

## **NAMAQUALAND REGIONAL WATER SUPPLY SCHEME**

*(REFURBISHMENT: PHASE 2)*

**FROM**

**HENKRIES PUMP STATION TO VAALHOEK RESERVOIR**

*(Steinkopf- and Concordia Commonage and Portion 10 of the Farm 133, Nama Khoi Municipality, Northern Cape Province).*



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*(DENC Officer: L Karsten)*

**FINAL BASIC ASSESSMENT REPORT**

**SEPTEMBER 2012**

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# EXECUTIVE SUMMARY

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## BACKGROUND

Namakwa Water Board is a bulk supplier of water to the Nama Khoi Municipal jurisdiction area, build in the 1970's. The communities that are served are: Steinkop, Okiep, Concordia, Nababeep, Bulletrap, Carolusberg, Springbok and Kleinzee with an estimate population of ±50 000. The scheme exist of an extraction point on the Orange River at Henkries mond, purification works at Henkries, a booster pump station at Doringwater and round about 130 km's of pipeline to Springbok. The water is pumped from Henkries to Eenrietberg from where it gravitates to Springbok. From Springbok to Kleinzee is another 120 km's of pipeline.

The current pipeline is already older than 35 years and has been in use well over its design period. As a result age and weathering the pipeline has deteriorated to such an extent that frequent pipeline failures occurs. Large volumes of water have already been lost due to leaks along the pipeline. Please note that this is the only source of potable water available for almost all of the above communities. Pipeline failures results in inconsistent water supply, leaving various communities and towns (45 000 people within the Nama Khoi Municipality) without potable water on an ever increasing frequency. The upgrading and maintenance of the Namakwa water scheme has thus become a very high priority. Since no other sources of potable water are locally available it means that the current pipelines need to be in operation while the replacement is done.

A phased refurbishment has been proposed. This project comprises the second phase of this refurbishment, and entails the replacement of approximately 100 km of pipeline between Henkries extraction point to Okiep (Vaalhoek Reservoir).

Please note that the replacement of a portion of this pipeline, approximately 6 km of the old pipeline, just north of Okiep (the portion between 10 km – 16 km north of Okiep) where the most frequent failures occur (at the lowest point where the pressure is at its highest) has already been approved by DENC and is known as phase 1 of the project (Refer to Environmental Authorization Ref. No. NNO 25/19 (NC/BA/NAM/NAB3/2011) issued on the 16<sup>th</sup> of February 2012).

It is proposed that the existing pipeline is to be removed and that the new pipeline will be placed in the same trench/location as the original pipeline (within the existing servitude). Water must remain available during the refurbishment period. The engineers thus proposes to install the new pipeline in sections (in a leap-frog exercise) during which a temporary pipeline will be placed next to the existing pipe to ensure continual water supply (while being replaced). Since the natural vegetation over the pipeline has re-established itself, a biodiversity scan was commissioned to evaluate the environmental impact of the proposed activity.

## VEGETATION

In accordance with the 2006 Vegetation map of South Africa, Lesotho and Swaziland (Mucina & Rutherford, 2006) seven broad vegetation types are expected in the study area, namely:

VEGETATION TYPE	BIOME	STATUS	REMAINING	FORMALLY CONSERVED	CONSERVATION TARGET
Eastern Gariep Rocky Desert	Desert	Least Threatened Not Protected	99.7%	0%	34%
Eastern Gariep Plains Desert	Desert	Least Threatened Not Protected		0%	34%
Bushmanland Arid Grassland	Nama-Karoo	Least Threatened Not Protected	99.5%	0%	21%
Bushmanland Sandy Grassland	Nama-Karoo	Least Threatened Hardly Protected	99.4%	0.4%	21%
Eenriet Plains Succulent Shrubland	Succulent	Least Threatened	99.5%	0%	28%

	Karoo	Not Protected			
Namaqualand Blomveld	Succulent Karoo	Least Threatened Hardly Protected	94%	1.5%	28%
Namaqualand Klipkoppe Shrubland	Succulent Karoo	Least Threatened Poorly Protected	95%	5.8%	28%

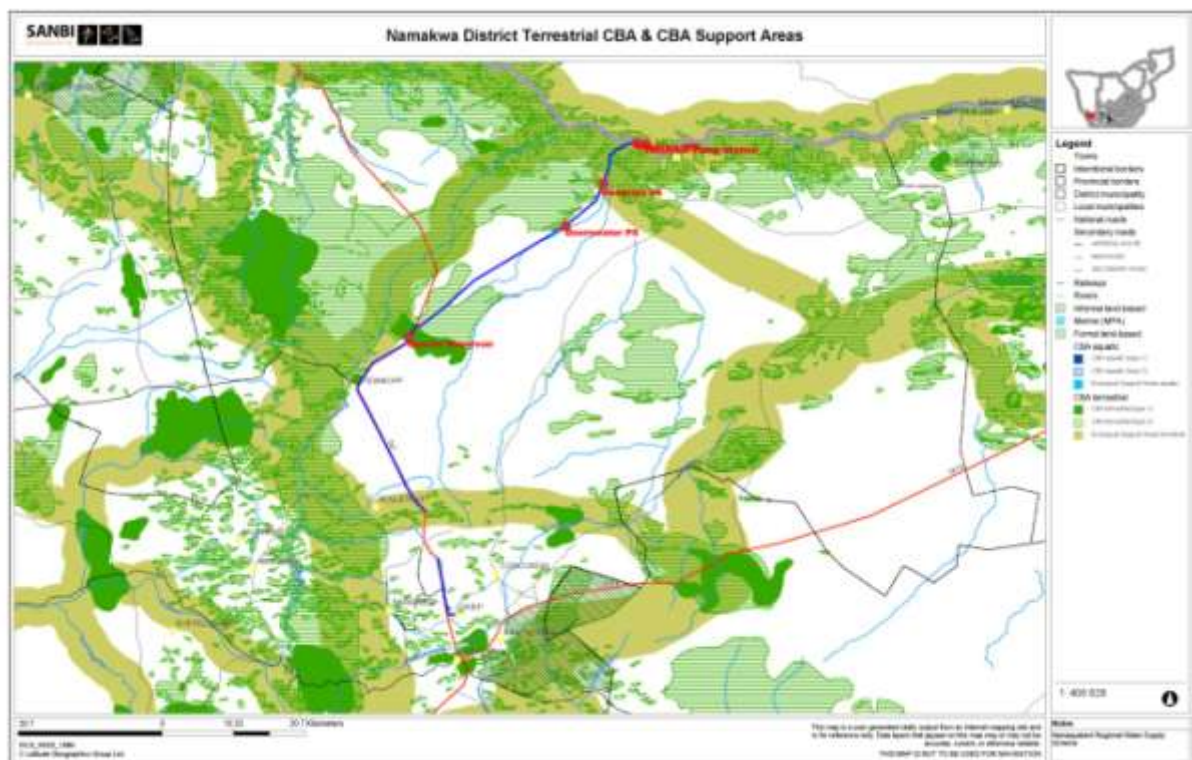
All of these vegetation types were classified as “Least Threatened” during the National Spatial Biodiversity Assessment (NSBA), 2004, but they are also all considered to be at least “Poorly Protected” given the fact that very little of these two vegetation types are formally protected. Fortunately, more than 95% of most of these vegetation types are still found in a relative natural state. In addition the pipeline would be situated in the same area (previously disturbed) as which the original pipeline is located, which will reduce the impact significantly.

- **Red Data Species**

No red data species had been observed, but the possibility exists that such species might be encountered within the study area. However, since the impact will be very localized and associated with existing disturbed areas, the changes of irreparable or irreversible lost is considered very low. Protected tree species like *Aloe dichotoma* var. *dichotoma* (Kokerboom) has been observed in the vicinity of the proposed pipeline. Other protected trees that are also likely to occur in this area are: *Acacia erioloba* (Camel Thorn Kameeldoring), *Boscia albitrunca* (Shepherds-tree Witgat/Matopie). All of which should be protected in terms of the CARA.

- **Critical Biodiversity Areas**

The Terrestrial Critical Biodiversity Areas (CBA) map for the Namaqualand District Municipality shows that the existing pipeline (and thus the proposed refurbishment) crosses various areas identified as CBA’s or CBA support areas within the sector plan (Refer to Figure underneath).



## RIVERS

The currently pipeline location crosses the Brak-, the Doring- and the Skaap Rivers or tributaries thereof.

- Near Henkries the pipeline crosses the non-perennial Brak River (Classified as an Endangered, Class B or Largely Natural river system).
- Just south of Steinkopf the pipeline crosses two a small non-perennial tributary of the Doring River (Classified as an Endangered, Class C –Moderately Modified river system).
- The non-perennial Skaap River (and smaller tributaries thereof are also crossed in more than one location in the vicinity of Bulletrap, north of Okiep (Classified as an Endangered, Class C or Moderately Modified river system).

Although all of these rivers are regarded as slightly too moderately impacted they are still classified as endangered and in need of protection. River crossing must thus be seen as significant aspects of the proposed project.

## SUMMARY OF ENVIRONMENTAL IMPACTS

Four alternatives were investigated namely:

1. Locating the new pipeline within the original trench (the preferred option) by removing the old pipeline and substituting it with the new pipeline.
2. Locating the new pipeline next to the original pipeline within the existing servitude (not removing the old pipeline).
3. Locating the new pipeline in a new servitude away from the original pipeline.
4. The “No-Go” options.

Having evaluated and discussed the various biodiversity aspects associated with the proposed alternatives it is clear that only Alternatives 1 and 3 are viable options. However, alternative 3 will basically double the impact, since a new pipeline route will have to be established in virgin soils (some of which will again fall within critical biodiversity areas), while the original pipeline remains *in situ*. By implementing Alternative 1, the environmental impact will be the smallest, and it will have the added advantage that the poor rehabilitation and clean-up of the original installation can be addressed as part of the rehabilitation of this project. Furthermore, the old pipeline will be removed (and not left in situ, as will most probably be the case if any of the alternative options is implemented).

The major environmental impacts associated with the implementation of any of the alternatives are:

- the fact that all the proposed routes will impact on critical biodiversity areas; and
- all the routes will have an impact river systems (a number of river crossings is associated with all of these options).

For any of these options care will have to taken when any work is done within or near any of the identified CBA areas, especially CBA1 areas (near Eenriet Reservoir) and all river/ stream crossings. However, with the correct mitigation the associated impacts can be much reduced.

Alternative 1 is given as the option with the least environmental impact for the following reasons:

- The new pipeline will be installed within the original pipeline servitude (not within virgin soils).
- This area was already disturbed during the installation of the original pipeline.
- Disturbance to critical biodiversity areas and river systems will be short term impacts.

- The old pipeline will be removed (and not left in-situ).
- Poor rehabilitation and clean-up of the original installation can be addressed as part of the rehabilitation of this project.
- Very little (if any) new blasting is expected since the placement specifications for the new pipeline will be the same as for the original pipeline.
- **The “NO-GO” alternative**

Various studies have been undertaken for alternative sources of potable water for the Nama Khoi Municipality. The latest study was conducted by the Department of Water Affairs, Kimberley, 2011 that led to the conclusion that water from the Orange river is the only source of sufficient and sustainable quantity. This source has been utilized since 1973 when the purification works were built at Henkries for the sole purpose of the supply of potable water to the area.

However, the current pipeline has been in use well over its design period and needs to be replaced as a matter of urgency. If the pipeline is not refurbished, communities and towns in the area will suffer more cut offs from the only potable water source in the area, which could cause detrimental effects. In addition major losses in water will occur if the pipeline deterioration and leakages are not properly repaired.

- It is very important to note that the “No-Go Alternative” will not result in a *status quo* or no impact. As a result the continual disturbance over time (when taking the cumulative effect into consideration) the “No-Go” alternative may have a more significant impact than some of the proposed alternatives. Each failure will result in excavations, vehicle access and possibly even temporary pipeline routes. Also note that these repairs are done out of need, with very little environmental control and very little thought with regards for environmental rehabilitation, or long term improvement, while the fact remains that eventually the pipeline will have to be replaced.

**With the available information to the EAP’s disposal it is recommended that Alternative 1 be chosen as the option associated with the least environmental impact over the long-term, provided that all mitigation is adequately enforced. Overall this activity is not expected to be associated with irreplaceable loss of species, ecological processes or other biodiversity features, but could constitute a significant positive contribution to the people of this area.**

## **SUMMARY OF COMMENTS RECEIVED ON DBAR**

Only two comments were received during the initial PPP **both supporting the application**, one from the Namakwa District Municipality and one from the Nama Khoi Local Municipality.

One further comment was received on the Draft BAR, namely from SAHRA informing EnviroAfrica that they have reviewed and support the Archaeologist’s findings, and that SAHRA **has no objection to the development** on condition that if any evidence of archaeological, palaeontological, graves or other heritage resources are found, SAHRA and an archaeologist and/or palaeontologist (depending on the find) must be alerted immediately.

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## **APPENDIXES TO FINAL BASIC ASSESSMENT REPORT**

### **APPENDIX A: LOCATION MAPS**

- A1: Regional Location map
- A2: Local Location map
- A3: Vegetation map
- A4: Critical Biodiversity Areas Map (Namakwa District Municipality)
- A5: Landcover map
- A6: General soil map

### **APPENDIX B: PHOTOGRAPHS**

- Overview photos

### **APPENDIX C: FACILITY ILLUSTRATIONS**

N/A

### **APPENDIX D: SPECIALIST REPORTS**

- D1: Biodiversity assessment / Botanical Scan
- D2: Archaeological assessment

### **APPENDIX E: PUBLIC PARTICIPATION**

#### **Appendix E1 – Initial PPP**

- E1.1: Acknowledgement of Application (DENC)
- E1.2: Register of I&AP's (1<sup>st</sup> round PPP)
- E1.3: Proof of letters send to I&AP's
- E1.4: Copy of hand-outs
- E1.5: Proof of Advert
- E1.6: Proof of posters
- E1.7: Comments received on initial PPP
- E1.8: Comments & Response report

#### **Appendix E2 – PPP for Draft BAR**

- E2.1 Acknowledgement of DBAR (DENC)
- E2.2 Register of I&AP's (DBAR)
- E2.3 Proof of Postage
- E2.4 Comments Received on DBAR
- E2.5 Updated Comments & Response report

### **APPENDIX F: ENVIRONMENTAL MANAGEMENT PLAN**

- F1: Final Environmental Management Plan (EnviroAfrica)

### **APPENDIX G: OTHER INFORMATION**

- G1: Sedibeng water: Regional bulk infrastructure grant - feasibility study