

# **REPAIR AND UPGRADE OF THE ONSEEPKANS WATER SUPPLY AND FLOOD PROTECTION INFRASTRUCTURE, ORANGE RIVER, NORTHERN CAPE**

DEA Ref No.: 14/12/16/3/3/1/977



## **DRAFT BASIC ASSESSMENT REPORT**

### **October 2013**

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# EXECUTIVE SUMMARY

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## Introduction

It is proposed that the existing open canal, which runs the length of the Onseepkans settlement (a distance of approximately 16.4 km), before it releases its surplus water back into the Orange River, be repaired and upgrade. It is proposed that the original earth and concrete canal be replaced by a closed concrete pipeline.

The infrastructure will not be expanded or the capacity increased (although much better results are expected from the enclosed system) and the pipeline will be placed within the existing canal footprint. In addition the existing flood protection structures will also be repaired and the intake works as well as outlet works will be repaired and upgraded to better complement the new system and for better protection of the inlet and outlet structures and the environment at these structures (erosion management).

Water from the Orange River is currently supplied to the agricultural land and smallholdings through gravity feed earth canal system designed and build with the establishment of the settlement (no pumping is done). Water is extracted from the Orange River by means of a weir constructed in the river from where it enters the canal. The system is designed to extract a maximum of 1500 l/s. During months with low water demands, flow is regulated with a sluice gate.

Fill/bedding material will be required for the pipeline upgrade, and will be sourced from seven proposed borrow pits, which have been identified in Onseepkans. These are located at seven different locations along the canal route, to minimise the distance from the borrow pit to the pipeline.

## Environmental Requirements

The National Environmental Management Act (NEMA, Act 107 of 1998), as amended, makes provision for the identification and assessment of activities that are potentially detrimental to the environment and which require authorisation from the competent authority based on the findings of an Environmental Assessment. NEMA is a national act, which is enforced by the Department of Environmental Affairs (DEA). According to the regulations of Section 24(5) of NEMA, authorisation is required for the following:

Government Notice R544 listed activities:

- 18:** The infilling or depositing of any material of more the 5 cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock from a watercourse;
- but excluding where such infilling, depositing, dredging, excavation, removal or moving:
- (i) is for maintenance purposes undertaken in accordance with a management plan agreed to by the relevant environmental authority; or
  - (ii) occurs behind the development setback line.

Government Notice R546 listed activities:

- 13:** The clearance of an area of 1 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation,

In the Northern Cape:

Critical biodiversity areas and ecological support areas as identified in systematic biodiversity plans adopted by the competent authority.

### Site Description

According to the Biodiversity Assessment (Appendix D2), the CBA map for the Onseepkans area indicates that all the proposed borrow pit sites as well as the whole of Onseepkans is located within proposed CBA 1 or CBA 2 areas.

Both *Acacia erioloba* and *Boscia albitrunca* was observed in the study area. However, none of these plants will be impacted by the proposed development.

In accordance with the 2006 Vegetation map of South Africa, Lesotho and Swaziland (Mucina & Rutherford, 2006) only two vegetation types are expected to be impacted by the proposed borrow pits namely; *Eastern Gariep Plains Desert* (Borrow Pits 3, 6 & 7) and *Eastern Gariep Rocky Desert* (Borrow Pit 1, 2, 4 & 5). According to the *National list of ecosystems that are threatened and in need of protection* (GN 1002, December 2011) these vegetation types are currently classified as 'Least Threatened'.

According to the Freshwater Assessment (Appendix D1), there are a number of drainage lines and small ephemeral streams draining from the south into the Orange River within the study area. The ephemeral streams are visible in the landscape due to the relatively wide sandy beds and, in some instances, by vegetation associated with the river beds and riparian zones. The Orange River however dominates the surrounding landscape, and displays braided features with secondary channels that are only active during high flow events. The riparian vegetation in terms of species composition within the channel is still largely natural. The South African side (southern bank) of the Orange River has been developed and cultivated to within the riparian zone.

According to the Freshwater Assessment (Appendix D1), in terms of the Critical Biodiversity Areas (CBA), the channel of the Orange River has been mapped as a CBA2 (Important Area) due to the fact that it contains Lower Gariep Alluvium vegetation which is considered as endangered and the river provides an important corridor for migration.

According to the Archaeological Impact Assessment (Appendix D3) very small numbers and the disturbed context in which they were found, means that the archaeological remains have been rated as having low (Grade 3C) significance. The study has identified no significant impacts to pre-colonial archaeological material that will need to be mitigated, prior to quarrying commencing. Five graves in Borrow Pit 1 might be impacted by proposed quarrying. In terms of the archaeological heritage, the proposed activity is deemed to be viable.

### Need and Desirability

Over the years the canal had been repaired and upgraded on numerous occasions, usually after flooding incidents. The existing water supply system has an average water loss percentage of 30% (which are constantly aggravated with each new flood). The proposed activity will not only include the repair to the damage done by floods, but the closed pipeline will ensure better water conservation and management (a maximum of 5% water loss is expected from such a closed system).

The proposed activity will not only include the repair to the damage done by floods, but the closed pipeline will ensure better water conservation and management, which is better for the users (agricultural land and smallholdings) being supplied water through the scheme.

The activity will also provide temporary employment for approximately 100 people during the construction phase (75% previously disadvantaged) and 15 permanent job opportunities (75% previously disadvantaged).

## Conclusion

The environmental impact is expected to be very low to low, with the following mitigation measures proposed:

### Botanical/biodiversity:

- All larger indigenous trees must be regarded as significant biodiversity features and all efforts must be made to protect and conserve any such tree.
- Seasonal streams should be seen as significant biodiversity features, which should be protected by adequate corridors which must also address the protection of the riparian vegetation.
- Permits must be obtained for the removal of any protected species which cannot be protected or avoided.
- As a pre-cautionary measure all viable herb-, bulb- and succulent plant species encountered within the footprint should be removed and replanted through a dedicated search and rescue operation.
- Only existing access roads should be used for access to the terrain. Access roads must be clearly demarcated and access must be tightly controlled (deviations may not be allowed).
- Indiscriminate clearing of areas must be avoided (all remaining areas to remain as natural as possible).
- All topsoil (at all excavation sites) must be removed and stored separately for re-use for rehabilitation purposes. The topsoil and vegetation should be replaced over the disturbed soil to provide a source of seed and a seed bed to encourage re-growth of the species removed during construction.
- Once the construction is completed all further movement must be confined to the access tracks to allow the vegetation to re-establish over the excavated areas.
- Rehabilitation must be done after construction.
- All construction must be done in accordance with an approved construction and operational phase Environmental Management Plan (EMP), which must be developed by a suitably experienced Environmental Assessment Practitioner.
- A suitably qualified Environmental Control Officer must be appointed to monitor the construction phase in terms of the EMP and the Biodiversity study recommendations as well as any other conditions which might be required by the Department of Environmental Affairs.
- An integrated waste management system must be implemented during the construction phase.
- All rubble and rubbish (if applicable) must be collected and removed from the site to a suitable registered waste disposal site.
- All alien vegetation should be removed from all associated footprints within the various construction sites.
- No mining/excavation activities may take place at borrow pit 5 during the breeding season (November to March), and only be allowed once the Martin colony has finished their breeding cycle and have migrated north (normally during the winter periods).

### Freshwater:

- Construction activities should not widen the existing maintenance road along the existing canal or create new disturbed areas within the riparian zone to the Orange River on the opposite side of the road from the trench – in particular the construction works should not intrude into the riparian areas which are considered to be more sensitive;
- Material (infill) should not be sourced from the riparian zones;
- Excess material (and concrete slabs and pipes) should not be dumped into the riparian zones;
- Existing dumped material along the maintenance road should be removed and placed back into the trench as backfilling. This should be done in such a way as not to bulldoze non disturbed areas or to widen the road;
- The exotic trees currently growing in the riparian zones should be cut and the stumps treated with herbicide to prevent re-growth;
- The borrow pits should adhere to the 30m buffers (measured from the lowest point in the stream channel) that are proposed for the ephemeral streams;
- All crossings over pipeline and discharge points from the pipeline back into the river should be rehabilitated such that the flow within the drainage channel is not impeded;

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- Where possible the ephemeral streams previously cut off from the Orange River by the trench should be reconnected with the river; and
- Appropriate construction methods should be deployed to ensure the prevention of erosion of the filled-in canal during flood events which could require the repetitive refilling the pipeline trenches once construction is completed.

### Archaeological:

- The five graves identified at borrow pit 1 must be excluded from the footprint area. This should be easily accommodated as the features are located on the north eastern boundary of the proposed borrow pit. A buffer of at least 10m must be established around each of the graves. There is also additional fill alongside the R358 where suitable material may be exploited.
- Should any unmarked human remains, or ostrich eggshell water flask caches for example, be uncovered, or exposed during quarrying, these must immediately be reported to the archaeologist (Jonathan Kaplan 082 321 0172), or the South African Heritage Resources Agency – Att. Ms Katie Smuts 021 462 4502.

Considering all the information, it is not envisaged that this proposed development will have a significant negative impact on the environment, and the environmental and socio-economic benefits are expected to outweigh any negative impacts.

It is therefore recommended that this application be authorised with the necessary conditions of approval as described throughout this BAR.