

Metropolitan Local Government
Waste & Resource Recovery Fund



Food Waste Reduction Program WRF 2.52 (Food Know How)



Cultivating Community and City of Yarra



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Metro Fund Final Report



METROPOLITAN
WASTE
MANAGEMENT
GROUP



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The Metropolitan Local Government Waste and Resource Recovery Fund

The Metropolitan Local Waste and Resource Recovery Fund (the Metro Fund) is designed to support local government in metropolitan Melbourne implement best practice waste collection and management systems in line with the Metropolitan Waste Plan and Resource Recovery Strategy.

The Fund aims to reduce local government exposure to higher landfill levy rates through funding programs and innovations that reduce the amount of waste householders generate and through improvements to collection systems and resource recovery.

The Fund also aims to support implementation of the MWMG Strategic Plan with funded projects aligning with the key findings and future directions it identifies.

For more information on the Metropolitan Local Government Waste and Resource Recovery Fund please visit www.mwmg.vic.gov.au

Notes

Food waste diversion figures in this report and supporting documentation are based on a food waste volume-to-weight conversion rate of 2L = 1kg, as specified in the Australian Government's National Greenhouse Account Factors July 2013, p63.

http://www.climatechange.gov.au/sites/climatechange/files/documents/07_2013/national-greenhouse-accounts-factors-july-2013.pdf

1. Executive Summary

The City of Yarra and Cultivating Community developed the “Food Waste Reduction Program WRF 2.52” (branded as Food Know How) which aims to reduce the amount of food waste going to landfill. Food waste in Yarra averages over 50% of the domestic and 40% of the commercial waste streams; representing significant social, economic and environmental inefficiencies and impacts.

Key objectives

- Engage households, cafés and offices and the wider community in avoiding food waste and recapturing organic waste
- Encourage behaviour change to reduce food waste through engagement, access to subsidised organics recycling systems, community compost hubs and a food waste collection scheme
- Develop and trial technologies for processing food waste at local compost hubs
- Develop information for future waste minimisation and management plans

Project Description

Food Know How was implemented over an 11 month period (June 2013-May 2014) (the 18 month budget included project design and evaluation periods). 554 households, 32 cafes and three offices were recruited. A network of community compost hubs was established with a corresponding food waste collection scheme, to process food waste from local cafes.

Project targets included participant recruitment, food waste reduction, development and implementation of appropriate scaled technological solutions and research and development of best practice.

Key messages focused on benefits associated with food waste reduction and participants received resources, training and advice.

Evaluation

Bin audits enabled comparative analysis of food waste proportions of the waste stream over time and surveys were also administered to gather selected self-reported data on diversions. The capacity of compost hubs was measured by weekly inputs of café food waste.

Key Outcomes

Food Know How met all objectives and targets, including:

- An average landfill food waste diversion rate of 2.8 t per week
- Diversion capacity of 3.8 t per week at end of program
- Total potential household food waste diversion of 82.5 t per year
- Total café food waste diversion of 37 t throughout program
- Six compost hubs developed and operating, with approximately 100m³ compost provided free to community
- Final greenhouse gas emissions reduction of approximately 4.5 tCO²-e per week

If the program continued, the food waste diversion rates are projected to increase.

Conclusions and Recommendations

Food Know How demonstrated the significant potential to reduce food waste through local solutions. The project could be readily replicated in other municipalities and more efficiently by adapting the learnings which include:

- Bokashi systems are a key technology for organics recycling. Worm farming is subject to complex management challenges.
- Ongoing recruitment throughout the program presented resource and engagement challenges, therefore closed intake periods and recruitment by Council are recommended.
- Project delivery by a not-for-profit organisation enabled flexible and adaptive management.
- Households empowered through deeper engagement can achieve greater food waste reductions. Household focus groups identified two distinct groups with different motivations.
- In-vessel hot composting systems provide the most scalable and sustainable solution for inner city organic waste management, complemented with a 'user-pays' hybrid vehicle-trike collection scheme.

2. Project details

Australians discard up to 20% of the food they purchase. According to the World Bank, 1/4 to 1/3 of all food produced globally is lost or wasted¹. Food waste in landfill rots slowly creating methane; a greenhouse gas 25 times more potent than carbon dioxide². Other hidden impacts include wasted embodied water, fuel and resources used to grow, transport and process food. Food waste in Yarra averages 52.6% of the domestic waste stream and 40.1% of the commercial waste stream by mass, representing significant direct costs to Council via collection costs and landfill levies and an average household loss of over \$1,000/year³.

The Food Know How program developed and trialled food waste avoidance and recycling methods along with a corresponding education program within the City of Yarra. The program had a budget of \$475,941⁴ over 18 months and was designed to engage household, café and office participants and the wider community about the food waste problem and to encourage action by reducing and recycling their organic waste. A network of community compost hubs was established with a corresponding food waste collection scheme to process food waste from local cafes.

The key objectives of Food Know How were to⁵:

- Implement a comprehensive education program for households, cafés and offices to develop strong uptake and participation in the program
- Encourage behaviour change through: engaging participants in key messages of avoiding food waste and recapturing organic waste; and providing access to subsidised organics recycling systems, community compost hubs and a food waste collection scheme
- Develop and trial technologies for processing food waste at local compost hubs
- Develop comprehensive data and case studies related to food waste habits to inform future waste minimisation and management plans
- Achieve end of program reduction of 2,675kg/week food waste diverted from the rubbish stream of targeted households, cafes and offices

Key messages to participants were that reducing food waste and composting are easy ways to save money, reduce landfill and wastage of resources, and produce valuable fertiliser for the garden/community. Food waste avoidance messages also focused on menu and meal planning, utilising leftovers, smart shopping, proper storage techniques and rotation of stock. Participants were regularly engaged by Project Coordinators who provided support, prompting and feedback and free educational resources and training workshops were provided to encourage participation.

¹The World Bank Group (2014). Infographic: Food Loss and Waste. <http://www.worldbank.org/en/news/feature/2014/02/27/infographic-food-loss-waste>. (Accessed July 9 2014).

² Reay, D., Smith, P. and Reay, A. (Eds.), *Methane and Climate Change*, Earthscan from Routledge. Report states that “per kilogram, [methane] is 25 times more powerful than carbon dioxide over a 100-year time horizon.”

³Foodwise (2014). Fast Facts of Food Waste Infographic. <http://www.foodwise.com.au/foodwaste/food-waste-fast-facts/>. (Accessed July 9 2014).

⁴ Figure includes \$10K for ‘Housing Estate Project’ conducted by Council and \$80K for ‘Electronic Collateral Development Project’ which was contracted to Do Something! Foodwise. All figures excl. GST.

⁵ See Table 3 addressing the full list of project objectives.

Table 1. Overview of engagement and project delivery

Target audience	No. of participants engaged	Overview of Engagement and Implementation
Households	n=554 (Target: 500)	<ul style="list-style-type: none"> • food waste avoidance education • subsidised compost bins, worm farms, Bokashi systems • free workshops and educational resources • regular engagement, support and feedback • progress measured via audits and surveys
Cafes	n=34 (Target: 32)	<ul style="list-style-type: none"> • source separation and food waste avoidance training • access to community compost hubs and a tricycle-based food waste collection scheme • subsidised onsite recycling systems • regular engagement, support and feedback • progress measured via audits
Offices	n=3 (Target: 3)	<ul style="list-style-type: none"> • access to subsidised food waste recycling systems • regular engagement, support and feedback • progress measured via audits and self-reported data

3. Project outcomes and findings

Food Know How met all objectives and targets⁶, including:

- An **average landfill diversion rate** of 2.8 tonnes per week of food waste from households, offices and cafes at end of program. (Refer Table 2)
- **Diversion capacity** of 3.8 t per week of food waste from households, offices and cafes at end of program.⁷
- **Total cafe diversion** of 37 t of food waste, with a final average diversion of 1.2 t per week⁸. (Refer Appendix A)
- Total **potential household food waste diversion** of 82.5 t per year (Refer Appendix B)
- Development, trial and evaluation of **six compost hubs** using a range of systems. (Refer Appendix A & C).⁹
- Final **greenhouse gas emissions reduction** of approximately 4.5 tCO₂-e per week¹⁰.
- Creation of approximately 100m³ **compost**¹¹, **provided as free, high-quality fertiliser** to community groups.

⁶ The café Resource Recovery Rate (RRR) was slightly lower than the project target as meat and dairy were not considered acceptable for processing at the Food Know How compost hubs and cafes were taught not to put them in with compostable food scraps. Additionally, the commercial audits conducted by the City of Yarra (2011) were not focused purely on cafes and therefore could not be used as representative baseline information to develop and report on the target.

⁷ Calculated as the sum total of the highest weekly capacity achieved for each hub, plus weekly potential household office diversion rates.

⁸ The final average weekly diversion rate for cafes was calculated over the last two months of the program.

⁹ A drainage issue and flat bobcat tyre interrupted work at the Collingwood Children's Farm compost hub in late May/June 2014, however these issues were addressed and the hub is functioning normally at June 30 2014.

¹⁰ Calculated using Australian Government National Greenhouse Accounts Factors July 2013, p77.

¹¹ This is an indicative figure based on addition of an equal volume of carbon to the food waste (e.g. straw, rice hulls, autumn leaves), and an average compost volume reduction of 40.7% as observed in Breitenbeck, G. and Schellinger, D. 2004. "Calculating the Reduction in Material Mass and Volume during Composting", *Compost Science & Utilisation*, 12.4, p365-371.

If the program continued, the food waste diversion rates are projected to increase.

Bin audits enabled comparative analysis of food waste proportions of the waste stream over time and surveys were also administered to gather selected self-reported data on diversions. The capacity of compost hubs was measured by weekly inputs of café food waste.

Key findings include:

- **Household audits** indicate that food waste in the general waste bin **significantly decreased** by an average of 2.3kg per household per week (See Table B3, Figure B3)
- Greater food waste reductions were observed in households who received **deeper one-to-one engagement** (See Figures B2 & B3).
- 89%¹² of households surveyed self-reported that they had **reduced their food waste** (See Figure B6).
- **Public housing community gardeners** using shared composting facilities within the community garden self-reported average weekly food waste diversions of 5.97kg per household; over twice the diversion rate achieved by average non-public housing participants (See Figure B4).
- Café audits showed an **increase in the Resource Recovery Rate (RRR)** over time with final audits showing a 63% RRR of compostable materials (all cafes) and 70% RRR (cafes on collection scheme)¹³ (See Figure A3).
- **Final café audits** show a 37% reduction of total waste to landfill (kg) for all cafés and a 40% reduction for cafés on the collection scheme (See Figure A4).
- Café audits show both the RRR for compostable organics and total diversion rates from landfill increase over time; this likely corresponds to **systematic support and education** provided by Coordinators, including regular feedback and face-to-face visits (Figure A3).

An **adaptive management approach** allowed flexibility and adjustments to be made:

- Recruitment remained 'open' throughout the program (rolling recruitment) and was tailored according to effective methods.
- Bokashi systems were introduced midway through the program as a viable option for apartment dwellers and uptake was higher than compost bins.
- Household focus groups identified two distinct groups with different motivations; those interested in gardening/growing food and others in food waste reduction. Engagement strategies were revised to reflect this.
- Worm farming was very popular; however has slow start-up rates, relatively complex management and vulnerability during heatwaves. A chart comparing systems was provided to participants to clearly communicate limitations (Appendix D, Collateral Examples).

¹² The remaining 11% of household participants were likely to have had existing systems / were early adopters and so therefore had not decreased food waste in the program.

¹³ Refer to Footnote #6 regarding café targets.

4. Project highlights

During implementation of Food Know How there were many challenges, learnings and successes. Major achievements and highlights of the program include:

- The project **met or exceeded all funding agreement targets** including participant recruitment and landfill diversion rates¹⁴.
- The program achieved **increased awareness and behaviour change** in participants and the local community, demonstrated through food waste reductions and positive participant feedback.
- Food Know How **won the United Nations Association of Australia World Environment Day Award 2014 for Sustainability Education**¹⁵.
- **Trisled Cargo Tricycles are an Australian first** – a custom made human-powered food waste collection vehicle. Besides their impressive capacity (up to 160kg of food waste), the trikes proved a valuable promotional tool and continue to divert over a tonne of food waste each week from landfill (see Photos section).
- Delivery of **17 workshops** to over 180 participants with **100% positive feedback** (See Appendix B, Figure B8).
- As this was a pilot project, best practice recruitment methods were still being developed and understood; however despite this the project **achieved rapid recruitment** of 554 households, 34 cafes and three offices in less than 12 months (June 2013 – May 2014). In any future projects recruitment would be far more efficient, based on the learnings of Food Know How.
- The successful **integration of community composting into high-rise** public housing represents a step towards developing organic waste recycling solutions for Melbourne's multi-unit housing sector.
- Free compost was provided to community groups and the commercial value of compost produced during Food Know How is estimated to be \$6000 (bulk) - \$28000 (retail).¹⁶
- The project supported five community gardens, five community groups and schools and a number of local champions to establish/improve community composting initiatives.
- Feedback from participants has been extremely positive:

"We used to plan our meals in our minds, and we'd have so many rotting vegies in the fridge. Now that we write it down, our fridge is cleaner and we are saving money. The

¹⁴ The RRR rate presented does not include meat products as a compostable material, as these products were not considered acceptable for processing at the Food Know How compost hubs and cafes were taught not to put them in with compostable food scraps. Therefore the rate is slightly less than the project target included in the MWMG Funding Agreement.

¹⁵ Media Release: [*Individuals stand out in top Environment awards*](#) June 13, 2014

¹⁶ Based on a survey of equivalent commercial compost products at sold at Bunnings warehouse, Soilworx and Bulleen Art and Garden on 28th May 2014. The average bulk cost was \$60/m³, and retail cost was \$7/25L bag or \$280/m³. Note the compost would require further sifting and testing to meet Australian standards.

worms have paid for themselves! Thank you for such an innovative program.”
Resident

“The Food Know How program has been easy and a rewarding experience personally as well as for our business” Café owner

“I like seeing the cafés adapt over time to collecting food waste, and it is fun riding the trike. It’s great to do something practical about sustainability.” Volunteer

Further participant testimonials and case studies can be found in Appendix A and B.

Key factors that we believe contributed to this success include:

- **An emphasis on partnerships:** a broad range of partners were engaged including the Collingwood Children’s Farm, chefs, worm breeders, specialist bike mechanics, urban farmers, community groups, community gardeners, food rescue organisations and schools.
- **Adaptive management practices:** including regular monitoring and review allowed flexibility to experiment and change our model based on feedback.
- **Extensive volunteer recruitment and training:** support from more than 35 volunteers over the course of the program magnified the project team’s capacity and broader impact.

5. Conclusion and recommendations

Food Know How delivered all program objectives¹⁷ and demonstrated the significant potential to empower the community to actively manage their food waste through local solutions. If continued, the diversion rates would directly reduce waste management costs by significantly reducing the quantity of waste to landfill as well as achieve a number of other environmental and social benefits (refer to Appendix E Cost Benefit Analysis)¹⁸.

If current project outcomes with **existing** household, café and office participants are **projected over 12 months**, this would result in:

- **Food waste diversion from landfill:** 150.3 tonnes or 300.5 m³/year
- **Production of compost:** 204.5 m³/year, at a commercial value of \$12,270 (bulk) or \$57,260 (retail).
- **Greenhouse gas emissions reduction:** 238.16 t CO₂-e/year

The projected outcomes if expanded across the City of Yarra, or other similar Councils, over 12 months can be seen in the cost benefit analysis prepared in Appendix D, including capital and projected costs for 100 cafes and 1,000 households. These outcomes and cost benefit analyses are significant to warrant further development of Food Know How in the City of Yarra and across other Councils.

¹⁷ Refer to Footnote #6 regarding café targets.

¹⁸ Reduced food waste to landfill increases the recovery value/efficiency of the waste stream by decreasing processing costs / chemical use etc. and increasing the proportion of recoverable materials.

Key Learnings and Recommendations

The program can be readily replicated in other municipalities more efficiently by using developed resources and adapting the learnings which include:

- Bokashi systems can accept all types of food waste and require relatively low maintenance. Worm farming was considered the least useful system due to its relatively complex management, slow start up rates and vulnerability during summer heatwaves.
- Ongoing recruitment throughout the program presented resource and engagement challenges, therefore closed intake periods and recruitment by Council are recommended.
- Project delivery by a not-for-profit organisation enabled flexible and adaptive management. A recommended partnership model with a Council and a not-for-profit increase effectiveness, as demonstrated in Appendix C, Table C1.
- Households empowered through deeper engagement can achieve greater food waste reductions. Household focus groups identified two distinct groups with different motivations.
- In-vessel hot composting systems provide the most scalable and sustainable solution for inner city organic waste management, complemented with a 'user-pays' hybrid vehicle-trike collection scheme to improve efficiency.
- Most participating cafes would be willing to pay competitive waste collection rates for the trike collection service (See Appendix A, Figure A8). A subsidised collection fee is recommended to reduce costs and encourage participants to value the service and comply with regulations.
- Workshops were effective and rated highly by participants however they are resource intensive and ensuring attendance was difficult. Attendance could be improved by charging a small booking fee (potentially refunded at workshop), offering discounted composting systems for purchase only at end of workshop, or utilizing a text message reminder service.¹⁹
- Household audit data was collected at an aggregated level²⁰ due to cost, which meant that variation of food waste for individual household bins (and the recycling system they used) is unknown. Audit data should be collected at an individual level where possible. Further research is recommended to determine food waste variations for individual households.

¹⁹ Hopkinson, H. pers comm. 09/04/2014

²⁰ i.e. all households' waste was audited together rather than evaluating waste from individual households

Supporting Documentation

I. Figures (Statistics and information relevant to outcomes)

The attached figures illustrate statistics and information relevant to outcomes:

- For Figures A1-A8 see Appendix A
- For Figures B1- B8 and Tables B1-B3 see Appendix B

II. Tables (Project targets and end results)

- Table 1 provides an overview of engagement and project delivery (see 'Project Details' section on page 6)
- Tables 2 and 3 below summarise the project targets and end results.

Table 2- Final Weekly Diversion Rates of Food Know How programs

Area	Kg food waste diverted per week	Notes
Cafes (n=32)	1,275	Weekly diversion rate of café food waste to six local compost hubs
Public Housing Community Gardeners (n=83)	498	Aerobins within community gardens processing community gardeners' food waste (based on self-reported data)
Non-public Housing Households (n=471)	1,088	Average of 2.31kg/household/week diverted (based on Audit results)
Offices (n=3)	30.5	Total average weekly diversion of food waste from offices (based on self-reported data)
Target program diversion rate: 2,675kg/week		Final program diversion rate: 2,890kg/week

Table 3: Final project outcomes based on objectives and measures specifically outlined in the funding agreement

Key objective	Measure	Outcome
Achieve end of program reduction of food waste in the rubbish stream of households and cafes	Avoid or divert food waste at a weekly rate of 2.675 tonnes per week by the end of the program	The final weekly rate of diversion rate for households and cafes is 2.8 tonnes per week . Refer to Appendix A and B for detailed analyses.
Implement community engagement events to promote larger message of food waste avoidance and recapture	Host one large public event on food, food waste avoidance / recycling etc.	At Open Garden weekend (Feb 15-16th 2014) in the Highett Street Public Housing Community Garden, seven workshops were held on composting, worm farming, Bokashi and veggie gardening basics with 67 participants. In addition 19 other smaller events were attended including <i>Ride 2 Work Day</i> , school fetes, and local farmers markets.
Develop current database of research related to food waste avoidance and recycling	Complete literature review of past/current neighbourhood food waste and composting projects	A literature review is provided in Appendix F, entitled <i>"Effective local action to prevent and reduce food waste"</i> A database of neighbourhood composting projects is provided in Appendix G
Develop online food waste avoidance and recycling tools and information packages with sub-partners	Create an integrated website within the first 6 months of the program and launch with recruitment drive	The integrated website was launched within the first 6 months including online tools and resources available on both the <i>Food Know How</i> (www.foodknowhow.org.au) and <i>Foodwise</i> (www.foodwise.com.au) websites.
Maintain an active and vital reference group	Hold 5 reference group meetings throughout the course of the program	At the October 28 th meeting it was decided that the Control Group, including members from City of Yarra, MWMG and Cultivating Community, could be the reference group. The Control Group had 8 meetings .
Provide recommendations for identifying legislative barriers to promote neighbourhood composting	Create a recommendation report to provide basis for advocacy in the first 6 months of the program	A report exploring legislative barriers and recommendations to promote community composting (Appendix H).
Create an accessible report on findings of program, including recommendations for future developments	Create best practice report and associated case studies on food waste avoidance and neighbourhood composting	A best practice report recommendations and lessons from Food Know How is provided in Appendix C.
Target investigation of alternatives to volunteer support to complement low-cost staffing	Create recommendation report for alternative staffing/support models to work with and potentially replace reliance on volunteers	A recommendations report (Appendix I) has been developed, recommending other models to replace reliance on volunteers.
Develop strong	Recruit and engage 500	552 Households and 34 cafes were recruited and

uptake and participation in the Household and Cafes Food Waste Reduction Projects	households for active participation by end of program, with total a 55% reduction from 2011 levels. Recruit and engage 32 cafes by the end of the program. ²¹	engaged by the end of the program. The households achieved a 55% reduction in food waste (average 2.31 kg per household per week) from 2011 levels. The total diversion for participating cafes is 1.275 tonnes of food waste per week and a 63% recovery rate of organic materials (average reduction of 33.18kg per café per week).
Implement a comprehensive food waste education program to reinforce project targets	Conduct two series of three different workshops on food waste avoidance and recycling options.	Delivery of 17 workshops to over 180 participants with 100% positive feedback (see Appendix B). Workshops were designed to educate people on simple food waste avoidance practices, and basic use of compost, worm farm or Bokashi systems.
Develop comprehensive data and case studies related to food waste habits in the average Yarra household office and food business to inform future waste minimisation and management plans Conduct regular surveys of participants to gather data and feedback for program evolution	Conduct a series of three residential and commercial and office waste audits within a random selection of the participant pool and conduct three surveys of participants (entry, mid and end of program).	Three waste audits were conducted on a random selection of 50 households and ten cafes and two waste audits were conducted on three offices. Households: A series of four surveys were conducted. An initial survey to gather baseline data, three anonymous online surveys to gather feedback on participant progression and program evaluation. Additional surveys were administered to public housing residents to estimate food waste diversion to the community garden Aerobin units. Cafes: Three surveys were conducted, the first in-person and/or online as an introduction to the program and to gather baseline data. The second was an anonymous online survey to gain feedback on program and participant progression. The final evaluation was conducted as phone interview. Additional qualitative feedback for all three program areas was obtained through focus groups, workshops, emails, phone calls and home visits.
Provide food waste recycling systems for household participants, including information and communication support	Install and/or provide orientation/support for food waste collection ²² systems (i.e. compost bins, worm farms, information packs, etc.) for 500 households by the end of the program	All 554 households were provided with information, training and guidance on the food waste recycling systems (composting, worm farms or Bokashi). 267 new systems were provided to households, 83 community gardeners given access to shared composting systems and 150 households supported to maintain existing composting systems they had set up prior to joining the program.
Provide food waste collection and recycling systems for cafe participants, including information and communication support	Consult, install and provide orientation/support for food waste collection systems (i.e. staff training, bins, pick-up arrangements, etc.) for 32 cafes by the end of the program	All 32 cafes were provided with information, training and guidance on the options for collection and/or food waste recycling systems which included a volunteer-based cargo tricycle collection, separating food scraps and walking them to a compost hub by cafe staff or volunteers and/or on-site worm farm or compost systems.
Develop hard	Create information kits ,	Unique ‘Welcome Kits’ were developed and

²¹*The RRR rate achieved for cafes in the program does not include meat products as a compostable material, as these products were not considered acceptable for processing at the Food Know How compost hubs and cafes were taught not to put them in with compostable food scraps. Therefore the rate is slightly less than the project target included in the MWMG Funding Agreement.

²² Household collection systems were not implemented; onsite recycling schemes were sufficient in achieving food waste diversion targets.

collateral for all projects	training/orientation processes, data collection systems, promotional materials, etc. for all projects within the first 6 months of the program	dispersed to all participants including orientation information, educational materials on the issues of food waste and tool-kit for reducing food waste. Cafés received buckets, stickers and posters as well as guides and training materials for source separating organic kitchen waste. Households were also eligible to purchase subsidised food waste recycling system packages . Examples of the different systems and the welcome kit materials are shown in Appendix D. Promotional materials were designed by Food Know How staff and Council Communications team, including posters and postcard-sized flyers .
Develop and trial a bicycle-based compost collection for Café Food Waste Reduction Project	Design, build and implement bicycle-based collection systems by the end of program	Three cargo tricycles operate seven days per week by volunteers. The scheme currently operates at an average of two routes per day, collecting food waste from 21 cafes and delivers to three compost hubs for processing.
Maintain active and focus groups for material development and program framing feedback	Recruit and convene residential and commercial focus groups within the first six months of the project	A core group of interested households and café representatives were selected from the beginning of the project to help shape the program. These groups developed into focus groups which met formally with a consultant to provide feedback on the developing project and inspire future developments.
Develop pilot for Office Food Waste Reduction Project; Provide food waste systems, information and support ²³	Recruit and engage 3 offices for active participation in the pilot and achieve a 55% reduction of food waste from 2011 levels.	3 offices²⁴ were recruited and engaged and collectively achieved a diversion of 30.5kg/week (based on self-reported data) using onsite Bokashi systems provided at subsidised rate. This exceeds the program target of average reduction of 2kg per office per week (i.e. from 3.6 kg to 1.6kg).
Expand composting hub at the Collingwood Children's Farm	Complete final elements of compost hub at CCF within the first 6 months of the program	CCF compost hub completed and operational within first 6 months of program.
Develop additional neighbourhood compost hubs	Design and build three additional compost hubs in the municipality by the end of the program	In addition to CCF Hub, five additional compost hubs were designed and built in the municipality.
Develop and implement a healthy eating and food waste avoidance pilot program at the Collingwood Estate	Conduct series of healthy cooking classes and food waste minimisation workshops at the Collingwood Public Housing Estate	Two low-income CALD pilots were conducted by City of Yarra staff: African Women's Group and Chinese Mothers' Group and reports were completed with overview of projects and findings (Refer to supplementary reports in Appendix J & K)

²³ Onsite Bokashi systems were deemed most suitable for offices and sustainable long-term. Therefore a collection scheme was not introduced.

²⁴ In addition to the three offices in the program, another office was provided with assistance in the operation, collection and emptying their full Bokashi Bins into compost bins located in local community gardens. The food waste diversion rates of this additional office were not measured.

Project Resources

Please refer to Appendix D for all examples of collateral and project resources used throughout the program.

I. Photos



Food Know How Households Coordinator Jodi Clarke with participant Mara Atkins, her two daughters Amelia and Tamika and their functioning worm farm.



Food Know How Cafes Coordinator Kaylyn Hawkes with volunteer Hermann Paulenz collecting food waste from Sonido Café with a Trisled Cargo Tricycle.



Food Know How Educator and Technical Advisor Kat Lavers demonstrating worm farm management to program participants.



Food Know How Compost Hub at the Collingwood Children's Farm



Food Know How Worm Farm Hub at 229 Hoddle Street, Collingwood.



Food Know How Aerobin Hub at Highett Street Public Housing Community Garden

II. Collateral (See Appendix D)

A sample of hard copies has been sent with this report; a full set of collateral developed for all projects can be found in Appendix D.

List of developed collateral:

- Pamphlets on reducing waste in commercial kitchens via menu planning and stock management
- Stickers and posters guiding source separation of kitchen waste
- Promotional program stickers, posters and coffee machine magnets
- 'Food Donation Tool-kit' brochure
- Foodwise information sheets on storage, use of leftovers, shelf-life and smart shopping
- Menu planner fridge magnet for households (electronic and paper copy provided)
- 'Fridge map' magnet with storage advice (electronic and paper copy provided)
- Food Know How branded shopping bags (sample unavailable)
- Information sheets on composting, worm farming and Bokashi systems
- Informative videos on composting and food waste avoidance are available at:
 - www.foodknowhow.org.au/kitchen-know-how/food-fact-sheets/
 - www.foodknowhow.org.au/waste-know-how/fact-sheets-videos/

III. Media releases

Media Releases

- i. Food Know How wins the *United Nations Association of Australia World Environment Day Sustainability Education Award 2014*. Media Release: [Individuals stand out in top Environment awards](#) June 13, 2014

Food Know How has also been nominated for the [Yarra Sustainability Awards 2014](#) and has entered the [Premiers Sustainability Awards 2014](#) and [Banksia Sustainability Awards 2014](#).

Newspaper articles

- i. [Top tips to reduce food waste, The Age, 18/4/2014](#)
- ii. [Economy gastronomy, The Herald Sun, April 2014](#)
- iii. [From plate to paddock on track across Yarra, Melbourne Times, 23/12/2013](#)
- iv. [Wise up to food waste, Yarra News, 1/10/2013](#)
- v. [Slimming our waste, The Age, 7/7/2013](#)
- vi. [Rubbish to Riches, Melbourne Times Weekly Review, 4/6/2014 \(p 9\)](#)

Radio interviews

- i. 3CR (855AM) community radio - as part of their Sustainable Breakfast 'sustainable options for the urban environment' talking about community gardens and Food Know How - 25th March 2014 <http://www.3cr.org.au/sustainablebreakfastseries>
- ii. Triple R (102.7FM) The Grapevine - live interview about Food Know How - 21 Oct 2013 <http://ondemand.rrr.org.au/live>
- iii. 92.1FM (2MFM) Muslim Community Radio - discussion on household food waste - 10 Oct 2013 <http://www.2mfm.org/2mfm/live-broadcast>
- iv. 3CR (855AM) community radio – introducing Food Know How - June 11 2013

Presentations

Polack, S. 2013. "The Food Know How program" Paper presented at Agrifood XX conference, University of Melbourne, 4th December, 2013

Lavers, K. 2014. "Living Simply in the City", Panel discussion at Sustainable Living Festival, Birrarung Marr, Saturday 15th February, 5-6pm, 2014.

Food Know How has also featured in The Age Good Food Week, Open Garden Australia celebrations, and the Sustainability Living Festival.

Newsletters

- i. [June 2014 eNewsletter](#)
- ii. [May 2014 eNewsletter](#)
- iii. [April 2014 eNewsletter](#)
- iv. [March 2014 eNewsletter](#)
- v. [Feb 2014 eNewsletter](#)
- vi. [Dec 2013 eNewsletter](#)

Videos

- i. The 'Food Know How' story <http://vimeo.com/88228010>
- ii. Food Know How Households Video <http://vimeo.com/69458360>
- iii. Food Know How Cafes Video <http://vimeo.com/69458358>
- iv. Food Know How Hubs Video <http://vimeo.com/69458359>

Websites and Social Media

Food Know How - <http://www.foodknowhow.org.au>

Cultivating Community - <http://www.cultivatingcommunity.org.au/>

Food Know How on Facebook - <https://www.facebook.com/FoodKnowHow>

Food Know How on Twitter - <https://twitter.com/FoodKnowHow>

Glossary

Term	Definition
Resource Recovery Rate (RRR)	The amount of food waste recycled as a percentage of all food waste.
Diversion Rate	The amount of food diverted as a proportion of the entire garbage stream
Food waste	Food discarded or 'lost' during the retail and final consumption phases of the supply chain
Organic Waste	The biodegradable component of the waste stream that is of biological origin but does not contain any Listed Waste, Radioactive Waste or Hazardous Waste.
Food waste avoidance	Behaviours that increase the proportion of food purchased that is consumed thus reducing the amount of food disposed of in the rubbish bin (i.e. correct storage or utilising leftover ingredients)
Compost Hub	A medium or large scale system used to process organic materials via composting or vermicomposting to produce soil conditioner
Collingwood Children's Farm (CCF)	The Collingwood Children's Farm (CCF) is a partner in the management of the composting windrow system located at the farm used to process café food waste into compost. The CCF is located 5km from the centre of Melbourne and its' seven hectares include paddocks, gardens, orchards and animal pens, a farm cafe and regular farmers market. www.farm.org.au/

X	Please check this box if you wish to be contacted directly by a reader for more information about this case study
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Appendices

[Appendix A](#) - Cafe and Compost Hub Data, Tables and Figures

[Appendix B](#) - Household Data, Tables and Figures

[Appendix C](#) - Best Practice Report: Recommendations and Lessons from Food Know How

[Appendix D](#) - Collateral developed for the Food Know How Project

[Appendix E](#) - Cost Benefit Analysis

[Appendix F](#) - Literature Review: Effective Local Action to Prevent and Reduce Food Waste, Dr Rachel Carey Sept 2013

[Appendix G](#) - Database of Neighbourhood Composting Projects

[Appendix H](#) - Review of Legislative Barriers and Recommendations to Community Composting, Stephanie Harfield, March 2014

[Appendix I](#) - Recommendations for Alternative Staffing Models for Tricycle Food Waste Collection Scheme

[Appendices J & K](#) - Low-income CALD pilots: African Women's Group and Chinese Mothers' Group, City of Yarra 2014 (Supplementary Food Know How Reports)



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