

## Attachment L.3– Leachate Management

<b>Organization Name:*</b>	<b>Organization</b>	Knockharley Landfill Limited
<b>Application I.D.:*</b>		LA004307

*For inspection purposes only.  
Consent of copyright owner required for any other use.*

## Existing Leachate Management

The landfill is designed to minimise leachate generation. Surface water run-off and groundwater flow is directed away from the fill area by means of interceptor drains installed outside the landfill cells. The cells are designed as fully contained areas.

The leachate collection system comprises a granular collection layer incorporating 160 mm and 200 mm leachate collection pipework laid at gradients of 1:150 and 1:100. The system drains by gravity to leachate collection sumps connected to the main (200 mm) drainage pipe, in each of the landfill cells. It is pumped from the sump via a sloping shaft side riser to the leachate storage lagoon.

The leachate lagoon is sized to provide a 72-hour storage capacity based on water balance calculations completed in accordance with the guidance presented in the EPA Landfill Manual on Landfill Site Design and are fitted with floating covers.

Annual water balance calculations are completed during the preparation of the Annual Environmental Report (AER) and are based on recorded rainfall data and the volumes of leachate removed from the site. The calculations form the basis for the assessment of the suitability of the current leachate management capacity.

The leachate lagoons are provided with the lining system specified in Condition 3.12.2 (W0146-02), which requires: -

- a composite liner consisting of at a minimum a basal soil clay layer of at least 1 m in thickness with a permeability of less than  $1 \times 10^{-9}$  m/s overlain by a 2 mm thick high density polyethylene (HDPE) layer, unless otherwise agreed with the Agency.
- A concrete spill pad is provided at the lagoon loading bays. The road tankers used to remove the leachate are parked in the bay while leachate is pumped from the lagoon. The pad is graded to direct any spills that might occur during the removal operations to flow back to the lagoon.
- All on-site leachate management structures are inspected and certified fit for use on an annual basis by an independent and appropriately qualified chartered engineer, as specified in Condition 3.14.5 (W0146-02).

## Leachate Treatment Plant

The proposed new leachate treatment plant layout is shown on Drawing LW 14-821-01-P-0600-01 in the Operational Report which is included in the Application as Attachment 4.8.1. Elevations and Tank Farm Treatment & Equipment details are shown on Drawings LW 14-821-01-P-0600-02 and LW 14-821-01-P-0600-03 respectively in the Operational Report. It will be adjacent to the existing leachate storage lagoon (3,000 m<sup>2</sup>) used for residual non-stabilised leachate (L1) and comprise:

### Raw Leachate Storage

3 No. additional floating cover raw leachate storage lagoons, each 3,000 m<sup>2</sup>

- L2 Stabilised & Inert raw leachate
- L3 IBA recovery raw leachate
- L4 IBA contaminated rain water run-off

2 No. banded above ground tanks for raw leachate from IBA Weathering Area (S1) and the IBA Cells and (S2) approximately 25 m diameter 6.0 m high.

### Leachate Treatment

Treatment plant comprising 6 No. modular treatment units (C 1 to C6) located on 1,600 m<sup>2</sup> concrete slab and 1 No. elevated tank (T1) - 5 m diameter 10 m high and 2No. (T2 and T3) low level (<5.0 m high) banded storage tanks for dosing and other compounds (T2 and T3).

The detailed design of the leachate treatment system will be a Specified Engineering Works (SEW), which will be submitted to the Agency for prior approval before the facility is commissioned. The facility will be designed to pre-treat leachate from the residual non-stabilised cells, the inert and stabilised cells and the IBA cells and the process wastewater from the biological treatment plant before they are sent of off-site treatments plants for final disposal.

### Treated Leachate Storage

3 No. banded above ground treated leachate storage tanks:

- 1 No. (S3) for landfill leachate approximately 20 m diameter 6.0 m high.
- 1 No. (S4) for IIBA leachate approximately 25 m diameter 6.0 m high, and
- 1 No. (S5) for leachate concentrate 10 m diameter by 6.0 m high).

The storage lagoons will have a composite lining system comprising 2 mm HDPE overlying 1 m clay barrier with a permeability < 1\*10<sup>-9</sup> m/s. The above ground raw leachate storage tanks (S1 and S2), leachate treatment tanks (T1, T2 and T3) and the treated leachate storage tanks (S3, S4 and S5) will be glass lined prefabricated steel tanks founded on a reinforced concrete foundation, with reinforced concrete bund walls, as required by Conditions 3.11.3 and 3.11.6 (W0146-02).

The raw leachate storage capacity, which is based on water balance calculations, will accommodate one month's storage. The treated leachate storage capacity will accommodate 7 days storage.

### Tanker Loading Area

Paved loading areas that can accommodate 4 No. 25 tonne articulated tankers and which are provided with a spill collection drainage system (HDPE pipes) that connects to the storage lagoon.