



Woodlawn Eco-Precinct



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ENVIRONMENTAL
SERVICES



Woodlawn Eco-Precinct

An Overview

Woodlawn is located south west of Goulburn in New South Wales. Previously a copper, lead and zinc open cut mine, it is now used as an in-situ Bioreactor. The surrounding 6000 hectares forms the wider Woodlawn Eco-Precinct.

The Woodlawn Eco-Precinct is comprised of three key elements:

- > Woodlawn Bioreactor
- > Woodlawn Alternative Sorting and Processing (WASP) facility
- > Woodlawn Windfarm

Woodlawn Eco-Precinct offers a significant alternative for the resource recovery and disposal of putrescible waste in New South Wales by taking advantage of proven technologies currently utilised by Veolia around the world. The Bioreactor Facility generates Green Electricity from what would otherwise be waste material. The WASP facility recovers reusable materials then produces compost for onsite rehabilitation. Veolia is also developing a 50MW windfarm. Situated on the Great Dividing Range, the Woodlawn Eco – Precinct is ideally situated to harness this natural energy in an area renowned for significant year round wind generation.



Veolia Environmental Services

Leaders in Environmental Innovation

Veolia Environmental Services is committed to providing enhanced and efficient waste treatment and resource recovery solutions for the Australian population. Our suite of facilities across Australia include:

- > Natural Recovery Systems (an in-vessel composting facility)
- > Earthpower (food waste to energy facility)
- > Woodlawn Bioreactor (bioreactor facility)
- > TiTree Bioenergy (bioreactor facility)
- > Construction and Demolition Waste Recycling Facilities
- > Materials Recovery Facilities (paper, glass, plastics, metals)
- > E-waste Recovery Facilities (electrical and electronic equipment)

Access to a World of Resources

Veolia Environmental Services' capabilities are bolstered by access to the Veolia Environnement network which boasts over 150 years of international expertise. As part of VE's sustainable development strategy, each year \$180m is invested in research and development to produce innovative, reliable and economically viable resource recovery infrastructure.

- > 243 non-hazardous waste sorting / recycling facilities
- > 102 composting facilities producing 830,000 tonnes of compost
- > 11 facilities for soil decontamination
- > 79 Waste to Energy plants worldwide
- > 57 facilities for physical-chemical treatment of hazardous waste
- > 7 million tonnes of material recovered per year
- > 58 million tonnes of waste treated



World Class Transfer Terminal

Veolia is the first environmental services company to transport waste by rail in Australia.

Access to the Woodlawn Bioreactor is through the Clyde Transfer Terminal in Sydney. This is located on Parramatta Road in Auburn. The Clyde Transfer Terminal is a state-of-the-art waste transport intermodal link where the waste is unloaded by waste collection vehicles and compacted into shipping containers for transport by rail to the Woodlawn Eco-Precinct. Each purpose built sealed shipping container is able to accommodate approximately three standard truck loads of waste material.

Clyde Transfer Terminal is one of the most environmentally secure facilities of its kind in the world. The facility's noise reduction and odour management systems have set new environmental and technical benchmarks for waste facilities.

The transport sector is one of the fastest growing emissions sectors in Australia and as such provides significant opportunities for greenhouse gas abatement.

With the use of rail, Veolia is assisting with the removal of trucks from Sydney's roads, which helps to reduce diesel emissions and the associated greenhouse gas impacts in comparison to conventional road transport. The use of rail transport alone from Sydney to Woodlawn accounts for 8000 tonnes of CO₂ equivalents saved compared to transport by road. This is the equivalent of taking 1773 cars off the road each year, a significant figure.

Award Winning Logistics

Veolia's achievements in transport and logistics innovations have been formally recognised by the following:

- > Winner of the "2005 Environment and Department of Public Works Sustainability Award" - Engineers Australia Awards.
- > Winner 2006 - "National Award for Environmental Excellence in Supply Chain and Logistics" Chartered Institute of Logistics and Transport (CILT), with assistance from the Supply Chain and Logistics Association of Australia (SCLAA).



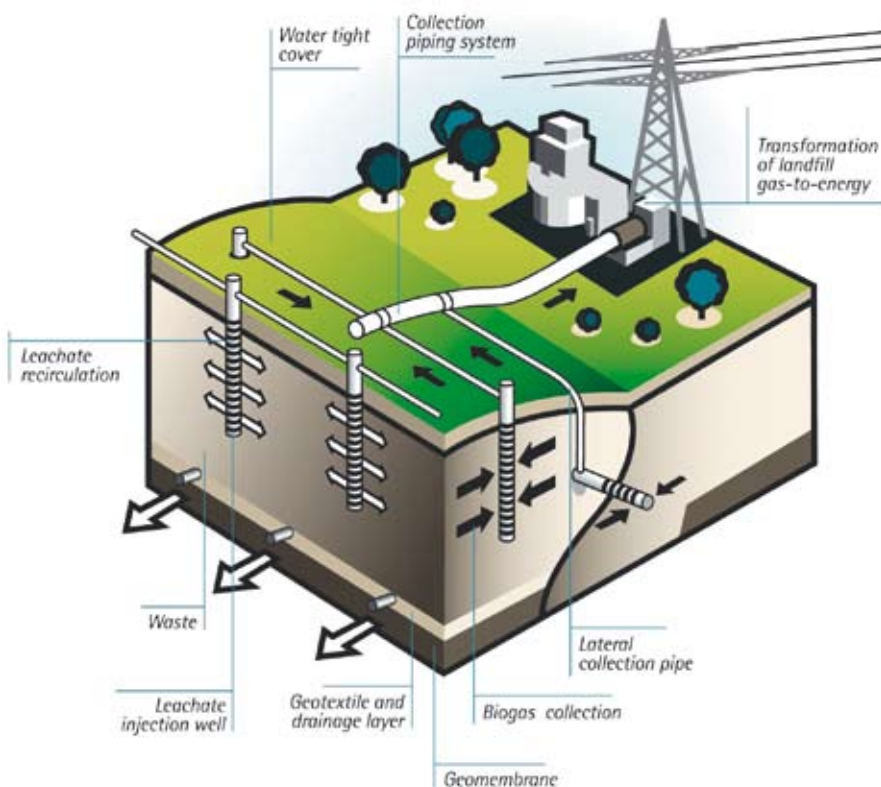
Bioreactor Technology - The Treatment Process

- > Bioreactors are designed to rapidly degrade and stabilise waste and generate green energy through efficient bio-gas production.
- > Bioreactor technology works by breaking down waste via the application of moisture, bacteria and nutrients; hence creating optimal conditions for micro-organisms to decompose waste.
- > Moisture is controlled by re-circulating nutrient rich leachate and injecting additional water whilst the PH and temperature levels are continually monitored.
- > A series of enclosed cells enable effective liquid recirculation and the capture of biogas.

A Robust System > Efficient, Reliable, Practical

The Bioreactor system is flexible in that it can accept variations in the mix of Solid Waste into the process; it does not rely upon a specialised waste stream to be developed for feed waste materials. The process is not sensitive to feedstock changes unlike some other AWT processes.

Bioreactor technology can cope with fluctuations in the characteristics of the feed waste without compromising gas generation performance of the system. Most Alternative Waste Technologies are unable to achieve this.





Woodlawn Alternative Sorting and Processing Technology (WASP)

Veolia is responding to the demand for technologies which further recover recyclable materials from commercial, industrial and municipal waste streams. The proposed WASP facility will form part of the Woodlawn Eco-Precinct and is designed to recover organics, plastics, glass and metals using automated technology and manual sorting to maximise materials recovery.

WASP is designed to have the potential to divert up to 80% of waste processed by weight. Compost that is produced by this facility will be used to remediate the severely degraded lands surrounding the former mine site.



Woodlawn Windfarm

Veolia in partnership with ActewAGL, ANZ Infrastructure and Acciona Energy has gained State Government approval for the construction of a wind farm comprising 25 wind turbines, enough to generate close to 50 megawatts of electricity per hour.





Minimising the Carbon Footprint - A Climate Friendly Eco-Precinct

Australians, on average have the largest carbon footprint in the world. Basically, this is because of our huge dependence on fossil fuel. The Woodlawn Bioreactor has been designed to generate “Green Power” and the gases harvested from the Bioreactor will be used to generate electricity. When at peak capacity, the Woodlawn Bioreactor will produce 20MW of green electricity, enough to supply over 20,000 homes.

The Woodlawn Bioreactor utilises state of the art gas collection techniques which allows maximum power generation with minimal escape of methane to the atmosphere. Recently Veolia have had the gas emissions from the Bioreactor measured. The results of this independent study confirm that Veolia currently collect over 92% of all the methane being produced from the site. As well as maximising the capture of fuel to generate

electricity, capturing methane is very important in protecting the environment. Methane is a greenhouse gas with the potential to have 23 times greater impact on climate change than carbon dioxide. When compared to data from conventional landfills Woodlawn gas capture systems ensure that the equivalent of 192,500 tonnes of carbon dioxide do not enter the atmosphere each year. In terms of reducing greenhouse emissions this is equivalent of taking 42,770 cars off the road.

The Woodlawn Eco-Precinct will generate sufficient green electricity to supply over 35,000 households with power.

Improving the Living Environment

Veolia's business strategies and activities are founded on the principles of ecologically sustainable development. We strive to meet the needs of the community today while protecting, supporting and enhancing the human and natural resources that will be needed by future generations.

Our commitment to sustainability and social responsibility is evidenced by our support of:

- > Clean Up Australia
- > Keep Australia Beautiful
- > National Stroke Foundation
- > Scouts Australia
- > Clean Up Antarctica
- > Westpac Rescue Helicopter
- > University Scholarship Programs



Contact Details:

Jim Hennessy
Veolia Environmental Services
Cnr Unwin & Shirley Sts
Rosehill NSW 2142
Ph: 02 9841 2500
E: nsw@veolia.com.au

www.veoliaes.com.au

