Metropolitan Local Government
Waste & Resource Recovery Fund

Project No. WRRF2.11 DROP & SORT PAD, RIDDELL ROAD LANDFILL, SUNBURY

Funded through the Metropolitan Local Government Waste and Resource Recovery Fund

Final report

Hume City Council

11/06/2015

Prepared by Alwyn Babb, Coordinator City Waste Management

METROPOLITAN WASTE AND RESOURCE RECOVERY GROUP

Contents

The Metropolitan Local Government Waste and Resource Recovery Fund

The Metropolitan Local Government Waste and Resource Recovery Fund (Metro Fund) is a Victorian Government initiative aimed at assisting councils in metropolitan Melbourne implement best practice waste collection and management systems in line with the *2009 Metropolitan Waste and Resource Recovery Strategic Plan* (Strategic Plan).

The Metro Fund is administered by the Metropolitan Waste and Resource Recovery Group. For more information please visit www.mwmg.vic.gov.au.

1 Executive summary

The Drop & Sort Pad (DSP) infrastructure project enables a greater quantity and range of materials to be recovered efficiently and effectively from the waste stream at Council's Riddell Road Sunbury Landfill facility. Funding provision for the project was provided from Metropolitan Local Government Waste & Resource Recovery Fund on a 50/50 basis to Council.

The DSP is a 30 metre long roofed concrete structure comprising of an upper deck for the receipt of recyclables and mixed waste loads from cars and trailers and a lower deck for sorting and loading of recyclables and residual waste material. The facility caters for the Sunbury Township and outlying areas and significantly improves the customer and staff amenity for waste disposal and recovery at the site as car and trailer loads of mixed waste no longer have to be sent to the tip face to unload.

The main results achieved by the project are that the resource recovery target for the Riddell Road Sunbury Landfill waste transfer operations has increased from 40% to 60% by weight. It is anticipated that 70% waste diversion could be achieved based on the performance of similar infrastructure installed at Council's Bolinda Road, Resource Recovery Centre, Campbellfield. The life of the Riddell Road Sunbury landfill will be extended by approximately one year due to increased waste diversion achieved using the DSP facility the anticipated landfill closure date is estimated to be 2031.

In conclusion the DSP project forms an integral part of the waste diversion infrastructure at Council's Riddell Road Sunbury Landfill to recover valuable resources for future generations and will continue to be utilised long after the landfill operations cease in 2031. The funding provision from the Metropolitan Local Government Waste & Resource Recovery Fund enabled Council to bring forward the timing for the development of the much needed infrastructure.

2 Project details

The Drop & Sort Pad (DSP) infrastructure project is situated at Hume City Council's Riddell Road Sunbury Landfill. The DSP is a 30 metre long roofed concrete structure comprising of an upper deck for the receipt of mixed waste loads from cars and trailers and a lower deck for sorting and loading of recyclables and residual waste material. There is no public access to the lower deck. A ten (10) metre wide roof spans the unloading and sorting area to provide sun and rain protection to customers and staff. Litter netting is erected to control and capture litter at the facility.

Key elements incorporated into the design and function of the DSP are:

- Public Safety; the height from the upper deck to the lower deck level is less than 1.0m, high bay LED lighting installed for daytime and night time operation, safety and traffic signage displayed in and around the facility, clear site visibility, material handling and sorting area separated from customers dropping off material.
- All weather facility, pavements and access roads are asphalted, main sorting and unloading area is roofed to provide sun and rain protection.
- Longevity and low maintenance, main structural steel members are hot dipped galvanised, surface of concrete sorting deck treated with abrasion resistant compound, steel protection provided to concrete surfaces and areas that are subject to abrasion and impact load. Rain water harvested for reuse to wash down surfaces and machinery.
- Efficient operations, turn-a-round times and distance travelled have been reduced, material handling improved, residual waste can be loaded from either end of the sorting deck, consolidates the waste management operations at the site, cars no longer sent to the landfill tip face to unload.
- Cater for future growth, able to cater for up to 8 vehicles at any one time to unload,
- Traffic management one way traffic flow, heavy vehicles and trucks engaged in recyclable and residual waste activity are separated from waste customers, road marking to define vehicle unloading bays, traffic signage installed.

Project need
The Drop & Sort Pad (DSP) project at the waste transfer station has significantly improved the diversion of recyclable materials from car and trailer mixed waste loads as well as the customer amenity and increased the efficiency of the waste disposal operations at the Riddell Road Sunbury Landfill site.

Car and trailer mixed waste load customers at the Riddell Road Sunbury Landfill were previously sent to the landfill face to unload their material. This resulted in minimal recycling and/or recovery of recyclables due to challenging conditions encountered by the recycling staff engaged at the landfill tipping face and loss of landfill operation efficiency. The recycling diversion target was set at 40% and two tipping faces were provided to separate cars from trucks. The customer amenity was poor and at times difficult at the tipping face especially during periods of wet weather the muddy conditions were also difficult for customers using vehicles not suitable for off-road. Additional resources were also required to provide the separate tipping areas for waste trucks and the cars/trailers which decreased the service efficiency of the waste disposal operations at the site.

Project objectives
The key objective of the DSP is to increase waste diversion from landfill at the site. This is achieved by using the DSP to safely and efficiently recover a greater quantity and range of materials than what was practical at the landfill tipping face.

The waste diversion target for the waste transfer station operations has increased from 40% to 60% by weight. This is based on Council's experience in installing a similar DSP at its Bolinda Road Resource Recovery Centre, Campbellfield where it has achieved 73% by weight recycling rate.

Other objectives being realised by the project comprise:
- Improved customer and staff amenity and safety at the site, customers no longer have to access the landfill tipping face to unload mixed waste.

- Environmental outcomes rainwater from roofed area of the DSP is collected for reuse to wash down surfaces and pavements at the DSP. Rain water and wash down water on the waste sorting deck is diverted to the leachate holding pond. Fixed litter nets are installed at the DSP to prevent litter from leaving the waste unloading, sorting and handling areas.
- Energy efficiency – LED lighting installed with photocells at the DSP. Travel distance for cars/trailers reduced by 1.0km at the site. Resource recovery confined to the waste transfer station operations. No longer have to cater for cars at the landfill tipping face.
- Improved waste recovery operations skip bins placed at the DSP for receipt of recycled material, machinery used to sort and load residual waste is located on lower platform away from customers unloading, a greater quantity and range of materials is recovered using the DSP.
- All weather facility fitted with a roofed area to provide sun and rain protection.
- Caters for current and future demands as population increases
- Robust infrastructure and longevity achieved through hot dipped galvanised coated main structural steel members, abrasion resistant concrete floor surface, integral kerb stop for trailers, steel protection provided on concrete edges and surfaces susceptible to impact and abrasion.
- Lifespan of the landfill will be increased by approximately one year landfill closure date is 2031.

Project implementation plan
The project implementation comprised 50/50 funding from Hume City Council and grant from Metropolitan Local Government Waste and Resource Recovery Fund. The original estimated cost of the DSP was $372,900.00 (includes GST). The actual cost of the project amounted to $711,587.80 (includes GST). The additional cost was mainly due to the unstable ground conditions (fill) encountered at the site resulting in the addition of concrete piles installed to a depth of 15 metres to support the foundations and concrete deck of the DSP plus the upgrade of internal access roads to the facility. The additional cost was met by Council

	Council (Contracting Party) contributions		Metro Fund milestone amount
	Financial	In-kind	
Project Totals (excluding GST)	$646,895.98	$30,000.00	$169,500.00
GST	$64,689.60	$3,000.00	$16,950.00
Totals (including GST)	**$711,585.58**	**$33,000.00**	**$186,450.00**

Public tenders were invited in 2013 for the construction of the DSP main structure. The contract was awarded to Entracon the works commenced in February 2014 and were completed in February 2015. Ancillary works to upgrade internal access roads, pavements, waste disposal areas, services and signage were carried out using Council's annual supply contractors. Unforeseen delays occurred with the project due to installation of concrete piles, prolonged inclement weather conditions and availability of annual supply contractors.

3 Project outcomes and findings

The project has greatly improved waste diversion and customer amenity at the site and will continue to be an integral part of the resource recovery infrastructure at the site for many years to come. The DSP has enabled a greater range and quantity of material to be diverted from the waste stream the waste diversion target has increased from 40% to 60%. The amenity for waste disposal and recycling at the site has also been significantly improved. It is estimated that 30,000 tonnes of waste will be diverted from landfill over the next 15 years thereby extending the life of the landfill by one year.

Waste load data shows that last financial year in 2013/14 the Riddell Road facility received 5,750 tonnes of waste of which 2,715 tonnes (47.2%) was diverted from landfill. There were 12,344 mixed waste loads received from cars and trailers. These mixed loads amount to 3,843 tonnes and were disposed directly onto the landfill face resulting in a significant loss of potential recyclable material that could have been recovered at the site. With the establishment of the DSP Council is confident that 4,025 tonnes/annum (70%) of waste will be diverted from landfill in the first year of operation at the Riddell Road Sunbury Landfill. As Hume's population and patronage increase at the Riddell Road Landfill so will the overall tonnage recycled increase at the site.

The main changes that have occurred from the DSP are that cars and trailer loads of mixed waste are no longer sent to the landfill tipping face to unload resulting in an increase in the quantity and range of materials recycled at the site and improved landfill operations.

The budget blowout was due to additional cost to address unstable ground conditions. The foundations and concrete pavement at the DSP required piling to overcome the unstable ground conditions. It is highly recommended to undertake soil investigations in the early concept stage of future projects to determine soil condition and presence of any fill material especially at a landfill site.

4 Project highlights

The main project highlights are:

- Waste diversion target increased from 40% to 60% from landfill, envisage waste diversion could be around 70% based on performance at Bolinda Road Resource Recovery Centre, Campbellfield operations;
- The lifespan of the landfill will be increased by one year, the landfill closure date is 2031;
- Significantly improved the amenity for waste customers and landfill staff at the site as mixed waste car/trailer loads no longer have to be sent to the tipping face to unload; and
- Improved the efficiency of the landfill operations no longer have to accommodate for cars at the tipping face.
-

Other highlights include improved turn-a-round time for waste customers by consolidating the DSP infrastructure at the waste transfer station operations the travel distance to unload mixed waste has been reduce by 1 kilometre at the site.

5 Conclusion and recommendations

The Drop & Sort Pad infrastructure project enables a greater quantity and range of materials to be recovered efficiently and effectively from the waste stream at Council's Riddell Road Sunbury Landfill facility for the current and future waste needs of the community.

Funding provision for the project was provided from Metropolitan Local Government Waste & Resource Recovery Fund on a 50/50 basis and enabled Council to bring forward the project in its capital works program to maximise the immediate and long term benefits provided by the project.

In conclusion the DSP project forms an integral part of the waste diversion infrastructure at Council's Riddell Road Sunbury Landfill to recover valuable resources for future generations to come and will continue to be utilised long after the landfill ceases operations in Year 2031 at the site. The funding provision from the Metropolitan Local Government Waste & Resource Recovery Fund enabled Council to bring forward the timing for the development of the much needed infrastructure.

Budget over expenditure was mainly due to additional cost to address unstable ground conditions, upgrade of access roads and services. It is recommended that detailed geotechnical investigations be conducted early in the concept stage when developing infrastructure at former landfill sites to determine if fill is present, and if so whether there is an alternative location to avoid increased cost for building foundations and pavements.

The DSP project has great potential to be rolled out to other metropolitan and rural councils that are considering upgrade of their waste transfer station operations to safely and efficiently recover material from car and trailer mixed waste loads. The design of the DSP can be readily duplicated at other sites and tailored to fit the service demand by adjusting the number of main support columns required for the roof structure that are spaced at 6metre intervals.

Supporting documentation

Figures & Tables

Comparison of waste diversion performance prior to and following the establishment of the DSP infrastructure project is tabled below:

Description	Without DSP	With DSP
Waste diversion target	40%	60%
No. Customers at WTS	30,000/annum	30,000/annum
No. car/trailer mixed waste loads sent to landfill tip face	12,344/annum	0
Target waste diversion based on 5,750 tonnes/annum	2,300 tonnes	3,450 tonnes
Actual waste diversion based on 5,750 tonnes/annum	2,715 tonnes (47.2%)	4,025 tonnes (70%)

Project resources

Haskell Architects were engaged to prepare the design plans for the DSP. Coffey Environmental P/L were engaged to do the geotechnical investigations and concrete slab design. The major construction work was carried out by the civil contractor Entracon P/L and the ancillary works carried out by Council using annual supply contractors. The contract administration and supervision was provided by Hume City Council and Haskell Architects.

Photos

Photos of the completed DSP infrastructure are shown below:

Collateral

Not applicable - the DSP Infrastructure project did not require any collateral to be developed.

Media releases

Media releases have not been undertaken at this point in time.

Glossary

Use this section to define any terms specific to your project

Term	Definition
DSP	Drop and Sort Pad

Final report sign off

The sign off of the final report is required from the project manager and department director/manager prior to submission.

Name	Position	Signature	Date
Alwyn Babb	Coordinator City Waste Management		
David Fricke	Acting Director City Infrastructure		