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LANDFILL CELL W: FILLING PLAN

MANGROVE MOUNTAIN LANDFILL,
HALLARDS ROAD, CENTRAL MANGROVE, NSW.
PREPARED FOR VERDE TERRA PTY LTD

CES DOCUMENT REFERENCED: CES110703-VDT-FI

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1. INTRODUCTION

Verde Terra Pty Ltd (Verde Terra) has engaged Consulting Earth Scientists Pty Ltd (CES) to prepare this Filling Plan for Landfill Cell W at Mangrove Mountain Landfill located at Hallards Road, Central Mangrove, and NSW.

This Filling Plan forms a sub-plan under the Landfill Environmental Management Plan (LEMP 2014) and has been prepared in general accordance with the requirements of the NSW Environmental Protection Authority (EPA) publication “Environmental Guidelines: Solid Waste Landfill” (January 1996) Benchmark Techniques BT27.

This Filling Plan also considers the Consent Orders made by the Land and Environment Court of NSW on 29 August 2014 in the proceedings 12/40900 ("Consent Orders").

In accordance with BT27, the purpose of this Filling Plan is to document the process by which the landfill is filled for the purposes of:

- Allowing the landfill operator to demonstrate that site operations are under control and to estimate the volume of waste landfilled.
- Allow the landfill operator to assist in updating calculations in relation to remaining landfill capacity.
- Facilitate control and management of landfill contours in a systematic manner as outlined in LEMP 2014.
- The landfill operator will update this Filling Plan when each cell is started or completed, or when directed by the EPA.
- The Filling plan identifies the type of waste in each cell.
- This survey will be conducted by a suitably qualified surveyor or by an alternative method agreed to by the EPA, and will ensure that the same grid and standard height datum is used for successive filling plan contour recordings.

2. TYPES OF WASTES ACCEPTED

The classifications of waste permitted under the EPL for the site is General Solid Waste (non-putrescible) and includes:

- Soil that meets the General Solid Waste Classification (assessed against the CT1 & CT2 thresholds, Table 1 and 2) of the Waste Classification Guidelines December 2009.
- Virgin Excavated Material (VENM).
- Building and Demolition Waste which does not contain asbestos.
- Glass, plastic, rubber, plasterboard, ceramics, bricks, concrete or metal.
- Paper and cardboard.
- Asphalt waste (including asphalt resulting from road construction and waterproofing works).
- Wood waste.
- Tyres – Tyres stockpiled at the Premises must not exceed fifty (50) tonnes at any one time.
- Waste material from transfer stations - Only if: (i) that waste is specified in this table; and (ii) the waste is not mixed with any other waste not specified in this table.
- Any waste received on site that is below licensing thresholds in Schedule 1 of the POEO Act, as in force from time to time.

3. WASTE PLACEMENT & COMPACTION

As described in LEMP 2014, wastes shall be deposited in Cell W in a manner that minimises the amount of landfill space used and minimise the creation of voids in the waste that would encourage the presence of vermin or lead to fires or excessive leachate generation.

A daily cover layer of VENM or ENM or other approved material shall be applied to the active tipping face at the end of each working day.

The active tip face shall be limited in dimensions to between 50m and 100m in length and a maximum 8m in depth to provide a safe working platform, facilitate vehicle movements and aid compaction. The working face shall be maintained sufficiently large to allow vehicle manoeuvring and discharge of wastes.

Insitu compaction should aim to achieve a density of between 0.65 to 0.85 tonnes/m^3 (or greater) for waste in the cell. A mobile waste shredder(s) may also be used at the site to facilitate insitu compaction of the waste.

The active tipping face shall be oriented such that the placement of waste is easily facilitated while allowing compactors to move from the base upwards to facilitate maximum compaction. Following compaction by a proprietary steel-wheeled compactor, lifts should be reduced in thickness by approximately one third. The placement of lifts involves filling to the cell walls. Where possible, the void between waste and the cell walls shall be backfilled with granular material to facilitate the vertical percolation of leachate into the collection system at the base of the landfill.

4. STAGED LANDFILL DEVELOPMENT

The landfill will be developed in four progressive landfill cells, Cells W, X, Y and Z in accordance with LEMP 2014 and the Leachate Management Plan 2014 for the Site.

Landfill cells X, Y and Z will be formed by excavation of the Hawkesbury Sandstone bedrock. At the time of preparing this document, Cell W had been substantially excavated. The location of new landfill cells W, X, Y and Z are shown in Figure 4 of LMP 2014.

5. CELL W – FILLING SEQUENCE

In accordance with the Consent Orders, following receipt of approval from the timetable for construction which commences on the date the Council or the NSW Environmental Protection Authority (EPA) (whichever is the later) approves LEMP 2014, the landfill operator has:

a. 3 weeks for the lining contractor to procure materials and mobilize the site
b. 10 weeks to line Cell W sufficient for the acceptance of waste excluding allowance for wet weather, or;
c. If Cell W is to be lined in one stage then the timetable to line Cell W shall be 5 months.

In consideration of the above, the Leachate Barrier and Leachate Collection and Conveyance System proposed for Cell W (refer to LMP 2014) will be constructed commencing at the north eastern end of the Cell W excavation. The first landfill sub-cell is anticipated to be approximately 30m wide (north east-north west). The sub-cell will be delineated at its western extend by construction of a Temporary Intermediate Bund (TIB) wall as described in Section 6.5 and Figure 8 of LMP 2014.

This sub-cell will be filled in a managed and systematic manner from north to south or south to north depending on operational requirements. Subsequent sub-cells of Cell W will be delineated by the construction of further TIBs and the leachate barrier and leachate collection and

conveyance systems extended. Each sub-cell shall be filled in a managed and systematic manner from north to south or south to north depending on operation requirements.

It is anticipated that 3 sub-cells will be constricted within Cell W to facilitate controlled and managed filling of Cell W. As Cell W is progressively filled, progressive excavation and filling of Cell X, followed by Cell Y and Cell Z will occur and the landfill cells will be progressively capped with a permanent landfill capping as they are completed to facilitate the construction and re-modelling of the Golf Course.

6. VOLUMETRIC SURVEY

As described in LEMP 2014 and in accordance with Benchmark 23 EPA NSW (1996) Solid Waste Landfill Guidelines, the quantities, types and sources of waste received are to be recorded at the weighbridge. Furthermore, in accordance with Benchmark 23, EPA NSW (1996) Solid Waste Landfill Guidelines, a detailed survey of the landfill will be prepared by a suitably qualified surveyor on an annual basis.

This survey shall be used to update the filling plans and to determine the amount of landfill capacity consumed in the previous year. In addition, the survey forms part of the landfill annual report to the EPA reconciling these quantities with monthly waste acceptance reports.

7. REVISION & UPDATE

As recommended under BT27, this Filling Plan should be revised if required and/or when directed by the EPA. Filling Plans for cells X, Y and Z will be prepared and submitted to EPA for approval prior to commencement of filling of the cells X, Y and Z.