

Sancta Maria College – WasteWise case study

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Foreword

This is one of a series of WasteWise case studies showcasing Auckland schools that are effectively minimising waste.

Aucklanders send over one million tonnes of rubbish to landfill every year. To combat this, Auckland Council is actively working towards an aspirational goal of zero waste by 2040 through its Waste Management and Minimisation Plan. Schools play a notable role in these efforts. With more than 1000 schools and early childhood centres in Auckland, students and teachers have the potential to reduce waste on a large scale. Schools provide children an opportunity to learn and practice responsible waste management every day. Students also take learnings home to their families, further educating the community about waste minimisation.

With student rolls ranging from less than 20 to over 3000, Auckland schools and early childhood centres have found a variety of ways to manage their waste. From worm farms to chicken coops, rubbish-free lunches to bin monitors, schools are doing their part to reduce waste sent to landfill. This series of case studies showcases some of the many routes schools can take to minimise waste. You will find detailed descriptions of waste systems and processes, new waste minimisation ideas, and evidence that reducing waste can also be good for a school's bottom line. We recommend reading multiple case studies and working with a team of teachers, students, caretakers, and senior management to develop a waste management plan that works for your school.

Ready to start reducing waste at your school? Auckland Council offers free waste minimisation support and resources to Auckland schools and early childhood centres. For more information, contact us at wastewiseschools@aucklandcouncil.govt.nz or by phone at 09 301 0101.



1 Executive Summary

"To educate our community about the importance of caring for the environment and to set systems and procedures that are environmentally friendly." – Excerpt from Sancta Maria College's Environment Team Booklet

Beginning in 2009 and led by Technology teacher Debbie McCreath, Sancta Maria College implemented a new waste management system. From 2012 to 2014 there was a 48 per cent reduction in total waste sent to landfill. This included a 46 per cent reduction in recyclable and compostable materials sent to landfill. Over the same period, student roll increased by 5.4 per cent.

To achieve this reduction in waste, the school implemented a waste system. This consisted of 19 outdoor bin stations; classroom bins for recyclables and rubbish; staff room bins for food waste, recyclables and rubbish. There is a regular schedule for emptying all the bins each week. The caretaker's job description outlines the requirements for the handling of rubbish bins, and assisting with recycling bins, decontamination. While the main responsibility for these systems is with the caretaker, students are involved by managing litter, making signs for the bins and planning Enviro Week each year.

2 School Information

Sancta Maria College

Location: Botany, Auckland

School type: Catholic co-educational secondary, Years 7 to 13

School roll (2015): 1019

Decile (2015): 7

Gender composition (2015): Boys 47 per cent, Girls 53 per cent



Ethnic composition (2015):

Number of international students (2015): 31

Academic achievement (2014):

- NCEA results:
 - Level 1: 99.2 per cent achievement
 - Level 2: 96.4 per cent achievement
 - Level 3: 97.6 per cent achievement

NB: School roll, decile, and demographics are obtained from the latest Education Review Office (ERO) report. Academic achievement information is obtained from the school's website.

3 Waste minimisation journey

See attached student-made booklet for journey from 2008-2013.

4 Waste management systems

4.1 Front-of-house systems – waste disposers

4.1.1 Set-up

Location	Set-up			
Outdoor bin stations (19)	 modelled on Western Springs College waste stations three 180L wheelie bins; closed lid rubbish: red, recycling: yellow, food waste: green bin locking station constructed from re-used pallets (see Figure 7) 			
Classrooms	one square plastic paper/cardboard box eachone small rubbish bin each			
Staff workroom	 one bin for one-sided, non-confidential paper used for making LoveNotes notebooks one paper wheelie bin one e-waste wheelie bin 			
Staff room	 one food waste bin one rubbish bin one 240L Auckland Council wheelie bin for co- mingled recyclables 			
Food technology room	 one rubbish bin one recycle bin one food waste bin 			
Tuck shop	 one rubbish bin one 240L Auckland Council wheelie bin for co- mingled recyclables 			
Offices	one paper/cardboard box eachone small rubbish bin each			
Other	 two yellow Paper from Homes wheelies bins (this initiative is no longer available) 			

4.1.2 Procedure

Location	Procedure		
Outdoor bin stations (x19)	 caretaker uses a tractor to empty bin stations twice per week; more frequently, if needed 		
Classrooms	 homeroom student monitors encouraged to empty paper bins once per week emptied into wheelie bin outside cleaner empties rubbish bin daily 		
Staff workroom	caretaker empties paper bin as needed into skip bin		
Staff room	 caretaker empties recycle bin as needed cleaner empties rubbish bin daily WasteWise key teacher empties food bin twice per week 		
Food technology room	 WasteWise key teacher: empties recycling bin in nearest station as needed empties food scraps into worm farm and bokashi bins twice per week cleaner empties rubbish bin daily 		
Tuck shop	 caretaker empties recycling bin into nearest station cleaner empties rubbish into nearest station 		
Offices	office stat empty their own paper/cardboard binscleaner empties rubbish bins		

4.1.3 Signage

Student-made signs depicting commonly discarded items are located above waste stations or on the front of bins. See Figures 7, 10, 12 and 18.

4.1.4 Litter

Everyone is expected to be responsible for their own rubbish. Detention students pick up litter twice per week.

4.2 Back-of-house systems – waste collectors and processors

	Procedure	Provider
Co-mingled recycling (plastic/aluminum /glass/steel)	 caretaker empties bins as needed into 240L Auckland Council wheelie bins wheelie bins collected kerbside fortnightly by provider 	Auckland Council: mixed-recyclables service; no cost in this area
Paper/cardboard recycling	 caretaker empties blue wheelie bins and yellow Paper from Homes wheelie bins twice per week into skip collected fortnightly or as needed caretaker stocks excess paper in rented storage cage and places in skip as space allows WasteWise key teacher sends paper collected for LoveNotes as required 	Fullcircle: Paper from Homes initiative is no longer available Lovenotes - http://lovenotes.co.nz/
Confidential paper recycling	 two red wheelie bins collected once per month by provider 	Nitrogenx: \$45 per month
Food waste	 caretaker empties bin station food waste into two large-scale composters twice per week WasteWise key teacher manages five Hungry Bin worm bins and five bokashi bins empties food waste bins from technology room and staff room twice per week 	On-site; maximum \$11 per year for one bag of Zing for bokashi system
Green waste	 caretaker manages on-site disposal into open-heap composters 	On-site; no cost
E-waste	 caretaker collects e-waste stores in garage takes it to a local drop-off point 	Ewaste.org.nz

Rubbish to Iandfill	 caretaker empties bins into a skip twice weekly skip collected twice per week by service provider occasional extra collections 	JJ Richards: \$82 per bin collection
Garden (three on site)	 WasteWise key teacher and caretaker add as needed: compost worm castings/tea bokashi scraps 	On-site; no cost Occaisionally, the WasteWise key teacher sells compost, worm castings, and worm tea to staff. Staff also sometimes purchase garden vegetables. Money raised is used to buy bokashi Zing, seedlings, garden supplies, etc.

NB: Sancta Maria College also manages the rubbish to landfill from neighbouring Sancta Maria Primary School. Sancta Maria Primary manage their own kerbside Auckland Council recycling bins.

5 Waste minimisation education

5.1 At launch

School assembly	 WasteWise key teacher and Environment Team students educated students and staff about systems
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5.2 Ongoing

Annual stream clean-up	 Environment Team manages litter clean-up at stream bordering school 		
Enviro Week	 Environment Team plans different theme each year examples: "Switch it off" campaign visiting speaker: Generation Zero, Solar and Sustainable Coastlines 		
Starship mobile phone appeal	 yearly appeal mobile phone collection in student centre earn points for sending in old/broken phones scheme ended in 2015 		

5.3 One-off

- Snack packet banner:
 - WasteWise key teacher sewed together all the snack packets from a single waste audit into a long chain
 - o demonstrated the amount of non-recyclable rubbish students create
- small group from the Environment Team visited the Visy Recycling Education Centre
- hosted a secondary school cluster meeting in 2013 for teachers interested in waste minimisation
- hosted a Mini Green Jam with Pakuranga College in 2014 and hosted again in 2015
- student made a booklet about their waste journey for a Year 13 ICT standard. See attached booklet

5.4 Formal education

- Year 7 homeroom:
 - introduced to the school's waste systems as part of their introduction to the college
- Years 7/8 Technology:

- study the characteristics of technology including the positive and negative impact of developments, e.g. plastic bags, digital devices in China, etc.
- Year 8 Art:
 - o a unit of work on environmental issues
- Year 8 Social Studies, Science, and Religious Education:
 - Sustainable Coastlines spoke about plastics in oceans
 - o trained students to present to the primary school students
 - o created posters about plastic in our oceans
- Year 9 God's Creation/Stewardship unit:
 - o covers the concept that we are the guardians of the environment
 - taught how scripture celebrates God the Creator, the concept of co-creation, that Christians are called to cooperate with God when building up creation, and to recognize human responsibility for de-creation
- Year 10 Service in the Church:
 - o sometimes brings in environmental issues
- Year 11 Religious Education, Level 1 NCEA standard:
 - investigates the question of how the Catholic Church responds to ethical issues including war, disaster, and environment
 - apply ethical principles of peace, charity, and reverence of creation to an ethical issue
 - o focuses on relevant issues at the time, e.g. Maui dolphins

5.5 Other

- Environmental Team badges:
 - o given to the senior and most dedicated members of the team
 - WasteWise key teacher presented 15 badges at a special school assembly
- LoveNotes notebooks:
 - o sold to staff for \$2 each to cover costs
 - provides these notebooks to all teachers in their annual start-of-year stationary pack

6 Time requirements for waste management

Ground staff/caretaker	 little to no time spent sorting twice weekly: landfill bins emptied to skip food waste bins into large scale composter kerbside recycling bins
Teachers	 WasteWise key teacher: 45 minutes per week mainly managing food waste (bokashi and worm farms)
Students	 1 student for 1 hour per day assisting caretaker with bin collection

7 Waste minimisation policies

• The caretaker's contract states that they are to "assist the recycling committee with removing of recycled items to appropriate bins". See Appendix 1.

8 Waste audit data

- Waste audits are performed annually
 - WasteWise key teacher, deputy principal, and as many students as possible clear all the bins the day before the audit
 - day of the audit there is a whole school assembly to see the waste dumped out onto a large tarp and to give the previous year's audit results
 - students and classes can come back throughout the day to help out and teachers are invited to bring their classes to watch
 - the audit typically runs from 9:00am to 2:00pm
- Sancta Maria College also manages Sancta Maria Primary's waste, so these audit results include rubbish from the primary school. However, the primary school is not yet actively involved in waste minimisation efforts. The kilograms of waste per person are calculated using the total roll of both the college and the primary school.
- from 2012 to 2014 there was a 48 per cent reduction in total waste sent to landfill including a 46 per cent reduction in divertible materials sent to landfill
 - o over the same period student roll increased by 5.4 per cent
- data from the waste audit is shown in Appendix 2
- summary of waste audits from 2012 to 2014 is shown in the figure below



Figure 1: Waste audit summary from 2012 to 2014

9 Waste management financial report

The full data for annual waste expenditures and incomes is in Appendix 3.



9.1 Annual waste expenditures

Figure 2: Summary of annual waste expenditure 2009-2014

- Note:
 - o numbers are rounded to the nearest dollar
 - the above table shows no clear trend in the net amount of money spent sending rubbish to landfill
 - this may be due to an increase in roll
 - the college manages the neighbouring primary's school waste; however, the primary school has not yet implemented a waste minimisation programme
 - o school roll increased 5.4 per cent in the period of 2012 to 2014
 - the above table does not show annual income received from Paper from Home initiative because it is no longer available

9.2 One-time expenses

All expenses were grant funded:

- bins for bin stations totalled \$3400
- two composters at approximately \$2750 per composter; total \$5500

9.3 External funding:

- Waste Minimisation and Innovation Fund (Auckland Council):
 - \$3410 towards the cost of new wheelie bins for the bin stations
- ASB Community Trust grant:
 - \$5000 towards the cost of two large-scale food scrap composters
- Manukau Council Schools Competition:
 - Won \$500 for classroom recycling bins
- Maggi Kitchen Showdown:
 - Won \$5000 for a water bottle refilling station
- Positive Futures Trust:
 - \$2500 towards the cost of five Hungry Bin worm bins and five bokashi bins
 - o also used for the bokashi Zing and other garden needs
- Other income sources:
 - o WasteWise key teacher sells worm casting, tea, and compost to staff
 - raises approximately \$25-30 per term
 - WasteWise key teacher sells garden vegetables to staff
 - uses funds for bokashi Zing and other garden needs

10 Photos



Figure2: Paper collection bins near the front of the school



Figure 3: The paper collection bins are emptied into the jumbo bin above. This initiative is no longer available



Figure 4: Classroom paper and cardboard bins



Figure 5: Paper and cardboard blue bin



Figure 6: The blue bin is emptied into the jumbo bin above and collected by Fullcircle



Figure 7: Coloured coded sorting station



Figure8: Bin trial with matching colour coding



Figure 9: Yellow recycling bin



Figure 10: Yellow recycle bin at sorting station



Figure 11: Council recycle bins collected fortnightly



Figure 12: Green food bin at sorting station



Figure 13: Green food bin



Figure 14: Bokashi bin system



Figure 15: Worm farm system



Figure 16: Composting system



Figure 17: The bokashi, worm farm and composting systems all feed the school gardens



Figure 18: Red landfill bin at sorting station



Figure 19: The red bin is transferred to the jumbo bin above for weekly collection

11 Appendices

11.1 Appendix I – Excerpt from caretaker's contract

Hygiene

- immediately following school intervals and lunch breaks clean up rubbish around problem areas to ensure no rubbish is lying around pathways or gardens
- ensure main courtyard is regularly swept of rubbish build-up
- empty rubbish bins daily
- ensure that all bins are sanitized weekly and in clean condition at all times
- assist the recycling committee with removing of recycled items to appropriate bins and ensuring bins are out for collection

It also contains the statement "any other duties as directed by the Business Manager".

11.2 Appendix 2 – Waste Audit Data

Landfill waste per person was calculated based on the number of people present at the school the day of the audit.

- 2012
 - o one day landfill waste total: 92.2kg (0.070kg per person)
 - o could have been diverted: 71.1kg
 - o actual landfill waste: 21.1kg
 - o correctly diverted: 44.9kg
 - including paper/cardboard and mixed recyclables
- 2013
 - o one day landfill waste total: 63.8kg (0.055kg per person)
 - o could have been diverted: 51.5kg
 - o actual landfill waste: 12.3kg
 - o correctly diverted: 37.9kg
 - including paper/cardboard and mixed recyclables

- 2014
 - o one day landfill waste total: 47.5kg (0.038kg per person)
 - o could have been diverted: 38.5kg
 - o actual landfill waste: 9.2kg
 - o correctly diverted: 22.3kg recyclables
 - including 12kg paper/cardboard and 10.3kg organic waste

11.3 Appendix 3 – Annual Waste expenditures (-) and income (+)

Waste management	Landfill waste disposal	Green	Recycling Collection			
costs by year		waste disposal	Paper/ cardboard	Plastic/glass	Metal	Total (\$/year)
2009	-\$7226	\$0	\$0	\$0	\$0	-\$7226
2010	-\$8877	\$0	\$0	\$0	\$0	-\$8877
2011	-\$9470	\$0	+\$14	\$0	\$0	-\$9456
2012	-\$7287	\$0	+\$209	\$0	\$0	-\$7078
2013	-\$7371	\$0	+\$144	\$0	\$0	-\$7227
2014	-\$8808	\$0	+\$313	\$0	\$0	-\$8495

• Note:

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 - this may be due to an increase in roll
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