



March 2015

## ALLAWUNA FARM LANDFILL

# Topsoil Handling and Sedimentation Management

**Submitted to:**

John Jones  
SITA Australia Pty Ltd  
116 Kurnall Road  
WELSHPOOL WA 6106

REPORT

**Report Number.** 147645033-019-R-Rev0

**Distribution:**

1 Electronic Copy – SITA Australia Pty Ltd  
1 Electronic Copy – Golder Associates Pty Ltd





## Table of Contents

<b>1.0</b>	<b>TOPSOIL MANAGEMENT AND SEDIMENT CONTROL, CELL 1 &amp; 2</b> .....	<b>1</b>
1.1	Relevant guidelines .....	1
1.2	Topsoil management .....	1
1.3	Sediment control and management.....	1
1.3.1	During construction .....	1
1.3.2	During operation .....	1
1.3.3	Post-closure.....	2
<b>2.0</b>	<b>TOPSOIL MANAGEMENT AND SEDIMENT CONTROL, BORROW AREAS</b> .....	<b>3</b>
2.1	Relevant guidelines .....	3
2.2	Future plans.....	3



## 1.0 TOPSOIL MANAGEMENT AND SEDIMENT CONTROL, CELL 1 & 2

### 1.1 Relevant guidelines

The management of topsoil during construction and the associated sediment control measures employed have been developed in accordance with the recommendations of the International Erosion Control Association (IECA, 2008)<sup>1</sup>.

### 1.2 Topsoil management

The stripping of topsoil will occur progressively, staged in a manner that follows the construction of the cells. Topsoil will be stripped to a depth of 200 mm across the footprint of each cell, an area approximately 12.5 Ha. Topsoil will be stripped whilst in a moist condition to prevent clodding or hard-setting due to the potentially high silt/clay content. Therefore, no stripping should take place immediately following prolonged rainfall or irrigation.

Stockpiling will occur in a designated area north of the landform (refer to Golder Drawing 147645033 D202). Stockpiles will be limited to a height of 1.5 m with batter slopes of 1V:1H. Since topsoil material is deemed unsuitable as engineered fill, the stockpiles will remain in place until required for re-use in final capping or landscaping works. Topsoil will be stockpiled separately from any sub-soil materials (e.g. soil excavated from sub-soil drainage trenches) and clear signage erected.

The stockpile area will be contained by a low temporary bund constructed from suitable fill material. A sediment-fence will be installed around the inside perimeter of the bund and between stockpile types (topsoil upper 50 mm; topsoil lower 200 mm; sub-soil) to prevent migration of eroded soil particles outside of the stockpile area and cross-mingling of soil types.

### 1.3 Sediment control and management

#### 1.3.1 During construction

The construction of each cell will require stripping of topsoil. Incident rainfall on the stripped area is likely to generate turbid runoff due to the absence of vegetation cover, and this runoff will require management throughout the construction works. To manage this, a temporary sediment fence may be installed around the southern and western perimeter of the cell in addition to the sediment management structure downstream of the primary drainage culvert, (as shown on Golder Drawing 147645033 D243) which will remain in place until the construction of the cell has been completed.

#### 1.3.2 During operation

During operation sediment control features will be incorporated into the stormwater management system where capped areas and cleared or disturbed areas are likely to contribute to increased sediment loads to the downstream environment. Sediment management requirements, specifications and designs will be based on the approaches recommended by IECA (2008). For the control of sediment likely to discharge from the Allawuna Landfill site the overall erosion and sediment control strategy will comprise of the following:

- *Drainage control measures* aimed at preventing or reducing soil erosion caused by concentrated flows and to appropriately manage the movement and separation of 'clean' and 'impacted' water through the site.
- *Erosion control measures* aimed at preventing or reducing soil erosion caused by rain drop impact and sheet flow (i.e. the control of splash and sheet erosion).
- *Sediment control measures* aimed at trapping and retaining sediment either moving along the land surface (bed load) or contained within flowing water.

<sup>1</sup> IECA 2008, *Best Practice Erosion and Sediment Control*, International Erosion Control Association (Australasia.), Picton NSW.



The stormwater management strategy states that clean water is diverted around the site with a large proportion of diverted runoff discharging to the stormwater dam. Potentially impacted water will be managed, contained and monitored within the active landfill area, the adjacent retention pond and the sediment control structures, prior to controlled discharge to the downstream environment. Turbidity of the collected water could be enhanced prior to discharge (if required) by coagulating and flocculating agents.

Silt fences and temporary bunds could be constructed on the covered landfill side slopes to minimise scouring and generation of sediments.

Shallow, vegetated stormwater swales are recommended along all road alignments and would provide an effective approach for the reduction of sediment loads by conveying a sheet flow of shallow depth through vegetation.

Erosion control measures are provided in locations where significant flow velocities are expected, particularly in relation to the stormwater dam spillway. Energy dissipators, erosion protection mats and vegetation within the downstream channel are recommended to minimise the risk of erosion and scour impacts during significant runoff events.

### **1.3.3 Post-closure**

For the minimisation of sedimentation post-closure, emphasis will be placed on re-vegetation of slopes and re-instatement of endemic soils to the surrounding area, as this will provide a more robust long-term mitigation measure than the continued reliance on control structures. A detailed closure plan, developed toward the end of the landfill life, will incorporate suitable erosion control strategies based on the future site conditions.



## **2.0 TOPSOIL MANAGEMENT AND SEDIMENT CONTROL, BORROW AREAS**

### **2.1 Relevant guidelines**

The management of topsoil during construction and the associated sediment control measures employed have been developed in accordance with the recommendations of the International Erosion Control Association (IECA, 2008)<sup>2</sup>.

### **2.2 Future plans**

Topsoil management and sediment control plans will be developed for each of the individual borrow areas prior to development of these areas. This will occur in association with cell development. The relevant topsoil and sediment control plans, in line with the relevant guidelines, will be submitted with the appropriate works approval application for future cell development.

#### **GOLDER ASSOCIATES PTY LTD**

Max Kulesa  
Civil Engineer

Liza du Preez  
Associate, Senior Landfill Engineer

MK/LdP/hsl

A.B.N. 64 006 107 857

Golder, Golder Associates and the GA globe design are trademarks of Golder Associates Corporation.

[https://aupws.golder.com/sites/147645033alluwunafarmpeerreview/correspondence out/147645033-019 topsoil management and sedimentation control/147645033-019-r-rev0.docx](https://aupws.golder.com/sites/147645033alluwunafarmpeerreview/correspondence%20out/147645033-019%20topsoil%20management%20and%20sedimentation%20control/147645033-019-r-rev0.docx)

<sup>2</sup> IECA 2008, *Best Practice Erosion and Sediment Control*, International Erosion Control Association (Australasia.), Picton NSW.

As a global, employee-owned organisation with over 50 years of experience, Golder Associates is driven by our purpose to engineer earth's development while preserving earth's integrity. We deliver solutions that help our clients achieve their sustainable development goals by providing a wide range of independent consulting, design and construction services in our specialist areas of earth, environment and energy.

For more information, visit [golder.com](http://golder.com)

Africa	+ 27 11 254 4800
Asia	+ 86 21 6258 5522
Australasia	+ 61 3 8862 3500
Europe	+ 44 1628 851851
North America	+ 1 800 275 3281
South America	+ 56 2 2616 2000

[solutions@golder.com](mailto:solutions@golder.com)  
[www.golder.com](http://www.golder.com)

**Golder Associates Pty Ltd**  
**Level 3, 1 Havelock Street**  
**West Perth, Western Australia 6005**  
**Australia**  
**T: +61 8 9213 7600**

