



# Operation Environment Management Plan SITA Advanced Waste Treatment Facility Kemps Creek Sydney

SITA Australia Pty Ltd  
29 April 2009

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Prepared for

**SITA Australia Pty Ltd**

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Prepared by

29 April 2009

60010008

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## Definitions

|          |  |
|----------|--|
| AEMR     | Annual Environmental Management Report                           |
| AQIS     | Australian Quarantine Inspection Service                         |
| AWT      | Advanced Waste Treatment   |
| BOD      | Biochemical Oxygen Demand  |
| CEMP     | Construction Environment Management Plan                         |
| DECC     | Department of Environment and Climate Change                     |
| DGRs     | Director General's Requirements                                  |
| DIPNR    | Department of Infrastructure Planning and Natural Resources      |
| DoP      | Department of Planning   |
| EA       | Environmental Assessment   |
| EMP      | Environmental Management Plan/Environmental Management Programme |
| EPA      | Environment Protection Authority                                 |
| EPBC Act | Environment Protection and Biodiversity Conservation Act 1999    |
| EPL      | Environment Protection Licence                                   |
| LEMP     | Landfill Environmental Management Plan                           |
| LEP      | Local Environmental Plan   |
| LOS      | Level of Service   |
| OEMP     | Operational Environmental Management Plan                        |
| OH&S     | Occupational Health & Safety                                     |
| PCC      | Penrith City Council   |
| POEO Act | Protection of the Environment Operations Act 1997                |
| RTA      | Roads and Traffic Authority                                      |
| SAWT     | SITA Advance Waste Treatment                                     |
| SEPP     | State Environmental Planning Policy                              |
| SOP      | Standard Operating Procedure                                     |
| SREP     | Sydney Regional Environmental Plan                               |
| STPs     | Sewage Treatment Plants  |
| WARR Act | Waste Avoidance and Resource Recovery Act                        |

## Executive Summary

SITA Australia Pty Ltd recently constructed an Advanced Waste Treatment facility (AWT) at Kemps Creek, Sydney. As part of its obligations under the Minister's approval it is required to prepare an Operation Environment Management Plan (OEMP).

The OEMP provides clear direction on the selection and implementation of appropriate environmental control and monitoring techniques during the operational life of the AWT and reflects the requirements of licence and approval conditions as well as SITA's commitment to high standard environmental performance.

Under Schedule 4 of the Minister's approval, SITA is required to prepare an Environmental Management Plan for the operational phase of the AWT and it addresses all of the conditions referred to in the Environment Protection Licence.

The purpose of the OEMP is to ensure that appropriate environmental practices are followed during operation of the AWT facility.

The environmental objectives of the OEMP and its supporting SOPs are to:

- Implement and maintain effective environmental management systems for the environmental aspects of AWT activities;
- Document details of environmental protection infrastructure and controls and their operation so that they function effectively to provide protection for the natural environment; and
- Ensure compliance with relevant legislation, regulatory requirements and undertakings given by SITA.

It is not intended that this OEMP repeat the wide range of environmental matters that were assessed leading to the issuing of the approval and licence. However, where it is helpful to clarify or draw to the attention of the reader a particular issue discussed in the various reference documents, this OEMP either: (a) refers to the respective document and relevant section; or (b) repeats relevant text.

### Scope and Format of the OEMP

The OEMP applies to facility operations within the AWT excised area plan located in Sub-Section 1.5 below. The AWT is excised from the overall site and the layout plan has been approved by the DECC.

The OEMP consists of six main sections that make up the document. They include:

- **Section 1** provides an introduction to the project background and provides context, including the range of potential environmental impacts identified during the EA process. This section also cross-references licence and approval conditions with the location within the OEMP where the particular conditions are addressed;
- **Section 2** summarises the statutory and regulatory requirements which have guided the various agencies that have contributed to the consolidated approval conditions;
- **Section 3** provides a brief description of the AWT facility, including description of the waste and environmental management practices employed;
- **Section 4** (a) lists the potential environmental impacts identified during the assessment and approval processes as requiring Environmental Management Programmes to be developed and implemented; and (b) provides the specific Environmental Management Programmes, including monitoring and reporting requirements. The Programmes are described in table format;
- **Section 5** describes the means by which the OEMP and SOPs will be controlled and distributed; and
- **Section 6** sets out emergency response procedures.



## Project Background

On 15 April 2008 and in accordance with Section 75J of the Environmental Planning and Assessment Act 1979 (EP&A Act), the Minister for Planning approved a project application by SITA Environmental Solutions (SITA's local trading name) to construct and operate an AWT facility at Kemps Creek, Sydney. The project application was based on the AWT facility being located within the property boundary of the existing SITA, Elizabeth Drive, Kemps Creek Landfill.

On 30 July 2008, the Department of Environment and Climate Change (DECC) and the Environment Protection Authority (EPA – exercising its statutory functions as part of DECC), issued [draft] Environment Protection Licence (EPL) N° 12889 for the AWT. The licence was issued in accordance with Section 55 of the Protection of the Environment Operations Act 1997 (POEO Act) and covers the Scheduled and related activities of *composting, waste storage, transfer, separating or processing*. The operation of the landfill is subject to a separate EPL.

The purpose of the AWT facility is to minimise the amount of recyclable and putrescible waste disposed of to the landfill by the implementation of sustainable waste management processes including sorting, recovery and composting, all by mechanical equipment.

## Statutory Requirements

Section 2 covers the Statutory and Regulatory requirements and obligations imposed by the Commonwealth, State, Regional and Local governments.

It outlines the planning process, environmental assessment requirements and the commitment to reduce waste to landfill by increasing recycling through resource recovery strategies.

## Description of the AWT Facility and its Operation

The AWT facility is located on SITA's existing 84 ha Elizabeth Drive Landfill site in the Penrith Local Government Area (LGA). This site is 5 km west of Kemps Creek and approximately 41 km west of Sydney CBD. The plan in Section 1.5 shows the general layout of the AWT facility in relation to the landfill.

The north-western corner of the Elizabeth Drive site was selected as the preferred location because of its geotechnical stability, undisturbed land and distance from sensitive receptors. The corner location is the most distant position (on-site) from the residential dwelling to the east and from Elizabeth Drive to the south.

The AWT facility is located within a fully-fenced compound at the end of a dedicated road between the facility and the main entrance gate to the broader SITA site. The facility is collocated with and wholly within the broader landfill boundary.

The AWT facility is capable of processing approximately 120,000 tpa of waste. Whilst not essential to the composting operation, the facility also has the capability to receive and treat up to 14,400 tpa of biosolids in addition to the waste.

When operating at design capacity and based on the typical composition of waste, the AWT facility is expected to recover recyclable materials (steel, aluminium, plastics, glass, paper and cardboard) and produce up to 40,000 tpa of compost, leaving an inert residual of up to 35,000 tpa suitable for disposal in SITA's adjacent Solid Waste Non-Putrescible Landfill.

The AWT Site layout in Sub-Section 3.6.3 shows the location of the various components of the facility including leachate and sediment ponds.

Other information provided in Section 3 includes:

- AWT Plan Organisational Chart showing the management structure and staffing levels;



- AWT process is based on SITA's facility already in use in Europe and at waste composting facilities in Perth, Western Australia;
- An operational overview of the facility including;
  - Materials movement from the point of entry to the site to the end product stage; and
  - Main features of the facility such as the maturation area, composting tunnels and refining buildings.

### **Environmental Management Programmes**

SITA's consultation and assessment strategy involved the identification of environmental issues associated with the operation of the AWT facility. It was concluded that some issues required no further action as they were covered by the LEMP while other issues would require the preparation and implementation of environment management programmes. Some of the issues are able to be dealt with through simple administrative actions such as the setting of the hours of operation or confirmation of compliance with building codes, while others require more comprehensive and detailed guidance and include the specification of criteria and monitoring actions.

The listing of environmental issues requiring either: (a) the development of management measures; or (b) explanation or simple instruction - is set out in Section 1.2 *OEMP Requirements* in this OEMP.

In addition to the above environmental issues identified in the EA process and for which Environmental Management Programmes are set out in this OEMP, SITA has made a commitment to enhance its environmental performance through a range of measures. Those additional measures were implemented during the design and construction phases. This section of the OEMP identifies the commitments applicable to the operational phase of the AWT.

Other EMPs associated with the facility and have already been approved, are not referred to in this document.

### **Document Review**

Regular reviews will be undertaken of all documents relevant to the operation and management of the AWT.

As the documents are "live", changes can be initiated at any time however regular reviews will be carried out to coincide with reviews of the LEMP documents.

### **Emergency Response Procedures**

Within three months of the date of the operating licence an emergency response plan will be prepared which will document the procedures to deal with all types of incidents (eg. spills, explosions or fire) that may occur at the premises or outside of the premises (eg. during transfer) which are likely to cause harm to the environment.

## 1.0 Introduction

This document is the Operation Environmental Management Plan (OEMP) specific to the operation of the Advanced Waste Treatment facility (AWT) at Kemps Creek, Sydney. The AWT facility is owned and operated by SITA Australia Pty Ltd (SITA). The AWT facility is located in the north-west corner of the existing SITA Kemps Creek landfill site.

The OEMP:

- Provides clear direction on the selection and implementation of appropriate environmental control and monitoring techniques during the operational life of the AWT; and
- Reflects the requirements of licence and approval conditions as well as SITA's commitments to high standard environmental performance.

In order to ensure that the facility operates with the least environmental impact, the OEMP addresses a wide range of issues including:

- Materials inwards management;
- Product management
- Air quality - dust and odour;
- Water quality – stormwater and leachate;
- Water reuse;
- Noise and vibration;
- Traffic;
- Hazardous materials management; and
- Vegetation management.

This OEMP:

- Has been prepared by Maunsell AECOM (Maunsell) for SITA Australia Pty Ltd; and
- Should be held in a location or locations where the reader has access to a range of other reference documents (see Section 1.3 *Reference Documents*).

## 1.1 Background and Context

On 15 April 2008 and in accordance with Section 75J of the Environmental Planning and Assessment Act 1979 (EP&A Act), the Minister for Planning approved a project application by SITA Environmental Solutions (SITA's local trading name) to construct and operate an AWT facility at Kemps Creek, Sydney. The project application was based on the AWT facility being located within the property boundary of the existing SITA, Elizabeth Drive, Kemps Creek, Landfill.

On 30 July 2008, the Department of Environment and Climate Change (DECC) and the Environment Protection Authority (EPA – exercising its statutory functions as part of DECC), issued [draft] Environment Protection Licence (EPL) N° 12889 for the AWT. The licence was issued in accordance with Section 55 of the Protection of the Environment Operations Act 1997 (POEO Act) and covers the Scheduled and related activities of *composting, waste storage, transfer, separating or processing*. The operation of the landfill is subject to a separate EPL.

The purpose of the AWT facility is to minimise the amount of recyclable and putrescible waste disposed of to the landfill by the implementation of sustainable waste management processes including sorting, recovery and composting, all by mechanical equipment.

The principal features of the Minister's approval conditions include the following:

- Permit for 20 years the annual receipt and processing of: (a) 120,000 tonnes of mixed and garden waste; and (b) 14,400 tonnes of biosolids from sewage treatment plants (STPs);
- Set out the requirement to develop, have approved and implement a number of management plans designed to protect the environment during both construction and operation;
- Allow the progressive/staged submission of management plans and monitoring programmes – intended mainly to allow construction-related environment documentation to be submitted in advance of operations-related documentation; and
- The conditions of approval take precedence over, but do not replace, environmental assessment documents and the commitments made.

The Construction Environmental Management Plan (CEMP) and associated documents were approved by the Department of Planning (DoP). Construction and plant commissioning are complete. Prior to the commencement of operation of the AWT, an OEMP must be: (a) prepared by SITA; and (b) approved by DoP with reference to EPA.

## 1.2 OEMP Requirements

Schedule 4 of the Minister's approval requires the preparation of an EMP for the operational phase of the AWT.

In order to affirm that the operations-related environmental issues described in the EPL and approval documents are addressed in this OEMP, Tables A,B,C and D below list each of those issues and refer the reader to the location within this document where the respective environmental management, protection and monitoring measures are described.

**Table A – Requirements of Schedule 2 of the Approval**

| Condition  | Requirement                                       | Location in OEMP |
|------------|---|------------------|
| 1          | Statement of purpose - to protect the environment | 1.0 and 1.4      |
| 2, 3 and 4 | Terms of approval                                 | 1.1              |
| 5          | Time limit of approval (20 years)                 | 1.1              |
| 6          | Progressive submission of management plans        | 1.1              |
| 7          | Compliance with Building Code of Australia        | 4.10             |
| 8          | Demolition in accordance with Standard            | N/A              |
| 9          | Operation and maintenance of plant and equipment  | 4.17             |

N/A – Not Applicable [with respect to inclusion in the OEMP]

**Table B – Requirements of Schedule 3 of the Approval**

| Condition | Requirement   | Location in OEMP            |
|-----------|---|-----------------------------|
| 1         | Waste quantities – input limits                     | 1.1 first dot point and 4.6 |
| 2         | Waste types   | 1.1 first dot point and 4.6 |
| 3         | Waste outputs                                       | 1.1 first dot point and 4.6 |
| 4         | Review of condition 3c and 3d                       | N/A                         |
| 5         | Waste monitoring program                            | 4.6                         |
| 6         | Compliance with s129 of POEO Act                    | 4.5                         |
| 7         | Odour minimisation                                  | 4.5                         |
| 8         | Weather station on site                             | 4.12                        |
| 9         | Minimise dust                                       | 4.4                         |
| 10        | Composting standards                                | 4.6                         |
| 11        | Feasibility report for Greenhouse Gas               | N/A                         |
| 12        | Operating hours                                     | 4.11                        |
| 13        | Noise Limits  | 4.7                         |
| 14        | Construction Noise                                  | N/A                         |
| 15        | Noise mitigation measures for 1669A Elizabeth Drive | N/A                         |
| 16        | Operational noise monitoring programme              | 4.7                         |

| Condition     | Requirement  | Location in OEMP          |
|---------------|--|---------------------------|
| 17            | Compliance with s120 of the POEO Act (water pollution) | 4.3 and 4.9               |
| 18            | Leachate barrier                                       | 4.3                       |
| 19            | Bunding  | 4.18                      |
| 20 to 25 incl | Soil, Water & Leachate management Plan                 | 4.2                       |
| 26            | Maintain riparian corridor                             | N/A (in Landfill EMP)     |
| 27            | Prepare Vegetation Management Plan                     | N/A (previously approved) |
| 28            | Monitor performance of Elizabeth Drive intersection    | 4.8                       |
| 29            | Lighting   | 4.15                      |
| 30, 31        | Rehabilitation and closure                             | N/A                       |

N/A – Not Applicable [with respect to inclusion in the OEMP]

**Table C – Requirements of Schedule 4 of the Approval**

| Condition  | Requirement                                   | Location in OEMP         |
|------------|---|--------------------------|
| 1          | Prepare Operation Environment Management Plan | This OEMP and references |
| 2          | Compliance reporting                          | 4.14 and all EMPs        |
| 3 and 4    | Incident reporting                            | All EMPs                 |
| 5          | Annual Environmental Management Report (AEMR) | 4.14                     |
| 6          | Continuous improvement in odour control       | 4.5                      |
| 7, 8 and 9 | Environmental audit after 2 years operation   | 4.19                     |
| 10         | Public availability of information            | N/A                      |

N/A – Not Applicable [with respect to inclusion in the OEMP]

**Table D – Requirements of EPL N° 12889**

| Condition  | Requirement  | Location in OEMP      |
|------------|--|-----------------------|
| A1 – A4    | Administrative                                     | N/A                   |
| P1         | Monitoring/Discharge points                        | 4.15                  |
| L1         | Compliance with s120 POEO                          | 4.3 and 4.9           |
| L2         | Load limits  | N/A                   |
| L3         | Pollution concentration limits                     | 4.16                  |
| L4         | Volume and mass limits                             | Not used (see EPL L5) |
| L5         | Waste details                                      | 4.6                   |
| L6         | Noise limits                                       | 4.7                   |
| L7         | Odour  | 4.5                   |
| L8         | Operating Hours                                    | 4.11                  |
| O1         | Carry out activities in a competent manner         | 1.5.2                 |
| O2         | Maintain plant                                     | 4.17                  |
| O3         | Emergency Response                                 | 6.0                   |
| O4         | Waste Classification                               | 4.6                   |
| O5         | Non-Conforming Waste                               | 4.6                   |
| O6         | Dust Control                                       | 4.4                   |
| O7         | CEMP   | N/A                   |
| O8         | Odour Management                                   | 4.5                   |
| O9         | Leachate Barrier                                   | N/A                   |
| O10        | Bunding  | 4.18                  |
| M1, M2, M3 | Monitoring and recording                           |                       |
| M4         | Pollution incident recording                       |                       |
| M5         | Telephone complaints                               |                       |
| M6         | N/A  | N/A                   |
| R1         | Annual Reporting                                   | 4.14                  |
| R2         | Notification of Environmental Harm                 | All EMPs              |
| R3         | Written Report                                     | N/A                   |
| G1         | Copy of Environment Protection Licence at premises | 4.13                  |
| U1         | Water balance                                      | Attached to OEMP      |



| Condition | Requirement                   | Location in OEMP |
|-----------|-------------------------------|------------------|
| U2.1      | Noise mitigation – Caretakers | 4.7              |
| U2.2      | Noise Monitoring Program      | 4.6              |

N/A – Not Applicable [with respect to inclusion in the OEMP]

### 1.3 Reference Documents

The process leading to the issuing of the Minister's approval and the EPL involved detailed design, rigorous environmental assessment (EA) and agency and community consultation.

This OEMP draws on the following primary EA and agency-issued documents for its content and guidance:

- *Environmental Assessment – Advanced Waste Treatment Facility – Elizabeth Drive, Maunsell, June 2007;*
- *Preferred Project Report – Advanced Waste Treatment Facility – Elizabeth Drive, Maunsell, October 2007;*
- *Elizabeth Drive Landfill Kemps Creek – Environmental Management Plan. [Also referred to as the Landfill Environmental Management Plan- LEMP] SITA Environmental Solutions, June 2007;*
- *Project Approval – [NSW] Minister for Planning, 15 April 2008; and*
- *Environment Protection Licence N° 12889;*

Note that the *Preferred Project Report* supersedes certain aspects of the *EA*, following assessment of and responses to public and agency submissions.

### 1.4 Purpose and Environmental Objectives of the OEMP

The purpose of this OEMP is to ensure that appropriate environmental practices are followed during operation of the AWT facility.

The environmental objectives of the OEMP and its supporting SOPs are to:

- Implement and maintain effective environmental management systems for the environmental aspects of SAWT activities;
- Document details of environmental protection infrastructure and controls and their operation so that they function effectively to provide protection for the natural environment; and
- Ensure compliance with relevant legislation, regulatory requirements and undertakings given by SITA.

It is not intended that this OEMP repeat the wide range of environmental matters that were assessed leading to the issuing of the approval and licence. However, where it is helpful to clarify or draw to the attention of the reader a particular issue discussed in the various reference documents, this OEMP either: (a) refers to the respective document and relevant section; or (b) repeats relevant text.

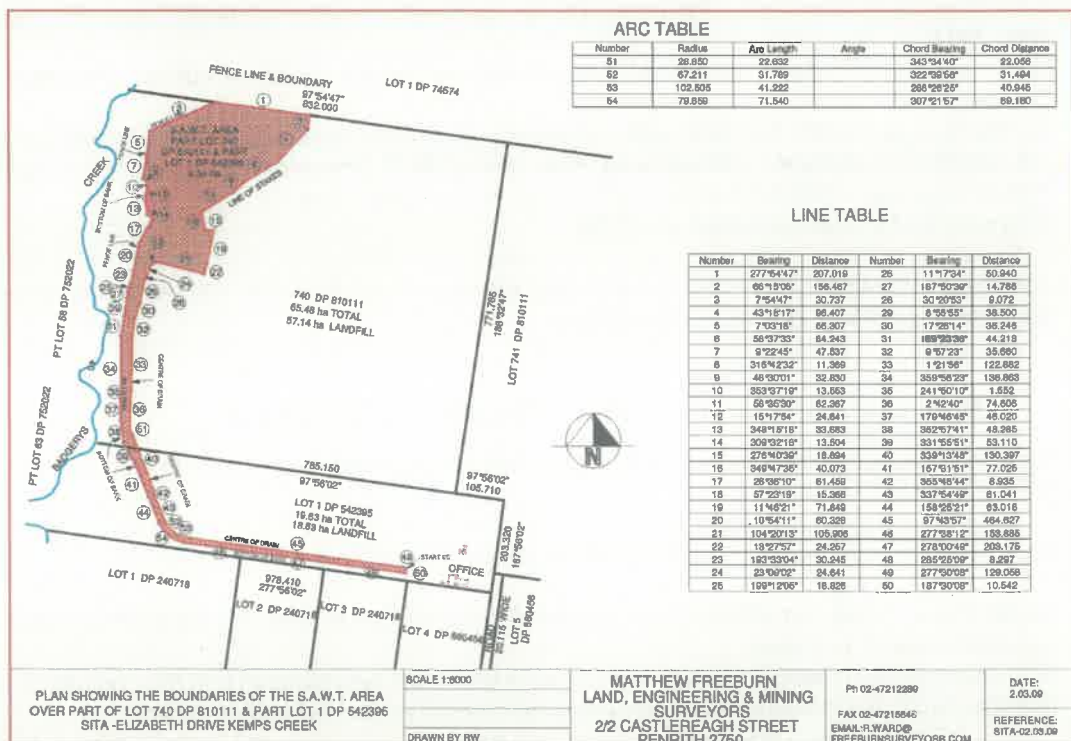
### 1.5 Scope and Format of the OEMP

The format of this OEMP is as follows:

- **Section 1** provides an introduction to the project background and provides context, including the range of potential environmental impacts identified during the EA process. This section also cross-references licence and approval conditions with the location within the OEMP where the particular conditions are addressed;
- **Section 2** summarises the statutory and regulatory requirements which have guided the various agencies that have contributed to the consolidated approval conditions;
- **Section 3** provides a brief description of the SAWT facility, including description of the waste and environmental management practices employed;

- **Section 4 (a)** lists the potential environmental impacts identified during the assessment and approval processes as requiring Environmental Management Programmes to be developed and implemented; and (b) provides the specific Environmental Management Programmes, including monitoring and reporting requirements. Where possible, the Programmes are described in table format. Others warrant lengthier description in Environmental Sub Plans;
- **Section 5** describes the means by which the OEMP and its supporting Sub Plans and SOPs will be controlled and distributed; and
- **Section 6** sets out emergency response procedures.

The OEMP applies to facility operations within the AWT facility excised area which is shown in red on the plan below. The AWT is excised from the overall site and the layout plan has been approved by the DECC.



### 1.5.1 Standard Operating Procedures

Standard Operating Procedures (SOPs), Work instructions (WIs) and checklists which provide detailed guidance for those responsible for the day-to-day operation of the AWT facility are maintained in SITA's on-site instruction manual.

It is essential that AWT operators be trained in the guidance provided in the SOPs and that they also be inducted into the AWT facility using, among other documents (for example OH&S guidance), this OEMP. This provides increased certainty that, coupled with experienced site management and supervisory staff, AWT operations: (a) will be carried out in a competent manner; and (b) that the staff will have a sound understanding of the environmental context within which they perform their duties and discharge their obligations with respect to environmental good practice.

Relevant SOPs are referenced in this OEMP though do not form part of the OEMP.

## 2.0 Statutory Requirements

The environmental aspects of the construction and operation of the AWT facility were assessed in accordance with planning laws and in the context of legislation and guidelines applicable to each of those aspects. Each of the specialist studies documented in the *EA* and *Preferred Project Report* list the legal and guideline documents taken into account in those studies.

The primary statutory instruments that are applicable to this project include the following:

### 2.1 Commonwealth

#### 2.1.1 Environment Protection and Biodiversity Conservation Act 1999

A search of the Schedules to the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) showed that matters listed as being of national environmental significance have been recorded around the broad locality of the proposed Site. An assessment by a flora and fauna specialist concluded that no species listed under the Commonwealth's EPBC Act would be adversely impacted by the construction or operation of the SAWT.

### 2.2 State

#### 2.2.1 Statutory Planning Framework

Environmental assessment of the AWT was prepared in accordance with [NSW] State legislation and the requirements of the Director-General of the DoP. The Director-General's Requirements (the *DGRs*) for the EA were issued in accordance with Part 3A of the Environmental Planning and Assessment Act 1979 (EP&A Act) on 28 December 2005.

##### 2.2.1.1 Part 3A (Major Projects) of the EP&A Act

Part 3A applies to major State government infrastructure projects, development previously classified as State significant and other plans, projects or works declared by the Minister.

##### 2.2.1.2 SEPP (Major Projects)

A Declaration was made under Clause 6 (1) of State Environmental Planning Policy (SEPP) (Major Projects) on the 6 December 2005, by the Minister, confirming that the proposal to construct and operate the AWT was classified as a Major Project.

##### 2.2.1.3 Environmental Planning and Assessment Act 1979

The AWT proposal was an 'integrated development', requiring an Environment Protection Licence (EPL) under the Protection of the Environment Operations Act 1997 (POEO Act).

##### 2.2.1.4 NSW Waste Avoidance and Resource Recovery Strategy

The AWT facility will both: (a) recover resources; and (b) reduce the amount of waste material placed in landfill, and therefore will contribute to meeting the resource recovery targets for municipal and commercial and industrial waste streams under the NSW Waste Avoidance and Resource Recovery (WARR) Strategy.

##### 2.2.1.5 Local Government Action Plan

The AWT facility will make a major contribution towards the aim of the DECC (2003) Local Government Action Plan that requires Councils to achieve a target of diverting 66% of the total domestic waste stream from landfill by 2014.



## **2.3 Regional**

### **2.3.1 Sydney Regional Environmental Plan (SREP) 20 – Hawkesbury-Nepean River (No 2 – 1997)**

The AWT development is located near a floodplain at the confluence of Badgerys Creek and South Creek. The wetland drains to South Creek and eventually the Hawkesbury River. The operations of the AWT have been designed having regard to SREP 20.

## **2.4 Local**

### **2.4.1 Penrith Local Environmental Plan 201 – Rural Lands**

Penrith Local Environmental Plan (LEP) 201 has the general aim of encouraging “proper management, development and conservation of valuable natural and man-made resources” of rural areas in Penrith. Approval of rezoning to allow land use for a waste treatment facility was granted by Penrith City Council (PCC). The rezoning was approved by the Minister for Planning and gazetted on 16 February 2007.

## 3.0 Description of AWT Facility and its Operation

### 3.1 AWT Facility Overview

The AWT facility is located within a fully-fenced compound at the end of a dedicated road between the facility and the main entrance gate to the broader SITA site.

The AWT facility consists of:

- Access road from the main gate and weighbridge to the AWT facility and surrounds;
- Entry/exit control, including weighing out;
- The main building including an administration annexe;
- Biofilters, housed in an adjacent structure;
- Graded external paved areas for vehicle marshalling and for compost maturation pads;
- Ponds for stormwater management; and
- Environmental controls.

The graded surfaces around and within the facility are designed to direct surface water runoff to water management features.

### 3.2 Broader site description and regional setting

SITA opened the AWT facility in early 2009 and has owned and operated the landfill at Kemps Creek since 1992. The existing Elizabeth Drive site is already cleared and is positioned with good buffers to nearby sensitive receptors (for example, residences). The surrounding land is rural and is generally not developed.

The Elizabeth Drive site was previously subject to extensive quarrying, particularly for surface clays. Some light-firing clays remain at the eastern section. Much of the site is currently used as a solid waste landfill. As a consequence, the ground surface has been altered substantially

Except for the area adjacent to Badgerys Creek, most of the Elizabeth Drive site has been cleared of vegetation in the past.

In general, the broader SITA site slopes gently from the south-east to the north-west and becomes predominantly flat over the north-west portion.

Most of the site lies above Reduced Level (RL) 44m AHD. On the western site boundary, near Badgerys Creek, the ground surface drops between two and three metres in elevation to approximately RL 40m AHD.

### 3.3 SAWT setting within landfill licensed boundary

The AWT facility is located on SITA's existing 84 ha Elizabeth Drive Landfill site in the Penrith Local Government Area (LGA). This site is 5 km west of Kemps Creek and approximately 41 km west of Sydney CBD. The plan in Section 1.5 shows the general layout of the AWT facility in relation to the landfill.

The north-western corner of the Elizabeth Drive site was selected as the preferred location because of its geotechnical stability, undisturbed land and distance from sensitive receptors. The corner location is the most distant position (on-site) from the residential dwelling to the east and from Elizabeth Drive to the south. The AWT site is lower in elevation than the area around the entry/exit gatehouse, thereby reducing visual impacts. The distance from existing residences and the shielding offered by

the existing landfill operations have helped to reduce noise impacts on the eastern and southern residential dwellings. The selected location maximises the available void space and time span of the existing landfill.

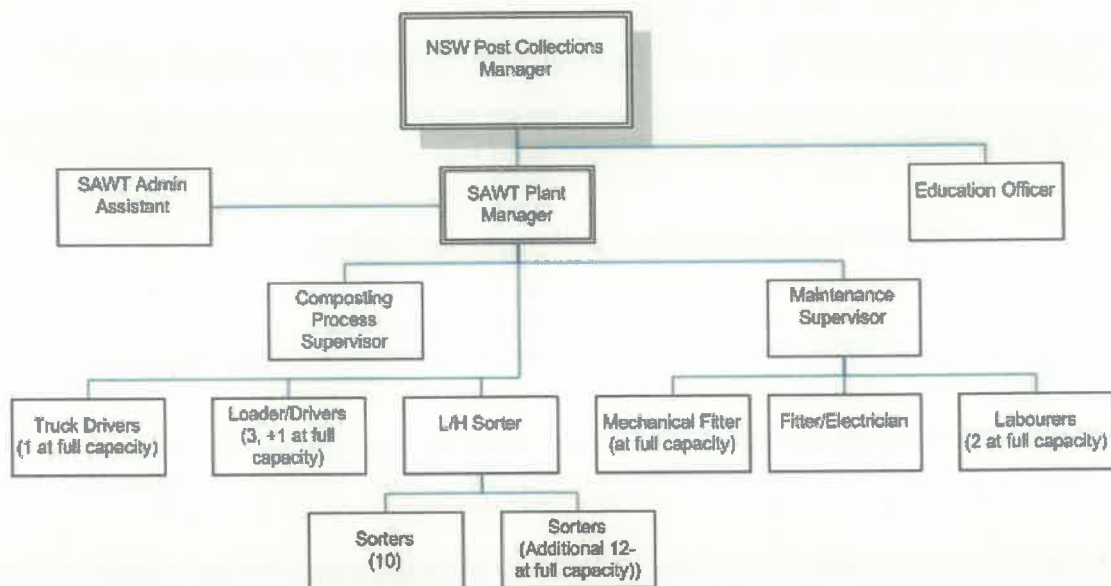
The facility is collocated with and wholly within the broader landfill boundary.

### 3.4 Management organisation and responsibility for implementation of OEMP

The following organisation chart sets out the management responsibility for roles that have or may have influence over the environmental performance of the AWT facility:

## SAWT PLANT ORGANISATIONAL CHART – KEMPS CREEK

January 29<sup>th</sup>, 2009



The NSW Post Collections Manager also has responsibility for Elizabeth Drive Landfill, which is adjacent to the SAWT facility. In addition, the NSW Environment, Health and Safety Manager also reports through the NSW Post Collections Manager, and has a responsibility to Elizabeth Drive Landfill and SAWT. These two positions combined ensure that there is a reporting and responsibility link for the environmental protection and monitoring requirements of the two adjacent facilities.

### 3.5 SAWT Process

The facility incorporates SITA Advanced Waste Treatment (SAWT), already in use by SITA in Europe and at a waste composting facility in Perth, Western Australia. The terms AWT and SAWT should not be confused.

The aim of the SAWT process [undertaken at the AWT facility] is to:

- Recover recyclable materials (steel, aluminium, timber, plastics, glass, paper and cardboard) and organics (green waste and food waste) from Municipal Solid Waste, Green and Kitchen Waste (GKW) and Commercial and Industrial waste;
- Process source-separated organic waste into a product for reuse;

- Ensure that all process steps are carried out with the highest level of environmental control; and
- Provide for a safe operational environment.

AWT processes comprise the following major steps:

- Recovery of all organics and recyclables from each waste stream through a mechanical resource recovery process;
- Aerobic composting of source-separated organic waste within a fully enclosed tunnel; and
- Preparation of compost on site for sale to market.

Organics recovered from the source separated organic waste streams will be composted separately to the organics recovered from the mixed waste streams. The AWT facility may also at times receive and process biosolids from sewage treatment plants (STPs). The biosolids will be composted along with the source separated organic waste stream.

The treatment route for each waste stream will be as follows:

- Recyclables positively sorted from the waste will be taken offsite to be recycled;
- The putrescible fraction of the waste will be composted in composting tunnels;
- The non-putrescible process residual fraction will be disposed of in the adjacent landfill; and
- In the unlikely event that residual fraction contains putrescible material, that fraction will be;
  - Reprocessed to further remove the organic material, or
  - Disposed of in an appropriately licensed landfill offsite.

The SAWT process employs a combination of mechanical separation, manual sorting, and biological composting technologies that have been successfully applied by SITA in Australia and in Europe.

## 3.6 Operations Overview

### 3.6.1 Materials Movement

The movement of materials through the AWT building and surrounds is as follows:

- All vehicles arriving to use the SAWT facility will have controlled access via the site entry weighbridge and gatehouse;
- Waste trucks access the waste receival area where fast acting roller shutter doors operate to provide enhanced odour control;
- Mixed waste and source-separated organic waste loads are dumped on the floor;
- Mixed waste and source-separated organic waste loads are moved separately within the building via loaders and an internal conveyor system to the Resource Recovery section of the building for processing;
- Storage containers are removed from the Resource Recovery area via roller shutter doors;
- Material to be composted generated from the separate processing lines is transferred via internal conveyor to the Composting section of the building;
- Feedstock originating from the mixed waste input stream and the source is transferred via front end loader to composting tunnels for composting;
- Feedstock originating from the source separated organic waste stream is transferred via front end loader to composting tunnels for composting;
- After completion of the composting process, the compost from the composting tunnels is transferred via front end loader to a discharge conveyor to the maturation pad to undergo maturation. Another front end loader collects the compost from the stockpile that forms below the exit of the discharge conveyor and places the compost into windrows for maturation;

- Matured compost is transferred via front end loader to the Refining Building;
- Final products (post-refining) are removed by front end loader from the Refining Building and placed on the storage pad ready for export from the site;
- All process residues will be disposed of to the adjacent landfill facility if organic content is acceptable.
- Vehicles taking compost from the AWT facility are loaded by conventional mobile equipment and pass over the AWT area weighbridge to record the amount of compost leaving the facility..

### 3.6.2 SAWT Process Features

The SAWT process, its main components and inputs are as follows:

- **Transport** – waste is delivered in either a typical waste collection truck or, in the case of waste brought from transfer stations, in semi-trailers. The dimensions of the larger of the delivery trucks varies within the market but they are typically a 19m long semi trailer vehicle fitted with a 'walking floor' that allows waste contained within the trailer to be walked out of, or ejected from, the trailer in lieu of the entire vehicle body tipping (as is the case with the domestic collection trucks). The AWT facility and access roadways are designed to allow delivery of 19m semi trailer transfer vehicles;
- **Site access** – vehicles arrive at the main gate. The nature of each load is identified by SITA controller in accordance with SOPs and waste control plan, including inspection of the load manifest. Vehicles destined only for the landfill are directed in accordance with the location and identity of the active cell. Vehicles with loads assigned to the AWT are directed onto the dedicated AWT access road, from which they are unable to access the landfill cells. Those vehicles arrive at the AWT facility entry control point and are directed to the marshalling area from which they reverse into the respective AWT building roller door entrance and thence to a point at which the load is discharged;
- **Main building and receival area**– once through the main gate and weighbridge, vehicles travel along a fenced and sign-posted dedicated road to the SAWT area. Vehicles reverse into the fully enclosed AWT building which operates under negative air pressure. Up to five collection vehicles can unload simultaneously in the receival area of the building which is fitted with large fast-acting roller doors. Floor drainage includes a leachate capture system. Following initial recovery of large items by a wheeled loader the waste is visually screened (in accordance with SOPs) for process suitability. The receival area of the SAWT building has sufficient capacity to store, if necessary, up to two days of the forecast daily volume of waste;
- **Resource recovery** – involves the mechanical and manual separation of putrescible and non-putrescible fractions to recover recyclable materials and organics. The Resource Recovery section of the AWT building houses two separate processing lines; (a) one for mixed waste feedstock; and (b) one for source-separated organics waste feedstock. The inventory of processing equipment includes:
  - Trommel screens to separate the respective waste streams by size;
  - Manual sorting stations to recover recyclable items;
  - Magnetic separators to recover metals;
  - Eddie current separators to recover aluminium and other non-ferrous metals;
  - Shredding equipment to size reduce and prepare material for composting;
  - Mixing equipment to prepare material for composting;
  - Storage containers for recovered recyclables and process residuals; and
  - Leachate and dust control systems.
- **Composting building** - the Composting section of the AWT building houses the composting tunnels and associated process control equipment. A front end loader is used within the building to:
  - (a) transfer feedstock from the feed conveyor to the composting tunnels; and



- (b) transfer composted material from the composting tunnels to a discharge conveyor. Oxygen and temperature monitoring is used to maintain process control of the composting material within the composting tunnels;
- **Tunnel composting** – involves the biological treatment of the organic fraction of the mixed waste in ventilated, fully-enclosed composting tunnels for five to six weeks. Thirty such composting tunnels are available. Fans provide process air supply to the composting tunnels. A sprinkler system provides water to hydrate the composting material within the composting tunnels;
- **Maturation and maturation pad** - maturation consists of several week's curing of the composted product outdoors, in windrows, on maturation pads. The pads are constructed outdoors and consist of a hardstand area made from compacted sandstone and clay and include a leachate control system. The material in the windrows is turned by mechanical equipment on a regular basis until the material is ready for the refining phase. Depending upon market demand, it may be necessary to store material on the maturation pad, for example during winter months when the demand for compost usually reduces. The market also dictates material quality and one reason for keeping fine material separate from coarse material on the hardstand is that finer material can be sold at a better price;
- **Refining building and process** – The Refining Building is a fully-enclosed, metal clad, steel portal frame building with a concrete floor and a leachate collection system. This building contains specialised compost refining equipment as well as storage containers for process residual material. The refining process involves screening of composted products with various technologies in order to improve product quality and remove physical containment;
- **Biofilter** – Four Biofilters have been constructed on the site as one of the key elements in the air control and odour management. The Biofilters treat all of the air within the Receiving, Resource Recovery and Composting building as well as the refining building. It consists of an organic filter medium which removes the odour from the air within buildings. Regular monitoring of the operation of the odour collection and biofilter system provides valuable feedback on the health and effectiveness of the system.
- **Water Storage Ponds** – Stormwater and leachate storage ponds are located on the site. The leachate ponds accept all water that has been in contact with waste while the roof stormwater, which is clean water only, is collected in a separate pond. The size of each pond has been calculated from available rainfall data. The SAWT is considered to be a net user of water (refer to the attached water balance model) and will therefore use all of the available water with preferential use of the leachate first, then any other available stormwater.

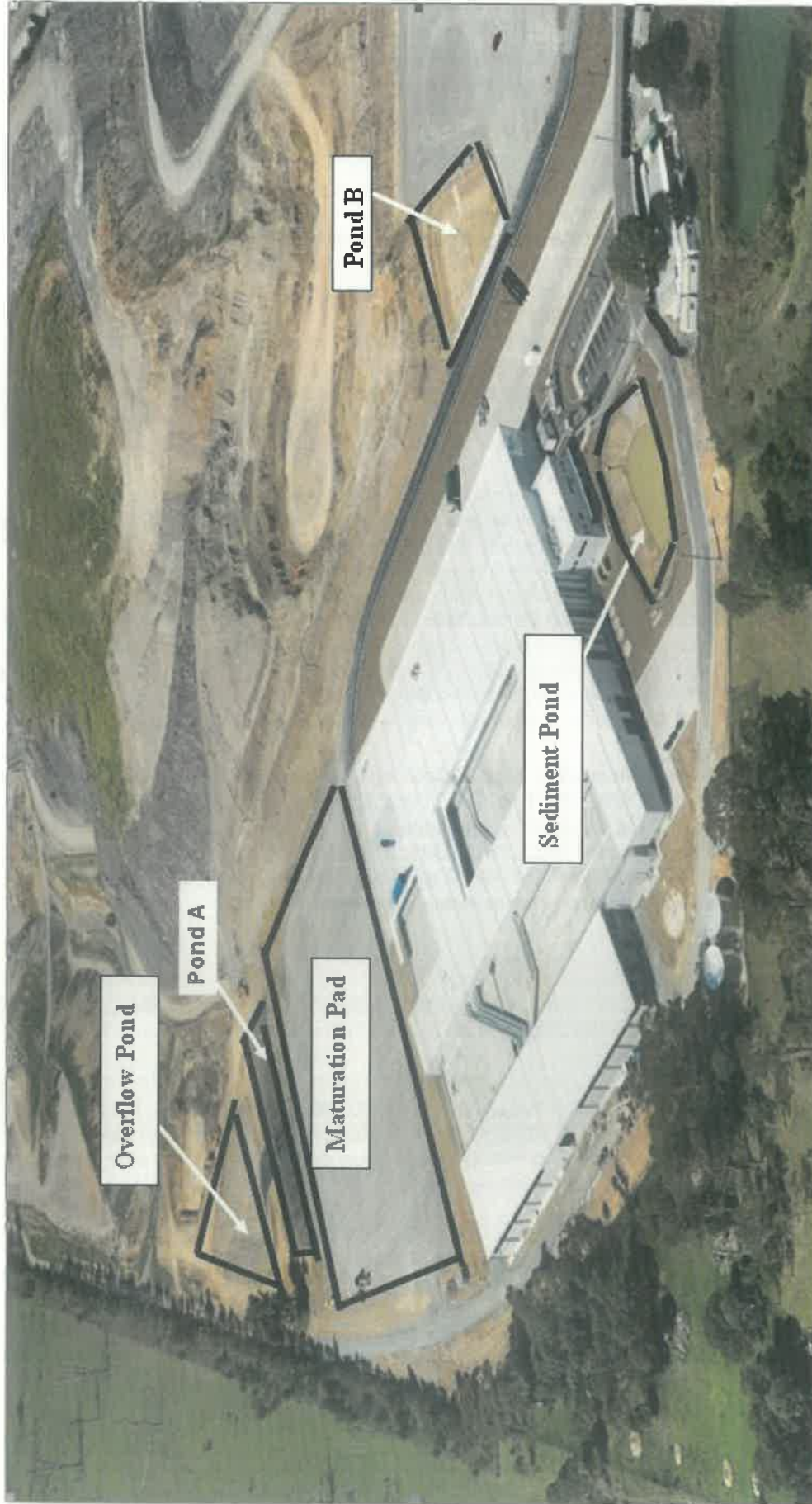
### 3.6.3 Capacity

The AWT facility is capable of processing approximately 120,000 tpa of waste. Whilst not essential to the composting operation, the facility also has the capability to receive and treat up to 14,400 tpa of biosolids in addition to the waste.

When operating at design capacity and based on the typical composition of waste, the AWT facility is expected to recover recyclable materials (steel, aluminium, plastics, glass, paper and cardboard) and produce up to 40,000 tpa of compost, leaving an inert residual of up to 35,000 tpa suitable for disposal in SITA's adjacent Solid Waste Non-Putrescible Landfill.

The existing Landfill currently accepts approximately 300,000 tpa which fluctuates yearly depending upon market conditions.

The AWT Site layout below shows the location of the various components of the facility including leachate and sediment ponds.



Advanced Waste Treatment Facility Layout



## 4.0 Environmental Management Programmes

SITA's consultation and assessment strategy involved the identification of environmental issues associated with the operation of the AWT facility. It was concluded that some issues required no further action while other issues would require the preparation and implementation of environment management programmes. Some of the issues are able to be dealt with through simple administrative actions such as the setting of the hours of operation or confirmation of compliance with building codes, while others require more comprehensive and detailed guidance and include the specification of criteria and monitoring actions.

The listing of environmental issues requiring either: (a) the development of management measures; or (b) explanation or simple instruction - is set out in Section 1.2 *OEMP Requirements* in this OEMP.

In order to improve cross-referencing of environmental protection measures to the instrument/s in which the particular issue is raised (that is, EPL, approval, commitment), various measures in the Environmental Management Plans (EMPs) in the following sub-sections include abbreviations which refer the reader to the subject instrument/s.

### 4.1.1 Format of Environmental Management Plans

Most of the EMPs follow a set format with sub-headings as follows:

- Potential impacts;
- Operational objective/s;
- Performance criteria;
- Management strategy;
- Baseline data;
- Monitoring;
- Reporting; and
- Corrective action;

## 4.2 Environmental Commitments

In addition to the above environmental issues identified in the EA process and for which Environmental Management Programmes are set out in the following section of this OEMP, SITA has made a commitment to enhance its environmental performance through a range of measures. Those additional measures were implemented during the design and construction phases. This section of the OEMP identifies the commitments applicable to the operational phase of the SAWT.

The broad areas of commitment are to minimise impacts on:

- Geology, soils and groundwater;
- Flooding and hydrology;
- Odour emissions;
- Visual amenity and landscape.
- Surface water quality;
- Flora and fauna;
- Dust;
- Heritage;
- Surface water quality;
- Greenhouse gas emissions;
- Noise during operation;

- Minimise the risk of fire hazard; and
- Minimise potential health and safety impacts to workers and future users of the compost material.

The elements presented below address the potential environmental issues associated with the operation of the AWT facility. The management strategies contained in the OEMP provide both general and specific advice and guidance on environmental management options, measures and monitoring requirements.

The aim of these programmes is to reduce or eliminate the potential environmental impacts identified in **Section 1.2** of this OEMP.

Each programme is set out in table format

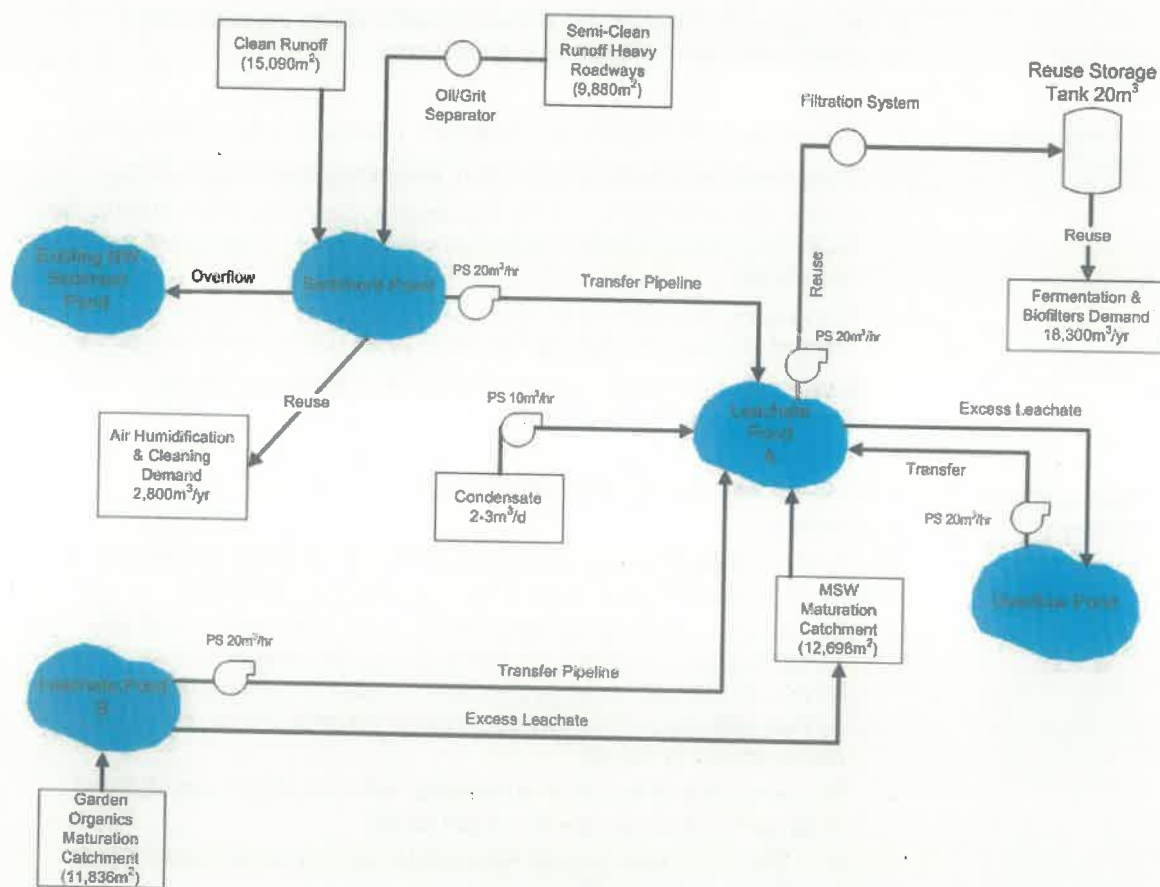
The responsibility for implementation of each element is outlined in **Section 3.4**.

### 4.3 Soil, Water and Leachate Management

Section 120 of the POEO Act 1997 requires the establishment of an EPL if the activity has the potential to pollute waters. The following instructions and advice with respect to *Soil, Water and Leachate Management* and Section 4.9 *Surface Water, Groundwater and Leachate Response Plan* are designed to prevent such pollution.

The figure at the end of this Section shows the layout of the facility including the relative location of the sediment, leachate and overflow ponds.

The figure below is a Water Balance - Flow diagram of the clean water and leachate for the site.



SITA Elizabeth Drive - Site Water Management Flow Chart

- Potential Impacts**
- Soil loss and degradation.
  - Increased turbidity and increased pollutant loads (for example, from soil and spillage) in nearby creeks and waterways;
  - Increased sediment load on stormwater management infrastructure;
  - Potential for presence of pathogens in received waste and spread via surface water runoff, wind or through application of composted material;
  - Assessment indicates that a storm event larger than a 1 in 10 year, 24 hour AEP event has the potential for the runoff from the Elizabeth Drive landfill site to be affected by runoff from the AWT facility;

|                              |   |
|------------------------------|---|
|                              | <ul style="list-style-type: none"> <li>• Potential for pollution of waterways due to the excessive sediment, acidity, nutrient and micro-organism loading, and BOD characteristics of compost-related leachate.</li> <li>• Offensive odours may result during the receipt and processing of the waste. Measures will be put in place to monitor and manage these issues.</li> </ul>   |
| <b>Operational Objective</b> | <ul style="list-style-type: none"> <li>• Avoid impact to water quality in groundwater and creeks and rivers downstream of the facility, especially Badgerys Creek;</li> <li>• Control surface water runoff on-site by site grading and strategic placement and sizing of water management ponds;</li> <li>• Manage leachate such that it neither overflows into the surrounding environment nor contaminates groundwater.</li> </ul>  |
| <b>Performance Criteria</b>  | <ul style="list-style-type: none"> <li>• Compliance with Environment Protection Licence Number 12889 (EPL);</li> <li>• Compliance with the POEO Act 1997 and other relevant legislation;</li> <li>• Compliance with Edition 4 of the Landcom's <i>Managing Urban Stormwater Guidelines</i> (2004) (the Blue Book) prior to the commencement of operations;</li> <li>• Compliance with DECC's <i>Environmental Guidelines for Composting and Related Organics Processing Facilities</i> (2004) (Composting Guidelines.)</li> <li>• Compliance with the latest version of DECC's <i>Managing Urban Stormwater: Council Handbook</i></li> </ul>  |
| <b>Management Strategy</b>   | <p><u>Statement of Commitments, Environmental Assessment</u></p> <p><b>Stormwater</b></p> <p>Stormwater affected by the proposed AWT facility has been divided into diverted stormwater from maturation areas and clean site runoff.</p> <ul style="list-style-type: none"> <li>• The AWT facility has been designed such that the main bulk of <b>site runoff is clean</b>, consisting of rain that has fallen within the AWT facility boundaries (for example on the roofs of buildings) but has not been in contact with areas where waste, organic material or compost have been handled or stored.</li> <li>• The remainder of the clean stormwater will come from roadways and other surfaces which do not contain waste. <ul style="list-style-type: none"> <li>- The runoff from both of these areas will be diverted to the Clean Water Sedimentation Pond;</li> <li>- Stored stormwater runoff from this pond will be managed to ensure as much reuse as is practicable;</li> <li>- Any stormwater diverted to Leachate Pond A will be transferred by pump thereby preventing any backflow;</li> <li>- This reuse water will be used for application in the AWT facility processes in preference to potable water, or will be directly used for operational purposes such as irrigation, dust suppression and fire fighting.</li> </ul> </li> <li>• The Clean Water Sedimentation pond has been designed to remove coarse particulates from runoff, including two grease trap, prior to (a) use on-site; or (b) discharge via overland flow. Maintenance of available volume in the pond/s is important to their efficient operations;</li> <li>• The AWT facility has also been designed to be protected from upstream <b>Diverted Stormwater</b> which is stormwater generated up-</li> </ul> |

gradient of the AWT facility.

- This stormwater will be diverted around the AWT facility and ultimately discharged, in accordance with the landfill's EPL, to Badgerys Creek via the existing North-Western Sedimentation Pond, the new Sedimentation Pond and/or overland discharge;
- Water from these sedimentation ponds will be used for operational purposes such as use in the composting process, irrigation, dust suppression and in reserve for fire fighting.
- All Sedimentation ponds have been lined with a low permeability liner to control infiltration of stored water into groundwater;
- Located at the north-western corner of the Elizabeth Drive Landfill are EPA-licensed points of overflow discharge, namely the sediment pond, leachate ponds and overflow pond. These discharge points have been designed to flow only in periods of heavy or extended periods of rainfall. The design of the broader landfill includes a grassed area which discharges non-impacted surface flow stormwater naturally (that is, not in a concentrated point discharge) into Badgerys Creek;
- Badgerys Creek is the only receiving stream for stormwater from the AWT facility. Stormwater will only be discharged to Badgerys Creek only if the capacity of all other water capture and management measures is exceeded;
- All facilities and roads are elevated above the 1 in 100 year AEP flood event level or are bunded such that they are protected from that flood event;
- Protection shall be provided to areas that have the potential to experience erosion or inundation during a 1 in 100 year AEP storm event;
- Runoff for all events up to and including the 1 in 10 year, 24 hour AEP event will be retained on site;
- All drainage paths have been designed and constructed to prevent ponding and infiltration into the groundwater;
- Permanent stabilisation of embankments, channels has been achieved through vegetation and shall be maintained so as to remain effective;
- The AWT site has been graded to ensure that stormwater is diverted appropriately and undergoes the level of treatment as required by regulation;
- Storage of stormwater runoff will be managed through the implementation of SOPs to ensure as much re-use, and thereby reduction in potable water demand, as is practicable;
- Waste for the AWT will be received in the Receiving and Resource Recovery Buildings to avoid contact with stormwater.

### Leachate

Three sources of leachate from the AWT site have been identified. Each type of leachate contains different levels of contaminants.

The Composting Guidelines require leachate generated from composted materials to be retained and treated, evaporated or in some way disposed of, rather than discharged to the natural environment. In order to meet this requirement, the design of the AWT facility captures and reuses leachate preferentially.

- **Condensate Leachate** is produced during composting of organic materials within the Composting Tunnels.



- This leachate has the highest concentration of contaminants and the least volume;
- The volume of this type of leachate will be minimised by ensuring that an appropriate composition of waste feedstock material is maintained during composting and by maintaining the moisture and oxygen content of the compost within optimum range, in accordance with SOPs;
- Leachate generated inside buildings drains (via sealed working surfaces) into concrete sumps and is re-used within the composting process;
- Condensate leachate generated in the Composting Tunnels will first be extracted via floor drains and pumped to the main leachate storage pond, Leachate Pond A; and
- The relatively small volume of condensate expected to be generated will be preferentially used for re-application onto the Composting Tunnels so that further treatment or disposal of this condensate leachate will not be required.
- **Leachate from Cleaning**
  - Small volumes of moderate concentration leachate will be generated within the Receiving and Resource Recovery Buildings through the use of small amounts of water for cleaning of floors or equipment;
  - This leachate will be collected in sumps within the buildings. All of this water will end up in Leachate Pond A.
- **Stormwater Leachate**
  - Low concentration leachate will be generated when rain falls on material handling, vehicle movement areas, maturation windrows and temporary compost product stockpiles;
  - Treated leachate will be stored in Leachate Pond A, which will be capable of holding the expected runoff from a 1 in 10 year, 24 hour duration storm event (in accordance with *DECC Composting Guidelines*). A second leachate storage pond is also available (Leachate Pond B) for the maturation area.
  - Treated leachate will be reused in the composting process at both the composting tunnels and maturation pads;
  - Under controlled conditions, any excess leachate will be pumped and re-injected into the landfill or used for irrigation, if possible.
- Untreated leachate must not be discharged to Badgerys Creek;
- Leachate storage and treatment ponds and stormwater storage ponds will be lined with a low permeability liner to control infiltration to groundwater;
- Regular maintenance of leachate handling infrastructure will be performed in accordance with SOPs;

#### Approval

The leachate barrier has been designed and constructed to meet the requirements of Schedule 3, Condition 18.

#### EPL

The leachate barrier has been designed and constructed to meet the requirements of Condition O9.

## **Baseline Data**

### Environmental Assessment (EA)

### Surface Water Quality

- Water quality monitoring has been regularly conducted in designated locations along Badgerys Creek as part of the environmental monitoring program specified in the existing landfill EPL and surface water criteria have been adopted for the site;
- Monitoring indicates that the waterway typically maintains acceptable water quality for suspended solids, turbidity and BOD;
- Water quality data reported in studies for the Second Sydney Airport NSW (Tuft, 1997), indicated that Badgerys Creek, upstream of the site, was a disturbed ecosystem with generally high levels of nitrogen and chlorophyll A and low levels of oxygen;
- Non-ionised ammonia was above the toxic threshold. The creek also supported plants characteristic of eutrophic ecosystem and a wide variety of invertebrates with a high proportion of pollution tolerant species. Introduced pest fish species, such as *Gambusia* and European Carp were reported as common.

### Monitoring

Sediment and erosion control measures will be checked to ensure their integrity, in accordance with site inspection checklists and SOPs.

#### EPL

- Four locations for monitoring/discharge points are identified in Section 2 of the [AWT] EPL, namely the sediment pond, two leachate ponds and the overflow pond as shown in the Water Balance Flow Diagram in Section 4.3
- Monitoring of leachate management will be undertaken to ensure that no untreated leachate leaves the site. Monitoring will involve:
  - Inspection of leachate pond level monthly and after any significant rainfall event; and
  - Sampling and analysis of any leachate injected into landfill from AWT site.
- EDL already measures the Badgerys Creek watercourse in three locations each quarter as part of its monitoring program. Samples are tested for BOD, conductivity, Nitrogen (ammonia), TOC, TSS and pH.
- Concentration Limits:
  - For each monitoring/discharge point, the concentration of a pollutant discharged at that point must not exceed the limits presented in **Section L3** of the EPL.
- For each of the four monitoring points, SITA will monitor the concentration of each of the nominated pollutants using the sampling method, sampling frequency and units of measure as specified in **Section M2** of the EPL.
- All incidents of pollution will be recorded in accordance with **Section M4** of the EPL, Recording of pollution complaints, and reported in accordance with **Section R2** of the EPL, Notification of environmental harm.

### Reporting

### Corrective Action

In the event that the operational objective is not being achieved, SITA project personnel shall undertake corrective actions in accordance with the SOP which could include:

- Clean up of mobilised sediment;
- Rehabilitation of eroded areas;
- **Installation of additional sediment and erosion controls;**
- Additional stormwater control measures;
- Improved site management and/or operational procedures.



Refer to the Surface water, groundwater and leachate response plan in Section 4.9.

## 4.4 Dust Management

### Potential Impacts EA

Generation of dust associated with the operation of the facility may impact residents or commercial establishments close to the facility.

### Operational Objective

#### Statement of Commitments

Minimise impacts on air quality.

### Performance Criteria

The EPL, Approval and Statement of Commitments all refer to a qualitative criterion expressed generally as *minimise or prevent emission of dust from the premises*.

### Management Strategies

#### Statement of Commitments and EA

The following practices and procedures will be adopted to ensure that dust levels are adequately controlled:

- Regular cleaning of the site haulage and access roads;
- Dust suppression on unsealed surfaces and work areas using a water cart or alternative;
- Minimising traffic movements on exposed areas;
- Minimising heavy vehicle trip distances and speed within the Elizabeth Drive site;
- Dampening of stockpiles;
- Removing mud from vehicles before leaving the Elizabeth Drive site, where necessary;
- Cleaning up materials that might act as dust sources, as soon as possible;
- Conducting regular cleaning maintenance of machinery and vehicles;
- Ensuring any procedures for outdoor activities include a requirement for dust minimisation; and
- Providing awareness training in the importance of minimising dust generation at its source.

The following practices and procedures will be adopted to provide certainty that dust levels will be adequately controlled:

- Waste handling will take place within enclosed buildings;
- Compost maturation and compost feedstock stockpiles have been located away from sensitive receptors; and
- Dampening of stockpiles.

#### EA

The following practices and procedures will be adopted to ensure that dust levels are adequately controlled:

- Regular inspections of dust emissions from truck movements will be conducted in the early stages of the AWT operation to confirm the conclusions of the dust assessment;
- Maintenance of the surface seal of the site haulage/access road;
- Enforcing Elizabeth Drive site speed limits for all vehicles, including trucks;
- Prompt cleanup of spills as soon as practicable;
- Provision of an adequate water supply for dust suppression;
- Ensure that procedures (SOPs) for outdoor activities include a requirement for dust minimisation

#### Preferred Project Report (PPR)

As dust emissions will arise primarily from delivery trucks travelling on the access road to the facility, provision of a sealed road will ensure that there are no adverse dust impacts observed at nearest residents.

**Monitoring**

Dust monitoring will be in the form of visual checks carried out throughout the day. These checks will be undertaken by the Site Supervisor responsible for that area of the operation.

The SAWT Manager will also have access to the results recorded by the landfill dust gauges which will be used to assist in the monitoring of dust on the site.

**Reporting**

EPL

All incidents of pollution will be recorded in accordance with **Section M4** of the EPL, Recording of pollution complaints, and reported in accordance with **Section R2** of the EPL, Notification of environmental harm.

**Corrective Action** EA

- In the event that the above management strategies are insufficient, additional mitigation measures such as the use of water sprays may be required and implemented.

## 4.5 Odour Management

It is intended that no offensive odours be emitted from the site under s129 of the *Protection of the Environment Operations Act 1997*, [POEO Act]. This provision of the POEO Act also includes provisions under the Act that provide a mechanism to deal with any potential breaches of the odour criteria and to provide a framework for dealing with the potential odour impacts.

### Potential Impacts EA

Generation of nuisance odours and vapours that may impact residents or commercial establishments close to the facility as a part of works associated with the operation of the AWT facility.

### Operational Objective

#### Statement of Commitments

Minimise odour emissions.

### Performance Criteria

The EPL, Approval and Statement of Commitments for the AWT facility define measures to be used to reduce and eliminate odours. The main odour criterion for the AWT is to not generate offensive odours.

### Management Strategies

#### Statement of Commitments and EA

The management strategies for odour are as follows:

- Comply with the requirements of the EPL Complaints procedure. An odour complaints registration, investigation and response procedure as part of the existing complaints procedure will be implemented at the AWT facility [Refer *Complaints Procedure* in this OEMP].
- Provision of enclosed facilities for all parts of the AWT process, except maturation;
- Rapid-lift and close roller doors in the Receival Building to enable the openings to be closed at all times other than loading/unloading, and to limit the amount of time a doorway is open;
- Biofilters for treatment of all air within the Receival, Resource Recovery and Composting buildings;
- Maintenance of oxygen and moisture levels and feedstock composition within optimum range for composting;
- Windrow stockpiles on the maturation pads will be turned once a week to ensure they are kept aerobic and moisture levels will be adjusted to minimise anaerobic conditions which can lead to higher odour levels;
- Aeration of the leachate ponds as required to ensure the ponds remain aerobic;
- Preferential reuse of stored leachate in the composting process to avoid long-term storage of leachate (see also 4.3 *Soil, water and leachate management*);
- Appropriate storage of biosolids (tank or covered pit) if and/or when they are accepted;

#### EA

- The composting tunnels will be fully enclosed with each composting tunnel having its own air supply and extraction fan to collect air for processing through the Biofilters;
- Implement operational controls, through SOPs to ensure that the outdoor activities of compost maturation are maintained in an aerobic state to minimise the potential for odours;

- Treat all leachate from the process prior to short term storage and reuse in order to avoid odour associated with high BOD levels in stale leachate.
- Minimise the handling of waste materials;
- Regularly inspect Biofilters to ensure adequate operation.

#### EPL

- Composting must be undertaken for set periods of time and at certain temperatures, oxygen and moisture levels to provide certainty that the composted material has been fermented properly and is adequately stabilised prior to any outdoor storage of the composted material. These parameters will be as per SOPs;
- Ensure that both the leachate ponds are in service, with the Pond operated at very low levels, with all leachate reuse sourced from the pond. This will act to minimise the surface area of odorous leachate.

#### Preferred Project Report

- Each day's waste will be processed on the same day to minimise the amount of waste left in the receival building overnight.

### **Monitoring**

SITA will undertake several rounds of odour monitoring when the facility becomes steady-state operational to verify the predicted odour emissions and should the subsequent modelling indicate odour emissions in excess of that predicted SITA will propose further mitigation measures. The first round of odour monitoring will commence six months after the start of commissioning.

### **Reporting**

#### EPL

The EPL for the AWT does not require odour measurement separate to the landfill operations. AWT operators should note that within 24 hours of detecting offensive odours for the broader site, SITA is required to notify DoP and DECC of the matter.

Within six days of notifying DoP and DECC, SITA will provide a written report to DoP and DECC that:

- Describes the date, time and nature of the incident;
- Identifies the cause, or likely cause, of the incident; and
- Describes what action has been taken to date to address the incident, and what actions are proposed to be implemented in the future to either address the consequences of the incident or avoid a recurrence of the incident.

#### Approval

SITA is implementing continuous improvement in regard to odour emission management. As part of this, SITA submits a report annually to DoP and DECC, unless otherwise agreed by the Director-General, outlining new developments in the field of odour control and management relevant to the operation, and detailing practices that have been implemented on the site during the previous year to reduce odour emissions. The report: (a) identifies which practices can be implemented in a cost effective manner; and (b) justifies why other measures are not required.

**Corrective Action** Statement of Commitments

- SITA will undertake odour monitoring when the facility becomes operational to verify odour emission modelling;
- Should the subsequent modelling indicate odour emissions in excess of that predicted, SITA will propose further mitigation measures.

## 4.6 Materials Monitoring Plan

The Materials Monitoring Plan refers to how materials will be tracked from the time they enter the facility via the weighbridge, through the processing stage and then to the end product stage, i.e. the production of compost and the recovery of recyclables.

The Plan is divided into Input Materials (Waste) and Output Materials (Compost)

Other recyclable products recovered during the process will be stored in separate areas or within storage bins where they will be sold to the market.

### 4.6.1 Input Materials

|                              |  |
|------------------------------|--|
| <b>Potential Impacts</b>     | The waste received by the AWT facility is Category 2 material as described in Department of Infrastructure, Planning and Natural Resources (DIPNR, now DoP) <i>EIS Practice Guideline: Composting and Related Facilities</i> (DUAP 1996). The material is considered to have the potential for medium impact on the natural ecosystems on site.  |
| <b>Operational Objective</b> | <ul style="list-style-type: none"><li>• Maximise the reuse and recycling of waste and minimise the generation of wastes to be disposed of in landfill;</li><li>• Not receive any category or type of organic materials other than those permitted to be received at the premises, as specified in the EPL and Approval;</li><li>• The quantity of organics permitted to be received at the premises, as specified in the EPL and Approval, must not be exceeded; and</li><li>• Ensure all waste is managed in accordance with the POEO Act (1997).</li></ul>   |
| <b>Performance Criteria</b>  | <ul style="list-style-type: none"><li>• Compliance with EPL N° 12889 and Minister's Approval;</li><li>• Compliance with Statement of Commitments for the AWT facility;</li><li>• Compliance with the POEO Act (1997);</li><li>• Compliance with Australian Standard AS 4454-2003: <i>Composts Soil Conditioners and Mulches</i>;</li><li>• Compliance with the chemical acceptance concentration threshold for compost - Restricted Use (Grade B and C) in the <i>NSW Environmental Guidelines: Use and Disposal of Biosolid Products</i>; and</li><li>• All waste resulting from operational activities is disposed off in an appropriate manner and at an appropriate facility/location;</li><li>• Evidence of compliance will be auditable documentation held in the AWT area quality system files.</li></ul> |
| <b>Management Strategy</b>   | <ul style="list-style-type: none"><li>• Waste Material enters the SAWT via the weighbridge where it is identified as suitable (or not) to be received and processed. The weighbridge computer system records all of the relevant information concerning the material including customer, vehicle details, date, time, weight (gross and tare) and waste type.</li></ul>  |



- Any incoming and processed organics/material must be stored and managed in quantities not exceeding the design requirements;
- Contaminated organics, materials, wastes or residues will not be stored outside the secure storage areas provided for them at the facility;
- Wastes generated at the premises will be handled and disposed in accordance with best practice and applicable guidelines and regulations:
  - Waste will be classified in accordance with the DECCs *Waste Classification Guidelines* (April 2008) before being dispatched from the facility and the broader premises;
  - Waste dispatched from the premises will be sent to a waste facility that is licensed to receive it or to premises that may otherwise lawfully receive it;
  - The movement and disposal of waste classified or assessed as being hazardous waste, industrial waste or Group A waste (in accordance with the waste classification guidelines) will be tracked and recorded.
- The facility **must not receive** the following categories of material:
  - Materials other than those permitted in the EPL (which are identified in the EPL as general solid waste and garden waste and biosolids from STPs);
  - Materials seized or subject to controls issued by the Australian Quarantine Inspection Service (AQIS) or NSW Agriculture or another agricultural agency, **unless** the facility receives and complies with any additional requirements that AQIS or the agricultural agency may impose to ensure destruction or inactivation of the contaminants or pathogens of concern
  - Materials containing contaminants classified as **hazardous wastes** or **industrial wastes** in any statutory instruments (including the POEO Act 1997 and *Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes* (EPA 1999a));
- The AWT operators must be able to identify the different categories and types of organics and also the potential outward signs of unacceptable contamination
- The AWT operators must operate a comprehensive incoming organics inspection SOP before, during and after organics unloading;
- The AWT operators must implement a random incoming organics sampling and testing protocol;
- SITA will provide waste receptacles for all anticipated waste types and will ensure that personnel use these correctly.

## Monitoring

Monitoring of waste relies mainly on the skills of the operators in identifying materials, tracking their movements and confirming weights in and out of the facility. Records produced through these efforts will be fundamental to complying with the reporting requirements of the EPL.

- An SOP has been prepared and implemented: (a) with respect to practices to screen incoming material; and (b) in order to provide certainty that only those materials permitted to be received at the facility are received.

The SOP includes direction with respect to:

- Clear identification and classification of waste materials prior to arrival at the AWT facility;
- The use of a certified accurate/calibrated weighbridge (at the entrance/exit of the AWT facility). Certification of the weighbridge must be performed annually, including calibration and stamping to demonstrate accurate recording of weights of waste delivered and waste sent to the landfill;
- Waste checking procedures at the entrance to the AWT facility and again at the discharge point, to identify non-conforming wastes;
- Systems and procedures to record weights, waste type and disposal location.
- A SOP will be prepared that will aid to quantify: (a) material received for processing; and (b) finished product transported from the premises. The weighbridge operator will record the following on the site database:
  - Date;
  - Time;
  - Vehicle registration;
  - Customer;
  - Gross weight, tare weight, net payload; and
  - Waste type.
- Implementation of the waste management procedures on site will be inspected on a daily basis by the SITA Environmental Site Manager using a checklist.
- Australian Standard AS4454-2003: *Composts, Soil Conditioners and Mulches* contains guidance regarding product quality assurance. Assessment of quality and consistency will include sampling and laboratory testing of the following parameters:
  - heavy metal concentrations;
  - physical composition and inert constituents;
  - pathogenic bacteriology and phytopathogens; and
  - potentially toxic elements (PTEs).
- Monitoring will also include feedback from users of the compost product with respect to plant growth performance or other performance measures that customers may emphasise.

## Reporting

- Waste screening data (from the weighbridge operators) will be recorded daily;
- The Site Environmental Manager will report on issues related to the management of waste via regular in-house progress reports (both monthly and annually);
- Section 6 of the EPL sets out reporting requirements which generally relate to annual returns. The ability to provide accurate and informative annual returns depends to a large extent on diligent daily information collection.

- Corrective Action**
- Any waste materials not disposed of correctly shall be recovered/salvaged and disposed of to the satisfaction of the Supervisor;
  - Identification of incorrect materials management will depend on regular review of records and on high standard training of operators; and
  - As necessary, additional training of staff, sub-contractors on non-hazardous waste management on the site will be carried out.

#### **4.6.2 Output Material – Compost, Recyclables and Residue**

##### **Compost**

Compost output products for land rehabilitation and agriculture or similar use will be processed such that they;

- meet the Australian Standards (AS4454-2003: *Compost Soil Conditioners and Mulches*);
- comply with the limits for physical contaminants in NSW Environmental Guidelines: Use and Disposal of Biosolid Products (1997);
- comply with Resource Recovery Exemptions under S51 of the POEO Act; and
- will have minimal impact on the natural ecosystems on site

Should any contaminant exceed the desired level, the initial action will be to investigate blending to achieve the desired level, or as a last resort we will send the compost to landfill.

##### **Recyclables**

During the process recyclable products will be separated out, stored in bins or bunkers and sold to the market as a beneficial product.

Recyclable products will consist of steel, plastics, paper, cardboard and non ferrous products.

##### **Residue**

Residual material which can not be reused will be either deposited in the adjoining SITA Kemps Creek landfill if it meets the licence conditions or transported to an appropriately licensed facility.

## 4.7 Noise Management

### Potential Impacts EA

Generation of noise resulting from operation of the AWT facility and associated infrastructure may adversely impact residents or commercial establishments close to the facility.

### Operational Objective

#### Statement of Commitments

Minimise impacts from noise emissions.

Note that with respect to potential cumulative impacts resulting from the operation of the landfill and the AWT facility, the EA stated that if it can be demonstrated that the proposed AWT facility satisfies intrusive or amenity criteria set independently of the current landfill (which are significantly lower than the current noise limits), then the combined noise from both the proposed AWT facility and landfill operations would almost always comply with the current noise limits. If there are times that compliance would not occur, it would be due to the already approved landfill rather than the AWT facility.

### Performance Criteria

- Compliance with noise limits, derived from the NSW Industrial Noise Policy, set out in Section L6 of the EPL, specifically Table L6.1 which sets out the limits of noise during the morning shoulder period and during the day, evening and night periods as measured at four nominated locations, including the Caretakers Residence at 1669A Elizabeth Drive. The reader should be aware of a set of explanatory notes that immediately follow Table L6.1;
- Compliance with approved hours of operation;
- Compliance with Statement of Commitments.

### Management Strategies

#### Statement of Commitments and EA.

- SITA will install mitigation measures at the Caretaker's Residence as required by EPL Section U2 *Noise Mitigation and Monitoring Program*.
- SITA has committed to the combined noise from the AWT facility and the existing landfill not exceeding the noise limits approved for the landfill operations licence;
- SITA will undertake additional noise modelling when the facility is operational in order to verify the results of the predicted noise modelling. Should the predicted noise levels identified in modelling not be capable of being achieved, SITA will propose modification to the design of the facility to further reduce the impact of noise.

#### Minister's Approval

- Prepare and implement a Noise Monitoring Program for the AWT facility, to the satisfaction of the DECC and DoP;
- The Noise Monitoring Program must be submitted to DoP prior to commencing operation and must include a noise monitoring protocol for evaluating compliance with the project noise limits in L6.1 of the EPL.

#### EA

#### Operational Noise Management

The following noise mitigation measures have been designed and put in place to reduce impacts from operational noise:

- Attenuation of biofilter discharge fans to achieve an effective  $L_w$  (sound

- power level) of 91dBA per fan;
- Shielding of biofilter discharge fans by biofilter units;
- Purchasing of recent model front-end loaders with a low  $L_{wi}$ ;
- The proposed construction of a Building Noise Insulation / Noise Barrier on Approach Road (subject to discussions with Council and/or affected landowner/s); and
- Management of times of operation of various plant / activities in accordance with the EPL.

SITA will undertake further noise monitoring once the facility is operational to: (a) confirm compliance with the licence criteria; and (b) review options for further noise control which can only be effectively designed once the facility has been operational and actual noise levels measured.

#### Preferred Project Report

- The combined noise impact at identified sensitive receivers from both the landfill site and the AWT facility are to be reduced over a period of a few years from the current allowable limit of  $L_{A10} = 50$  dB(A) during the day (7am -6pm) and  $L_{A10} = 40$  dB(A) during the evening and night time period (6pm - 7am);
- New criteria is dependent upon noise monitoring to be carried out at the landfill site, but levels of  $L_{A90} = 38-44$  dB(A) during the day (7am -6pm) may be appropriate. [Facility management to determine appropriate action.];
- Noise impact at the property at 1669A Elizabeth Drive (Caretakers Residence) is to be mitigated through the provision of double glazing and air-conditioning (EPL Section U2).

For information of AWT operators, the LEMP states that the landfill's design, construction and operating procedures incorporate measures specifically aimed at: (a) mitigating excessive noise impacts from the operation; and (b) ensuring compliance with [landfill] EPL requirements. These measures include:

- The use of appropriate and well-maintained machinery manufactured to appropriate design specifications;
- Non-use of compression braking in heavy vehicles;
- Incorporation of a three metre high bund along the southern boundary of the site; and
- Re-organisation of storage stockpiles to provide acoustic shielding.

Between 6:00 a.m. and 7:00 a.m. the following [landfill] control measures relating to the use of alarms on machinery include:

- Reduction in the level of sound from the alarms;
- Change in the characteristics of the sound; and
- Substitution by flashing lights during the dark, with the lights to be at the base of the vehicle/s to provide maximum reflection.

#### **Monitoring**

- Noise monitoring shall be undertaken at the receivers indicated in Table L6.1 of the EPL;
- Monitoring for AWT-related noise will be undertaken during normal working hours, outside break periods and according to licence



requirements unless otherwise requested or approved by the EPA.

- Noise monitoring is to take place on an annual basis. The measurement periods are required to be representative of any single working day and to consist of at least three measurement periods of at least 15 minutes duration, and are carried out at the four receptor points listed in Table L6.1 of the EPL;
  - Measurements will be undertaken and assessed in accordance with AS 1055.1 1989 *Acoustics-Description and measurement of environmental noise (parts 1-3)* and AS 2436 1981 *Guide to noise control on construction, maintenance and demolition sites*. It should be noted that compliance requires suitable weather conditions for the measurements.
  - Measurements will be assessed in accordance with the NSW Industrial Noise Policy (INP) January 2000.
  - Monitoring will be carried out with a sound level meter complying with International Standard IEC 651 (1979) *Sound level monitoring*;
  - Refer to the Notes following Table L6.1 in the EPL for further instructions with respect to monitoring locations;
  - The first round of noise monitoring will commence six months after the start of commissioning.
- Monitoring procedures for the landfill are detailed in the LEMP.

#### Reporting

##### Approval and EPL

All incidents of pollution will be recorded in accordance with **Section M4** of the EPL, Recording of pollution complaints, and reported in accordance with **Section R2** of the EPL, Notification of environmental harm.

#### Corrective Action EA

- SITA will undertake additional noise modelling when the facility is operational to verify the results of the predicted noise modelling. Should performance relative to predicted noise levels be difficult to achieve, SITA will propose further modification to the design of the AWT facility to further reduce the impact of noise.

##### Preferred Project Report and Statement of Commitments

- The Statements of Commitments includes an undertaking to: (a) verify the revised noise modelling following construction; and (b) implement additional noise mitigation measures if the predicted noise levels at sensitive receptors exceed those levels stated in the revised noise assessment.

## 4.8 Traffic

### Potential Impacts EA

An increase in traffic movements associated with operation of the AWT facility may impact residents or commercial establishments close to the facility.

[Secondary potential impacts associated with vehicle movements, for example dust and noise, are considered under separate EMPs.]

### Operational Objective

Minimise impacts of traffic to and from the site.

### Performance Criteria

Compliance with Ministers Approval, the EA and the Preferred Project Requirements for the AWT facility.

### Management Strategies

#### EA

The primary management strategy to be employed for traffic is that of monitoring numbers of movements to ensure that the approved numerical limit is not exceeded.

The EA determined that: (a) the moderate traffic volumes expected to be generated by the proposed AWT facility; and (b) the minimal delay expected to be experienced by vehicles turning right into and out of the Elizabeth Drive site did not warrant intersection upgrade or additional signals for the existing intersection of the landfill/AWT main entry road and Elizabeth Drive.

The maximum number of permitted daily movements for the landfill is 780 and the SAWT is 236, a total of 1,016. Daily movements comprise vehicle arrivals and departures. However, SITA is not currently utilising the full extent of the existing PCC Development Consent Conditions.

Overall the traffic impact from additional vehicles turning from Elizabeth Drive and accessing the Elizabeth Drive site for AWT operations is a marginal increase on existing traffic flows on Elizabeth Drive. An increase is expected in the number of vehicles travelling to the Elizabeth Drive site, however this number is in line with the total vehicle limit stated in the Development Consent, which currently is under-utilised for the landfill operations.

### Monitoring

#### Approval

SITA is required to monitor the performance of the intersection of Elizabeth Drive and the landfill access road within 2 years of the commencement of operations, or as otherwise required by DoP.

In the event that the performance of the intersection is found to be at [traffic movement criteria] Level of Service D (LOS D) or worse as a result of traffic from the landfill and the AWT facility, SITA will be required to implement mitigation measures as recommended by the RTA.

### Reporting

#### Approval

Reporting requirements with respect to traffic consist of reporting on the performance of the intersection of Elizabeth Drive and the landfill access road within 2 years of the commencement of operations, or as otherwise required by DoP.

**Corrective Action** EA

In the event of increased delays for vehicles turning into and out of the site, the following actions will be considered in consultation with RTA and PCC:

- Intersection upgrade;
- Additional signs or signalling.

## 4.9 Surface Water, Groundwater and Leachate Response Plan

As groundwater is not applicable to the operation of the SAWT, a Response Plan for Groundwater will not be required.

Groundwater monitoring would be required to be carried out as part of the landfill site and is a requirement under the Elizabeth Drive Landfill EPL which will cover both site operations.

### 4.9.1 Groundwater Response Plan

A groundwater monitoring and response procedure is in place for the landfill, refer Section 4.3 of the LEMP.

The EPA carries out independent reviews of monitoring data. If in their opinion, there is evidence of groundwater contamination by leachate, an investigation programme will be implemented, and remedial works carried out as required.

Should there be any groundwater contamination detected, SITA's response will be documented as part of the annual report submitted to Penrith City Council in compliance with Development Consent Condition 10. Notification to the EPA will also be undertaken in compliance with licence requirement R2.

### 4.9.2 Surface Water Response Plan

**Potential Impacts** Contamination of surface water resulting from leachate generated from waste that is left outside the building or other contaminants

**Operational Objective**

Approval

The surface water response plan must:

- (a) Include a protocol for the investigation, notification and mitigation of any exceedances of the respective trigger levels; and
- (b) Describe the array of measures that could be implemented to respond to any surface water contamination that may be caused by the development.

**Performance Criteria**

- Compliance with Minister's Approval, EPL and EA for the AWT facility.
- Note that well-established criteria and performance monitoring are in place in the LEMP.

**Management Strategies**

Statement of Commitments

SITA's Statement of Commitments requires SITA to minimise impact on surface water quality

- Stormwater from the AWT facility has been divided into diverted stormwater and 'clean' site runoff. The AWT area is graded to ensure that contaminated stormwater is diverted appropriately and undergoes treatment;
- All stormwater will be captured and retained on site up to and including the 1 in 10 year, 24 hour duration event;
- Storage of stormwater runoff will be managed to ensure maximum reuse and thereby reduction in potable water demand. This type of water will be used for application in the AWT processes, or it will be directly used for operational purposes (irrigation and dust suppression);
- Additional use of stormwater runoff to the extent that is practicable will act to prevent the discharge of untreated water from the AWT facility, and stormwater discharged to Badgerys Creek will therefore not increase in volume;

It is worthwhile noting the response plans applicable in the landfill as these will be equally applied in the AWT area:

•  
*Surface Water Contingency Plan*

Contingency operations for non-complying discharges are essentially in two stages comprising:

1. Closing off the discharge from the sedimentation pond and either re-circulating, treating or removing and treating the contaminated water; followed by
2. Directing (or pumping) stormwater back into Leachate Pond A, Leachate Pond B or Overflow pond(s), with later removal and treatment of the stored stormwater.

Closing off of the Sediment Pond will be effected by use of hand activated slide gate valves incorporated in the outlet structures. Sufficient emergency pumping equipment shall be maintained on site to enable re-circulation of inflows into the active area for emergency storage.

In the event of sedimentation pond overflow and where further discharges are likely (such as in an unlikely case of the sedimentation dam breach during a major storm event) the water will be diverted into another pond. Any excess stormwater will only have the effect of significantly diluting already relatively clean water.

Given the substantial volume available in each of the ponds onsite, such contingency provisions are expected to be adequate for most storm events, where a "contain and treat" approach will be adopted in the case of any accidental spillages or contamination events (for example, spillage on site).

Similar procedures will apply in respect of Badgery's Creek monitoring. Should any stream monitoring results exceed set values, then discharges from the site will be curtailed until either the cause is clearly identified, or investigation has demonstrated that further exceedance of set/standard values can be prevented.

In the event of a sedimentation pond overflow the following steps will be undertaken:

- (i) re-direct in-flows to an alternative pond or the landfill;
- (ii) pump out sufficient sedimentation pond water to temporary dam to enable restoration of dam failure;
- (iii) recommission sedimentation pond.

**Monitoring**

See 4.3 *Soil, Water and Leachate Management*

**Reporting**

Approval and EPL

Within 24 hours of detecting an exceedance of trigger levels [concentration limits], or the occurrence of an incidence that causes (or may cause) harm to the environment, SITA is required to notify DECC.

Within six days of notifying DoP and DECC, SITA is required to provide a written report to DoP and DECC that:

- Describes the date, time and nature of the incident;
- Identifies the cause, or likely cause, of the incident; and



- Describes what action has been taken to date to address the incident, and what actions are proposed to be implemented in the future to either address the consequences of the incident or avoid a recurrence of the incident.

**Corrective Action** EPL

Section O3.1 of the EPL states that SITA is required to develop, or update, an emergency response plan which documents the procedures to deal with all types of incidents (for example, spill, explosions or fire) that may occur at the premises or outside of the premises (for example, during transfer) which are likely to cause harm to the environment.

**4.9.3 Leachate Response Plan**

**Potential Impacts** Contamination of surface water resulting from leachate generated from waste that is left outside the building or other contaminants.

**Operational Objective** Leachate spill resulting from a broken pipe, faulty pump or truck incident.

Approval

The leachate response plan must:

- (c) Include a protocol for the investigation, notification and mitigation of any exceedances of the respective trigger levels; and
- (d) Describe the array of measures that could be implemented to respond to any surface water contamination that may be caused by the development.

**Performance Criteria**

- Compliance with Minister's Approval, EPL and EA for the AWT facility.
- Note that well-established criteria and performance monitoring are in place in the LEMP.

**Management Strategies**

EA

**Excess Leachate**

To handle excess leachate, the following methods may be employed:

*Re-injection*

The Composting Guidelines allow for discharge of leachate directly to receiving waters for storm events with greater than a 1 in 10 year Annual Exceedance Probability (AEP). Any leachate that overflows during major storm events is significantly diluted.

Injection of leachate into the landfill is only an option if the pond level is high and another major storm event is expected. This will provide capacity in the leachate pond. The landfill has engineered leachate controls in place to protect the environment and an existing DECC licensed environmental monitoring regime is in place and routinely performed.

*Irrigation*

A further option for managing excess stormwater runoff leachate is to irrigate it over vegetated areas of the Elizabeth Drive site or areas undergoing rehabilitation. Leachate potentially carries nutrient loadings that would make it beneficial to plant growth, more so than potable water or water from sedimentation dams.

### *Statement of Commitments*

SITA's Statement of Commitments requires SITA to minimise impact on surface water quality

Leachate will be retained on site in the leachate storage ponds which are lined to prevent leakage (Leachate Ponds A & B). The leachate will be reused within the AWT process.

Given the substantial volume available in each of the ponds onsite, such contingency provisions are expected to be adequate for most storm events, where a "contain and treat" approach will be adopted in the case of any accidental spillages or contamination events (for example, spillage on site).

It is worthwhile noting the response plans applicable in the landfill as these will be equally applied in the AWT area.

### *Leachate Spillage Contingency*

Leachate spillages could conceivably originate from:

- Leachate Collection System Failure; and
- a vehicle accident

Contingency measures for each of these scenarios are described below:

### *Leachate Collection System Failure*

The potential for a collection system failure within the facility is remote.

In the unlikely event of a collection system failure, the system concerned is to be isolated, the leachate collected and removed, and the collection system emptied and repaired to eliminate the problem.

The regular monitoring of water quality at the pond inlets is aimed at ensuring that any abnormality, occurring as a result of such a failure, is detected enabling the source to be found and remedial action taken.

### *Spills Due to Vehicle Accidents*

Spills of leachate could potentially occur as a result of an incident involving a truck/trailer unit either en-route to the treatment plant, or at the loading point.

Resultant environmental risks are mainly limited to those locations where a direct spill to Badgery's Creek could occur, or other watercourses or populated areas en-route. Critical locations include bridges. The effects of a spill on surface water resources would depend on the quantities released, but could potentially be significant.

In the event of a vehicle accident in which leachate is spilled on the road, Emergency Services would be contacted using the 000 telephone number.

For a vehicle accident inside the facility, actions will be taken to contain the spill and clean it up.

See 4.3 *Soil, Water and Leachate Management*

## **Monitoring**

## **Reporting**

### Approval and EPL

All incidents of pollution will be recorded in accordance with **Section M4** of the EPL, Recording of pollution complaints, and reported in accordance with **Section R2** of the EPL, Notification of environmental harm.

#### Corrective Action EPL

Section O3.1 of the EPL states that SITA is required to develop, or update, an emergency response plan which documents the procedures to deal with all types of incidents (for example, spill, explosions or fire) that may occur at the premises or outside of the premises (for example, during transfer) which are likely to cause harm to the environment.

#### 4.10 Compliance with the Building Code of Australia

The environmental performance of the AWT building and the buildings ability to withstand the effects of incidents and accidents is optimised through ensuring its compliance with the Building Code of Australia (BCA). Advanced Waste Treatment operations must not commence prior to formal certification of BCA compliance.

BCA certification has been provided progressively by Penrith City Council (PCC).

#### 4.11 Hours of Operation

The following sets out the approved hours of operation for the AWT facility:

##### Requirements of Schedule 2 of the Approval

| Activity   | Day                | Hours                   |
|--|--------------------|-------------------------|
| Waste receipt, outdoor operations and product dispatch | Monday to Friday   | 6:00 a.m. to 6:00 p.m.  |
|  | Saturday           | 8:00 a.m. to 5:00 p.m.  |
|  | Sunday             | 8:00 a.m. to 4:00 p.m.  |
|  | Public holidays    | 7:00 a.m. to 4:00 p.m.  |
|  |                    |                         |
| Indoor operations                                      | Monday to Saturday | 7:00 a.m. to 11:00 p.m. |
|  |                    |                         |
| In case of emergency                                   | Monday to Sunday   | Any time                |

#### 4.12 Weather Station On-Site

A weather station has been established on site as part of environmental management and monitoring efforts associated with the landfill.

The weather station is located in accordance with the EPL requirements to monitor activities on the site.

The data available from the weather station includes the following:

- Wind speed;
- Wind direction;
- Temperature; and
- Rainfall.

#### 4.13 Availability of Operational and Compliance Documents

EPL N° 12889 states at Section G - General Conditions that:

- A copy of the EPL must be kept at the premises – in this case at both the AWT administration area and the main office adjacent the main entry off Elizabeth Drive;
- The licence must be produced to any authorised officer of the EPA who asks to see the licence; and
- The licence must be available for inspection by any employee or agent of the licensee (SITA) working at the premises.

#### 4.14 Annual Reporting Obligations

In accordance with EPL N° 12889, Section 6 – *Reporting Conditions*, Subsection R1 Annual Return Documents

#### 4.15 Complaints Procedure

The issue of complaints is covered in Section 5 of the EPL, Monitoring and Recording. Particular reference is made to M4 and M5.

The EPL requires the licensee to keep a legible record of all complaints arising from any activity to which the licence applies.

#### 4.16 Monitoring and Discharge Points

With respect to discharge and monitoring points associated with environmental management of water, air and land, EPL N° 12889 lists the following sites:

- Point 1 - Stormwater monitoring at discharge point from the *AWT clean water dam*;
- Point 2 - Leachate monitoring point at *Leachate Pond A*;
- Point 3 - Leachate monitoring point at *Leachate Pond B*;
- Point 4 - Overflow leachate monitoring point at the *Overflow Pond*

Refer to EPL N° 12889 Section 2 Discharges to air and water and applications to land for detailed descriptions of each of the above points.

#### 4.17 Approved Concentration Limits for Discharges

Concentration limits are set only for the above Points 1 and 4.

Exceedance of the concentration limits for Point 4 are permitted only in the event of a localised rainfall event of 91 millimetres in any five day period.

Refer to EPL N° 12889 Section L3 *Concentration Limits*.

#### 4.18 Maintenance and Operation of Plant

Fundamental to efficient, safe and environmentally compliant operation of all plant, either fixed or mobile, within the AWT facility is the identification of hazards associated with the plant and then the systematic elimination of those hazards, be they safety or environment-related.

The reader is referred to WorkCover NSW publication *Plant* which describes an approach to such hazard identification and elimination. The guidance is consistent with the requirements of NSW OH&S Act 2000 and Regulations 2001.

Reliable operation of the AWT requires diligent maintenance of all plant in accordance with manufacturers and suppliers manuals. Clause 143 of OH&S Regulation 2001 requires an employer to keep records in relation to tests, maintenance and inspections of plant.

Further valuable instruction on the safe operation of plant is provided in WorkCover Code of Practice *Moving Plant on Construction Sites*.

For both fixed and mobile plant, information on maintenance and operation must be provided by a range of people including designers, manufacturers, hirers or lessors, suppliers and employers. That includes information about:

- The purpose for which plant is designed;
- Testing or inspections to be carried out;
- Installation, commissioning, operation, maintenance, inspection, cleaning, transport storage and dismantling;
- Systems of work necessary for safe use;
- Knowledge, skills or training necessary for inspecting, testing the plant;
- Emergency procedure; and
- Any other information that enables risk management.

#### **4.19 Bunding**

All above ground tanks, regardless of their storage or processing role (other than clean water) must be surrounded by a bund with the capacity to contain 110% of the volume of the tank within the bund.

Bunding is required to be designed and installed in accordance with Australian Standards relevant to the type of material contained and/or DECC's *Environment Protection Manual, Technical Bulletin, Bunding and Spill Management*.

Instruction on broader issues relating to liquids containment and spill management is found in DECC 2006 *Environmental Compliance Report, Liquid Chemical Storage and Spill Management*, although it should be emphasised here that little if any chemical storage is planned for the AWT facility. However, the report has relevance to design and maintenance of bunding.

#### **4.20 Audits**

An independent auditor will be appointed to assess the effectiveness of the OEMP as an operational document.

The auditor can be someone within SITA who is not closely aligned to the project.



## 5.0 Regular Document Review

Regular reviews will be undertaken of all documents relevant to the operation and management of the AWT.

As the documents are "live", changes can be initiated at any time however regular reviews will be carried out to coincide with reviews of the LEMP documents.

## 6.0 Emergency Response Procedures

A Draft Emergency Response Plan has been prepared for the AWT facility. It documents the procedures to deal with all types of incidents (eg. spills, explosions or fire) that may occur at the premises or outside of the premises (eg. during transfer) which are likely to cause harm to the environment.