

Heritage Impact Assessment of the proposed reverse osmosis plant and associated infrastructure, Brandvlei, Hantam Local Municipality, Northern Cape.

Prepared for
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Executive summary

ACO Associates cc was appointed by Van Zyl Environmental Consultants on behalf of the client, Hantam Local Municipality, to undertake the Heritage Impact Assessment for the proposed development and operation of a reverse osmosis plant and brine evaporation ponds and associated infrastructure, at Brandvlei, Northern Cape Province. The proposed development will take place on Erven 304, 305 and 339 located to the north and east of town.

The aim of the project is to ensure the provision of reliable potable water to the residents of Brandvlei.

An initial desktop review was undertaken of the archaeology and history of the surrounding area. A field survey was then conducted by Lita Webley and Jayson Orton on the 29 November 2012. Visibility was good and there were no limitations to the survey.

The site of the proposed reverse osmosis plant is located next to existing reservoirs and a cell phone tower. The topsoil has been significantly disturbed due to previous development on the site.

A few scatters of 20th century dump material, such as glass fragments, rusted tin cans, ceramic and bone were identified and mapped. Concentrations are very low and they do not represent important historic dumps. The remains are considered to be of low significance.

The proposed boreholes are located on the margins of the Sak River. The topsoil is very silty and there is no evidence of any archaeological or historical material.

There will be no impact on the Built Environment, Cultural Landscape or Scenic Routes.

It is recommended that the proposed development should proceed.

Declaration:

Dr Lita Webley and Jayson Orton are independent specialist consultants who are in no way connected with the proponent, other than delivery of consulting services.

Lita Webley (Phd) is an archaeologist with 30 years of working experience. Having served previously as Director of the Albany Museum, she is familiar with the archaeology of the area and local heritage issues. She is also accredited with Principal Investigator status with the Association of Southern African Professional Archaeologists.

Jayson Orton (MA) has been working as a CRM practitioner since 1999. He is an accredited Principal Investigator with the Association of Southern African Professional Archaeologists.

GLOSSARY

Archaeology: *Remains resulting from human activity which is in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures.*

Early Stone Age: *The archaeology of the Stone Age between 700 000 and 2500 000 years ago.*

Fossil: *Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.*

Heritage: *That which is inherited and forms part of the National Estate (Historical places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999.*

Late Stone Age: *The archaeology of the last 20 000 years associated with fully modern people.*

Middle Stone Age: *The archaeology of the Stone Age between 20-300 000 years ago associated with early modern humans.*

National Estate: *The collective heritage assets of the Nation*

Palaeontology: *Any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.*

Structure (historic:) *Any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith. Protected structures are those which are over 60 years old.*

Acronyms

DEA&DP	Department of Environmental Affairs and Development Planning
ESA	Early Stone Age
GPS	Global Positioning System
HIA	Heritage Impact Assessment
HWC	Heritage Western Cape
LSA	Late Stone Age
MSA	Middle Stone Age
NHRA	National Heritage Resources Act
SAHRA	South African Heritage Resources Agency

CONTENTS

1. Introduction	6
1.1 The proposal	6
1.2 The Location	6
2. Legislative context	7
2.1 The receiving environment.....	8
2.2.1 Pre-colonial heritage	9
2.2.1 The colonial period	10
2.2 Living Heritage	10
2.3 Cultural landscape and scenic routes	10
3. Methodology for study	10
3.1 Restrictions and assumptions	10
4. Findings	11
5. Mitigation and conservation	12
5.1 Archaeological heritage	12
5.2 Un-identified archaeological material, fossils and fossil bone	12
5.3 Built Environment	12
5.4 Graveyards.....	12
5.5 Living heritage.....	12
5.6 Cultural landscape and scenic routes	13
6. Conclusions	13
7. References	13

1. Introduction

ACO Associates cc was appointed by Van Zyl Environmental Consultants on behalf of the client, Hantam Local Municipality, to undertake the Heritage (excluding palaeontology) Impact Assessment for the proposed development and operation of a reverse osmosis plant and brine evaporation ponds and associated infrastructure, at Brandvlei, Northern Cape Province.

The proposed development will take place on Erven 304, 305 and 339 located to the north and east of town.

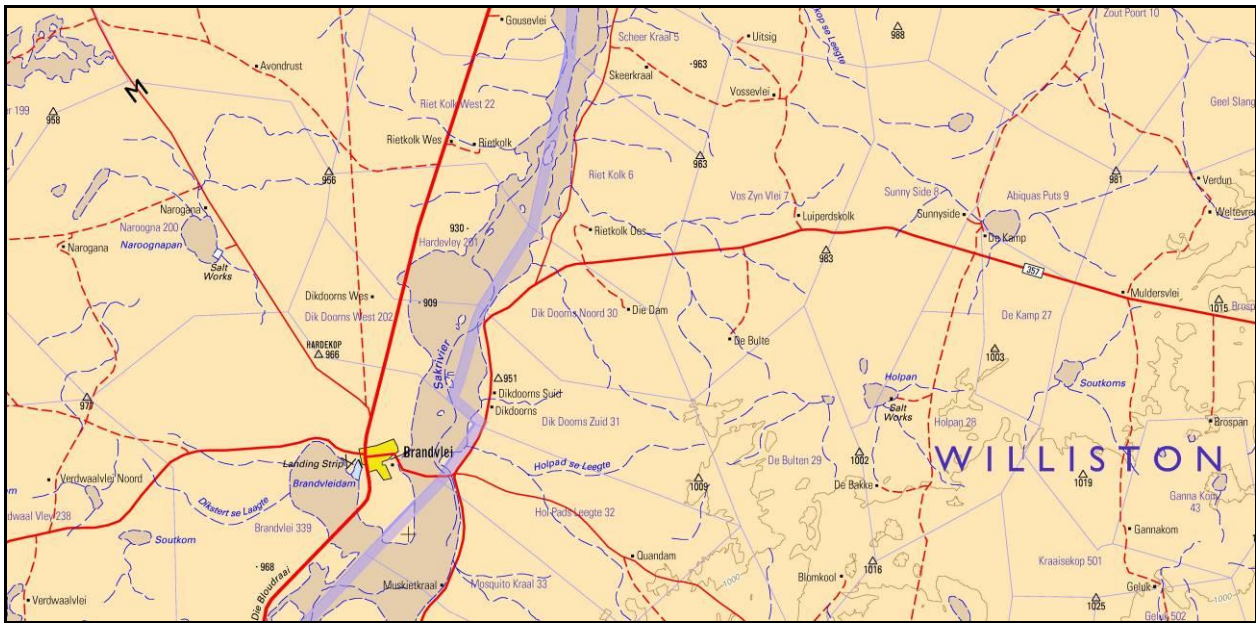


Figure 1: Map 3020 of the Northern Cape (Scale 1:250 000) showing the location of Brandvlei with respect to the Sak River.

1.1 The proposal

The Hantam Local Municipality proposes the construction and operation of the following infrastructure in order to ensure the provision of reliable potable water to the residents of Brandvlei and surrounding areas:

- Borehole Pump Station;
- High Voltage electrical supply line of either 11kV or 22kV;
- A 2.65km water pipeline (with a 125mm diameter) to a water reservoir;
- Reserve osmosis (RO) desalination plant to treat water to a potable standard;
- Brine evaporation ponds to treat the brine, a by-product of the RO process;
- Possible reclamation of salts and minerals.

The purpose of the project is to ensure the provision of reliable potable water to the community of Brandvlei. The town currently receives its water through an asbestos cement pipeline from 5 boreholes located about 40km southeast of the town. The pipeline is in old and in poor condition, resulting in numerous breakages. The condition of the pipeline may result in the town being without water for extended periods of time.

1.2 The Location

The boreholes are situated on Erven 304 and 305 owned by the Hantam Local Municipality, to the east of the town, and within the flood area of the Sak River. The water has been tested and two boreholes have been found suitable for use.

- Graves and grave yards
- Living heritage

Section 38 of the NHRA requires that Heritage Impact Assessments (HIA's) are required for certain kinds of development such as rezoning of land greater than 10 000 sq m in extent or exceeding 3 or more sub-divisions, or for any activity that will alter the character or landscape of a site greater than 5000 sq m.

The proposal is subject to the conditions of the Basic Environmental Impact Assessment Process.

2.1 The receiving environment



Plate 1: View from the current reservoir in a southerly direction, towards Brandvlei. Note the sparse vegetation and good ground visibility.



Plates 2 & 3: Infrastructure (reservoirs and cell phone tower) on top of the slight rise at the edge of town.

The reverse osmosis plant will be constructed on Erf 339 which is communal agricultural property owned by the Hantam Local Municipality. There is already a reservoir and cell phone tower on the property, which has the highest elevation in the vicinity of the town. There is evidence of considerable disturbance of the top soil, resulting from the construction of the current infrastructure.

Visibility is good, with the vegetation around the reservoirs consisting of a low woody scrub (Plate 1). The boreholes are located on the edge of the Sak River and the soil here is very silty and the vegetation cover is extremely spare, reaching only to ankle height. There is an occasional thorn tree (Plate 5).



Plate 4: The houses along Korster Street which look towards the boreholes. **Plate 5:** The location of the boreholes on the edge of the Sak River.

2.2.1 Pre-colonial heritage

There is little archaeological information available for the Brandvlei area and this review of the literature is obtained from CRM reports from further afield, in the vicinity of Kenhardt.

Halkett & Orton (2011) undertook the HIA for the Olyven Kolk Solar Power Plant located to the south of the Aries substation, located to the west of Kenhardt. They recorded a potential 50 “sites” although they describe these as: “gravel pavement, low density artefact scatter esa/msa gravel pavement”. These scatters of ESA and MSA material do not have discrete boundaries and it is not possible to talk of sites. They describe the material as including a few isolated large implements which resembled sub-classic bifaces (ESA) but the items were very weathered and observations remain equivocal and one clear biface of a size suggestive of Fauresmith type. Most of the material was ascribed to the Middle Stone Age and distinctive flakes were noted some of which some were retouched.

Pelser (2011) recorded both Early and Middle Stone artefact scatters on the farm Klein Zwart Bast, to the west of Kenhardt. He described the widespread distribution of material and emphasized in his report that “although GPS coordinates were taken on many locales (Sites), many more sites (scatters and concentrations of stone tools) were not recorded as it became clear during the assessment that most of the area is covered by Stone Age material and that it would be a near impossible task taking the scope and time-frame of the assessment into consideration to mark all the finds. The whole area can therefore be marked as a Stone Age site, with potentially millions of artefacts present”.

Previous work therefore suggests that the study area will contain a widespread distribution of Early and Middle Stone Age material with perhaps a few Later Stone Age sites, depending on topography and proximity to water, such as the Sak River. Webley & Halkett (2010) reported on ephemeral scatters of weathered MSA artefacts around the Katkop Hills to the west of Brandvlei.

Pelser (2011) described a small rocky outcrop with potentially Later Stone Age material on Klein Zwart Bas. Similarly, Halkett & Orton (2011) have also recorded a single LSA site with an upside down grindstone on the nearby farm. We know from the Bleek and Lloyd records that the /Xam Bushman moved across this section of Bushmanland.

Deacon (1986; 1996 & 1997) has studied the Bleek and Lloyd records in order to determine the territory of the /Xam Bushman. The /Xam were traditionally hunter-gatherers who roamed across the plains of Bushmanland but by the mid-nineteenth century they were subsisting on Trekboer farms around Kenhardt, Van Wyksvlei and Brandvlei. Using a map provided by /Xam informants, Deacon (1997) has been able to trace their territories and their last camp sites. The Grass Bushmen are reported to have lived around the Katkop Hills to the west of Brandvlei, nevertheless to date very few Later Stone Age sites have been recorded from this part of Bushmanland.

2.2.2 The colonial period

There were many skirmishes between Boers and San people in the area around Kenhardt. The first Trekboers settled along the lower Orange River by 1730 but the interior of Bushmanland was only settled much later. Even around the 1830's missionaries such as Barnabas Shaw reported that large areas were deserted because of a lack of adequate grazing and water. This region was used after the summer rains, with many farmers moving seasonally between Namaqualand and Bushmanland. Shaw and later travellers described groups of "Basters" living in wagons around the pans on Bushmanland in the second half of the 19th century.

Increasing competition for land and resources between the Trekboers and Khoisan groups resulted in increasing tensions and ultimately to violence during the First Korana War of 1868-9. The Cape Colonial Government sent a special magistrate and border police force to the Kenhardt area in 1868 to serve as a buffer against the Koranas (a Khoekhoen group). For a long time it was the most remote white settlement in the North-Western Cape. Many farms could only be settled permanently after the introduction of the wind pump after 1870.

The Anglo-Boer War (1899-1902) affected the Kenhardt region directly. By March 1900 Boer forces had taken Prieska, Kenhardt, Kakamas and Upington, attracting rebel support in the process. British columns were able to recapture the towns and the invasion had ended by June 1900.

2.2.3 Living Heritage

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) is given protection under the NHRA. Close association with the land, such as that experienced by farm owners and farm workers, may result in certain features on the landscape enjoying particular social or ritual significance. For example, certain places may be utilized for social outings while others may be visited for indigenous plants, etc.

2.2.4 Cultural landscape and scenic routes

Cultural landscapes are highly sensitive to accumulative impacts and large scale development activities that change the character and public memory of a place. In terms of the National Heritage Resources Act a cultural landscape may also include a natural landscape of high rarity value and scientific significance.

3. Methodology for study

A desktop review of the archaeological literature for the general area was conducted. According to the SAHRIS database, there are no CRM reports for Brandvlei itself.

The closest archaeological surveys which have been conducted are those for solar energy facilities around Kenhardt (Pelser 2011; Halkett & Orton 2011; Webley & Halkett 2012).

The property was visited by Lita Webley and Jayson Orton on the 29 November 2012. The locations of the proposed reverse osmosis plant were loaded onto handheld GPS receivers (set to the WGS84 datum) to facilitate the identification of the search area during field work. Walk paths and site locations were recorded with GPS and finds were photographed and described. The assessment was primarily concerned with archaeology, but consideration was also given to the built environment where appropriate.

3.1 Restrictions and assumptions

The study area is located on the edge of town (Figure 1 & 2). There were no restrictions to the study. Access was possible at the site of the proposed reverse osmosis facility and at the boreholes.

Visibility was excellent.

4. Findings

The site for the proposed reverse osmosis plant was examined on foot. We drove along the route of the proposed pipeline and powerline, and made spot checks on foot along the route. We also examined the area around the proposed boreholes.

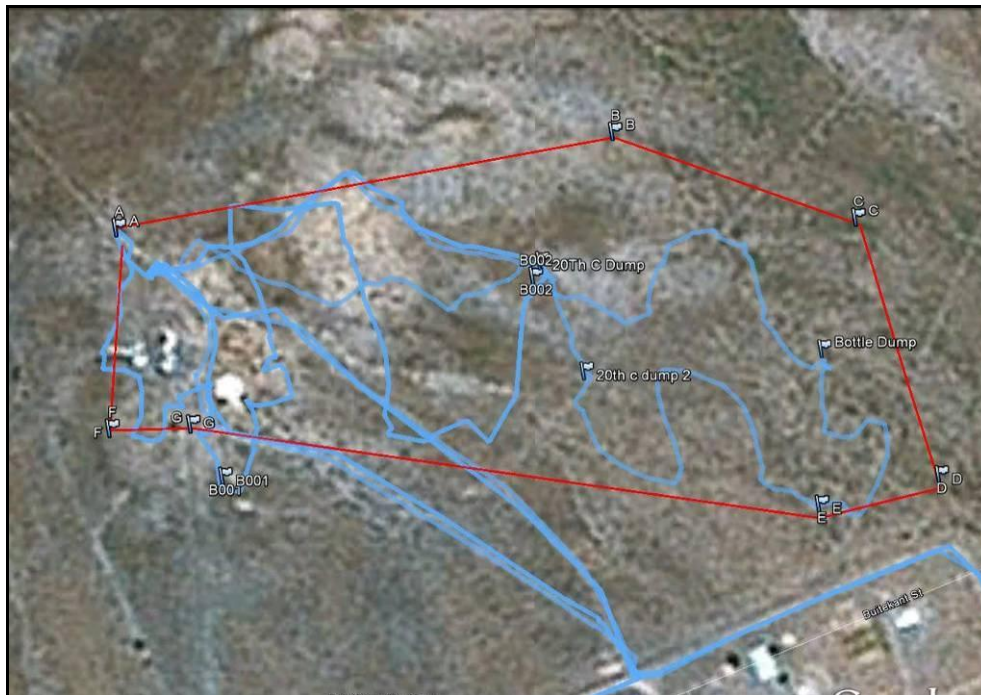


Figure 3: The survey tracks for the reverse osmosis plant on the north of town.

We did not record any pre-colonial archaeological remains. Site B001, immediately outside the study area (Figure 3) is a small scatter of stones under a bush. They do not appear to be a cairn and are unlikely to be of archaeological significance.



Plate 6: Twentieth century dump material from Site B002; **Plate 7:** Green bottle glass dump material.

Apart from this, the only other remains are historical dump material (Table 1). We found scatters of 20th century dump material on at least three places (Figure 3). The scatters do not represent large scale dump events. Rather, they are very light scatters, possibly of a single site visit. These remains are of low significance.

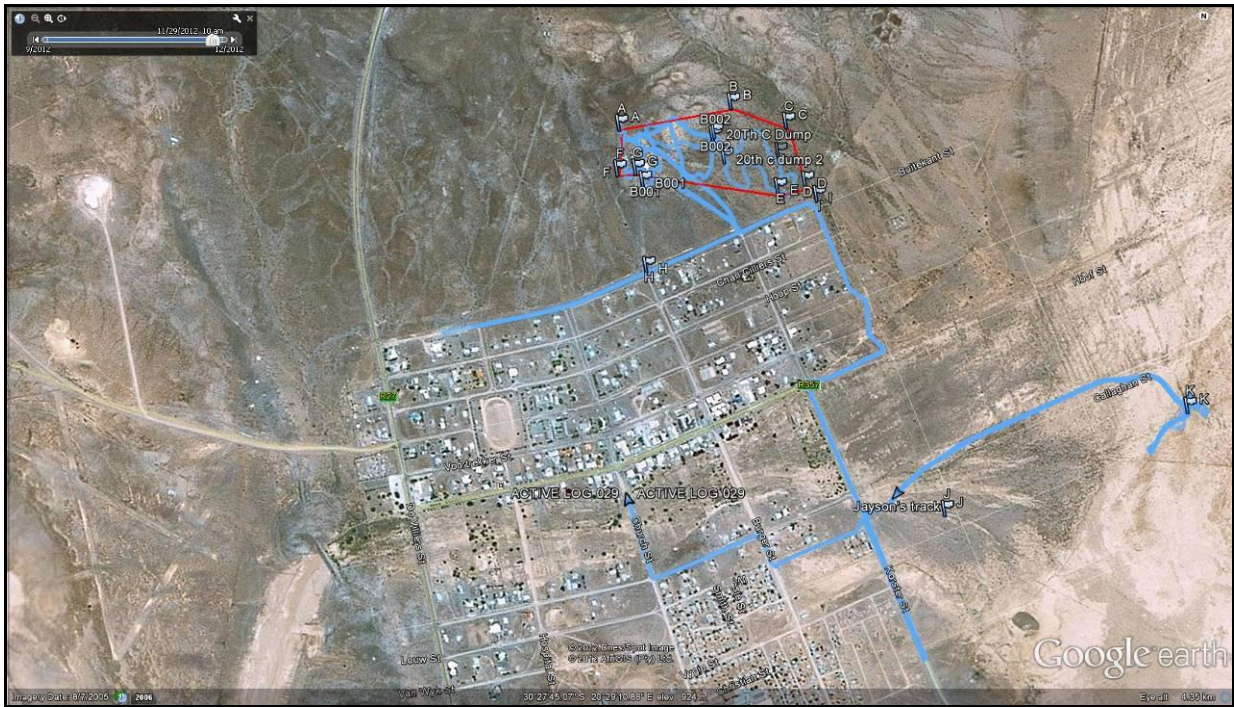


Figure 4: The blue line represents the survey tracks along the powerline/pipeline and to the borehole.

5. Mitigation and conservation

5.1 Archaeological heritage

Light scatters of 20th century dump material were recorded (Table 1). They are of low significance and no mitigation is required.

5.2 Un-identified archaeological material, fossils and fossil bone

There is a very small chance that archaeological material may be exposed during bulk excavation for services and foundations. All archaeological material over 100 years of age is protected and may only be altered or removed from its place of origin under a permit issued by SAHRA. In the event of anything unusual being encountered, the SAHRA archaeology unit must be consulted immediately so that mitigation action can be determined and be implemented if necessary (find-stop scenario). Mitigation is at the cost of the developer, while time delays and diversion of machinery/plant may be necessary until mitigation in the form of conservation or archaeological/palaeontological sampling is completed.

5.3 Built Environment

There are no built environment issues on this site identified for the reverse osmosis facility. The reservoir and cell tower are all of recent date. The houses on Korster Street, all date to the last few decades and it is not expected that the construction of the facility will have any visual impact on the landscape of the town.

5.4 Graveyards

While graves are accorded a very high significance rating, none were recorded during this survey.

5.5 Living heritage

There is no evidence that the land is being used for cultural or ritual purposes.

5.6 Cultural landscape and scenic routes

There are no cultural landscape issues and the site is some distance from the R27 which bisects the town. It will not be visible from the road.

6. Conclusions

The site of the proposed reverse osmosis plant is located next to existing reservoirs and a cell phone tower. The topsoil has been significantly disturbed due to previous development on the site.

A few scatters of 20th century dump material, such as glass fragments, rusted tin cans, ceramic and bone were identified and mapped. Concentrations are very low and they do not represent important historic dumps. The remains are considered to be of low significance.

The proposed boreholes are located on the margins of the Sak River. The topsoil is very silty and there is no evidence of any archaeological or historical material.

There will be no impact on the Built Environment, Cultural Landscape or Scenic Routes.

It is recommended that the proposed development should proceed.

7. References

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Table 1: Locations for the sites described in the text.

Site Number	GPS Co-ordinates	Site Type	Description	Significance
B001	S30 27 27.6 E20 29 13.8	Cluster of stones	A rough cluster of stones outside the study area	Low
B002 (20 th)	S30 27 22.9	Historic dump	An ephemeral scatter of	Low

Century Rubbish Dump 1)	E20 29 22.2		glass, iron, ceramic and bone – all 20 th century	
20 th Century rubbish dump 2	S30 27 25.1 E20 29 23.6	Historic dump		Low
Bottle Dump	S30 27 24.6 E20 29 30.2	Historic dump		