

Degraves Street Recycling Facility

Funded through the Metropolitan Local Government Waste and Resource
Recovery Fund

Final report

The City of Melbourne
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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 Degrares Street Recycling Facility was launched in March 2013. The purpose of the program was to change the waste and amenity culture in the café precinct and provide for food waste, cardboard and co-mingled recycling. The program was borne out of the Integrated Waste Management Program endorsed by Council in 2010. The Program included initiatives to trial small-scale organics processing technology and test the model of a shared recycling collection point in the central city.

Degrares Place was identified as a target location for the trial due to the high density of food businesses and the high number of bins stored on the street. Waste bins were poorly managed in this laneway leading to a highly visible amenity problem with overflowing bins, dumped rubbish, litter, vermin, odour and access issues. Secondly, there was no recycling taking place. The City of Melbourne (CoM) especially wanted to trial the processing of food waste – something CoM hadn't done before.

A waste audit in February 2012 of the 32 businesses in the precinct revealed that;

- None of the businesses were recycling.
- They were collectively producing 700kgs of food waste a day.
- Almost 90% of their waste stream was either recyclable or food waste that could be diverted from landfill.

The Key Performance Indicators for the project were;

1. 50% decrease of waste being sent to landfill amongst participants in the trial.
2. 70% increase in recycling amongst participants in the trial.
3. 70% reduction in the volume of food waste collected from participants in the trial.

The project was designed to engage and educate the businesses about recycling, helping them to set up source separation systems in their kitchens and understand the importance of recycling and the issue about food waste in landfill. Recycling Officers were employed to operate the facility and carry out the education component. The Officers worked collaboratively with the traders in the precinct to overcome challenges such as space constraints, late night operating hours, high staff turnover and behaviour change. These challenges were met with strong persistence and the final commitment of all traders to the program. A new sense of pride was established for the lane and traders began to work together as a united precinct.

A recent survey in March 2015 by CoM of 24 businesses in Degrares Street showed that 75% of traders rated the improvement in the amenity of the laneway as 8/10 or above. 100% described their satisfaction level as either 'satisfied' or 'very satisfied' with the project as a whole.

A waste audit in December 2014 of the same 30 businesses (2 did not participate) revealed in comparison with the audit in February 2012 that;

- The garbage waste stream in 2014 had reduced in size from 4,629.76kgs to 1,573.68kgs from February 2012 – a reduction of 66.0%, which meets key indicator number one.
- The resource recovery rate was 66.9% - this is extremely close to the target of 70% for key indicator number two.

Separate from the audit, the volume reduction for food waste was calculated to be 68.99%.

In conclusion, The Degrares Street Recycling Facility has been a tremendous success.. Achievements include:

- A combined total of 392 tons of recycling diverted from landfill.
- 137 tons of co-mingled recycling.
- 148 tons of cardboard.
- 106 tons of organics.
- Provision of waxed cardboard to Queen Victoria Market for re-use.
- Supplied local community gardens with some of the biomass created from the food dehydrator free of charge.
- Conditioning of the biomass for re-distribution onto council parks and gardens.

2 Project details

The purpose was to trial a shared recycling facility in the central city, test innovative food waste processing technology, increase resource recovery and improve amenity. The waste in the target precinct was being poorly managed creating a highly visible amenity problem and businesses had no recycling systems in place resulting in a zero per cent recycling rate.

An important element of the program involved recruiting Recycling Officers with good people skills and a passion for the environment to visit the businesses and win their agreement to be a part of the program – not just the managers but the kitchen staff too. The team experienced early success with 100 per cent participation from all 32 businesses within the precinct through persistent education and collaboration.

2.1 Key Performance Objectives

Key performance indicator	Measure	Evaluation Method
50% decrease of waste being sent to landfill amongst participants in the trial	Amount of waste diverted from direct disposal to landfill	Waste audit of all material collected in Degrares and Centre Place during the audit period.
70% increase in recycling amongst participants in the trial	Amount of materials collected by waste contractor from the recycling facility	Scales on site will allow staff to measure material and provide reports throughout the pilot. Audit periods will be scheduled throughout the 12 month pilot.
70% reduction in the volume of food waste collected from participants in the trial	Volume of food waste being transferred from the businesses and treated by the dehydrator	Scales on-site will allow staff to measure the weight of food waste before and after it is processed by the dehydrator. Audit periods will be scheduled throughout the 12 month pilot.

The project implementation required extensions to milestones 15 and 16 as noted below. This was due to a breakdown of the original gas powered dehydrator machine between January and April 2014.

2.2 Implementation Plan

Milestone #	Activity Period	Description	Main Activities	KPI's achieved
1	December 2012	Funding agreement signed	Contract Signed	
2	December 2012– March 2014	Project Management	Manage all aspects of the trial	
3	December 2012	Education and engagement plan developed	Write plan	<ul style="list-style-type: none">Education plan completed
4	December 2012	Site assessment completed	Engage contractor and conduct assessment	<ul style="list-style-type: none">On site assessments completed contractor in place
5	December 2012	Lease agreement developed	Write lease agreement with Ross House	<ul style="list-style-type: none">Lease with Ross House signed and in place
6	December 2012	Infrastructure ordered	Order infrastructure	<ul style="list-style-type: none">Machinery ordered
7	December 2012	Lease agreement finalised	Agreement between Ross House and CoM	<ul style="list-style-type: none">Agreements signed

8	January 2013	Source separation systems ordered	Source separation systems selected, ordered and delivered to participants	<ul style="list-style-type: none"> Infrastructure rolled out
9	February 2013	Staffing recruitment commences	Recruitment process and staff hired	<ul style="list-style-type: none"> Staff in place for program
10	February 2013 to June 2013	Education and engagement plan implemented	Participating businesses recruited, source separation education commences	
11	February 2013	Site lease commences	CoM moves in to site	
12	February 2013	Site modifications completed	Site prepared for installation of infrastructure	
13	February 2013	Infrastructure installed	Install infrastructure and train staff	<ul style="list-style-type: none"> Infrastructure installed
14	March 2013	Recycling service commences	Implement the service	
15	March 2014 <i>Changed to December 2014</i>	Evaluation of program completed	Waste audit completed Quantitative and qualitative data collated and analysed	<ul style="list-style-type: none"> Increased diversion rate of total waste from landfill Increased amount of recyclable materials recovered Reduction in the volume of food waste going to landfill
16	May 2014 <i>Changed to 16 March 2015</i>	Full project report written	Write final report and submit to MWMG	

2.3 Project Budget Breakdown

Project line item	Total funding sought from Fund (\$)	Applicant funding committed (subject to 2012-13 budget cycle) (\$)	Total (\$)
Contractors on-site to manage the recycling facility	\$17,290	\$107,560	\$124,850
Graphic design and printing of project collateral ¹		\$7,310	\$7,310
On- site infrastructure – pilot 1 year ²	\$167,570		\$167,570
Utilities ³		\$12,000	\$12,000
Recycling collection from Waste Contractor ⁴		\$10,920	\$10,920
Infrastructure for businesses ⁵	\$7,440		\$7,440
Site Lease ⁶	\$19,200		\$19,200
Stakeholder workshops ⁷		\$2,660	\$ 2,660
Evaluative Waste Audit	\$12,000		\$12,000
Project Management and Installation		\$60,000	\$60,000
TOTAL	\$223,500	\$200,450	\$423,950

3 Project outcomes and findings

3.1 Landfill Diversion Results

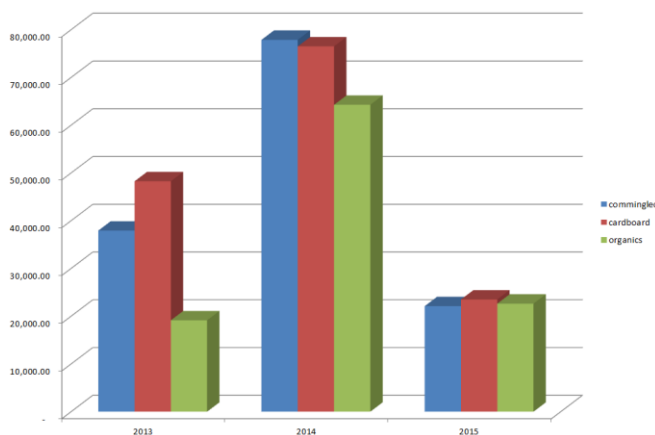
The following statistical information was measured using scales.. Bins were weighed and recorded daily by the recycling officers..

Table 4 displays the two-year duration of the program from March 2013 to April 2015. The quantity of recycling has grown by an average of 72% from 2013 to 2014 and then by 18% from 2014 to 2015. 61 businesses are recorded as participants in the program by providing recyclable materials to the facility, which is almost double the original number the program began with.

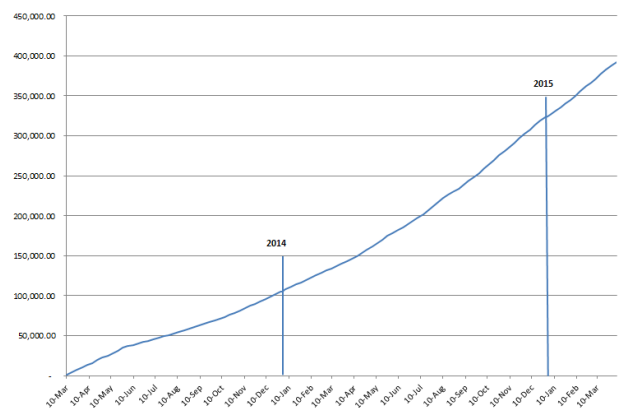
Table 4 – Total Diversion from Landfill for Degraes Facility (Kg)

	MAR-DEC 2013	2014	JAN-APR 2015	TOTAL
Co-mingled	37,931.39	77,877.90	22,107.87	137,917.17
Cardboard	48,250.00	76,500.00	23,500.00	148,250.00
Organics	19,140.00	64,268.10	22,629.90	106,038.00
TOTAL	105,321.39	218,646.00	68,237.77	392,205.17

**Figure 1 – Total for Recycling Streams
MAR 2013- APR 2015 (Kg)**



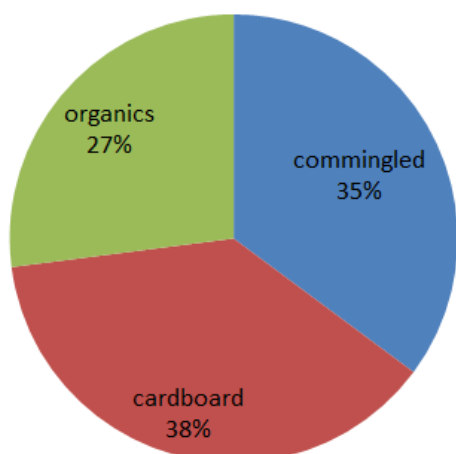
**Figure 2 – Total Cumulative Recycling
MAR 2013 – APR 2015 (Kg)**



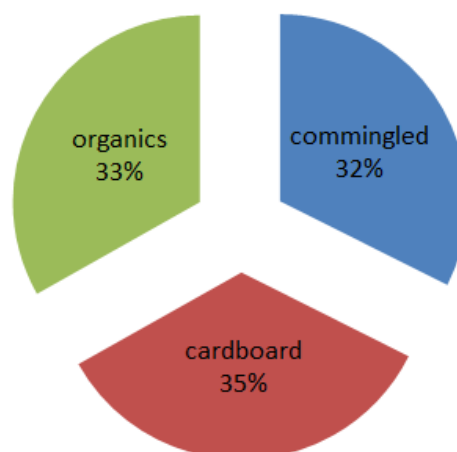
On average per week, the facility recovers 3.53 tons of recyclable material with a standard deviation of 1.34 tons. This represents an average spread but is mostly attributable to the 4 month period from Jan 2014 to Apr 2014 when the organic matter wasn't recycled due to the breakdown of the dehydrator.

The makeup of waste streams in Figure 3 clearly shows that cardboard is the primary article of recycling, however Figure 4 shows that the streams are beginning to even out in consistency.

**Figure 3 – Total Cumulative Recycling
MAR 2013- APR 2015 (Kg)**



**Figure 4 – Total Cumulative Recycling
JAN – APR 2015 (Kg)**



The reason the streams are trending more evenly is because there is a lot more diversion opportunity that exists for Organics, which will be explained in the next section.

3.2 Key Performance Criteria Results

The City of Melbourne engaged All Environmental Concepts to undertake a food waste audit in 2012 to establish baseline data and again in 2014 to compare the effects of the facility after installation. The results of the food waste audits will be used to measure the project's performance against the key performance criteria.

- **50% decrease of waste being sent to landfill amongst participants in the trial.**

Below, Table 5 shows the results of both audits, most noticeably that the garbage waste stream in 2014 had reduced in size from 4,629.76kgs to 1,573.68kgs from February 2012 – a reduction of 66.0%. This clearly meets the KPI of reducing waste to landfill by 50%.

Table 5 – Total Audit Results Comparison between 2012 and 2014.

	Feb-12				Dec-14				Reduction by Weight
	KG	% of total KG	L	% of total L	KG	% of total KG	L	% of total L	
Organics	2,163.72	46.7%	5,309	14.4%	923.44	58.7%	2,145	20.3%	57.3%
Clean Paper	243.85	5.3%	1,944	5.3%	40.63	2.6%	537	5.1%	83.3%
Cardboard	650.08	14.0%	13,697	37.2%	28.54	1.8%	666	6.3%	95.6%
Glass Bottles	654.12	14.1%	2,302	6.3%	83.61	5.3%	298	2.8%	87.2%
Plastics 1-7	209.57	4.5%	4,668	12.7%	45.66	2.9%	1,516	14.4%	78.2%
Other Recyclables	144.94	3.1%	2,740	7.4%	25.02	1.6%	411	3.9%	82.7%
General Waste	563.48	12.2%	6,147	16.7%	426.78	27.1%	4,982	47.2%	24.3%
Total Materials	4,629.76		36,807		1,573.68		10,555		66.0%

- **70% increase in recycling amongst participants in the trial.**

Below, Table 6 displays the resource recovery rate of the facility over the audit period. This has been calculated based on the total amount of materials diverted to the recycling facility as a proportion of the total amount of recoverable materials generated over the audit period. The audit found that 66.9% of all food and recyclable materials generated were recovered through the Degraeves facility.

Table 6 – Resource Recovery Rate

	Food	Commingled	Cardboard	Total
	KG	KG	KG	KG
Total Materials Generated	1799.9	916.6	750.0	3,466.5
Total in Garbage Stream	923.44	194.92	28.5	1,146.9
Total Diverted to Degrares St Recycling Facility	876.46	721.68	721.5	2,319.6
Resource Recovery Rate	48.7%	78.7%	96.2%	66.9%

This figure doesn't reach the target 70% figure under the KPI for the program. The most notable area for improvement revealed by the audit was to increase food waste diversion from landfill, which has a recovery rate of 49%.

- **70% reduction in the volume of food waste collected from participants in the trial.**

Below, Table 7 displays the average yearly percentage of volume reduction for food waste. The gas powered machine in 2013 broke down for a 4 month period, which resulted in a lower net reduction in food volume than usual. The total average for the project of 68.99% falls narrowly below project KPI.

Table 7 – Average Volume Reduction of Food Waste by Dehydrator

	2013	2014	2015	TOTAL
Organics	66.57%	70.88%	69.52%	68.99%

3.3 Survey Results

Introduction and background

A Waste Management Survey was undertaken by CoM in the Degrares Street area in September 2014 and again in March 2015. Twelve and twenty-four businesses participated respectively. This was done to obtain raw feedback about how traders viewed the program and if there were any areas for improvement.

Data collection process

Surveys were distributed by hand and collected a few days later. Responses were anonymous.

Results and analysis

Below is a summary table comparing the results between September 2014 and March 2015.

Survey Questions	September 2014 (sample size – 12)	March 2015 (sample size – 24)	Comparison
Q1. On a scale of 1-10 please rate the level of improvement in the amenity of Degrares Street and Degrares Place since the Degrares Facility has been operating. (1 being no improvement at all and 10 being Excellent).	9.33	8.42	The drop in improvement rating is reflected in the larger sample size and is still at a very high level. The lowest score rating was 6.
Q2. Please rate your overall satisfaction with the Degrares Street Recycling project.	75% - Very Satisfied 25% - Satisfied	46% - Very Satisfied 54% - Satisfied	The result is more balanced because of the higher sample size.
Q3 On a scale of 1-10 please rate how effective your business was at recycling BEFORE the Degrares Facility was	5.17	6.17	The higher opinion rating in 2015 may signal the embedded change in behaviour within the traders, making it harder to recall previous conditions.

operating.(1 being did not recycle at all and 10 being recycled all the time).			
Q4 On a scale of 1-10 please rate how effective your business is at recycling AFTER the Degrares Facility has been operating.(1 being do not recycle at all and 10 being recycle all the time).	9.33	9.25	
Q5 Please rate the impact that separating your recyclables and dropping off your organics has had on your business. (Has it caused disruptions or lost time?)	41% - No impact 33% - Min impact 9% - Mod impact 17% - Maj impact	45 % - No impact 30% - Min impact 17% - Mod impact 8 % - Maj impact	Larger sample size in 2015 has evened out the distribution.
Q6 Please rate your level of satisfaction with the service you have received from the Degrares Recycling Officers.	83% - V.Satisfied 17% - Satisfied	75% - V.Satisfied 25% - Satisfied	Satisfaction rating has decreased yet the scale reading in Q7 has remained virtually the same.
Q7 On a scale of 1-10 please rate your level of satisfaction with the service you have received from the Degrares Recycling Officers. (1 being very dissatisfied and 10 being very satisfied).	9.33	9.17	The lowest score was 7.

4 Project highlights

4.1 Amenity and Safety

At its core, the Degrares Street Recycling Facility has vastly improved the amenity of the lane. It has reduced dumped rubbish, reduced graffiti, solved odour issues and vermin problems and reduced litter in the laneway. This has led to them taking an active role in improving the environs. Safety has also increased in the lane, where Staff at the facility act as 'caretakers' for the lane and were provided with improved security services in the area including cameras installed as part of the project

4.2 Unexpected Social Benefits

The project has also created something that stretches beyond laneway presentation. Community behavior has changed immensely with a new sense of pride and respect in the laneway, a greater community connection between traders and even people holding each other to account.. As can be seen in the aforementioned surveys of Degrares traders, the presentation of the lane was ranked at 8.4 out of 10 and 100 per cent of traders rated their satisfaction levels as 'satisfied' or 'very satisfied'.

The social benefits of the program are also important and are best illustrated by participant's comments in a short YouTube clip that can be viewed here <http://www.youtube.com/watch?v=80SRmNIPKC4> . The project has promoted a greater awareness and understanding within the local community about recycling and the issue of food waste going to landfill. Business owners, managers and their staff are engaged and educated daily by our Recycling Officers about source separation and reduction of waste, particularly food waste. This education has the potential to flow in to the home environment.

4.3 Education

Levels of understanding and awareness were achieved and have been exceeded beyond expectations. The Degrares Precinct is united together in promoting the project and supporting one another in a way that continues to attract other interested parties. Businesses and residents external to the Degrares precinct have expressed interest in recycling their organic waste in the Degrares Facility. A restaurant two blocks away specially delivers its organics in our Degrares Facility supplied buckets each week so that it can be recycled.

In addition to this, public interest and tour requests from schools, universities and industry continue to be received on a weekly basis.

4.4 A Model for Success

The project has also paved the way for similar facilities to operate and service local precincts in Melbourne's central city. A barrier that was overcome over the project journey was a prohibition in the Melbourne Planning Scheme (MPS). The use of a building within the Capital City Zone for storing and processing recyclable and organic materials was prohibited under the MPS. We applied to the Minister for Planning requesting an amendment to the planning scheme to allow for the activity to take place. A blanket amendment was granted allowing us to pioneer change within the capital city zone in Melbourne and allow for other buildings to replicate the model.

5 Conclusion and recommendations

The Degrares Street Recycling Facility has been a tremendous success in terms of the diversion of waste from landfill, the vastly improved amenity of Melbourne's busiest café precinct and the added social and educational benefits that have been passed on to the community.

Many challenges were faced throughout the project's early stages, for example, setting up the facility. Winning the hearts and minds of traders and convincing some of the value of being a part of the program took time. Some found it hard to source separate their waste after so many years of just dumping it all in the one big bin. Engaging the Degrares stakeholders and developing relationships with them was met with early barriers including:

- Busy cafes with high customer volumes
- High turnover of staff causing lost education messages
- Lack of space within shop footprints to separate waste streams
- Language barriers

The total engagement program has relied upon multiple visits to each business to collect their recycling, educate and change behaviours. The high frequency of consistent messaging has helped bring about behaviour change quickly and resulted in high quality recyclable materials with very little contamination being diverted from landfill.

The Key Selection Criteria was only met in one category but was missed marginally in the other two. The City of Melbourne still considers the project to be a success and the recycling statistics are only growing. There has already been an 18 per cent lift in the amount of recycling in the first quarter of 2015 with plans for further expansion within the city block.

6 Supporting documentation

6.1 Project Targets

Key performance indicator	Measure	Result
50% decrease of waste being sent to landfill amongst participants in the trial	Amount of waste diverted from direct disposal to landfill	The garbage waste stream in 2014 had reduced in size from 4,629.76kgs to 1,573.68kgs from February 2012 – a reduction of 66.0%.
70% increase in recycling amongst participants in the trial	Amount of materials collected by waste contractor from the recycling facility	The audit found that 66.9% of all food and recyclable materials generated were recovered through the Degraeves facility.
70% reduction in the volume of food waste collected from participants in the trial	Volume of food waste being transferred from the businesses and treated by the dehydrator	The total average for the project of 68.99% falls narrowly below project KPI.

6.2 Photos

DEGRAVES ST
RECYCLING FACILITY

THE CITY OF MELBOURNE AND DEGRAVES STREET BUSINESSES ARE WORKING TOGETHER TO KEEP THE PRECINCT CLEAN FOR EVERYONE TO ENJOY.

THE DEGRAVES STREET RECYCLING FACILITY IN ROSS HOUSE USES INNOVATIVE TECHNOLOGY AND WASTE MANAGEMENT PRACTICES TO REDUCE THE AMOUNT OF ORGANIC WASTE GOING TO LANDFILL AND INCREASE RECYCLING.

FOR MORE INFORMATION ABOUT THE DEGRAVES STREET RECYCLING FACILITY, PLEASE CALL THE CITY OF MELBOURNE ON (03) 9658 9658 OR VISIT MELBOURNE.VIC.GOV.AU

Metropolitan Local Government
Waste & Resource Recovery Fund

Government of
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ROSS HOUSE
ASSOCIATION

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The Facility

