

# Memo

**To:** Penny Creswell

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**cc:** Alexandra Guild

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**From:** Alaa Abou-Antoun

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**Date:** 30/11/2016

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**Subject:** MRL S22 Response letter – Geotechnical Stability of Sidewall batter and liner system

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Hi Penny,

Please refer my comments below in response to EPA query regarding how the geotechnical stability of side wall and liner system will be assessed during detail design.

The following factors are taken into consideration during the detail design phase in order to evaluate the stability of sidewall and liner system:

1. The cell base geometric layout is developed with adequate offset to account/allow for a sidewall batter grade of 1V to 3H, which is in line with the BPEM recommendation and takes into account constructability to be able to compact the earthworks and install the liner.
2. The groundwater table level is assessed to determine if the sidewall batter will be subjected to potential pore pressure build-up. Subject to assessment, the batter design may include a groundwater relief system beneath the proposed liner system.
3. Where the sidewall batter will adjoin the quarry wall, the quarry face will be visually assessed to determine if there are any fractures/disjointing prior to earthwork commencement.
4. The liner system interface design with the batter will be assessed against slip failure, friction angle and stresses that will be imposed by the proposed batter grade and waste profile.

The landfill cell detail design will be reviewed and assessed by the EPA appointed Environmental Auditor prior to the construction. Should the proposed sidewall design (incl. liner system) require further data to support the Auditor's recommendation, this will be determined during the design phase for each of the future cells to be designed.

Regards,



**Alaa Abou-Antoun**

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