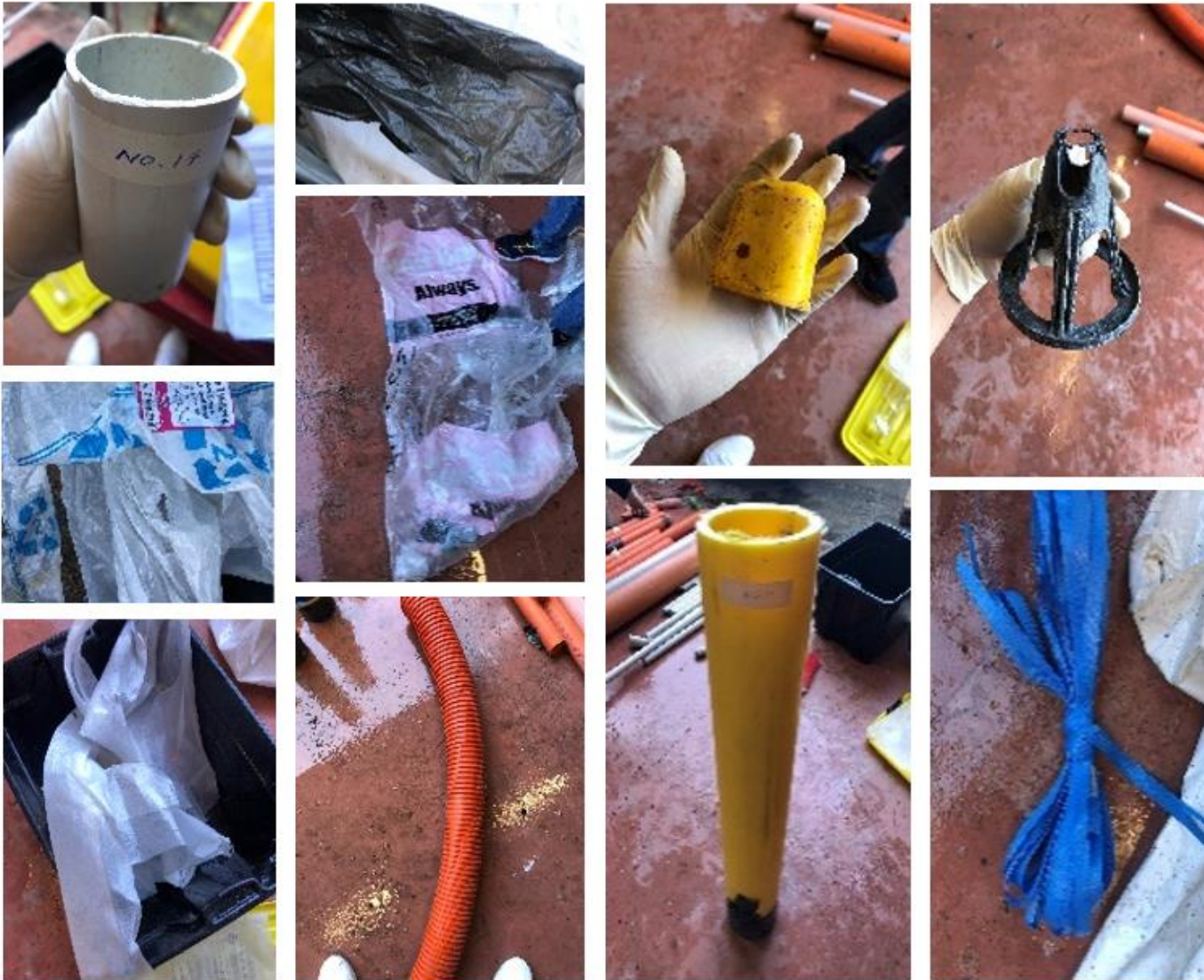


Reducing Construction Plastic Waste to Landfill

(Making gold from straw!)

Terri-Ann Berry & Penny Thomson
ESRC, Unitec Institute of Technology



The Issue

- Construction Waste
- Annual quantity (by 2012) of C&D waste (of 40 countries)
 - 3 billion tonnes
 - 10-50% total municipal solid waste contribution
- In Auckland, approximately 40% of waste to landfill = C&D waste



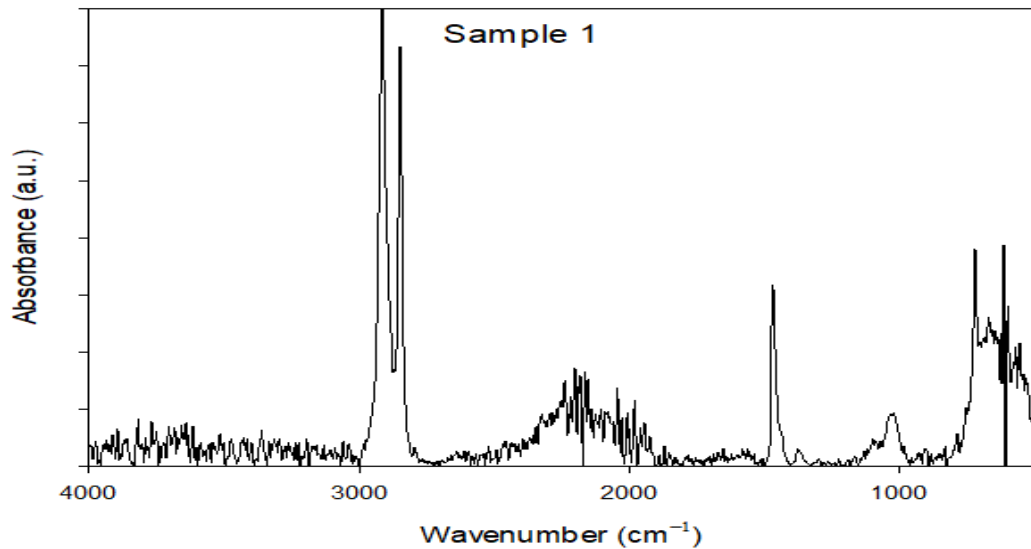
Plastic Waste

- Auckland Landfills per year = 25,000T (plastic)
 - Approx 30,000m³
- Little incentive to avoid landfill
 - Current levy = \$20/T
- On-site separation
 - Rare
 - Lack of standardisation
- Issues for construction plastic waste
 - No clear recycling endpoints
 - No transportation system once sorted

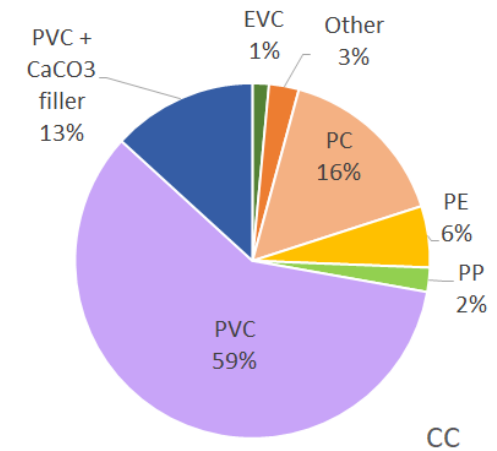
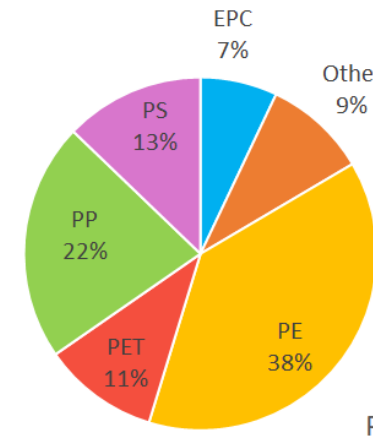
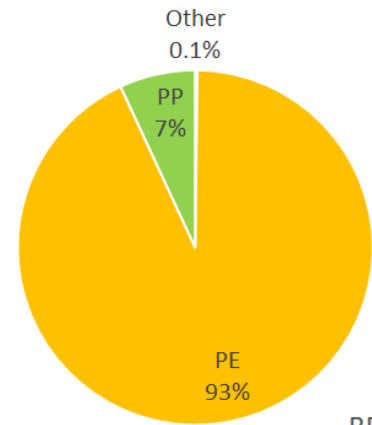
Waste Auditing



Plastic Type



Samples were characterized using a Bruker Vertex 70 FTIR spectrophotometer.



- Polyethylene (PE) (yellow)
- Polyvinyl chloride (PVC) (lilac)
- Polypropylene (PP) (green)



Plastic Uses

- Building protection
 - (e.g., shrinkwrap, damp proof membranes, carpet protectors)
- Product packaging
 - (e.g., cling film wrap, bubble wrap, plastic bags)
- Construction components
 - (e.g., PVC pipe offcuts, tape, power points, light fittings)

Answer: Construction Components!

Novel Solutions

Mitre 10 ordering: opt-in checkbox

Reducing unnecessary packaging

Mitre 10 is working with industry bodies in reducing unnecessary waste on building sites.

Please note: Some Timber and Panels are often wrapped in plastic for protection from the weather and transport damage.

NO - I do not wish these products to be wrapped. *Note: In the case of expected bad weather the store will contact you with options.*

YES - I want these products wrapped.

Mitre 10 - Tradehub Tickbox

Outcome:
97% - Unwrapped
3% - Wrapped

Reusable Timber Pack Covers



Naylor Love - Timber Pack Covers

Difficult Wastes

Hardie Board

- No recycling options
- No response
- Avoid?



Building Wrap

- Must be free of contaminants
- Fold and sort immediately



Dan Band/Strapping

- Yet to find recycler
- High volume, low mass
- Not all the same (PP, PE, PET)
- Reusable alternative?





Hazardous Wastes

- Please 'Check before you chop!'
- Recycling has risks - particularly demolition work
- Asbestos exposure during home renovation is an increasing problem
- Mesothelioma Support & Asbestos Awareness Trust (MSAA)
 - Please support us to support them

PVC PIPES



On-Site Separation

- Sorting of wastes
 - Clear signage and bags
 - Dedicated space on site for bags
 - Immediate sorting to avoid contamination and mixing
- Management of site staff and sorting
 - Training of staff including sub-contractors
 - Presence (and continuous monitoring) by an on-site manager

Plastics Audit Catalogues

Polyethylene - LDPE, 4



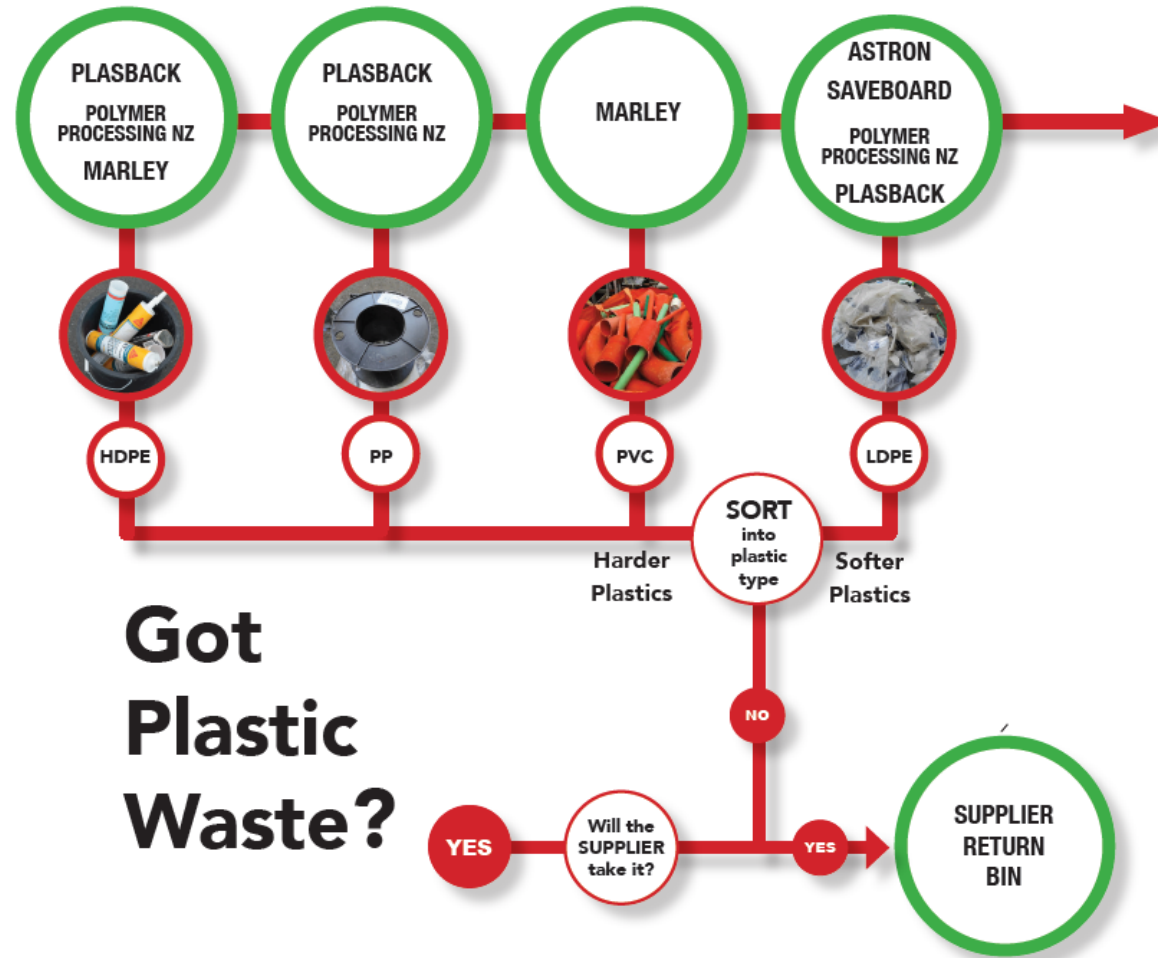
Polyethylene - HDPE, 2



Polypropylene - PP, 5



Holistic Management: Decision Tree



Check it...

- Dusty OK
- Low level contamination
- No plastic ties
- Folded (Building Wrap)
- Sorted, no other hard plastics

- No fabric or tape
- No contamination
- Separate pipes
- Remove rings and/or sockets

- Dusty OK
- Low level contamination
- Stickers OK

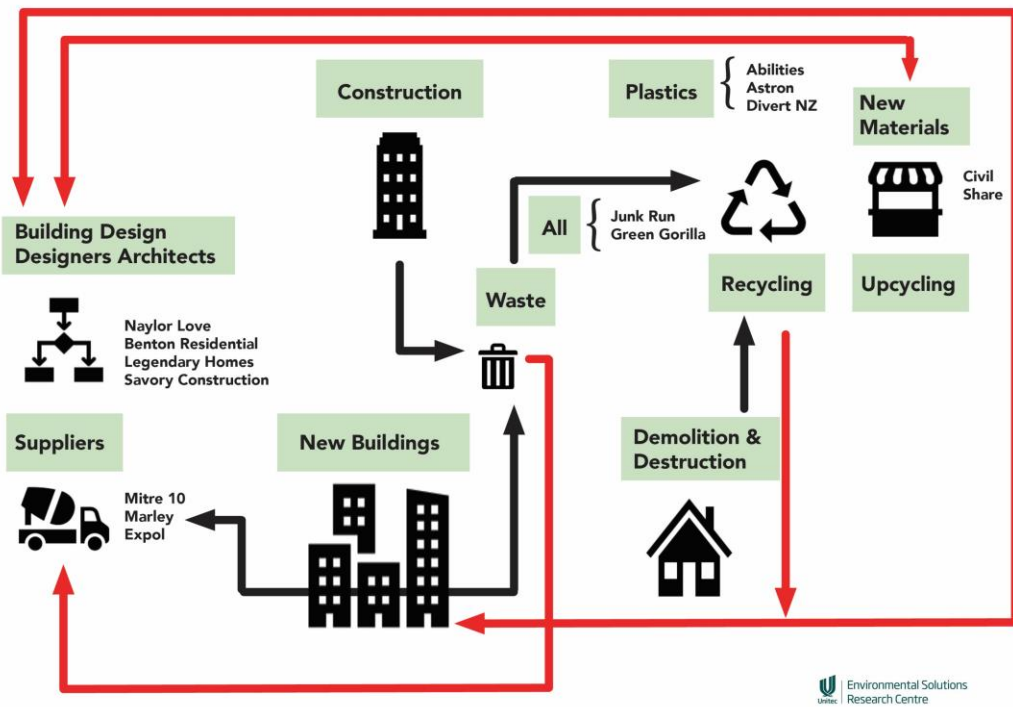
- Folded (Building Wrap)
- Sorted, no other hard plastics
- No tape, paint, plaster, adhesive

POLYMER PROCESSING NZ

- Dusty
- Low level contamination
- Clean, folded building wrap

Design concept SARZN

Environmental Solutions Research Centre



Future Work

- Test best practice on-site separation methods
- Build upon nationwide catalogue of waste recyclers
- Investigate transportation issues from site to recycler
- Create easily accessible education information for site workers and public



Thank You!

- With thanks to our partners
- Especially to our funders
 - BRANZ, Mitre 10, Plastics NZ & Marley
- Any questions? esrc@unitec.ac.nz

