



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

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Reference: 6/2/2/6

NATIONAL COUNCIL OF PROVINCES

FOR WRITTEN REPLY

QUESTION NO 743

DATE OF PUBLICATION IN INTERNAL QUESTION PAPER: 27 OCTOBER 2023
(INTERNAL QUESTION PAPER NO. 41)

743. Mr M A P De Bruyn (Free State: FF Plus) to ask the Minister of Water and Sanitation:

- (1) Whether the plans to move the remaining tailings dam at Jagersfontein back into the vacant mine will go ahead; if not, why not; if so, what are the relevant details;
- (2) whether any environmental impact studies were conducted to assess the impact of such a move on the environment; if not, why not; if so, (a) what were the findings and (b) what are the further relevant details;
- (3) whether the study indicated the impact of such a move on the groundwater in the (a) short- and (b) long-term; if not, what is the position in this regard; if so, what are the relevant details?

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MINISTER OF WATER AND SANITATION

1. The Department of Water and Sanitation (DWS) issued an Integrated Water Use Licence (IWULA) authorising Jagersfontein Development (Pty) Ltd to dispose generated tailings from their operations into the De Beers historic pit. This licence supersedes or replaces the water use licence granted to Jagersfontein Developments (Pty) Ltd, licence number: 10/D33K/AA/6148, dated 16 January 2018 to dispose into the Fine Tailing Storage Facility (FTSF).

The Department directed Jagersfontein Development (JD) through Section 118 of the National Water Act to immediately decant approximately 2 700 000 m³ of the remaining tailings in Compartment-2 of the tailings storage facility (TSF) into the historic pit. The TSF composes two compartments in which Compartment-1 failed in September 2022 releasing approximately 6 000 000 m³ of fine tailings.

Jagersfontein Development was further directed to decommission the entire TSF and appoint an Approved Professional Person (APP) who will apply to the Department's Dam Safety Office for a licence to decommission a dam with a safety risk. The remnants of the decommissioned TSF will not be deposited into the historic pit. The slopes will be flattened and the TSF will be altered not to permanently store any water (or water containing substance) in line with the dam safety regulations.

2. An Environmental Impact Assessment was conducted, and the findings drawn from the report regarding the geology and soil, air quality, surface and groundwater, are indicated in Annexure A.
3. The groundwater study indicated the short-term and long-term impact due to the backfilling of the pit with the material from tailings storage facilities. The geohydrological report indicated the short-term impact as the shallow aquifer developing a pollution plume from tempering with tailings storage facilities and surface water receiving contaminated runoff from the surrounding during the removal of the tailings storage facilities.

The groundwater study also dealt with the long-term impact once the material from tailings storage facilities is backfilled to the historical pit. The study indicates that the reactive material will be buried into the historical pit forever, meaning that if the pit fails to contain seepage or leachate from the buried material, the leachate will migrate to deep groundwater forming a pollution plume the direction of which has not been determined. It is possible that after some time, this may lead to pollution of the shallow aquifer and even surface water resources.

The study revealed that there is no upward movement of groundwater from the deep aquifer to the shallow aquifer. However, the Department included the condition as a mitigation measure that the shallow aquifer should continuously be monitored, and the deep aquifer should be monitored too, even beyond the depth of the pit. The Jagersfontein Development (Pty) Ltd has made an undertaking to adhere to the conditions as they had already started with monitoring the shallow aquifer and the company is intending to implement and strengthen their groundwater monitoring once the water use licence is issued.

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DRAFT REPLY: RECOMMENDED/ ~~NOT RECOMMENDED~~/ ~~AMENDED~~



DR SEAN PHILLIPS
DIRECTOR-GENERAL
DATE: 8 12 2023

DRAFT REPLY: APPROVED/ ~~NOT APPROVED~~/ ~~AMENDED~~



MR SENZO MCHUNU, MP
MINISTER OF WATER AND SANITATION
DATE:

12/12/23

ANNEXURE A**Geology and Soil**

The farm Jagersfontein 14 is situated on the Karoo Supergroup. The geology is mainly of the Adelaide Subgroup of the Beaufort Group in the northeast of the farm and the Tierberg Formation of the Ecca Group southwest. Both of these lithologies are intruded by an extensive Karoo dolerite sill. The Adelaide Subgroup is made up of blue-grey and purple mudstone inter-bedded with yellow sandstone and siltstone, mudstone and sandstone. The Tierberg Formation is made up of blue-grey to dark-grey shale with carbonate concretions, subordinate sandstone and siltstone in the upper part. Two soil types are common in this area.

The Hutton soil is common in the north while the Tierberg soil is more common in the south. This prospecting area is on an existing old mine, extensively mined up to 1972. DWS Climate historical rainfall data indicates the Mean Annual Precipitation ("MAP") to be approximately 439mm / annum (DWS, 2018) at the Kalkfontein Dam, located approximately 19km north of the proposed area. The Study Area is located in the C5B Rainfall Zone and the MAP is between 400 - 500mm/annum (WRC, 2005).

The Jagersfontein area has, save for the Tailings Operation, no major industrial facilities with atmospheric emissions thus the overall air quality is good. The surrounding area is mainly associated with agricultural activities. A Dust fallout Monitoring Programme is implemented by the applicant for the current activities. The Programme will be implemented throughout the lifetime of both the Tailings Operation and Prospecting Right.

Air Quality

The geology of the Jagersfontein area consists mainly of sediments from the Karoo Supergroup. These are predominantly sandstone, shale and mudstones formations of the Dwyka-, Ecca- and Beaufort group, with intrusion of post Karoo dolerite sills and dykes along weak contact zones between different formations or fault zones. The Karoo sediments are characterised by low permeability; groundwater movement mainly occurs along jointed and fractured zones caused by faults or on the contact zones with dolerite intrusions. Based on the water levels of sources in the area (The Shaft and the boreholes) and the variability in water quality, it is evident that there are two aquifer systems in the study area. At the top is a shallow aquifer with a rest water level (water table level) of approximately 5m below ground level ("mbgl"). At the bottom is a deeper aquifer with a current drawdown water level at 379mbgl (6 August 2018) and a rest water level at approximately 160mbgl. The two aquifer systems are separated by an impermeable dolerite sill.

Surface and groundwater

This is based on early geological maps that indicate a dolerite sill from surface to depth of approximately 300m. It is very likely the dolerite sill is a major geological feature due to its thickness, the large area it covers over the Site and Operational Site and important role it plays in the movement of groundwater in the study area. The shallow aquifer will most probably be very recharged by rainwater and will move along the weathered zone of the dolerite sill and / or fractures along the contact with the Karoo sediments that can be associated with the dolerite sill intrusion. The aquifer systems are, to a large extent, independent of each other because of the impermeable sill that separates them. There may, however, be some isolated zones of connectivity between the two aquifer systems.

The surrounding groundwater users in the Jagersfontein Town abstract water from the shallow aquifer, as it is not feasible to drill boreholes to the depths required to abstract from the deeper aquifer. The shallow aquifer is not affected by the drawdown created in the deep aquifer. Abstraction from the deeper aquifer therefore has an insignificant impact on the shallow aquifer's

	<p>water levels. Jagersfontein is situated in the C51H quaternary drainage region of the Upper Orange Catchment. The main surface water features on the Operational Site is Dam 10 with a capacity of 459 126m³; Loskop Dam with a capacity of 52 698m³; and the watercourse that drains into Dam 10.</p>
Land use	<p>The land is used for the reprocessing of the surface tailings on it and forms part of the tailings operation and activities associated with it (i.e. ploughing, loading, transportation of material, processing in the plant). The other areas include parts of the town of Jagersfontein. The area surrounding the tailings operation is mainly used for agriculture.</p>
Vegetation	<p>The area consists of Xhariep Karroid Grassland which is currently listed as least threatened within the National List of Threatened Ecosystems (Notice 1477 of 2009) (National Environmental Management Biodiversity Act, 2004) and is not currently subjected to any pronounced development pressures. The proposed prospecting footprint is listed as being an Ecological Support Area 1 and 2. It therefore functions in ecological support of surrounding watercourses and wetlands although it is not a Critical Biodiversity Area. The prospecting area was subdivided into 4 separate areas by the ecologist.</p>