

# **THE PROPOSED KALAHARI EAST (PHASE 1) BULK WATER SUPPLY PIPELINE AND RESERVOIR, ASKHAM, RIETFontein, NORTHERN CAPE**

DEPARTMENT OF ENVIRONMENTAL AND NATURE CONSERVATION  
(DENC) REF NO: NC/BA/27/ZFM/MIE/ASK1/2014



**FINAL BASIC ASSESSMENT REPORT**

**October 2014**

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# EXECUTIVE SUMMARY

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## Introduction

It is proposed that the Kalahari East Bulk Water Scheme be extended between Askam and Philandersbron.

The proposed development includes the construction of an approximately 161km pipeline between the existing Kalahari East Bulk Water Supply pipeline (A-line), through Remainder Farm 201 and Portion 0 of Farm 202, via the R31 to Askham, along the R360 through Hakskeen Pan, via Rietfontein, along the Namibiaweg Road to Philandersbron.

The proposed activity will also include the construction of an earth reservoir with a floating roof at Haksteenpan on Portion 130 of Farm 585. The reservoir will have a footprint of approximately 3.3ha, with a 4m high maximum earth wall. The reservoir will allow for two week storage time.

The majority of the pipeline will be located within the road reserve of the R31, R360 and Namibiaweg Road.

The pipeline will be a 315mm diameter uPVC pipeline (first 70km), then a 200mm diameter pipeline to Philandersbron.

The Phase 1 pipeline will provide 27l/s of water to most towns in the Mier area, including Askham, Groot Mier, Loubos, Rietfontein and Philandersbron. This will be the initial supply pipeline which will form part of future expansion (future phases) to provide water to farms to the north.

Currently, it is envisaged that borrow pits which will be needed for bedding material for the pipeline, will be sourced from existing borrow pits and/or from the excavation/deepening of existing farm dams in the area. No new borrow pits are expected at this time.

## 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). In the Northern Cape, these powers are delegated to the Department of Environmental & Nature Conservation (DE&NC). According to the regulations of Section 24(5) of NEMA, authorisation is required for the following:

Government Notice R544 listed activities (Listing Notice 1):

**11:** The construction of:

- (i) Canals;
- (ii) Channels;
- (iii) Bridges;
- (iv) Dams;
- (v) Weirs;
- (vi) Bulk storm water outlet structures;
- (vii) Marinas;
- (viii) Jetties exceeding 50 square meters in size;
- (ix) Slipways exceeding 50 square meters in size;
- (x) Buildings exceeding 50 square meters in size; or
- (xi) Infrastructure or structures covering 50 square meters or more;**

Where such construction occurs within a watercourse or within 32 meters of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.

- 12:** The construction of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50000 cubic meters or more, unless such storage falls within the ambit of activity 19 of Notice 545 of 2010;
- 18:** The infilling or depositing of any material of more than 5 cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock from
- (i) a watercourse;**
  - (ii) the sea;
  - (iii) the seashore;
  - (iv) the littoral active zone, an estuary or a distance of 100 meters inland of the high-water mark of the sea or an estuary, whichever distance is greater
- 37:** The **expansion** of facilities or infrastructure for the bulk transportation of water, sewage or storm water where:
- (a) **The facility or infrastructure is expanded by more than 1000 meters in length;** or
  - (b) Where the throughput capacity of the facility or infrastructure will be increased by 10% or more-
- Excluding where such expansion:
- (i) Relates to transportation of water, sewage or storm water within a road reserve; or
  - (ii) Where such expansion will occur within urban areas but further than 32 meters from a watercourse, measured from the edge of the watercourse.
- 40:** The **expansion** of
- (i) Jetties by more than 50 square meters;
  - (ii) Slipways by more than 50 square meters; or
  - (iii) Buildings by more than 50 square meters
  - (iv) **Infrastructure** by more than 50 square meters

Within a watercourse or within 32 meters of a watercourse, measured from the edge of a watercourse, but excluding where such expansion will occur behind the development setback line.

Government Notice R546 listed activities (Listing Notice 3):

- 2:** The construction of reservoirs for bulk water supply with a capacity of more than 250 cubic metres.
- 14:** The clearance of an area of 5 hectares or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation, except where such removal of vegetation is required for:
- (1) purposes of agriculture or afforestation inside areas identified in spatial instruments adopted by the competent authority for agriculture or afforestation purposes;
  - (2) the undertaking of a process or activity included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the activity is regarded to be excluded from this list;
  - (3) the undertaking of a linear activity falling below the thresholds in Notice 544 of 2010.

### Site Description

According to the Biodiversity Assessment (**Appendix D2**), the almost 170 km of proposed pipeline will span two Biomes, most of which falls within the Savanna Biome (Kalahari Duneveld Bioregion), but the last portion of the pipeline near Rietfontein will also cross vegetation belonging to the Nama-Karoo Biome.

Four vegetation types within the Savanna Biome might be encountered along the pipeline route namely: Gordonia Duneveld, Gordonia Kameeldoring Bushveld, Auob Duneveld and Gordonia Plains Shrubland. Kalahari Karroid Shrubland (part of the Nama-Karoo Biome) is expected in the vicinity and surroundings of

Rietfontein, while Southern Kalahari Mekkacha (part of the Azonal Vegetation) is expected along the Kuruman- and Molopo Rivers and Southern Kalahari Salt Pans were also encountered. The conservation status of each vegetation type according to the 2004 National Spatial Biodiversity Assessment and the 2011 National Spatial Assessment or National List of Threatened Ecosystems (GN 1002, December 2011) is Least Threatened

No species of conservation concern was recorded in terms of the latest Red List of species for South Africa.

Three (3) species protected in terms of the National Forests Act (NFA) of 1998 (Act 84 of 1998) were encountered namely: *Acacia erioloba*, *Acacia haematoxylon* and *Boscia albitrunca*

The proposed pipeline route will follow the dry riverbed of the Kuruman River from Cramond farm to Andriesvale where it connects with the Molopo River. Near Andriesvale the route will also cross the dry riverbed of the Molopo River. It will also cross two Southern Kalahari Salt pans namely the Kooan and Hakskeenpan as well as numerous ephemeral and also seasonal streams which drains the Mier, Rietfontein and Philandersbron area into the Hakskeenpan. However, the route will follow the existing R31 within the road reserve, an area already subjected to disturbance. The temporary nature of the construction phase should not add significantly to the impact on any of these streams in the long run, provided that the construction is done responsibly and with good environmental control. The route should have little impact on the Kuruman River as it will mostly run to the south of the already disturbed R31 corridor (away from the Kuruman River).

The Molopo crossing will also follow the existing road reserve as will all other ephemeral and stream crossings. In the vicinity of Mier the route will cross a number of small streams or ephemeral drainage lines, all of which drains the Mier area towards Hakskeenpan. Some of these streams are delineated by well-established riparian vegetation. However, this riparian vegetation is in most cases already disturbed within the road reserve. The same is true for the streams and ephemeral drainage lines found in the vicinity of Rietfontein and Philandersbron.

According to Heritage Impact Assessment (**Appendix D3**), the following observations were made:

- A handful of Middle Stone Age (MSA) lithics (mainly flakes & chunks) were found in a severely disturbed area between the existing reservoir at Philandersbron and the Namibia Road, at the entrance to the town.
- A small number of MSA implements were encountered in the road reserve (Namibia Road) between Philandersbron and Rietfontein.
- Several MSA flakes were recorded on eroded and sheet washed gravels outside the road reserve (Namibia Road) near the entrance to the town of Rietfontein.
- A few MSA flakes and chunks were found near the intersection of the Namibia Road and the R360.
- A few MSA tools were recorded on a gravel ridge in the road reserve (R360) between Rietfontein and Askham.
- Three Christian graves were located in the road reserve (R360) between Rietfontein and Andriesvale/Askham. Burials have a high local significance and are protected under Section 36 of the National Heritage Resources Act (Act No. 25 of 1999).
- A single flaked chunk/minimal core was found in the road reserve (R31) between Askham and the Farm Crammond No. 202/0.
- No rock engravings were found alongside the road where several outcroppings of dolerite in the road reserve (R360) near Klein Mier were noted.
- The footprint area for the proposed earth dam alongside the R360 was not inspected.

The very small numbers, isolated and disturbed context in which they were found means that the archaeological remains recorded during the study are rated as having low (3C) local significance.

MSA implements encountered during the study are the same as the tools described and illustrated in several HIA's for social housing projects in Askham and surrounding small towns.

The Heritage Impact Assessment (**Appendix D3**) concluded that the proposed Kalahari-East Bulk Water Supply Pipeline (Phase 1A) Askham to Philandersbron will not impact on significant archaeological heritage.

Graves located alongside the road (R360) between Rietfontein and Askham are protected under Section 36 of the National Heritage Resources Act (No. 25 of 1999), and have been rated as having high local significance.

### Need and Desirability

The proposed pipeline will provide additional potable water to the Mier area, including the towns of Askham, Loubos, Groot Mier, Rietfontein and Philandersbron.

The activity will lead to more sustainable farming activities, and reduce the pressure/use on underground water resources in the area, leading to long term protection and sustainability of these water resources.

The activity will also provide higher quality water to the towns and surrounding farm area.

The activity would also lead to long term socio-economic sustainability, through tourism and jobs, as well as short term employment opportunities during the construction.

### Conclusion

The overall environmental impact is expected to be low, with the following mitigation measures proposed from a heritage and biodiversity perspective:

#### Heritage:

With regard to the proposed Kalahari-East Bulk Water Supply Pipeline Phase 1 Askham till Philandersbron, the following recommendations are made:

- No archaeological mitigation is required.
- Should any unmarked human burials/remains or ostrich eggshell water flask caches for example be uncovered, or exposed during construction activities, these must immediately be reported to the archaeologist (Jonathan Kaplan 082 321 0172), or Ms Jenna Lavin at the South African Heritage Resources Agency (021 462 4502). Burials or caches of ostrich eggshell must not be removed or disturbed until inspected by the archaeologist.
- Graves in the R360 road reserve between Rietfontein and Andriesvale must be avoided during construction of the pipeline. The graves must be taped off and clearly demarcated prior to construction work commencing, and should not be disturbed in any way. The Environmental Control Officer must be responsible for ensuring the graves are protected during the entire construction phase of the project.

#### Biodiversity:

The following mitigation measures are recommended:

- 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 pertaining to other specialist studies and requirements of the DENC or DAFF.
- An application must be made for a permit in terms of the NFA with regards to the potential impact on protected tree species.
- An application for a flora permit for the temporary disturbance of listed species identified in terms of Schedule 1 and 2 of the NCNCA.
- Should borrow pits be required for the excavation of bedding or blanket material a sand mining permit must be obtained from the Department of Mineral Resources in terms of Section 39 of the Mineral and Petroleum Resource Development Act (Act 28 of 2002).

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- The construction footprint must stay within the road reserve with the overall aim of minimising disturbance.
- The final pipeline route must be adjusted on site *via* ECO approval, with the aim of minimising permanent impact on mature indigenous tree species (especially protected tree species), through slight route alterations.
- Additional lay-down areas or construction sites must be located within already disturbed areas or areas of low ecological value and must be pre-approved by the ECO.
- Indiscriminate clearing of areas must be avoided.
- Topsoil, the top 10-20 cm layer of soil, which should contain 80-90% of the seed bearing material and bulbs, must be protected throughout the project (removal and separately storage).
- The topsoil and vegetation must be replaced over the disturbed soil to provide a source of seed and a seed bed to encourage re-growth of plant species.
- When working within or near water courses the impact on riparian vegetation must be minimised through excellent environmental control with the aim of minimising the impact on riparian zones; ensuring good rehabilitation and re-vegetation with suitable indigenous vegetation to reduce the risk of erosion in the stream channels.
- All alien vegetation must be removed from within the construction footprint (the road reserve) and immediate surroundings (especially river corridors).
- It is imperative that the correct alien eradication methods are employed (especially with regards to *Prosopis* control) as incorrect methods WILL aggravate the infestation.
- Follow up work must be carried out after rehabilitation to ensure that no invasive alien plant re-establishes itself.
- An integrated waste management approach must be implemented during construction.

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

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