

Would you like carbon with that?

The carbon impacts of waste management

WasteMINZ

Sept 2019

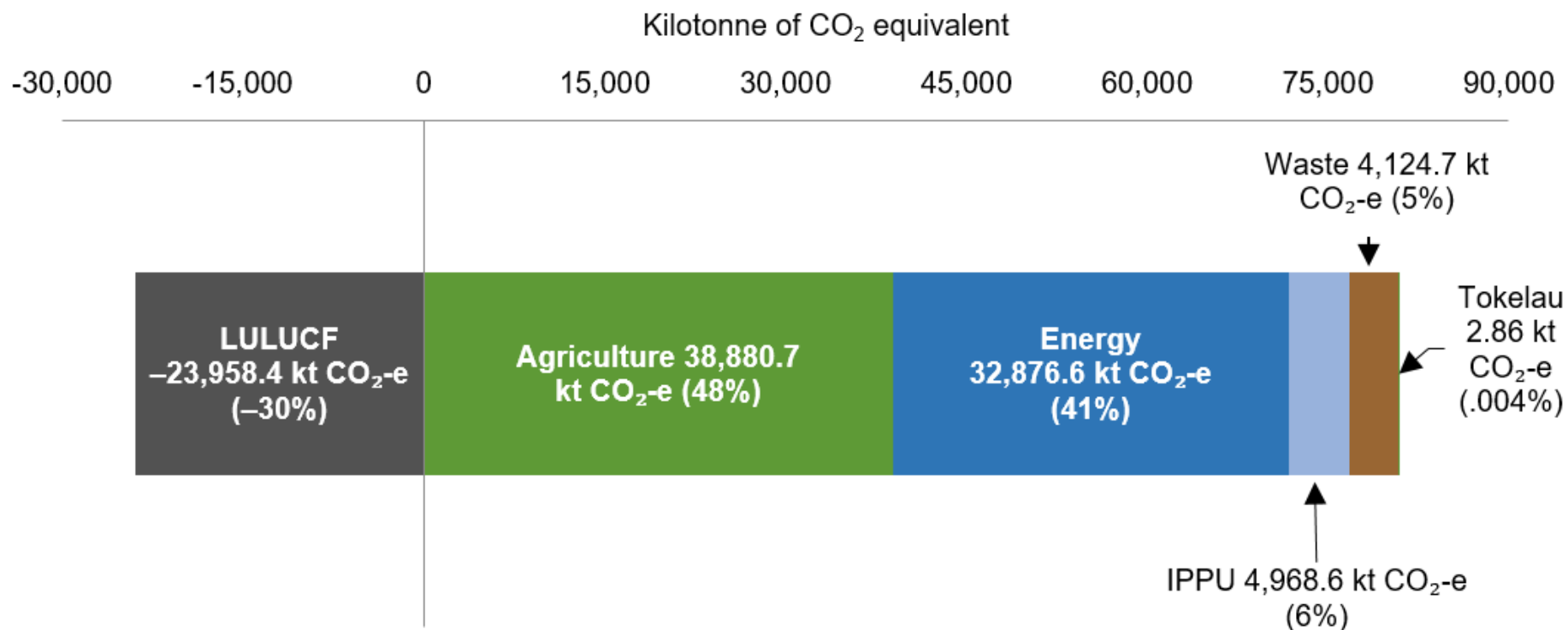
Duncan Wilson

eunomia 

Introduction: Climate Emergency

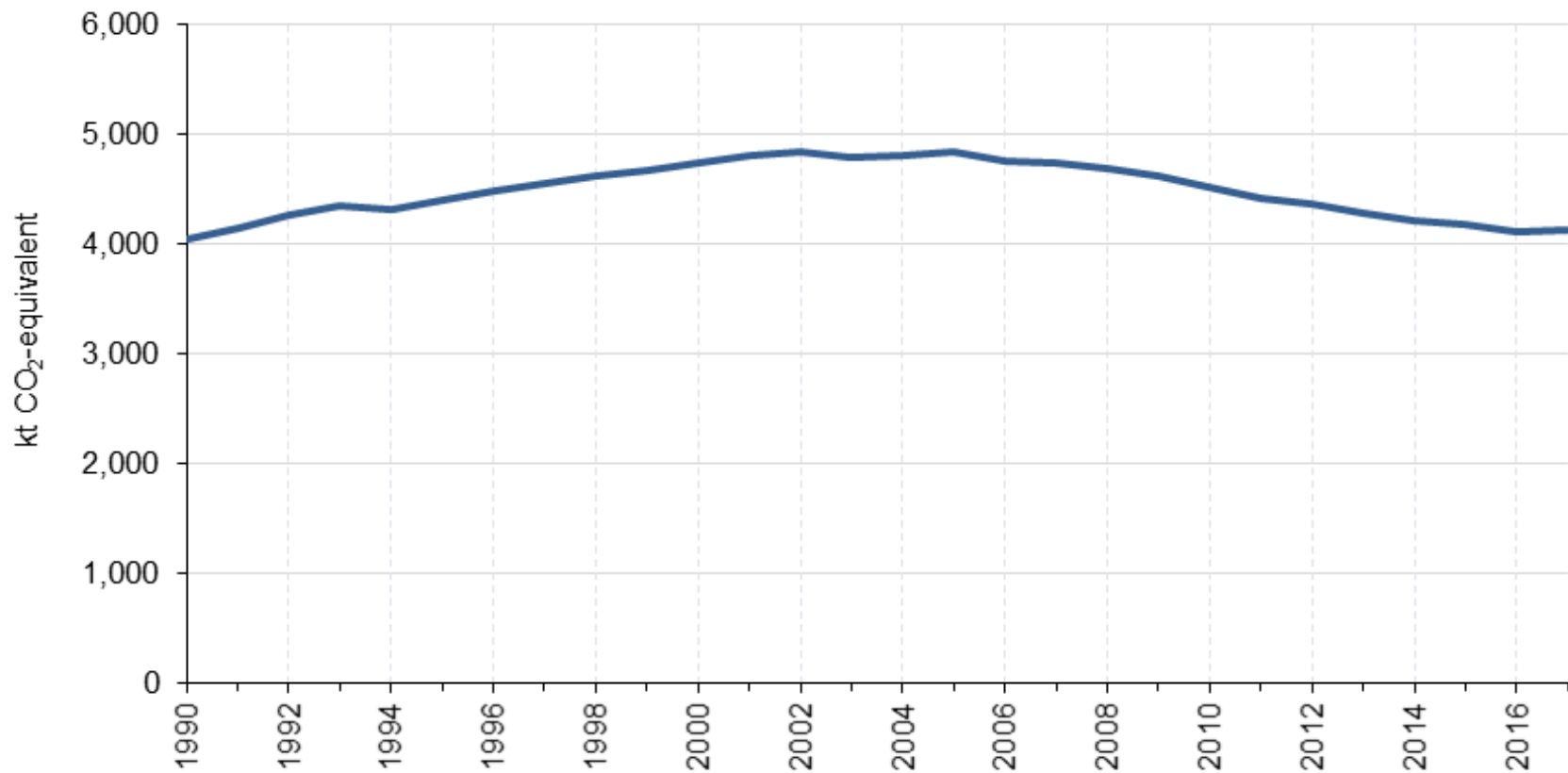
- Auckland City Council
- Bay of Plenty Regional Council
- Canterbury Regional Council
- Christchurch City Council
- Dunedin City Council
- Greater Wellington Regional Council
- Hawkes Bay Regional Council
- Hutt City Council
- Kapiti Coast District Council
- Nelson City Council
- Porirua City Council
- Queenstown Lakes District Council
- Whangarei District Council
- Wellington City Council

Introduction: GHG From Waste



Source: MfE

Introduction: GHG From Waste



Source: MfE

Introduction: GHG From Waste

- Emissions from landfill only tell part of the story
- Three key types of carbon impact:
 - Disposal (landfill currently – calculated differently)
 - Recycling/Recovery - benefit from avoided emissions
 - Avoidance - benefit from avoided emissions
- In fact disposal is the least of these impacts

Darebin City Council

- Eunomia has done a lot of work, particularly in the UK and Europe, on understanding the carbon impacts not just of landfill but of recycling, and avoidance
- Asked by Darebin City Council in Melbourne to identify their carbon impacts and key opportunities to reduce them

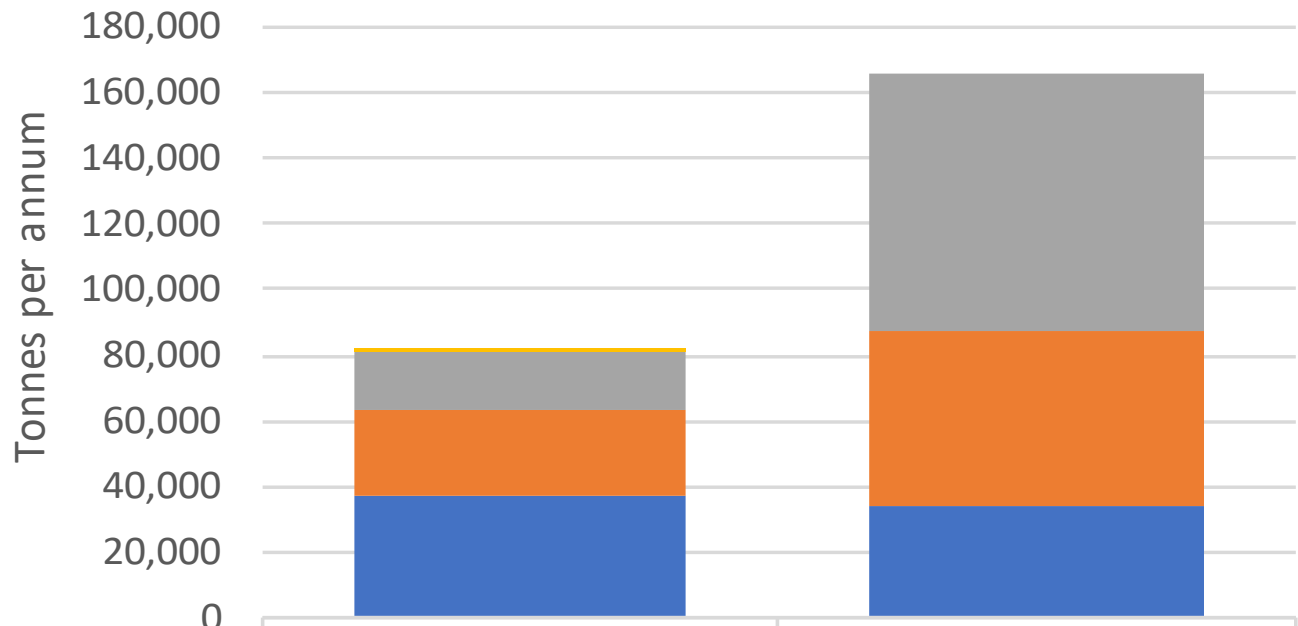
Darebin City Council

- North Melbourne
- 53km²
- Suburban
- 146,721 people, 63,560 dwellings
- Green Party led Council
- First Council in the world to declare a climate emergency

Darebin City Council

- Weekly 80L wheeled bin for rubbish
- Fortnightly 240L wheeled bin for comingled recycling
- User pays 120L or 240L wheeled bin for greenwaste (charged annually)
- Twice annual 'hard waste' collection (1 booked, 1 unbooked)
- Council-owned Resource Recovery Centre

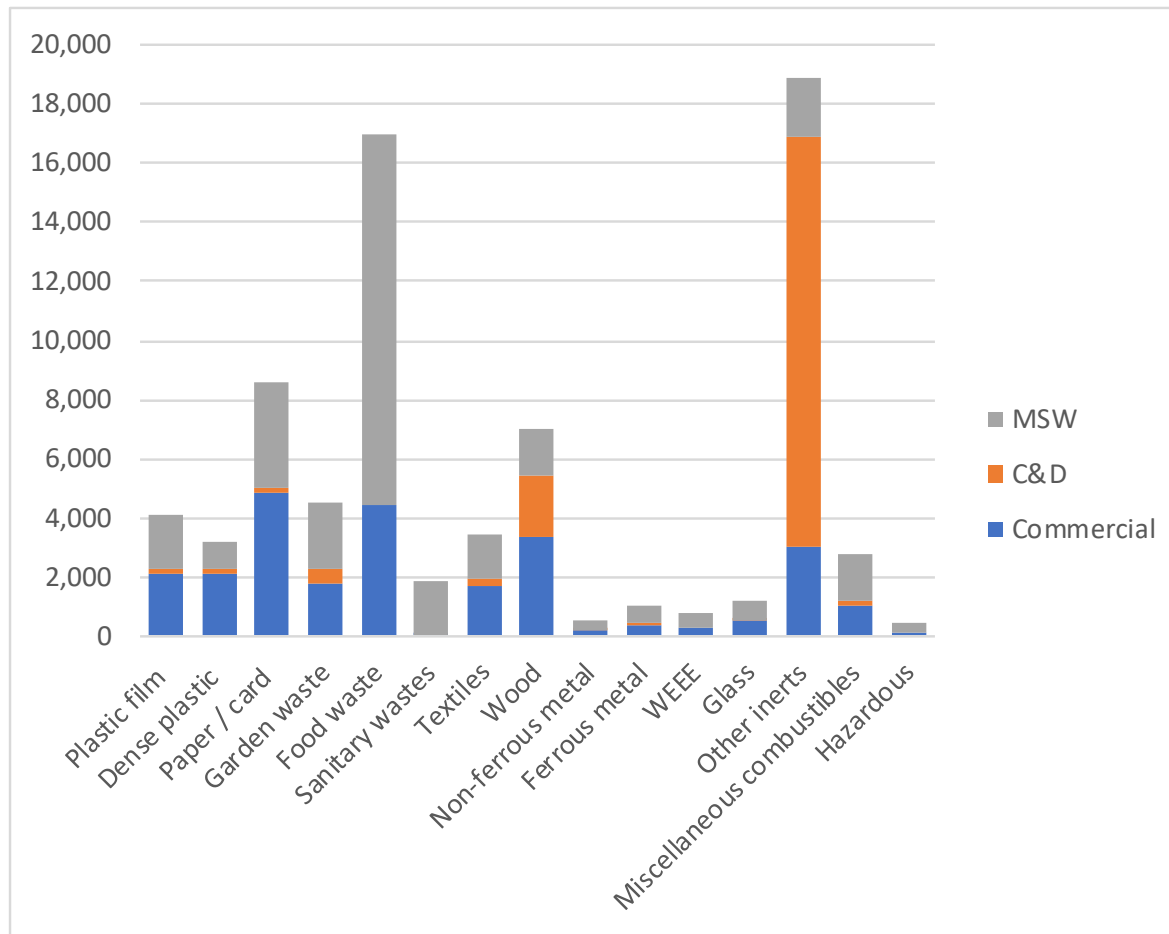
Analysis of Waste Streams



| | Landfill | Recovery |
|--------------------------------|----------|----------|
| ■ Private household collection | 1,813 | 0 |
| ■ Construction & Demolition | 17,394 | 78,374 |
| ■ Commercial | 26,028 | 53,370 |
| ■ Council-controlled | 37,388 | 33,938 |

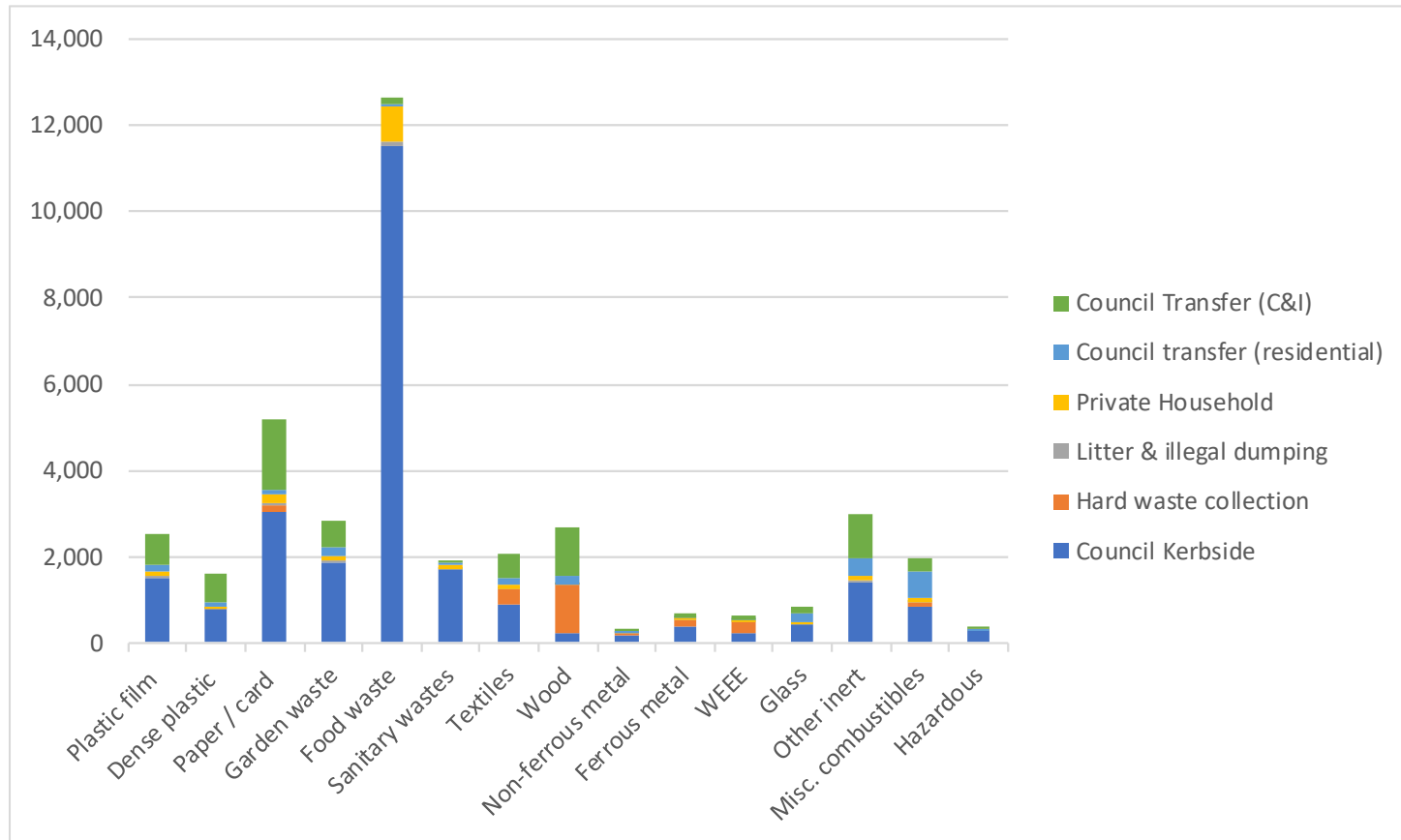
Analysis of Waste Streams

Landfilled Materials by Source



Analysis of Waste Streams

Council Controlled Landfilled Materials by Source



Analysis of Waste Streams

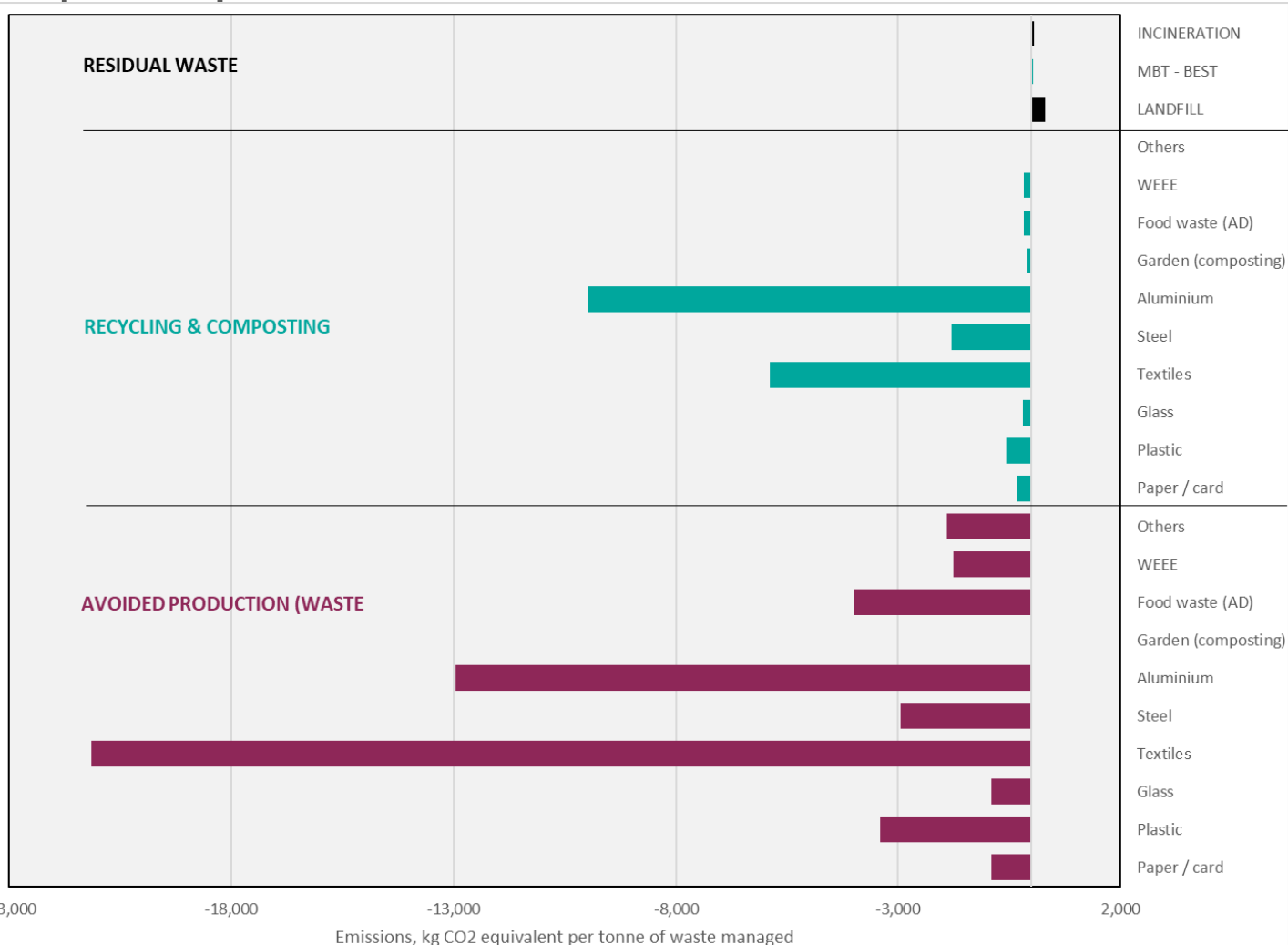
- MSW 25% of all flows
- MSW recovery rates lag behind Commercial and C&D
- Biggest recovery opportunity is food waste

Analysis of Carbon Impacts

- Carbon Map: Impacts across lifecycle per tonne, by material:
- Calculated based on:
 - Australian landfill emissions profile
 - Local energy profile (avoided emissions)
 - Local recycling industry data
 - International recycling data
 - International production data

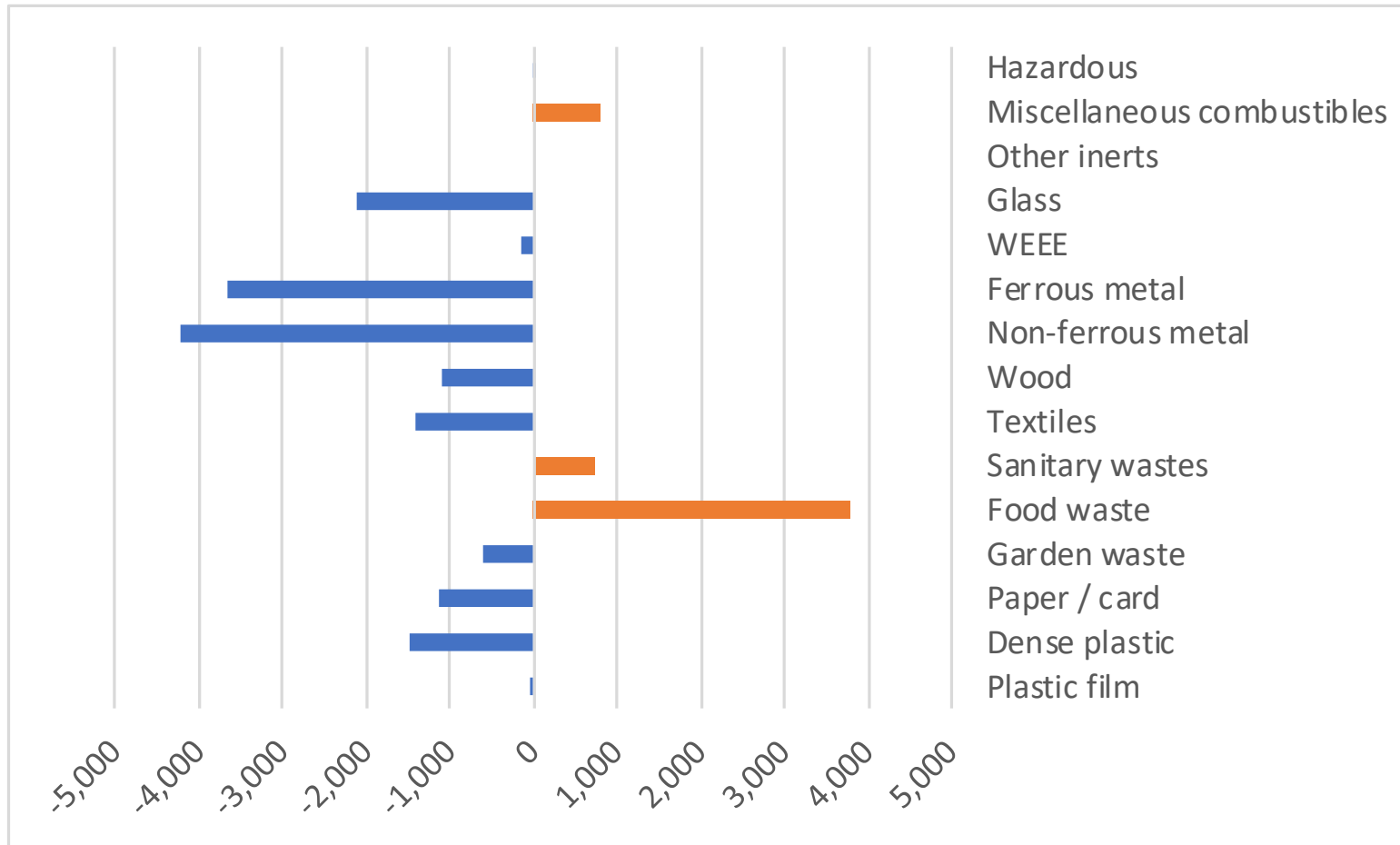
Analysis of Carbon Impacts

Impacts per Tonne



Analysis of Carbon Impacts

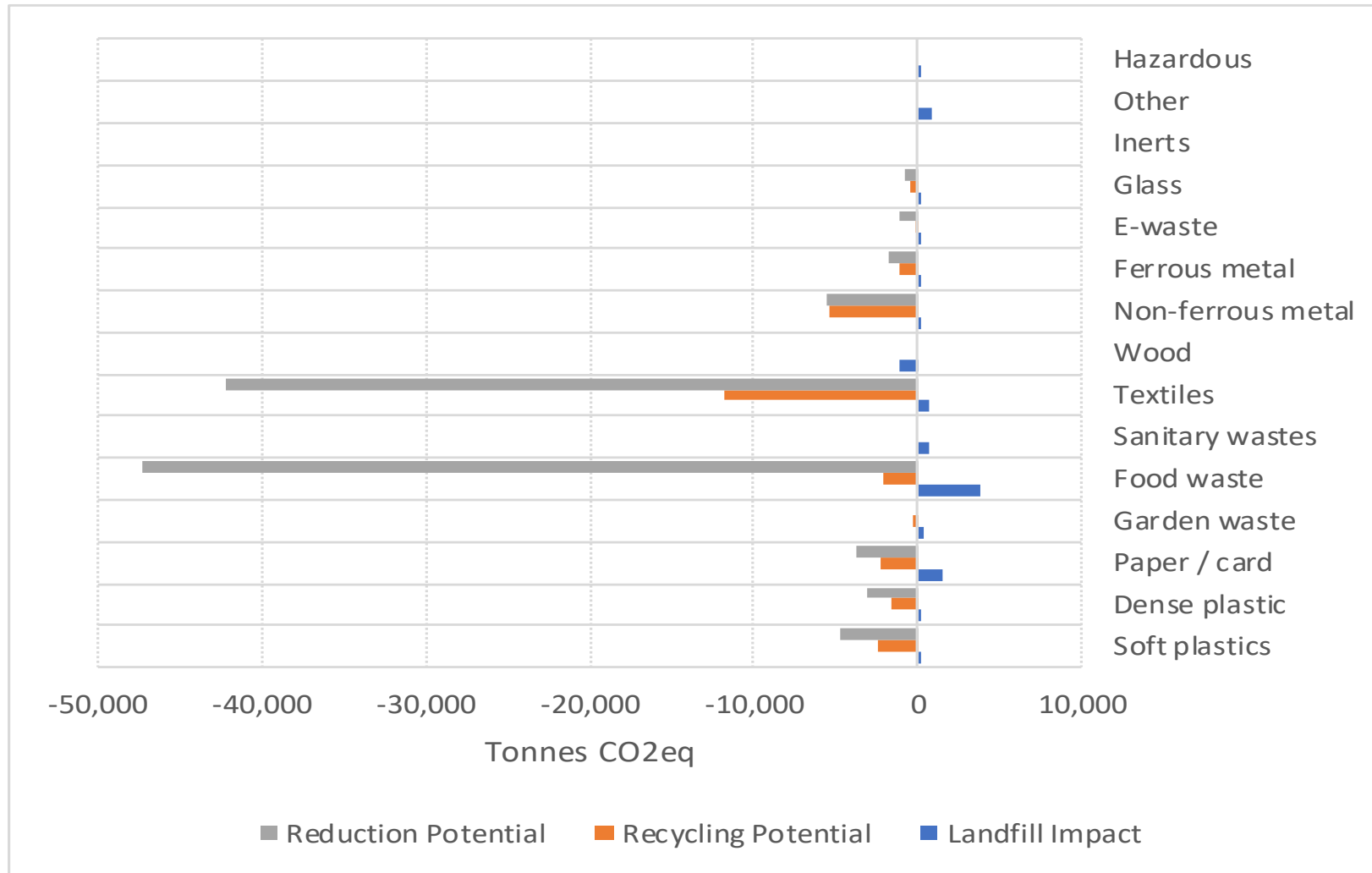
Total Impact – Council Controlled Disposal and Recovery



Analysis of Carbon Impacts

- But... Assumes recycling is actually recycled.
- Council's recycler SKM recently went bust
- Recycling currently being landfilled
- This changes the analysis and potentially the priorities.

Analysis of Carbon Impacts



Three Scenarios

1. Significant Step Change

- Significant shift
- Short timeframes
- Carbon drawdown

2. Incremental Step Change

- Similar level of change but longer timeframe
- Less required of council and community – small steps

3. Business as Usual

- Lower impact
- Less required of the community
- Still aims to improve outcomes

Options – Organics

| SIGNIFICANT | INCREMENTAL | BUSINESS AS USUAL |
|---|--|--|
| Organic Waste - Collection | | |
| <ul style="list-style-type: none"> ● Food waste collection including MUDs ● User pays residual waste collections ● Develop commercial food waste collections ● Food waste to AD | <ul style="list-style-type: none"> ● Food and garden organics collection for those with green waste collections ● Separate food waste collection for households without garden waste collections incl MUDS ● Develop commercial food waste collections ● Food and garden to Dry AD | <ul style="list-style-type: none"> ● Introduce food and garden organics collection for those with green waste collections ● Food and garden to IVC |

Options – Recycling and Textiles

| SIGNIFICANT | INCREMENTAL | BUSINESS AS USUAL |
|---|---|---|
| Recycling | | |
| <ul style="list-style-type: none"> ● Kerbside sort collections ● MUD collections ● Council purchasing policies for recovered material ● Local reprocessing | <ul style="list-style-type: none"> ● Two stream recycling collections ● MUD collections ● Council purchasing policies for recovered material | <ul style="list-style-type: none"> ● Improve co-mingled recycling collections ● Bin inspections to reduce contamination |
| Textiles | | |
| <ul style="list-style-type: none"> ● Textile recycling ● Drop off hubs ● Textile collections ● Promote clothes sharing apps ● Develop Darebin as a reuse 'destination' | <ul style="list-style-type: none"> ● Textile recycling ● Drop off hubs | <ul style="list-style-type: none"> ● Drop off hubs |

Options - Residual

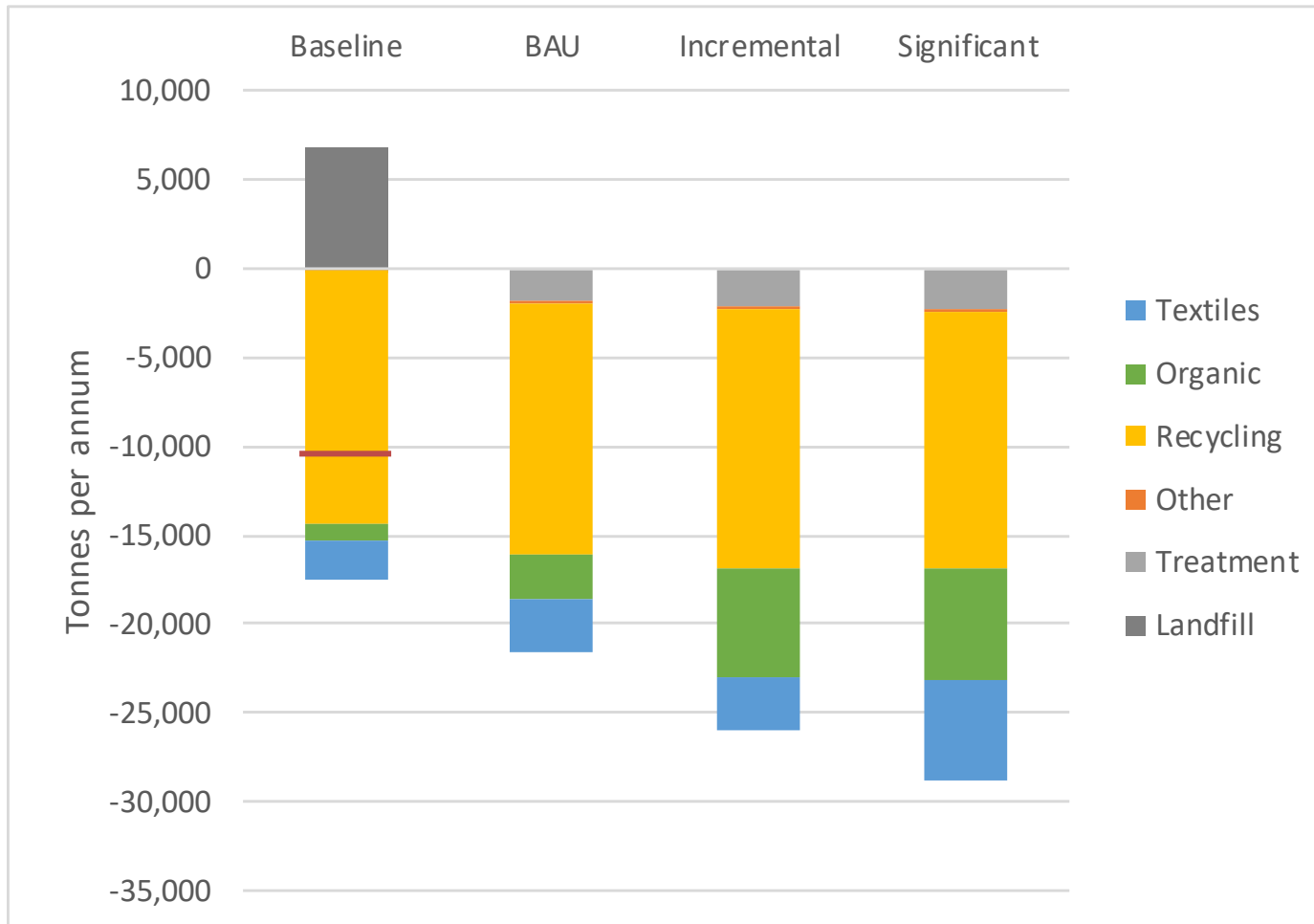


Residual:

- Mechanical Biological Treatment (MBT)
 - Residual to landfill
- Incineration
 - Electricity only
 - CHP
 - CHP & pre-sorting

Options – Carbon Savings

Distribution of carbon impacts including residual treatment and disposal (tCO₂e)



Summary

- Impacts from carbon to disposal are small compared to potential reduction from recycling and avoidance
- Total impact including recovery is positive
- Biggest landfill impact is food waste
- Biggest recovery/avoidance impacts are food waste and textiles (if you are recycling)
- Residual treatment can have a role to play

Thank You

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