

THE END OF

Construction Waste

Quick Poll

- Number of Institutions?
- Students building on campus?
- Measuring campus development waste?
- Waste minimisation plan requirements and/or diversion targets?


















Unitec





One Planet Living Strategic Action Plan

	<p>Health and happiness</p> <p>Encouraging active, sociable, meaningful lives to promote good health and well being</p>		<p>Local and sustainable food</p> <p>Supporting sustainable and humane farming, promoting access to healthy, low impact, local, seasonal and organic diets and reducing food waste</p>
	<p>Equity and local economy</p> <p>Creating bioregional economies that support equity and diverse local employment and international fair trade</p>		<p>Sustainable materials</p> <p>Using sustainable and healthy products, such as those with low embodied energy, sourced locally, made from renewable or waste resources</p>
	<p>Culture and community</p> <p>Respecting and reviving local identity, wisdom and culture; encouraging the involvement of people in shaping their community and creating a new culture of sustainability</p>		<p>Sustainable transport</p> <p>Reducing the need to travel, and encouraging low and zero carbon modes of transport to reduce emissions</p>
	<p>Land use and wildlife</p> <p>Protecting and restoring biodiversity and creating new natural habitats through good land use and integration into the built environment</p>		<p>Zero waste</p> <p>Reducing waste, reusing where possible, and ultimately sending zero waste to landfill</p>
	<p>Sustainable water</p> <p>Using water efficiently in buildings, farming and manufacturing. Designing to avoid local issues such as flooding, drought and water course pollution</p>		<p>Zero carbon</p> <p>Making buildings energy efficient and delivering all energy with renewable technologies</p>

Zero Waste

Reduce our own rubbish by 5% pa - down to Zero Waste by 2040.

What we knew

Reducing our waste was getting harder...

- Next obvious high weight - big volumes to target – house build and trades area
- Already recycling metal, tyres, oil, bottles and cans and some cardboard
- There were other recycling options available in Auckland
- Our waste contract was coming up

- Our building students weren't learning how to recycle on site

>70%

of all material used in the
building industry is
recyclable or reusable

The big goal

Inspire a new generation of builders to minimize, recover and recycle waste.



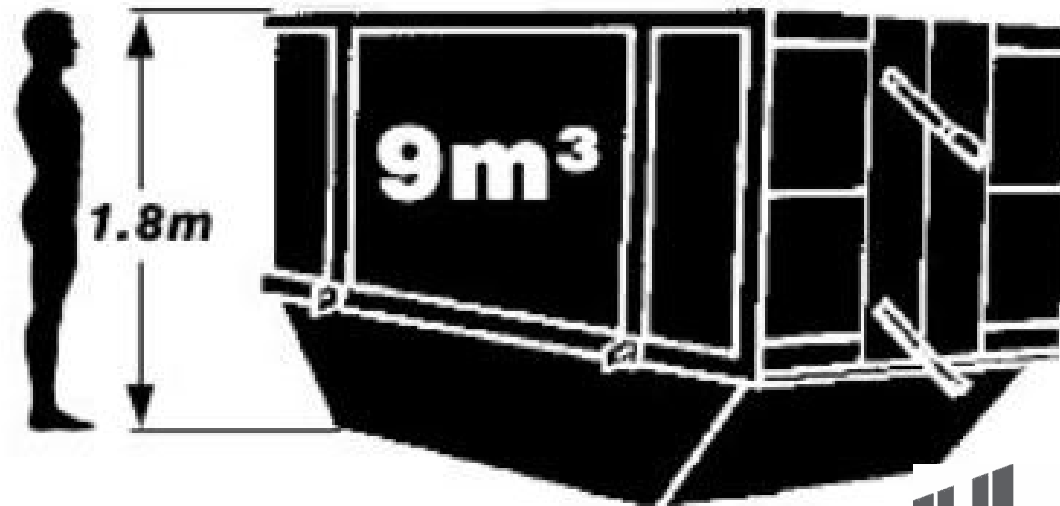


New Zealand Stats

Construction and demolition waste makes up to 50% of all waste generated in NZ (MFE)

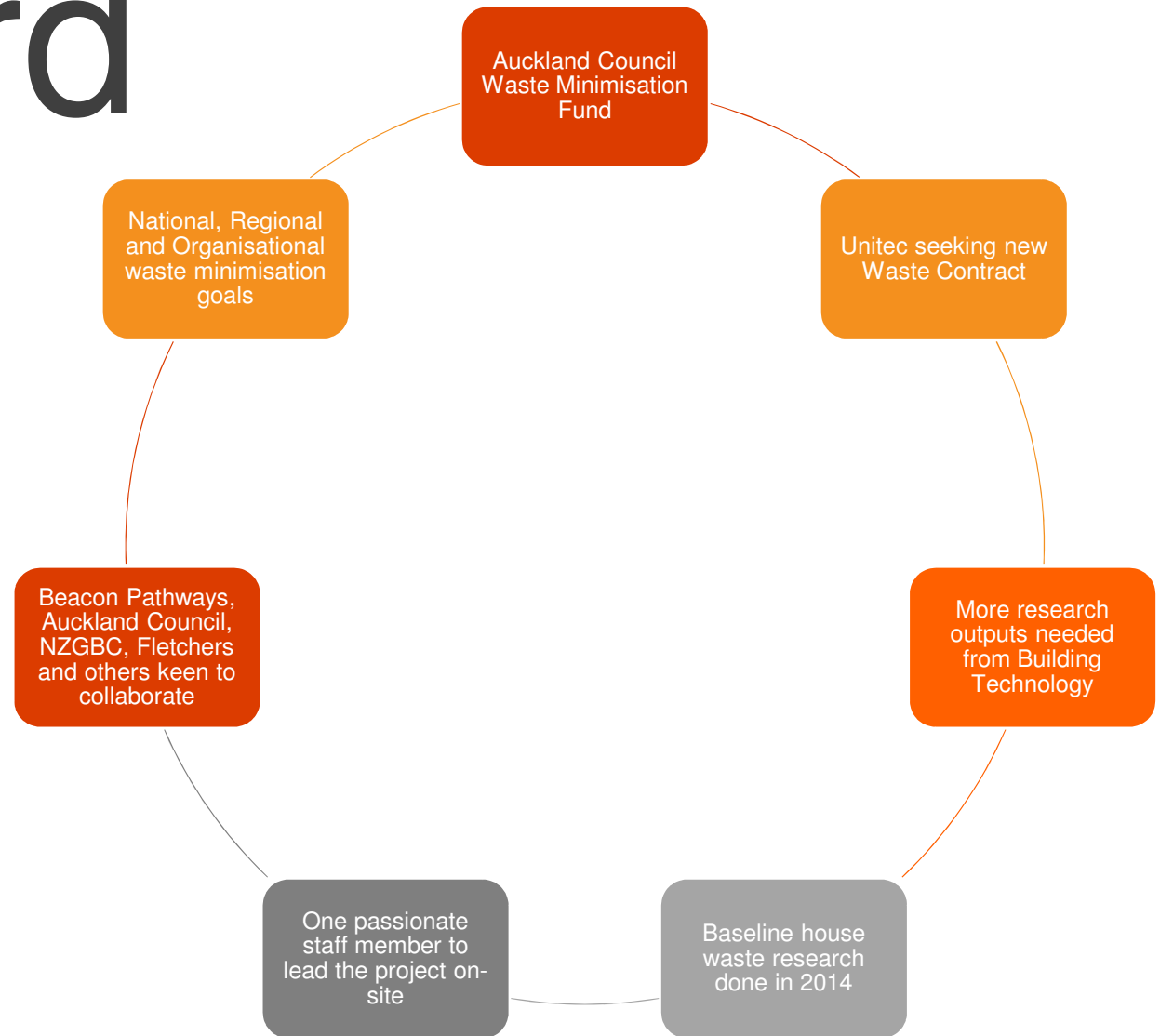
Average house build generates:

- 3-5 tonnes of waste
- 35-40m³ waste
- 3-4 9m³ bins





All aboard



Research









Teaching





Project Methodology

- 4 identical re-locatable houses measured in project
- 3 Bed, open plan wooden framed, iron roofed, cedar clad,
- Waste stream separation by activities
 - Sub floor-bearers up-
 - Framing
 - Roofing and soffit
 - Exterior cladding and rap
 - Internal lining and trim
 - Plastics and cardboard
 - Sub trades

Roofing, electrical plumbing, kitchen/bath fit-out

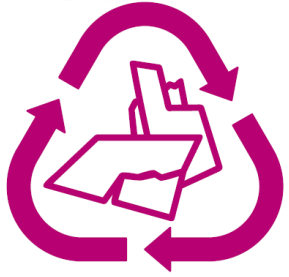


Weigh Station

- 2 x 120 ltr bins labelled per house
- 3 x 120 ltr recycle bins
- 3 x 120 ltr land fill bins
- Materials sorted by cross section sizes/location and weighed
- Placed into 3 cm bin for recycle-furnace fuel-
- Each house weighed once per week, weather permitting
- Running spread sheet results



Gypsum



Plasterboard

Metal



Iron & Steel

Cardboard



Flattened

Wood



**Lengths &
Pieces**

Plastic



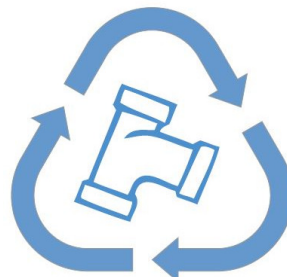
**All Wrap
(black & clear)**

Plastic



Expanded

Plastic



Pipe

<http://www.wasteminz.org.nz/pubs/ronz-symbols/>

3-5 tonnes of waste



130kgs per house total at lining stage

Findings so far...

- Very controlled environment
- Over ordering some materials
- Variance in timber supplied per house - cedar
- Design impacts – roofing 150mm - 700mm sheet
- Ease of use for students and tutors an issue
- Time/leadership on site essential
- Putting all waste in wheelie bin
- Emptying then sorting – fully supervised
- NB: framing is provided prenailed

Waste Contract



Green Gorilla Shhhhh Dual Collection Vehicle



CID Resource Recovery Facility

Industry

Why?

- Save \$
- Better on site Health and Safety
- Improve reputation
- Leadership – considerate and professional builders
- Stay ahead of regulation
- Homestar/Greenstar points
- Environmental – reduce landfill, pollution, resource consumption



**TIDY SITES ARE SAFER, MORE
EFFICIENT AND COMMAND RESPECT**

Campus Redevelopment









Next



B108 - Inventory

Environmental Engineering Students - 2015-2016 Summer Project

Quantifying Our Future Waste

- List all Materials
- Number
- Volume
- Weight
- Content
- Location
- Quality

Options

What can be reused?

What can be recycled?

What can be repurposed?

What can be repaired?

Who can deconstruct and sort it?

Who are the suppliers?

Potential reprocessors, refurbishers, recyclers?

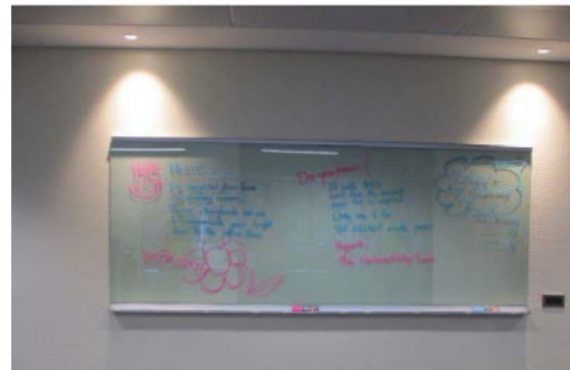
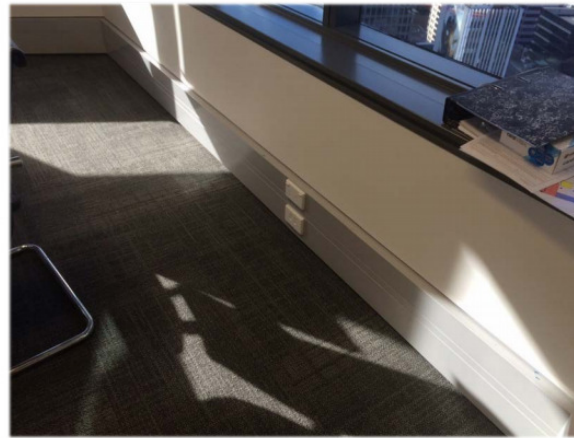
Costings?

Property Services to Incorporate Recommendations into Tenders

Auckland Council e.g.

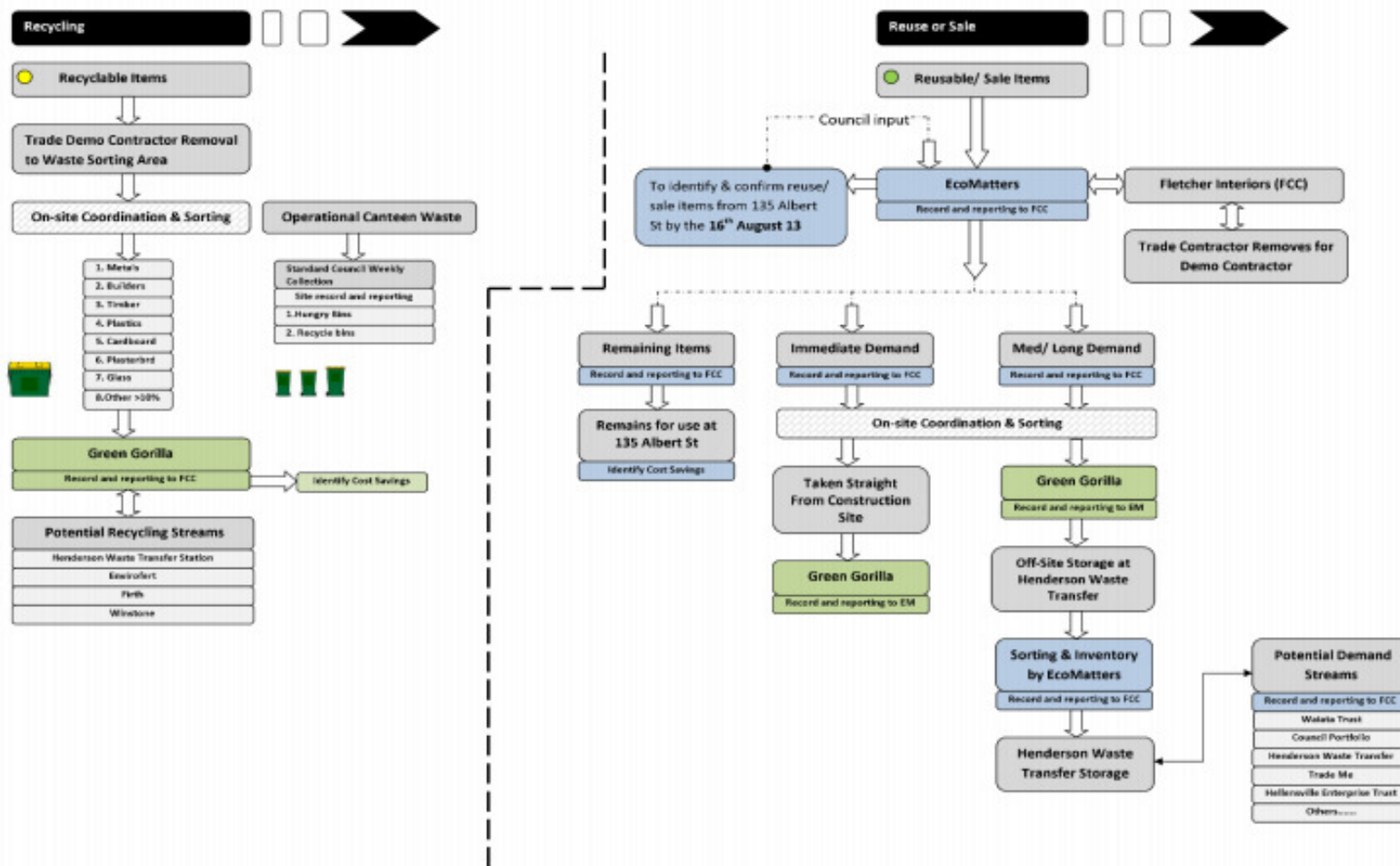
135 Albert Street Auckland

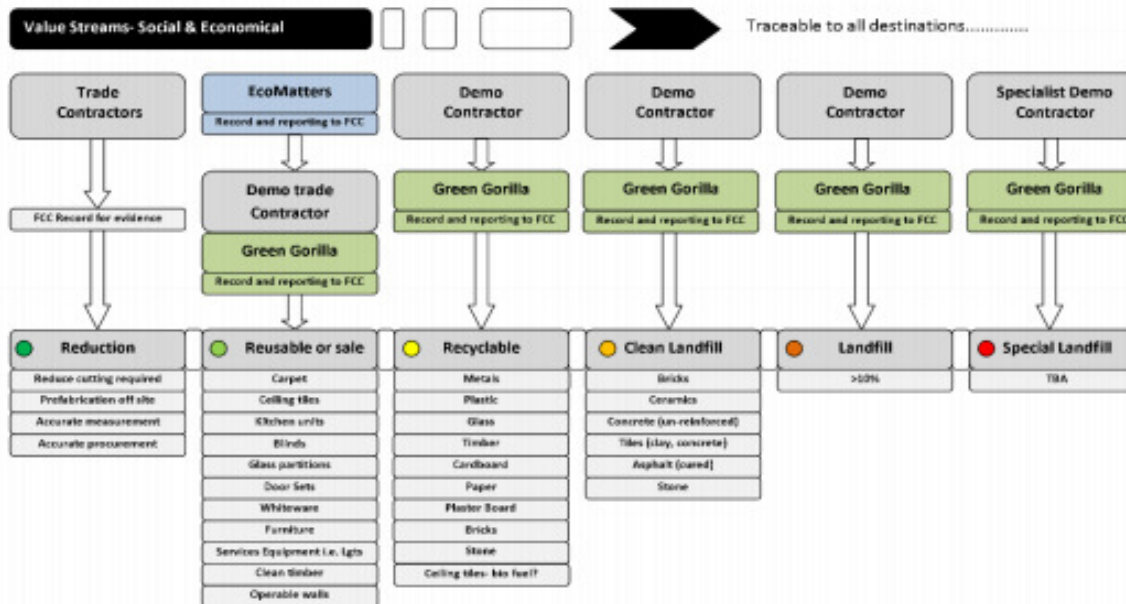
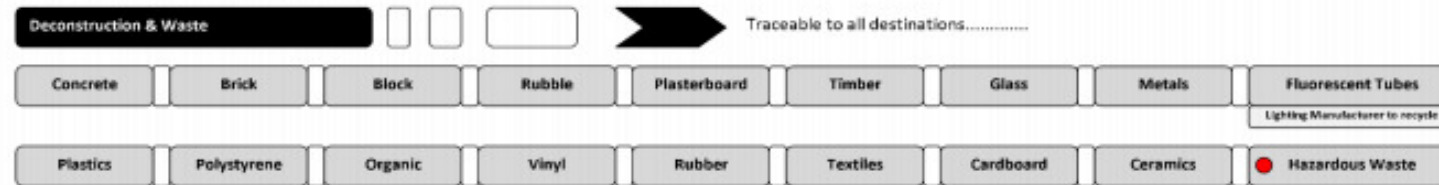
- 82.3% waste diversion
- Plasterboard, ceiling tiles and glass all recycled
- 2,443 light fittings - 3.9 tonnes recycled, 4 tonnes steel casings refurbished
- 8.6 tonnes of trunking modified and reused
- Glass partitions reused as write up boards
- 8.631 tonnes Lundia shelving reused
- Acoustic and thermal insulation on sold
- 1.88 tonnes of blinds reused









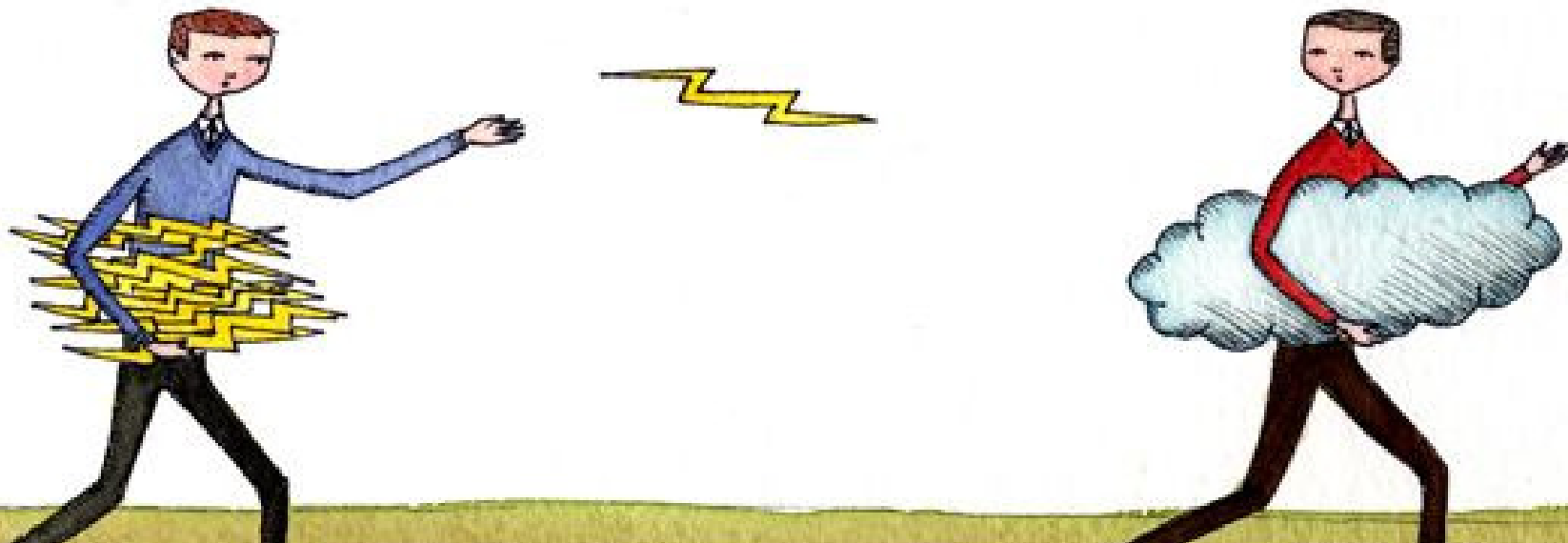


Phase 2 - Teaching



- Get students to DIY
- Need to get buy-in from tutors
- Incentives?

You stole my thunder,
But I stole your lightning.



Contact

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