



SITA Advanced Waste Treatment - Elizabeth Drive Project Application

SITA Environmental Solutions

August 2006

MAUNSELL | AECOM

Project Application

Prepared for

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1.0 SITA Advanced Waste Treatment

1.1 Background to Proposal

SITA Environmental Solutions (SITA) proposes to build a SITA Advanced Waste Treatment (SAWT) facility on approximately 5 hectares (ha) of its existing Elizabeth Drive landfill site in Western Sydney (Elizabeth Drive Site). The intended maximum capacity of the SAWT facility is approximately 120,000 tonnes per annum (tpa) of municipal solid, commercial, industrial and green waste plus 14,400tpa of biosolids (from sewage treatment plants). The SAWT facility has the flexibility to be developed in stages, to reflect the amount of waste which is received and requires processing at the facility.

1.1.1 Advanced Waste Treatment

SAWT incorporates existing technologies already used by SITA both in Europe and at the BioWise waste composting facility in Perth, Western Australia. The proposed SAWT facility will:

- Receive waste
- Mechanically separate the putrescible and non-putrescible fractions of the waste
- Recover recyclables from the waste using manual sorting and other techniques
- Anaerobically digest a portion of the putrescible fraction of the waste
- Compost the putrescible fraction of the waste
- Refine the compost to remove contaminants (i.e. glass, plastics)
- Mature the compost
- Further refine the matured compost to produce a range of compost products and mulch products
- Dispose of the non-putrescible residual material at SITA's existing Elizabeth Drive landfill.

All of the SAWT processes (except for maturation and green waste shredding) will be carried out in fully enclosed buildings.

1.2 Project Need

Landfill capacity for untreated organic waste in the Sydney Metropolitan Area is very limited relative to the amount of waste being produced and the rapidly decreasing available airspace. The only facilities within Sydney capable of treating putrescible waste using mechanical biological waste treatment technologies are the UR3R (capacity of approximately 175,000tpa), located at Eastern Creek, Earthpower (capacity of approximately 76,650tpa), located at Camellia and Ecolibrium (capacity of approximately 90,000tpa) to be located in Camden and commissioned in 2008. Approved landfills servicing the Sydney region accepting putrescible waste between June 2006 and June 2014 have a total available capacity of approximately 11 million tonnes (Mt) (Cleland, 2005). Sydney's putrescible waste generation over the same period is expected to be approximately 16.8Mt (Cleland, 2005), leaving a shortfall of approximately 5.8Mt. The SAWT proposal would accept up to 120,000tpa of waste and 14,400tpa of biosolids, for a period in excess of twenty years, which will assist in meeting this shortfall.

The Commissioners of Inquiry for Environment and Planning into the Proposed Alterations and Extensions at Eastern Creek Waste Management Centre, in its report to the Minister, noted that even with new alternative waste treatment facilities operational at UR-3R, Woodlawn and MACROC, '*...this still leaves a substantial amount of putrescible waste to be treated by AWT facilities if the waste diversion targets noted [in the WARR Strategy] are to be met by 2014.*'

The aim of the SAWT proposal is to recover resources from waste entering the facility, hence contribute to NSW meeting the WARR Strategy resource recovery targets for municipal and commercial and industrial waste streams and reducing the amount of waste material going to landfill.

Section 3.2 below provides further detail.

The compost produced by a SAWT facility is a much-needed product in NSW for improving water holding capacity and enhancing the poor quality of most soils. While there are currently a number of licensed compost-related activities in Sydney, most of these use green waste and biosolids to produce a Grade A under the *NSW Environmental Guidelines for Use and Disposal of Biosolids Products* (Biosolids Guidelines) saleable product for the general public or for use in landscaping of public areas. There is also a requirement for compost that complies with the standard of Grade B of the Biosolids Guidelines. Uses for Grade B compost include mine site rehabilitation, large-scale agricultural application, landfill rehabilitation and potential for methane oxidation in landfill caps. The demand for compost for rehabilitation is increasing in the Greater Sydney Region.

SITA itself has a genuine requirement for a compost material at Elizabeth Drive for the rehabilitation of its adjacent 68ha landfill. This requirement would enable the application of up to approximately 100,000 tonnes of material if only the SAWT product was applied to the landfill site with an application thickness of 250mm. Therefore, SITA can use up to 7 years worth of SAWT compost production (at the initial production rate of up to 14,000tpa, which is equivalent to an input of 60,000tpa of municipal solid and commercial and industrial waste) for its own revegetation purposes, hence replacing the need to buy in an alternative compost product.

1.3 The Proponent

The proponent of the activity is SITA Environmental Solutions. SITA is an Australian subsidiary of the French based Suez Group, a major global provider of infrastructure services in the areas of energy, water and waste. SITA currently owns and operates a number of facilities throughout Australia including: the BioWise composting facility in Perth (as a joint venture with the Water Corporation of WA); waste recycling and transfer stations in Wetherill Park, Camellia (Western Sydney), Melbourne and in Perth; engineered landfills in Sydney, Melbourne and Perth; and numerous waste collection facilities in all mainland states serving over 800,000 households and more than 30,000 commercial/industrial clients.

2.0 Project Description

2.1 Site Location

The proposed SAWT facility would be located on SITA's existing 84ha Elizabeth Drive Site in the Penrith Local Government Area (LGA). This site is 5 kilometres (km) west of Kemps Creek and approximately 41km west of Sydney CBD (**Figure 1**). The Elizabeth Drive Site comprises Lot 1, DP 542395 and Lot 740, DP 810111. **Figure 2** provides an aerial view of the area surrounding the Elizabeth Drive Site, and **Figure 3** provides a plan view of the location of the SAWT facility in relation to the Elizabeth Drive Site.

2.2 Site Selection

SITA considered several options for siting the waste processing plant and selected the western part of Metropolitan Sydney as an area with an obvious need for Advanced Waste Treatment (AWT). The area is experiencing strong population growth, which is fuelling an increased demand for services and, in turn, construction and development. Waste generation in Western Sydney is increasing with population growth and suitable waste management technologies are required to meet this need. Local and State Governments are increasingly looking to AWT to meet requirements to reduce quantities of waste to landfill. Locating the SAWT facility in the western suburbs will meet a demand for such facilities to cater for the increased waste production in the area.

Other land that was considered included some commercial and industrial land. Such land is generally unsuitable because of insufficient buffer distances to neighbouring properties, the difficulty of obtaining approval and required licences, and the inefficiencies associated with transporting the inorganic material from a site for disposal. Within the Penrith City Council area the only Industrial precinct, which could readily be identified as suitable for the proposed SAWT facility would be the St Marys – Dunheved precinct. Property value levels there suggest that a 5ha site, if available, would cost in the vicinity of 150 dollars per square metre (i.e. 7.5 million dollars for a 5ha site), which would make the SAWT proposal non-viable commercially.

This site was selected as it has the benefit of co-location with the existing landfill. This means there is existing infrastructure, established transportation routes and residual waste can be disposed of easily and quickly without the need for the waste to leave the site.

2.3 Site Description

The existing landfill is licensed under the *Protection of the Environment Operations Act 1997* (POEO Act) by the New South Wales (NSW) Department of Environment and Conservation (DEC) to accept Industrial Waste and Solid Waste Class 2 (non-putrescible waste). The Elizabeth Drive Site has sufficient space to allow the construction of the SAWT facility without interfering with the independent operation of 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 distance from existing residences and the shielding offered by the existing landfill operations also help to reduce noise impacts on the eastern residential dwelling. The selected location maximises the available void space and minimises any conflicts with the existing landfill.

The existing Elizabeth Drive Site is already cleared and is positioned with good buffers to nearby sensitive receptors, such as residences. The nearest township is Kemps Creek, approximately 5km east of the Elizabeth Drive Site.

Badgerys Creek, which forms part of the Hawkesbury-Lower Nepean River System, borders the Elizabeth Drive Site to the west. A vegetative buffer is maintained along much of its length, adjacent to the Elizabeth Drive Site where the creek forms a property boundary for the Elizabeth Drive Site. Existing Landfill operations have been carried out to avoid impacts on the creek by constructing all infrastructure away from the creek banks. The Elizabeth Drive Site's fence line is set back a minimum of 50m from Badgerys Creek.

2.4 Surrounding Land Use

Land surrounding the Elizabeth Drive Site is rural and consists of a number of residential holdings with stables for horses and rural residential dwellings. Badgerys Creek and the McGarvie-Smith Farm, owned by the University of Sydney, bound the Elizabeth Drive Site to the west. To the north the Elizabeth Drive Site is adjacent to more rural land owned by Sydney University property "Fleurs". To the east of the Elizabeth Drive Site are two smaller residential holdings and further away is South Creek. There is an area of agricultural land to the south of the Elizabeth Drive Site and beyond that is Elizabeth Drive.

2.5 General Layout of the SAWT Project

SAWT requires an area of approximately 5ha and consists of built structures, hardstand, maturation pads, stormwater and leachate ponds (leachate refers to water that has come into contact with matured compost from the Maturation Pads or temporary compost product stockpiles), electricity generation, and access roads. Refer to **Figure 4** for a plan view of the proposed general layout of the SAWT project.

The access road will lead from the main gate of Elizabeth Drive landfill, but once on the site, will be kept separate from the road to the landfill area. The access road will generally run along the south and west parts of the landfill area, and will include a weighbridge at the exit of the SAWT facility.

The built structures will include one enclosed building of approximately 9,000m² which will house the waste receival area, residual load out area, resource recovery process, composting tunnels and biocells. Other structures will include the digestion unit, which is a tank approximately 13.5m in diameter and 24m high, a biogas storage tank approximately 9.2m in diameter and 7.2m high, and a flare approximately 7.5m high. These three structures will be close to the main building.

Attached to the main building will be two biofilter units, which are used to filter the air out of the building and processes primarily to act as odour control. An enclosed conveyor belt will transport the material from the composting tunnels and biocells to the maturation pads, and this belt will extend approximately 50m from the main building.

The maturation pads will have an area of approximately 10,000m². The final refining building will be an enclosed structure with an area of approximately 1,000m². This building will be away from the main building, on the edge of the maturation pads to improve material flows and vehicle routes.

The facility has been designed to adapt to different waste collection systems. For example, if mixed green waste and food waste is accepted at the facility, a building which has been specifically designed for the receipt and processing of this waste stream (i.e. mixed green waste and food waste) will be constructed.

2.6 SAWT

Please refer to **Figure 5** for a plan view of the proposed SAWT facility.

2.6.1 Waste

The municipal solid, commercial and industrial waste received at the SAWT facility is referred to as Waste for the purpose of this application. The Waste will be received and separated by both mechanical and manual means into different fractions. These fractions will include recyclable products such as glass, paper, cardboard, metals and plastics, which are separated before composting begins.

The recyclable products will be taken from the site to the markets or for further processing elsewhere. The non-recyclable fraction greater than 110 millimetres (mm) in size will be directed to landfill for disposal.

The putrescible material fraction greater than 40mm and less than 110mm in size will be directed to the composting tunnels. The putrescible material fraction less than 40mm in size will go into the anaerobic digestion process, or if that is currently operating at capacity, directly to the composting tunnels.

2.6.2 Anaerobic Digestion

Anaerobic digestion is a process for the rapid decomposition of putrescible material in the absence of oxygen. Putrescible material (less than 40mm in size) is mixed with water and iron chloride and pumped into the top of the digester tank. Over a period of 20-30 days, through the action of bacteria, this mixture decomposes to a dry sludge.

During the decomposition process, biogas is released. This gas will be collected and piped to a storage tank. The gas is then used to generate electricity (**Section 2.6.7**). Any excess gas would be burnt using a purpose-built flare.

2.6.3 Green Waste and Biosolids

Green waste is to be received separately from Waste and will be passed through a shredder before going directly into the biocells. If biosolids are received, they will be stored in an aboveground tank or in an underground pit. Biosolids will be mixed with green waste to increase the nutrient value. Green waste and biosolids will not go through the anaerobic digestion process, and will be kept separate from Waste throughout the process, to produce a higher-quality compost.

2.6.4 Composting Process

Municipal Solid, Commercial and Industrial Waste

The putrescible waste fraction obtained from the Waste will be loaded into a series of enclosed composting tunnels. Putrescible material (less than 40mm in size) which has undergone anaerobic digestion in the digester will also be placed in the composting tunnels after mixing with undigested putrescible material (greater than 40mm and less than 110mm in size).

The tunnels are concrete structures, similar to large bunkers, in which the material sits for up to five weeks. During this time, air is circulated through the material, to encourage decomposition. Temperature in these tunnels is maintained at above 60°C for three days to kill any pathogens present. Temperature, oxygen, moisture and other parameters of the composting tunnels will be continuously monitored and controlled by Programmable Logic Controller.

After the material has been composting in the tunnels for three weeks it is turned by being transferred to another tunnel. The transfer and turning is conducted to ensure proper mixing of the material and break down any large lumps of material.

Green Waste

Green waste, and biosolids if received, will be mixed and placed in biocells. The purpose of the biocells is similar to the composting tunnels, in that the biocells encourage decomposition of the material, but differ in that they have an open top.

Both the composting tunnels and biocells are enclosed in the composting building with comprehensive air management and odour control systems.

2.6.5 Maturation

After completion of composting in the tunnels or biocells, the material will undergo primary refining and be transported to an outside area for it to continue the maturation process. This outside area is a hardstand where the material is piled in windrows. The material is turned on a regular basis to assist the maturation process.

2.6.6 Refining

After 2-3 months maturation, the material is ready to be processed in a second stage refining process to remove any remaining contaminants and to grade the compost into size fractions to optimise the product quality to meet market needs.

2.6.7 Electricity Generation

The gas produced during anaerobic digestion will be used to power engines, which in turn will be operated continuously to generate electricity. The electricity generated will be used to power the SAWT facility and excess electricity is directed to the grid.

2.6.8 Water Management

The SAWT will be a net user of water. The water required for the composting process will be supplied from any leachate, then from the stormwater dams (both within the proposed SAWT facility and also from those situated around the landfill site). However in times of low rainfall, water supply may need to be supplemented by mains water.

2.7 Project Cost Estimate

It has been estimated that the cost to commission the full scale SAWT facility will be in the order of forty million dollars.

2.8 Key Technical Issues

2.8.1 Site Constraints

The SAWT will be positioned in the north-west corner of Elizabeth Drive Site. This part of the site falls within the 1:100 year flood risk area and therefore this will require the construction of an embankment to provide flood protection.

The access road will generally run along the southern part of the landfill and the western boundary of the site (which are on virgin land) to take advantage of noise bunding along the southern boundary and to minimise disruption to landfill operations.

Power will generally be supplied by the use of gas-fired generators, however a connection to the grid is required for start-up, back-up and for the return of electricity back to the grid. Therefore, a cable will run from the SAWT to the south-east corner of the Elizabeth Drive site, at the location of the main connection to the grid. This cable can run overground on poles or underground along the access road depending on cost or other requirements.

The area required for operations is constrained by the need to move a high volume of low-density material. This area includes the need for access by heavy vehicles and to keep Waste separate from green waste. The area required for maturation is dictated by the need for material to be placed outside for up to three months before being moved off site. Therefore the maturation pads need to be sufficient to place three months material and allow access for heavy vehicles to collect that material.

Two stormwater dams and a leachate dam are required for the operation of the SAWT facility. The dams will be capable of holding the expected runoff from a 1 in 10 year, 24 hour duration storm event (*Environmental Guidelines: Composting and Related Organics Processing Facilities [NSW DEC 2004]*). Water stored in these dams will also be used in the anaerobic digestion and composting process.

Anaerobic digestion imposes certain limitations on structures and their size. In particular, the main digestion unit will be 24m high with a pipe feeding material into the top and another removing material from the bottom. Close to the digester will be a tank, approximately 7.2m high, for storing gas removed from the digestion process.

2.8.2 Construction

It is expected that construction will require the delivery of some heavy plant to the site. Existing on-site plant will be used where possible. However, most plant and equipment will be assembled on-site, and the site is sufficiently large to allow set-down and parking areas for deliveries.

There is a need for earthworks on the site prior to construction to raise the level of part of the site to above the 1:100 flood line, to form an embankment for the access road and to cut any excess material to the required levels. In addition, two stormwater ponds and one leachate pond will be constructed and the site graded to fall towards these ponds as necessary.

2.8.3 Operation

The full capacity of the SAWT facility is 120,000tpa of Waste and green waste, plus 14,400tpa of biosolids, however the facility can be run at a lower capacity if required. At full capacity the facility will produce approximately 8,000tpa of recyclable products. Of the remainder, it is expected that approximately 30,000tpa of the putrescible material recovered will go through the digester. Residual waste will be sent to the Solid Waste Class 2 landfill on the Elizabeth Drive Site.

Once operating at full capacity, traffic flow to and from the Elizabeth Drive Site, including the SAWT facility, will increase to approximately 225 vehicles per day, which is well below the permitted number of 390 per day (Penrith City Council Development Consent, 1990). The majority of these vehicles will be heavy trucks, and the landfill site entrance and access road has been constructed to a level capable of accepting this traffic.

The SAWT facility will be available for waste to be accepted and product collected between 6am and 6pm Monday-Friday, between 8am and 5pm on Saturdays, and between 8am and 4pm on Sundays and Public Holidays. This is in line with the current licence for the neighbouring landfill operation.

The resource recovery and sorting operation will have the flexibility to operate continuously from 7am Monday to 11pm Friday, from 8am to 5pm Saturdays and from 8am to 4pm on Sundays and Public Holidays during periods of high demand, after downtime, or in order to manage or assist with other extraordinary circumstances. However, operating times will normally be between 7am and 11pm Monday-Friday. The composting, digestion and maturation processes will all of the time.

2.9 Project Timetable

The preliminary timetable below identifies the major milestones for this project.

Submission of EA to Department of Planning	August 2006
Construction of SAWT starts	January 2007
Operation of SAWT starts.....	January 2008

2.10 Project Description

Appendix A contains a brief description of this Project and of the permits required.

3.0 Statutory and Policy Context

3.1 Commonwealth

Environment Protection and Biodiversity Conservation Act 1999

Under the Commonwealth *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act) any proposed activities that could have an impact on matters of national environmental significance are required to have an in-depth evaluation and be subject to the approvals process. Specifically such significant areas are World Heritage properties, national heritage properties, Ramsar wetlands, listed threatened species and ecological communities, listed migratory species, a Commonwealth marine area or a nuclear action.

As part of the assessment of the SAWT proposal a search of the Schedules to the EPBC Act was conducted. The search showed that matters listed as being of national environmental significance have been recorded around the broad locality of the proposed SAWT Site.

A flora and fauna specialist was engaged to conduct a site visit to evaluate whether species protected by Commonwealth legislation were present on the SAWT Site. Although species of national significance have been recorded in the general area, none have been recorded on the SAWT Site specifically. The assessment concluded that no species listed under the Commonwealth's EPBC Act would be adversely impacted by the SAWT proposal.

3.2 State

Statutory Planning Framework

Development approval and EA in NSW are undertaken in accordance with the *Environmental Planning and Assessment Act 1979* and the *Environmental Planning and Assessment Regulation 2000*. The SAWT proposal EA has been prepared by the proponent, SITA in accordance with State legislation and the requirements of the Director-General of the DoP.

Environmental Planning and Assessment Act 1979

The SAWT proposal is an 'integrated development' as defined under Section 91 of the *Environmental Planning and Assessment Act 1979* because, in addition to approval by the consent authority, in this case the Minister, the SAWT facility will require an Environment Protection Licence (Licence) under the POEO Act. SITA has commenced consultation with the DEC (formerly the Environment Protection Authority) to involve the regulatory authority in the scope of the SAWT proposal so that in due course, SITA can apply for the Licence.

Environmental Planning and Assessment Regulation 2000

The SAWT proposal is classified by the *Environmental Planning and Assessment Regulation 2000* (Regulation) as a 'designated development' because it is classified as "waste management facilities or works that store, treat, purify or dispose of waste or sort, process, recycle, recover, use or reuse material from waste".

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

The new Part 3A of the EP&A Act commenced on 1 August 2005. The aim of this amendment is to:
'facilitate major project and infrastructure delivery and encourage economic development, while strengthening environmental safeguards and community participation'.

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. The new provisions also ensure that appropriate community consultation and environmental assessment is undertaken, based on the level or risk or community concern.

SEPP (Major Projects)

SEPP (Major Projects) works alongside the new Part 3A to outline which proposals require Ministerial approval, and Clause 27 includes,

"Development for the purpose of resource recovery or recycling facilities that handle more than 75,000 tonnes per year of waste or have a capital investment value of more than \$30 million."

as being a class of development that is classified as State significant, meaning the NSW Planning Minister becomes the consent authority. This being the case, the EA and DA will be required to be prepared for and submitted to Department of Planning (DoP).

A Declaration was made under Clause 6 (1) of SEPP (Major Projects) on the 6 December 2005, by the Minister, confirming that this proposal is to be considered as a Major Project.

State Environmental Planning Policy 11 – Traffic Generating Developments

The intent of SEPP11 is to ensure that the Roads and Traffic Authority (RTA) is made aware of, and given an opportunity to make representations in respect of development listed in Schedule 1 or 2 of SEPP11. SEPP11 is taken to be referring to 'Waste Activities' as listed in the POEO Act, which is the current, equivalent legislation.

State Environmental Planning Policy 33 – Hazardous and Offensive Development

State Environmental Planning Policy 33 – Hazardous and Offensive Development (SEPP 33) is the statutory policy that provides definitions of 'hazardous' and 'offensive' industries to enable consent decisions to be made on the merit of individual proposals.

Hazardous

SEPP 33 defines potentially 'hazardous' industry as "industry where if no mitigation measures were taken, would "pose a significant risk in relation to the locality". A classification of the proposed SAWT facility was undertaken by applying the process detailed in Applying SEPP 33 - Hazardous and Offensive Development Application Guidelines (DUAP 1997) ('SEPP33 Guidelines').

The proposed SAWT facility is intended to receive solid waste only, originating from municipal, commercial and industrial sources. While it is prudent to consider that waste to be received at the SAWT may contain a tiny fraction of potentially hazardous materials, primarily within waste from a typical household, this percentage is extremely small and well below the dangerous goods storage thresholds identified in the DoP screening method.

The total quantity of any of these materials temporarily stored on site would be less than 1m³ prior to collection and removal by an appropriately licensed contractor. These materials are also anticipated to be well below the DoP screening thresholds and will be stored normally in accordance with the dangerous goods regulations

Other potentially hazardous materials brought onto the site are related to cleaning and vehicle maintenance, iron chloride and diesel. Iron chloride is required as part of the anaerobic digestion process, and diesel is required as fuel for on-site plant and machinery. Both substances have been assessed according to the SEPP33 Guidelines.

Biogas is produced by the anaerobic digestion process, and will be used to power the electricity generators. The biogas will be stored in a purpose-built above-ground tank of approximately 15m³ and has also been assessed according to the SEPP33 Guidelines.

Relevant MSDS, spill containment and other safety equipment will be installed and maintained. This includes bunds around storage tanks, fire extinguishers and drains.

Offensive

Under SEPP 33, the proposed SAWT facility could be classified as a “potentially offensive development” because it has the potential to impact on the surrounding locality through the emission of noise, dust, and odour. However SEPP 33 has provision for circumstances where a Licence can be granted and then “the development is permissible and can proceed to detailed assessment”.

The proposed SAWT facility will require a Licence under the POEO Act as a ‘*composting or related organics processing facility*’, and the process of obtaining that Licence is via the ‘integrated development’ process. Receipt of this Licence will therefore allow the proposed SAWT development to proceed because it is no longer a ‘potentially offensive development’.

State Environmental Planning Policy 48 – Major Putrescible Landfill Sites

The proposed SAWT facility is for a composting or related putrescibles processing facility, not a putrescible landfill, and therefore SEPP 48 is not applicable.

State Environmental Planning Policy 55 – Remediation of Land

State Environmental Planning Policy 55 – Remediation of Land (SEPP 55) deals with the remediation of contaminated land. This statutory policy directs that land must not be developed if any contaminated material present, could affect the eventual land use that is being proposed.

Whilst SEPP 55 applies to all developments, there is no known contamination contained within the SAWT Site and therefore no remediation is required to be undertaken at this stage.

The SAWT Site for the proposed facility has been selected because:

- It is on a section of the landfill site which is essentially undeveloped and has not been landfilled previously
- Proposed built structures will be located on areas that have experienced only minor or no disturbance and are highly unlikely to be contaminated
- Ancillary development such as haulage roads and the weighbridge will be located and constructed so as to minimise disturbance to areas that have been landfilled or could be (potentially) contaminated from past practices

- The proposed haulage road will be adjacent to the southern and western perimeters of the Elizabeth Drive Site and will follow an existing on-site track that avoids areas previously used for landfill operations.

NSW Waste Avoidance and Resource Recovery Strategy

In 2003, Resource NSW (now NSW DEC - Sustainability Programs Division) introduced the *NSW Waste Avoidance and Resource Recovery (WARR) Strategy*. The WARR Strategy is the primary document to guide the efforts of State and Local Government agencies, industries and the broader community in waste prevention and avoidance, reuse and recycling. The WARR Strategy identifies targets for achieving waste avoidance and resource recovery and sets a framework for delivering targets through the commitment of industry, Government and other stakeholders to key programs and actions. The WARR Strategy target for resource recovery from the municipal waste stream is 66%. The WARR Strategy target for resource recovery from the commercial and industrial waste stream is 63%.

The SAWT proposal will enable resources to be recovered from waste entering the facility, hence contribute to NSW meeting the WARR Strategy resource recovery targets for municipal and commercial and industrial waste streams. The SAWT proposal fits well with the WARR Strategy in that it recovers resources and reduces the amount of waste material going to landfill. SITA intends to treat or process up to 120,000tpa of waste that would otherwise be disposed of to landfill. The proposal will convert these wastes, and potentially a further 14,400tpa of biosolids, into approximately 28,000tpa of useable compost each year. Although recycling is widely practised in Sydney, many recyclable materials end up as solid waste going to landfill. The SAWT process will also recover up to 8,000tpa of these recyclable materials to be used as a resource.

Local Government Action Plan

As a result of the WARR Strategy, in 2003 the NSW DEC published the Local Government Action Plan. This is a consultation paper, which proposes a draft Action Plan to identify the commitment required by councils to achieve the goals of the WARR Strategy. This target is to divert 66% of the total domestic waste stream from landfill by 2014. The SAWT proposal will make a major contribution towards its achievement.

3.3 Regional

Sydney Regional Environmental Plan 20 – Hawkesbury-Nepean River (No 2 – 1997)

Sydney Regional Environmental Plan 20 – Hawkesbury-Nepean River No 2 – 1997 (SREP 20) is intended to protect the environment of the Hawkesbury-Nepean River system by ensuring that the impacts of future land uses are considered in a regional context.

The proposed SAWT development is located near Badgerys Creek. A wetland area occurs north of the SAWT Site where Badgerys Creek joins South Creek. The wetland drains into South Creek and eventually the Hawkesbury River. Accordingly, the implications for the proposed SAWT development include:

- Referral for comment to Local Government Authorities adjacent to and downstream of the SAWT Site
- Consideration of impact in terms of the entire water catchment
- Requirement for rehabilitation if sand, gravel or soil are taken from the riverine corridor
- Consideration of any impact on the water table and acid sulfate soils
- The need to quantify and assess likely impacts of any predicted increase in pollutant loads on receiving waters

- On-site disposal of sewage effluent, if it could have an effect on water quality or ground water
- An Erosion and Sediment Control Plan in place at commencement of development
- That the facility is sited to ensure bank stability
- Stormwater run-off is not significantly increased as a result of the development
- Aboriginal sites and places of significance are protected
- Structures located where the clearing and disturbance of land can be avoided
- Ability of the SAWT Site to sustain the proposed SAWT development over a long period of time
- The proposal should be complementary to the “vision, goal, key principles and action plan of the metropolitan strategy”.

These requirements have been considered by the proponent. The proposed SAWT development has been designed having regard to SREP 20 for the Hawkesbury-Nepean River.

3.4 Local

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. Under LEP 201, the SAWT Site is classified as ‘Zone No. 1(a) (Rural “A” Zone-General).

3.5 Previous Council Approvals

Penrith Council approved a DA in 1990 for “the Continued Operation and Backfilling of Badgerys Creek Quarry.” The Badgerys Creek Quarry (Quarry) had operated for a reasonably long period of time and it appeared to the then owner and operator of the Quarry that the most effective method of rehabilitation was the backfilling of the subsequent void with non-putrescible waste materials. The Quarry was approved subject to 79 compliance conditions and continued to operate in accordance with the consent and its conditions.

In November 2001, PCC approved a modification to the 1990 Consent in order to allow the operator (SITA) to comply with its current Licence from the EPA. That Licence required compliance with the Landfill Environmental Management Plan (LEMP), which had been approved by the EPA.

3.6 Rezoning

The Elizabeth Drive landfill has operated, and continues to operate in accordance with the Consent granted in 1990 and the modifications approved in 2001. PCC has not had cause to enforce compliance with any of the conditions contained in the Consent. Relevant planning instruments, with the exception of LEP 201, are satisfied by the proposed SAWT development. After extended exhibition and negotiation SITA has lodged an application with PCC to permit a Waste Treatment Facility as a permissible use on the Site. PCC has prepared and exhibited a draft LEP amendment for the rezoning.

PCC is currently preparing a report in accordance with Section 69 of the Environmental Planning and Assessment Act. This report will be lodged with the Minister for Planning for final approval.

4.0 Consultation

4.1 Consultation Undertaken to Date

Consultation has been undertaken over the course of the development of the project. Consultation was previously undertaken as part of the requirement to complete an Environmental Impact Statement (EIS) under Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) as the SAWT facility was a designated development under Schedule 3 of the Environmental Planning and Assessment Regulation 2000. Further, the project is currently the subject of a rezoning application to enable the project to proceed. This consultation has been undertaken by PCC as part of the rezoning procedures and has involved input by SITA relating to the proposed development.

4.2 Consultation Requirements

The project is now a development of a kind described in State Environmental Planning Policy (Major Projects) 2005 and therefore Part 3A of the EP&A Act now applies. Environmental Assessment (EA) Requirements have been subsequently issued by the NSW DoP on 28 December 2005. As extracted from the EA Requirements, “an **appropriate** and **justified** level of consultation” must be undertaken **during** the preparation of the EA with stakeholders including statutory authorities and the local community.

4.3 Consultation Aim

The EA Requirements stipulates that the results of consultation must be incorporated into the EA, with the aim to “clearly indicate issues raised by stakeholders during consultation, and how those matters have been addressed in the EA”.

4.4 Consultation Objectives

In line with the consultation requirements and aim, objectives for proposed consultations with stakeholders will be to:

- Be open and transparent
- Involve government agencies, neighbours and the community in the proposed project
- Provide understandable information
- Allow stakeholders to express their perception of the key issues prior to detailed study
- Incorporate issues raised into the EA preparation.

4.5 Public Consultation

As part of the rezoning process, PCC has based its decision to proceed with rezoning based on an early draft of the EIS as an alternative to commissioning a Local Environmental Study (LES). This proposal has been publicly advertised as part of a rezoning proposal submitted to PCC and the early draft of the EA (formerly EIS) was available upon request to PCC.

Public display consisted of a 30 day review period of both the rezoning proposal and the early draft EA (formerly EIS) on 15 June 2005. No public comment was received on these documents as a result of this display period.

The rezoning application was placed on exhibition for a second time by PCC on 20 December 2005 to 24 January 2006. Three comments were received as a result of this exhibition. These were from adjoining landowners, primarily relating to the potential for concurrently rezoning their properties in the same manner as SITA. All issues raised by these adjoining landowners were discussed in detail at two PCC organised meetings on 2 February 2006 and a meeting on site on 18 February 2006.

Landfill neighbours have also been consulted as a separate exercise and SITA has met with the neighbours during March 2005 and twice in the first quarter of 2006. This includes a meeting in February 2006 at Penrith Council during which all neighbours and their advisors were present to discuss the proposal. A detailed meeting and site visit with neighbours followed two weeks later.

4.6 Regulatory Authority Consultation

Early briefing meetings were held by SITA in early 2004, with the RTA (29/01/2004), Department of Environment and Heritage (DEH) – Environment Protection Authority (EPA) (30/01/2004) and DIPNR (06/02/2004). At these briefing meetings SITA tabled a technical briefing paper and related documents including proposed layout diagrams.

A Planning Focus Workshop was held on 27 April 2004 at Penrith Civic Centre and was attended by representatives of PCC, DEC - Sustainability Programs, DEC-EPA, DIPNR, RTA, SITA, Maunsell and Mullane Planning Consultants. SITA presented the features of the SAWT proposal as a response to the WARR Strategy 2003, which sets a target for municipal, commercial and industrial waste diversion from landfilling.

Director-General's Requirements for the content of this EA were issued under Part 4 of the EP&A Act by DoP on 18 March 2004 and subsequently re-issued in accordance with part 3A of the EP&A on 28 December 2005.

This proposed development has been discussed on 16 occasions with various approval authorities, namely, NSW DEC, RTA, Department of Infrastructure, Planning and Natural Resources (DIPNR) and Penrith Council during 2004 and 2005, including presentations to four meetings of PCC.

As a result of the public exhibition period from the rezoning performed in June 2005, government authority comments were received from Blue Mountains City Council, Hawkesbury City Council, and Rural Fire Services. These comments were taken into account by PCC during their decision making process for the re-zoning.

Most recently, the proposal was discussed with Department of Planning on 2 May 2006. Since that meeting further consultation has been sought with RTA, NSW DEC, Sydney Catchment Authority (SCA) and Department of Natural Resources. SCA has responded with a statement that it has no further interest in the project. RTA have also responded with a statement that it currently has no specific issues with the proposal and that it will review and comment as necessary at the time of the submission of the project's EA.

4.7 Further Consultation

As part of the EA and development application process, it is intended to perform further consultation. It is expected that a Consultation Plan is to be developed, and that future discussions with stakeholders are to be noted, recorded and any relevant issues raised taken into account during preparation of the EA.

SITA understand that under Part 3A of the EP&A act that further public display and necessary consultation via advertisements in local/Sydney newspapers, display of the EA on the DoP website, etc becomes the responsibility of DoP, however Consultation in accordance with the DGRs will be carried out by SITA.

5.0 Preliminary Environmental Assessment

5.1 Overview

The following environmental issues have been identified as being relevant for the Environmental Assessment (EA) of the SAWT project:

- Noise
- Dust
- Odour
- Visual amenity
- Leachate management
- Water quality.

5.2 Main Environmental Issues

5.2.1 Noise

Noise generated from the proposed SAWT facility has the potential to affect residents on neighbouring properties. It is expected that this impact will be minimal due to the distances these residents are from the proposed facility. A detailed noise assessment will be carried out as part of the EA for the SAWT proposal. This noise assessment is intended to cover all environmental noise aspects related to construction, operation and traffic noise impacts due to the proposed SAWT development. The noise assessment will identify specific noise mitigation measures to be implemented as necessary to reduce impacts from noise relating to the facility.

The following noise mitigation measures have already been incorporated into the preliminary design of the SAWT facility: building layout, building shielding; enclosure of noise generating processes; building insulation; and orientation of plant away from sensitive receptors.

5.2.2 Dust

The proposed SAWT facility has the potential to generate and export dust. Sources of dust during the operation of the facility include: compost on the maturation pads; mobile plant operation on material handling areas; and transportation and movement of waste and compost. Dust modelling for the SAWT facility will be carried out as part of the EA.

Examples of dust mitigation measures that have already been incorporated into the preliminary design of the SAWT facility include: all of the SAWT processes (except for maturation and green waste shredding) will be carried out in fully enclosed buildings; locating compost maturation stockpiles away from sensitive receptors; regular cleaning of sealed access road; minimise traffic movements on exposed areas; and dust suppression by water cart.

5.2.3 Odour

The proposed SAWT facility has the potential to generate odour from the acceptance and handling of the waste. Odour dispersion modelling will be carried out as part of the EA for the SAWT proposal to ensure the design meets the requirements of the EPA and accordingly odour is controlled within the facility.

Examples of the odour mitigation measures that have already been incorporated into the design of the SAWT facility include: all of the SAWT processes (except for maturation and green waste shredding) will be carried out in fully enclosed buildings under negative air pressure; closing roller doors; and operation of biofilters to capture odours before passing air to the outside.

5.2.4 Visual amenity

The main potential visual impacts of the SAWT facility (once constructed) will be the height of the main building, digester and gas flare.

The Elizabeth Drive Site is situated in a relatively open landscape at the peak of a gently raised ridgeline bounded to the east and west by the South Creek and Badgerys Creek valleys respectively. The temporary stockpile to the south-east of the proposed SAWT Site is the current dominant feature in the local topography.

To address the visibility of the SAWT facility, in context with the surrounding landscape, buildings will be designed to sit at an elevation as low as practicable on the SAWT Site, without compromising flood protection or drainage design.

Remnant native vegetation, especially along the creek lines, helps screen much of the SAWT Site. Visibility of the existing operation from Elizabeth Drive is screened in most places by either the existing bund situated along the southern boundary of the Elizabeth Drive Site and by roadside vegetation.

As part of the EA, a visual impact assessment will be carried out to assess the potential visual impact of the SAWT facility on the surrounding landscape.

5.2.5 Leachate management

For the purpose of this EA, leachate is water that has come into contact with matured compost from the Maturation Pads or temporary compost product stockpiles. Any such leachate generated at the SAWT facility will be collected, retained and reused on site. As the composting process is a net user of water, leachate will preferentially be used in the process over other forms of water, such as stormwater. The reuse of leachate and stormwater runoff instead of potable water proposed for the facility will avoid potentially adverse impacts of leachate discharge and reduce consumption of potable water during operation of the SAWT facility.

Leachate generated inside the buildings will either be temporarily stored in closed containers and reused in the composting process. Leachate generated from rainfall will be treated through bioretention, temporarily stored in a sedimentation pond and reused on-site. In the event of prolonged wet weather periods, any excess stormwater generated leachate will be pumped and re-injected into the landfill or used for irrigation under controlled conditions.

5.2.6 Water quality

The SAWT will be a net user of water. Collection, treatment, reuse and controlled discharge of leachate and stormwater runoff from the proposed SAWT facility are important for the overall water management on the SAWT Site (i.e. maximising reuse) and to ensure that potential impacts on the surrounding environment are minimised.

Badgerys Creek forms the western property boundary of the Elizabeth Drive Site and is the receiving environment for stormwater runoff. The proposed SAWT facility is located adjacent to Badgerys Creek and a vegetative buffer of at least 50m is maintained along much of the creek's length. This buffer provides substantial amelioration of any pollution entrained in stormwater runoff as well as water flow features.

Sedimentation dams will be used to store and control water quality of stormwater prior to any discharge from site as necessary.

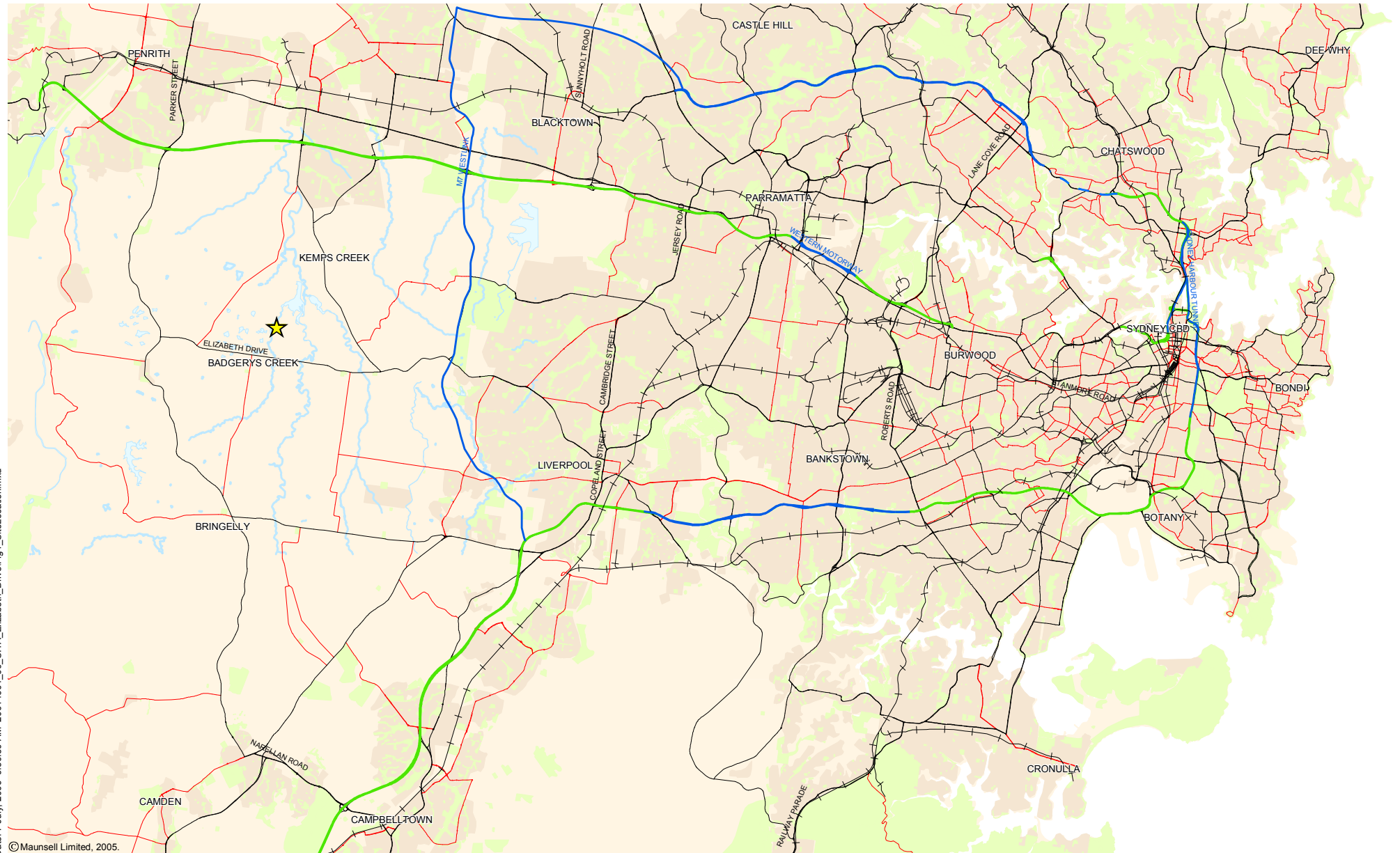
Water quality monitoring has been regularly conducted in designated locations along Badgerys Creek as part of the environmental monitoring program specified in the existing landfill licence.

The proposed preferential reuse of process and product-related leachate and stormwater runoff, to the extent that is practicable, will prevent the discharge of untreated water from the SAWT facility.

The use of stormwater for the SAWT processes will result in the benefit of reduced dam levels, which reduces the risk of dam overflow in the event of a storm.

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- ★ SITA Waste Facility
- Main Roads
- Waterbodies
- Railways
- Freeways
- Parks
- Major Local Roads
- Motorways
- Built Up Area

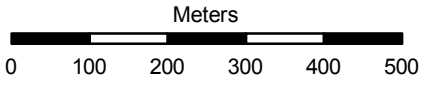
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Advanced Waste Treatment Facility
Elizabeth Drive
FIGURE 1: Elizabeth Drive Site Location

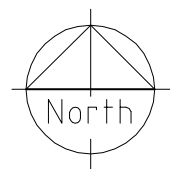


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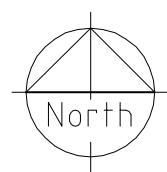


Advanced Waste Treatment Facility
Elizabeth Drive
FIGURE 2: Elizabeth Drive Landfill Site

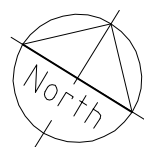
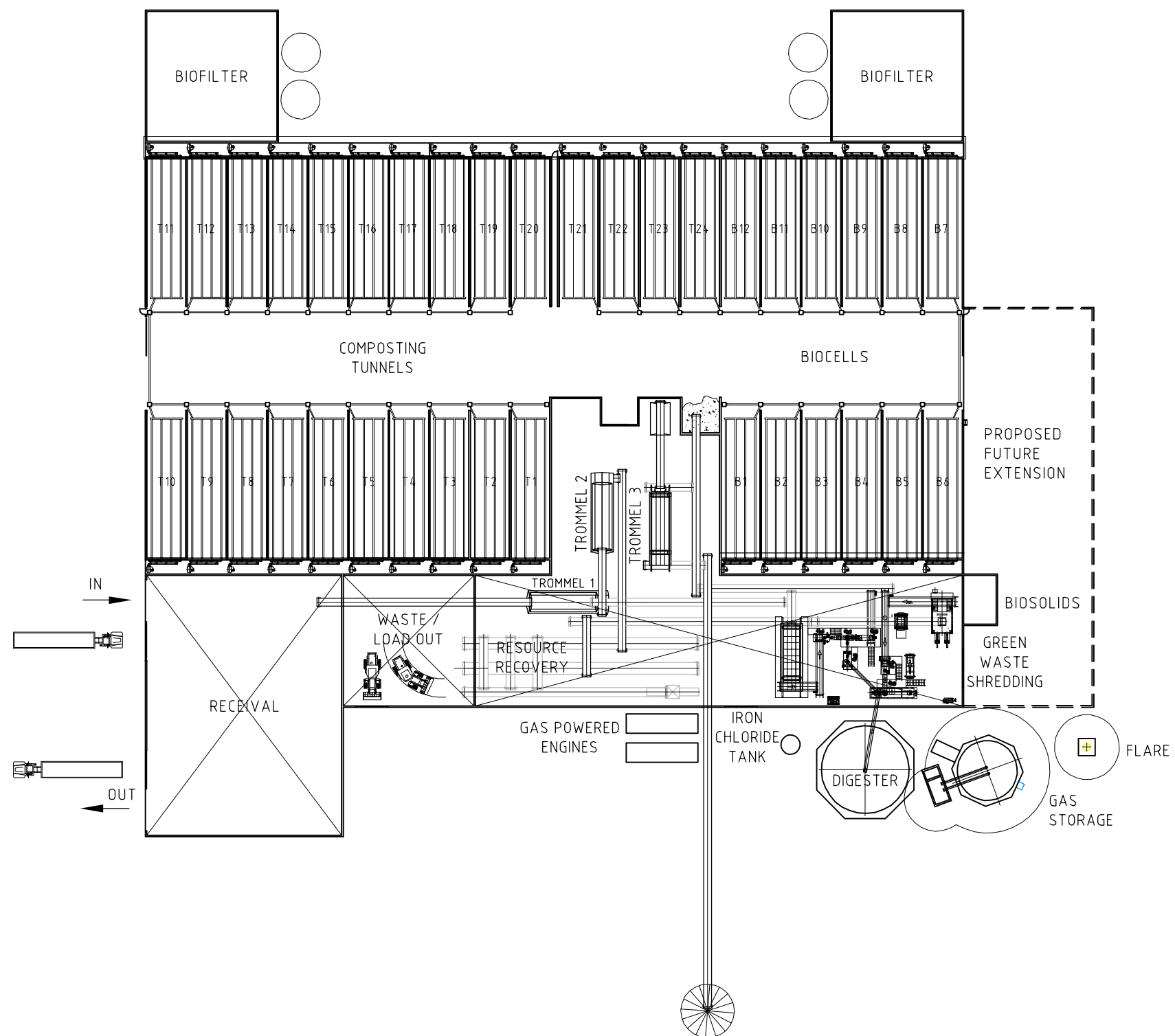
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Appendix A SAWT Project Summary

Project	SITA Advanced Waste Treatment (SAWT)
Objectives	Divert waste away from landfill, recover resource materials from waste and generate compost material for market.
Major elements	<p>Staged development of the SAWT facility to manage a throughput of up to 120,000tpa of solid waste (consisting of municipal solid, commercial and industrial and green waste), and up to 14,400tpa of biosolids.</p> <p>The SAWT facility will consist of:</p> <ul style="list-style-type: none"> a) A main building, housing: <ul style="list-style-type: none"> - Waste receival - Resource recovery - Composting tunnels - Biocells - Waste load out b) Anaerobic digestion, including: <ul style="list-style-type: none"> • Digester • Gas storage tank • Gas flare c) Maturation pads for the compost d) Final Refining building e) Electricity generation and supply to the grid. <p>Additional elements to aid operations and environmental protection:</p> <ul style="list-style-type: none"> • Sedimentation ponds and diversion drains • Leachate pond and diversion drains • Landscaping to provide visual and noise screening of the facility • Construction of access roads and weighbridge • Control room, staff amenities and car parking • Security fencing.
Ancillary works	All necessary infrastructure and proposed works are on site.
Outline of construction methods	<p>All main components will be assembled and installed on site.</p> <p>Construction will primarily consist of earthworks related to preparation of civil infrastructure, installation of concrete foundations, installation of appropriate machinery, and construction of buildings.</p> <p>Other earthworks will be related to the construction of the leachate and stormwater dams, the construction of a bund above the 1:100 floodline (which will carry part of the access road), and the construction of an area for use as maturation pads.</p>

Outline of operations	<p>The facility will be available for waste to be accepted and product collected between 6am and 6pm Monday-Friday, between 8am and 5pm on Saturdays, and between 8am and 4pm on Sundays and Public Holidays.</p> <p>The resource recovery and sorting operation will have the flexibility to operate continuously from 7am Monday to 11pm Friday, from 8am to 5pm Saturdays and from 8am to 4pm on Sundays and Bank Holidays during periods of high demand, after downtime, or in order to manage or assist with other extraordinary circumstances. However, operating times will ordinarily be between 7am and 11pm Monday-Friday.</p> <p>The process by which material is deposited into, and removed from, the composting tunnels, the biocells and the digester will be during resource recovery and sorting operation hours. Work on the maturation area will take place during waste acceptance hours.</p>
Location	Elizabeth Drive Landfill Site. The SAWT facility will occupy approximately 5ha of the whole 84ha Site, which is on Elizabeth Drive, 5km west of the township of Kemps Creek.
Timeframe	Operation is required by October 2007. A construction period of 12 months is required.
Operating Period	It is proposed that the SAWT facility will operate for a period in excess of twenty years.