

**ARCHAEOLOGICAL IMPACT ASSESSMENT
THE PROPOSED KUBOES OXIDATION PONDS
AND SEWER PIPELINE
NORTHERN CAPE**

Prepared for:

Bvi Consulting Engineers

Att: Mr Winston Cloete

P O Box 683

Springbok

8240

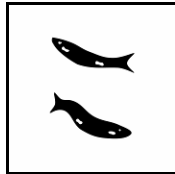
Tel: 027 712 9990/7

Email: Winston@bvinam.co.za

On behalf of:

Richtersveld Municipality

By



Jonathan Kaplan

Agency for Cultural Resource Management

5 Stuart Road

Rondebosch

7306

Ph/Fax: 021 685 7589

Cellular: 082 321 0172

Email: acrm@wcacces.co.za

**AUGUST
2011**

Executive summary

The Agency for Cultural Resource Management (ACRM) was commissioned by Bvi Consulting Engineers to conduct an Archaeological Impact Assessment (AIA) for the proposed construction of oxidation ponds and a ± 1.1 km long underground sewer pipeline at Kuboes in the Richtersveld region of the Northern Cape.

Kuboes is a small village located about 55 kms north east of Alexander Bay and about 135 kms from Port Nolloth on the Namaqualand coast. The proposed 3.4 ha site for the oxidation ponds is located on the left hand side of the road and about 1 km before the village.

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

In addition, Section 38 (1) (a) of the Act indicates that any person constructing a powerline, pipeline or road, or similar linear development exceeding 300m in length must notify the responsible heritage resources authority (i.e. SAHRA), who will in turn advise whether an impact assessment is required before development can take place.

The aim of the archaeological study is to locate and map heritage sites or remains that may potentially be impacted by the proposed development, to assess the significance of the potential impacts and to propose measures to mitigate any impacts.

A field study took place in which the following observations were made:

Thirty one stone implements were documented in the footprint area for the proposed oxidation dam. The tools are dominated by Later Stone Age elements and only one Middle Stone Age flake was found. Unlike at Sandrift (about 20 kms further to the north), where the raw material known as chalcedony was available (washing down the Orange River from higher levels upstream), no chalcedony tools were found on the proposed site and all the implements are in locally available quartzite and quartz. While no formal retouched tools were found, one anvil and one hammerstone were counted on the sheet washed and eroded slopes. In addition, one quartz crystal and one flaked quartz crystal chunk were also found. No organic remains such as pottery, bone or ostrich eggshell was found.

Their fairly small numbers and the isolated and disturbed context in which they were found mean that the remains have been rated as having low archaeological significance.

The possible remains of a 'traditional', or Christian grave were also documented in the footprint area of the proposed oxidation pond. Traditional forms of graves appear in the landscape as circular stone cairns. However, no cairn was visible on the site, or the cairn may have since collapsed. Alternatively, the grave may be that of a Christian burial, although no head or footstone was identified. As a precaution, the location site has been 'Red Flagged'.

The proposed 1.1 km sewer pipeline falls within an area that has been also identified for a proposed waste refuse site and will be dealt with in a separate report. Suffice to say only a few isolated stone tools were found in/close to the proposed pipeline, the bulk of which will be aligned alongside the main gravel road that leads to the town.

Overall, the study has identified no significant impacts to pre-colonial archaeological material that will need to be mitigated prior to proposed development activities.

With regard to the proposed construction of oxidation ponds and a sewerage pipeline at Kuboes, the following recommendations are made:

1. The project is deemed to be viable.
2. No archaeological mitigation is required.
3. The possible grave must be fenced off prior to construction activities commencing.
4. Should any unmarked human remains, or features such as buried ostrich eggshell caches be exposed or uncovered during excavations and bulk earthworks these must immediately be reported to the South African Heritage Resources Agency (Ms Mariagrazia Galimberti 021 4624502). Burials must not be disturbed until inspected by the archaeologist and will have to be removed by an archaeologist under a permit issued by SAHRA.

Table of Contents

	Page
Executive summary	1
1. INTRODUCTION	4
2. TERMS OF REFERENCE	6
3. DESCRIPTION OF THE AFFECTED ENVIRONMENT	6
4. STUDY APPROACH	9
4.1 Method of survey	9
4.2 Constraints and limitations	9
4.3 Identification of potential risks	9
4.4 Results of the desk top study	9
5. RESULTS OF THE SURVEY	10
5.1 The proposed oxidation ponds	10
5.1.1 Significance of the archaeological remains	11
5.2 The proposed sewerage pipeline	11
5.3 Graves	12
6. PREDICTED IMPACTS	12
7. CONCLUSION	12
8. RECOMMENDATIONS	13
9. REFERENCES	14
Appendix	

1. INTRODUCTION

Bvi Consulting Engineers, on behalf of the Richtersveld Municipality, commissioned the Agency for Cultural Resource Management (ACRM) to conduct an Archaeological Impact Assessment (AIA) for the proposed construction of oxidation ponds and a sewer pipeline at Kuboes in the Richtersveld region of the Northern Cape (Figures 1 & 2).

The proposed project entails the following:

- Construction of sewer oxidation and evaporation ponds
- Construction of inlet and outlet structures to convey water from one pond to another
- Installation of security fencing around the ponds
- Construction of a \pm 1.1 km underground sewer pipeline
- Construction of a sewer, pump station

The footprint area of the proposed oxidation ponds and associated infrastructure will be about 3.4 ha.

The proposed activities are to be located on Portion 4 of Farm Richtersveld 11, Namaqualand.

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

In addition, Section 38 (1) (a) of the Act indicates that any person constructing a powerline, pipeline or road, or linear development exceeding 300m in length is required to notify the responsible heritage resources authority, who will advise whether an impact assessment is required before development can take place.

ACRM has been instructed to undertake a baseline study in order to locate and map archaeological sites or remains that may potentially be impacted by the proposed development, to assess the significance of the potential impacts and to propose measures to mitigate any impacts.

The AIA forms part of the Environmental Basic Assessment process that is being undertaken by independent environmental consultants, Enviro-Logic cc.



Figure 1. Locality Map: Regional context

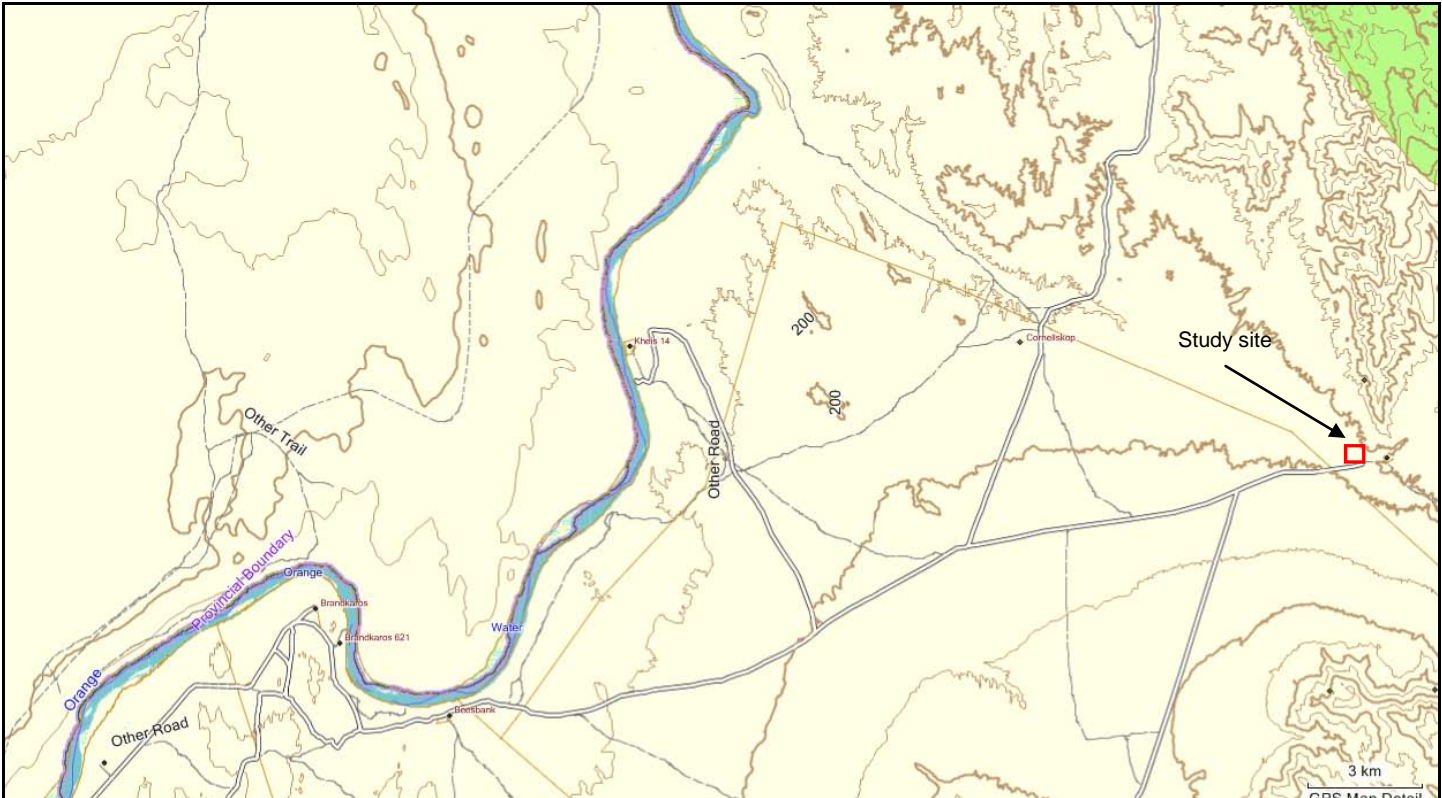


Figure 2. Locality Map: Local context

2. TERMS OF REFERENCE

The terms of reference for the archaeological study were to:

- Determine whether there are likely to be any archaeological resources that may be impacted by the proposed construction of the oxidation ponds, including associated infrastructure;
- To identify and map archaeological resources that may be impacted by the proposed development;
- To assess the sensitivity and conservation significance of archaeological resources affected by the proposed development;
- To assess the significance of any impacts resulting from the proposed development, and
- To identify measures to protect and maintain any valuable archaeological sites that may be impacted by the proposed development

3. DESCRIPTION OF THE AFFECTED ENVIRONMENT

An aerial photograph indicating the site layout for the proposed Kuboes oxidation ponds is illustrated in Figure 3.

Kuboes is a small Nama village located 55 kms north east of Alexander Bay and about 135 kms from Port Nolloth on the Namaqualand coast. The proposed site for the oxidation dam is located on the left hand side of the road, about 1 km before the bridge that leads to the village. The bridge crosses the Annis River which discharges into the Orange River near Bloeddrift about 15 kms to the north.

The proposed site comprises a series of heavily eroded and sheet washed terraces cut through by several small streams and deeper drainage channels, which flow into the Annis River (Figures 4-6). Most of the top soils have been washed away, exposing hard compact eroded surfaces where loose stone has collected in small channels. There is some sporadic vegetation and succulent ground covers that occurs over the site. There are no significant landscape features on the proposed site, which is very degraded. Surrounding land use is mainly marginal stock grazing.

The proposed 1.1 km long underground sewer pipeline will mostly run alongside the main gravel road and connect to a proposed sewer pump station near the entrance to the town (Figure 7).

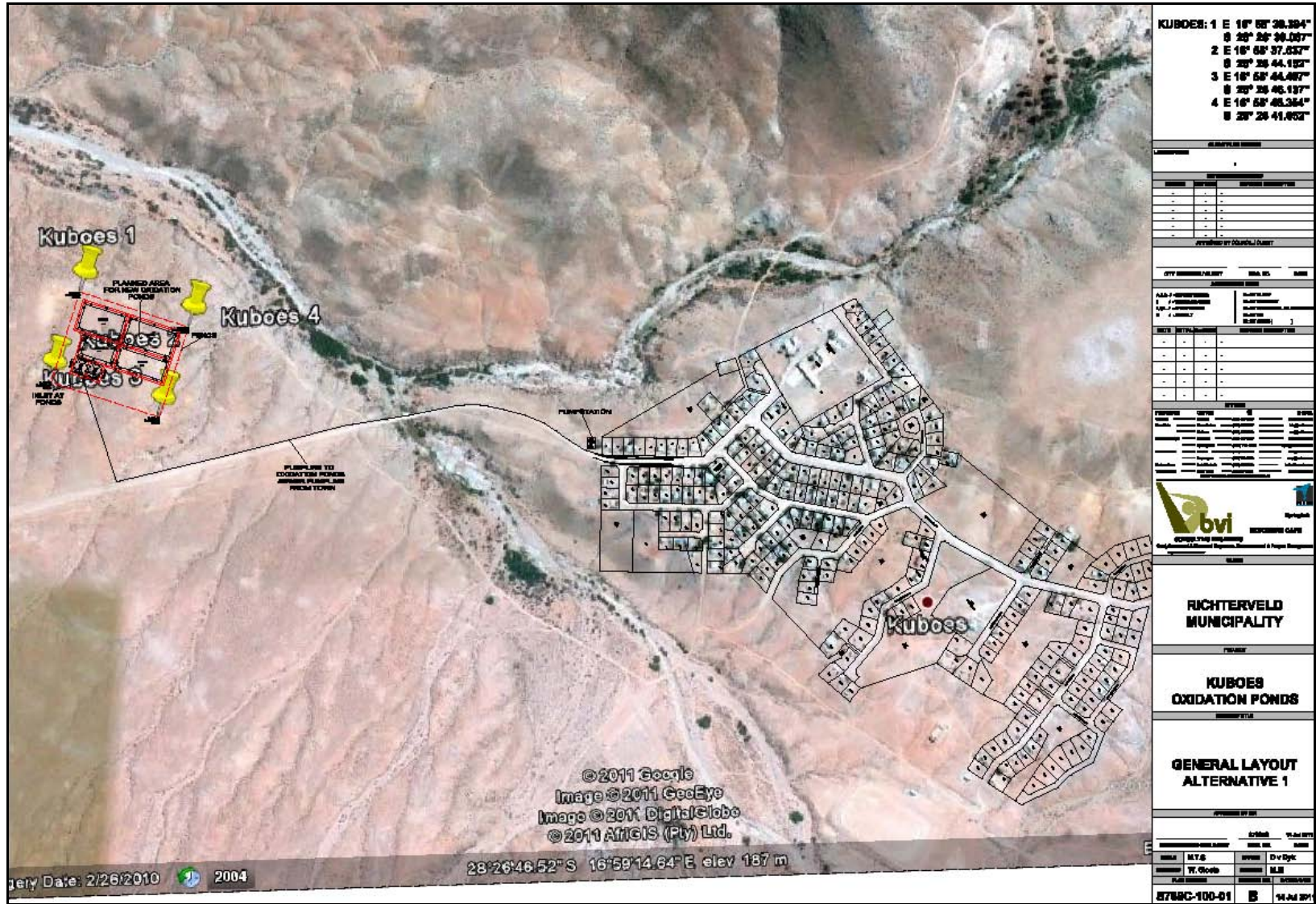


Figure 3. Proposed layout of the Kuboes Oxidation Ponds



Figure 4. View of the site facing southeast. Kuboes is in the background.



Figure 5. View of the site facing east. Note the small stream channels



Figure 6. View of the proposed site facing north east



Figure 7. The proposed sewer pipeline will be located alongside the gravel road

4. STUDY APPROACH

4.1 Method of survey

A survey of the proposed development activities was undertaken on the 3rd August, 2011 and a number of archaeological observations were made.

A desk top study was also done.

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.

4.2 Constraints and limitations

There were no constraints or limitations associated with the study.

4.3 Identification of potential risks

There are no archaeological risks associated with proposed construction of the Kuboes oxidation ponds and sewer pipeline.

A possible grave may occur near the north western edge of the proposed oxidation dam.

It is very unlikely, but unmarked human remains and ostrich eggshell caches may be uncovered or exposed during excavations and bulk earthworks.

4.4 Results of the desk top study

The Richtersveld is a vast and arid region in the Northern Cape and because of its remoteness very little archaeological research or work has been done in the area. Most of the work that has been done has been in, or near the floodplain of the Orange River, where scatters of Early, Middle and Later Stone Age tools have been documented at

Koeskop (west of Sandrift), Bloeddrift, Nxodap, Jakkalsberg and Sendelingsdrift (Halkett 1999). Petroglyphs (or rock engravings) have also been recorded at Bloeddrift and Sendelingsdrift (Halkett 1999). Some of the engravings depict aspects of colonial life while others are more enigmatic and probably date to the last 2000 years. Dispersed scatters of Early, Middle and Later Stone Age tools have recently been documented at Sandrift (Kaplan 2011a, b in prep).

Archaeological excavations have also been done on a 300 year old Herder (or pastoralist) campsite near Bloeddrift about 20 kms further to the north east (from Sandrift) (Smith *et al* 2001). Spatially discreet hearths were excavated generating large numbers of quartz and other stone pieces, bone chips, pottery, ostrich eggshell fragments and beads. Similar spatial features and cultural debris were documented further north at Jakkalsberg near Sendelingsdrift (Wadley 1997).

Jakkalsberg N and Jakkalsberg L (at Sendelingsdrift) are two LSA sites with large assemblages of lithics and bead manufacturing debris, including engraved ostrich eggshells and flask mouth fragments that have been dated to about 3500 years ago (Orton & Halkett 2010). The assemblages at Jakkalsberg are interesting in that they include types of tools uncommon in South Africa, but are more frequently found through much of central and southern Africa, such as triangles, trapezia and denticulates.

At Kuboes, low density scatters of mainly Later Stone Age implements have been documented alongside the proposed footprint area for the oxidation ponds (Kaplan 2011c in prep). Halkett (1999) also reports that rock engravings have been documented on dolerite slabs in the floodplain of the Annis River. Several traditional graves (stone piled cairns) occur alongside the road.

5. RESULTS OF THE SURVEY

A Google aerial photograph indicating the waypoints of archaeological occurrences documented during the study is illustrated in Figures 11 and 12 in the Appendix.

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

5.1 The proposed oxidation ponds

Twenty five archaeological occurrences, numbering thirty one stone implements were documented in the footprint area for the proposed oxidation dam (refer to Table 1 in the Appendix).

The tools are dominated by Later Stone Age elements and only one silcrete Middle Stone Age flake (292) was recorded. No Early Stone Age finds were made. Most of the tools comprise unmodified flakes, chunks, a blade (280) and flaked/broken cobbles. No cores were found. While no formal retouched tools, such as scrapers, adzes or backed artefacts were found, one pecked anvil (283) and one round pitted hammerstone (293) were counted. In addition, one quartz crystal (279) and one flaked quartz crystal chunk (290) were also found.

The majority of tools occur on the heavily eroded and sheet washed slopes in the eastern portion of the proposed site where most of the top soils have been washed away. Because of this and despite the occurrence of the anvil and hammerstone, no discernable activity areas or evidence of any human settlement was found.

Unlike at Sandrift (about 20 kms further to the north), where chalcedony was available (washing down the Orange River from higher levels upstream), no chalcedony tools were found on the footprint area for the proposed Kuboes oxidation ponds and all the material, save for one large quartz flake (282) and the quartz crystals all are in locally available quartzite.

No organic remains such as pottery, bone or ostrich eggshell was found.

A collection of some of the tools documented during the study is illustrated in Figures 8 & 9.

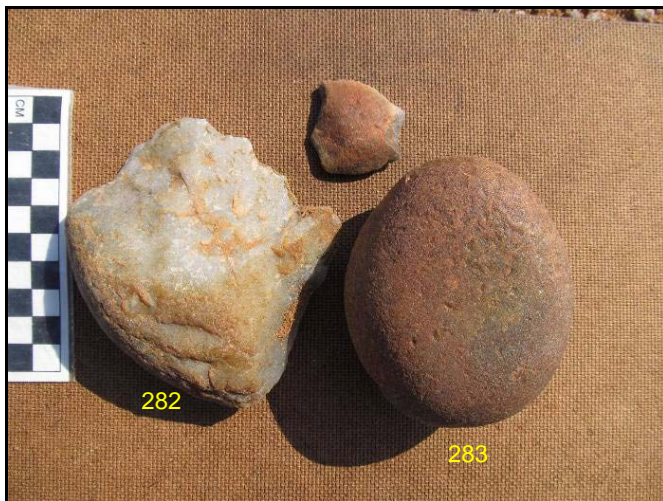


Figure 8. Tools from the proposed oxidation ponds.
Scale is in cm



Figure 9. Tools from the proposed oxidation ponds.
Scale is in cm

5.1.1 Significance of the archaeological remains

The small numbers and the isolated and disturbed context in which they were found mean that the remains have been rated as having low archaeological significance.

5.2 The proposed sewer pipeline

The proposed 1.1 km long sewer pipeline falls within an area that has been identified for the proposed Kuboes waste refuse site and will be dealt with in a separate report (Kaplan 2011 c in prep). Suffice to say only a few tools were counted in the proposed pipeline route. Most of the route will be aligned alongside the main road where it will connect with a proposed pump station at the entrance to the town (refer to Figures 3 and 7).

5.3 Graves

The remains of a possible 'traditional' or Christian grave were located during the study. At, S28 26.743 E16 58.749, the grave (270) is located near the north western edge of the proposed oxidation ponds (Figure 10). Typically, traditional forms of graves appear in the landscape as circular stone cairns and probably predate the colonial era. These types of graves are common in the Richtersveld landscape (Halkett 1999), and are often encountered alongside the road. However, no cairn is present on the proposed site, or it may have collapsed as a result of the extensive sheet wash and erosion in the surrounding area. The grave does not show any Christian influences either, such as rectangular mounds of stone, head or footstones, but large pieces of stone are still visible on the ground. No grave goods such as glass bottles, jars, or marine shellfish were noticed.

As a precaution, the location site has been 'Red Flagged'.

Graves older than 100 years are protected under the NHRA and it is an offence to damage or remove any grave without a permit issued by SAHRA



Figure 10. Possible grave

6. PREDICTED IMPACTS

The impact of the proposed construction of oxidation ponds and a sewer pipeline on important archaeological remains is rated as being low.

A possible grave may occur near the north western edge of the proposed oxidation pond, and care must be taken to avoid disturbing or damaging the site during construction activities.

7. CONCLUSION

The Archaeological Impact Assessment has identified no significant impacts to pre-colonial archaeological material that will need to be mitigated prior to proposed development activities.

8. RECOMMENDATIONS

With regard to the proposed construction of oxidation ponds in Kuboes in the Northern Cape, the following recommendations are made:

1. The project is deemed to be viable.
2. No archaeological mitigation is required.
3. The possible grave in the footprint area must be fenced off prior to any construction work commencing.
4. Should any unmarked human remains, or features such as buried ostrich eggshell caches be exposed or uncovered during excavations and bulk earthworks these must immediately be reported to the South African Heritage Resources Agency (Ms Mariagrazia Galimberti 021 4624502). Burials must not be removed until inspected by the archaeologist and will have to be removed by an archaeologist under a permit issued by SAHRA.

9. REFERENCES

Halkett, D. 1999. A Phase 1 Archaeological Impact Assessment of heritage resources in the Trans Hex Diamond Concession, Richtersveld. Report prepared for Trans Hex Group Ltd. Archaeology Contracts Office, University of Cape Town.

Kaplan, J. 2011a. Archaeological Impact Assessment proposed Sandrift oxidation ponds and sewerage pipeline. Report prepared for Bvi Consulting Engineers. ACRM Cape Town.

Kaplan, J. 2011b in prep. Archaeological Impact Assessment proposed Sandrift waste refuse site, Northern Cape. Report prepared for Bvi Consulting Engineers. ACRM Cape Town.

Kaplan, J. 2011c in prep. Archaeological Impact Assessment Kuboes waste refuse site, Northern Cape. Report prepared for Bvi Consulting Engineers. ACRM Cape Town.

Orton, J. & Halkett, D. 2010. Stone tools, beads and a river: Two Holocene Microlithic sites at Jakkalsberg in the northwestern Richtersveld, Northern Cape, South Africa. *South African Archaeological Bulletin* 65:13-25.

Smith, A.B., Halkett, D., Hart, T. & Mutti, B. 2001. Spatial patterning, cultural identity and site integrity on open sites: evidence from Bloeddrift 23, a pre-colonial herder camp in the Richtersveld, Northern Cape Province, South Africa. *South African Archaeological Bulletin* 56:23-33

Webley, L. 1997. Jakkalsberg A and B: the cultural material from two pastoralist sites in the Richtersveld, Northern Cape. *South African Field Archaeology* 6:3-19.

Appendix

Name of site	Erf No/Fame Name	Lat/Long	Finds
	Portion 4 of Farm Richtersveld 11, Namaqualand		
267		S28 26.796 E16 58.719	Quartzite flake
268		S28 26.762 E16 58.758	Split quartzite cobble
269		S28 26.735 E16 58.769	2 quartzite flakes, 1 quartzite chunk
270		S28 26.743 E16 58.749	Possible Grave
271		S28 26.737 E16 58.753	Split quartzite chunk
272		S28 26.731 E16 58.759	Quartzite flake
273		S28 26.725 E16 58.760	Quartzite broken/split cobble
274		S28 26.734 E16 58.748	Quartzite flake
275		S28 26.741 E16 58.729	Quartzite flake
276		S28 26.707 E16 58.748	1 quartzite flaked cobble and 2 quartzite chunks on heavily eroded sheet washed slope
277		S28 26.697 E16 58.743	Large quartzite flake
278		S28 26.707 E16 58.715	Quartzite flake and chunk
279		S28 26.689 E16 58.721	Quartz crystal chunk
280		S28 26.704 E16 58.659	Quartzite blade and chunk
281		S28 26.710 E16 58.658	Quartzite flake
282		S28 26.715 E16 58.653	Large quartzite flake and quartz flake
283		S28 26.743 E16 58.647	Anvil
284		S28 26.723 E16 58.665	Quartzite chunk
285		S28 26.756 E16 58.669	Large flaked cobble - quartzite
286		S28 26.724 E16 58.685	Large flaked chunk – quartzite
287		S28 26.707 E16 58.699	Large flaked chunk – quartzite
288		S28 26.706 E16 58.699	Quartzite flake
289		S28 26.702 E16 58.700	Flaked quartzite chunk
290		S28 26.700 E16 58.701	Flaked quartz crystal
291		S28 26.687 E16 58.718	Flaked quartzite chunk
292		S28 26.694 E16 58.715	MSA silcrete flake
293		S28 26.712 E16 58.708	Hammerstone

Table 1. Spreadsheet of waypoints and description of archaeological finds: Proposed Kuboes oxidation ponds



Figure 11. Waypoints of archaeological finds

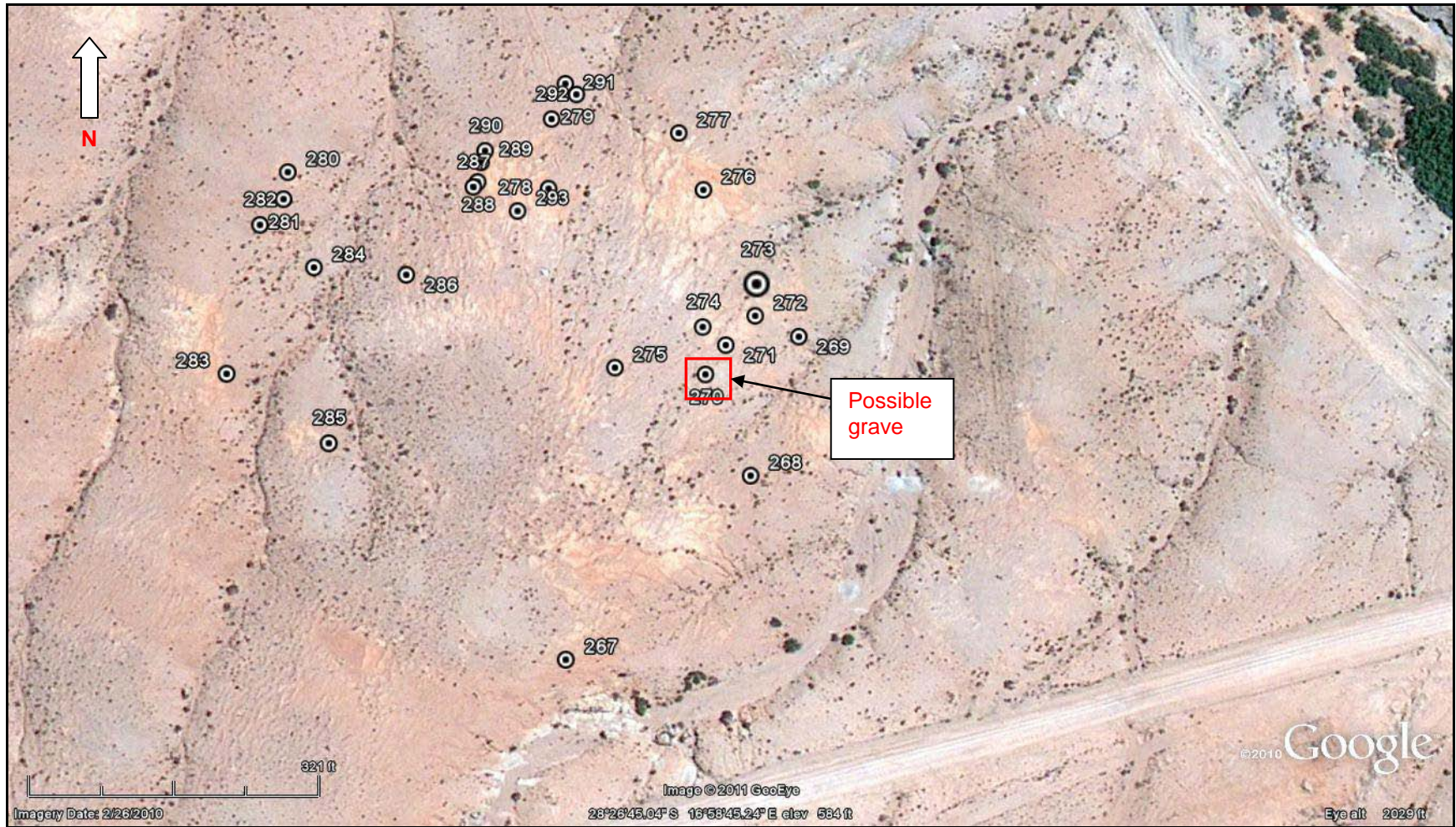


Figure 12. Waypoints of archaeological finds