



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

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Tel: 012 336 8677/7061/8944
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ACTING CHIEF DIRECTOR: WATER USE AUTHORISATION

For attention Director: Resource Protection and Waste, and Ms W Moolman

WASTE LICENSE APPLICATION: ENGINEERING SERVICES COMMENT: PRE-APPLICATION FOR GOVAN MBEKI LM REGIONAL WASTE FACILITY FOR TYPE 2 WASTE ON THE EXISTING LEANDRA WASTE DUMP SITE

1. Presentation

On Thursday 16 April 2015 at 08h00 the project background and engineering design were presented by Lance Hill Associates under the auspices of Ms M Nevondo.

2. Documentation

The following reports, drawings and documents were provided for consideration in support of demonstrating compliance with regulatory norms and standards:

- a) Pre-meeting Checklist by the Coordinator.
- b) Govan Mbeki Local Municipality Proposed Leslie Regional Landfill Site Design Philosophy Report, including drawings, dated April 2015 and compiled by Lance Hill Associates.

3. Consideration

This consideration is limited to whether the application demonstrates compliance with the norms and standards of landfill classification and containment barrier system design. These requirements include multiple aspects of Minimum Requirements for Waste Disposal by Landfill (2nd Edition) of 1998 and of NEMWA Regulation 636 of August 2013 which supersedes the base liner of MR2 of 1998 Appendix 8.

The proposed 30 year facility is on the existing Leandra Landfill Site which is unlined and where extensive waste burning has taken place. The proposed new regional facility comprises 14 cells and 4 leachate dams situated on a hillock above sedimentary rock underlain by a dolomite sill. The groundwater depth reportedly varies between 3m and 20m below NGL.

The Class B facility reportedly comprises herringbone under-drains which gravitate to daylight and provide a liner performance quasi-monitoring function. This subsurface drain is overlain by a base preparation layer; composite GCL with PE backing and 2mm HDPE GM; 300mm thick

sand protection layer; GT separator (270g/m²); 150 LCS aggregate and GT filter (monofilament) followed by waste deposition. The detail of LCS shows a drop herringbone system to maximise leachate runoff and at these rib positions the protection of the GM is provided by a thicker GT (1000g/m²) deemed potentially adequate for the ultimate waste depth of 25m. Leachate decant is under gravity, through a perimeter soil berm to a 1,5mm thick GM lined open canal with GT and geocell protection, which conveys leachate to one of the four leachate dams. Each PCD is designed as a lagoon of double geosynthetic composite liner system and separated by a cusped geodrain LDS, and this barrier system having cover protection both on floor and wall areas.

There is an inconsistency in the design philosophy where the Type 2 waste in a sanitary landfill of Class B liner, then passes in an open canal (unsanitary) of lower standard barrier, to leachate collection dams of significantly higher containment standard. Further to the inconsistent philosophy is the absence of material test results for availability and compatibility, as well as the non-disclosure of FoS as prescribed in the standards.

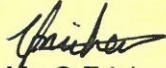
It is noted that the site of the regional waste facility is adjacent to a WWTW which separates it from a water course by an estimated distance of 500m, hence a WUL may be required for 21 c, g and i use.

The philosophy report addresses service life in principle only, total solute, drainage, and materials compatibility and incorporates a CQA plan. The recirculation of leachate effect on service life and compatibility of materials is not adequately addressed.

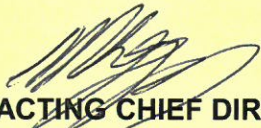
4. Recommendation

It is recommended that the design philosophy recorded in the documentation under item 2 above be rejected for the waste license record of decision.

Furthermore the disclaimer in the registered person's "Design Philosophy Report" negates its validity which should be brought to the attention of the Municipal Manager (as per direction given by CD:LS) as well as the unsafe condition brought about by unconsolidated undrained conditions in the liner design (see drawing PR091-LESLIE-D06-0), which correspondence should be copied to ECSA


Ms B Seake / Ms C Fricker
Candidate: Civil Engineer
Date: 23/09/2015

Mr KK Mnisi
Candidate Scientist: Eng Geologist
Date:


PP **ACTING CHIEF DIRECTOR: ENGINEERING SERVICES**
Letter signed by KR Legge
Chief Engineer: Integrated Environmental Engineering
Date: 29/5/23.

List of Acronyms (January 2015)