

**PROPOSED LOUBOS OXIDATION PONDS,
REMAINDER OF FARM MIER NO. 585, LOUBOS,
DAWID KRUIPER LOCAL MUNICIPALITY,
NORTHERN CAPE**



POST-APPLICATION BASIC ASSESSMENT REPORT

for comment

APRIL 2019

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REMAINDER OF FARM MIER NO. 585, LOUBOS,
DAWID KRUIPER LOCAL MUNICIPALITY,
NORTHERN CAPE**

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EXECUTIVE SUMMARY

Introduction

The site is located on Remainder of Farm Mier No. 585, near the town of Loubos. Six different potential site locations have been identified on the property (please refer to the Google Earth below) which will be assessed, of which only one will be developed (the preferred site location is Site 1).

It is proposed that new oxidation ponds be constructed near the town. The oxidation ponds will consist of the following: 2 x Anaerobic Ponds (525 m³), 1 x Facultative Pond (1350 m³), 3 x Aerobic Ponds (2700 m³) and 1 x Final Storage Pond (700 m³). The total surface area of the oxidation ponds will be 0.4ha. The total area of the development site (fenced off area), will be 1.68ha.

Sewerage will be collected from the existing conservancy tanks in Loubos and be transported and disposed of in the proposed oxidation ponds for treatment.

The town of Loubos does not have any formal sanitation system. The existing system comprise dry sanitation (VIP/UDS), night-soil and some conservancy tanks to a lesser extent.

With the completion of the Kalahari-East to Mier Pipeline project, sustainable water provision to Loubos was addressed. In order to provide full-waterborne sanitation services, a wastewater treatment works must be constructed to treat the effluent that will be generated.

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 R327 (Listing Notice 1):

Activity 12: The development of;

- (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres;
- (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs;
 - (a) within a watercourse;
 - (b) in front of a development setback; or
 - (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;

Activity 19: The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;

- (a) will occur behind a development setback;
- (b) is for maintenance purposes undertaken in accordance with a maintenance management plan; or
- (c) falls within the ambit of activity 21 in this Notice, in which case that activity applies.

Activity 19: The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for;

- (i) the undertaking of a linear activity; or
- (ii) maintenance purposes undertaken in accordance with a maintenance management plan.

Government Notice R324 (Listing Notice 3):

Activity 12: The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.

Activity 14: The development of;

- (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 10 square metres;
- (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs;
 - (a) within a watercourse;
 - (b) in front of a development setback; or
 - (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;

Excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;

Site Description

- Vegetation

According to the Botanical Assessment, the vegetation found in the immediate surrounds of Loubos where the oxidation ponds would be constructed is Kalahari Karroid Shrubland which fall into the Bushmanland and West Griqualand Bioregion of the Nama Karoo Biome.

Although a number of grass species are listed as occurring in Kalahari Karroid Shrubland, almost no grass was found in the Loubos study area. This is ascribed to both the very dry conditions but also to the heavy grazing, mainly by goats. The low shrub component was also lacking and relatively few species were recorded. This is also ascribed to severe grazing pressure in a hyper-arid environment.

Kalahari Karroid Shrubland is not listed in the National List of Threatened Ecosystems and it is thus Least Threatened.

The area of Alternative 1 is on a rough gravel plain where a two-spoor track runs. The vegetation is sparse on the gravel plain with the dominant species being *Rhigozum trichotomum* (driedoring), with scattered specimens of *Boscia foetida* subsp. *Foetida*. A few other notable species were recorded namely, *Aptosimum spinescens*, *Zygophyllum* cf. *rigidum*, one plant of the enigmatic *Hoodia gordonii* (bitterghaap; muishondghaap) and a single tree of *Parkinsonia africana* (green hair tree).

The Alternative 1 site is heavily grazed by goats which could partly account for the sparse vegetation, particularly with respect to herbaceous plants.

No threatened plant species were found on the Preferred Site (Alternative 1).

- Freshwater

An ephemeral stream crosses through the proposed site (Alternative 1). However, the WWTW can be positioned to be outside the main drainage line channel. According to the Freshwater Assessment this drainage line passes the town of Loubos to the north, and are not part of the main water way above the Swartbas Dam. They all connect to the Hakskeen Pan downstream of the Swartbas Dam.

The site, including all alternative sites, are subject to moving water during high rainfall events. Any runoff from the sites essentially will flow into Hakskeen Pan through Sub-Catchment 2.

- Heritage

A total of ten incidences of Stone Age material were found across the surveyed area marked as Alternatives 1 and 2. No lithic material was observed within the boundaries of Alternative 1. The cultural material recorded shows various degrees of weathering and is representative of the Early Later Stone Age and the Middle Stone Age.

Isolated, the identified archaeological materials are of low significance, as the archaeological samples are small and without context, and therefore of little scientific value. However, due to the concentrated frequency and density of the lithic scatters across the landscape around Alternatives 1 and 2, holistically the material is of medium significance and it is recommended that these two alternatives be avoided or mitigated before development could commence.

These Stone Age heritage finds are given a General protection B (IV B). This means sites should be recorded before destruction.

No historical features and no formal or informal graves were identified.

Need and Desirability

With the completion of the Kalahari-East to Mier Pipeline project, sustainable water provision to Loubos was addressed. In order to provide full-waterborne sanitation services, a wastewater treatment works must be constructed to treat the effluent that will be generated.

The town of Loubos does not have any formal sanitation system. In order to provide full-waterborne sanitation services, a wastewater treatment works must be constructed to treat the effluent that will be generated.

The project will also create work opportunities during the construction phase of the development.

Conclusion

The overall environmental impact is expected to be Low (negative) to Very Low (negative), with the following mitigation measures proposed:

- Freshwater
 - The new WWTW should be sited as far as possible from drainage lines. If possible at all it should not be sited in a drainage line. As it stands now, it would be hard to find a locality at least 100m away from drainage lines, as these are densely distributed over the landscape. Drainage lines migrate over time across the sandy landscape. Even where there are no drainage lines, signs of water movement are evident. The siting of the new WWTW poses challenges and demand serious consideration.
 - The new WWTW should be located as far as possible from the banks of Hakskeen Pan.
 - If possible at all the new WWTW should be sited in the catchment area of the Swartbas Dam. The dam could serve as a buffer, in case of an accidental spillage.
 - During the construction phase only one access route should be allowed. Vehicles should not be allowed to move anywhere but on the access road. The footprint should be kept as small as possible.
 - Likewise, the WWTW's site should be kept as small as possible, with construction activities limited to a demarcated area.
 - Riparian zones should be kept intact, as far as possible. Where damaged, rehabilitation should take place.
 - Special care should be taken during the design of the new WWTW with regard to storm water management. Cut-off berms and erosion resistant materials should be included in the design. The design should make provision for a worst-case scenario
 - At least 500mm freeboard should be maintained in the ponds at all times. Additional ponds should be considered prior to the reaching of the design capacity of the new WWTW.

- Written contingency plans should be drafted for implementation, should a spill ever occur.
 - Clean-up kits should be available, in case of a spill from tanker trucks.
 - The de-sludging of anaerobic ponds poses special challenges. A new pond should be ready for use prior to the de-sludging operation. The pond in need of maintenance should be allowed to properly dry out before the sludge is removed. Sludge should preferably not be disposed of in the direct Hakskeen Pan catchment area, but should be moved elsewhere so that there is no chance left for any of it to move into Hakskeen Pan during floods.
 - Given the ecological realities, treated sewage effluent should preferably not be used for irrigation of crops in the Hakskeen Pan catchment area. The effluent should rather be allowed to evaporate from a pond designed for this purpose. The very high evaporation rate of the Kalahari Desert would aid the process.
 - An ECO should be appointed for the construction of the new WWTW.
 - Staff operating the WWTW should be properly qualified and experienced.
- Botanical
 - Given the sparse vegetation and low sensitivity habitat, the requirement for mitigation would be low. The only mitigation necessary in the case of Alternatives 1—4 would be to avoid the seasonal drainage lines and to ensure that they are buffered i.e. treated as watercourses and construction should not be within 32 m of the drainage lines. If this is properly applied and the seasonal watercourses are protected, the mitigation would lower the impacts to **Very Low Negative** for Alternatives 1—4.
- Heritage
 - The lithic traces on the landscape of proposed Alternatives 1, 3, 4, and 5 are of low significance and the impact of the development on these resources are inconsequential. Alternative 5 lies within a flood plain, and although the impact on heritage resources is negligible, might not be a feasible option. No further mitigation is required regarding heritage resources. Therefore, from a heritage point of view we recommend that the proposed development can continue any of these proposed Alternatives.
 - Alternatives 2 and 6 have lithics scatters that are deemed as Medium Significance and should be mitigated before development can commence on these proposed Alternatives. Mitigation would require sampling, mapping and recording of sensitive areas. Furthermore, care should be taken to avoid these areas completely until its significance can be fully assessed by a professional, especially during construction at any of the more feasible Alternatives.
 - Due to the low palaeontological significance of the area, no further palaeontological heritage studies, ground truthing and/or specialist mitigation are required pending the discovery of newly discovered fossils. It is considered that the development of the proposed development is deemed appropriate and feasible and will not lead to detrimental impacts on the palaeontological resources of the area. If fossil remains are discovered during any phase of construction, either on the surface or unearthed by fresh excavations, the ECO in charge of these developments ought to be alerted immediately. These discoveries ought to be protected (preferably in situ) and the ECO must report to SAHRA so that appropriate mitigation (e.g. recording, collection) can be carried out by a professional palaeontologist (Butler 2018).

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