent which does not comply with industry standards. There is also a high risk of surface and groundwater water contamination.

The proposed upgrading will essentially comprise increasing the capacity of the existing sewerage ponds and the construction of two new sewerage ponds, and a storage pond.

The proposed upgrading and expansion will take place within a footprint area covering about 4 ha in extent.

In terms of Section 38 (1) (c) (iii) of the National Heritage Resources Act 1999 (Act 25 of 1999), a Heritage Impact Assessment of the proposed project is required if the footprint area of the proposed development is more than 5000 m².

The AIA forms part of the Environmental Basic Assessment process that is being conducted by EnviroAfrica.

The aim of the study is to locate and map archaeological heritage that may be impacted by the proposed project, to assess the significance of the potential impacts and to propose measures to mitigate the impacts.

A detailed foot survey of the proposed development site was undertaken in which the following observations were made:

34 stone artefacts were counted and mapped with a hand held GPS unit. The majority of the tools are assigned to the Middle Stone Age. One or two Later Stone Age elements may also occur, but no Early Stone Age implements were encountered. The tools are spread very thinly and unevenly over the surrounding landscape. The majority of the lithics comprise flakes and chunks but at least seven round/irregular cores were found. Most of the implements display some retouch, or utilization damage, but only one formal retouched tool, a side/end scraper was found.

More than 85% of the implements are in banded iron stone, with the remainder in indurated shale, quartz and quartzite. Banded ironstone is well known to have been a favoured and desirable raw material for making stone artefacts and occurs on many archaeological sites throughout the Northern Cape.

As archaeological sites are concerned, however, the occurrences are lacking in context as no organic remains such as bone, pottery or ostrich eggshell was found.

Overall the relatively small numbers and isolated and disturbed context in which they were found means that the archaeological remains on Erf 1036 have been rated as having low (Grade 3C) significance.

In terms of the built environment, the area has no significance, as there are no old buildings, structures, or features, old equipment, public memorial or monuments in the proposed footprint area.

The study has identified no significant impacts to pre-colonial archaeological material that will need to be mitigated prior to proposed development activities. The study has captured most of the information on the archaeological heritage.

The results indicate that the proposed upgrading and expansion of the Louisevale oxidation pond system will not have an impact of great significance on these and potentially other archaeological remains.

The following recommendations are made:

1. No further archaeological mitigation is required.

2. Should any unmarked human burials/remains or ostrich eggshell water flask caches be uncovered, or exposed during construction activities, these must immediately be reported to the archaeologist (Jonathan Kaplan 082 321 0172), or the South African Heritage Resources Agency (SAHRA) (Att Ms Katie Smuts 021 462 4502). Burials, etc. must not be removed or disturbed until inspected by the archaeologist.

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1. INTRODUCTION

EnviroAfrica requested that the Agency for Cultural Resource Management conduct an Archaeological Impact Assessment (AIA) for the proposed upgrading of the Louisevale Road Waste Water Treatment Works on Erf 1036 in Louisevale (//Khara Hais Local Municipality) in Upington, in the Northern Cape (Figures 1 & 2).

The existing facility is an oxidation pond system, servicing the village of Louisevale Road, which is located a few kilometres south of the Orange River. Due to a sharp growth in the population, the facility is operating at flows in excess of the design capacity. The conditions of the existing ponds are also poor and the system is currently organically overloaded, leading to a very poor quality effluent which does not comply with industry standards. There is also a high risk of surface and groundwater water contamination.

The proposed upgrading will essentially comprise increasing the capacity of the existing sewerage ponds, and the construction of two new sewerage ponds, and a storage pond. The proposed activities will take place within a footprint area covering about 4ha in extent.

The AIA forms part of the Environmental Basic Assessment process that is being conducted by EnviroAfrica.

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)).

Figure 1. Locality Map

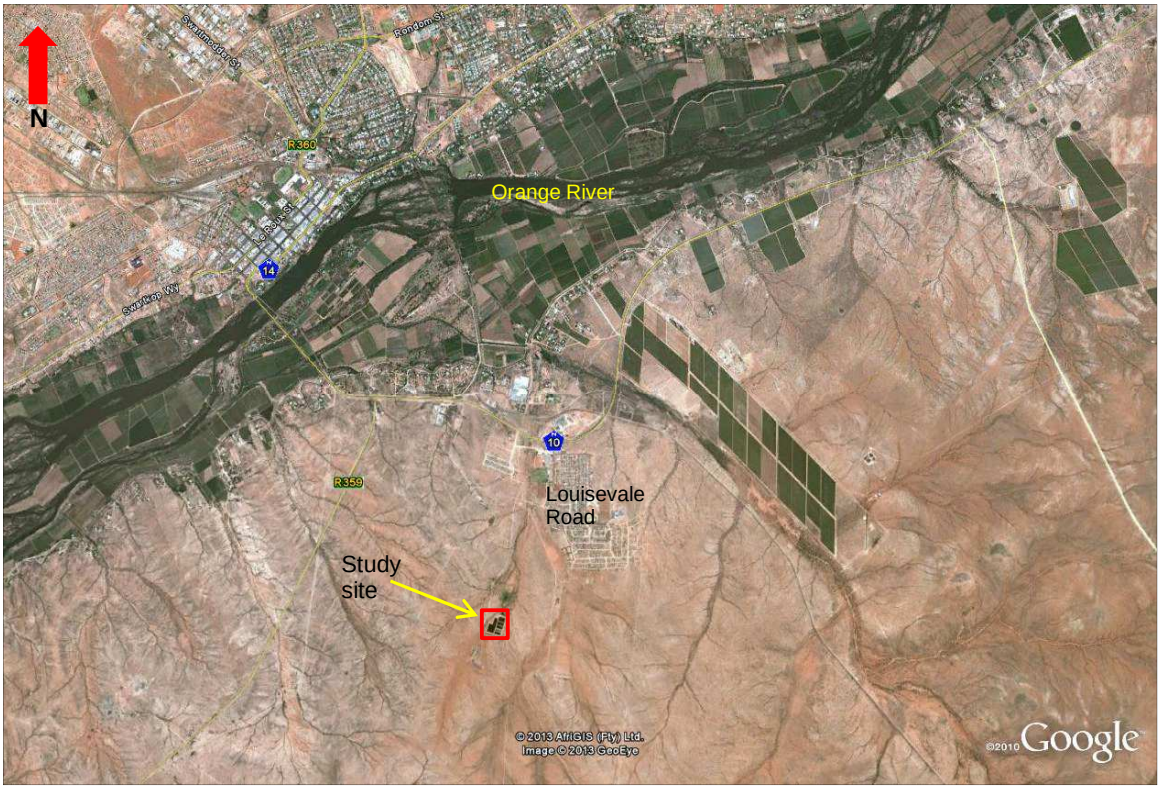

Figure 2.Google image illustrating the location of the study site.

3. TERMS OF REFERENCE

The terms of reference for the archaeological study were to:

- Determine whether there are likely to be any important archaeological resources that may potentially be impacted by the proposed project;
- Indicate any constraints that would need to be taken into account in considering the development proposal;
- Identify potentially sensitive archaeological areas, and
- Recommend any further mitigation action.

4. DESCRIPTION OF THE AFFECTED ENVIRONMENT

The proposed site is located in Louisevale Village, about 3.5kms south of the Orange River in Upington. Access to the facility is from the N10 Groblaarshoop Road, via a gravel road, and past an informal dumping site. The facility is fenced off and there is one dilapidated building at the entrance. Outside the boundary of the existing facility, the footprint area for the proposed expansion comprises a flat piece of gravel terrain, bound by the ponds in the south, a wetland area in the south east and a gravel road in the north (Figures 3-7)). Some vegetation cover occurs in places. A drainage channel is located nearby in the north east. Apart from the existing facility there are no old buildings, or structures on the proposed site, nor are there any visible graves. Surrounding land use comprises some marginal grazing and vast tracts of vacant land.

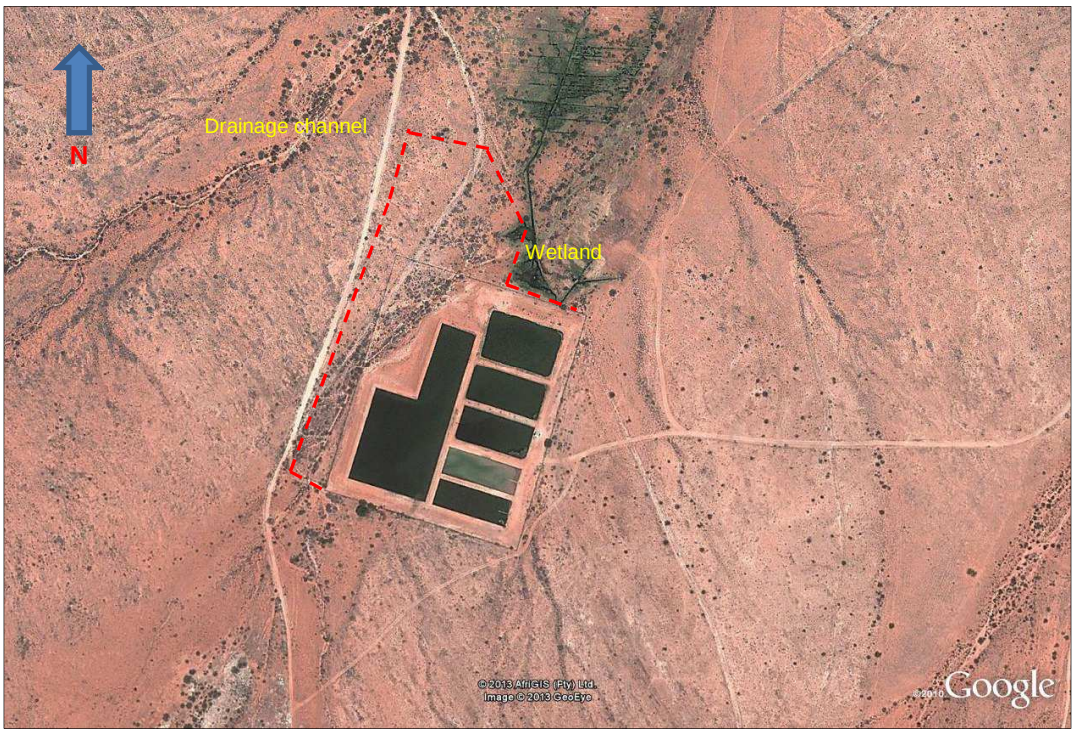

Figure 3. Aerial photograph of the existing Louisevale Road WWTW and the approximate boundary (red dashed line) of the proposed expansion.

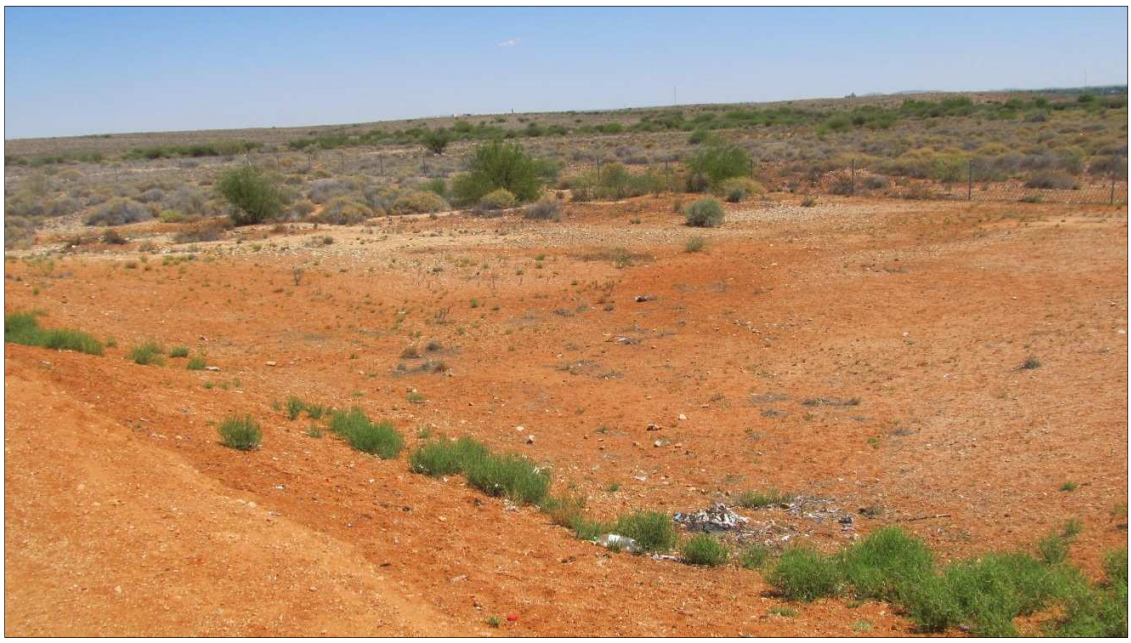

Figure 4. View of the existing footprint area facing north east. Notice the already severely disturbed terrain in the foreground where some of the proposed expansion will take place.

Figure 5. View of the existing footprint area facing south east. The artificially created wetland area is in the background of the plate, immediately behind the boundary fence.

Figure 6. View of the proposed site facing west. The gravel road is the northern limit of the proposed expansion programme.

Figure 7. View of the proposed site facing north east. The existing WWTW is to the right of the plate

5. STUDY APPROACH

5.1 Method of survey

A survey of the proposed footprint area was undertaken on 31 January 2013.

A GPS track path of the survey was created (refer to Figure 10 in Appendix II). All archaeological occurrences documented during the study were mapped in-situ using a hand-held Garmin Oregon 300 GPS unit set on the map datum WGS 84. A desk top study was also done.

5.2 Constraints and limitations

There were no constraints or limitations associated with the study. Overall, archaeological visibility was very good.

5.3 Identification of potential risks

Based on the results of the study, there are no archaeological risks associated with the proposed development.

5.4 Results of the desk top study

Not much archaeological work has been done in Upington, apart from an AIA for two small borrow pits on the northern bank of the Orange River near Uap, where small numbers of mainly banded iron stone, Later Stone Age implements were found (Kaplan 2008). A handful of tools comprising Later, Middle and Early Stone Age implements were also recorded during a recent study for the proposed upgrading of the (very severely degraded) KWV Upington Effluent Management Facility a few kilometres north west of the town (Kaplan 2013a). Further afield, relatively large numbers of tools, assigned mainly to the Middle Stone Age, were documented during a study for a proposed solar energy farm in Keimoes about 30 kms south west of Upington (Kaplan 2012a), while similar types of tools were encountered during a study for a large low cost housing project (Kaplan 2013b).

6. FINDINGS

Thirty archaeological occurrences numbering 34 stone artefacts were mapped and counted with a hand held GPS unit (refer to Table 2 in Appendix I). The majority of finds located during the study are assigned to the Middle Stone Age (MSA), but one or two LSA elements may be present. No Early Stone Age lithics were encountered. More than 85% of the tools are in banded ironstone, with the remainder in indurated shale, quartz and quartzite. Banded ironstone is known to have been a favoured raw material for making stone artefacts and occurs on a number of sites that have been documented by this archaeologist and others throughout the Northern Cape. It was clearly favoured by Stone Age people as a raw material for its superior flaking qualities, and almost every flake and chunk found on the Louisevale Road site has been either retouched, utilized or nicked.

Seven cores (comprising 20% of the lithics) were also counted, perhaps indicating the desirability of the raw material, while only one core in indurated shale was found. Frequencies of formally retouched tools was very low; two double sided retouched pointed flakes (812 & 819) and one retouched end and side scraper (805) was found. No organic remains such as bone, pottery, or ostrich eggshell were found.

Most of the archaeological remains are spread very thinly and unevenly over the surrounding landscape. No evidence of any factory or workshop site, or the result of any human settlement was identified.

No colonial heritage resources were noted during the study.

A collection of tools documented during the study are illustrated in Figures 8 and 9.

Figure 8. Collection of tools encountered during the study. Scale is in cm

Figure 9. Collection of tools encountered during the study. Scale is in cm

6.1 Significance of the archaeological remains

As archaeological sites are concerned, the occurrences are lacking in context as no organic remains such as bone, pottery or ostrich eggshell was found. Overall the relatively small numbers and isolated context in which they were found means that the archaeological remains have been rated as having low (Grade 3C) significance.

7. ASSESSMENT OF IMPACTS

In the case of the proposed upgrading and expansion of the Louisevale Road oxidation ponds, it is expected that some archaeological impacts will occur during the construction phase of the proposed project, but that the overall impact on important archaeological resources will be low (Table 1).

Potential impacts on archaeological heritage	
Extent of impact:	Site specific
Duration of impact;	Permanent
Intensity	Low
Probability of occurrence:	Probable
Significance without mitigation	Low
Significance with mitigation	Negative
Confidence:	High

Table 1. Assessment of archaeological impacts.

8. CONCLUSION

The results of the study indicate that the proposed upgrading and expansion of the Louisevale oxidation pond system will not have an impact of great significance on the archaeological heritage. The study has captured most of the information on the archaeological heritage.

9. RECOMMENDATIONS

With regard to the proposed upgrading of the Louisevale Road oxidation ponds in Upington, the following recommendations are made:

1. No further archaeological mitigation is required.

2. Should any unmarked human burials/remains or ostrich eggshell water flask caches be uncovered, or exposed during construction activities, these must immediately be reported to the archaeologist (Jonathan Kaplan 082 321 0172), or the South African Heritage Resources Agency (SAHRA) (Att Ms Katie Smuts 021 462 4502). Burials must not be removed or disturbed until inspected by the archaeologist.

10. REFERENCES

Kaplan, J. 2013a. Archaeological Impact Assessment proposed low cost housing development Keimoes A & B, Northern Cape. Report prepared for EnviroAfrica. ACRM

Kaplan, J. 2013b. Archaeological Impact Assessment KWV Upington Effluent Management Facility, Upington, Northern Cape. ACRM

Kaplan, J. 2012. Agency for Cultural Resource Management, the proposed Keren Energy Keimoes Solar Energy Plant on Erf 666, Keimoes, Northern Cape. Report prepared for EnviroAfrica. ACRM.

Kaplan, J. 2008. Phase 1 Archaeological Impact Assessment proposed construction of a water treatment plant and supply pipeline from Keimoes to Kenhardt, Western Cape Province. Report prepared for EnviroAfrica. ACRM.

Kaplan, J. 2012. Archaeological Impact Assessment, the proposed Keren Energy Keimoes Solar Plant on Erf 1654, Kakamas. Report prepared for EnviroAfrica. ACRM Cape Town

Kaplan, J. 2008. An archaeological assessment of two borrow pits alongside DR3321 Uap, Northern Cape Province. Report prepared for Van Zyl Environmental Consultants. ACRM.

Appendix I

Spreadsheet of waypoints and description of archaeological finds

Name of Site	Name of Farm	Lat/Long	Finds
	Erf 1036 Louisevale, Upington		
788		S28 29.596 E21 15.956	Round core in banded ironstone
789		S28 29.605 E21 15.946	Utilized and retouched MSA flake
790		S28 29.589 E21 15.972	MSA quartz flake
791		S28 29.590 E21 15.965	Indurated shale chunk/cobble
792		S28 29.580 E21 15.976	Indurated shale core on block/cortex cobble
793		S28 29.553 E21 15.962	Irregular banded iron stone core with cortex
794		S28 29.549 E21 15.969	Weathered partially retouched banded ironstone core
795		S28 29.557 E21 16.004	Partially weathered retouched & utilized MSA banded ironstone flake
797		S28 29.543 E21 15.988	Retouched banded ironstone MSA flake
798		S28 29.535 E21 16.010	Small chunk banded ironstone
799		S28 29.532 E21 16.014	MSA triangular shaped quartz flake
800		S28 29.516 E21 16.018	Large flake or cortex cobble/reduced core
801		S28 29.543 E21 15.985	Small triangular shaped retouched MSA banded ironstone flake
802		S28 29.527 E21 16.001	MSA quartz flake
803		S28 29.531 E21 15.987	Snapped thin banded ironstone flake
804		S28 29.529 E21 15.984	Split cobble/flake banded ironstone
805		S28 29.515 E21 15.995	Side/end retouched banded ironstone **scraper**
806		S28 29.536 E21 15.974	Weathered/burnished MSA chunky flake
807		S28 29.524 E21 15.977	Chunk
808		S28 29.513 E21 15.974	Miscellaneous retouched MSA cortex flake, utilized chunk & small triangular shaped flake – all in banded ironstone.
809		S28 29.517 E21 15.969	Chunk
810		S28 29.511 E21 15.968	MSA quartzite flake, and utilized and retouched MSA banded irons stone flake
811		S28 29.489 E21 15.981	Large round banded ironstone flaked cobble
812		S28 29.522 E21 15.958	Double sided retouched pointed stubby flake and chunk – in banded ironstone
813		S28 29.527 E21 15.956	Chunky MSA burnished retouched flake in banded ironstone
814		S28 29.532 E21 15.955	Banded ironstone MSA flake
815		S28 29.585 E21 15.939	Round core – banded ironstone
816		S28 29.598 E21 15.928	Round core – banded ironstone
817		S28 29.599 E21 15.933	Large, weathered Indurated shale MSA flake
818		S28 29.522 E21 15.955	Flat worked out banded iron stone core
819		S28 29.537 E21 15.984	Double sided retouched pointed flake in banded ironstone

Table 2. Spreadsheet of waypoints and description of archaeological finds.

Appendix II

Track path and illustration of waypoints

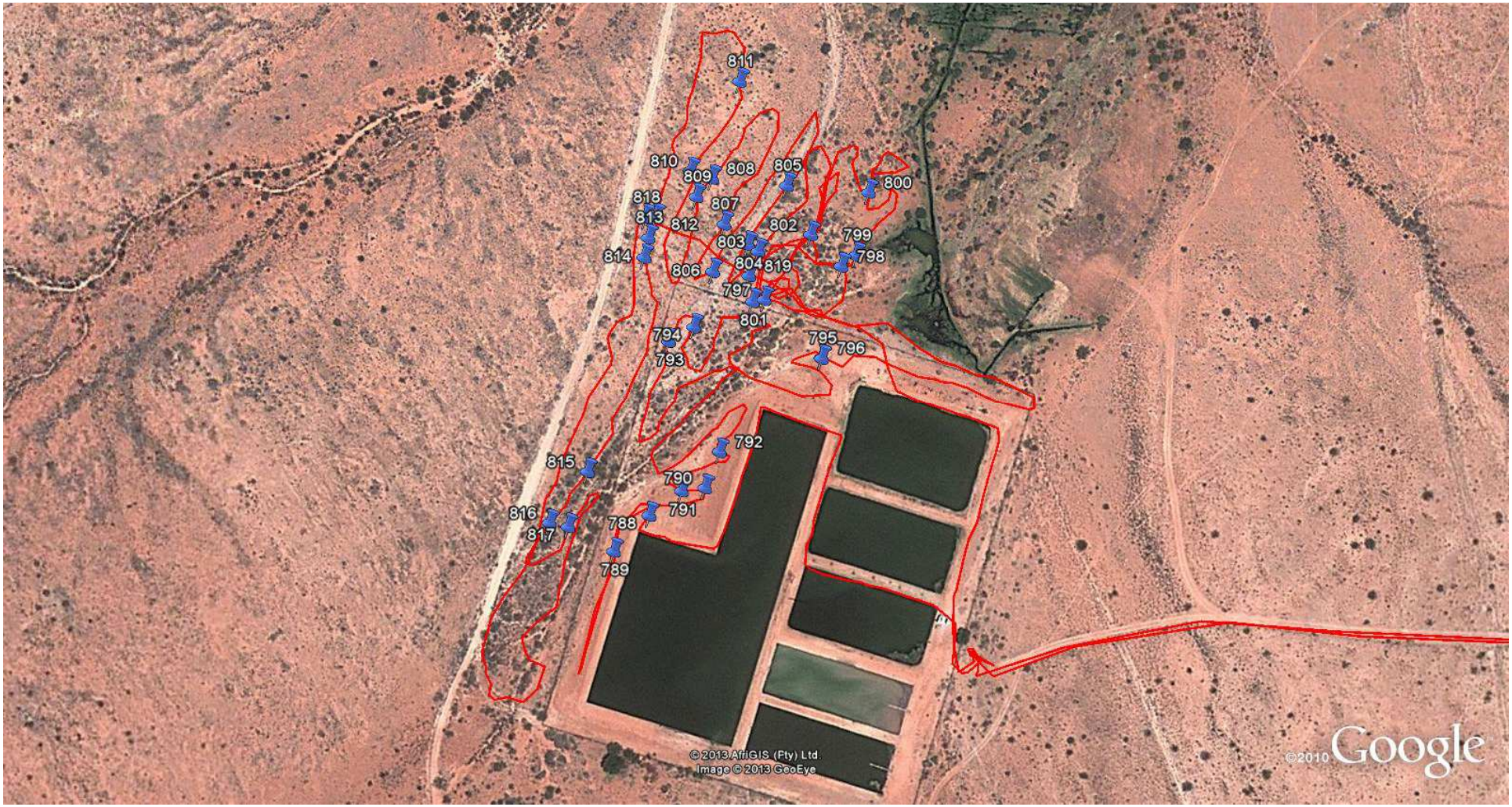

Figure 10. GPS trackpath and waypoints of archaeological finds