



NSW GOVERNMENT
Department of Planning

MAJOR PROJECT ASSESSMENT: Advanced Waste Facility – Elizabeth Drive



Director General's
Environmental Assessment Report
Section 75I of the
Environmental Planning and Assessment Act 1979

March 2008

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EXECUTIVE SUMMARY

SITA Environmental Solutions (SITA) operates the Kemps Creek Landfill and associated quarry adjacent to Badgerys Creek and close to Elizabeth Drive in the Penrith Local Government Area (LGA).

The landfill is regulated by a development consent granted by Penrith City Council in 1990, and an environmental protection license granted by the Department of Environment and Climate Change. It currently receives around 360,000 tonnes of Class 2 (non-putrescible) and industrial waste a year.

SITA now proposes to construct and operate an advanced waste technology facility (AWT) on approximately 6 hectares in the northwest corner of this site.

The new facility would receive up to 120,000 tonnes of mixed solid waste and 14,400 tonnes of biosolids a year, and produce up to 40,000 tonnes compost a year that would be suitable for a range of uses, including the rehabilitation of the Kemps Creek Landfill. It would also recover up to 8,000 tonnes of recyclable material a year. All residual waste would be landfilled or disposed of at a suitably licensed facility.

The proposal has a capital value of \$40 million, and would generate up to 30 jobs during construction and operation.

During the exhibition period, the Department received nine submissions on the project, including four from public authorities and five from the general public.

The public authorities generally support the project subject to conditions. However, the submissions from the general public generally object to the project, raising concerns in particular about the potential odour, noise and traffic impacts of the proposal.

The Department has assessed the merits of the proposal in detail, and is satisfied that the environmental impacts of the proposal can be either mitigated or managed to ensure an acceptable level of environmental performance.

It is also satisfied that the proposal represents a logical extension to the existing Kemps Creek Landfill, which should make a significant contribution to the Government's strategic objectives outlined of reducing the amount of waste currently going to landfill, transforming waste into resources that can be reused, and reducing the greenhouse emissions associated with waste disposal.

Consequently, the Department believes that the proposal is in the public interest, and should be approved subject to strict conditions of approval.

1. BACKGROUND

SITA Environmental Solutions (SITA) operates a landfill and associated quarry approximately 5 kilometres west of Kemps Creek in the Penrith Local Government Area (LGA).

The landfill is regulated by a development consent granted by Penrith City Council in 1990, and an environmental protection license granted by the Department of Climate Change (DECC). It is currently allowed to accept and dispose of solid waste Class 2 (non-putrescible) and industrial waste, and receives around 360,000 tonnes of this waste a year.

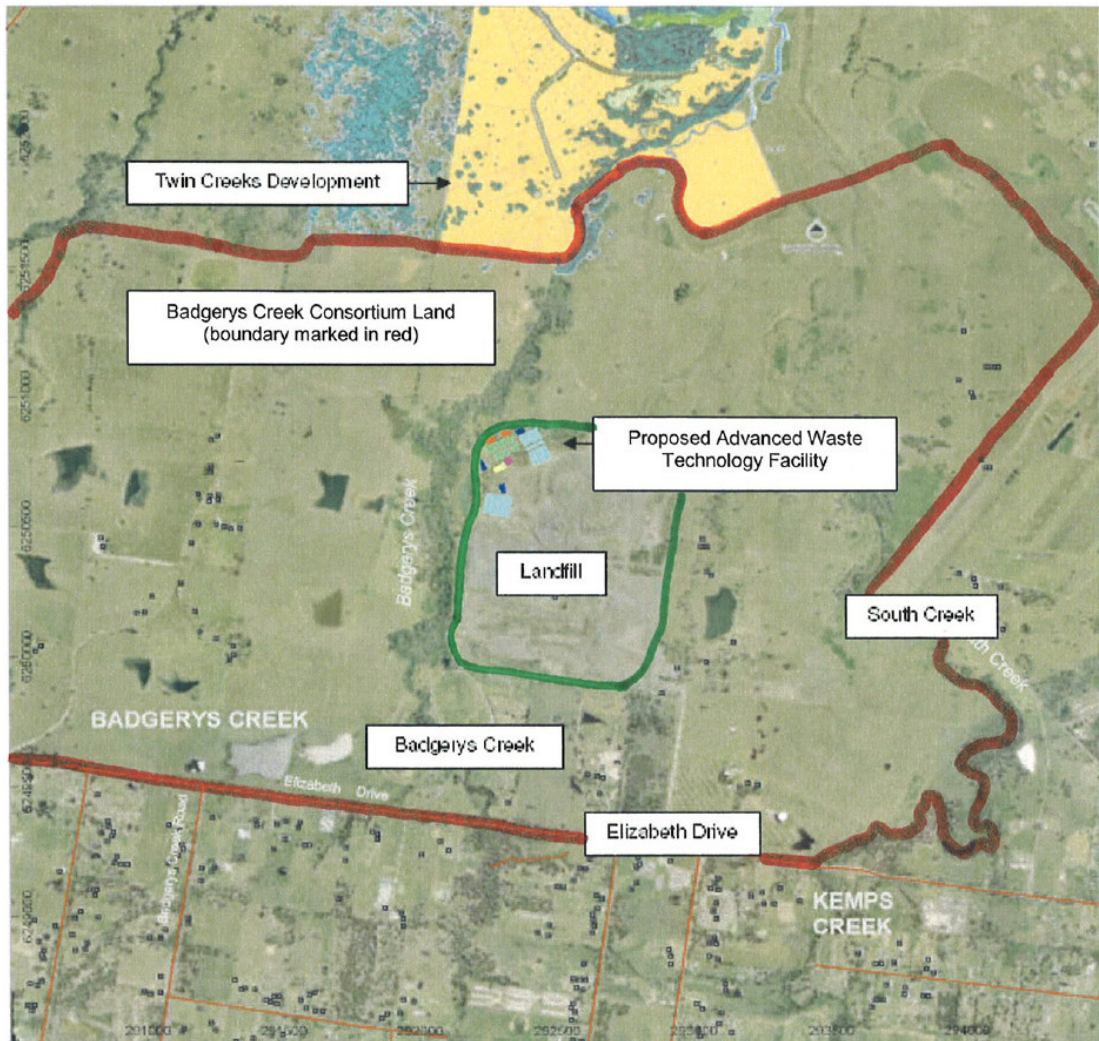


Figure 1: Regional Context – Kemps Creek Site

The landfill is located on an 84 hectare site, and is connected to Elizabeth Drive via an access road. Elizabeth Drive is an RTA arterial road, providing access to rural and industrial developments, as well as connecting the M7 and The Northern Road. Badgerys Creek is located along the western boundary of the site, and South Creek is located to its east. Both creeks flow northwards.

The area surrounding the landfill is dominated by rural and rural residential development and is fairly sparsely populated. Agricultural land is located to the north, south and west of the site, along with a small number of associated rural residences, namely:

- two residences located close to the eastern boundary of the landfill;
- three residences, located approximately 1 kilometre west of the landfill, on McGarvie Smith Farm owned by the University of Sydney; and
- two residences located over 1 kilometre to the south of the site.

However, the area is likely to be substantially redeveloped in the next few years as Sydney expands westward.

For instance, a new 356 hectare housing and tourist development known as Twin Creeks has been approved by Council approximately 500 metres north of the site (see the area shaded in yellow on Figure 1). At this stage, a golf course and tourist facility has been constructed on the site, and the subdivision and development of residential lots has commenced.

Notwithstanding this approval, most of the area in the vicinity of the site is likely to be redeveloped for employment purposes as it forms part of the Western Sydney Employment Lands Investigation Area (see Figure 2). This area was earmarked for potential redevelopment in the *Employment Action Plan*, which was released by the Department in March 2007.

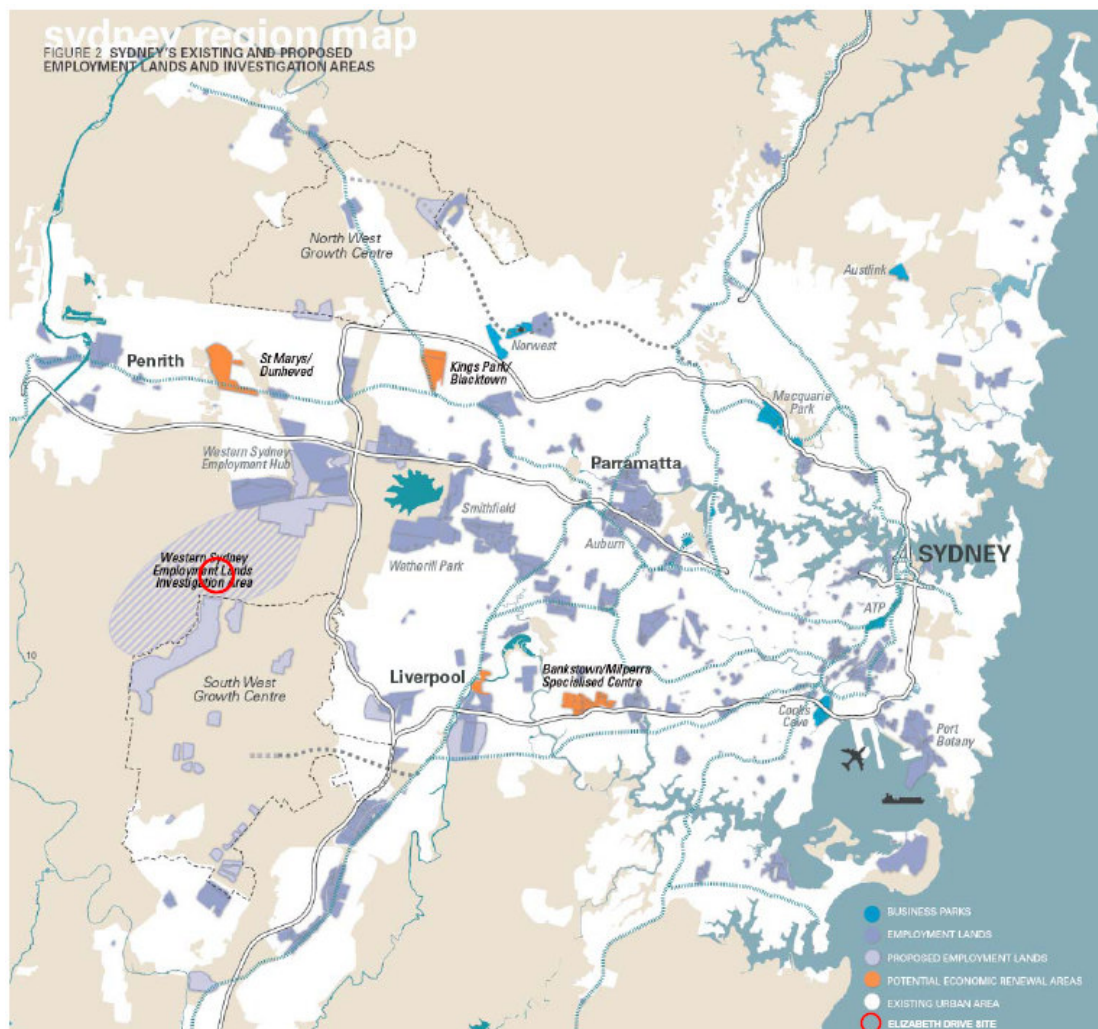


Figure 2: Western Sydney Employment Lands Investigation Area

The Department is currently investigating the potential listing of this large area as a State Significant Site, and the Minister recently agreed to consider two concept plans for redevelopment of the land within this area for employment uses; one from Australand to develop 560 hectares of land; and the other from the Badgerys Creek Consortium (BCC), which is comprised of the Medich Property Group, University of Sydney and Damjanovich family, to develop 875 hectares of land.

The BCC's land surrounds the Kemps Creek Landfill, (see area outline in red on Figure 1).

SITA now proposes to establish a new advanced waste technology facility in the north west corner of the landfill, and is seeking approval for the proposed facility under Part 3A of the *Environmental Planning & Assessment Act 1979* (EP&A Act.).

2. PROPOSED DEVELOPMENT

2.1 Project Description

SITA proposes to establish a new advanced waste technology (AWT) facility on 6 hectares adjacent to existing operations at the Kemps Creek landfill.

The major components of the proposal are summarised in Table 1 below, and depicted in Figures 3 and 4.

The proposal is described in full in SITA's Environmental Assessment (EA) of the project, the Preferred Project Report (PPR), and an appendix to the PPR, which are attached as Appendix C, D and F.

Table 1: Major Components of the Proposal

Aspect	Description
Project Summary	An AWT processing up to 120,000 tonnes per annum (tpa) of mixed waste and 14,400 tpa of biosolids for 20 years to produce compost, remove recyclables such as wood, paper, plastics and metal from the waste stream for recycling, and remove residual inert wastes for suitable disposal.
Waste Receipt	Up to 120,000 tpa of mixed waste and 14,400 tpa of biosolids, largely from Penrith and Liverpool LGAs. Waste would be transported in domestic waste collection vehicles along Elizabeth Drive and the existing landfill access road.
Receival Hall	The receival hall would be 9.2 metres high, have a floor area of 2400m ² and be fully enclosed under negative pressure. Waste delivered to the receival hall would initially be sorted and large waste items recovered. Mixed waste and source separated organics would be transported separately by conveyor to the resource recovery building.
Resource Recovery Building	The resource recovery building would be 10.5 metres high, have a floor area of 2130m ² and be fully enclosed under negative pressure. Mixed waste and source separated organics would be processed separately using: <ul style="list-style-type: none"> • trommels; • manual sorting; • magnetic and eddie current separators to remove metals; and • shredders and mixers to prepare for composting. The refined waste streams would be transported separately by conveyor to the composting tunnels.
Composting Tunnels	Thirty, 24 metre long, ventilated, fully enclosed tunnels, would be used for biological treatment of the separate waste streams. Moisture, temperature and oxygen levels would be controlled to maximise rot, prior to transfer to the maturation area via front end loader.
Maturation Area	The external maturation area would be used to cure the compost for a few months prior to transfer to the refining building via front end loader.
Refining Building	The refining building would be enclosed, 10.5 metres high, with a floor area of 1020m ² . It would be used for the final refining of the compost, prior to removal via front end loader to the maturation pad for export.
Outputs	The facility would have the following outputs: <ul style="list-style-type: none"> • 25,000 – 40,000 tpa of compost; • 5,000 – 8,000 tpa of recyclables including wood, paper, plastics and metal; and • 35,000 – 50,000 tpa of residual non-putrescible waste for disposal at SITA's landfill or another suitably licensed facility landfill.
Water Management	Stormwater drainage and pond, leachate ponds, an overflow pond, mains water connection and a self contained sewerage plant. Leachate and stormwater would be used for site operations, supplemented by mains water.
Associated Infrastructure	Office and amenities buildings, electricity connection, sealed internal access road, new weighbridge for exiting vehicles, with the existing landfill weighbridge used for vehicles entering the site.

Odour Management	Semi-enclosed biofilters.
Construction	12 months.
Hours of Operation	Monday to Friday 6am-6pm and 7am-11pm for waste receipt and processing respectively, Saturday 8am-5pm, Sunday 8am-4pm, Public Holidays 7am-4pm.
Traffic	Approximately 236 vehicle movements a day.
Capital Value	\$40 million.
Employment	Construction workforce up to 30 and operational workforce up to 20.



Figure 3: Site Layout for SITA's proposed Advanced Waste Technology Facility

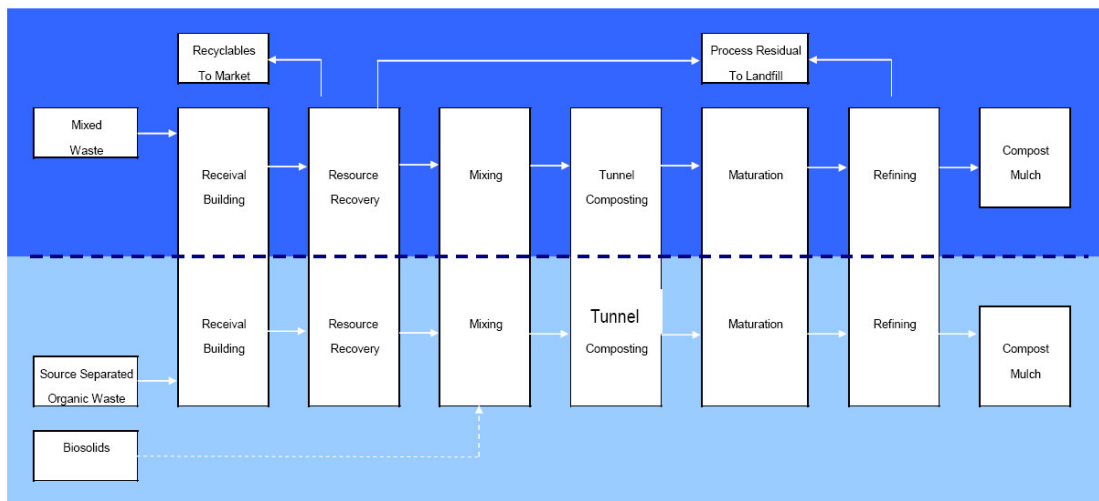


Figure 4: Proposed process to be undertaken at SITA's AWT at Kemps Creek

2.3 Project Justification

The *NSW Waste Avoidance and Resource Recovery Strategy (WARR Strategy)* sets the strategic framework for reducing waste and making better use of resources in NSW. Through implementation of a range of measures and programs, the strategy seeks to substantially increase the recovery and use of materials from the municipal waste stream to at least 66 percent by 2014. Consequently, the amount of waste being disposed of at landfills should be notably reduced.

SITA argues that the proposed AWT is consistent with the WARR strategy. The AWT would process up to 120,000 tpa of mixed waste, and 14,400 tpa of biosolids. The AWT would convert the putrescible component of the waste stream into between 25,000 to 40,000 tpa of mixed waste compost for a variety of potential applications. It would remove between 5,000 to 8,000 tpa of recyclables, such as wood, paper, plastic and metal, from the waste stream for recycling. SITA estimate that between 35,000 – 50,000 tpa of the waste stream would be inert waste. This inert waste would be removed during the AWT process for disposal at the on-site landfill or another appropriately licensed facility.

The Department therefore considers it provides a valuable contribution towards meeting the goals in the *WARR Strategy*. The proposal would result in the diversion of approximately 72,000 tpa of waste, namely 60 percent of the facility's waste stream, from landfill disposal.

3. STATUTORY CONTEXT

3.1 Major Project

The proposal is classified as a major project under Part 3A of the EP&A Act because it is development for the purpose of resource recovery that would handle more than 75,000 tonnes of waste a year, and therefore triggers the criteria in Clause 27 of Schedule 1 of *State Environmental Planning Policy (Major Projects) 2005*.

Consequently, the Minister for Planning is the approval authority for the project.

3.2 Permissibility

The project is located on land zoned rural under the *Penrith Local Environmental Plan 201 – Rural Lands (LEP)*. Whilst waste treatment facilities are prohibited in this rural zone, Clause 43 of the LEP, allows development for the purpose of an advanced waste treatment facility on the site, subject to consent.

Consequently, the Minister may approve the carrying out of the project.

3.3 Exhibition

Under Section 75H(3) of the *Environmental Planning and Assessment Act, 1979* (EP&A Act), the Director General is required to make the EA of a project available for at least 30 days.

After accepting the EA for this project, the Department:

- made it publicly available for a period of 4 weeks from 17 July 2007 until 20 August 2007:
 - on the Department's website, and
 - at the Department's Information Centre, Penrith City Council, and the Nature Conservation Council;
- notified landowners in the vicinity of the site about the exhibition period by letter;
- notified relevant State and local government authorities by letter; and
- advertised the exhibition of the EA in the local newspapers.

During the assessment process the Department also made a number of documents available for download on the Department's website. These documents included the:

- project application;
- Director General's requirements for the environmental assessment of the project;
- EA; and
- PPR.

This satisfies the requirements of Section 75H(3) of the EP&A Act.

3.5 Environmental Planning Instruments (EPIs)

Under Section 75I of the EP&A Act, the Director General's report is to include a copy of or reference to the provisions of any:

- *State Environmental Planning Policy* (SEPP) that substantially govern the carrying out of the project; and
- environmental planning instruments that would (but for Part 3A) substantially govern the carrying out of the project and that have been taken into consideration on the environmental assessment of the project.

The Department has assessed the proposal against the relevant provisions of several environmental planning instruments and is satisfied that none of these SEPPs substantially govern the carrying out of this project (see Appendix G).

3.4 Objects of the *Environmental Planning and Assessment Act, 1979*

The Minister is required to consider the objects of the EP&A Act when he makes decisions under the Act. These objects are detailed in Section 5 of the Act, and include:

The objects of this Act are:

- (a) *to encourage:*
 - (i) *the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,*
 - (ii) *the promotion and co-ordination of the orderly and economic use and development of land,*
 - (iii) *the protection, provision and co-ordination of communication and utility services,*
 - (iv) *the provision of land for public purposes,*
 - (v) *the provision and co-ordination of community services and facilities, and*
 - (vi) *the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and*
 - (vii) *ecologically sustainable development, and*
 - (viii) *the provision and maintenance of affordable housing, and*
- (b) *to promote the sharing of the responsibility for environmental planning between the different levels of government in the State, and*

- (c) *to provide increased opportunity for public involvement and participation in environmental planning and assessment.*

The objects of most relevance to the Minister's decision on whether or not to approve this project are those under Section 5(a)(i), (ii) and (vii).

With respect to ecologically sustainable development (ESD), the EP&A Act adopts the definition in the *Protection of the Environment Administration Act 1991*. Section 6(2) of that Act states that ESD 'requires the effective integration of economic and environmental considerations in decision-making processes' and that ESD 'can be achieved through' the implementation of the principles and programs including the precautionary principle, the principle of inter-generational equity, the principle of conservation of biological diversity and ecological integrity, and the principle of improved valuation, pricing and incentive mechanisms. In applying the precautionary principle, public decisions should be guided by careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment and an assessment of the risk-weighted consequences of various options.

The Department has fully considered the objects of the EP&A Act, including the encouragement of ESD, in its assessment of the project application.

This assessment integrates all significant economic and environmental considerations and seeks to avoid any potential serious or irreversible damage to the environment, based on an assessment of risk-weighted consequences.

SITA has also considered a number of alternatives to the proposed project (including the alternative of not proceeding) and has considered the project in the light of the principles of ESD.

3.6 Statement of Compliance

Under Section 75I(2) of the EP&A Act, the Director General's report is required to include a statement relating to compliance with the environmental assessment requirements with respect to the project.

The Department is satisfied that the environmental assessment requirements have been complied with.

4. ISSUES RAISED DURING CONSULTATION

The Department received nine submissions on the project:

- four submissions from public authorities; and
- five submissions from the general public (including a late submission from the BCC).

A summary of the issues raised in these submissions is provided below, and a full copy of the submissions is attached in Appendix E.

4.1 Public Authorities

The **Department of Environment and Climate Change** (DECC) raised concern about odour impacts on the Twin Creeks development. SITA therefore modified the design of the project, as outlined in the PPR, to substantially reduce the odour impacts. The DECC subsequently recommended several conditions of approval.

The **Department of Water and Energy** (DWE) recommended that a 40 metre wide riparian zone and an additional 10 metre buffer zone be provided along Badgerys Creek, and advised that a license under the *Water Management Act 2000* may be required for reuse and storage of water.

Sydney Water advised that SITA would be required to construct an extended private service connection from Elizabeth Drive to the property and would need to obtain a Section 73 Compliance Certificate from Sydney Water.

Penrith City Council (PCC) raised concern about odour impacts on the Twin Creeks Development and noise impacts on the Caretakers Cottage. It also requested information in relation to flood impacts, control of discharges and requirements for the rehabilitation of the site.

4.2 General Public

All submissions from the general public either objected to or raised concerns about the project relating to:

- odour;
- noise and hours of operation;
- traffic impacts on Elizabeth Drive and absence of infrastructure contributions;
- water quality management; and
- property devaluation;

The BCC, in particular, was concerned that the proposal would unreasonably restrict its options for redevelopment of its land for employment purposes, and therefore compromise the State Government's strategic planning objectives for the Western Sydney Employment Lands Investigation Area.

These issues have been addressed in Section 5 of the report.

4.3 Preferred Project Report

SITA made a number of changes to the design and proposed operation of the facility to reduce odour and noise impacts, which were outlined in the PPR. The PPR, including a response to submissions, and a Supplementary Report to respond to issues raised by BCC, are attached in Appendix C and D.

The Department has considered the issues raised in submissions and SITA's response in Section 5 of this report.

5. ASSESSMENT OF ENVIRONMENTAL IMPACTS

5.1 Waste Management

Identification and Disposal of Unapproved Waste Inputs

In receiving mixed waste and biosolids from various sources, the potential exists for some of the waste stream to be contaminated by hazardous, clinical or industrial chemicals and waste, or by waste product containing pests and diseases. Chemical contaminants, in particular, are not readily treated by composting processes and would directly affect the output product quality. SITA therefore proposes to implement a number of upfront screening processes to identify and remove contaminants, prior to the composting including waste origin identification at the site entry and manual identification and removal of chemical and hazardous materials by staff on the waste handling floor and at an inspection station in front of the first processing trommel.

Concern was raised by a surrounding property owner that the proposal could result in the spread of disease. To ensure that waste stock is appropriately managed, and contamination of it is minimised, the recommended conditions of approval require that:

- waste containing chemicals and/or pathogens (that would not be rendered harmless by the operations on site, or that may constitute a health or environmental risk) and hazardous and industrial waste, not be received at the facility;
- incoming waste loads be screened to ensure that the site does not accept prohibited wastes; and
- identified contaminated waste be separated from the general waste stream and disposed of at an appropriately licensed facility.

The Department considers that these recommended conditions should ensure that the quality of waste input, and disposal of unapproved feedstock, is appropriately managed and regulated.

Compost Output Quality

SITA proposes that its source separated and mixed waste compost could be used in a wide variety of applications, including urban developments, horticulture, agriculture, site remediation and landfill rehabilitation. Due to the likely variability of the waste feedstock, SITA is not able to identify the likely composition of its compost nor demonstrate its applicability for any proposed end uses, at this stage. Instead, SITA has requested that use of the compost be determined by the requirements of the end user on a case by case basis.

Both the Department and DECC consider that the quality and use of the mixed waste compost should be regulated to ensure an appropriate and safe end use. Furthermore, it is important that there are consistent requirements for quality and use of compost produced at all alternative waste facilities.

At this stage, however, there are no accepted standards regulating the quality of mixed waste composts. Whilst the waste industry and the DECC are currently developing standards for mixed waste composts to address this deficiency, it may be sometime before they are endorsed and applied under the *Protection of the Environment Operations Act 1997* (POEO Act) and its associated Regulations.

In the absence of these endorsed standards, or site specific standards developed by SITA, the Department and DECC have adopted the following default standards in the recommended condition of approval:

- compost used for any public compost application off SITA's site must comply with Australian Standard *AS 4454 for Composts, Soil Conditioners and Mulches* (AS4454-2003) including the limits for physical contaminants set out in Table 3.1 and the chemical concentration thresholds for unrestricted use (Grade A) in the DECC's *Environmental Guideline for the Use and Disposal of Biosolids* (Biosolids Guidelines); and
- compost used for mine site and landfill site rehabilitation purposes must comply with AS4454-2003 including the limits for physical contaminants set out in Table 3.1 and the chemical concentration thresholds for Grade B and C in the Biosolids Guidelines.

The recommended conditions of approval require that SITA review these standards in consultation with DECC, within three years of the approval, or as directed by the Director General, and to comply with any new endorsed standards or an alternative output criteria for a specific end use, if appropriate. This regulatory regime for compost standards is consistent with the Minister's conditions of approval for the recently approved Woodlawn Alternative Waste Treatment Facility.

The recommended conditions of approval also require implementation of a waste monitoring program to:

- monitor the quantity, type and source of waste inputs received at the facility;
- monitor the quantity, type and quality of outputs to ensure standards and controls outlined in the conditions of approval are met; and
- outline contingency measures that would be implemented in the event of non-compliance with these standards and controls.

With these measures in place, the Department and the DECC are confident that quality of the waste outputs from the facility would be of an appropriate standard to minimise impacts from their reuse.

Disposal of Residual Waste

SITA estimates that approximately 40 percent of its waste stream (namely 35,000-50,000 tpa) would be non-putrescible waste, which is not suitable for composting. This residual non-putrescible waste would need to be removed during the AWT process and disposed of at SITA's adjoining Class 2 landfill, or another appropriately licensed facility.

SITA would ensure that the inert waste is suitably identified, removed and disposed, by:

- removing bulky contaminants in the receival area;
- separating and removing non-putrescible waste during the resource recovery process;
- removing residual inert materials including glass, plastics, timber, stones, during the final refining process; and
- screening inert waste at its landfill, to ensure it is suitable for disposal.

The Department is satisfied that proposed screening processes would ensure that non-putrescible waste is appropriately identified, removed, and disposed of.

5.2 Odour

Whilst the surrounding area is predominantly agricultural land with scattered residences, there is still some potential for odour impacts at a number of private residences, due to the generation of waste related odour from the AWT and adjoining landfill. The potentially impacted residences include: two residences located 800 metres from the AWT site along the landfill's eastern boundary (referred to as 1669A Elizabeth Drive and its Caretakers Residence); a collection of residences approximately one kilometre west of the site on McGarvie Smith Farm owned by the University of Sydney; residences over one kilometre south of the site (the closest being 1745 Elizabeth Drive); and, the new Twin Creeks development located approximately 500 metres north of the site.

An odour assessment by Holmes Air Sciences was therefore included in the EA, and revised in the PPR, to identify potential odour impacts on these surrounding sensitive receivers.

Odour Assessment Methodology

The odour assessment identified that the main odour sources would be from the biofilters, external maturation areas and leachate ponds, in addition to cumulative impacts from the existing landfill. Odour emissions rates from these sources were estimated based on monitoring results of similar sources in Australia and France.

Holmes Air Sciences used the computer based dispersion model AUSPLUME to identify the potential off-site impacts of these combined odour sources, based on air dispersion data from a location three kilometres north northeast of the site (referred to as the Fleurs wind data set), and rainfall and temperature data measured from the Bureau of Meteorology's sites at Liverpool and Badgerys Creek. The odour predictions for residences surrounding the site were then compared against the DECC's odour assessment criteria.

The BCC raised concern about the adequacy of the odour assessment based on a review of the EA, the PPR and the associated AUSPLUME model input files provided directly to them by SITA. In particular, the BCC raised concern that odour from surrounding poultry farms was not included in the odour model. According to the BCC, a preliminary air dispersion model, including odour from these poultry farms, was developed by its air consultant Heggies Pty Ltd. The model predicted significantly higher odour impacts than SITA's odour assessment. The BCC also raised concern about the adequacy of the meteorological and terrain data used in SITA's model, in that it did not reflect air flow patterns of the site.

SITA subsequently demonstrated that the model had been undertaken in accordance with the *DECC's Assessment and Management of Odour from Stationary Sources in NSW* and the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*. SITA demonstrated that it had met the requirements of these guidelines, including requirements for a cumulative odour assessment, by including all likely sources of waste related odour as required by these guidelines. Odour concentration rates were used, based on measurements from similar facilities, and acceptable meteorological and terrain data had been used in its AUSPLUME model.

The DECC reviewed the odour assessment and the associated documents and concurred with the methodology used. The DECC advised that the assessment was technically robust and that it presented clear predictions of the potential odour impacts of the project. The Department is therefore satisfied that the odour assessment is appropriate for identification and evaluation of the proposal's odour impacts.

Odour Impacts

The DECC's odour performance criteria provides a benchmark to assess the likely performance and acceptability of odour from a proposal on nearby receivers. It has been designed to cater for the wide range of responses to odour and is generally applied, with some discretion, based on likely reactions of the subject population. Once a facility is operational, however, the odour benchmark is not to generate odours considered offensive by the subject population, as stipulated in Section 129 of the POEO Act. The DECC's odour assessment criteria is summarised in Table 2 below:

Table 2: DECC odour assessment criteria

Population of affected community	Odour performance criteria (nose-response-time average, 99 th percentile)
Rural single residences (≥ 2)	7
~ 10	6
~ 30	5
~ 125	4
~ 500	3
Urban area (≥ 2000) and/or schools or hospitals	2

The initial odour assessment undertaken in the EA indicated that up to 4 odour units (OU) would be experienced at the two nearest residences, located 800 metres east of the site, and at residences on McGarvie Farm owned by the University of Sydney, located 1 kilometre west of the site. The Twin Creeks development would also be impacted by odour, including odour levels in excess of 7OU.

Concerns were raised by a number of property owners about potential odour impacts of the proposal. In addition, concerns were raised by the Department and DECC about specific odour impacts on the Twin Creeks development. As a result, SITA modified the design and odour control systems of the project to reduce odour impacts. Details of these changes were outlined in a PPR provided to the Department and included:

- provision of fully enclosed tunnels for all composting to reduce the volume of odorous air treated by the biofilters;
- an increase in the number of composting tunnels at the facility, to allow for longer composting times to produce a more decomposed and less odorous product;
- use of semi-enclosed, deeper biofilters to increase the retention time of air in filters and thereby improve odour treatment; and
- provision of two leachate ponds to reduce the available surface area for odour generation.

These changes resulted in a substantial reduction in the predicted odour generation from the facility, with predicted odour emissions meeting the most stringent odour assessment criteria of 2 OU at neighbouring receivers. Odour levels were predicted to be under 1 OU at existing residences closest to the site. Odour levels up to 2 OU would be experienced on small sections of two residential lots along the southern boundary of the Twin Creeks development. Odour levels across all other sections of Twin Creeks would be less than 2 OU. The predicted odour levels from the facility and AWT are outlined in Figure 5.

In addition to the proposed changes to the facility, SITA has also committed to instigate a community complaints program to investigate any odour complaints, and outlined additional odour management measures that could be implemented to address unexpected odour impacts, including installation of an acid scrubber in the airflow to the biofilter, and increasing the biofilter's capacity.

Concern was raised by the BCC, and another neighbouring property owner, that odour from the proposal would unreasonably restrict its opportunities to redevelop the land for employment uses, and thereby potentially undermine the Government's strategic objectives for the Western Sydney Employment Land Investigation Area. The BCC argued that SITA should be required to restrict the odour impacts of the project to 2 OU at the boundary of the site.

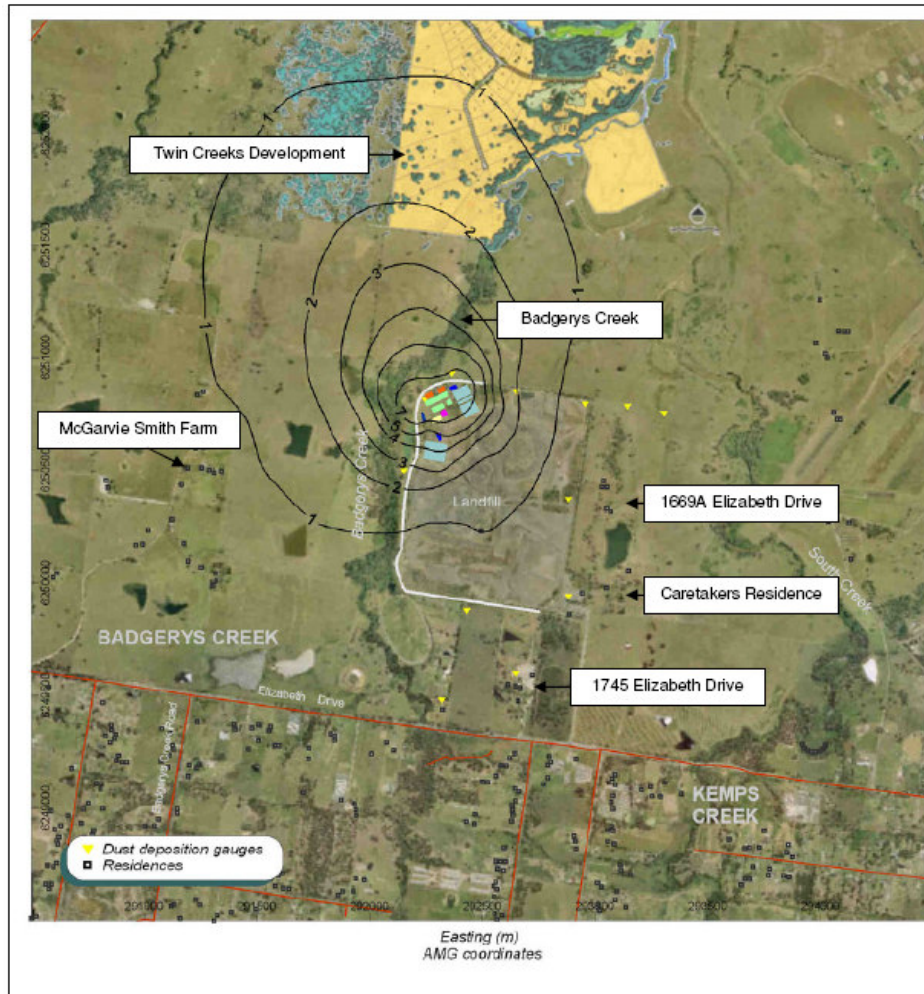


Figure 5: Predicted 99th percentile odour unit due to proposed AWT and landfill

The Department and DECC have reviewed SITA's odour assessment and the BCC's criticism of this assessment, and concluded that the predicted odour impacts of the project are acceptable as they comply with all the relevant odour criteria for the current land uses in the area, and are low enough to ensure that there are unlikely to be any significant land use conflicts in the future when the area surrounding the site is redeveloped for employment uses.

In addition, the Department is satisfied that any potential land use conflicts can be readily addressed through:

- the design of any redevelopment proposal (locating compatible employment uses next to the landfill and AWT);
- the staging of any redevelopment proposal (too coincide with the closure of the landfill);
- the implementation of further odour controls on the SITA site (such as increasing the capacity of the biofilters or installing an acid scrubber in the airflow of the biofilters); or
- a combination of these measures; and that
- the implementation of further odour controls on site would be costly, and is not warranted at this stage, given the project is predicted to comply with all the relevant odour criteria for the current land uses in the area.

Nevertheless, the Department and DECC recommend that SITA be required to:

- implement all reasonable and feasible odour controls on site;
- ensure that the project does not cause "offensive odour" impacts in accordance with section 129 of the POEO Act;
- continuously review and improve its odour controls over time to comply with best practice as it evolves; and

- commission an independent audit of the project within 2 years of the commencement of operations and every 3 years thereafter or as directed by the Director-General.

These recommendations have been included in the conditions of approval and would ensure that the facility does not cause adverse odour impacts, that unexpected odour impacts could be managed, and that options to minimise odour impacts would be available, should changes to land uses in the area necessitate this.

5.4 Noise

The EA included a detailed noise assessment by Wilkinson Murray to identify the construction and operational noise impacts at the closest sensitive receivers to the site, namely: two residences adjoining the eastern landfill boundary (referred to as 1669A Elizabeth Drive and its Caretakers Residence); a collection of residences approximately one kilometre west of the AWT site on McGarvie Smith Farm owned by the University of Sydney; and, a residence located over one kilometre south of the AWT site at 1745 Elizabeth Drive.

Construction Noise

SITA propose to undertake earthwork and construction activities during the first 5-6 months, with installation and commission of equipment during the subsequent 6 months. As such, SITA has used the construction noise criteria for under 26 weeks outlined in the DECC's *Environmental Noise Control Manual*. The assessment indicates that the noise limits would be exceeded by up to 2dBA at McGarvie Smith Farm, located one kilometre west of the site. SITA has therefore committed to manage and minimise construction noise through a variety of work practices including control on the hours of construction and use of modern, well maintained equipment.

The Department and DECC have reviewed the construction noise assessment and agree that construction noise impacts would be acceptable, provided they are adequately managed. Recommended conditions of approval have therefore been included to restrict construction hours and to require implementation of a Construction Noise Management Protocol.

Operational Noise

Wilkinson Murray undertook an operational noise assessment in accordance with the DECC's Industrial Noise Policy (INP) to identify the noise impacts of the proposal at surrounding sensitive receivers. The DECC and a number of neighbouring property owners, including the BCC, initially raised concern about the noise assessment methodology, the accuracy of the background noise levels and the associated intrusive criteria, and the identification of noise sources. The DECC subsequently advised that the noise assessment was generally acceptable, subject to adoption of modified evening and nighttime noise criteria, based on the daytime background noise levels.

The noise assessment was based on the implementation of a range of reasonable and feasible noise controls on the site, including:

- restriction on operating hours and intensity of operations;
- use of modern front end loaders (with low sound power levels);
- alternative biofilter discharge fans; and
- layout of the buildings designed to shield the noisier activities on site from sensitive receivers.

The initial assessment indicated that the proposal was likely to:

- result in exceedances (<4dBA) of the intrusive noise criteria at 3 residences on McGarvie Smith Farm, 1 kilometre west of the site, during adverse weather conditions in the daytime (7am to 6pm); and
- result in moderate exceedances (between 3 and 7dBA) of the intrusive noise criteria at the Caretakers Residence, which is located adjacent to the existing access road to the landfill and the proposed access way to the AWT.

SITA subsequently agreed to relocate the shredder inside a building in order to reduce the predicted daytime noise levels at McGarvie Smith Farm by around 2-3dBA. Both the Department and DECC considered that the residual noise exceedances up to 1dBA above

the intrusive noise criteria were minor and acceptable, as this would occur infrequently during about five percent of daytime operations.

Noise levels at the Caretakers Residence were generated by traffic accessing the landfill and AWT. To ameliorate these noise impacts, SITA has agreed to implement a range of additional noise mitigation measures (such as double glazing and air conditioning) with the agreement of the landowner. The DECC and the Department, therefore, consider that these predicted noise levels would be acceptable.

The BCC and another property owner from Elizabeth Drive raised concern about noise levels on land that is yet to be developed. In particular, concern was raised that noise from the proposal could restrict opportunities to redevelop the land for employment uses and requested that noise impacts be assessed along SITA's boundary and that noise mitigation be provided, if necessary.

The Department, however, considers that noise impacts of the project on the area surrounding the site were acceptable as the noise levels were low enough to ensure future land use conflicts were unlikely when the area becomes developed for employment uses.

Nevertheless, the Department believes SITA should be required to:

- restrict the hours of operation on site;
- comply with strict noise limits;
- develop and implement noise management plans;
- install additional noise mitigation measures at the Caretakers Residence; and
- regularly monitor the noise impacts of the project.

These requirements have therefore been included in the recommended conditions of approval.

Traffic Noise

Concern was raised by a surrounding resident about the impact of increased traffic noise resulting from the proposal. The assessment, indicated, however, that traffic from the proposal would increase noise levels along Elizabeth Drive by approximately 0.5dBA, which complies traffic noise controls for new developments outlined in the DECC's *Environmental Criteria for Road Traffic Noise* (ECRTN). The Department therefore considers that traffic noise impacts are limited and acceptable.

5.3 Greenhouse Gas Emissions.

The proposal would result in direct and indirect greenhouse gas (GHG) emissions. The direct GHG emissions resulting from the composting processes were estimated to be between 43,200 tonnes equivalent to carbon dioxide (tCO₂-e) and 49,200tCO₂-e per annum. The indirect GHG emissions, resulting from the transportation of waste and waste outputs and the installation and running of equipment, were not estimated.

Notwithstanding this, the EA demonstrated that the proposal would result in substantially less GHG emissions than an equivalent sized landfill. According to the EA, a similar sized landfill in Sydney would result in direct GHG emissions of 140,400tCO₂-e per annum, with indirect GHG emissions again not estimated. The proposal would thereby result in GHG emission savings of between 90,000 – 100,000tCO₂-e per annum.

As the proposal would result in a substantial reduction in GHG emissions, it is generally supported by the Department. The Department considers, however, that best practice techniques to minimise GHG emissions should be implemented at the facility. The DECC has also requested that the use of GHG emissions for electricity generation be investigated further. The recommended conditions of approval therefore require that composting process be designed and implemented to minimise GHG emissions, and that SITA investigate options to utilise greenhouse gas for electricity generation.

5.5 Soil and Water Management

SITA aim to reuse leachate and stormwater in on-site operations, to be supplemented by potable water, as required. A conceptual water management system was outlined in the EA. Following consultation with the DECC, however, this system is being modified and refined, prior to the issue of the EPL. Key features of the water management system will include:

- drainage works upstream of the facility;
- a stormwater pond;
- two leachate ponds designed for a 1 in 10 year Average Recurrence Interval (ARI); and
- an overflow pond.

Whilst the detailed design of the water management system is still being finalised, the DECC has advised that the proposed water management systems should ensure that water quality and quantity are adequately managed, to minimise impacts from the site. The DWE has advised that stormwater outlets to the watercourse should be designed in accordance with DWE's *Stormwater Outlet Structure to Streams Guideline* and that a license under the *Water Management Act, 2000* may be required for the proposal's water storage and reuse options.

The BCC has raised concern about the adequacy of the water quality assessment and potential adverse impacts on groundwater and surface water resulting from the project.

Whilst it is acknowledged that the detailed design of the water management system has not been finalised, the Department considers that sufficient information has been provided to assess the likely impacts on groundwater and surface water. The Department considers that contamination of groundwater and surface water would be minimised by the proposed containment of leachate on hardstand areas and in leachate ponds until reused and that site runoff would be limited by the proposed stormwater ponds, the existing and proposed sedimentation ponds, and the vegetation buffer along Badgery's Creek.

The Department therefore considers that the proposal would not adversely impact the groundwater table or Badgery's Creek, provided the water management systems are adequately implemented and maintained. The recommended conditions of approval therefore require an erosion and sediment control plan, a stormwater management plan and a water monitoring and response plan to be implemented and barriers that stop permeation of leachate into the groundwater table be provided. The Department considers that these controls would ensure that surrounding water systems are not adversely impacted by the proposal.

5.6 Flora and Fauna

The site of the AWT is extensively disturbed and cleared, with small pockets of degraded Eucalyptus. The proposal includes clearing of 0.81 hectares of degraded Cumberland Plain Woodland. The flora and fauna assessment indicated that the proposal would not have any significant impact on threatened species or endangered ecological communities (EEC), including the Cumberland Plain Woodland and advised that revegetation of cleared gaps in the riparian corridor would be the most effective ecological initiative for the site. SITA has therefore committed to continue to maintain the 25 metre wide riparian zone along the eastern side of Badgery's Creek. Additionally, SITA would continue to revegetate its northern boundary, and would revegetate the northwest corner of the site and implement a weed management program, to ensure no net loss of the Cumberland Plain Woodland.

The DWE recommended that SITA rehabilitate a 50 metre wide riparian corridor along Badgery's Creek, consisting of a 40 metre wide riparian zone and a 10 metre buffer zone. Provision of a 50 metre wide riparian corridor is not possible, however, due to the existing internal site road being located a minimum of 38 metres from the creek. The Department considers that it would be impractical to relocate this road to the east, due to existing landfill activities in this area. To ensure opportunities to rehabilitate the riparian corridor are maximised, despite the site constraints, however, the recommended conditions of approval require that SITA rehabilitate the area between the internal road and Badgery's Creek, as outlined in Figure 6 (over the page).

The DECC, did not raise concerns about the proposed clearing or revegetation program. As the AWT would be located on a highly degraded site, the Department considered its ecological impacts would be limited and acceptable. To ensure residual impacts are adequately offset, the recommended conditions of approval require that details of the rehabilitation program and the weed management program, be outlined in a Vegetation Management Plan, to be approved by the Director General. Once operations cease, the Proponent would also be required to decommission the project and rehabilitate the site to the satisfaction of the Director General. The Department considers these requirements should ensure that flora and fauna impacts from the project and minimised, with opportunities to undertaken appropriate and controlled revegetation utilised.



Figure 6: Riparian corridor to be rehabilitated by SITA

5.7 Traffic

Traffic will access the site via the current Elizabeth Drive site access road, east of Luddenham Road. The impact of project traffic on Elizabeth Drive and its intersection with the site access road was modelled using the SIDRA intersection modelling package. Modelling included in the EA was based on the estimated number of daily vehicle movements associated with the proposed facility, namely 236 vehicle movements, and the current number of daily vehicle movements to the landfill, namely 404 vehicle movements. The modelling indicated that the right turn from Elizabeth Drive onto the site access road would operate at level of service (LOS) A. The right turn from the site access road onto Elizabeth Drive was not modelled.

The current number of vehicle movements to the landfill, namely 404 vehicle movements per day, is substantially lower than the number of vehicle movements permitted under the

landfill's consent, namely 780 vehicle movements per day. The Department therefore requested that the traffic model be revised, to include the maximum daily number of vehicle movements permitted under the landfill's consent. The revised traffic assessment in the PPR indicated that:

- traffic along Elizabeth Drive would continue to operate at LOS A;
- the right turn from Elizabeth Drive into the access road would operate at LOS B; and
- the right turn from the access road onto Elizabeth Drive would operate at LOS D (ie near capacity) with an average delay of 42.8 seconds.

The Department notes that, in the event that both the landfill and the AWT were to generate the maximum level of traffic, the right turn from the access road would operate near capacity. As traffic from the landfill, however, is currently well below the traffic levels cited in the revised modelling, traffic impacts are considered acceptable.

Whilst the RTA was consulted about the proposal, it did not provide a submission. Similarly, PCC did not comment on road impacts. A number of surrounding property owners, however, raised concern about traffic impacts and requested that the number of vehicles servicing the site be capped. The BCC also raised concern that SITA was not contributing to the upgrade and the ongoing maintenance of Elizabeth Drive.

At this stage, the Department considers that traffic impacts from the project are acceptable, and provision of funding for an upgrade or ongoing maintenance of Elizabeth Drive is not warranted. In order to ensure that site access road's intersection with Elizabeth Drive continues to operate adequately, however, the recommended conditions of approval require SITA to monitor and review its performance in two years time (or as recommended by the Director General). In the event that operation of the intersection is found to perform equal to or worse than LOS D, due to increased traffic from the landfill and AWT, SITA shall implement mitigation measures recommended by the RTA.

5.7 Summary of Other Impacts

Issue	Impact
Flooding	<ul style="list-style-type: none"> • Council raised concern about the impact of flooding on the proposal; • SITA subsequently demonstrated that as the proposal would be built outside the 1:100 ARI zone and its leachate ponds would be designed to contain the 1:10 ARI, its flooding impacts would be limited; • To ensure that rainfall during storms is adequately managed and controlled, a recommended condition of approval requires that a Stormwater Management Scheme be prepared and implemented in accordance with the <i>DECC's Managing Urban Stormwater: Council Handbook</i>.
Visual	<ul style="list-style-type: none"> • The visual assessment indicates that that proposal would only be visible at one residence, namely 1745 Elizabeth Drive, during its initial stages, and it would not be visible within 8 years, as views of it would be blocked by the final landform at the landfill; • SITA propose to use neutral building colours and provide landscape screening to minimise residual visual impacts; • The Department therefore considers that the visual impacts would be acceptable; • To ensure impacts from external lighting are minimised, a recommended condition of approval requires lighting to be designed so that it does not create nuisance for surrounding properties, in accordance with <i>AS 4282(INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting</i>.
Dust	<ul style="list-style-type: none"> • Dust would be generated by clearing and construction activities, and by truck movements during operation; • To minimise dust, SITA would implement dust suppression techniques, maintain its machinery and provided a sealed road during operation; • The Department therefore considers that dust would be adequately minimised and managed.

Hazards	<ul style="list-style-type: none"> • There is a fire risk at the facility from ignition during composting and from bushfires along Badgerys Creek; • SITA has committed to monitor composting activities to limit ignition opportunities, install fire fighting equipment, and to maintain fire breaks between the facility and Badgerys Creek; • The Department therefore considers that fire risks would be adequately minimised and mitigated; • To minimise impacts from spillage, a recommended condition of approval requires that diesel for vehicles be stored in appropriately sized bunds in accordance with all relevant Australian Standards and DECC's <i>Technical Bulletin Bunding and Spill Management</i>; • Additionally, any hazardous waste delivered to the site is to be identified, separated and removed for disposal at an appropriately licensed facility.
Heritage	<ul style="list-style-type: none"> • There are no identified non-indigenous heritage items in the vicinity of the site; • The site is highly modified and has low archaeological potential, however, an indigenous heritage item was identified between the site and Badgerys Creek in 1991; • This item would not be impacted by the proposal; • The Department therefore considers that the proposal would not impact heritage items.

6. RECOMMENDED CONDITIONS OF APPROVAL

The Department has prepared recommended conditions of approval for the project which are summarised in Appendix A and included in Appendix B.

These conditions are required to:

- control and regulate waste inputs and outputs from the site;
- manage odour impacts from the facility, including ongoing implementation of best practice odour management practices;
- manage and mitigate noise impacts at surrounding residences; and
- manage and monitor other environmental impacts.

SITA does not object to the imposition of the recommended conditions.

7. CONCLUSION

The Department has assessed the EA, submissions, and SITA's preferred project report including the response to submissions on the proposal, in accordance with the requirements under the EP&A Act.

This assessment has found that the environmental impacts of the proposal can be mitigated and/or managed to ensure an acceptable level of environmental performance.

It has also found that the proposal would provide a range of economic, social and environmental benefits including:

- a capital investment of over \$40 million to Western Sydney;
- provision of jobs for up to 30 people during construction and 20 people during operation;
- a contribution towards achieving the resource recovery targets in the *NSW Waste Avoidance and Resource Recovery Strategy*;
- production of a mixed waste compost for beneficial reuse; and
- a substantial reduction in greenhouse gas emissions generated by each tonne of mixed waste received at the facility, compared to the emission levels that would be generated if this waste was disposed of in a landfill.

Consequently, the Department believes that the proposal is in the public interest and should be approved, subject to conditions.

8. RECOMMENDATION

It is recommended that the Minister:

- consider the findings and recommendations of this report;
- approve the project application approval under Section 75J of the Act, and subject to the recommended conditions of approval; and
- sign the attached instrument of approval (Attachment B).

David Kitto
A/Executive Director
Major Project Assessment

Sam Haddad
Director General

APPENDIX A – SUMMARY OF CONDITIONS OF APPROVAL

<i>Aspect</i>	<i>Condition</i>	<i>Requirement</i>
<i>Schedule 3: Specific Environmental Conditions</i>		
<i>Waste Management</i>	1-5	Outlines limits on waste inputs and outputs, and a requirement to revise the waste output criteria.
<i>Odour</i>	6-8	Odour limits, management and monitoring requirements.
<i>Dust</i>	9	Dust minimisation requirements.
<i>Greenhouse Gas</i>	10-11	Requirements for best practices techniques to minimise greenhouse gas generation, investigate use of greenhouse gas for electricity.
<i>Noise</i>	12-16	Working hours for construction and operation, noise limits, noise management, mitigation and monitoring requirements.
<i>Soil and Water</i>	17-25	Leachate barriers and bunding criteria, requirements for soil, water and leachate management plan.
<i>Flora and Fauna</i>	26-27	Requirements for rehabilitation of the riparian corridor, revegetation and weed management programs.
<i>Transport</i>	28	Requirements to review intersection performance.
<i>Visual Amenity</i>	29-31	Lighting requirements, rehabilitation and closure plan.
<i>Schedule 4: Environmental Management, Reporting and Auditing</i>		
<i>Environmental Management</i>	1	Requirements for the environmental management plan.
<i>Reporting</i>	2-6	Compliance, incident and annual reporting, including an annual odour management report identifying advances in odour management.

APPENDIX B – CONDITIONS OF APPROVAL

APPENDIX C – SUPPLEMENTARY PREFERRED PROJECT REPORT

APPENDIX D –PREFERRED PROJECT REPORT

APPENDIX E – SUBMISSIONS

APPENDIX F – ENVIRONMENTAL ASSESSMENT

APPENDIX G – CONSIDERATION OF ENVIRONMENTAL PLANNING INSTRUMENTS

Section 75(2) of the *Environmental Planning and Assessment Act 1979* requires that reference be made to the provisions of any environmental planning instrument that would (but for Part 3A of the Act) substantially govern the carrying out of the project. Consideration of the proposed development in the context of the objectives and provisions of the relevant environmental planning instruments is provided below.

State Environmental Planning Policy No. 11 – Traffic Generating Developments

SEPP 11 aims to ensure that the RTA is made aware of and allowed to comment on projects for developments listed in Schedules 1 and 2 of SEPP 11. Schedule 1 identifies developments including waste activities. The proposed development therefore triggers SEPP 11. The project was referred to the RTA for comment in accordance with SEPP 11.

State Environmental Planning Policy No. 33 – Hazardous and Offensive Development

SEPP 33 aims to identify proposed developments with the potential for significant off-site impacts, in terms of risk and/ or offence (odour, noise etc). A development is defined as potentially hazardous and/ or potentially offensive if, without mitigating measures in place, the development would have a significant risk and/ or offence impact, on off-site receptors. SEPP 33 was considered as part of the proposal.

State Environmental Planning Policy No. 55 – Remediation of Land

SEPP 55 deals with the remediation of contaminated land. Whilst SEPP 55 applies to all projects, there is no known contamination contained within the proposed AWT site, and therefore no remediation is required to be undertaken at this stage.

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

Sydney Regional Environmental Plan No. 20 – Hawkesbury-Nepean River (No. 2 -1997) (SREP 20) outlines planning policies and strategies to protect the Hawkesbury-Nepean River system. As Badgerys Creek flows join South Creek into the Hawkesbury River, the proposal was designed having regard for the identified policies and strategies under SREP 20. The Department is satisfied that the project is consistent with the objectives of the SREP 20.

Penrith Local Environmental Plan 201- Rural Lands

Penrith Local Environmental Plan 2001 – Rural Lands (LEP) aims to protect, enhance and conserve the scenic quality and valuable landscape features of rural areas in the Local Government Area. The subject site is zoned rural under the *Penrith Local Environmental Plan 201 – Rural Lands* (LEP). Whilst waste treatment facilities are prohibited in this rural zone, Clause 43 of the LEP, allows development for the purpose of an advanced waste treatment facility on the site, subject to consent. The Department therefore considers that the proposal is consistent with the objectives and zoning requirements of this LEP.