MAJOR PROJECT ASSESSMENT:
Lucas Heights
Alternative Waste Technology Facility

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

June 2010

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EXECUTIVE SUMMARY

WSN Environmental Solutions (WSN) is proposing to develop an Alternative Waste Technology (AWT) Facility within the Lucas Heights Waste and Recycling Centre (LHWRC) in the Sutherland Shire Local Government Area.

The proposed AWT facility would use ArrowBio technology (anaerobic digestion) to process up to 100,000 tonnes of municipal solid waste per year. The project would divert an estimated 70% of the incoming municipal waste from landfill and would produce:

- stabilised sludge with market potential as soil conditioner;
- biogas, which would be used to generate approximately 2 megawatts of electricity for use onsite and export to the electricity grid; and
- other residual material which would be disposed of to landfill.

The project has a capital investment value (CIV) of $60 million and would generate between 30-50 construction jobs, and approximately 69 operational jobs. The project would have an operational life of 20 years. This would exceed the current approved life (2024) of the landfill at the LHWRC. After closure of the LHWRC landfill, residual waste from the project would be transported off-site for disposal at an appropriate Class 2 landfill.

The project constitutes a 'major project' under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act), and consequently the Minister is the approval authority.

The Department exhibited the Environmental Assessment of the project from 30 September 2009 to 2 November 2009, and received 8 submissions on the proposal: 6 from government authorities generally supporting the project, and 2 from the general public objecting to the project. These submissions raised concerns broadly in relation to traffic, noise, air emissions and odour.

The Department has reviewed these submissions in detail, and assessed the project application and Environmental Assessment in accordance with the objects of the EP&A Act.

The Department considers that the potential environmental impacts of the project can be adequately mitigated and/or managed to ensure an acceptable level of performance and has recommended a range of conditions to ensure this occurs.

The proposed AWT facility is consistent with the existing use of the LHWRC. In addition, the Department considers the project to be consistent with the objects of NSW Waste Avoidance and Resource Recovery Strategy (WARR, 2007) in diverting significant amounts of waste away from landfill.

In summary, the Department considers that the site is suitable for the proposed development, and that the project offers significant economic benefits for the region. Consequently, the Department considers that the Lucas Heights AWT Facility project is in the public interest and should be approved subject to conditions.

1. BACKGROUND

In 1985, Sutherland Shire Council (Council) granted approval for the operation of the Lucas Heights Waste and Recycling Centre (LHWRC) at Lucas Heights (Consent No. 5482/85).

In November 1999, the then Minister for Planning granted approval for a major expansion of the waste facility and the inclusion of additional waste related operations (DA 11-01-99). The 1999 approval included:

- the expansion of the LHWRC's capacity by 8.225 million tonnes and extension of the landfill life to 2024 with tonnage limits on landfilled, recycled and composted waste;
- the development of composting and recycling facilities, including a green waste processing and composting facility and a biowaste facility;
- the staged provision of a rehabilitated landform and the progressive development of a local and regional multi-purpose sporting and recreational complex at Lucas Heights; and
- the rehabilitation of 123.5 ha of bushland (known as the Lucas Heights Conservation Area), to be transferred to NSW National Parks and Wildlife Service.

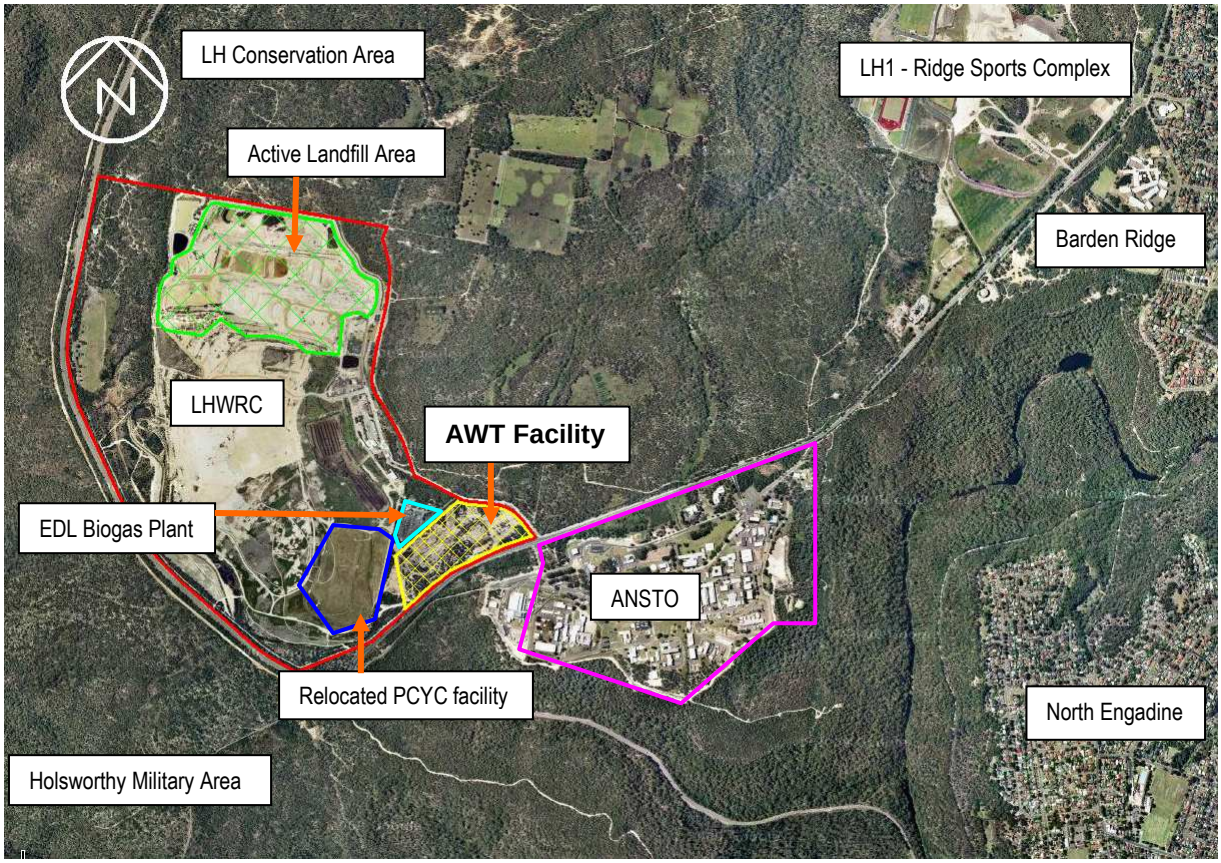

***Figure 1**: Regional context*

Since development consent was granted in 1999, a number of modifications have been approved including a capacity inflow increase up until 2000, a change in dam configurations, waste sourcing from a number of council areas across the Sydney metropolitan region, staged construction of the clubhouse at Lucas Heights 1, and subdivision.

1.1 Surrounding Land Use

The following land uses are located in the immediate vicinity of the site (see Figure 1):

- the LHWRC (to the west);
- bushland areas that form part of the Australian Nuclear Science and Technology Organisation's (ANSTO) exclusion zone (to the north and south); and
- ANSTO's facilities (to the south on the opposite side of New Illawarra Road) including the ANSTO Motel.

Land uses in the surrounding area include (see Figure 1):

- the residential suburbs of North Engadine (approximately 2 km to the east) and Barden Ridge (approximately 3 km to the north east);
- Holsworthy Military Reserve (to the north, west and south);
- the Ridge Sports Complex, a major regional sporting facility on the site of the former LHWRC (LH1 approximately 2.5 km to the north-east);
- the Lucas Heights Conservation Area (approximately 2 km to the north-west); and
- the Police and Community Youth Club (PCYC) bike facility (on the site of the proposed project).

2. PROPOSED PROJECT

WSN propose to construct and operate an Alternative Waste Technology (AWT) facility and associated infrastructure in the south-east corner of the LHWRC (refer Figure 1). The LHWRC is approximately 205 hectares in area. The proposed AWT facility would occupy approximately 11 hectares. The proposed site is owned by ANSTO and leased to WSN, but wholly within the LHWRC.

A patented ArrowBio technology would be used to process up to 100,000 tonnes of municipal solid waste per year and divert an estimated 70% of incoming material away from the landfill site to the north (the LHWRC landfill site). The project life would be 20 years. The operation of the project would exceed the current approved life (2024) of the landfill at the LHWRC. After closure of the LHWRC landfill, residual waste from the project would be transported off-site for disposal at an appropriate Class 2 landfill. Biogas produced from the project would be used to generate approximately 2 MW of electricity for use on site with excess being exported to the electricity grid.

The major components of the project are summarised in Table 1, and depicted in Figure 2. The project is described in full in WSN's Environmental Assessment (EA), which is attached as Appendix D.

***Table 1**: Major Components of the Lucas Heights AWT Facility Project*

Aspect	Description
Project Summary	Construction and operation of an AWT facility and associated infrastructure to process municipal solid waste
Key features	
Waste processing	Up to 100,000 tonnes per annum of municipal solid waste
Project Life	20 years from the commencement of operations on site
CIV	$60 million
Output	▪ Recyclables recovered 20,000 tpa ▪ Residuals/rejects landfilled 30,000 tpa ▪ Stabalised sludge (soil conditioner) 18,000 tpa ▪ Water produced 12,000 tpa ▪ Methane produced 5,000 tpa ▪ CO_2 and moisture loss 15,000 tpa
Employment	▪ 30-50 construction jobs ▪ 69 operational jobs
Construction Period	18 months: 6 months of earthworks followed by and additional 12 months of building, equipment installation and commissioning
Operating Hours	▪ Biological plant and electricity generation plant - 24 hours a day, 7 days a week ▪ Waste receival - 6am to 4pm Monday to Friday, 8am to 4pm Saturdays, and 6am to 2 pm on public holidays ▪ Waste processing (indoor operations) - 5am to 9pm Monday to Friday
Access	Access would be via a new internal access road off Little Forest Road
Odour Management	Enclosed operation and an ozone injection system
Water Management	▪ Net process water produced would be approximately 40 kL/day ▪ Wastewater would be treated in the on-site wastewater treatment plant, stored in the on-site process water dam then disposed of to sewer under a Sydney Water trade waste agreement ▪ Stormwater would be collected in a first flush system and on-site stormwater retention dam

Aspect	Description
Development Components	
Components	The project would involve the following components: ▪ Receival hall; ▪ Process plant; ▪ Biological plant; ▪ Energy generation plant; ▪ staff facilities; ▪ laboratory; ▪ weighbridge; ▪ parking area for 72 cars and other vehicles; ▪ internal sealed road network; ▪ water treatment plant; and ▪ roads and infrastructure
Vegetation Clearing and Landscaping	▪ 1.43 ha of remnant vegetation would be cleared for the project ▪ Landscaping would include retaining some existing vegetation, identifying new landscaping zones, and vegetation / screening enhancement

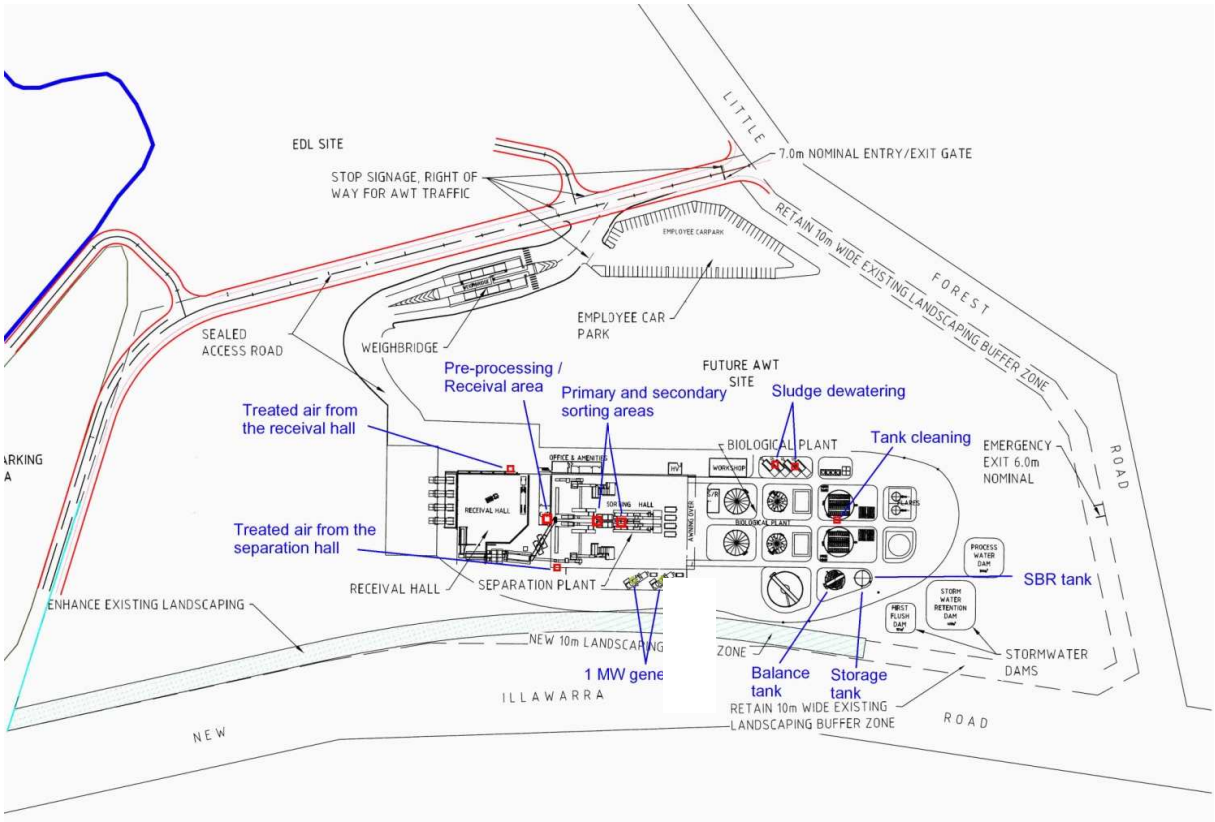

***Figure 2**: AWT Facility Ste Layout*

3. STATUTORY CONTEXT

3.1 Strategic Context

The NSW strategic policy framework for waste management incorporates policy to drive waste reduction and resource recovery. The framework has most recently been strengthened with the addition of new legislation to streamline development of waste management infrastructure and a strategy that provides for increasing resource recovery and reducing toxicity in products.

Waste Avoidance and Resource Recovery Act 2001

The *Waste Avoidance and Resource Recovery Act 2001* (WARR Act) governs the strategic direction for waste management and resource recovery in NSW. The main objectives of the WARR Act are:

- *a) to encourage the most efficient use of resources and to reduce environmental harm in accordance with the principles of ecologically sustainable development,*
- *b) to ensure that resource management options are considered in accordance with the following hierarchical order:*
  - *i. avoidance of unnecessary resource consumption,*
  - *ii. resource recovery (including reuse, reprocessing, recycling and energy recovery), or*
  - *iii. disposal,*
- *c) to provide for the continual reduction in waste generation,*
- *d) to minimise the consumption of natural resources and the final disposal of waste by encouraging the avoidance of waste and the reuse and recycling of waste,*
- *e) to ensure that industry shares with the community the responsibility for reducing and dealing with waste,*
- *f) to ensure the efficient funding of waste and resource management planning, programs and service delivery,*
- *g) to achieve integrated waste and resource management planning, programs and service delivery on a State-wide basis,*
- *h) to assist in the achievement of the objectives of the Protection of the Environment Operations Act 1997.*

Waste Avoidance and Resource Recovery Strategy 2007

The Waste Avoidance and Resource Recovery Strategy (WARR Strategy) set targets for waste avoidance for the State. It was released in 2003 and updated in 2006. The key result areas and targets identified in Waste Strategy 2003 were retained in the Waste Avoidance and Resource Recovery Strategy 2007 (WARR Strategy 2007). They remain relevant in the current NSW economic, environmental and social climate and while they are ambitious, the targets are also realistic goals that will continue to provide an impetus for action across all sectors.

Sydney Metropolitan Strategy 2005

The Sydney Metropolitan Strategy ('City of Cities: A Plan for Sydney's Future') was released in 2005 and is currently undergoing a review. The strategy is a broad framework to facilitate and manage growth and development over the next 25 years. One of the aims of the strategy is to reduce the amount of waste produced by Sydney:

> *'4. Protect the environment*
> *Protect Sydney's unique environmental setting and reduce the city's use of natural resources and production of waste.'*

The strategy arranges Sydney into ten subregions combining local government areas with similar issues and challenges. The Sutherland LGA falls within the Southern Subregion. The South Subregion Strategy, which forms part of the Metropolitan Strategy identifies that Sutherland is the second most populated LGA in NSW and covers an area of 334 km^2.

The proposed AWT facility project is consistent with an increasing focus on sustainable waste management at a local, State and National level. The project would assist councils to meet the objectives of the WARR Act and aggressive resource recovery targets set by the WARR Strategy 2007, including the 66% resource recovery target for municipal waste.

Of the 100,000 tonnes of municipal solid waste processed at the site each year approximately 70% of the waste would be diverted away from landfill. The Department is therefore satisfied the proposal is

consistent with the WARR Strategy, as extensive waste processing is proposed, thereby reducing the amount of waste to landfill.

As well as meeting State targets for waste management, the Proponent forecasts that the community will demand ongoing improvement in waste management, and higher standards of environmental performance, sustainability and resource recovery. The project would satisfy community expectations for improved waste management practices.

3.2 Major Project

The proposal is classified as a major project under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act), because it is development for the purpose of a resource recovery or recycling facility that handles more than 75,000 tonnes per year of waste, in accordance with Clause 27(3) of Schedule 1 of *State Environmental Planning Policy (Major Development) 2005*.

Consequently the Minister is the approval authority for a major project.

On 25 January 2010, the Minister delegated his powers and functions as an approval authority for certain projects under section 75J of the EP&A Act to the Deputy Director-General of Development Assessment and Systems Performance. This project application meets the terms of this delegation. Under these circumstances, the Deputy Director-General may determine the application under delegated authority.

3.3 Permissibility

The site is zoned No. 12 - Special Uses under the *Sutherland Shire Local Environmental Plan 2006.* The development of waste recycling and management centres is permissible with consent in this zone.

The Deputy Director-General, under delegated authority of the Minister for Planning, may approve the development.

3.4 Exhibition and Notification

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

After accepting the EA for the project, the Department:

- made it publicly available from 30 September 2009 until 2 November 2009:
  - on the Department's website;
  - at the Department's Information Centre;
  - at Sutherland Shire Council; and
  - at the Nature Conservation Council;
- notified landowners in the vicinity of the site about the exhibition period by letter;
- notified relevant State government authorities and Sutherland Shire Council by letter; and
- advertised the exhibition in the St George and Sutherland Shire Leader.

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 environmental assessment requirements;
- EA; and
- WSN's response to issues raised in submissions.

3.5 Environmental Planning Instruments

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 instrument that would (but for Part 3A) substantially govern the carrying out of the project and that have been taken into consideration in the environmental assessment of the project.

In relation to this particular project, the relevant EPI's are:

- *State Environmental Planning Policy No. 33 - Hazardous and Offensive Development;*
- *State Environmental Planning Policy No. 55 - Remediation of Land;*
- *State Environmental Planning Policy (Infrastructure)2007;*
- *State Environmental Planning Policy (Major Development) 2005; and*
- *Sutherland Shire Local Environment Plan 2006.*

WSN has assessed the project against the relevant provisions in these EPIs in the EA (see Appendix D) and concluded that:

- subject to the implementation of the proposed mitigation measures, the proposal would not constitute hazardous or offensive development;
- the site is suitable for the proposed development and would not require remediation; and
- the proposal is consistent with the LEP.

The Department has assessed the project against the relevant provisions of these instruments and is also satisfied that the project is consistent with the instruments.

A copy of the environmental planning instruments is provided in Appendix C.

3.6 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), (iii), (vi) 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 considered the objects of the EP&A Act, including the encouragement of ESD, in its assessment of the project application. The Department considers that the project is consistent with the objects of the EP&A Act as it would divert an estimated 70% of incoming material away from

landfill and would generate approximately 2 MW of electricity for use on site with excess being exported to the electricity grid.

3.7 Statement of Compliance

Under Section 75I 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 IN SUBMISSIONS

During the exhibition period, the Department received a total of 8 submissions on the project:

- 6 from public authorities (RTA, DECCW, Sutherland Shire Council (Council), ANSTO, NOW and Sydney Water); and
- 2 submissions from the general public.

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

4.1 Public Authorities

The **Roads and Traffic Authority** (RTA) did not object to the project, however, they did raise issues pertaining to traffic management. These included the requirement for a Demolition & Construction Traffic Management Plan; the provision of facilities to clean tyres of vehicles exiting the site; and the need for parking areas, swept paths and manoeuvrability to be designed in accordance with Australian Standards for heavy vehicle use and AUSTROADS.

The **Department of Environment Climate Change and Water (DECCW)** did not object to the project. The DECCW recommended a number of conditions of approval relating to waste and water management, emission and discharge limits, and noise. Following recent experiences with the AWT facility at WSN's Macarthur Resource Recovery Facility (Jacks Gully), DECCW also recommended rigorous conditions regarding odour management.

Sutherland Shire Council did not object to the project and advised that their concerns had been addressed during previous discussions with the Proponent.

The **Australian Nuclear Science and Technology Organisation** (ANSTO) raised concerns relating to additional traffic generation, air quality, visual appearance, and safety given the proximity of the proposed AWT facility to Australia's only nuclear facility and associated infrastructure. While ANSTO has issued owners consent for the project application, they have advised in their submission that they have other plans for the proposed AWT site and are currently investigating with WSN the scope to relocate the proposed AWT facility to another site. This would need to be the subject of a separate application should this eventuate.

The **NSW Office of Water** did not object to the proposal and advised that should the project be approved, the office should be contacted regarding the licensing of the proposed additional monitoring bore.

Sydney Water (SW) raised issues pertaining to service requirements. SW noted that the proposed site is not served by the existing Sydney Water Sewerage System and that a pump to sewer system would be required for the Lucas Heights sewers.

4.2 General Public

Two submissions were received from community representatives located in Engadine. These submissions objected to the proposed AWT Facility on a number of grounds generally in relation to hazards, traffic impacts and proximity of the facility to residential areas and associated impacts such as noise, odour and air quality.

4.3 Response to Submissions

WSN has provided responses to the issues raised in submissions (see Appendix F). This has been made publicly available on the Department's website.

The Department has considered the issues raised in submissions, and WSN's responses to these issues in its assessment of the project.

5. ASSESSMENT

In assessing the merits of the project, the Department has considered:

- the environmental assessment, submissions and response to submissions on the project (see Appendices D to F);
- the relevant environmental planning instruments, guidelines and policies;
- the objects of the EP&A Act, including the object to encourage ecologically sustainable development; and
- the relevant statutory requirements of the EP&A Act & Regulation.

The following provides the Department's assessment of the key issues associated with the project. Other issues are summarised in Table 5.

5.1 Resource Recovery

Issue

The project would improve resource recovery rates.

Consideration

The NSW Government is committed to waste avoidance and resource recovery from all waste streams across NSW. This policy is reflected in both the *Waste Avoidance and Resource Recovery Act 2001* and the associated *Waste Avoidance & Resource Recovery Strategy 2007 (WARR Strategy)*.

The primary aims of this policy are to:

a. encourage the most efficient use of resources and reduce environmental harm in accordance with the principles of ecologically sustainable development; and
b. ensure that resource management options are considered against the hierarchy of the following order:
   (i) avoidance of unnecessary resource consumption;
   (ii) resource recovery (including reuse, reprocessing, recycling and energy recovery); and
   (iii) disposal.

The WARR Strategy sets the following specific targets for resource recovery by 2014:

- 66% of municipal waste;
- 63% of commercial and industrial waste (C&I); and
- 76% of construction and demolition (C&D) waste.

The proposed project would assist councils across the Sydney metropolitan region to reach their waste minimisation goals by diverting up to 70% of incoming municipal solid waste from landfill. This exceeds the WARR strategy 2014 resource recovery target of 66% of municipal waste.

Both the Department and DECCW consider that the quality and use of the mixed waste compost (output) should meet the most recent standards set under the POEO Act 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.

Conclusion

The Department considers that the project would assist councils to meet the objectives of the WARR Act and targets for resource recovery set by the WARR Strategy 2007, including the 66% resource recovery target.

Notwithstanding, the Department has recommended a number of conditions of approval that require WSN to develop and implement 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 DECCW are confident that the quality of the waste outputs from the facility would be of an appropriate standard to minimise impacts from their reuse.

5.2 Traffic and access

Issue

The project would generate increased traffic volumes on New Illawarra Road, and at the intersections of Little Forest Road and New Illawarra Road and New Illawarra Road and Heathcote Road.

Consideration

Cardno Eppell Olen was engaged by WSN to undertake a traffic impact assessment for the project. The assessment considered the additional traffic to be generated by the AWT on top of the traffic already generated by the LHWRC's regular operating conditions. Cumulative impacts were also assessed in relation to the potential traffic to be generated from WSN's proposed Truck Parking Area which is subject to a separate application. However, the assessment revealed that the Truck Parking Area would not generate any additional traffic during peak periods. The analysis of impact of the project focused on peak hour traffic as this is the worst case for assessment.

Existing situation at LHWRC
On an average weekday, there are around 866 vehicles movements associated with the existing LHWRC site with hourly volumes varying from 62 to 106 vehicles per hour. On weekends the average number of vehicles is slightly lower. Over a week the average number of vehicle movements was observed to be 5,844 vehicles. These scenarios represent the existing 'base case' scenario for the LHWRC.

The road network and associated intersections surrounding LHWRC generally perform adequately and are able to carry the existing traffic volumes. However, a small number of vehicles (LHWRC users) exiting Little Forest Road turning right onto New Illawarra Road during the AM peak period experience significant delays. Similarly at the intersection of Heathcote Road and New Illawarra Road the right turn from New Illawarra Road onto Heathcote Road experience significant delays and additional intersection capacity would be required to address this issue (refer Figure 3). The RTA has advised that traffic control signals are proposed to be installed at the intersection of New Illawarra Road and Heathcote Road as part of the RTA's five (5) year works program.

Proposed Access
A new internal road would be constructed off Little Forest Road to provide access to the proposed facility. Vehicles accessing the AWT facility would travel via the new internal road, turning left at the proposed AWT facility entrance. Light vehicles would turn left into the car park prior to the weighbridge. Heavy vehicles would proceed straight ahead through the weighbridge before arriving at the main facility (see Figure 2).

The proposed access road off Little Forest Road would also provide access to the relocated PCYC mini-bike facility, and the existing Energy Development (EDL) site.

***Figure 3**: Road network and associated intersections surrounding LHWRC*

Construction Traffic

During construction of the project, a daily traffic volume of 260 vehicle movements would be generated based on worst case scenario (60 light and 200 heavy vehicles entering the site). Peak traffic generation from construction of the project would occur outside the peak AM and PM periods for the surrounding road network. During construction of the AWT facility, the estimated total traffic generation would be 64 vehicle movements per hour during the AM and PM peak periods.

Both the RTA and the Department are satisfied the construction traffic can be accommodated within the existing road network.

Operational Traffic

During operation, the project would generate additional traffic movements on the key surrounding road network, via New Illawarra Road associated with;

- the estimated 69 employees,
- heavy vehicles (10 tonne trucks) associated with the delivery of 100,000 tpa of waste for processing (2012 to 2035); and
- heavy vehicles (22 tonne trucks) associated with the removal of up to 40,000 tpa of residual waste (2025 to 2035) for disposal at alternative licensed landfill sites. The quantity of 40,000 tpa (as opposed to target 30,000 tpa) has been used to give a conservative 'worst case' scenario in terms of traffic generation.

AWT Facility Traffic Generation

It is estimated that the project would employ 69 people over various shifts. It is assumed that all employees would drive to work and hence would generate 138 vehicle movements per day (69 in and 69 out). The majority of staff would arrive and depart outside of the AM and PM commuter peak periods. Staff generation during the peak periods is estimated to be 10 vehicle movements per hour (10 in and 0 out) in the AM peak and 14 vehicle movements per hour (2 in and 12 out) in the PM peak.

The use of 10 tonne capacity compactor vehicles would comprise the majority of the heavy vehicle movements. An estimated 39 trucks would deliver to the site resulting in 78 vehicle movements per day. Truck traffic generation during the peak periods is estimated to equate to 8 truck movements per hour (4 in and 4 out) in both the AM and PM peak.

The total traffic generation from the proposed AWT facility per day pre-2025 is summarised in Table 2.

***Table 2**: Daily Traffic Generation from the AWT Facility Pre-2025*

Component	Daily		AM Peak		PM Peak	
	IN	OUT	IN	OUT	IN	OUT
Employee Traffic Generation	69	69	10	0	2	12
Heavy Vehicle Traffic (AWT MSW delivery)	39	39	4	4	4	4
Total	**108**	**108**	**14**	**4**	**6**	**16**

As the operation of the project would exceed the current approved life (2024) of the landfill at the LHWRC, heavy vehicles (22 tonne trucks) would remove up to 40,000 tpa of residual waste from the site for disposal at alternative licensed landfill sites. This would result in an additional 14 truck movements each day.

Based on the above, a daily traffic volume of 216 vehicle movements per day would be generated during operation of the project up to the end of 2024. The volume would marginally increase by an additional 14 vehicle movements per day from 2024 to 2035 due to the removal of residual waste from the site.

Conclusion

WSN has included a number of commitments to address traffic impacts from the project. This includes the preparation and implementation of a Construction and Operational Traffic Management Plan for the project that addresses truck movements to and from the site, interactions with general public, parking and access requirements for construction personnel, and safety signage and training.

The Department considers the impact of construction traffic on the road network surrounding the site to be relatively low compared to the existing traffic generated by the LHWRC. Further, it would be temporary and would be limited to the 12 to 18 month construction period.

In regard to operational traffic, although the project would result in a 25% increase in traffic movements to the LHWRC site, both the RTA and the Department considered that the traffic could be accommodated by the existing external road network without augmentation. While the level of service of the existing intersections in the vicinity of the facility is adequate, the RTA has advised that traffic control signals are proposed to be installed at the intersection of New Illawarra Road and Heathcote Road as part of the RTA's five (5) year works program. Adequate provisions have been made to ensure traffic issues have been addressed on the internal road network.

In addition, the Department has considered the cumulative traffic impact of both the AWT facility and the proposed truck parking area (also under consideration as a modification to the LHWRC consent). Both the Department and RTA are confident that traffic generated from both proposals can be accommodated in the surrounding road network.

Notwithstanding the above and WSN's commitments, the Department has included a number of conditions to ensure any potential traffic impacts would be adequately mitigated and managed to an acceptable level. These conditions require WSN to:

- ensure that all internal roads and parking associated with the project are in accordance with the latest versions of the Australian Standards and AUSTROADS for heavy vehicles;
- ensure all parking generated by the project is accommodated on-site and the project does not result in any vehicles queuing on the public road network; and
- prepare and implement a Transport Code of Conduct for the project that describes the measures to be implemented to minimise the impact of the project on the local and regional road network, including traffic noise.

5.3 Odour

Issue

The project would generate odour emissions. Further, the Department raised concerns that the ANSTO Motel was not identified as a sensitive receptor or considered in the EA.

Consideration

Odour
The proposed AWT facility would be an enclosed facility. Air from the receival and process hall would be treated to reduce odour. The proposed method of odour control would be an ozone injection system to reduce odours from the air before being discharged to the atmosphere through vents on the side of each building. Ozone injection is currently being used to control odour at WSN's AWT facility at Jacks Gully.

The air quality assessment identified two main sources of odour in the area of the proposed AWT facility. These are the AWT facility itself and the existing landfill site at the LHWRC which includes a greenwaste and composting facility.

Air emission sources were assessed individually, to demonstrate the relative contribution from each operation, and combined for a cumulative impact. From this analysis it is evident the landfill is the dominant odour source.

Based on the odour certainty threshold defined by NSW DECCW framework documents, the most stringent odour performance criterion for Urban, 2 odour units (ou) at the 99th percentile (to be exceeded not more that 1% of the time), was used in the dispersion modeling for the air quality assessment.

Assessment results demonstrate that the 2 ou contour goal for the AWT facility alone is not expected to be exceeded at any sensitive receptors in the area, such as residents or schools. Similarly, the 2 ou contour for the LHWRC landfill site alone does not encroach on any of the residential areas such as Menai to the northeast, Barden Ridge to the east or Engadine to the southeast.

Additional analysis undertaken by WSN confirmed that while the ANSTO Motel was not addressed explicitly in the air quality assessment, the plots presented in the EA illustrate that the 2 ou contour goal is not expected to be exceeded at the location of the motel. An odour goal of 7 ou (99th percentile) has been applied to the ANSTO facility based on its industrial nature.

When assessing cumulative impacts of the AWT site in conjunction with the landfill site, the results show that the landfill is the dominant odour source and that the effects of the AWT facility operations are relatively minor. Even though the cumulative 2 ou contour extends beyond the landfill boundary, it would not impact upon the local residential areas. The cumulative odour concentration (due to combined emissions from the LHWRC landfill and the AWT facility) under general operating conditions is illustrated in Figure 4.

There would be occasions, every 2 to 3 years, when the acetogenic tanks at the AWT facility require cleaning. Assessment results predict that the maximum odour concentrations due to the AWT facility only with this additional source would not exceed the 2 ou emission goal at the nearest sensitive residence. When combined with the emissions from the landfill, results illustrate that there is very little difference given the landfill is the dominant odour source in the area, and that the cleaning of the tanks is a relatively minor source at the AWT facility given its small area. The 2 ou level is not predicted to be exceeded at the nearest sensitive residence during the cleaning process.

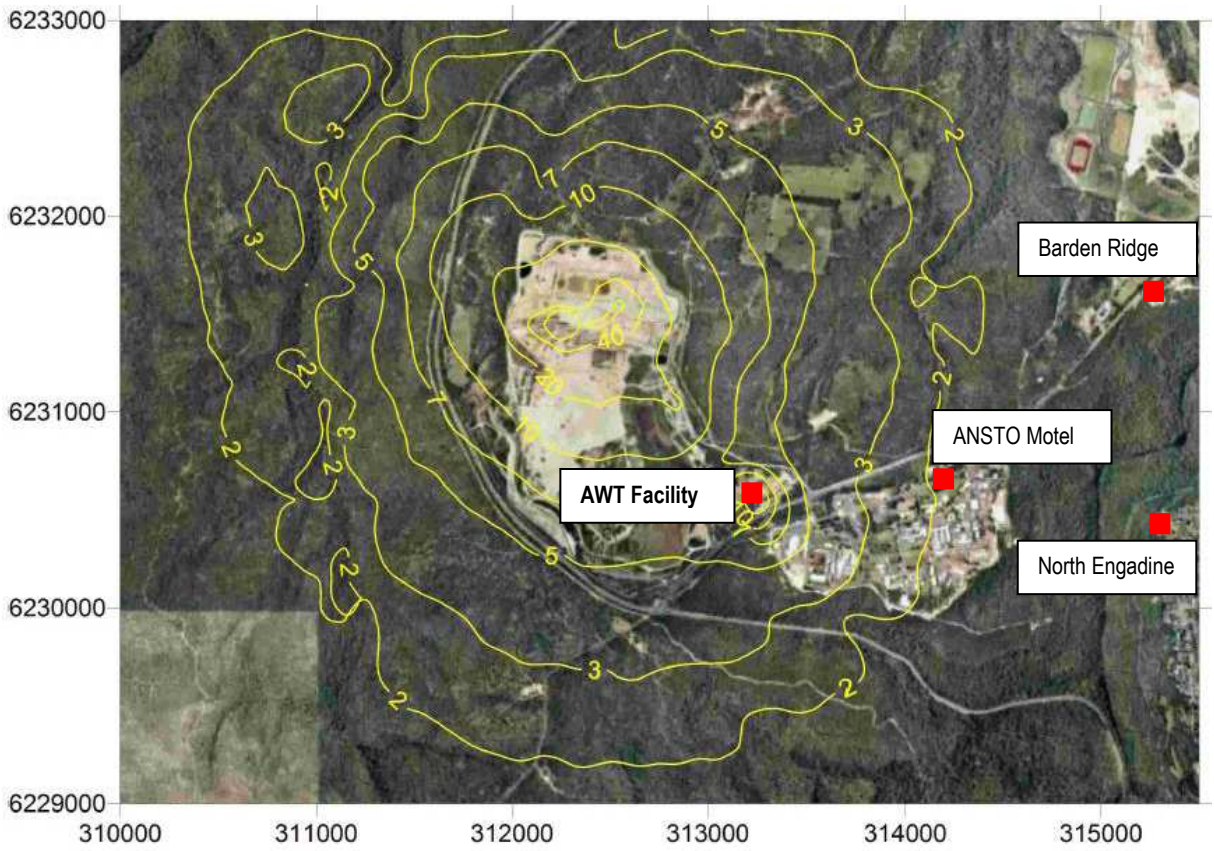

***Figure 4**: Predicted 99th percentile odour concentration due to combined emissions from the LHWRC landfill and AWT facility under general operating conditions.*

Conclusion

Based on a review of the EA and subsequent information, both the DECCW and the Department are confident that odour impacts at residential properties can be maintained at acceptable limits.

The design of the project includes a number of measures to minimise odour impacts such as the receival hall and processing hall being enclosed and the implementation of an ozone injection system.

Notwithstanding, the Department, in consultation with the DECCW, has recommended a number of conditions of approval to ensure air quality and odour impacts are adequately mitigated and managed. These conditions have been included based on this assessment of the current proposal and an understanding gained in relation to the proposed AWT technology since the commissioning of WSN's Macarthur Resource Recovery Facility (Jacks Gully AWT facility) approved by the then Minister for Planning in September 2006.

WSN is proposing to utilise the same technology used at the Jacks Gully AWT facility at the proposed Lucas Heights AWT facility. Both the Department and DECCW have become aware of odour issues associated with the Jacks Gully AWT facility. Both DECCW and the Department are confident that the odour issues relate to the operation and management of the facility, as opposed to the assessed performance of the technology. Further, the sensitive receptors in the vicinity of the Jacks Gully AWT facility are significantly closer to the facility than the nearest residents would be to the proposed Lucas Heights facility, and in greater numbers. Notwithstanding, additional conditions of approval have been included to strengthen the odour management regime for this type of facility and ensure that off-site odour impact can be effectively managed.

These conditions require WSN to;

- ensure that all waste is processed in negative pressure environments that vent via the approved air quality treatment processes designed in consultation with the DECCW;

- prepare and implement an Air Quality, Odour and Greenhouse Gas Management Plan for the project including a program for monitoring the air quality and odour impacts of the project during operation;
- within 6 months of commencement of operations of the AWT facility undertake an Independent Odour Audit and Validation of the project and implement remedial action if required;
- ensure that all venting of odorous emissions, identified by the Independent Odour Audit & Validation from the wastewater treatment system is discharged via treatment processes designed in consultation with the DECCW;
- ensure that all stored waste is either immediately covered or stored in negative pressure environments that vent via the approved treatment processes designed in consultation with the DECCW; and
- ensure air emissions from the plant (stacks) comply with the limits set out in the projects EPL.

The Department and DECCW consider the recommended suite of air quality conditions are rigorous and would ensure that potential odour sources at the proposed AWT would be managed effectively. Both the Department and the DECCW will further monitor compliance with the criteria closely and are satisfied there is scope with the recommended conditions to rectify any issues that may arise.

5.4 Noise

Issue

The Project would generate noise and could potentially cause amenity impacts.

Consideration

A noise impact assessment (NIA) was undertaken by Heggies Pty Ltd for the proposed AWT facility. The assessment considered 24 hour operation of the AWT plant and gas engines and truck deliveries from 6:00am to nominally 4:30pm. Three aspects of noise impacts were considered being: road traffic noise; construction noise; and operational noise.

Road Traffic Noise
The Environmental Criteria for Road Traffic Noise (1999) establishes criteria for road traffic noise in NSW. This document allows for land use developments with potential to create additional traffic on local roads to occur providing that they do not increase the existing level of road traffic noise by more than 2 dB(A). The NIA predicts that the worst case scenario would increase road traffic noise levels by 0.8 dB(A).

The Departments finds that the minor increase in road traffic noise is acceptable and within the road traffic noise criteria.

Construction Noise
Predictions of construction noise associated with the project show that it would not result in any significant impact. The predictions show that any noise associated with any construction activities can be managed within the Operational Noise Criteria and the activities do not require any specific criteria to be established.

Operational Noise
The assessment of operational noise considered both existing and predicted noise from the AWT plant.

The NIA predicts that the calculated noise levels at two representative residential monitoring locations, under a worst case scenario of enhanced weather conditions and operation of the AWT facility, would not exceed the project noise criteria.

Conclusion

DECCW raised concerns that the noise criteria determined by Heggies had not been established in accordance with the *NSW Industrial Noise Policy* (INP). The Department concurs with DECCW and

also identified an additional sensitive receiver, being the ANSTO Motel. Heggies subsequently advised the Department that a maximum noise level of 34 dB(A) would be experienced at the Motel.

Based on a review of the available information and the application of the INP, the Department has proposed the following operational noise limits presented in Table 4. Under the INP, where the existing background noise level is less than 30dBA, then the background noise level is set at 30dBA. Therefore for residential areas, the intrusive criteria of background plus 5dBA are used to establish the relevant noise criteria.

Table 4: *The Department's Proposed Noise Limits*

Reference Point	**Noise Level $L_{eq\ (15\ min)}$ dB(A)**			**$L_{(Max)}$ dB(A)**
	Day	**Evening**	**Night**	**Night**
	Prediction/Criteria	**Prediction/Criteria**	**Prediction/Criteria**	**Criteria**
Location 1 Barden Ridge	21/35	21/35	25/35	45
Location 2 North Engadine	22/35	22/35	26/35	45
ANSTO Motel*	34/55	34/45	34/40	45
ANSTO Nearest Building	27/65	27/65	27/65	-

* Criteria for the Motel has been based on Table 2.1 of the INP for an Suburban interface classification.

The Department is satisfied that the AWT facility can be operated within the proposed noise limits. Notwithstanding, additional conditions have been recommended to ensure any impacts from noise can be adequately mitigated. These conditions require WSN to;

- comply with specified operating hours and noise limits;
- prepare and implement a Noise Monitoring Program for the project; and
- prepare and implement a Transport Code of Conduct for the project that describes the measures to be implemented to minimise the impact of the project on the local and regional road network, including traffic noise.

5.5 Landscape and Visual Amenity

Issue

The project could potentially have visual impacts.

Consideration

The proposed AWT facility would occupy approximately 11 ha in the south-east corner of the existing LHWRC landfill site. The landscape character of the AWT facility site is one of scattered stands of remnant indigenous woodland and heath, with large areas cleared for the PCYC mini bike activities. There are considerable areas of bare earth, some low structures associated with the mini bike activities and a large quantity of used rubber tyres used as safety barriers around the tracks.

The site is visible (in part) from Little Forest Road and New Illawarra Road (both public roads). It is not visible from any other public viewpoints or residential areas. As a result, the main views to the project from the public domain would be from New Illawarra Road.

Views into the site from New Illawarra Road are partly screened by a low earth bund inside the boundary fence, existing stands of casuarinas and remnant stands of native vegetation. Views into the site from Little Forest Road are similarly screened. There is limited visibility of the site from Heathcote Road due to the topography, distance and dense roadside vegetation.

The main building structure, comprising the processing hall and receival hall, would be approximately 47.8 m wide by 129.6 m long by 15.4 m high. The methanogenic tanks would be 15.5 m high and the acidogenic tanks would be 12.7 m high. The project includes a 'landscape zone' along the New Illawarra Road site boundary to allow for screening (including landscaping).

Landscaping would be undertaken in accordance with the Landscaped Management Plan (refer Figure 5).

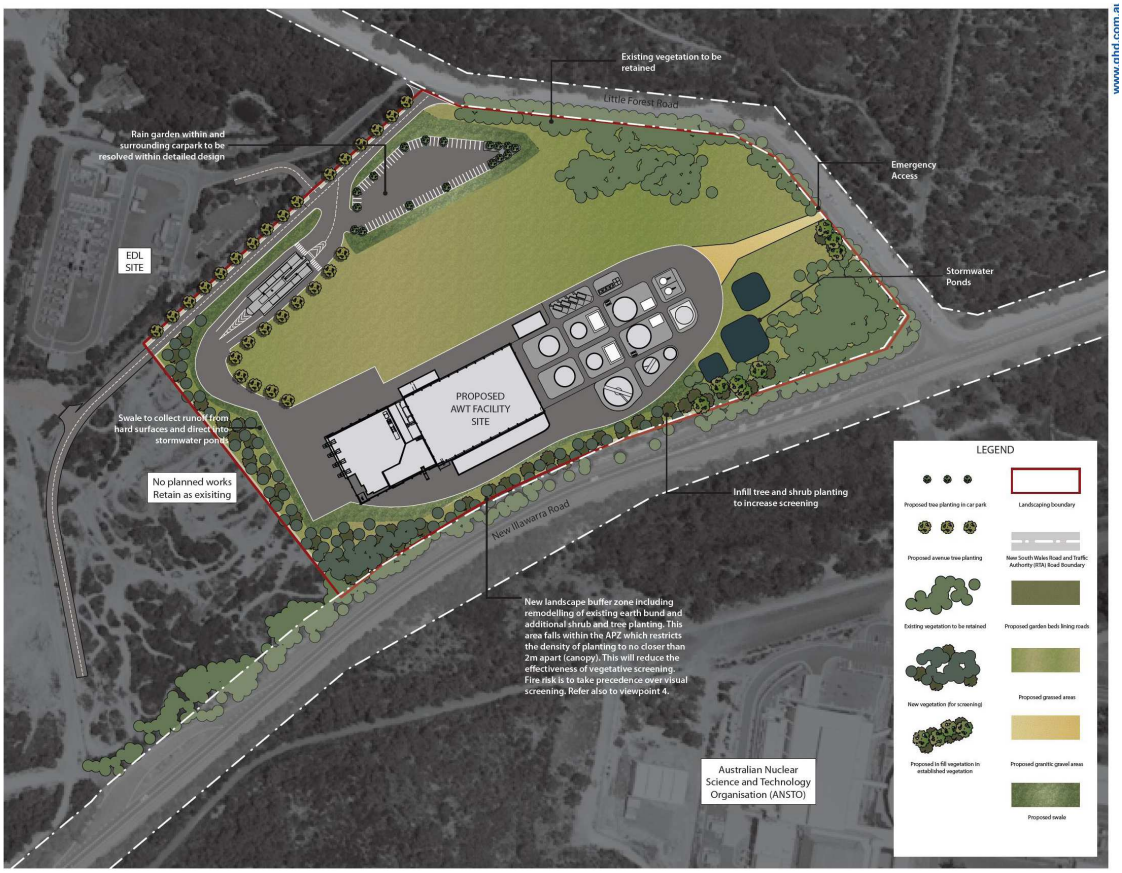

***Figure 5**: Proposed Landscape Management Plan*

The construction of the project would generate visual impacts during the 18 month construction period. These impacts would be temporary and limited to motorists travelling along New Illawarra Road.

The project would result in a change in the character and the appearance of the site, with the potential for this change to be visible from surrounding areas. The detailed design of the project would involve consideration of building materials and treatments to minimise the potential visibility of the project. Screen planting, in association with bunding (at appropriate locations), would help to reduce the potential visual impacts of the project in the mid to long term. The buildings would also be setback approximately 35 m from the site boundary, with an additional 10-15 m of land before the verge of the New Illawarra Road, again reducing the visibility of the new structures from New Illawarra Road and reducing visual impacts.

Conclusion

Based on the above, and additional measures detailed in the Proponent's Statement of Commitments, the Department is satisfied that the visual implications arising from the project are acceptable and could be adequately minimised. Notwithstanding, the recommended conditions of approval require WSN to;

- undertake landscaping in accordance with the Landscape Phasing & Prioritisation Plan and Planting Plan prepared for the project;
- complete all landscaping prior to commencement of operation;
- maintain landscaping during the life of the project; and
- ensure that all external lighting complies with Australian Standards (*AS 4282(INT) 1995*) for outdoor lighting.

5.6 Other Issues

Table 5: *Other issues*

Issue	***Assessment***	***Recommendation***
Soil and Water	▪ Construction of the project would result in disturbance of 51,000 m^3 of soil for levelling and excavations. ▪ The impervious surfaces of the facility would result in changed stormwater runoff characteristics. ▪ An assessment of the site found asbestos in some areas. Soil stockpiles located on the site were also found to have contained asbestos. ▪ Non-contaminated displaced soil would be stockpiled for use in landscaping. ▪ An asbestos identification protocol would be developed for the identification and removal of asbestos should it be encounted during earthworks and construction activities. ▪ Potential impacts to soil and water would be managed through the implementation of environmental management measures as outlined by a Soils and Water Management Plan, and by the water management features that form part of the project design. ▪ The Department is satisfied that any potential impacts from the project on soil and water can be adequately managed and mitigated.	Recommended conditions require WSN to: ▪ implement suitable erosion and sediment control measures during construction; ▪ discharge all wastewater generated by the project to sewer in accordance with a Trade Waste Agreement with Sydney Water; ▪ ensure that all above ground tanks and vats are surrounded by a bund; and ▪ prepare and implement a Soil and Water Management Plan for the project.
Biodiversity	▪ The project would result in the clearance of approximately 1.43 ha of remnant vegetation, including vegetation that would be impacted by the project footprint and vegetation that would need to be removed to satisfy Assets Protection Zone requirements. ▪ Vegetation that would be removed largely consists of weed-infested areas, open grassed areas and disturbed patches of Sydney Sandstone Ridgetop Woodland community. ▪ There are no threatened flora or fauna species present on the site. ▪ Biodiversity management measures would be implemented during construction to minimise impacts on remaining vegetation. Management measures would be detailed in the construction environmental management plan (EMP). ▪ The Department is satisfied that any potential impacts to biodiversity can be adequately managed and mitigated.	Recommended conditions require WSN to: ▪ undertake landscaping in accordance with the Landscape Phasing and Prioritisation Plan to facilitate the management and improvement of vegetation on site.
Hazards	▪ A qualitative risk assessment identified hazard scenarios, and concluded that only one scenario presented an unacceptable risk – fire or explosion of biogas. However, the more detailed Preliminary Hazard Assessment found that this scenario does not exceed the risk criteria and that WSN's operational and engineering controls would minimise the risk to as low as reasonably practical. ▪ Further WSN propose to implement a comprehensive safety management system and bushfire management controls. ▪ The Department is satisfied that the potential hazards associated with the project can be mitigated and managed to an acceptable level.	Recommended conditions require WSN to: ▪ prepare and implement a Bushfire and Emergency Management Plan for the project.
Air Quality	Nitrogen dioxide ▪ It is proposed that the biogas generated by the proposed AWT facility would be used to fuel two 1 MW power generators for the generation of	Refer to section 5.3 for recommended conditions.

Issue	Assessment	Recommendation
	electricity. Emissions from these cogenerators would be a source of NO_2. The emissions from similar operations have been assessed at Eastern Creek and at Jacks Gully, which use the same equipment, allowing emission estimates to be calculated for the Lucas Heights site. ▪ In addition to the biogas generators at the AWT site, there are fifteen 1.15 MW generators which currently operate at the adjacent EDL site. These were considered in the cumulative NO_2 assessment. ▪ Based on the modelled results for NO_x it is predicted that the project would not result in exceedences of the NO_2 emission goal at any nearby sensitive receptors.	
	Dust ▪ Construction of the project has the potential to result in minor air quality impacts (eg. particulate matter disturbance). ▪ Potential impacts would be managed through the implementation of environmental mitigation measures such as; the watering of unsealed roads, water spraying, restricting the size of disturbed surfaces and controlling vehicle movements. ▪ Estimated dust emissions over the 6 month earthworks construction period are considered to be low and well within both health and nuisance criteria. Dust is unlikely to cause any adverse impacts at the nearest residential areas and nuisance impacts are likely to be short-term and generally occur on days where wind speeds are elevated. ▪ The Department is satisfied that potential impacts from dust can be mitigated and managed to an acceptable level.	Recommended conditions require WSN to: ▪ construct, operate and maintain the project in a manner that prevents and/or minimises dust emissions from the site; and ▪ ensure that all internal road surfaces are paved and regularly cleaned.

The Department has assessed the project, in accordance with the requirements of Clause 8B of the *Environmental Planning and Assessment Regulation 2000*, and considers that potential impacts of the project can be suitably managed to ensure an acceptable level of environmental performance.

6. RECOMMENDED CONDITIONS

The Department has prepared recommended conditions of approval for the project (see Appendix B) and summarised these conditions in Appendix A. These conditions are required to:

- prevent, minimise, and/or offset adverse impacts of the project;
- set standards and performance measures for acceptable environmental performance;
- ensure regular monitoring and reporting; and
- provide for the ongoing environmental management of the project.

The Department has provided the draft conditions of approval for the project to WSN for comment, and has incorporated their comments into the conditions of approval where appropriate. Council advised that they had no concerns or objections to the project.

WSN has reviewed and accepts the recommended conditions.

7. CONCLUSION

The Department has assessed the merits of the project having regard to the objects of the EP&A Act and the principles of ecologically sustainable development. This assessment has concluded that with the implementation of the recommended conditions of approval, the impacts of the project can be mitigated and/or managed to ensure an acceptable level of environmental performance.

The Department recognises the importance of the AWT in decreasing the amount of waste that is deposited into landfill to meet the *NSW DECCW WARRS 2007* targets for 2014. The Department also recognises the number of long-term employment opportunities that this facility presents. The site is located within the LHWRC and will employ 30-50 workers during construction and approximately 69 during full operation.

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

RECOMMENDATION

It is RECOMMENDED that the Deputy Director-General:

- consider the findings and recommendations of this report;
- approve the project application, subject to conditions, under section 75J of the Environmental Planning and Assessment Act 1979; and
- sign the attached project approval (see Appendix B)

Chris Ritchie
Manager - Industry

25.6.10

Chris Wilson
Executive Director

28/6/10

Richard Pearson
Deputy Director-General

APPENDIX A: SUMMARY OF CONDITIONS OF APPROVAL

Aspect	Condition	Requirement
Schedule 3: General Administrative Conditions		
Limits of Approval	5	Limits waste operations to 20 years from the commencement of operations on site
	6	Limits waste receipt and processing to up to 100,000 tonnes of general solid waste per year at the site
Schedule 4: Specific Environmental Conditions		
Waste	1	Limits waste receipt, storage, handling and disposal to: general solid waste (putrescible); and special waste authorised for receipt on site under an EPL
	2	Limits waste outputs
	3	Details waste management and monitoring requirements – Waste Management Plan
Air Quality	4-5	Dust minimisation requirements
	6	Odour emission limits
	7	Requirement to ensure that all waste is processed in negative pressure environments that vent via the approved air quality treatment processes (see Air Quality, Odour and Greenhouse Gas Management Plan, Condition 16 of Schedule 4) designed in consultation with the DECCW.
	8	Requirement to ensure that all venting of odorous emissions, identified by the Independent Odour Audit & Validation, from the wastewater treatment system is discharged via treatment processes designed in consultation with the DECCW
	9	Requirement to enclose all or part of the facility should this be recommended by the Independent Odour Audit and Validation
	10	Provision to ensure that all stored waste is either covered or stored in negative pressure environments that vent via the approved treatment processes
	12	Greenhouse Gas requirements
	13	Stake Emission Limits in accordance with the project EPL
	14-15	Outlines pollution discharge monitoring requirements and sampling positions
	16	Details the requirement for an Air Quality, Odour and Greenhouse Gas Management Plan
Noise	17	Details project specific operation hours
	18	Details project specific noise limits
	19	Outlines noise monitoring requirements – Noise Monitoring Plan
Soils and Water	20-22	Details discharge limits and bunding requirements
	24	Outlines the requirement for suitable erosion and sediment control measures
	25	Details the requirement for a Soils and Water Management Plan
Traffic	27-28	Details restrictions on internal roads and parking
	29	Details the requirement for a Transport Code of Conduct
Visual Amenity	30	Details landscaping requirements
	31	Specifies lighting limitations and requirements
Hazards	32	Details the requirement for a Bushfire and Emergency Management Plan
Schedule 5: Environmental Management, Monitoring Auditing and Reporting		
Environmental Management	1	Outlines the requirement for an Environmental Management Strategy
	2	Outlines the requirement for a Construction Management Plan
Reporting	3-6	Details pre-construction, pre-operation and incident reporting requirements
Auditing	7	Outlines annual review requirements
Independent Odour Audit & Validation	8	Outlines odour auditing and validation requirements
Revision of Strategies, Plans and Programs	10	Outlines the requirements for the review and revision of strategies, plans and programs required under the approval

APPENDIX B: CONDITIONS OF APPROVAL

APPENDIX C: ENVIRONMENTAL PLANNING INSTRUMENTS

APPENDIX D: ENVIRONMENTAL ASSESSMENT

APPENDIX E: SUBMISSIONS

APPENDIX F: WSN'S RESPONSE TO SUBMISSIONS & ADDITIONAL INFORMATION