ARCHAEOLOGICAL IMPACT ASSESSMENT PROPOSED PORT NOLLOTH OXIDATION PONDS AND SEWER PIPELINE NORTHERN CAPE

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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 new oxidation ponds and a sewer pipeline in Port Nolloth in the Northern Cape.

In terms of Section 38 (1) (c) of the National Heritage Resources Act (NHRA) 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 NHRA indicates that any person constructing a powerline, pipeline or road, or similar linear development or barrier 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:

- Apart from a few small superficial scatters of marine shellfish and some isolated stone flakes, no significant archaeological heritage was documented in the proposed footprint area of the new oxidation ponds, or in the alignment of the proposed sewer pipeline.

  The proposed site for the new oxidation ponds is located within an area of extensive (old) diggings and constitutes a severely degraded and transformed landscape.

  The proposed connecting sewer pipeline will be aligned alongside existing gravel roads.

- A wider search of the footprint area has, however, documented fairly extensive scatters of marine shellfish, and a relatively large number of Later Stone Age (LSA) flakes and implements on the back dunes immediately south of the proposed pipeline servitude and south west of the footprint area for the proposed oxidation ponds. Several lower grindstones and grindstone fragments were also found, as well as some organic remains such as ostrich eggshell and bone. No beads were found. No pottery was found either, suggesting that the site may be older than 2000 years.

  While this possible LSA encampment is currently relatively undisturbed, pedestrian traffic from the nearby township has already impacted on the surrounding dunes. The archaeological remains may also be vulnerable to further damage due increased activity related to the proposed development. Some intervention is therefore required in order to protect the integrity of the archaeological landscape.

Overall, 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.

Measures, must however, be put in place to safeguard the sensitive archaeological landscape.

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

1. The project is deemed to be viable.

2. No immediate archaeological mitigation is required.

3. Shell middens that have been documented on the dunes south of the footprint area must be demarcated with danger tape prior to construction activities commencing.

4. Signage should be erected alerting the community to the presence of vulnerable archaeological sites and their importance.

5. If deemed necessary by SAHRA, the scatters of shellfish on the back dunes south of the footprint area could be sampled and material collected for dating and analysis. An excavation of 4-6m² may be sufficient to obtain a representative sample of shellfish for analysis and dating.

6. Should any unmarked human remains 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.

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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 new oxidation ponds in Port Nolloth in the Northern Cape (Figure 1).

The proposed project entails the following:

- Construction of new sewer oxidation and evaporation ponds (that will replace the existing oxidation ponds in the town).
- The construction of new inlet and outlet structures to convey water from one pond to another.
- Installation of fencing around the ponds.
- Construction of a 1.7 km underground sewer pipeline.
- Construction of a pump station to connect the existing sewer pipeline and sewer ponds with the new oxidation ponds.
- Treated water will be used to irrigate the local community sports fields.

The proposed activities are to be located on Remainder Erf 516 Port Nolloth.

The footprint area for a proposed waste management facility is usually around 15-20 ha, but the proposed new oxidation ponds and associated infrastructure will cover a much smaller area (probably less than 2 ha). However, because of the extensive earthmoving that is required for the proposed activities, a larger area will be disturbed.

In terms of Section 38 (1) (c) of the National Heritage Resources Act (NHRA) 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 NHRA also indicates that any person constructing a powerline, pipeline or road, or linear development or barrier 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.

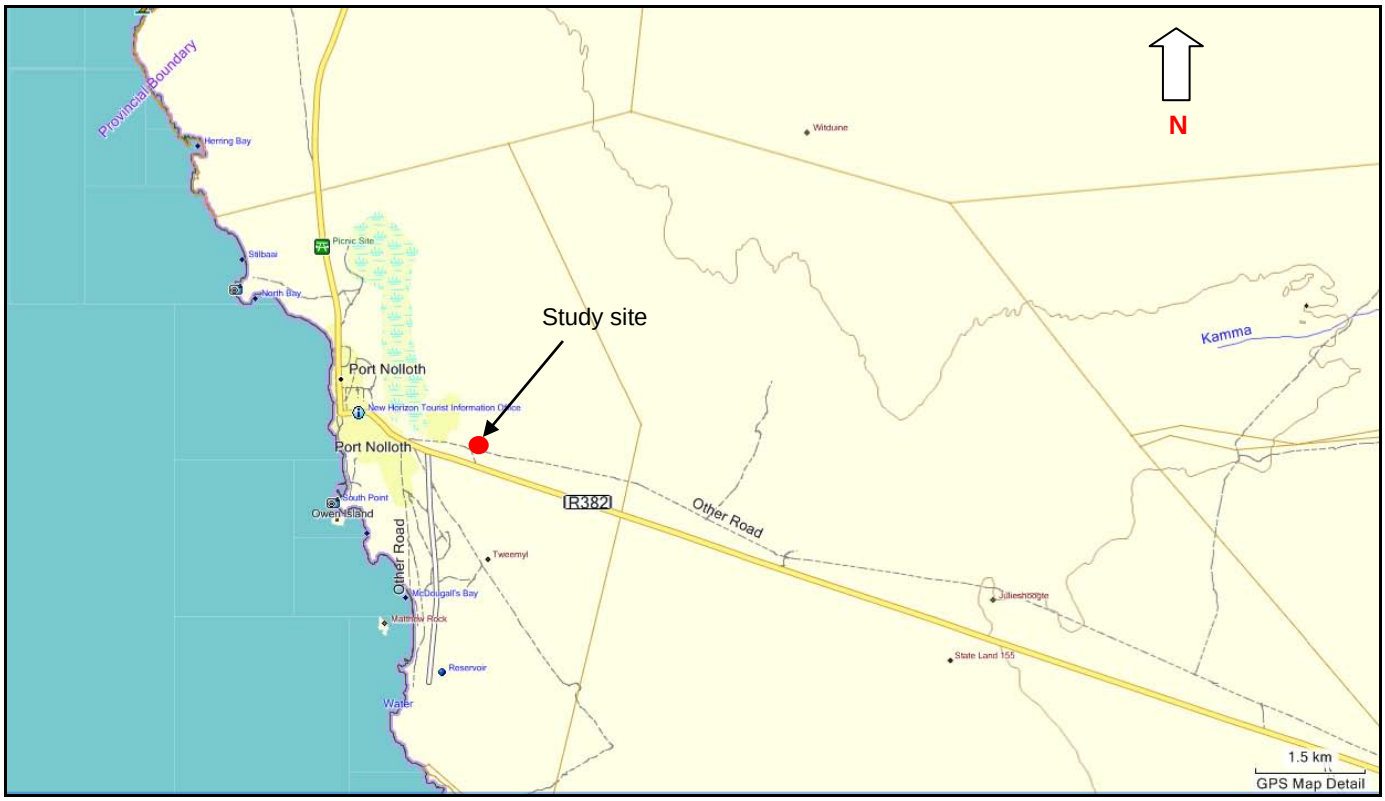

Figure 1. Locality map

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 mew oxidation and evaporation 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 impacted by the proposed development

3. DESCRIPTION OF THE AFFECTED ENVIRONMENT

A proposed schematic drawing and site layout for the proposed Port Nolloth oxidation ponds is illustrated in Figures 2 and 3.

The existing Port Nolloth sewer oxidation ponds are located about 1.5 kms outside town on the left hand side of the road (R382), as one leaves the town (Figure 4). The affected environment comprises a series of stabilized sand dunes with sporadic vegetation occurring in places. Surrounding land use is formal housing and some light industry. There are extensive diggings in the area related to unrehabilitated mining and prospecting activities.

The footprint area of the proposed new oxidation ponds is located about 650 m to the north east of the existing sewer oxidation ponds, within an area that has been severely degraded and transformed as a result of old prospecting diggings, trenches and pits (Figures 5 & 6).

The proposed 1.7 km sewer pipeline will be located alongside existing gravel roads that will connect the existing oxidation ponds to the planned new oxidation and evaporations ponds. No new access roads are envisaged.

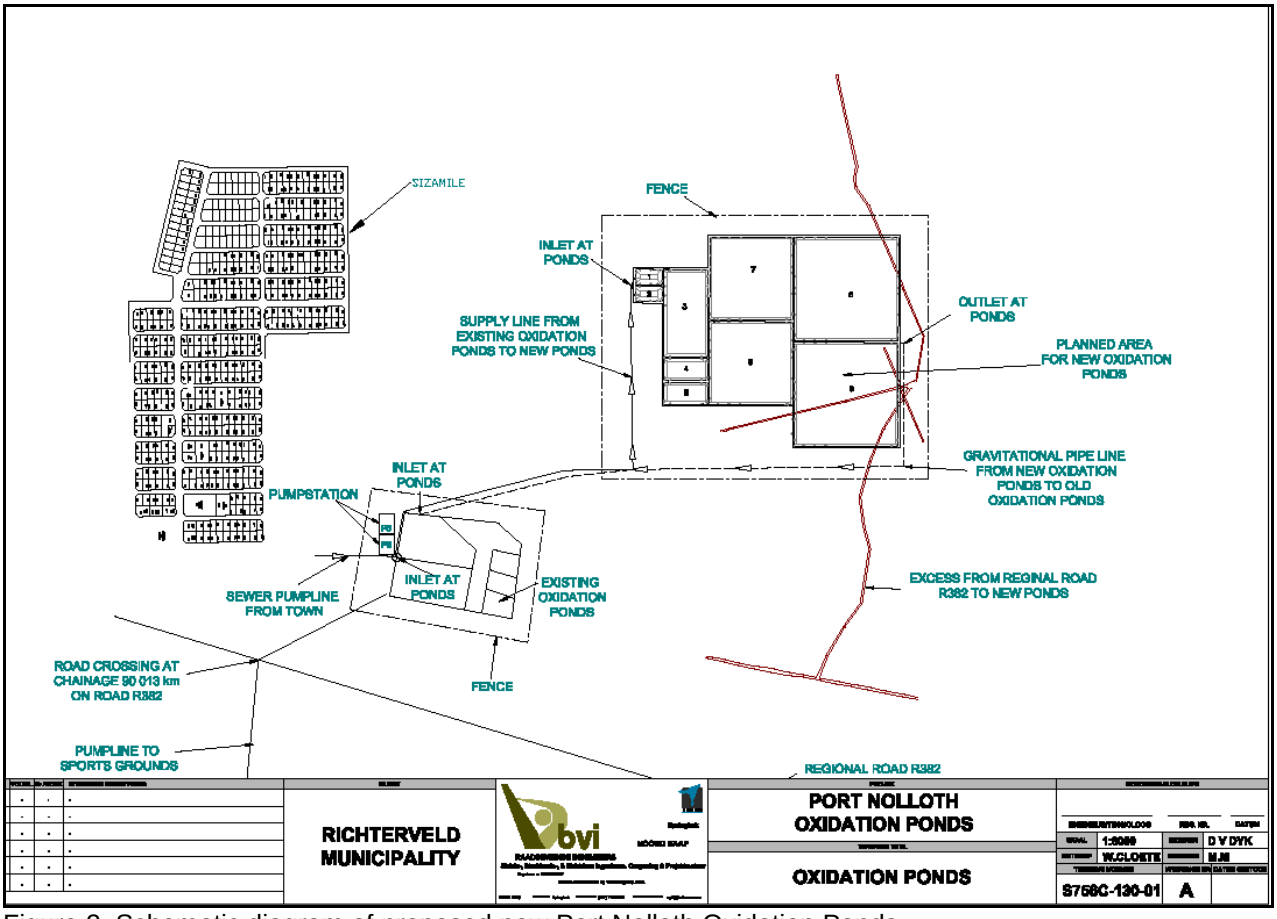

Figure 2. Schematic diagram of proposed new Port Nolloth Oxidation Ponds

Figure 3. Layout of proposed new Port Nolloth Oxidation Ponds

Figure 4. Arrow indicates the existing oxidation pond. View facing west

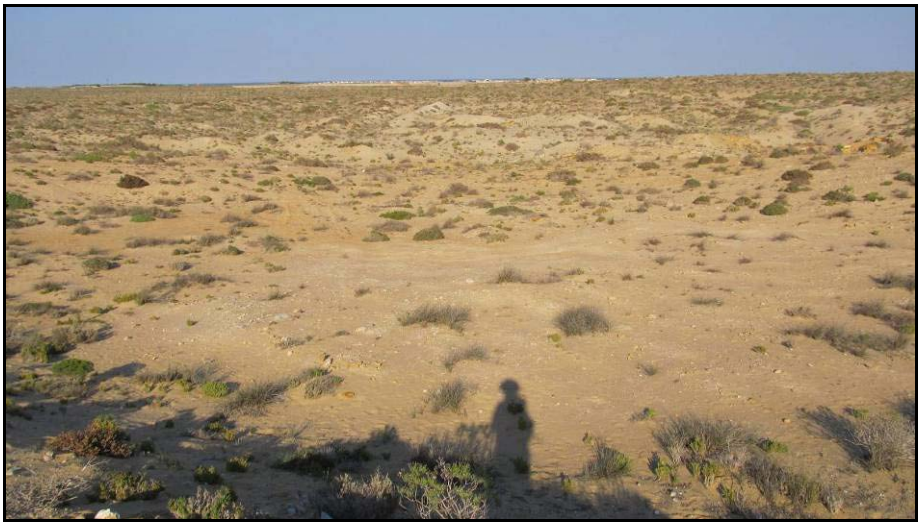

Figure 5. Proposed oxidation ponds. View facing south west

Figure 6. Proposed oxidation ponds. View facing south

4. STUDY APPROACH

4.1 Method of survey

A baseline survey of the proposed development was undertaken on the 2nd 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 (refer to Figure 12 in the Appendix).

4.2 Constraints and limitations

There were no constraints or limitations associated with the study.

4.3 Identification of potential risks

While no significant archaeological heritage was documented in the proposed footprint area, scatters of marine shellfish, stone implements, ostrich eggshell and bone was located south of the proposed pipeline servitude and south west of the proposed new oxidation ponds. These potentially important archaeological remains might be threatened during the construction phase of the proposed project.

Unmarked pre-colonial human remains may also be uncovered or exposed during bulk excavations and excavations for the sewer pipeline.

4.4 Results of the desk top study

More than 40 years ago Rudner (1968) reported that there were extensive shell middens on the coast near North Point north of the town. Laidler collected much material from middens north and south of Port Nolloth in 1913. He reports: “The shell deposits were hundreds of feet in length and breadth and the implement assemblages homogenous, being of a Wilton type accompanied by ostrich eggshell plaques and pendants, eggshell water bottles, ornamented and plain. Pottery of a ‘Hottentot’ type occurred mainly on the mounds on which stone implements were scarcest”.

An AIA of the proposed Port Nolloth Mari Culture Park just inland of North Point was undertaken by David Morris of the McGregor Museum in 2006, where several middens were also documented. More middens were documented during a recent study for a proposed desalination plant in the Park (Kaplan 2011a). Kaplan (2011a) has also shown how unrehabilitated diamond diggings, access roads, 4 x 4 vehicles and recreational quad bikes have damaged and destroyed many middens in the dune and beach area alongside the Port Nolloth Abalone Farm at North Point.

Further south at McDougall’s Bay there are shell middens capping the dunes along the northern half of the bay (Wadley 2009), and Rudner (1968) reports on at least 52 clay pots from this area. According to Colson (1905) a complete pot was found in a midden in 1899 south of the Port Nolloth jetty. This pot was half-filled with specularite (an iron powder used as decoration), as well as a bone awl and some ostrich eggshell beads.

Kaplan (1993) listed 297 open station shell midden sites from the 1:50 000 map sheet for Port Nolloth (2916 BD Port Nolloth). The sites occur at White Point, Wedge Point and Twee Pad.

More recently, a housing development in McDougall's Bay (named KaiKai) resulted in disturbance to numerous middens overlooking the Bay. These have been recorded as part of an AIA by David Morris of the McGregor Museum (Wadley 2009).

Wadley (2009) also documented several important shell middens and scatters of stone tools and ostrich eggshell on the edge of the large salt pan to the north of the town, about 1 km inland from the coast.

Kaplan (2011b in prep) has recently documented several shell middens with stone tools, ostrich eggshell and bone, near the town's municipal waste dump.

Early and Middle Stone Age quarry (stone knapping) sites were recorded by Küsel (2009) during an AIA for a proposed wind farm situated about 15 kms east of Port Nolloth.

The Archaeology Contracts Office (ACO) at the University of Cape Town has also been involved in archaeological mitigation work in the diamond fields of the Namaqualand coast since 1991. They have conducted extensive surveys of the land owned by De Beers resulting in a database of nearly 1 400 sites and undertaken extensive mitigation of shell middens. Dewar (2007) later compiled a regional synthesis of the archaeology of the Namaqualand coast based on the excavations of nine of these sites.

The ACO was also involved in the rescue excavations of a small shelter named Boegoeberg 2, about 60km north of Port Nolloth, on the coast (Parkington et al. 2004). It had been blanketed by sand some time after it was occupied by Middle Stone Age shellfish gatherers. It remained blocked until the early 1990s when diamond miners excavated the shelter in search of diamondiferous deposits. Archaeologists were alerted after most of the deposit had been removed. These deposits are extremely informative for our understanding of the spread of the Middle Stone Age in Namaqualand and further open sites are not impossible (Parkington et al. 2004).

From the above it is clear that while archaeologists are becoming increasingly aware of the richness and importance of the Port Nolloth area, no professional archaeological research has yet been undertaken there. Sadly, it is in places like Port Nolloth, which are so far from established universities and research institutions such as the McGregor Museum in Kimberly, that there is very little oversight with regard to the protection of these valuable heritage resources.

5. RESULTS OF THE SURVEY

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

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

5.1 The proposed new oxidation ponds

091 Superficial fragments of limpets, including some large whole shells (C. granatina and C. oculus) and some fresh water land snails were documented on a pile of tailings alongside several deep pits that have been excavated on the north western edge of the proposed footprint area. A few quartz chunks and many pieces of rusted metal were also noted. The surrounding area is heavily degraded.

092 Fragments of limpets (S. argenvillei) including some whole shells, some Black Mussel (Choromytilus meridionalis) and some land snails were documented on piles of diggings and tailings on the north eastern edge of the proposed footprint area. No cultural remains were found. The surrounding area is heavily degraded and transformed as a result of prospecting and diggings (Figure 7 and refer to Figures 5 & 6).

Figure 7. Site 092 view facing north west

5.1.1 Significance of the archaeological remains

The isolated and dispersed scatters and the highly disturbed and degraded context in which they were found means that the remains have been rated as having low archaeological significance

5.2 The proposed sewer pipeline

Several small, superficial patches of fragments of adiagnostic limpet shell and a few whole shells (C. argenvillei and C. granatina) (**086**, **088**), and a few isolated quartz and quartzite chunks (**083**-**085** & **087**) were found alongside the alignment of the proposed sewer pipeline.

A very thin scatter of shell fragments (**089** & **090**), including a few smaller whole shells (C. granatina and S. argenvillei), some fresh water land snail, and rusted metal were found alongside the pipeline servitude.

5.2.1 Significance of the archaeological remains

The isolated pieces of stone and small, superficial scatters of shellfish mean that the remains have been rated as having low archaeological significance.

5. 3 Other finds

077: Comprises several small patches and dispersed scatters of shellfish, including some whole shell (S. argenvillei and C. oculus) on top of the dunes south of the pipeline servitude, overlooking the existing oxidation ponds (Figure 8). The shellfish is dominated by limpets with some Black Mussel also occurring. No cultural remains such as stone tools, pottery or ostrich eggshell were found. Pedestrian traffic is evident and some glass fragments and bottles were found lying about.

078 & **079**: Comprises a fairly extensive scatter of shellfish, including many large whole shells on the soft sands on the raised dune, and in the back dune area south of the proposed sewer pipeline/gravel road (Figures 9 & 10). The shellfish is dominated by the limpets S. argenvillei and C. granatina, but relatively large amounts of Black Mussel were also noted. About 25-30 quartz flakes and chunks, two quartz cores, and several silcrete and quartzite flakes and chunks were also counted. Two lower grindstones were found, including one partially buried elliptical grindstone (Figure 11). Several manuports were also noted. Some ostrich eggshell was recorded as well as some tortoise and bird bone. No pottery was found, suggesting the site may be older than 2000 years. The site is relatively undisturbed, but plastic, rusted metal, glass bottles and broken glass are lying about, indicating recent pedestrian traffic in the area.

080 & **081**: Comprises very thin and dispersed fragments of shellfish on soft sands in the back dune area south of the proposed sewer pipeline/road.

082: Comprise a wider scatter of dispersed fragments of shellfish and some whole shells in the back dune area south of the proposed sewer pipeline/road. A few smaller patches of shellfish also occur. The shellfish is dominated by the limpets S. argenvillei and C. granatina. Several quartz chunks and flakes were found on the soft sands, including a, flaked quartz crystal. Some ostrich eggshell (OES) and a few weathered pieces of OES were counted. One lower grindstone and a broken grindstone fragment were also found. No pottery was noted.

It is likely that 077-082 are part of a single, larger Later Stone Age settlement camp that is situated on top of the dunes and in the back dune area.

5.3.1 Significance of the archaeological remains

The relatively undisturbed nature of the sites and the range of tools and material culture that were found, as well as the context in which the finds were made (back dunes indicating a possible campsite) mean that remains have been rated as having medium-high significance.

Figure 8. Site 077. View facing west. Note the existing oxidation ponds in the background.

Figure 10. 077/078. Scatter of shell on the back dunes. Arrow indicates a lower grindstone.

Figure 9. 077/078. Scatter of shellfish on the back dunes.

Figure 11. Lower grindstone. Scale is in cm.

6. PREDICTED IMPACTS

The (direct) impact of the proposed construction of new oxidation ponds and a sewer pipeline on important archaeological remains is rated as being low. However, increased pedestrian traffic, as well as activities associated with the proposed project, might impact negatively on the sensitive archaeological heritage surrounding the footprint area.

7. CONCLUSION

The Phase 1 Archaeological Impact Assessment has identified no significant impacts to pre-colonial archaeological material that will need to be mitigated prior to proposed development activities.

Measures, must however, be put in place to safeguard the threatened and sensitive archaeological landscape.

8. RECOMMENDATIONS

With regard to the proposed construction of new oxidation ponds and associated sewerage pipeline in Port Nolloth in the Northern Cape, the following recommendations are made:

1. The project is deemed to be viable.

2. No immediate archaeological mitigation is required.

3. Shell middens that have been documented on dunes south of the footprint area must be demarcated with danger tape prior to construction activities commencing.

4. Signage should be erected alerting the community to the presence of vulnerable archaeological sites and their importance[1].

5. If deemed necessary by SAHRA the scatters of shellfish on the back dunes south of the footprint area could be sampled and material collected for dating and analysis. An excavation of 4-6m² may be sufficient to obtain a representative sample of shellfish for analysis and dating.

6. Should any unmarked human remains, or buried shell middens be exposed or uncovered during excavations 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.

[1] It is debatable whether recommendations 3 & 4 will be sufficient to protect the long term integrity of the shell middens in the back dune area.

9. REFERENCES

Colson, R. 1905. The Port Nolloth Kitchen middens. Man 5:93.

Dewar, G. 2007. The archaeology of the coastal desert of Namaqualand: a regional synthesis. Unpublished D.Phil thesis: University of Cape Town.

Kaplan, J. 2011a. Archaeological Impact Assessment proposed Port Nolloth Desalination Plant, Northern Cape. Report prepared for Enviro Logic. ACRM Cape Town.

Kaplan, J. 2011b. Archaeological Impact Assessment proposed waste refuse site at Port Nolloth, Northern Cape. Report prepared for Enviro Logic. ACRM Cape Town

Kaplan, J. 1993. The state of archaeological information in the coastal zone of the Orange River to Ponta do Oura. Unpublished report for the Department of Environmental Affairs and Tourism.

Küsel, U. 2009. Cultural Heritage Resources Impact Assessment of a Portion of the Farm Kannikwa Vlakte 157 within the winter rainfall region of the Namaqualand Division ± 15 kms from Port Nolloth. Report prepared for Galago Environmental cc. African Heritage Consultants cc

Laidler, P.W. 1935. Shell mound cultures. South African Journal of Science 32: 560-571.

Morris, D. 2006. Phase 1 Archaeological Impact Assessment for the proposed Port Nolloth Mari Culture Park, Northern Cape. Report prepared for Richtersveld Municipality. McGregor Museum, Kimberley.

Parkington, J., Poggenpoel, C., Halkett, D. & Hart, T. 2004. Initial observations on the Middle Stone Age coastal settlement in the Western Cape, South Africa. In Settlement Dynamics of the Middle Palaeolithic and Middle Stone Age. Vol 11. Conrad, N (ed). Kerns Verlag: Tubingen.

Rudner, J. 1968. Strandloper pottery from South and South West Africa. Annals of the South African Museum 49 (2): 441-663.

Webley, L. 2009. Archaeological Impact Assessment: Port Nolloth Borrow Pits, Richtersveld Municipality, Northern Cape. Report prepared for the Richtersveld Municipality. Archaeology Contracts Office

Appendix

Name of site	Farm/Erf No.	Lat/Long	Finds
	Remainder Erf 516		
076		S29 15.475 E16 53.393	Quartz chunk
077		S29 15.480 E16 53.403	Small, thin scatter of shell, dominated by limpets. No cultural remains
078/79		S29 15.485 E16 53.415	Extensive scatter of shellfish fragments, including many large whole shells on the raised dune, and back dunes south of the proposed sewer pipeline/gravel road. Shellfish is dominated by limpets S. argenvillei and C. granatina, but relatively large amounts of Black Mussel also occur. 25-30 quartz flakes and chunks, a quartz core, and several silcrete and quartzite flakes were also counted. Lower grindstones, including one partially buried elliptical g/stone. Several manuports. Some ostrich eggshell, tortoise and bird bone. No pottery found. Some plastic, rusted metal and glass bottles and broken glass lying about
080		S29 15.483 E16 53.417	Dispersed fragments of shellfish on soft sands in the back dune area south of the sewer pipeline/road
081		S29 15.450 E16 53.397	Same as above
082		S29 15.447 E16 53.435	Wider scatter of dispersed fragments of shell fish and some whole shells on the back dunes south of the proposed sewer pipeline/road. A few smaller coherent patches of shellfish also occur. Shellfish dominated by the limpets S. argenvillei and C. granatina. A few quartz chunks and flakes on the soft sands, including a flaked piece of crystal quartz. Some OES, including a few weathered pieces counted. One lower grindstone and a broken grindstone fragment. No pottery was found.
083		S29 15.436 E16 53.405	Quartz chunk
084		S29 15.457 E16 53.387	Quartz chunk
085		S29 15.447 E16 53.378	Quartz chunk
086		S29 15.415 E16 53.424	Tiny fragments of adiagnostic shell about 10 m from road/pipeline servitude. 1 quartzite chunk
087		S29 15.387 E16 53.421	Quartz chunk/split cobble
088		S29 15.416 E16 53.424	Tiny fragments of limpet shell on soft sands next to road/pipeline servitude

089		S29 15.409 E16 53.434	Small scatter of shell fragments on soft sand, including 2-3 small whole limpets, alongside road/pipeline servitude. Rusted metal bits lying about
090		S29 15.414 E16 53.441	Very thin scatter of fragments of limpets (C. granatina), including 2-3 quartz and quartzite chunks alongside pipeline servitude
091		S29 15.374 E16 53.447	Fragments of limpets, including several large whole limpets (C. granatina and C. oculus) on pile of diggings and pits on the north western edge of the proposed footprint area of the oxidation pond. 1 quartz chunk and rusted metal.
092		S29 15.331 E16 53.524	Fragments of limpets (S. argenvillei) and Black Mussel on pile of diggings on north eastern edge of the proposed footprint area of the oxidation ponds

Table 1. Spreadsheet of waypoints and description of archaeological finds

Figure 12. Waypoints of archaeological finds