

# HERITAGE IMPACT ASSESSMENT

## PROPOSED BULK WATER SUPPLY & EVAPORATION PONDS, GARIES NORTHERN CAPE

Prepared for:

### **ENVIRO LOGIC**

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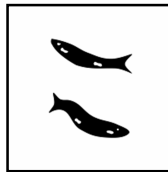
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### **KAMIESBERG MUNICIPALITY**

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### **Executive summary**

ACRM was appointed to conduct a Heritage Impact Assessment (HIA) for the proposed upgrading of the bulk water supply in Garies, in the Northern Cape.

The applicant is the Kamiesberg Municipality.

The bulk of Garies's potable water is supplied by three boreholes located east of the town, supplemented by a well in the Groenrivier on the northern side of the town. Due to increasing demand, two new boreholes were drilled adjacent the Groenrivier. While the quantity of the water was found to be sufficient from the new boreholes, the quality was declared unfit for human consumption due to high levels of dissolved salts and chlorides.

In order to remedy the situation, the Kamiesberg Municipality is proposing to install a Reverse Osmosis water desalination plant to augment the supply of quality potable water to the town.

The project entails the following activities:

- Installation of new pumps and switch boards at the existing boreholes;
- Construction of a power line to the existing boreholes;
- Construction of a 500 kl/ day Reverse Osmosis water desalination plant;
- Construction of pipelines from the boreholes to the proposed desalination plant;
- Construction of seven new brine evaporation ponds at the existing waste water treatment site, and
- Expansion of the existing sewer evaporation ponds

ACRM was appointed to investigate the impact of the proposed activities on the archaeological heritage.

According to the SAHRA fossil sensitivity map the area is considered to have a very low (insignificant/zero) palaeontological sensitivity.

A field assessment of the proposed development activities took place on 17<sup>th</sup> September 2014, in which the following observations were made:

- No archaeological heritage was recorded.
- No visible graves will be impacted by the proposed activities.
- No old buildings, structures or features will be impacted by the proposed activities.
- A small cemetery occurs near the pipeline route (north of the town), but will not be impacted by proposed development activities.
- A large, formal cemetery is located about 150 m north west of the sewer evaporation ponds.

The study has therefore identified no impacts to pre-colonial archaeological material that will need to be mitigated prior to proposed activities commencing.

The receiving environment is not a sensitive archaeological landscape, and is already quite severely degraded and disturbed as a result of competing land uses.

With regard to the proposed upgrading of the bulk water supply for Garies, the following recommendations are made:

- No archaeological mitigation is required.
- In the unlikely event of any unmarked human burials or ostrich eggshell caches for example, being uncovered during earthworks, these must immediately be reported to the archaeologist (Jonathan Kaplan 082 321 0172, or the South Africa Heritage Resources Agency (Att: Ms Mariagrazia Galimberti 021 462 4502).
- The Environmental Control Officer (ECO) must ensure that the small cemetery alongside the proposed pipeline route north of the town is not disturbed or damaged in any way.

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## 1. INTRODUCTION

ACRM was appointed by Enviro Logic, on behalf of the Kamiesberg Municipality, to conduct a Heritage Impact Assessment (HIA) for the proposed upgrading of the bulk water supply in Garies, in the Namaqualand region of the Northern Cape Province (Figures 1 & 2).

The bulk of Garies's water is supplied by three freshwater boreholes located east of the town, supplemented by a well in the Groenrivier on the northern side of the town. Due to increasing water demand, two new boreholes were drilled adjacent the Groenrivier. While the quantity of the potable water was found to be sufficient, the quality was found to be unfit for human consumption due to high levels of dissolved salts and chlorides.

In order to remedy the situation, The Kamiesberg Municipality is proposing to install a Reverse Osmosis water desalination plant including associated infrastructure to augment the supply of potable water to the town (Figure 3).

The project entails the following activities:

- Installation of new pumps and switch boards at the production existing boreholes;
- Construction of a  $\pm 210$  m above ground, and  $\pm 120$ m underground 16kVa power line from the existing electricity supply networks to the two new boreholes located on the north bank of the Groenrivier;
- Construction of a 500 kl/day Reverse Osmosis water desalination plant on a footprint area measuring about 100m<sup>2</sup>;
- Construction of 1300 m long trenches for pipelines from the boreholes to the desalination plant, as well as to the existing reservoirs in the town;
- Construction of seven new brine evaporation ponds at the existing waste water treatment works. The footprint area is about 2.9ha, and
- Construction of seven sewer evaporation ponds at the existing waste water treatment works. The footprint area is about 4.6ha

The raw water from the two new boreholes will be pumped to an existing 350kl water reservoir in town. The water will be conveyed to the proposed new desalination plant alongside the reservoirs. Treated water from the desalination plant will be mixed with freshwater from the existing three operational boreholes in an existing 750kl reservoir. The water will then be conveyed by an existing water pipeline to a 1.5Ml existing concrete reservoir and from the reservoir released through the existing distribution system to residents in the town.

Brine (effluent with high salt concentrate) will be conveyed to the proposed new brine evaporation ponds at the existing waste water treatment works. An existing 110mm diameter underground water pipeline will be extended by 550m to the proposed new brine evaporation ponds (Figure 3).

Heritage Impact Assessment proposed upgrading of the Garies Bulk Water Supply



Figure 1. Locality map. Arrow indicates the town of Garies alongside the N7 north.



Figure 2. Google aerial map of the town of Garies.

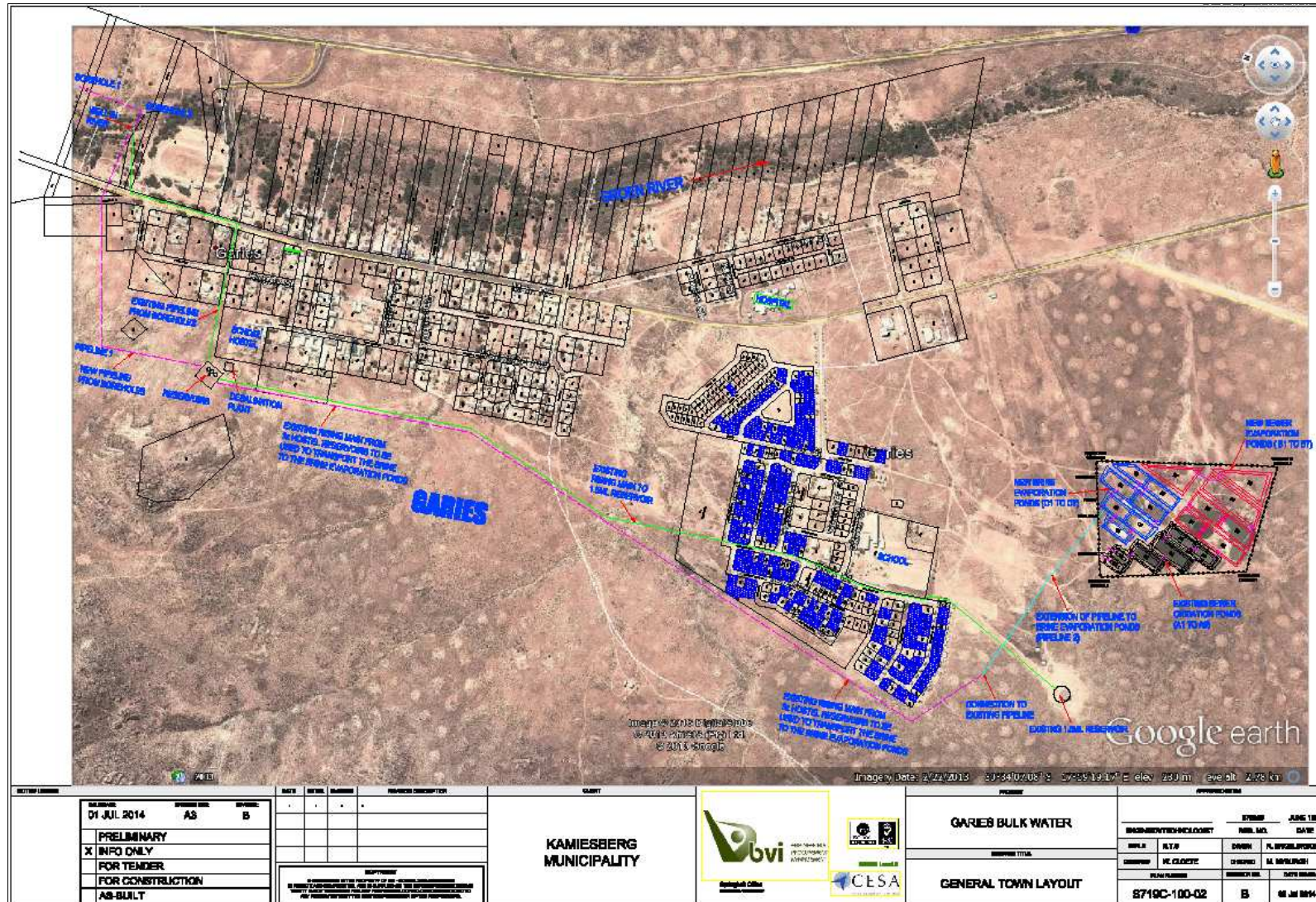


Figure 3. Garies Bulk Water Supply. Proposed development plan.

## **2. LEGAL FRAMEWORK**

The National Heritage Resources Act (Act No. 25 of 1999) makes provision for a compulsory Heritage Impact Assessment (HIA) when an area exceeding 5000 m<sup>2</sup> 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)).

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 is required to notify the responsible heritage resources authority, who will in turn advise whether an impact assessment report is needed before development can take place.

## **3. TERMS OF REFERENCE**

The terms of reference for the study were to:

- Determine whether there are likely to be any important archaeological resources that may potentially be impacted by the proposed project/activities, and
- Recommend any mitigation action.

## **4. DESCRIPTION OF THE RECEIVING ENVIRONMENT**

Garies is located about 440kms north of Cape, alongside the N7, in the Namaqualand region of the Northern Cape. The Groenrivier runs between the town and the N7, before discharging into the Atlantic Ocean some 80kms to the south west. The proposed pipeline, from the river to the proposed desalination plant, crosses the municipal camping picnic/site, and up a weathered gritty/sandy slope, before it turns south to the existing concrete water reservoirs, alongside the site for the proposed Reverse Osmosis desalination plant. Thereafter, the pipeline is aligned alongside an existing water supply pipeline/Eskom powerline, crossing a small stream, before running alongside a fence line, where it turns east to the existing Waste Water Treatment Works (Figures 4-21).





Figure 4. Proposed pipeline route north of the river



Figure 7. Proposed pipeline route. View facing east



Figure 5. Existing well



Figure 8. Arrow indicates existing reservoirs. View south



Figure 6. The pipeline crosses the municipal camping/picnic site. View facing west



Figure 9. Existing reservoirs



Figure 10. Arrow indicates footprint area for proposed desalination plant, located behind the school koshuis



Figure 13. Pipeline route south. View facing south



Figure 11. Pipeline route. View facing south



Figure 14. Pipeline route. View facing south



Figure 12. Pipeline route looking back to reservoirs. View facing north



Figure 15. Pipeline route alongside fence line. View facing south



Figure 16. Pipeline route to the proposed desalination plant. View facing north



Figure 18. View of waste water treatment works



Figure 17. Pipeline route to the existing waste water treatment works. View facing east



Figure 19. Waste water treatment works. View facing south east



Figure 20. Footprint area for proposed evaporation ponds. View facing south. Raw sewerage has already overflowed into the area



Figure 21. Footprint area for the proposed new brine ponds. View facing south west

## **5. STUDY APPROACH**

### **5.1 Method**

A walk down survey of the proposed activities took place on 17<sup>th</sup> September, 2014.

The entire pipeline route (a distance of just over 3 kms) including associated activities were assessed for archaeological heritage.

Archaeologist Mr Guy Slingsby assisted with the study.

A desk top study was also done.

### **5.2 Constraints and limitations**

There were no constraints or limitations associated with the study. Ground 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 activities.

The proposed pipeline north of the town is aligned close to a small fenced off cemetery.

There is a large formal cemetery about 150 m north of the waste water treatment works.

Unmarked human remains or buried ostrich eggshell caches may be uncovered or exposed during excavations for the pipeline or brine/evaporation ponds, but this is considered to be unlikely.

According to the SAHRA fossil sensitivity map the area is considered to have a very low (insignificant/zero) palaeontological sensitivity.

#### **5.4 Archaeological background**

No archaeological work has been done in Garies until now, while most of the studies in the surrounding area have been undertaken by commercial archaeologists doing Heritage Impact Assessments as part of the EIA process. Webley (1992) however, did find Howiesons Poort type (70 000 years old) implements belonging to the Middle Stone Age (MSA) during excavations at Keurbos Cave about 15 km north-east of Garies. Commercial archaeology reports indicate mixed results as these are governed by specific development proposals. For example, only a few Later Stone Age (LSA) and MSA remains were recorded during an assessment of 10 borrow pits and five quarries for the upgrading of several gravel roads between Garies and Hondeklipbaai at the coast (Kaplan 2011). A HIA for a large (mining) stock pile area 13kms south west of Garies did not encounter any archaeological heritage (Kaplan 2013), while based on the results of a desk top study and considering the very small footprint area (1.5ha), Webley (2012) concluded that the potential impact on heritage resources for a proposed quarry near Klipfontein north west of Garies were considered to be of minor significance. Webley & Halkett (2010) however recorded a LSA site with large numbers of stone tools, pottery, ostrich eggshell fragments and some 19<sup>th</sup> Century British refined earthenware on the banks of the Swartdoring River, as well as an important MSA factory site and Early Stone Age (ESA) tools during a survey for a rare earth minerals mine about 30kms south of Garies. The MSA factory site was subsequently sampled by Van der Ryst & Küsel (2012).

Historically, the interior of Namaqualand was occupied by the Little Namaqua, a Khoekhoen pastoralist group, who herded sheep and cattle and lived in temporary encampments of mat/grass huts. The Little Namaqua are known to have moved seasonally with their livestock, and historical reports indicate that they may have followed a transhumance cycle between the Kamiesberg in the summer months and the Sandveld in the winter months (Webley 1992). Early traveller accounts relating to Little Namaqua settlement in the area is summarized in Webley (1992). For example, the Governor Simon van der Stel who travelled to Namaqualand in 1685, found the first Namaqua kraals north of the Doornboschrivier, which it is believed, is a reference to the Groenrivier (Webley & Halkett 2010). Wind deflated campsites (perhaps associated with the Little Namaqua) with stone tools, decorated pottery, ostrich eggshell and marine shellfish were recently recorded about 40kms south west of Garies (Kaplan in prep 2014).

Since the Little Namaqua had no clearly defined territorial boundaries, it was easy for the colonial Trekboers to settle in the area. The earliest loan farms were granted after 1750 and some were located on the Groen and Doorn Rivers. The Little Namaqua eventually retreated to so-called "reserves" such as Leliefontein, Steinkopf, Kommaggas, Concordia and the Richtersveld (Webley & Halkett 2010).

## 6. FINDINGS

### 6.1 Archaeology

No archaeological remains were recorded during the study. A GPS track path is illustrated in Figure 22.

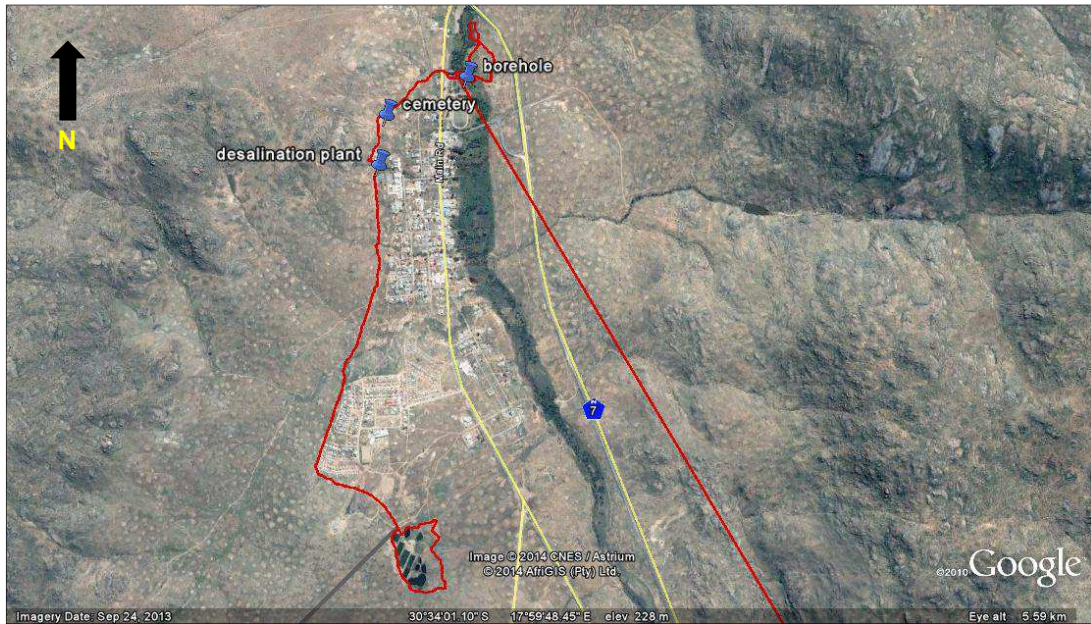


Figure 22. Track paths.

### 6.2 Graves/cemeteries

No visible graves were located during the study, but the pipeline (north of the town) will be aligned fairly close to a small, fenced off cemetery (Figure 23).

A large formal cemetery is located about 150m north of the waste water treatment works.



Figure 23. Cemetery alongside the pipeline route

## **7. CONCLUSION**

The HIA has identified no impacts to pre-colonial archaeological material that will need to be mitigated prior to the proposed development activities.

Indications are that the receiving environment, which is already quite severely disturbed and degraded, is not a sensitive or threatened archaeological landscape.

## **8. RECOMMENDATIONS**

With regard to the proposed Garies Bulk Water Supply, the following recommendations are made:

- No archaeological mitigation is required.
- In the unlikely event of any unmarked human burials or ostrich eggshell caches being uncovered during quarrying operations, these must immediately be reported to the archaeologist (Jonathan Kaplan 082 321 0172), or the South Africa Heritage Resources Agency (Att: Ms Mariagrazia Galimberti 021 462 4502).
- The Environmental Control Officer must ensure that the small cemetery north west of the town is not damaged or disturbed in any way.

## 9. REFERENCES

Kaplan, J. in prep. 2014. Heritage Impact Assessment, Zirco Roode Heuwel (Pty) Ltd, Northern Cape Kamiesberg Project, Namaqualand, South Africa. Report prepared for Coastal and Environmental Services (CES), Grahamstown.

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