

FROM WASTE TO RESOURCE

The \$100M Veolia Woodlawn Mechanical Biological Treatment Facility provides a new waste composting facility to convert 144,000t per annum of waste generated within the Sydney region into compost and extract recyclable material. Using cutting edge technology this facility is unique for Australia and will help contribute to less waste going direct to land fill.

The former Woodlawn open-cut mine at Tarago in the New South Wales southern tablelands now has a state-of-the-art mechanical and biological waste treatment facility built by Lipman Pty Ltd for Veolia.

Significantly, the MBT project is the largest of its kind, in the world for Veolia and unique in the waste-recycling sector within Australia. It will convert solid household waste into compost which will ultimately be used for the rehabilitation of the surrounding degraded mine site.

Lipman, a highly successful privately-owned Australian company with construction experience across commercial, aged care, hospitality, education, health, industrial, refurbishment and fitout, was selected by Veolia to design and construct this complex project.

One of Lipman's particular skills is its ability to add value for its clients in the design phase. Senior Project Manager for Lipman, Jason King, said that on receipt of the preliminary documents from Veolia, Lipman's design team looked at methods of streamlining the project using 3D modelling and finding construction efficiencies.

"Once we were awarded the contract, we visited similar plants run by Veolia in France to further enhance our final design. The Woodlawn plant is not identical to the overseas facilities but reflects the process and complexity of the project."

Construction commenced in October 2015. At the peak stages of the project there were over 200 people per day working on this remote site to achieve the project programme milestones.

Jason said the biggest challenge was presented by the weather and the natural environment. "The strategy behind the October start was to take advantage of the reasonably good weather pattern going into the summer. However, hardly a week went by without at least some rain and heavy winds. Nonetheless we reached our initial target of having three of the four main buildings cladded by April 2016. This enabled plant and equipment work within the buildings to proceed with minimal impact from the weather."

One of the key features of the project from Lipman's perspective has been the outstanding safety record achieved onsite. Jason said that with large numbers of personnel and machinery constantly on the move over a large footprint, Lipman established clearly delineated pedestrian pathways and work zones between the four buildings.

The result from this strategy speaks for itself, with more than 270,000 man-hours worked with no Lost Time Injury recorded. This very creditable achievement has been recognised by receiving the 2016 MBA safety award for projects over \$50 million.

Simultaneously Lipman built Veolia's new waste transfer facility and associated railway infrastructure at Banksmeadow in Sydney. This facility in addition to Veolia's existing Clyde facility, take household waste from a number of Sydney Councils, compact and containerise it prior to shipment by rail to the Veolia Woodlawn site.

The Woodlawn site also includes, the Woodlawn bioreactor, which has been operating since 2004 and is highly recognised as an example of best practice landfill technology from the residual waste stream after kerbside recycling has been undertaken. Since opening, over 5.5 million tonnes of waste has been used to generate green electricity and the facility

now exports enough power to supply over 8,000 households.

Jason said that the newly-constructed MBT facility will further enhance the resource recovery capabilities at Woodlawn. "The project reflects Lipman's commitment to excellence and the company is proud to

have played a major role in bringing Veolia's landmark development to fruition."

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MAIN CONSTRUCTION COMPANY : Lipman
ARCHITECTS : Davidson Architecture
STRUCTURAL ENGINEER : Costin Roe
CONSTRUCTION VALUE : \$100 million

Below Downer Group completed extensive mechanical and construction services on the unique facility.

Below Costin Roe Consulting was contracted to complete all the civil and structural works for the expansive facility.



Conveyor leading to the Fermentation building



BRS Drums with observation platform, from the Reception building



45 Aero Control fans in the fermentation building



Reception building.



An overview of the facility.

Downer group was commissioned to undertake the Electrical and Mechanical Design and Construction of the landmark project.

Veolia MBT Facility had several different elements that created a unique challenge for Downer, including the relatively remote location and the need to integrate overseas technology into the project.

Site Manager for Downer was Chris Johnston, who said that it was exciting for the company to be at the centre of the construction of the MBT facility. "This is a really positive step-forward for the environment and fits perfectly into Downer's philosophy of involvement with initiatives that create sustainable outcomes."

"One of our major challenges onsite was the horrendous weather we experienced, including unusually cold and wet weather," Chris said. "This was a particular problem when we were welding the massive digesters, a French product, which are 40m long. We were often welding around the clock to maintain the right temperature."

Coordination of the many different trades onsite and scheduling deliveries, were also often impacted by the weather.

In addition to the French digesters, Downer installed a total of 32 conveyors of various sizes and a compost stacker imported from Holland. At the peak of the build, Downer had 80 employees onsite.

"Downer Group is a one-stop-shop for design, build and maintenance services over an extensive range of projects," Chris said. "The company already has a large catalogue of achievements in the environmental sector and the Veolia MBT Facility will enhance that record."

For more information contact Downer Group, Trinita Business Campus, 39 Delhi Road, North Ryde NSW 2113, phone 1800 369 637, email info@downergroup.com, website www.downergroup.com

Costin Roe Consulting completed all the civil and structural engineering works for Veolia's Mechanical Biological Treatment project. Civil works included earthwork levels and grading, stormwater drainage, external pavements, the carpark and modifications to the haulage road and the ponds road. Structural works included all building structures, a crane beam, internal pavements, reception pit, push walls, and the detailed coordination of services.

"There were some unique challenges, as with all major projects," said Managing Director, Grant Roe, BE (Hons), MEngSc, MBA, MIEAust, CPEng. "One particular challenge related to the design and construction methodology of the reception pit, which at 13m deep, 27m long and 12.5m wide, presented both design and construction issues. Another challenge was the complexity of services coordination and the incorporation of requirements as the project developed. The successful resolution of challenges and meeting of requirements is a credit to the entire project team."

Established in 1989 as Costin Structural and renamed Costin Roe Consulting in 2001, the firm has grown to become a leading provider of professional engineering and BIM coordination services for major industrial, commercial, residential, community and infrastructure

developments and upgrades. Today there are more than 25 staff and offices in Sydney, Melbourne, Brisbane, Newcastle, and Wollongong. Over the course of the MBT project, six engineers and two draftsmen were used to design and document the works using a fully integrated and coordinated BIM platform.

Current engineering engagements for the firm include several large-scale industrial warehousing developments and multi-storey commercial and residential projects. The Bunnings Warehouse retail facility project at Kingsgrove, one of the largest in Sydney, is a recently completed project.

Costin Roe Consulting has been building a strong, industry-wide reputation for delivering precision, communication, and accountability in engineering and BIM coordination for clients and their projects. The firm's work at the Woodlawn MBT facility has further enhanced that reputation.

For further information contact Costin Roe Consulting, Level 1, 8 Windmill Street, Walsh Bay NSW 2000, phone 02 9251 7699, email mail@costinroe.com.au, website www.costinroe.com.au



Veolia MBT Facility, Woodlawn NSW

Below XL Precast supplied and installed precision precast concrete walls for the facility.



Construction of the Veolia Mechanical and Biological Treatment (MBT) Facility required a range of specialised building components, including the precast concrete walls.

XL Precast Pty Ltd was selected to supply the walls to strict specifications based on its deserved reputation for manufacturing to precise tolerances using the latest advances in panel design, concrete technology, production methods and use of embedments. The company also has its own unique transportation system.

National Operations Manager for XL Precast, Alessandro Bentancur, said that the contract required a very high quality finish for the wall panels. "XL Precast manufactured and delivered precast wall panels for the four main buildings. As the panels were to be left unpainted, we needed to manufacture to the highest standard with no blemishes on the surface."

Alessandro added that the panel design was unique to the project. "The shape of the walls and the inclusions within the panels were very uncommon and as a result created some design challenges but our design team worked very constructively with the architects, builders, consultants and engineers from the early stages of the project."

"We were able to turn around the drawings from concept to final design in quick time utilising our resources. From design to delivery of precast, there was a short timeframe especially for a project of this size and complexity. However, our capacity to manufacture large quantities quickly and deliver these panels using our own transport sped up the process dramatically," Alessandro said.

"XL Precast utilises a unique transportation system that promotes quick and efficient transport. This ensures that onsite delays and double handling are eliminated. The trailer systems are designed so that escorts are not required for oversize loads."

XL Precast is based at Yennora in western Sydney, with branches in Brisbane and Perth. It is currently involved in several major projects around Sydney including several high rise developments in Clarence Street Sydney and Broadway.

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