

One Tree Hill College – WasteWise case study





One Tree Hill
COLLEGE

**Filtered Water
Bottle Refill Station**

**Help Build a
Sustainable Future**

- » **Reduce**
your need to buy bottled water
- » **Reuse**
your water bottle-refill here
- » **Recycle**
your water bottle after use



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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

“Where, and whenever possible, the College will reduce, reuse and recycle materials and waste.” – Excerpt from One Tree Hill College’s Environment Policy

One Tree Hill College implemented a new waste management system in 2013 led by Deputy Principal Merv Bettridge. From 2013 to 2014 there was a 38 per cent reduction in total waste sent to landfill. This included a 42 per cent reduction in recyclable and compostable materials sent to landfill. Over the same period, student roll increased by 9 per cent. In 2014, the school saved \$3054 on waste management compared to 2012 even with a substantial increase in school roll. This savings was largely due to a reduction in waste to landfill and increased income from sales of recycled paper and metal.

To achieve this, the school implemented a waste system consisting of three outdoor bin stations, classroom paper bins, and separate rubbish, plastic/glass, aluminium, and food waste bins in each of the four student common rooms. Importantly, all students and staff are involved in the management of the system. There is a regular schedule for emptying bins each week and students rotate responsibility for this task. The caretaker’s job description now includes handling of recycling bins, decontamination, and an expectation to “display sustainable green practices to minimise rubbish dumped.” The cleaners’ contract also states they must separate out any recyclable material placed in the indoor rubbish bins. Of note, the school’s Policy Manual now includes an Environment Policy with a goal “to ensure One Tree Hill College acts in an environmentally friendly manner,” as well as a guideline that “Where, and whenever possible, the College will reduce, reuse and recycle materials and waste.”

2 School Information

One Tree Hill College

Location: Penrose, Auckland

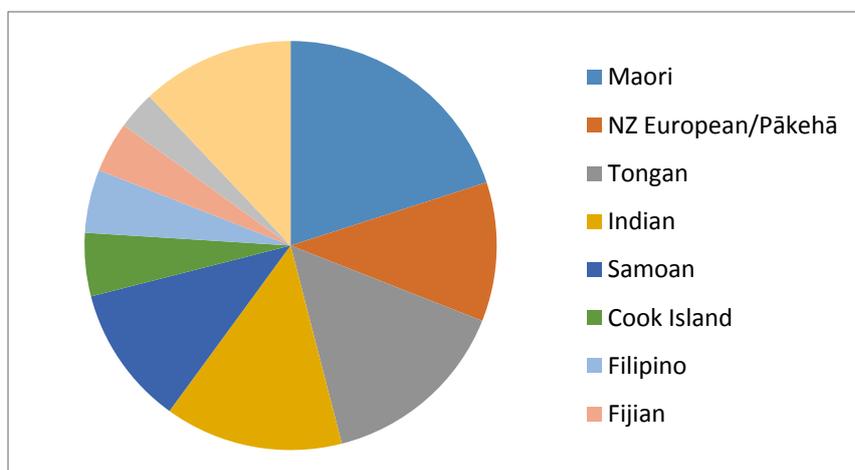
School type: Co-educational secondary, Years 9 to 13

School roll (2015): 1009

Decile (2015): 3

Gender composition (2015): Boys 56 per cent, Girls 44 per cent

Ethnic composition (2015):



Number of international students (2015): 20

Academic achievement (2014):

- NCEA results:
 - Level 1: 76.5 per cent achievement
 - Level 2: 81.6 per cent achievement
 - Level 3: 67.8 per cent achievement
- Literacy and Numeracy results:
 - Literacy: 90 per cent achievement
 - Numeracy: 80 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

As told by Deputy Principal, Merv Bettridge:

The journey began as a series of coincidences occurring over a two week period in early 2013. Fullcircle recycling contacted Auckland schools offering to recycle paper and cardboard and pay \$50 per tonne. A letter was received from Environmental Education for Resource Sustainability Trust offering free classroom bins for paper and cardboard recycling, independent of Fullcircle. Information was received from Auckland Council about the Waste Minimisation and Innovation Fund grants and an application was submitted for a chicken house, worm bin and construction costs towards compost bins. This grant application was successful. A small group of senior students led by Deputy Principal Merv Bettridge conceived a plan to initiate a recycling plan and reduce rubbish sent to landfill. This involved placing colour coded wheelie bins and other bins in strategic places around the school for the recycling of paper and cardboard, plastic bottles and aluminium cans at the beginning of term 2. It also involved using full-school junior and senior assemblies to explain the recycling plan as well as informing staff at the first staff meeting of the term. A waste audit was held in mid-August 2013 and a report was made back to students at assemblies. At the beginning of 2014 the chicken run was established at the back of the caretaker's property which borders on the school grounds. Four chickens were purchased and they were fed food scraps collected in new bins strategically placed in the school. The flock of chickens has been increased to eight and the chicken run extended to the back of the canteen. Eggs are sold at 25 cents each to staff in half-dozen lots – demand outstrips supply. Money from egg sales offsets the cost of buying commercial chicken food during the holidays. Two filtered drink stations were established with the view to encourage students to drink more water and to reuse their drink bottles at the beginning of 2014. Another waste audit was done in mid-August 2014 on the same day as the previous year. A report on this audit was given to the full-school assemblies comparing the 2013 audit to the 2014 audit, showing the progress made.

Students and staff have all bought into the recycling programme at the school, and none would want to return to pre-recycling days. Most were indifferent when the plan was put into place. The school is much cleaner and there is little litter left lying about by students. There is an unsaid “feel good” factor among students and staff about doing the right thing and recycling items instead of sending them to landfill. Since the start of 2014, we have managed to keep to one skip bin of rubbish emptied each week during the term. Previous to this time we always had two skip bins emptied every week. All this has happened in a time when we have had a 28 per cent roll increase (2012 to 2015).

Students and staff are all aware of the Auckland Council Waste Management and Minimisation Plan goals of reducing waste by 30 per cent by 2018 and becoming zero waste by 2040. At One Tree Hill College we have already achieved the 2018 goal.

4 Waste management systems

4.1 Front-of-house systems – waste disposers

4.1.1 Set-up

Location	Set-up
Outdoor bin stations (three)	<ul style="list-style-type: none"> • one 180L red wheelie bin; closed lid <ul style="list-style-type: none"> ○ plastic and glass/drink cartons • one 140L yellow wheelie bin closed lid <ul style="list-style-type: none"> ○ aluminium cans • Hungry bin (worms) at one station • rubbish bin at one station • 10x rubbish bins around school
Classrooms	<ul style="list-style-type: none"> • one small rubbish bin each • one green plastic box: paper <ul style="list-style-type: none"> ○ supplied by Paper4trees
Common rooms (four)	<ul style="list-style-type: none"> • one small black rubbish bin each • one food waste bin each • one small red bin each <ul style="list-style-type: none"> ○ plastic and glass/drink cartons • one small yellow bin each <ul style="list-style-type: none"> ○ aluminium cans • one 180L blue top wheelie bin
Staff room	<ul style="list-style-type: none"> • one 240L blue top Auckland Council recycling wheelie bin • one food waste bin • one rubbish bin • one paper bin
Food technology room	<ul style="list-style-type: none"> • one food waste bin • one rubbish bin • one paper bin
Tuck shop	<ul style="list-style-type: none"> • one food waste bin • one recycling bin • one rubbish bin

4.1.2 Procedure

Location	Procedure
Classrooms and offices	<ul style="list-style-type: none">• students empty green classroom bins into blue top wheelie bin twice per week• student monitors take wheelie bins to caretaker• caretaker empties bins into 1100L Fullcircle bin
Common rooms (x4)	<ul style="list-style-type: none">• student monitor empties red and yellow bins into outdoor station twice per week
Food waste	<ul style="list-style-type: none">• caretaker empties all food waste bins and feeds chickens
Tuck shop	<ul style="list-style-type: none">• staff empty bins into outdoor station<ul style="list-style-type: none">○ paper/cardboard emptied into 1100L Fullcircle bin
Decontamination	<ul style="list-style-type: none">• cleaners and caretaker separate recyclables and food waste from rubbish bins<ul style="list-style-type: none">○ separated recyclables and food waste emptied into outdoor station

4.1.3 Signage

Each bin has a simple laminated sign made by the school which indicates what should be placed in each bin.

4.1.4 Litter

Litter has significantly reduced since implementation of the system, and very little loose litter is left lying around. There has been a culture shift at the school, and students now take pride in keeping the school clean. Caretakers, including paid student caretakers, pick up any loose litter at the end of the day while they are emptying rubbish bins.

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

	Procedure	Provider
Paper/cardboard recycling	<ul style="list-style-type: none"> students and staff empty paper bins into two 1100L Fullcircle bins service provider empties twice a week 	Fullcircle Note: Paper for Homes initiative is no longer available
Plastic recycling	<ul style="list-style-type: none"> caretaker empties 180L red wheelie bins into 240L blue top Auckland Council wheelie bins caretaker places up to 12 blue top wheelie bins kerbside every two weeks 	Auckland Council: mixed-recyclables service; no cost in this area
Aluminium/steel recycling	<ul style="list-style-type: none"> caretaker empties 140L yellow wheelie bins into large polythene bags at end of each term caretaker disposes of bags at CMA Recycling in Onehunga 	CMA Recycling: \$500 per year income
Food waste	<ul style="list-style-type: none"> caretaker feeds food waste to chickens 	On-site; no cost
Green waste	<ul style="list-style-type: none"> caretakers place green waste into compost bins compost used on school gardens 	On-site; no cost
Rubbish to landfill	<ul style="list-style-type: none"> caretaker empties outdoor bins into rubbish skip cleaners empty outdoor bins into rubbish skip service provider empties skip once per week 	JJ Richards: \$100 per collection
Garden	<ul style="list-style-type: none"> used in teaching Horticulture as part of science program 	On-site; no cost

5 Waste minimisation education

5.1 At launch

School assembly	<ul style="list-style-type: none">• promotion of recycling programme start by deputy principal<ul style="list-style-type: none">○ displayed new recycling bins○ emptied rubbish bin in front of students and staff○ rubbish and recyclables were sorted
Staff meeting	<ul style="list-style-type: none">• to inform staff of new recycling program at start of Term 2 in 2013

5.2 After launch

Waste audit	<ul style="list-style-type: none">• performed under supervision of an Auckland Council waste minimisation facilitator• deputy principal reported results in school assembly• repeated in 2014 to compare results
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5.3 Ongoing

School assembly	<ul style="list-style-type: none">• reminders to place recyclables in appropriate bins
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5.4 Other

- Two filtered drink stations
 - outside the gymnasium and tuck shop
 - encourage students to drink water and reuse their plastic drink bottles
- Two students are paid as after-school caretakers to empty bins and sort any recyclables and food scraps

6 Time requirements for waste management

<p>Ground staff/caretaker</p>	<ul style="list-style-type: none"> • 10 hours per week <ul style="list-style-type: none"> ○ includes hours of two students assisting after school • no additional time was added after launch
<p>Teachers</p>	<ul style="list-style-type: none"> • minimal <ul style="list-style-type: none"> ○ a student is sent to empty paper recycling bin twice per week
<p>Students</p>	<ul style="list-style-type: none"> • 10-15 minutes twice per week <ul style="list-style-type: none"> ○ empty classroom recycling bins ○ empty common room recycling bins
<p>Senior management</p>	<ul style="list-style-type: none"> • no extra time • deputy principal's normal duties to manage the ground staff

7 Waste minimisation policies

One Tree Hill College has instituted the following waste minimisation policies:

- Environment Policy in the school's Policy Manual. This includes a goal "to ensure One Tree Hill College acts in an environmentally friendly manner," as well as a guideline that "Where, and whenever possible, the College will reduce, reuse and recycle materials and waste." See Appendix 1
- caretaker's job description includes handling of recycling bins, decontamination, and an expectation to "display sustainable green practices to minimise rubbish dumped." See Appendix 2
- cleaners' contract states they must separate out any recyclable material placed in the indoor rubbish bins

8 Waste audit data

- Students completed waste audits in 2013 and 2014 which was led by an Auckland Council waste minimisation facilitator
 - there was a 38 per cent reduction in waste sent to landfill including a 42 per cent reduction in divertible materials sent to landfill
 - student roll increased nine per cent during this time
- each audit took approximately two hours to complete
- waste audit data is provided in Appendix 3
- summary is shown in the figure below

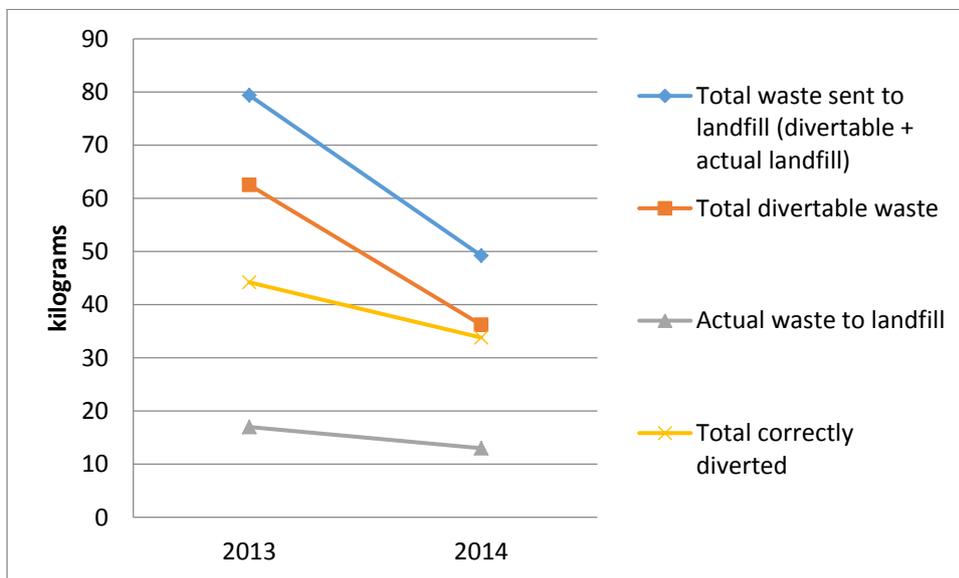


Figure 1: Summary of waste audit data 2013 / 2014

9 Waste management financial report

The full data for annual waste expenditures and incomes is provided in Appendix 4.

9.1 Annual waste expenditure

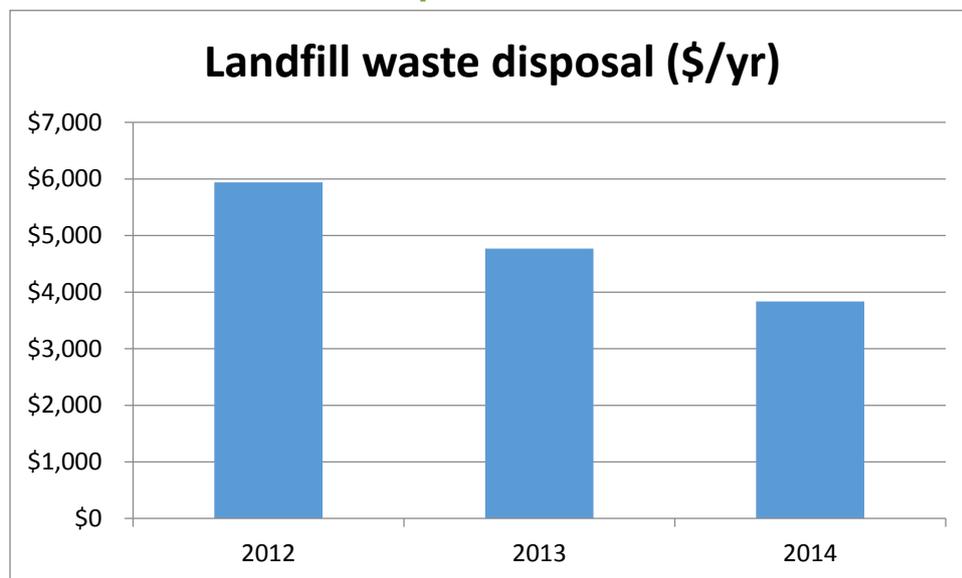


Figure 2: Summary of annual waste expenditure 2012-2014

- Notes:
 - numbers are rounded to the nearest dollar
 - table shows a decline in the net amount of money spent sending rubbish to landfill
 - recycling programme was instituted mid-way through 2013
 - first full year of recycling was 2014
 - school roll increased 25 per cent in the period of 2012 to 2015
 - not included in the table above
 - value of 72 native plants the school in 2015 through the Paper4trees programme.
 - based on over 9 tonnes of paper and cardboard recycled in 2014

9.2 One-time expenses

- Approximately \$1000 for colour-coded wheelie bins and other bins during initial set-up
 - from MacDonald Industries (Mt Roskill)

9.3 External funding:

- Waste Minimisation and Innovation Fund (Auckland Council):
 - \$1002 towards the cost of a chicken run, compost bin materials, and a worm farm to divert organic material from landfill
- ASB Trust grant:
 - \$4000 towards the cost of purchase and installation of two filtered drink station

10 Photos



Figure 2: Outdoor bin station near the tuck shop



Figure 3: Simple outdoor bin station



Figure 4: Skip bin for landfill rubbish



Figure 5: Filtered drink station to reduce plastic water bottle use



Figure 6: Common room bins



Figure 7: Common room bins including small rubbish bin



Figure 8: Classroom paper and rubbish bins



Figure 9: Students emptying classroom paper bin into common room wheelie bin



Figure 10: Three compost bins



Figure 21: Chicken house and run



Figure 32: Caretaker with buckets for separating rubbish



Figure 13: Cleaner helping with waste management after school

11 Appendices

11.1 Appendix I – Environment Policy

Environment Policy

Goal:

To ensure One Tree Hill College acts in an environmentally friendly manner.

Rationale:

One Tree Hill College is an establishment that is responsible for the education of students should be seen to be environmentally aware and practice sound environmental procedures.

Guidelines:

1. Where, and whenever possible, the College will reduce, reuse and recycle materials and waste.
2. Trees and shrubs will be planted and kept in good condition around the College.
3. All forms of energy will be monitored and kept to the lowest levels that are reasonably possible.
4. Green technologies will be employed where practical and possible.
5. All legislation and recognised good practices will be deployed and adhered to at One Tree Hill College.

Ratified

Signature



Date: 04 August 2014

Appendix 2 – Caretaker Job Description Excerpt

Key performance Areas	Expected outcomes and Performance indicators
	<ul style="list-style-type: none"> ▪ Turn off and on all hot water cylinders at the start and end of term holidays. ▪ In conjunction with the Caretaker/Groundsman check inventory of equipment during term 3 holidays. ▪ Replace blown light bulbs (wet day job).
<p>4. Rubbish Removal and Recycling</p>	<ul style="list-style-type: none"> ▪ Empty outside rubbish bins and pick up loose litter when required – separate aluminium cans, plastic bottles and food scraps for recycling while doing this. ▪ Empty blue top wheely bins of paper and cardboard on a Tuesday and Thursday morning at whanau time and other times when required. ▪ Empty red and yellow wheely bins of plastic bottles and aluminium cans when required. ▪ Place blue top wheely bins full of plastic bottles on Rockfield Road footpath every fortnight for emptying by Auckland Council contractor. ▪ Take aluminium cans and other waste metal to the local scrap metal dealer at the end of each term. ▪ Display sustainable green practices to minimize rubbish dumped.

11.2 Appendix 3 – Waste audit data

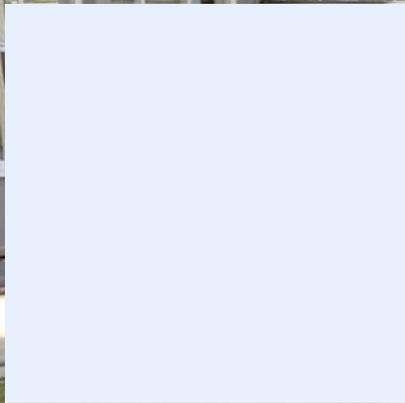
- Landfill waste per person was calculated based on the number of people present at the school the day of the audit
- **2013**
 - one day landfill waste total: 79.4kg (0.081kg per person)
 - could have been diverted: 62.5kg
 - actual landfill waste: 17.0kg
 - correctly diverted: 44.2kg
 - including 39kg paper/cardboard and 5.2kg mixed recyclables
- **2014**
 - one day landfill waste total: 49.2kg (0.046kg per person)
 - could have been diverted: 36.2kg
 - actual landfill waste: 13.0kg
 - correctly diverted: 33.8kg recyclables
 - including 21.6kg paper/cardboard, 12.1kg mixed plastics and 3.9kg organic waste

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

Waste management costs by year	Landfill waste disposal	Green waste disposal	Recycling Collection			Total (\$/year)
			Paper/cardboard	Plastic/glass	Metal	
2012	-\$5939	\$0	\$0	\$0	\$0	-\$5939
2013	-\$4769	\$0	+\$220	\$0	+\$242	-\$4307
2014	-\$3834	\$0	+\$462	\$0	+\$487	-\$2885

- Notes:
 - numbers are rounded to the nearest dollar
 - table shows a decline in the net amount of money spent sending rubbish to landfill
 - recycling programme was instituted mid-way through 2013
 - first full year of recycling was 2014
 - school roll increased 25 per cent in the period of 2012 to 2015
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- value of 72 native plants the school in 2015 through the Paper4trees programme
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WasteWise Schools
August 2015

