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**GOULBURN VALLEY WATER RESOURCE  
RECOVERY PRECINCT – WORKING WITH LOCAL  
GOVERNMENT TO ACHIEVE A WIN-WIN**



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# GOULBURN VALLEY WATER RESOURCE RECOVERY PRECINCT – WORKING WITH LOCAL GOVERNMENT TO ACHIEVE A WIN-WIN

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## PREFACE

This paper has been extracted from various submissions generated by Goulburn Valley Water and Greater Shepparton City Council.

## 1.0 INTRODUCTION

**Goulburn Valley Water (GVW)** is a Statutory Corporation constituted under the Water Act and is governed by a Board of eight Directors appointed by the Minister for Water. GVW provides urban water and wastewater services to a population of over 126,000 in 54 towns and cities from the outskirts of Melbourne in the south to the Murray River in the north, covering an area of some 20,000 square kilometres. The Corporation directly employs over 180 people in operational, engineering, financial and administrative roles.

**Greater Shepparton City Council (GSCC)** employs over 480 permanent staff in management, technical, financial, recreational and leisure, labouring, and children's services roles. Greater Shepparton is a vibrant, diverse community located approximately two hours north of Melbourne, in the heart of the Goulburn Valley. Greater Shepparton has a population of about 61,000 and covers an area of 2,421 square kilometres. It is the fourth largest provincial centre in Victoria and one of the fastest growing regions in Victoria.

## 2.0 SHEPPARTON'S RESOURCE RECOVERY PRECINCT

Goulburn Valley Water and Greater Shepparton City Council have strategically partnered since 2003 to establish the Resource Recovery Precinct (the Precinct) in Daldy Road, Shepparton.

The GVW and GSCC strategic partnership formed after it was identified that a suitable area of land was needed in Shepparton to enable the further development of industrial businesses, particularly those requiring a buffer zone for reasons including noise, odour or dust. The Precinct has subsequently expanded to include more diverse resource recovery opportunities.

The Precinct is anchored by GVW's Shepparton Wastewater Management Facility (WMF), which treats up to 30 ML/day of urban and industrial wastewater. The Precinct capitalises on the established development buffer area around the WMF to minimise the potential for environmental or social impacts on surrounding land and residents, whilst also guarding against any development encroaching on the operation of the WMF.

The Precinct accommodates businesses processing biogas into renewable energy, organic wastes into compost and management of prescribed wastes and septage, including:

- GVW's WMF – treats wastewater and produces biogas (primarily methane), biosolids and reclaimed water, and also incorporates tree plantations and farming operations

- Diamond Energy (DE) – utilises the biogas produced by the WMF to generate renewable energy which is exported to the electricity grid
- Veolia Environmental Services (VES) – operates the prescribed waste facility and operates and maintains GVW’s septage receival facility
- Western Composting Technologies (WCT) – operates the green waste to compost plant and produces compost complying with Australian Standards.

Businesses have embraced the Precinct concept and additional initiatives are currently in various stages of development:

- Reclaimed water from GVW’s WMF is being supplied to some of the businesses for various flushing and wash-down activities
- Installation of a gasification plant by Knetic Renewables (KR) to convert peach kernels sourced from SPC Ardmona, and other forms of organic wastes such as damaged pallets, into renewable energy
- Establishment of a construction and demolition waste recovery centre
- A second DE biogas generator to utilise all biogas produced by the WMF, as excess biogas is currently flared
- Extension of the natural gas main to Daldy Road to allow the second biogas generator to operate at full capacity during times of the year when biogas supplies are low
- Utilisation of waste heat from the DE and KR generators to pre-heat wastewater entering the WMF to optimise biological processes and increase the volume of biogas produced
- Consideration of the feasibility of establishing a solar energy technology demonstration park
- Evaluation of the potential to establish a tyre shredding facility
- Assessment of the viability of establishing a plastic washing, shredding and recycling facility.

### **3.0 DRIVING FORCES AND IMPLEMENTATION**

The Precinct is based on the local processing and value adding of by-products and wastes from across the Goulburn Valley, and their conversion into valuable resources in a centralised location.

In partnering to establish the Precinct, GVW and GSCC were seeking to:

- support regional development by maximising sustainability based business potential in the region
- establish a precinct which is well located and equipped to attract sustainable investment (i.e. access to reliable energy supplies, non potable water supply, roads, etc)
- encourage businesses to develop new and innovative ways to recover wastes and convert them into resources
- facilitate the reduction of greenhouse gas emissions
- maximise the value of the development buffer area around the WMF by introducing non-traditional high value and complementary industrial facilities to the site.

The objectives of the Precinct have been achieved through the close partnership formed between GVW and GSCC in cooperation with a range of government and industry stakeholders.

The Precinct is a unique demonstration of regional collaboration demonstrating leadership and innovation to harness opportunities for business and community benefit, including:

**Regional development** - the precinct has encouraged the establishment of new businesses utilising new 'green and clean' technologies, and supported further technology development and innovation in the region.

**Waste management** - waste management was a significant community issue as there were no alternatives in the Goulburn Valley for processing of by-products and wastes from local food processing, agricultural and residential sectors.

The founding of the WCT facility fulfilled a decade long plan to establish an organics processing capacity, the key action in the Goulburn Valley Regional Waste Management Plan. Kerbside garbage audits had shown up to 49% of household waste going to landfill comprised garden and food organics, which subsequently formed methane (a greenhouse gas) during decomposition. The WCT facility allows GSCC residential and business customers to voluntarily access a regular, easy-to-use green waste bin service which produces quality compost.

The VES facility has enabled regional businesses access to local prescribed waste management services, particularly for grease trap wastes. This has reduced the cost of this service as transportation of waste to Melbourne for processing is no longer required.

The KR project will solve a long-term issue for the fruit processing industry of how to sustainably manage fruit kernel wastes. Over time this facility will eliminate the existing fruit kernel stockpiles and their associated environmental issues of odour, pest management and stormwater run-off.

Other projects currently under consideration will provide the Precinct with dedicated recycling facilities for construction and demolition waste, tyres and plastic, removing these wastes from landfill and supporting their recovery and re-use within the region.

**Generation of renewable energy** - the long-term partnership between GVW and DE has seen biogas produced from the anaerobic digestion of wastewater converted into renewable energy, which is then supplied to the electricity grid. Stage 2 of this project is being evaluated, and may see further generation capacity added. The KR project will enable the conversion of waste organic materials into renewable energy.

Areas surrounding the Precinct have also been identified as fulfilling the key requirements for large scale solar generation, including proximity to the 220 kV terminal station, and are being considered for the establishment of a technology demonstration project.

**Reductions in greenhouse gas emissions** - establishment of the Precinct has facilitated several means of reducing the region's greenhouse gas emissions:

- The processing of organic waste into compost has encouraged the diversion of these wastes from landfill, avoiding the generation of methane during decomposition
- The DE project generates energy in the form of electricity and heat from renewable sources, thus substituting coal fired electricity and its associated emissions

- Local businesses no longer need to send their prescribed wastes to Melbourne for treatment, thus eliminating many of the emissions associated with this transportation.

#### **4.0 ACHIEVEMENT AND RESULTS**

Both GVW and GSCC are proud to collaborate with other agencies, businesses and the community to contribute to the sustainability of the Goulburn Valley region so that it remains the place where we want to live and work.

The Precinct is a tangible example of GVW and GSCC's sustainability vision for the Goulburn Valley region, providing significant benefits to the partners, businesses involved and community:

##### **Regional development**

- Shepparton has established a reputation as a leader in 'clean and green' technologies
- The foundation of a dedicated Resource Recovery Precinct close to an urban centre has facilitated increased investment attraction opportunities for the region.

##### **Waste management**

- GSCC was the first local government in Victoria to establish a controlled atmosphere processing facility for kerbside collected organics
- The WCT composting facility processed nearly 5,000 tonnes of green waste into saleable compost during 2009
- Victoria's Towards Zero Waste (TZW) strategy sets targets for diversion of municipal solid waste, commercial and construction and demolition waste from landfill. The Precinct supports these targets by providing an integrated service for collection and processing of green wastes
- Goulburn Valley Regional Waste Management Group (via Resource GV) targets diversion rates equivalent to those outlined in the TZW strategy through its Business Plan; specifically that households should have access to a green organics collection service. The Precinct also delivers against this target
- The septage receival facility services residents and businesses in unsewered towns throughout the region to manage their septic tank waste
- The prescribed waste facility allows wastes to be managed locally; enabling businesses to cost effectively comply with their trade waste agreements.

##### **Generation of renewable energy**

- DE invested nearly \$1 million in the Shepparton biogas generation plant which generates approximately 4,500 MWh of renewable electricity each year
- The national Renewable Energy Target defines the percentage of electricity to be generated from renewable sources, and the generation facilities in the Precinct will contribute towards achieving this target.

##### **Reductions in greenhouse gas emissions**

- The reduction in greenhouse gas emissions from landfill resulting from the organic waste processing is some 3,500 tonnes each year
- The biogas generation plant is certified GreenPower, and avoids about 6,000 tonnes of greenhouse gas emissions each year
- The renewable energy projects offer local businesses an opportunity to purchase locally generated renewable electricity under the GreenPower logo.

### **Future potential**

Expansion of the Precinct to include other clean technology based businesses is expected to create additional benefits:

- The KR project is expected to generate a further 7,500 MWh/year of renewable electricity from peach kernel wastes, avoiding 9,150 tonnes of greenhouse gas emissions
- Expansion of the DE generation facility will allow full utilisation of the biogas produced by the WMF, and is expected to generate an additional 2,500 MWh/year of renewable electricity and avoid 3,050 tonnes of greenhouse gas emissions
- Other projects being evaluated may see additional resource recovery opportunities becoming available in the region, such as tyre and plastic recycling.

## **5.0 SCALE AND BROADER IMPACT**

While the development of the Precinct provides a nominal monetary benefit to the partner organisations through sale of biogas, lease of land and municipal rates, the initiative primarily provides a range of significant benefits to the businesses involved, wider community and the environment.

Decisions to support proposals in the Precinct were based on sustainability principles by considering the triple bottom line (i.e. financial, environmental and social factors) from the perspective of each stakeholder – the partners, businesses and regional community.

The concept of a Resource Recovery Precinct is readily able to be translated to other regional areas where partnerships between state and local government authorities, water corporations and businesses are forged.

Practical conditions required for Precinct establishment include:

- Available land within existing WMF buffer areas
- Ability for businesses to lease land with the security of long-term leases
- Access to services such as energy supplies, roads and transport networks and water supplies
- Access to local by-products and wastes, particularly where related industries are clustered
- A location close to customers of the transformed resources or services
- Willingness of businesses to utilise new technologies and create new markets for resources.

Establishment of the Precinct has primarily been marketed to selected stakeholders during the initial development phase. Further marketing will ensue, including direct marketing to potential investors, joint promotion with Regional Development Victoria (RDV) via an investment attraction marketing campaign and the GSCC website.

## **6.0 INNOVATIVE PRACTICES, TECHNOLOGIES OR STANDARDS DEVELOPED OR UTILISED**

The Precinct is a leading example of what can be achieved when two organisations utilise their assets (i.e. land) and resources (i.e. people and networks) to develop a vision of sustainability for their region, and actively work with government, businesses and the community to achieve that vision.

The Precinct is a show-case of the innovative technologies developed by the businesses involved. The businesses have worked enthusiastically with local industries to identify and trial new technologies suitable for the management of their by-products and wastes.

The WCT in-vessel composting facility uses best practice technology, thus avoiding traditional odour and dust issues. The process guarantees the destruction of weed seeds and pathogens in the feed stock, ensuring hygienic compost.

The DE plant uses the flexible cover on the WMF lagoon to store biogas and allow generation to take place during periods of high electricity demand, maximising financial returns and supplementing the electricity grid's peak capacity.

The KR organic power plant will be the first gasification plant of its kind in Australia, and third in the world. Customers have already been identified for the charcoal and tar by-products produced by the plant.

## **7.0 PARTNERSHIPS FORMED AND STAKEHOLDERS ENGAGED**

The GVW and GSCC partnership is long-standing and has been reflected in many joint regional initiatives over the years. The achievement of the Precinct has taken the relationship to a new level, delivering wide ranging sustainability benefits for the environment and wider community.

DE and GVW have worked in partnership for some years, with DE operating a generation plant at GVW's Tatura WMF since 2007 after several years of research and development.

VES and GVW have a long-term relationship based on operation and maintenance of the septage receival facility.

The partnership between GSCC and WCT began when WCT was awarded the contract for collection and processing of organic waste via the kerbside green waste service.

KR was introduced to the Precinct initiative through Resource GV actively seeking a sustainable solution for the fruit processing industry's kernel wastes. Other partners have subsequently become involved, including SPC Ardmona (as the generator of the peach kernel waste) and Foote Waste (providing collection, handling and storage services).

DE and KR have subsequently formed their own partnership to further develop innovative biomass technologies.

The Precinct has engendered support from external stakeholders such as Environmental Protection Authority (EPA), Sustainability Victoria, Regional Development Victoria and Department of Planning and Community Development. These organisations have participated in the process facilitated by the partners to encourage regional development through various 'clean and green' technologies.

The community has been consulted about proposals for new businesses to locate in the Precinct through the planning approvals process. Anecdotal feedback received by the partners indicates there is a high degree of community support for establishment of the Precinct within the existing WMF buffer area, and for the development of clean technologies in the region.