

Upgrade of Kemps Creek SAWT Facility

EIS Scoping Document



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Prepared for
SITA Australia

Prepared by

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Quality Information

Document Upgrade of Kemps Creek SAWT Facility

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Project Terms

Term/acronym	Explanation
ARRT	Advanced Resource Recovery Technology
AWT	Advanced Waste Treatment
(The) Development	An expansion of the existing SAWT facility
DGRs	Director General's Requirements
EIS	Environmental Impact Statement
EP&A Act	Environmental Planning and Assessment Act 1979
EPA	Environment Protection Authority
Existing SAWT facility	Existing SITA advanced waste treatment facility
FGO	Food and garden organics
(The) landfill	Elizabeth Drive Landfill (not inclusive of the SAWT facility)
LEP	Local Environmental Plan
LGA	Local government area
Maturation Pads	Compost maturation includes curing partially composted material outdoors on pads made from compacted sandstone and clay, called maturation pads. The maturation pads include a leachate control system.
MSW	Municipal solid waste
OEH	Office of Environment and Heritage
PCC	Penrith City Council
SEPP	State Environmental Planning Policy
SITA	SITA Australia
Site	The area within the boundary of the existing SAWT facility, which is the location of the proposed Development
Study area	The area within a 5km radius of the proposed Development
tpa	Tonnes per annum

Executive Summary

AECOM Australia Pty Ltd has been engaged by SITA Australia to prepare a planning approval application for a proposed expansion of an existing advanced waste treatment (AWT) facility at its Kemps Creek landfill site in western Sydney. The planning application will be submitted under Division 4.1, Part 4 of the *Environmental Planning and Assessment Act 1979*.

This EIS Scoping Document has been prepared to support a request for Director-General's Requirements. This document presents a preliminary assessment of the potential impacts of the proposed works on the surrounding environment, particularly with regard to air quality, traffic, noise, and water quality. The proposed upgrade of the facility (the Development) would result in an increase in capacity for receiving waste from 134,400 tonnes per annum of waste to 220,000 tonnes per annum.

Site Context

The Development would be located on SITA's existing 84 hectare Elizabeth Drive Landfill (the landfill), predominantly within the footprint of the existing advanced waste treatment facility site (the Site). The Site is located within the Penrith LGA, five kilometres west of Kemps Creek and approximately forty one kilometres west of the Sydney Central Business District. The landfill and existing advanced waste treatment facility sites comprise Lot 1, Deposited Plan 542395 and Lot 740, Deposited Plan 810111. The landfill is licensed by the Environment Protection Authority, a division of the NSW Office of Environment and Heritage.

The Development

The key changes to operations resulting from the Development would be:

- An increase in capacity, including an increase in vehicle movements to and from the Site.
- Modifications to the current layout of operations on the Site.
- Extended hours for internal operations to seven days per week.

The upgrade would include a new municipal solid waste pre-treatment line, a new maturation hall, reconfiguring existing biofilters, introducing new biofilters and enclosing leachate tanks.

The strategic justification for the Development is based on the need with respect to the regional waste framework and customer demand, and the environmental benefits that would result from the Development. Essentially there are two key areas supporting the strategic justification for the Development:

- Need with respect to the regional waste framework and customer demand.
- Environmental benefits that would result from the Development.

The Development would not immediately accept the maximum proposed capacity but would accept a gradually increasing volume of material over time as new contracts become available.

Key issues

Based on a preliminary environmental risk assessment, the key issues arising from the Development that will be assessed in the Environmental Impact Statement are:

- Odour emissions during operation of the facility.
- Operational noise.
- Increased traffic during construction and operation.
- Water quality.

Air Quality

The construction and operation of the Development has the potential to degrade air quality in the vicinity of the facility as a result of airborne dust and odour emissions.

Wind direction in the study area is predominantly from the southwest and west-southwest with smaller occurrences of winds from all other directions. Land use activities that are potential sources of dust and odour in the vicinity of the facility include a golf course, piggeries, the landfill, and the existing advanced waste treatment facility. The closest residence to the Development is approximately 1km to the east-southeast of the Site.

Activities that have the potential to result in airborne dust during the construction phase will include earthmoving during site preparation, excavation of stormwater ponds and building foundations, and handling and stockpiling of excavated material.

The proposed Development has been designed to minimise the generation of dust during operation by incorporating a number of improvements to the existing facility, including replacing the existing municipal solid waste (MSW) maturation pad with an enclosed maturation hall. In addition the proposed facility has been designed to reduce odour emissions in comparison with the existing facility. These design elements include the enclosing of the composting maturation stage, storing only matured and refined MSW derived products outside, quarantined for quality control. All MSW processing stages will occur indoors with air ducted to biofilters, and runoff from waste areas and composting activities being collected in enclosed tanks rather than open leachate ponds.

An assessment of the potential air quality impacts resulting from the Development will be undertaken as part of the Environmental Impact Statement. The assessment will be undertaken in accordance with *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (DEC, 2005) and the *Assessment and Management of Odour from Stationary Sources* guideline. The assessment will consider issues relating to both dust and odour.

Noise

The existing background noise levels in the study area are affected by both traffic along neighbouring main roads and existing land use. Potential sources of noise from land uses in the vicinity of the Development result from rural residential properties, farming and cropping and some commercial enterprises. In terms of traffic, recent studies have shown that the morning peak hour is the highest contributor to the ambient noise levels.

There are three potential noise considerations relevant to the Development: construction noise, operational noise and traffic noise. Construction of the Development would generate a temporary increase in noise levels as a result of earthworks associated with site preparation, concreting, structure erection and fitout works, in addition to the increased flow of construction traffic and vehicles delivering materials to and from the Site.

Once the facility is operational noise impacts are likely to be associated with the longer operating hours and expansion of capacity. It is also expected that there would be an increase in traffic flows with additional truck deliveries to the Development.

An assessment of noise and vibration for the Development will be undertaken for the EIS in accordance with government policy and guidance, including the *Interim Construction Noise Guidelines* (DECC 2009), the *NSW Industrial Noise Policy* (EPA, 2000), and the *NSW Road Noise Policy* (DECCW 2011).

Traffic

Access to the Site is via a public road off Elizabeth Drive, between Mamre Road and Luddenham Road. Elizabeth Drive is a major east-west arterial connection between the Northern Road and Westlink M7, which provides local access to many rural and industrial developments along its length.

The construction stage of the Development is likely to result in a short-term and temporary spike in traffic flows of construction machinery, private vehicles and delivery vehicles. Heavy vehicles are likely to make multiple visits to the Site, many of which would occur during the peak hours. Limited public transport provision in the surrounding area would result in a significant portion of construction staff travelling in private vehicles to the Site.

The proposed expanded capacity of the facility is expected to result in an increase in the daily traffic volume to the Site. Deliveries of municipal solid waste would increase incrementally until peak capacity is reached. The morning peak period is likely to put the most pressure on traffic infrastructure, with most light vehicles and approximately half the heavy vehicles expected to enter the Site during this period.

A Traffic Impact Assessment will be conducted as part of the Environmental Impact Statement and will consider both construction and operational traffic implications as a result of the Development.

Water Quality

Surface water management on the advanced waste treatment site is of significance to SITA. Badgerys Creek, which is the receiving environment for surface water runoff from the existing facility, is located to the west of the Site. Water quality monitoring is conducted regularly in designated locations along Badgerys Creek as part of the environmental monitoring program for the existing landfill.

Construction of the Development, particularly during site preparation and excavation activities, has the potential to result in erosion of disturbed areas. This would potentially result in an increased sediment load in runoff generated from the Site. Sediment laden runoff discharging to Badgerys Creek would have a detrimental impact on the waterway. There is also the potential for other pollutants such as oil and grease from construction equipment to contaminate runoff.

Proposed improvements to the surface water and leachate management systems of the facility in comparison with the existing will be investigated as part of the Environmental Impact Statement. A site water balance will be prepared which identifies the source of all water collected or stored on the Site, including rainfall and stormwater, and identifies all water use on the Site including discharges. The Site water balance will be used to ensure that the design of the improved leachate collection system and the surface water management system are adequate.

Groundwater recharge at the Site is minimal due to surface clays, buildings and hardstand areas, which form a capping layer and restrict rainfall infiltration in those areas.

The water quality assessment will consider both surface water and groundwater, giving consideration to both the construction and operational phases of the Development.

1.0 Introduction

SITA Australia (SITA) is seeking approval for the expansion of an existing Advanced Waste Treatment facility (the existing AWT facility) at its Kemps Creek landfill (the landfill) site in western Sydney. The existing AWT facility site (referred to herein as the Site) is located approximately 5km west of Kemps Creek and 41km west of the Sydney CBD. The proposed expansion of the facility (referred to herein as the Development) would result in an increased capacity of the existing AWT facility from 134,400 tonnes per annum (tpa) to 220,000 tpa. The increase will be progressive as contracts become available.

This Environmental Impact Statement (EIS) Scoping Document has been prepared by AECOM on behalf of SITA Australia to provide an overview of the Development and an outline of associated potential environmental impacts. This document is being submitted under Division 4.1, Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to support a request for Director-General's Requirements (DGRs) that will guide the preparation of the EIS for the Development.

1.1 Background and Context

The landfill is currently operating under an existing development consent granted by Penrith City Council (PCC) under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) on 22nd October 1990 (DA number 451/89) for the continued operation and backfilling of Badgerys Creek Quarry. The landfill has and continues to operate independently of the existing AWT facility under the original approval granted in 1990 and subsequently modified with respect to final landform in several stages.

Major Project Approval (MP 06-0185) under Part 3A of the EP&A Act was granted in April 2008 for the construction of an AWT facility on approximately eight hectares of the landfill site. The intended maximum capacity of the facility was 120,000 tpa of municipal solid, commercial and industrial waste, and organic waste, with an additional 14,400 tpa of biosolids from sewage treatment plants.

Subsequent to receiving planning approval in 2008 SITA was awarded two contracts from Liverpool City Council and PCC for the treatment of waste at the proposed facility. Both contracts commenced in the financial year 2008-2009 once the facility became operational. Both of the contracts were originally for a period of ten years and it was expected that the amount of waste from the councils to be treated at the facility would increase to approximately 110,000 tpa over the ten year contract period.

Contrary to the initial prediction, the existing SAWT facility is currently operating at full capacity of 120,000 tpa of MSW and source separated organics. This is comprised of source separated food and garden organics and MSW from a range of councils including Penrith, Campbelltown, Camden, Wollondilly, Wingecarribee, Liverpool, and City of Sydney.

SITA initially proposed to submit an application to modify Project Approval 06-0185 for the increase in capacity, minor amended design elements, an extension to operating hours and inclusion of an additional maturation area that is directly linked to the existing AWT facility. However subsequent to liaison with Department of Planning and Infrastructure, SITA is now proposing to seek approval for the Development as State Significant Development under Division 4.1, Part 4 of the EP&A Act. Prior to making this decision an application for modification was prepared including a range of studies to assess the proposed modifications to the existing approval. In particular studies were undertaken to address the following key issues:

- Air quality (odour and dust impacts).
- Traffic generation.
- Noise.
- Surface water management including the leachate system and water mass balance.

Although the Development outlined within this Scoping Document differs somewhat to the proposed amendments documented in the application for modification report, some of the findings of the recent studies that were undertaken will still be relevant. Study methodology and findings that are considered to be relevant have been used to inform the content of this Scoping Document and reference to these studies has been noted where appropriate.

1.2 Development Overview

The Development would comprise an expansion of the existing AWT facility including the following key changes:

- An increase in capacity from 134,400 tpa to 220,000 tpa.
- An increase in operating hours for indoor operations to 24 hours per day, seven days a week.
- Changes to the management of material including internal maturation.
- Enclosed leachate tanks for recirculation of leachate into the system.

1.3 Development Need and Justification

There are two key areas supporting the strategic justification for the Development:

- Need with respect to the regional waste framework and customer demand.
- Environmental benefits that would result from the Development.

There is, and has been for some time, intense pressure on the waste framework in NSW. Ageing landfill infrastructure, no new landfills and increasing levels of waste means that the pressure on those existing sites is increasing. The pressure is two-fold – not only are sites facing pressure to increase their annual intake, they are also facing the possibility of reaching their capacity earlier than anticipated.

In addition, the Australian and State Governments have a variety of policies in place aimed at minimising waste and improving management, which has shaped an increased need for more sustainable waste processing technology and management from both the municipal and commercial sectors. These sectors are under increasing pressure to meet State Waste Targets identified through the NSW *Waste Avoidance and Resource Recovery Strategy 2003*, increasing recovery and use of secondary resources and subsequent landfill avoidance. Ever-increasing levels of material are required to be diverted away from landfill (66 percent for the municipal sector) in order to achieve policy outcomes for sustainable environmental management, as well as to ease pressure on ageing landfill infrastructure.

The existing AWT facility currently diverts approximately 50 percent of its intake from landfill. This diversion is anticipated to rise even further with the increase in community awareness of management of household waste streams and potential changes to refuse derived fuel regulations. The current performance represents a significant diversion of material away from landfill and a capacity increase could help to meet further local, regional and state objectives.

The existing AWT facility is currently operating at full capacity of 120,000 tpa of mixed waste and source separated organics, as shown in Table 1 below.

Table 1 Waste Source and Quantities

Council	Quantity	Waste Type
Penrith City Council	31,000 tpa	Source Separated Food and Garden Organics
Campbelltown, Camden, Wollondilly, Wingecarribee Councils	32,000 tpa	Organic material derived from MSW transferred from the Ecolibrium Facility for biological processing at SAWT
Liverpool and Penrith Council contracts	46,000 tpa	MSW
City of Sydney	11,000 tpa	MSW

The existing AWT facility and Eastern Creek UR-3R facility are both currently operating at 100 percent capacity. Furthermore, through the acquisition of WSN Environmental Solutions, SITA has secured processing contracts to receive an additional 80,000 tonnes of MSW through Bankstown and Parramatta Councils.

Following a technical review in 2011, SITA has made the decision to cease processing biological waste at the recently acquired Spring Farm ARRT facility in south-west Sydney. As a long-term solution, organic material is mechanically separated from MSW and transported to the AWT facility for biological processing.

The delay in development of an advanced resource recovery facility at Lucas Heights coupled with a loss of processing capacity in south-west Sydney has placed additional pressure on technically proven facilities such as the AWT facility at Kemps Creek. The demand for waste transferring from SITA's other sites, as well as increasing demand from municipal councils, means that a far greater capacity is required than that of the AWT at Kemps Creek. A capacity of 220,000 tpa would accommodate the projected demand.

The Development would also provide improved environmental outcomes. Following an extended commissioning phase, SITA would apply a number of technology advances to improve the overall environmental performance of the existing AWT facility. The proposed design includes an enclosed water treatment system and enclosed processing areas for treating MSW. This effectively removes the two major sources of potential odour associated with the operation of the existing facility.

1.4 Alternatives

Site

The primary initial design consideration for the Development was whether an expansion of the existing facility or development of an entirely new facility was the most prudent option. Economically, expanding the existing facility and leveraging the existing technology was deemed to be the preferred option. The Development is not a standalone facility. The existing facility acts as a feeder point to the Development. Environmentally, the concentration of effects from having one large rather than two small facilities is preferable, limiting the need for additional infrastructure. In addition, the scope for potential investment in new technology is greater. With environmental and cost considerations as the primary drivers, expansion of the existing facility was selected.

Technology

A number of technological alternatives were assessed before final determinations were made. These included different:

- Maturation/composting systems.
- Odour control technologies.
- Leachate management systems.

Maturation/Composting Systems

Various different composting/maturation systems were investigated for the facility expansion. All the options considered were fully enclosed for odour and process control reasons and would complement the initial tunnel composting process in the existing tunnels:

- **Tunnels.** Large format tunnels, similar to the existing facility tunnels, with a revised air-floor and recirculated air design. Compost material management would take place by front end loader.
- **Troughs.** Turned compost troughs, as used in the SITA Neerabup facility. Compost is loaded into 40 metre long troughs with concrete side walls, and is regularly turned and moved down the trough toward the discharge end by automated mobile machinery. The compost is aerated from the trough base by forced air fan systems.
- **Large format compost "reactors".** Composting occurs in a large (approximately 90 metres x 20 metres x two units) open topped concrete vessel, with negative aeration i.e. air is extracted through the compost toward the base of the vessel. The compost is regularly turned by automated systems, and migrates down the reactors towards the discharge end. The turning systems also control compost flow to the refining systems. The entire maturation system is enclosed in a steel framed building, with specialised elements for machinery support. Two different technology vendors were evaluated (TaimWeser and SCT), both of which have multiple facility waste management examples internationally.

All options considered allowed for four weeks maturation in addition to the initial 1.5 weeks tunnel composting (existing tunnels), then are followed by immediate refining of the matured compost. New large format tunnels were rejected as an option as no scale effect can be gained.

The SCT system, one of the reactor options, was the final maturation technology that was chosen. This option was preferable due to the smaller footprint required and the robustness of the machinery compared to the trough system. The SCT system, already used at the Eastern Creek UR-3R waste management facility, was selected for commercial reasons, with the near continuous flow design a major factor.

Odour Control Technologies

Three alternatives for control of odour from the enclosed maturation system were considered:

- Open biofilters: systems similar to the current facility design, using two metre deep shredded wood biofilters, with multiple units for redundancy and media change reasons. The biofilter size is increasing, but not linear with the throughput capacity of the facility due to the re-use of the air from pre-treatment in the SCT maturation system, the partial condensation of odorous components in the leachate (negative aeration) and the reduced odour generation pre-composted materials coming from the tunnels.
- Enclosed biofilters: the same biofilter system as above, but enclosed on all sides with the treated air exhausted through 12 – 15 metre tall stacks by forced ventilation. The use of stacks will enhance odour dispersion. Each biofilter segment would have an individual stack, to maintain the redundancy of the system. This enclosure increases both the capital and operating cost of the odour control systems.
- Wet scrubbers: a series of wet scrubbers, including chemical additions to the wash water. Wet scrubber systems have been used and tested for odour control of waste composting facilities, and may provide a better alternative long term.

The **enclosed biofilter** option has been chosen, due to the known performance characteristics of biofilters, plus the enhanced dispersion ability of the stacks. SITA will continue to investigate the possibility of wet scrubber series, and may choose this option over enclosed biofilters at a later date if increased odour control is proven.

Leachate Management Systems

The entire maturation stage would be carried out enclosed, and all leachate and condensate water from the system would be captured, stored in enclosed tanks, then reused in the new system. Water treatment equipment would be used to manage solids. The maturation system chosen has a high water demand, requiring all the leachate and condensate water generated, plus an additional clean water amount required during the later stages of composting.

After refining, compost would be stored on a purpose built pad for the final quality control before being shipped to market. The pad with an associated stormwater management system would be included in the overall facility revision. Transfer of water between storage ponds and to the maturation enclosed water storage system would be included in the design.

The stormwater generated from the enclosed maturation facility would be stored in an adjacent pond, and used for both biofilter irrigation and clean water supply to the final stages of compost maturation.

1.5 The Proponent

The proponent of the Development is SITA Australia. SITA is owned under a joint-venture, by parent companies Suez Environnement, a major global provider of infrastructure services in the areas of energy, water and waste; and Sembcorp Industries, a leading utilities and marine group.

SITA Australia currently owns and operates a number of facilities nationally including:

- The Advanced Resource Recovery Technology (ARRT) facility in Port Stephens.
- The ARRT facility in Cairns.
- The BioWise composting facility in Perth as a joint venture with the Water Corporation of Western Australia.
- Waste recycling and transfer stations in Sydney, Melbourne and Perth.
- Neerabup ARRT facility in Western Australia.
- Spring Farm ARRT facility in Western Sydney.
- Engineered landfills in Sydney, Melbourne and Perth.
- Numerous waste collection facilities in all mainland states serving over 800,000 households and more than 30,000 commercial/industrial clients.

In February 2011, SITA acquired the State Owned Corporation, WSN Environmental Solutions. This acquisition has expanded SITA's presence in NSW, with the addition of seven transfer stations, two putrescible landfills and resource recovery facilities for recycling, organics and MSW. SITA also has exclusive access to the Eastern Creek UR-3R Facility, capable of processing 220,000 tpa.

1.6 Capital Investment Value

The estimated capital investment value of the Development is \$49,000,000. This value includes:

- Earthworks and site preparation.
- Construction of new buildings including new pre-treatment line.
- New maturation hall.
- Refining machinery.
- Reconfiguration of biofilters.
- Construction of new internal leachate management system (including enclosed leachate tanks).
- Construction of new stormwater control system.

An estimated total of up to 75 jobs during construction and 20 full-time equivalent operational jobs would be generated as a result of the Development.

2.0 Development Description

2.1 Study Area

The study area is defined as the area within a 5km radius of the Development. The study area is approximately 41km west of the Sydney CBD and comprises agricultural, research and rural residential properties on gently undulating topography intersected by South Creek, Ropes Creek and Kemps Creek (refer to Figure 2). The regional context can be seen in Figure 1.

Badgerys Creek, which forms part of the Hawkesbury-Lower Nepean River System, and the McGarvie-Smith Farm, owned by the University of Sydney, bound the Site to the west. To the north and adjacent to the Site is "Fleurs", rural land owned by the University of Sydney and beyond this is the Twin Creek Golf and Country Club and residential estate. To the east of the Site are two residential holdings and South Creek. There is an area of rural and residential land to the south of the Site and further south is Elizabeth Drive. In the wider study area the Sydney suburb of Mount Vernon is located to the east of the Site, an Australian Native Landscapes site is located to the South across Elizabeth Drive, and Erskine Business Park to the North.

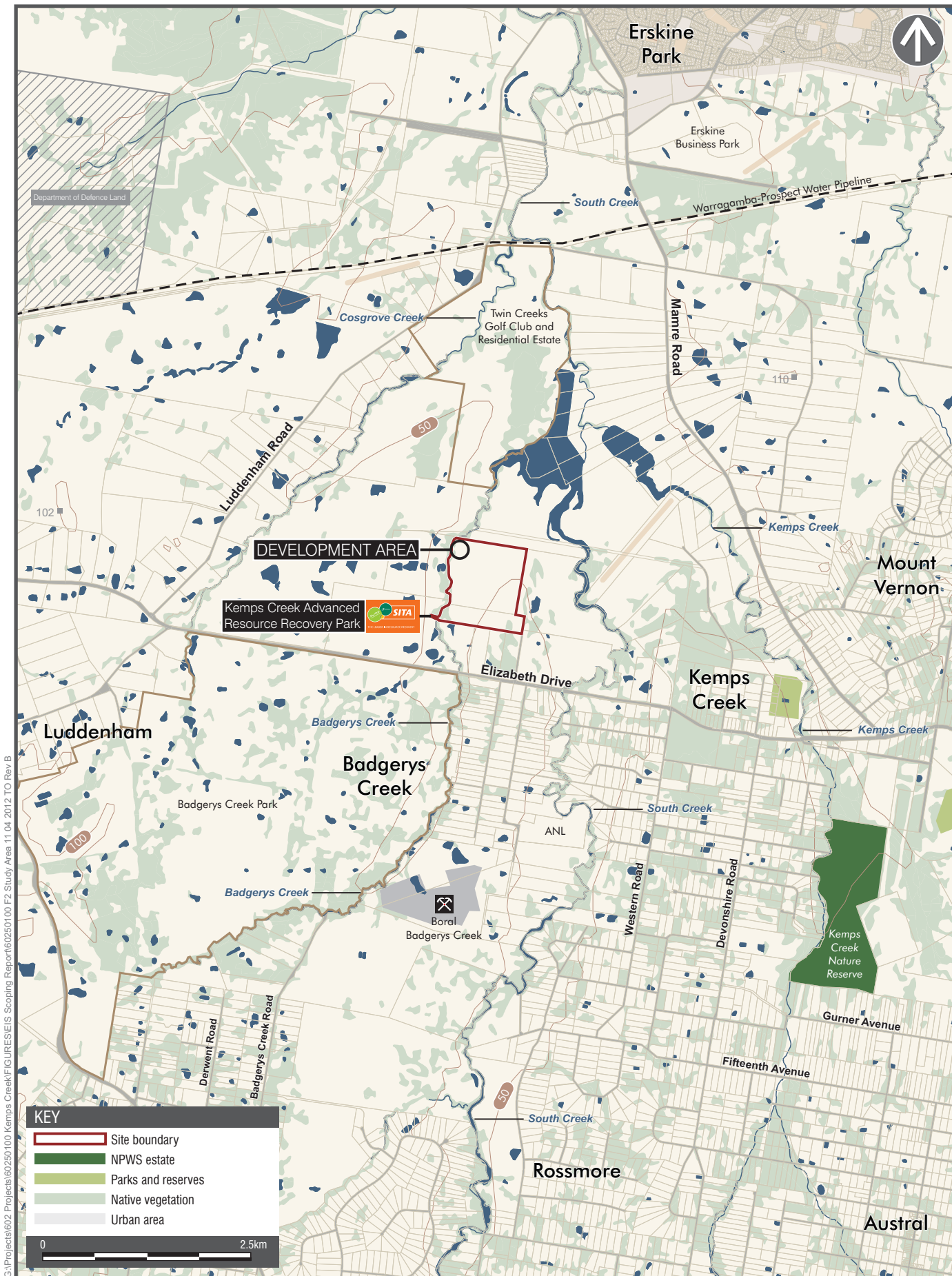
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REGIONAL CONTEXT
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Kemps Creek, New South Wales

FIGURE 1



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2.2 Existing landfill, AWT Facility and Operations

The Development would be located on SITA's existing 84 ha Kemps Creek landfill site (herein referred to as the landfill and landfill site) in the Penrith LGA, on which the existing AWT facility is currently operating. The Development would comprise an upgrade of the exiting AWT facility only and would not involve alterations to the landfill (refer to Figure 4). The Development would be located on Part Lot 740, DP 810111.

The landfill site slopes gently from south-east to north-west and becomes predominantly flat over the north-west portion. It has been extensively cleared and is positioned with good buffers to nearby sensitive receptors such as residences. The landfill continues to be subject to extensive quarrying, particularly for surface clays. As a consequence, the ground surface has been substantially altered. Some light-firing clays remain at the eastern section. Except for the area adjacent to Badgerys Creek, most of the landfill, including the Site has been cleared of vegetation.

Much of the landfill site is currently used as a solid waste landfill, which is owned by SITA and was operational prior to the construction of the existing AWT facility (since 1992). The landfill is licensed by the NSW Environment Protection Authority (EPA) under the *Protection of the Environment Operations Act 1997* to receive General Solid Waste (Non-putrescible), Restricted Waste, Asbestos Waste, Waste Tyres and inert residual materials from the AWT process.

AWT

MSW and source separated Food and Garden Organics (FGO) are delivered and processed at the existing AWT facility, which commenced operation in mid 2009. The AWT process employs a combination of mechanical separation, manual sorting, and biological composting technologies. This process is classified as a Mechanical Biological Treatment (MBT) system, and comprises three key stages (refer to Figure 3):

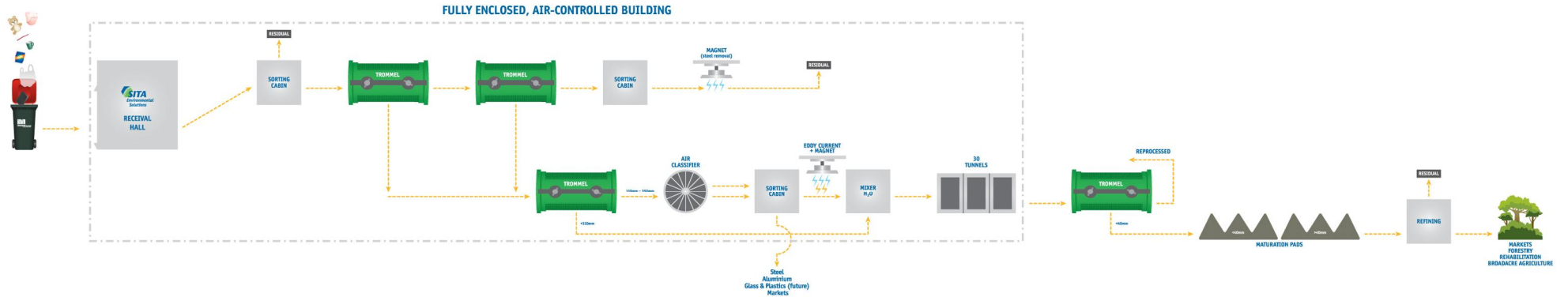
- Recovering organics and recyclables through a mechanical resource recovery process.
- Aerobic composting of source-separated organic waste within a fully enclosed environment.
- On site preparation of compost to remove any residual contaminants for sale to market.

The facility can process up to 120,000 tpa of municipal solid, commercial and industrial and organic waste, plus 14,400 tpa of biosolids from sewage treatment plants. The detailed operations the AWT facility undertakes include:

- Receiving mixed solid waste as well as source separated organic waste.
- Mechanically separating putrescible and non-putrescible fractions of the waste.
- Recovering recyclables from the waste using manual sorting and other techniques.
- Composting the putrescible fraction of the waste.
- Maturing the composted MSW and the FGO on separate open air maturation pads (refer to Figure 4).
- Refining the compost, producing a range of compost products and mulch products.
- Disposing of the non-putrescible residual material at the adjoining landfill

The existing 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 landfill. The facility consists of (refer to Figure 4):

- An access road from the main gate and weighbridge to the AWT facility and surrounds.
- Entry/exit control, including weighing out.
- Main building including an administration annexe.
- Biofilters and fan room, housed in an adjacent structure.
- Graded external paved areas for vehicle marshalling and for compost maturation pads.
- Ponds for leachate and stormwater management.
- Ancillary infrastructure such as fire fighting water storage tanks and electrical substations.



Process Flow Diagram
FIGURE 3



2.3 Development Description

The Development would be capable of processing up to 220,000 tpa of MSW which may include source separated organics as well as biosolids. Capacity would be gradually increased to reach full capacity of approximately 220,000 tpa. Based on existing contracts it is anticipated that feedstock would come from the sources outlined in Table 2.

Table 2 Likely Waste Sources

Waste source	Quantity
Source separated organics	35,000 tpa
MSW (via transfer trailers or direct delivered)	140,000 tpa
Organic material from MSW (processed at an alternative facility, e.g. Spring Farm Advanced Resource Recovery Facility)	45,000 tpa

A comparison of the existing AWT facility operations and those of the proposed Development is presented in Table 3.

Table 3 Comparison of Existing and Proposed Operations

	Existing SAWT Facility	Proposed Development
Capacity	120,000 tpa of MSW or source separated organics.	220,000 tpa MSW which may include separated organic material. Biosolids may be received on an occasional basis.
Limitations on Input	14,400 tpa of biosolids.	Specific allocation of tonnes for biosolids to be removed.
Operating hours	Outdoor Operations Monday to Friday - 6am to 10pm (with limited vehicle movements) Indoor Operations Monday to Saturday – 7am to 11pm	Outdoor Operations Monday to Friday - 6am to 10pm (with no restriction on vehicle movements) Indoor Operations 24 hours per day, seven days per week. .
Management of material	Material processed through an internal pre treatment line, prior to being transferred to enclosed composting in tunnels. Material is shifted to an external maturation pad for final decomposition, which then undergoes a final refining. Material is stockpiled on composting pads prior to market distribution.	- MSW Material would be processed through a new pre treatment line, using the existing footprint. - The material would be fed into 30 existing tunnels for 11 days to undergo accelerated decomposition. - Material would be transferred through an automatic feed to a new maturation hall for around 4 to 6 weeks. The hall would use technology to automatically turn the material to assure aerobic conditions. - Material would be refined and sent to market. Compost quality control and storage of material going to market require stockpiling on pads. Building size is estimated to be 72m x 120m x 10m (in height). Biofilters would be fully enclosed, 20m x 45m, and using a 15m stack. Existing biofilters may be reconfigured to stacks to improve odour profile. Additional refining line for processing of material would be included. Refining machinery would be placed adjacent to the maturation hall in a semi

	Existing SAWT Facility	Proposed Development
		enclosed building with curtain sides. External bins would be in place for storing refined material for movement to market or to a storage pad on the adjacent landfill.
Internal leachate management system	Use of external leachate dams.	Enclosed leachate tanks for recirculation into the system.
Traffic Access		Provision of dedicated right hand turn lane on the Site access road

Details regarding each of the key components of the Development are outlined below:

Resource recovery – The existing resource recovery system, which involves the mechanical and manual separation of putrescible and non-putrescible fractions to recover recyclable materials and organics from the mixed waste feedstock would continue to operate. To accommodate the additional input tonnes, equipment upgrades would be made to support an increased throughput of 35 tonne per hour. A redundancy of equipment would also be factored in to improve efficiencies.

Tunnel composting – The existing composting section of the AWT building houses 30 composting tunnels and associated process control equipment. The tunnels would be upgraded to increase air flow in order to facilitate material being composted more rapidly to a more advanced state and to adjust moisture to optimal levels. Increased air power within the composting tunnels would ensure that moisture in the tunnels is eradicated by evaporation.

Maturation and maturation pads – A new, fully enclosed MSW air-floor maturation hall would be constructed immediately east of the AWT, where the existing MSW maturation pad is located. Within this second stage facility it is proposed that an automated turning system would be installed, constantly turning the composted material from one end of the facility to another to prevent anaerobic conditions. This is a similar system to that adopted at the Eastern Creek UR-3R Facility maturation hall and ensures the material achieves accelerated maturity through aerobic means.

Refining Building and process – A new Refining Building is proposed adjacent to the enclosed maturation hall. Similar to the existing Refining Building the new structure would include a metal clad, steel portal frame with a concrete floor, however it would have a semi-enclosed design, with curtain sides. This is to minimise potential fire hazard. The Refining Building would also house specialised compost refining equipment with external bunkers for process residual material.

Biofilter – Two new biofilters have been proposed to the east of the new maturation hall. These biofilters would be located on the area that currently houses the leachate storage pond. The biofilters would treat air from the maturation hall. They have been sized to allow as large an air volume as possible and fitted with a 15 metre stack for dispersion.

Storage Ponds – The leachate storage pond to the east of the existing MSW maturation pad would no longer be required for the management of leachate, which would be captured and stored via leachate storage tanks. The existing rectangular shaped leachate storage pond would be decommissioned and removed to make provision for installation of the new biofilters. The triangular shaped leachate overflow pond (located to the east of the rectangular leachate storage pond), would be converted to a clean storm-water only pond.

Receival Capacity – The modified AWT facility would be capable of processing up to 220,000 tpa of municipal solid waste which may include source separated organics as well as biosolids on an occasional basis. This capacity would increase over a period of time.

3.0 Statutory Planning Considerations

3.1 Permissibility

The Development would be located on land zoned RU 2 – Rural Landscape under the *Penrith Local Environmental Plan 2010* (Penrith LEP 2010). Development for the purpose of waste management facilities is an innominate prohibited use in the zone.

Notwithstanding, clause 43 of the *Penrith Local Environmental Plan No 201* (Penrith Rural Lands LEP) provides that development for the purpose of an advance waste treatment facility is permissible with development consent on the site (Lot 1 DP 542395 and Lot 740 DP 810111).

3.2 State Significant Development

The Development is considered to be State Significant Development (SSD) as it falls under clause 23, Schedule 1 (waste and resource management facilities) of the *State Environmental Planning Policy (State and Regional Development) 2011* (State and Regional Development SEPP) as it is *development for the purpose of resource recovery or recycling facilities that handle more than 100,000 tonnes per year of waste*.

Accordingly, the Development would be assessed and determined as SSD by the Minister for Planning and Infrastructure, or the Minister's delegate, under Division 4.1, Part 4 of the EP&A Act.

3.3 Environmental Planning Instruments

Environmental planning instruments that contain provisions that may be relevant to the Development and will be considered in the EIS include the following:

- *State Environmental Planning Policy No. 55 – Remediation of Land.*
- *Penrith Local Environmental Plan 2010.*
- *Penrith Local Environmental Plan No. 201 – Rural Lands.*

State Environmental Planning Policy No. 55 - Remediation of Land (SEPP 55)

State Environmental Planning Policy No. 55 – Remediation of Land (SEPP 55) requires a consent authority, when assessing and determining a development application, to consider whether the land the subject of the development is contaminated and if so, whether the land requires remediation before the intended land use can proceed.

There are no known contaminated sites at the site of the proposed Development. The potential for contaminated land to be encountered, based on historical land use, will be considered as part of the EIS and appropriate mitigation measures identified where required.

Penrith Local Environmental Plan 2010

The Development traverses land zoned as RU2 – Rural Landscape under the Penrith LEP 2010. As a result the Development is considered as prohibited development under the Penrith Local Environmental Plan (LEP) 2010 where it lies within land zoned as RU2 – Rural Landscape. However, as discussed above, consent may still be granted as the Development is permissible with consent under clause 43 of LEP (Rural Lands).

In designing the Development and preparing the EIS, the objectives of this zone and permissible uses will be considered to minimise potential conflicts between the Development and the land use zoning.

Penrith LEP (Rural Lands)

In determining a development application for an advanced waste treatment facility on the Site, the consent authority must be satisfied of the following:

- (3)
 - (a) *the development is not likely to result in a significant impact on the environment in the event of a flood of a 1 percent annual exceedance probability flood level or greater, and*
 - (b) *the quality and quantity of stormwater discharged from the development will assist in improving aquatic ecosystem health, through the use of appropriate riparian buffer zones and adoption of "best practice" water sensitive designs.*

In addition council is required to consider the potential impact of the development on Badgery's Creek.

3.4 Existing Approvals

In conjunction with the Development application, the proponent would be seeking consequential amendments to the General Administrative Conditions for the existing AWT facility. This would be sought as a concurrent administrative modification. The amendments will be outlined in detail in the EIS, and will be relevant to the broad areas of:

- Limits on input.
- Vehicle movements on site.
- Sunset clause.

3.5 Strategic Land Use Planning

The Metropolitan Plan for Sydney 2036 (Metropolitan Plan) that was launched in late 2010 provides a long-term planning framework to sustainably manage Sydney's growth to 2036. The vision for metropolitan Sydney is to create a city that is sustainable, affordable, liveable, equitable and networked.

Tackling climate change and protecting the environment is one of the key strategic directions of the Metropolitan Plan and a key component of this is diverting waste streams from landfill. A specific objective within this key strategic direction is to minimise and recycle waste. The AWT facility would be consistent with this objective through slowing the rate of waste generation and reducing the loss of resources from the economy. A key initiative in achieving this objective is the NSW Waste Avoidance and Resource Recovery Strategy which sets targets for diverting waste from landfill. AWT facilities, composting facilities and materials recovery facilities are discussed within the objective as effective ways to reduce waste and the importance of adequate investment in resource recovery infrastructure is also noted. In addition a commitment is made within the objective from both the Office of Environment and Heritage (formerly the Department of Environment and Climate Change) and the Department of Planning and Infrastructure (formerly Department of Planning) to continue working with the private sector to promote resource recovery facilities and sustainable waste infrastructure.

Also under the strategic direction for tackling climate change and protecting the natural environment are specific actions relating to developing planning rules to include climate change adaptation into renewal plans for existing centres. The intent for renewing existing centres is to encourage a compact city that aims to preserve our natural environmental and minimise our ecological footprint. This action recognises that a growing population is intrinsically linked to an increasing ecological footprint and in turn the generation of increased waste. Diversion of waste from landfill through an expansion of the existing AWT facility at Kemps Creek would assist in reducing the requirement for land to be dedicated to the establishment of new landfills in the future.

The Metropolitan Plan was developed to meet targets set out in the NSW State Plan that was released in 2006 and updated in 2010. The State Plan target for waste is to meet the 2014 NSW waste recycling targets (as specified in the NSW Waste Avoidance and Resource Recovery Strategy). The NSW Government has recently released an updated plan, NSW 2021, which is a 10 year plan for the growth of NSW. The waste target outlined in NSW 2021 remains the same as that in the now superseded State Plan. A review of the State Plan targets was commissioned in 2010 to check the status of being able to achieve the targets by 2014. Findings of the review concluded that government, community and industry acceptance of the need for waste minimisation and resource recovery are integral in being able to achieve the targets.

The proposed Development would make an important contribution towards the objectives outlined above and the sustainable growth of Sydney for the next few decades and beyond.

3.6 Other NSW Environmental Approvals

Sections 89J and 89K of the EP&A Act list separate environmental approvals that will not be required for the Development or are to be consistently applied with the planning approval granted for the Development. Notwithstanding, the potential impact associated with matters addressed by each of the approvals will still need to be considered regardless of the need for the approval. Environmental approvals that may be applicable to the Development and a brief discussion of their relevance, as well as the need (or not) to obtain a separate approval, is outlined in Table 4.

Other environmental approvals that may be required in addition to those referred to under sections 89J and 89K of the EP&A Act will be considered as part of the EIS and outlined where relevant to the assessment of the Development.

Table 4 Environmental Approvals Applicable to the Development.

Approval	Applicability to the Development	Comment
Approvals not required under section 89J		
An approval under Part 4 or an excavation permit under section 139 of the <i>Heritage Act 1977</i>	Unlikely	Unlikely based on previous disturbance of the Site.
An Aboriginal heritage impact permit under section 90 of the <i>National Parks and Wildlife Act 1974</i>	Unlikely	Unlikely based on previous disturbance of the Site.
An authorisation to clear native vegetation or State protected land under section 12 of the <i>Native Vegetation Act 2003</i>	Unlikely	A single Roughbark Angophora may be affected by proposed development.
A bushfire safety authority under section 100B of the <i>Rural Fires Act 1997</i>	Unlikely	Unlikely as the proposed use of the land would not include development for a purpose referred to in section 10B(1) i.e. a subdivision that could be used for residential purposes or a special fire protection purpose.
An approval under Part 4 or an excavation permit under section 139 of the <i>Heritage Act 1977</i>	Unlikely	Unlikely based on previous disturbance of the Site.
Approvals required to be issued consistently under section 89K		
An environment protection licence under Chapter 3 of the <i>Protection of the Environment Operations Act 1997</i>	Likely	The Development would fall within Section 34 Resource Recovery of Schedule 1 of the <i>Protection of the Environment Operations Act 1997</i> and be declared to be a scheduled activity as the Development would involve having on site at any one time more than 2,500 tonnes or 2,500 cubic metres, whichever is the lesser, of waste. Accordingly, an EPL would be required.
A consent under section 138 of the <i>Roads Act 1993</i>	Unlikely	The Development would not cross any public road.

3.7 Commonwealth Environmental Approvals

3.7.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) requires approval from the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities where an action has or would have a significant impact on a matter of National Environmental Significance (NES).

A search of the EPBC Protected Matters database has been conducted for the study area of the Development to identify potential matters of NES that may trigger the need for a referral of the action to the Department of Sustainability, Environment, Water, Population and Communities. The results of the database search are presented in Table 5.

It is unlikely that the Development would impact upon any matters of NES. Although a number of listed threatened species, or their habitat have previously been recorded within the study area, it is unlikely that the Development would result in any impact on these species as the Development would be contained within the existing footprint of the landfill. It is highly unlikely that an EPBC Act referral would need to be made.

Table 5 Matters of National Environmental Significance

Matters of NES	Matters within the immediate vicinity of the Development
World heritage properties	Nil The closest world heritage properties to the study area are the Greater Blue Mountains, which is located approximately 15km west, and the Australian Convict Sites which is a property made up of 11 sites across Sydney. The closest Australian Convict Site to the Development is the Old Government House and Domain located at Parramatta a distance of more than 20km north east of the Site.
National heritage places	Nil The closest national heritage place to the Development is the Old Government House and Government Domain at Parramatta, which is located more than 20km north west of the Site.
Wetlands of international importance	Nil The closest wetland of international importance to the Development is Towra Point Nature Reserve, which adjoins Kurnell Peninsula and is located more than 20km to the south east of the Site.
Commonwealth listed threatened species and ecological communities	One listed threatened ecological community has been recorded in the study area – Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest. Twenty-four listed threatened species have either been recorded, or their potential habitat has been recorded, within the study area.
Commonwealth listed migratory species	Fourteen listed migratory species have either been recorded, or their potential habitat has been recorded, within the study area.
Nuclear action	The Development would not result in any nuclear action nor would any nuclear activity need to be undertaken.
Great Barrier Reef Marine Park	The Development would not result in any impact on the Great Barrier Reef Marine Park
Commonwealth marine areas	Nil The Development is located approximately 40km from the coastline and would not result in impact on any Commonwealth marine areas proximate to the study area.

4.0 Agency and Stakeholder Consultation

4.1 Previous Consultation

Consultation with Government agencies and community members was undertaken in 2011 as part of the modification application (that has not proceeded). The agencies and community members that were consulted and key issues raised are outlined below.

Table 6 Issues Raised by Departments During Previous Consultation

Department	Issues raised
Department of Planning and Infrastructure	- Amended design elements from the original approved project. - Noise and odour effects. - Interaction of the maturation area on the landfill and the need for a modification application to PCC.
Penrith City Council (PCC)	- Cumulative traffic impacts particularly the movement of material onto the landfill. - Noise, odour and dust impacts. - Offset impacts on the riparian zone.
Office of Environment and Heritage	- Odour effects. - Leachate system and water mass balance. - Noise effects.

Community Consultation

In 2011, SITA actively consulted with key stakeholders including PCC, neighbouring properties and members of the local community. This consultation involved:

- Issuing 200 invitations to attend a community information session to residents and businesses in close proximity to the facility. Voluntary community information session at SITA's Kemps Creek landfill site on the evening of the 15th September, attended by seven members of the local community. Verbal comments at the session noted concerns over odour and noise. Individual meetings with neighbouring property holders to communicate SITA's plans for the precinct.
- Briefings with PCC executive and elected Councillors.
- Briefing the local elected state Members of Parliament.

Local residents, neighbouring properties and local businesses were invited to submit a feedback form to SITA so comments could be incorporated into the modification report. No feedback forms were received.

4.2 Ongoing Community Consultation

Kemps Creek Community Reference Group

As part of their ongoing commitment to engagement with the local community, SITA coordinates a community forum called the Kemps Creek Community Reference Group. The group is made up of members of the community who are interested in SITA's facilities and operations, PCC and the EPA. The group was first established in September 2011, and last met on 9th February 2012. Meetings occur every six weeks to two months. The issues that were raised at the most recent reference group meeting include:

- Transparency around operations.
- Odour fence and its efficacy.
- Odour complaints and monitoring.
- Noise concerns (particularly truck beeping and movement of bins).
- Double glazing of surrounding residents houses.

4.3 Consultation Approach for the Development

Consultation activities will be undertaken as part of the EIS with NSW Government agencies, relevant stakeholders (including proximate property owners who may be affected during the construction phase) and the Kemps Creek Community Reference Group throughout the preparation of the EIS. The consultation process will provide all stakeholders with an opportunity to raise any concerns they have with the Development, and an opportunity for any issues to be considered in the final design.

4.3.1 Regulatory Authority Consultation

Agency consultation will be undertaken with:

- Department of Planning and Infrastructure
- Environment Protection Authority
- Penrith City Council.

A Planning Focus Meeting is likely to be held prior to the issuing of Director General's Requirements. The Planning Focus meeting is likely to be attended by representatives from DP&I, EPA, PCC, SITA and AECOM.

4.3.2 Public Consultation

SITA would continue to conduct community consultation through the Kemps Creek Community Reference Group. In addition, as part of the EIS process a Community and Stakeholder Engagement Plan will be developed, which will incorporate the following consultation:

- A Community Information Session for any stakeholders, including proximate residents and businesses.
- Individual meetings with proximate property holders, Council and businesses to inform them of the Development plan.
- Briefings with PCC and Members of State Parliament.

5.0 Approach to Identification of Key Issues

5.1 Environmental risk screening

A preliminary environmental risk screening for the Development has been conducted and has included consideration of the likelihood of an environmental impact occurring and the consequence of that impact should it not be mitigated. The screening levels applied to the likelihood and consequence of each relevant environmental impact is presented in Table 7.

The likelihood and consequence of each impact have been combined through the significance screening matrix (Table 8) to establish the likely significance of the issue for the environmental assessment of the Development.

Table 7 Environmental Risk Screening Levels

Likelihood of impact		Consequence of impact	
High (probable)	There is likely to be an environmental effect.	High (major)	International or national implications, major adverse environmental change, serious or long term cumulative impacts, mitigation measures not available.
Medium (possible)	There is potential for an environmental effect.	Medium (moderate)	Regional implications, moderate adverse environmental change, modest or medium-term cumulative impacts, non-standard mitigation measures required.
Low (improbable)	There is little potential for an environmental effect.	Low (minor)	Localised implications, imperceptible or short-term cumulative impacts, standard mitigation measures appropriate or none required.

Table 8 Significance Matrix

Likelihood of effect	Consequence of effect		
	Minor	Moderate	Major
Improbable	Low significance	Low significance	Medium significance
Possible	Low significance	Medium significance	High significance
Probable	Medium significance	High significance	High significance

5.2 Identification of environmental issues

Using the methods outlined in Section 5.1 the key environmental issues associated with the proposed Development have been identified and are summarised in Table 9. This process has allowed for the prioritisation of environmental issues and the level of detail necessary for the EIS. In all cases, reasonable and feasible mitigation measures will be developed to lower the risk rating of the issues identified, and these will be detailed in the EIS.

Table 9 Significance Rating of Environmental issues Associated with the Development

Issue	Unmitigated environmental risk screening		
	Likelihood	Consequence	Significance
Air Quality			
Dust generated during construction	Possible	Minor	Low
Dust generated by delivery trucks during operation	Possible	Minor	Low
Odour emissions from operation	Probable	Moderate	High
Noise and Vibration			
Construction noise – from earthworks, structure erection works and fitout works	Possible	Moderate	Medium
Operational noise – outdoor operations, mobile plants, refining areas	Possible	Minor	Low
Noise from increased traffic flows	Probable	Minor	Medium
Traffic and Transportation			
Increased traffic during construction	Probable	Moderate	High
Increased traffic during operation	Possible	Moderate	Medium
Water Quality			
Degradation of water quality in Badgerys creek	Improbable	Moderate	Low
Infiltration of leachate to groundwater resources	Improbable	Moderate	Low
Visual Amenity			
Construction-related visual amenity impacts	Possible	Minor	Low
Impacts related to visual amenity of pump station and associated infrastructure	Possible	Minor	Low
Ecology			
Damage to Roughbark Angophora on northern border of Site during construction	Possible	Minor	Low
Socio-economic			
Job creation during construction and operation	Probable	Positive impact	Low (Positive impact)
Waste			
Waste generated during construction	Probable	Minor	Low
Fire and Explosion			
Materials overheating during maturation or refining processes	Possible	Moderate	Medium

5.2.1 Key Issues

Based on the preliminary risk screening, key environmental issues that may be associated with the Development are:

- Odour issues during operation.
- Construction noise.
- Increased traffic during construction.
- Increased traffic during operation.
- Fire and explosion.

6.0 Key Environmental Issues

6.1 Air Quality

6.1.1 Existing Environment

The Bureau of Meteorology (BOM) operates a meteorological station at Badgerys Creek, approximately 4 km southwest of the Site. Data recorded at the Badgerys Creek station show that wind direction in the study area is predominantly from the southwest with smaller occurrences of winds from all other directions. Meteorological data is also collected from a meteorological station located on the landfill site. Data collected from this station correlates well with the data collected from the Badgerys Creek station, showing that winds are predominately from the southwest and west-southwest. The data also shows that winds generally occur from all directions, including a proportion of winds from the north, particularly during spring.

Land use in the study area is predominantly rural residential. Other land uses in the study area include a golf course, piggeries, poultry farms, ANL composting facility, brick making facility, the landfill, and the existing AWT facility. These land uses are potential sources of dust and odour emissions. The Site is surrounded by the existing landfill and rural residential properties, the closest of which is located 750 metres to the east-southeast of the Site.

The EPA air quality monitoring stations that are considered most representative of air quality in the study area are Liverpool and Bringelly. Particulate matter (PM₁₀) monitoring data collected at these stations in 2010 show that the maximum monitored 24-hour average PM₁₀ concentrations remained within the 50 ug/m³ EPA criterion (PAEHolmes, 2011). SITA conducts regular dust monitoring on the landfill, for which the average monitored dust deposition over all of the background gauges for the years 2000-2010 was 3.39 g/m²/month. The EPA criterion for dust deposition is 4 g/m²/month, which is an annual average of the monthly dust deposition rates.

The majority of operations at the existing AWT facility are conducted indoors and therefore the facility is not a significant source of dust in the study area. Sources of dust from the existing AWT facility include trucks hauling waste to the existing AWT facility, trucks moving materials between processing locations and taking product offsite, and trucks hauling material from the existing AWT facility to landfill. The potential for dust to be generated from these activities is currently managed by ensuring stockpile moisture is maintained, roads are kept clean and buildings are kept closed.

The EPA air quality monitoring stations do not collect odour emission data. Odour measurements are regularly taken at the Site for compliance purposes and odour intensity values are derived for all existing sources on the Site. Based on previous Site odour monitoring, the most significant odour sources from the existing AWT facility, in terms of odour intensity, are the leachate ponds, the FGO maturation pad and the MSW compost.

6.1.2 Issues for Consideration

Activities undertaken during the construction phase that have the potential to result in dust emissions include the following:

- Earthmoving during site preparation.
- Excavation of stormwater ponds and building foundations.
- Handling and stockpiling of excavated material.

A number of improvements are proposed to the existing AWT facility as part of the Development that would aim to reduce dust emissions compared with the existing operations. For example, it is proposed to replace the existing maturation pad with an enclosed maturation hall which would eliminate the potential for dust emissions from this source. Truck movements to and from the Site, and within the Site, would continue to be a potential source of dust at the facility. The success of existing controls for dust emissions from truck movements would be considered as part of the EIS.

There are also a number of improvements proposed to the existing facility as part of the Development that would aim to reduce odour emissions. The most significant of which are as follows:

- All stages of MSW maturation would be undertaken in an enclosed hall with air ducted biofilters with the exception of the final stage of maturation.
- Runoff from waste areas and composting activities would be collected and treated in enclosed tanks rather than open leachate ponds. The product of this would then be recycled into the composting process.

- Reconfiguration of the existing biofilters to stacks.

6.1.3 Method of Assessment

An assessment of the potential air quality impacts of the Development will be undertaken as part of the EIS. The assessment will be undertaken in accordance with *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (DEC, 2005) and *Assessment and Management of Odour from Stationary Sources* guideline. The assessment will:

- Determine background air quality at numerous locations around the Site.
- Identify sources of dust and odour emissions associated with the Development.
- Conduct dispersion modelling for the proposed Development using the CALPUFF dispersion model.
- Identify appropriate air quality management strategies and mitigation measures.
- Identify any residual risk.

6.2 Noise and vibration

6.2.1 Existing Environment

The study area is characterised by rural residential properties, farming and cropping, and commercial enterprises to the south across Elizabeth Drive (refer to Figure 2). Background noise levels in the study area are affected by both traffic and existing land use. Previous recent studies have revealed that during the morning shoulder period background noise values are higher than daytime levels as a result of morning peak hour traffic noise.

Vehicles entering the existing AWT facility currently enter and leave the Site via an access road from Elizabeth Drive. Heavy vehicle movements comprise trucks moving from the existing AWT facility to and from the landfill, as well as to and from the Site. In addition to delivery vehicles operating during waste acceptance hours, PCC parks garbage trucks overnight on the Site near the maintenance workshop in the southeast corner of the landfill. The garbage trucks depart between 4.30am and 5.30am Monday to Friday and at 3.00am on public holidays.

The existing AWT facility includes a receival, resource recovery, pre-refining, refining and composting area predominantly contained in one large building. Sources of noise from the existing facility include front end loaders shifting waste in the receival area, conveyor belts, various mechanical waste processing facilities, air drawn through tunnels, and biofilter fans. Planning approval conditions for the existing AWT facility limit indoor activities to 7am to 11pm Monday to Saturday.

Sources of operational noise associated with the existing facility are influenced by a combination of the facility itself and the neighbouring landfill. Based on results from previous relevant studies, landfill operations are likely to dominate at all receivers during daytime (landfill activities are not undertaken at night time).

6.2.2 Issues for Consideration

There are three potential noise considerations relevant to the Development: construction noise, operational noise and traffic noise.

In addition to the increased flow of construction traffic to and from the Site, construction noise for the Development would generate a temporary increase in noise levels as a result of earthworks associated with site preparation, concreting works, structure erection and fitout works. The likely equipment that is expected to be operational during construction includes:

- 30-tonne excavators
- dump trucks
- compactors
- pad foot rollers
- cranes
- graders.

The Development includes an increase of the current internal operating hours and expansion of capacity (as noted in Section 2.3). It is important to note that as the extended operating hours will be exclusively indoors, these noise considerations are expected to be manageable within acceptable limits. On-going and potentially increased sources of operational noise would include:

- mobile plant associated with food and garden organics (FGO) maturation area
- FGO refining area
- fans associated with biological processing and maturation areas
- receival area
- resource recovery area
- pre-refining areas
- refining areas
- mobile plant associated with biological processing and maturation areas
- PCC garbage trucks entering and leaving the Site.

Vehicle movements are likely to increase as a result of the Development with additional truck deliveries to the AWT facility, trucks taking processed/recovered material offsite, trucks taking processed material to the landfill and trucks taking processed material to the FGO maturation pad.

6.2.3 Method of Assessment

An assessment of noise and vibration for the Development will be undertaken in accordance with government policy and guidance, including the *Interim Construction Noise Guidelines* (DECC 2009), the *NSW Industrial Noise Policy* (EPA, 2000), and the *NSW Road Noise Policy* (DECCW 2011). The methodology proposed for the assessment is as follows:

Construction

- Determine sound power levels of all acoustically significant construction equipment, including site preparation works.
- Assess and model construction noise impacts.
- Identify noise management strategies and mitigation measures.
- Identify any residual risk.

Operation

- Determine existing background noise by monitoring at numerous locations around the Site.
- Determine sound power levels of all acoustically significant plant equipment to be operated during operation, taking into consideration variations in operations at different times of day.
- Conduct an existing and predicted increase traffic noise assessment of Elizabeth Drive.
- Assess various operational scenarios, potentially including: morning, daytime, evening, early night, and night.
- Model the likely variations in meteorological conditions, traffic conditions, plant operating hours (outdoor operations ceasing after 8pm etc) and cumulative impacts from landfill.
- Analyse noise data with reference to local weather and cumulative impacts, taking into consideration existing noise levels from the landfill site and traffic.
- Identify noise management strategies and mitigation measures.
- Identify any residual risk.

6.3 Traffic

6.3.1 Existing Environment

Access to the Site is via an existing access road off Elizabeth Drive, between Mamre Road and Luddenham Road in Western Sydney. Elizabeth Drive is a major east-west arterial connection between the Northern Road and Westlink M7 and provides local access to many rural and industrial developments along its length. Traffic flow gradually increases from the west to the east as it approaches the Westlink M7. Several RMS permanent vehicle counting stations are located on the road network surrounding the existing facility, and data from these will be utilised as part of the EIS. Peak hour in the study area falls between 7.15am-8.15am and 5pm-6pm, with AM peak hour demands higher than PM peak hour demands.

Although uncommon, traffic accidents in the study area generally occur within 10m of an intersection. Incidents of traffic accidents at the intersection of Elizabeth Drive and the existing Site are consistent with those in the rest of the study area.

The existing AWT facility has SITA staff and regular truck deliveries of MSW and organic waste entering the Site on a daily basis. The Site has a good vehicular connection to major arterial roads and freeway network in Western Sydney.

6.3.2 Issues for Consideration

The construction stage of the Development is likely to result in a short term spike in traffic flows of construction machinery, private vehicles and delivery vehicles. Heavy vehicles are likely to make multiple visits to the Site. Limited public transport provision in the surrounding area would result in a significant portion of construction staff travelling in private vehicles to the Site.

Operation of the landfill and existing AWT facility would continue as much as is feasible during construction and therefore construction vehicles associated with the Development would need to be considered together with the existing traffic movements for the facility.

The proposed expanded capacity of the Development is expected to result in an increase in traffic volume on a daily basis to the Site. Deliveries of MSW would increase incrementally until peak capacity is reached in 2023. The AM peak period is likely to put the most pressure on traffic infrastructure, with most light vehicles and approximately half the heavy vehicles entering the Site during this period.

6.3.3 Method of Assessment

As part of the EIS, a traffic impact assessment will be conducted for both the construction and operational phase.

Construction

- Determine the current volume of traffic and rate of accidents on Elizabeth Drive at all times of day.
- Determine the quantity and type of construction vehicles required for the construction phase of the Development.
- Determine the time of day vehicles are likely to be entering and leaving the Site.
- Analyse the likely changes to traffic flows as a result of construction traffic using appropriate traffic modelling software (e.g. SIDRA 5.1).
- Develop a Construction Traffic Management Plan, which will include appropriate signage, notification of community, and parking for employees and construction vehicles.

Operation

- Determine the current volume of traffic and rate of accidents on Elizabeth Drive at all times of day.
- Determine the quantity and type of vehicles likely to be entering and leaving the Site as a result of the Development.
- Analyse the likely changes to traffic flows as a result of the Development using appropriate software (e.g. SIDRA 5.1.).
- Consider the provision of a short left hand turn bay out of the Site.
- Develop a suitable Traffic Management Plan.

6.4 Water Quality

6.4.1 Existing Environment

Surface Water

Badgerys Creek, a tributary of South Creek and the Hawkesbury-Nepean River, is located approximately 160 metres to the west of the Site. It is the receiving environment for surface water runoff from the landfill and existing AWT facility. A vegetative buffer of at least 50 metres is maintained between the creek and the Site. This buffer provides substantial amelioration of any pollution entrained in surface water runoff as well as habitat, water flow features and stream shading (Maunsell, 2007).

Surface water at the Site is classified into five types. The classifications used to describe the types of surface water and the ways in which they are managed are as follows:

- **Diverted Stormwater Runoff.** Stormwater runoff from the Site, that would have otherwise flowed over the areas where organic materials are stored, is diverted and directed to either a sedimentation pond located adjacent to the car park or flows as natural overland flow and discharges into Badgerys Creek. The existing sedimentation pond is used to remove coarse particulates and is aerated as necessary to prevent anaerobic conditions occurring. The existing AWT facility is a net user of water and uses water from the sedimentation pond to reduce reliance on the potable water supply. Water from the sedimentation pond is used for operational purposes such as use in the composting process, irrigation, dust suppression and fire fighting. Stormwater is only discharged to Badgerys Creek if necessary.
- **Harvested Site Runoff.** Harvested site runoff is rain that has fallen within the existing AWT facility boundaries (on hardstand, buildings etc.) but has not contacted areas where waste, organic material or compost have been handled or stored. Harvested site runoff is currently directed to the sedimentation pond and is used for operational purposes such as irrigation, dust suppression and fire fighting.
- **Condensate Leachate.** Condensate leachate is generated by the composting process within the enclosed composting tunnels. The *Composting and Related Organics Processing Facilities Guidelines (DEH, 2004)* (Composting Guidelines) require leachate generated from composted materials to be retained and treated, evaporated or in some way disposed of, rather than being discharged to the natural environment. To meet this requirement, condensate leachate is currently captured and stored in an aerated leachate tank located to the north of the maturation pad. Some leachate is used in the composting process.
- **Leachate From Cleaning.** Small quantities of leachate from cleaning are currently generated within the Reveal Building and Resource Recovery Building. Floor drainage within these buildings includes a leachate capture system which is designed to direct leachate to the aerated leachate tank.
- **Stormwater Leachate.** Stormwater leachate is generated when rain from hardstand or pavement areas has direct contact with organic materials (compost and green waste). When stormwater comes into contact with the external maturation pads, leachate is directed to dedicated aerated leachate pond infrastructure that service the specific maturation pads containing FGO and MSW compost. This leachate can then be reused within the windrow turning process if required, however only leachate generated from the FGO platform can be utilised on the FGO compost material. Any leachate originating from pavement areas where stormwater has come into contact with organic material is directed to the floor drainage system, designed to direct leachate to the aerated leachate pond.

Water quality monitoring is conducted regularly in designated locations along Badgerys Creek as part of the environmental monitoring program for the existing landfill. Monitoring indicates that the waterway typically maintains acceptable water quality for suspended solids, turbidity and Biological Oxygen Demand (BOD). However, nutrient levels for both total nitrogen and total phosphorus are elevated both up and down stream of the existing landfill (Maunsell Australia, 2007). The elevated levels upstream indicate that the existing landfill and AWT facility are not the source of the elevated levels.

Groundwater

The claystones, siltstones and sandstones encountered in the study area are rocks of negligible primary porosity and permeability. As a result, they are highly resistant to the movement of groundwater (Maunsell, 2007). Groundwater recharge at the Site is minimal because of surface clays, buildings and hardstand areas, which form a capping layer and restricts rainfall infiltration in those areas. The existing leachate ponds at the AWT facility are lined to prevent infiltration of leachate.

The licence for the existing landfill requires that groundwater is monitored on a quarterly basis and that the level and quality of groundwater is reported in an Environmental Monitoring Annual Report to both PCC and the OEH (Maunsell, 2007). Both groundwater levels and quality have been monitored during the entire period of operation of the existing landfill and AWT facility. Results to date taken from down-gradient of the landfill and AWT sites show there is no impact to groundwater from either facilities (when compared with up-gradient groundwater chemistry).

6.4.2 Issues for Consideration

Construction

Construction of the Development, particularly during site preparation and excavation activities, has the potential to result in erosion of disturbed areas. This would potentially result in an increased sediment load in runoff generated from the Site. If this excess sediment were to reach Badgerys Creek it would have a detrimental impact on the existing waterway. There is also the potential for other pollutants such as oil and grease from construction equipment to contaminate runoff.

Operation

A number of improvements are proposed to the existing AWT facility, which would have benefits in terms of surface water management. For example, drains would be constructed on the upstream side of the existing AWT facility in order to enable natural drainage to flow around the facility. 'Clean' site runoff would be diverted around composting activities and materials handling areas to prevent entrainment of pollution from the compost process. A 'clean' site runoff only pond would be constructed to collect this runoff and the runoff would be used for application in the AWT process, preferentially to potable water, or would be used for operational purposes such as irrigation, dust suppression and fire fighting.

Improvements are also proposed for the management of leachate. For example, the volume of stormwater leachate generated at the Site would be reduced by constructing an enclosed maturation hall rather than using the existing maturation pad which is not covered. The existing leachate storage pond to the east of the existing maturation pad would no longer be required for the management of leachate, which would be captured and stored via enclosed leachate storage tanks.

6.4.3 Method of Assessment

The proposed improvements to the surface water and leachate management systems will be further investigated as part of the EIS. A site water balance will be prepared which identifies the source of all water collected or stored on the Site, including rainfall and stormwater, and identifies all water use on the Site and any discharges. The site water balance will be used to ensure that the design of the improved leachate collection system and the surface water management system are adequate.

Following completion of the site water balance and design of the improvements to the surface water and leachate management, an assessment of the potential water quality impacts of the Development will be undertaken as part of the EIS. The EIS will:

- Describe the existing surface water and groundwater environment using existing monitoring data available as part of the monitoring program for the landfill.
- Assess the potential impact of construction and operation of the Development on surface water and groundwater.
- Identify appropriate water quality management and mitigation measures in accordance with the latest version of *Managing Urban Stormwater: Soils and Construction* (Landcom).
- Identify any residual risk.

6.5 Fire and explosion

Fire and explosion can pose a risk to composting facilities if the material is not properly managed throughout the process. The risks could present itself at various stages, each of which will be analysed as part of the EIS. The issues for consideration would include: the Development would be utilising improved version of current technology and the quantity of composted material would be increasing.

The existing AWT facility has had no incidents of spontaneous combustion occurring, and with improved versions of current technology and operational practices, it is not anticipated that the risk will increase.

The EIS will describe the management of material throughout the process and identify appropriate risk mitigation measures.

7.0 Other Environmental Issues

7.1 Visual amenity

Visual amenity is not considered a significant issue for the Development due to the existing facility and landfill. Nonetheless, an assessment of visual amenity impacts would be prepared for inclusion in the EIS, including identification of sensitive receivers, local publicly accessible viewpoints to the study area, and consideration of potential mitigation measures. The assessment will include:

- Access to key visually-sensitive receiver locations to assess potential impacts.
- Assessment of viewpoints from publicly accessible viewpoints to determine strategies to minimise any visual impacts.

Landscape guidelines will also be developed for management of the construction and landscape mitigation measures.

7.2 Ecology

The Development would be located on a Site that has been previously disturbed. With the exception of a single Roughbark Angophora that is located on the northern border of the Site, the site of the Development is devoid of vegetation. The Roughbark Angophora is located approximately 9 metres from the footprint of the Development and is proposed to be retained. A vegetation assessment will be conducted as part of the EIS giving consideration to the Roughbark Angophora and appropriate mitigation measures will be developed to ensure adequate protection is provided during construction and operation.

No impact on the riparian zone of Badgerys Creek is anticipated to occur as a result of the Development. The proposed road realignment along the northern Site boundary would be located in close proximity to the Cumberland Woodland Site revegetation. An assessment will be conducted as part of the EIS to ensure an appropriate buffer is implemented between the construction works and the vegetation.

7.3 Socio-economic

The Development has the potential to result in a beneficial social impact for the local economy through job creation. In the short term, construction activities are expected to generate up to 75 construction jobs which would contribute directly to the PCC economy. During operation, the Development is expected to create 20 full-time equivalent operational jobs, at the same time as supporting ancillary services in the local economy.

Potential adverse social impacts from the Development will be addressed in specialist studies, but may include increased traffic movement, odour and noise impacts. Appropriate measures to mitigate any potential negative impacts will be identified as part of the EIS.

7.4 Construction Waste

During construction of the Development, waste generation would be limited to waste types typically associated with construction works for these types of developments, including steel scrap/off cuts, excess concrete, potential excess spoil and domestic waste generated by construction workers.

The EIS will identify all waste streams likely to be generated during construction of the Development. Mitigation measures will be proposed and will include as a minimum that waste streams would be classified, separated and disposed in accordance with the *Waste Classification Guidelines* (DECCW, 2009).

8.0 Conclusions

The report has been prepared to support an application for planning approval for a proposed expansion of an existing advanced waste treatment (AWT) facility at SITA's Kemps Creek landfill site in western Sydney. The elements for modification as part of the Development are:

- An increase in capacity, including an increase in vehicle movements to and from the Site.
- Modifications to the current layout of operations on the Site.
- Extended hours for internal operations to seven days per week.

There are two key areas supporting the strategic justification for the Development:

- Need with respect to the regional waste framework and customer demand.
- Environmental benefits that would result from the Development.

Based on a preliminary risk assessment, the key issues that will be addressed as part of the Environmental Impact Statement are:

- Odour emissions during operation of the facility.
- Operational noise.
- Increased traffic during construction and operation.
- Water quality.

As part of the EIS, a Community and Stakeholder Engagement Plan will be developed, and consultation will be undertaken with NSW Government agencies, relevant stakeholders (e.g. proximate property owners), and the already established Kemps Creek Community Reference Group.

The EIS would enable the development of mitigation and management measures to reduce potential impacts during both construction and operational phases. Throughout the assessment of the Development, priority would be given to avoiding and minimising impacts on the environment and local community.

9.0 References

AECOM, 2007. *Advanced Waste Treatment facility – Elizabeth Drive. Preferred Project Report*. Prepared for SITA Environmental Solutions.

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