

# Novel approach to organic waste management at local government scale

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## Waste 2021 Conference

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INNER WEST



Institute for  
Sustainable  
Futures

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## Organic waste in urban environment



Food waste



Garden waste



Pet waste



Used cooking oil



Fats, oils and greases



Sewage sludge



Trade waste

# Organic waste in urban environment



Food waste



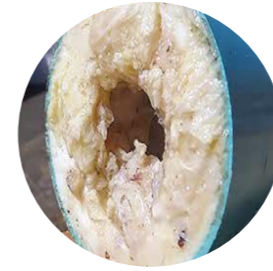
Garden waste



Pet waste



Used cooking oil



Fats, oils and greases



Sewage sludge



Trade waste



RESIDENTIAL



COMMERCIAL AND INDUSTRIAL

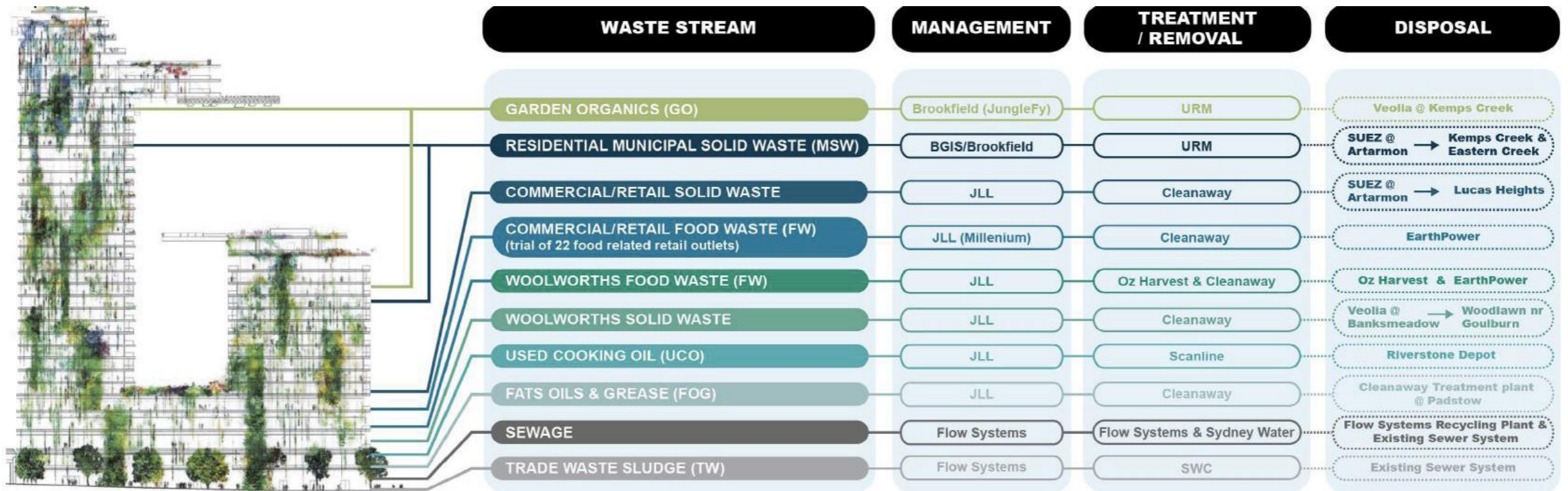


INSTITUTIONAL

# Organic waste management – Sydney Central Park example

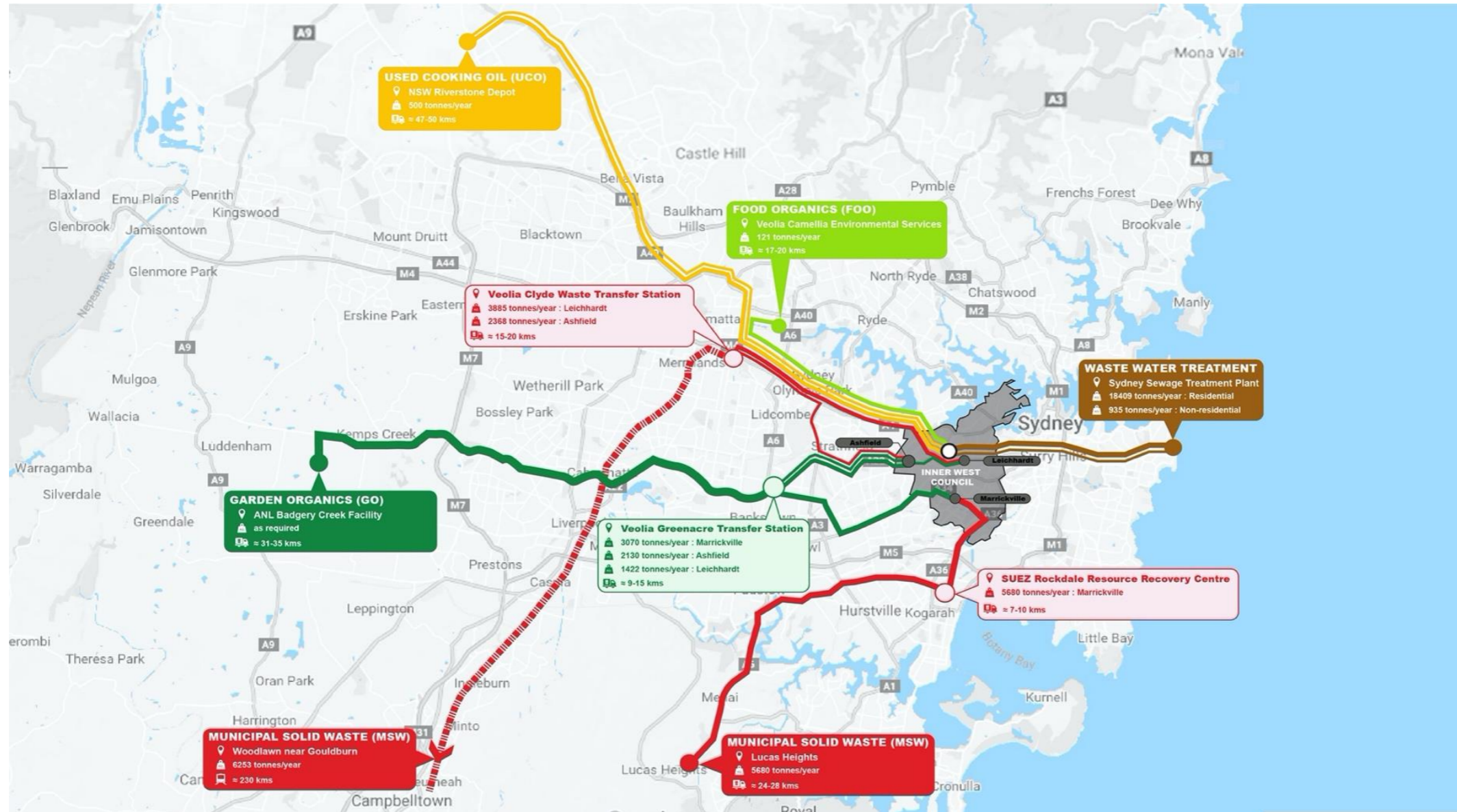


# Organic waste management – Sydney Central Park example



Turner A, Fam D, McLean, L, Zaporoshenko, M, Halliday, D, Buman, M, Lupis, M & Kalkanas, A., Institute for Sustainable Futures, University of Technology Sydney 2018, Central Park Precinct Organics Management Feasibility Study.

# Destination of organic waste streams



# Estimating non-residential organic waste



## DATA SOURCES

INNER WEST

Sydney  
**WATER**

**profile.id**  
COMMUNITY PROFILE

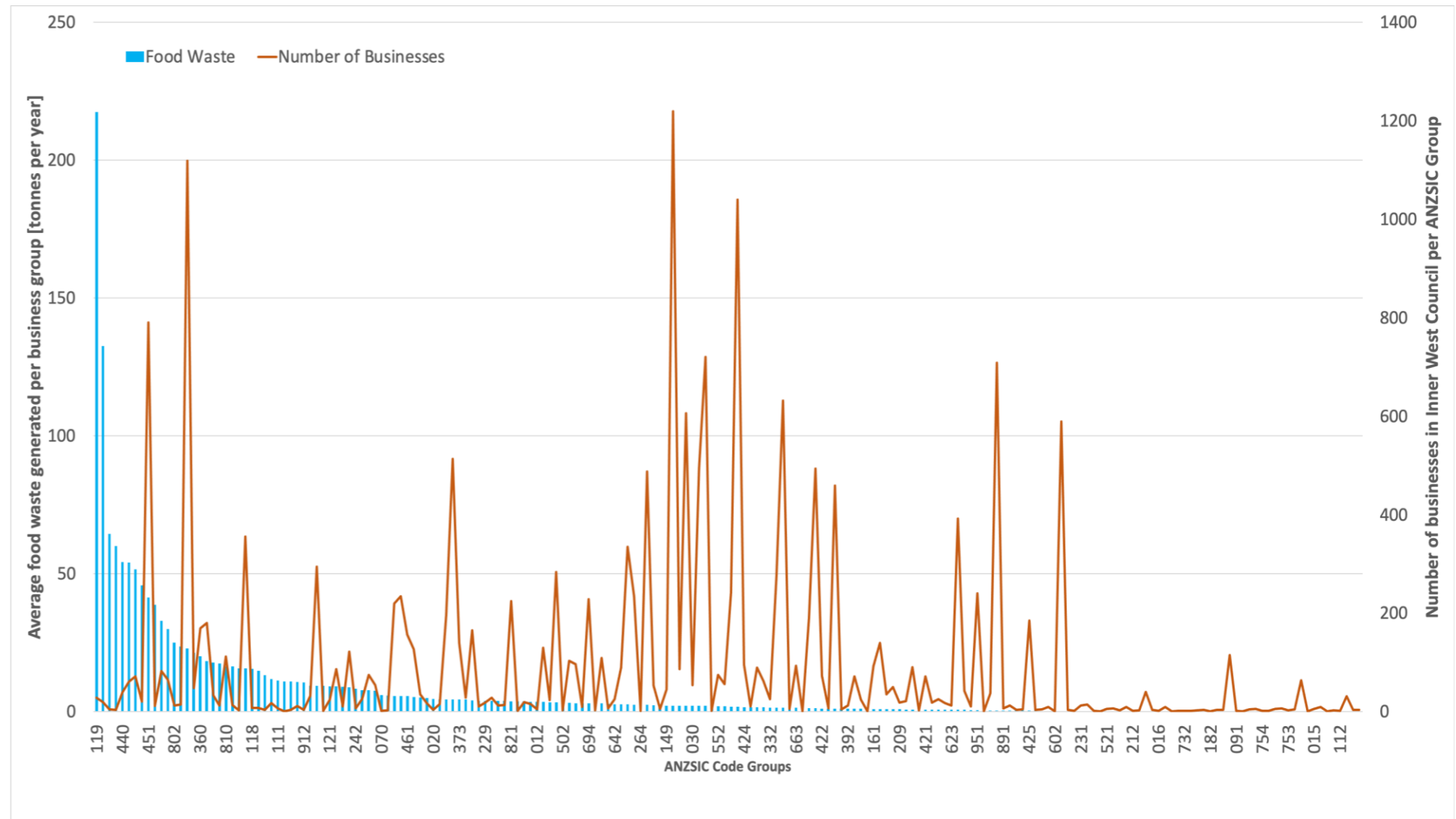


# Estimating non-residential organic waste



## DATA SOURCES

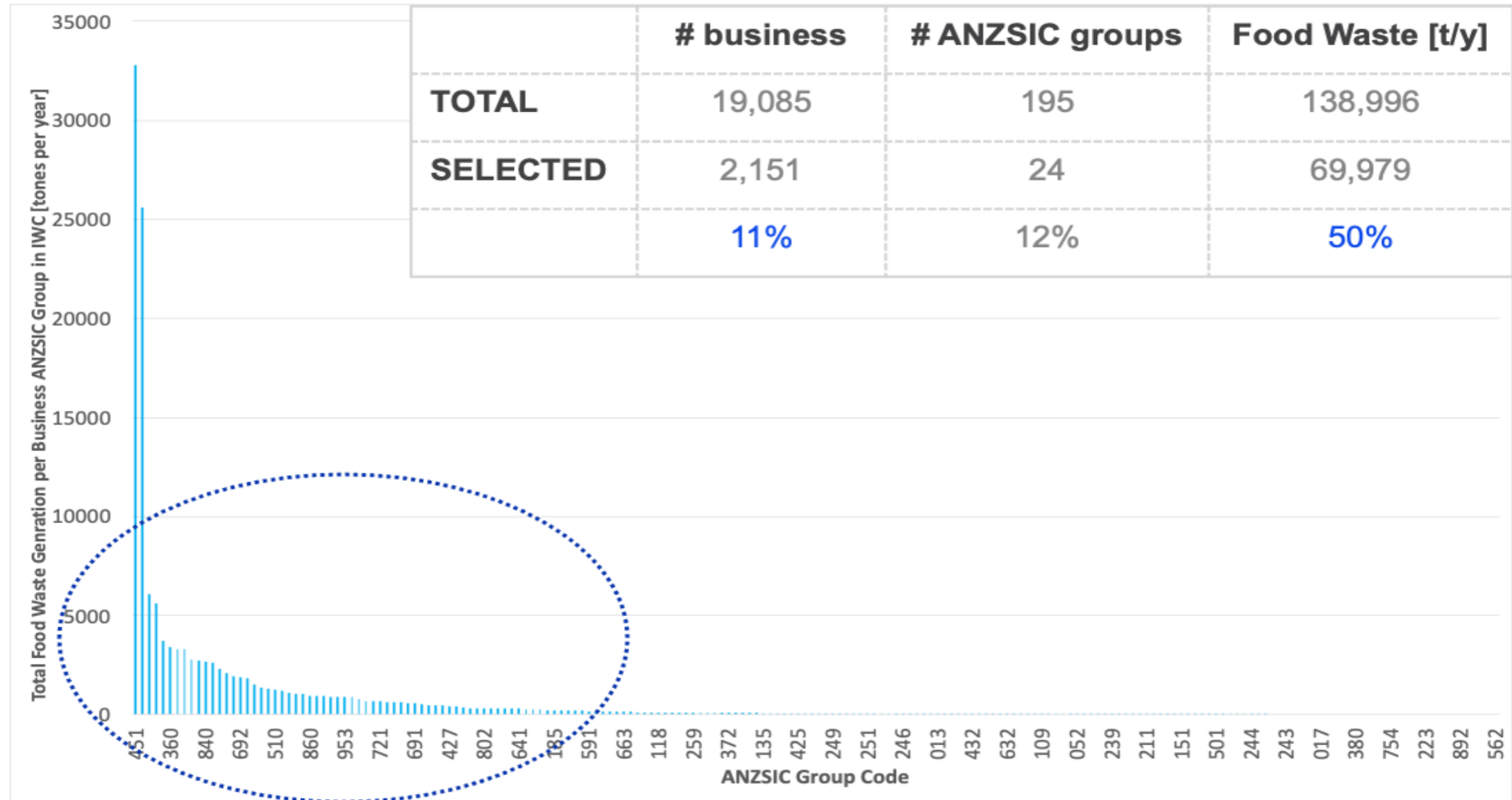
INNER WEST  
 Sydney WATER  
 profile.id COMMUNITY PROFILE  
 NSW GOVERNMENT BIN TRIM  
 Australian Bureau of Statistics  
 Australian Taxation Office



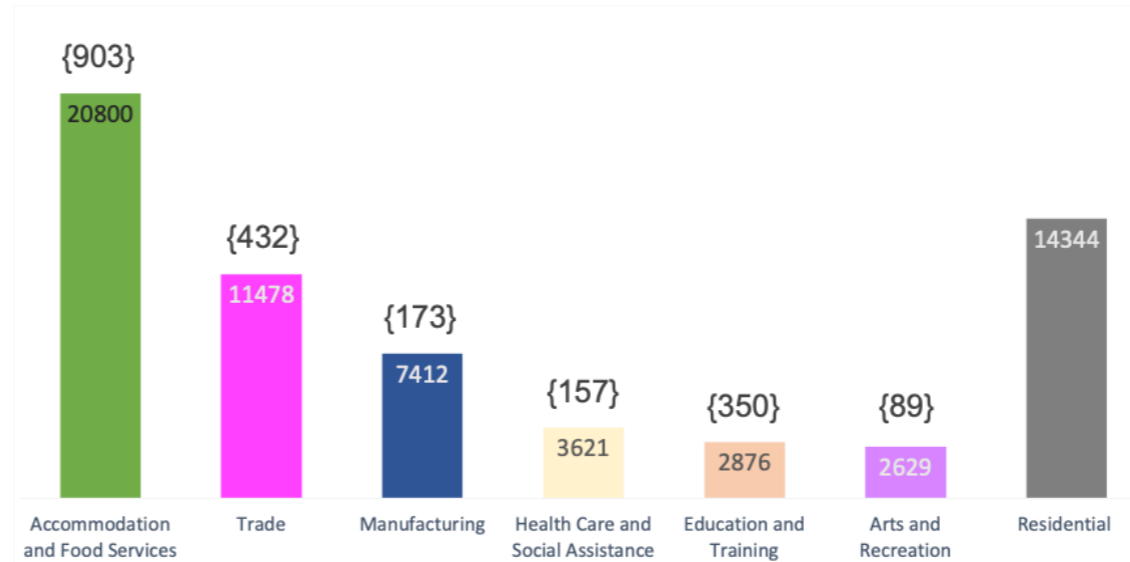
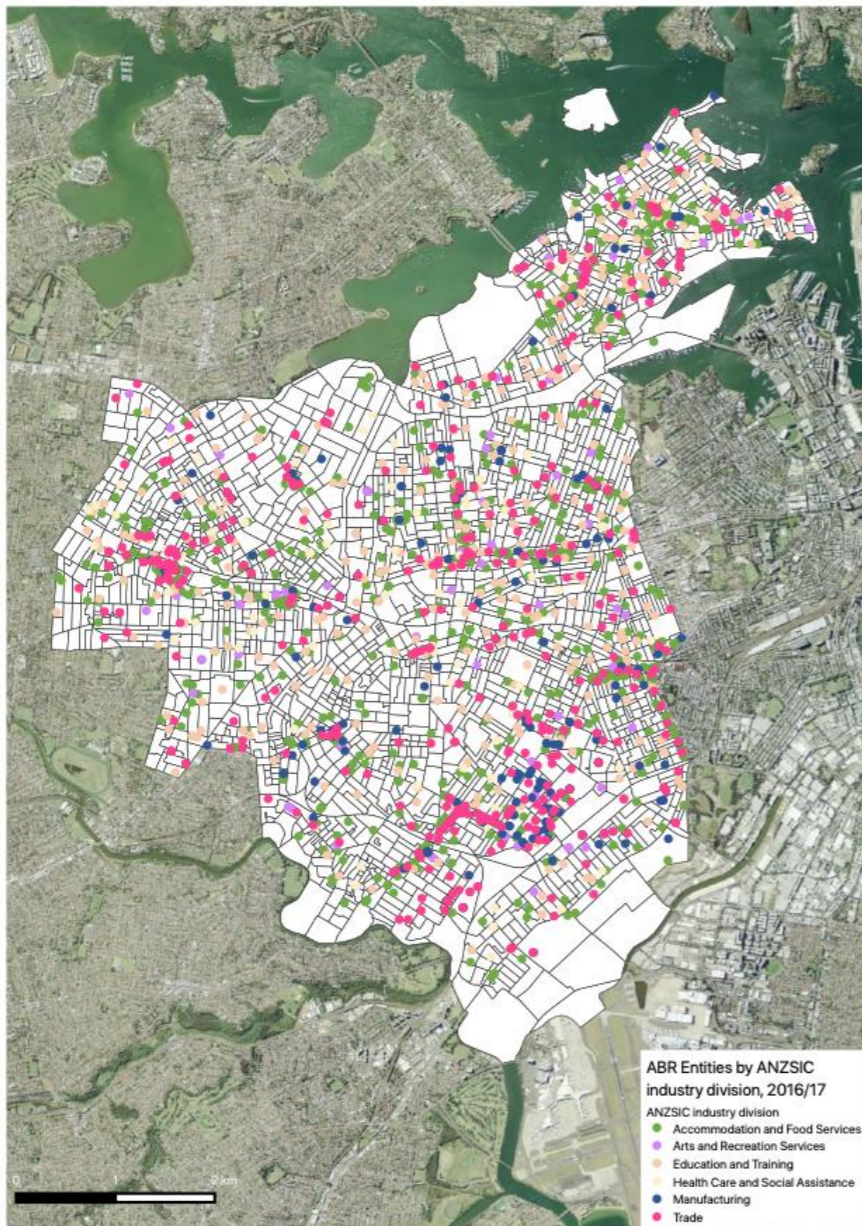
*Estimated average food organics generated per business group (ANZSIC) in t/y and the number of businesses in IWC per ANZSIC group.*



# Insights from non-residential organic waste generation

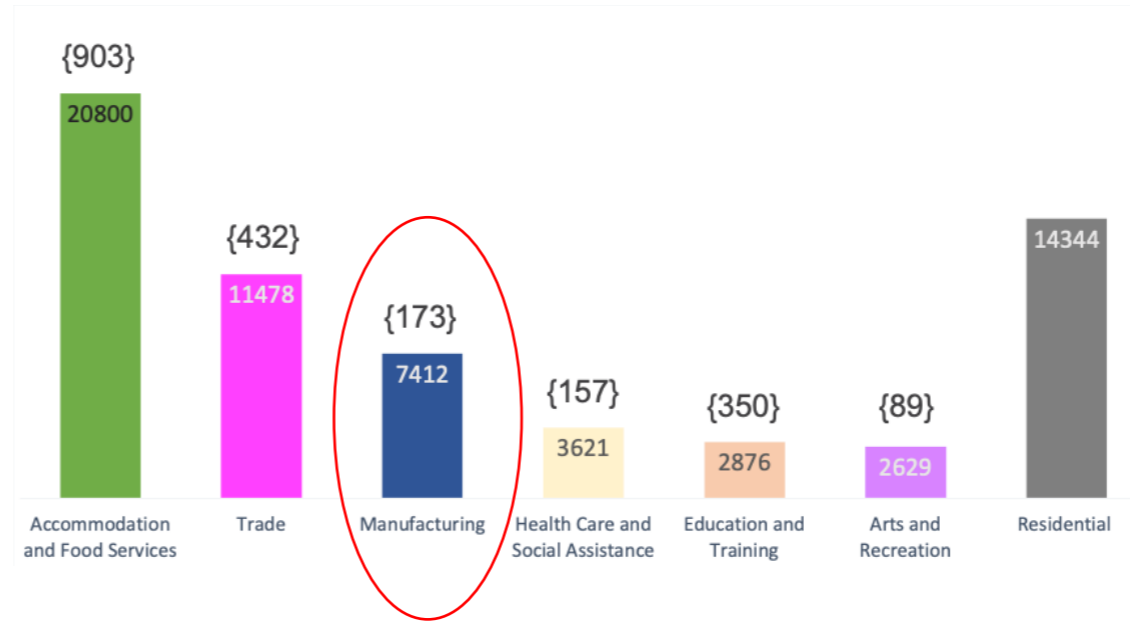
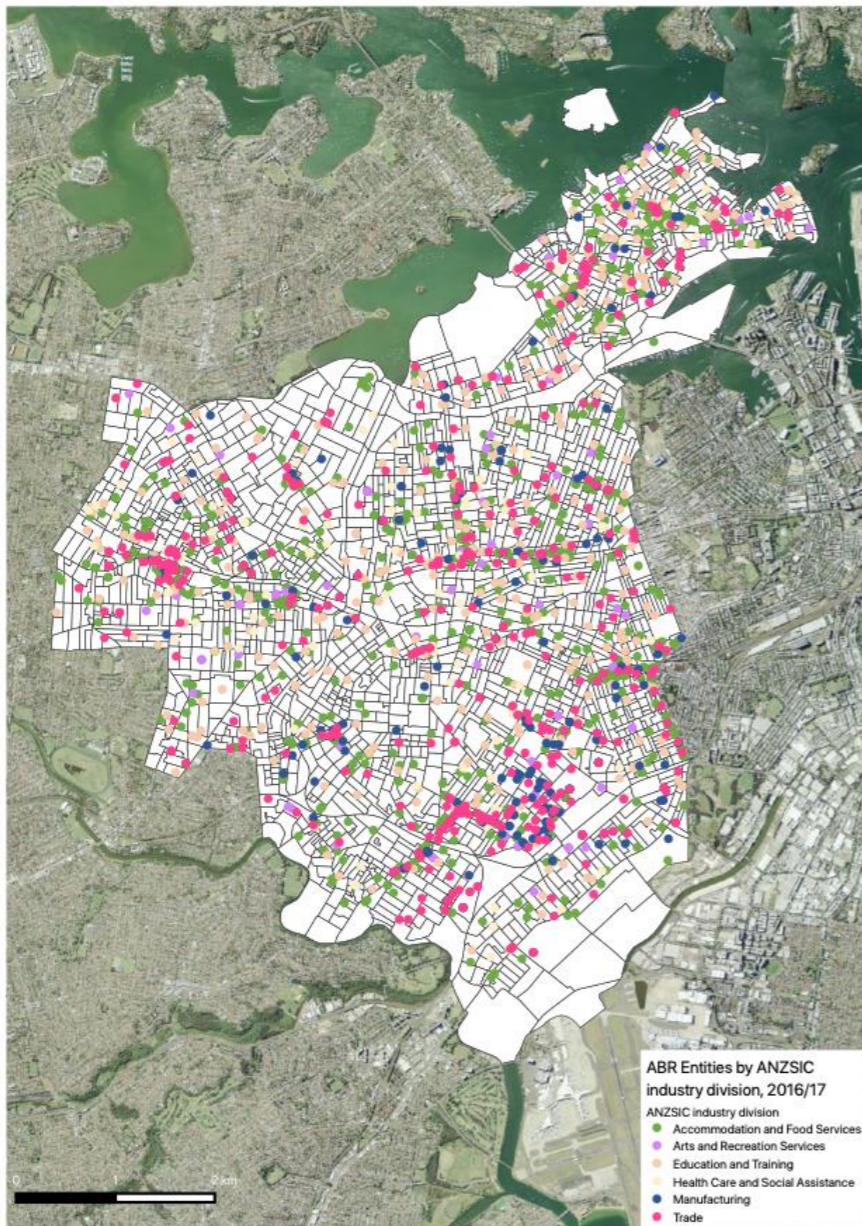


# Industry groups generating most food organics



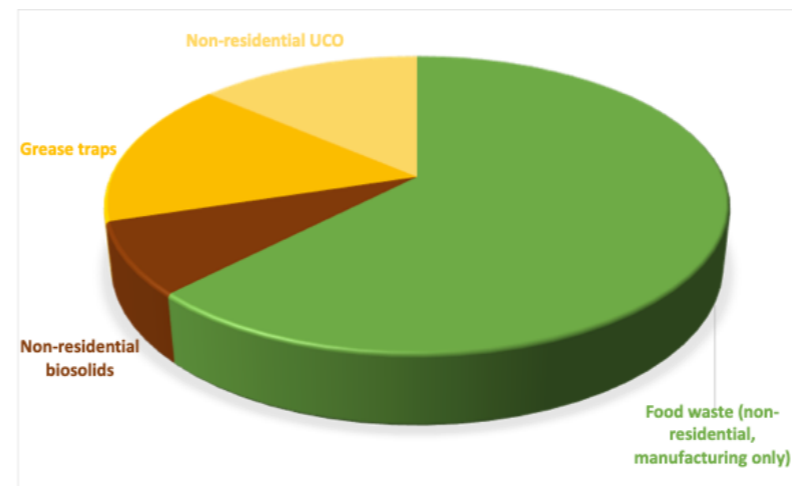
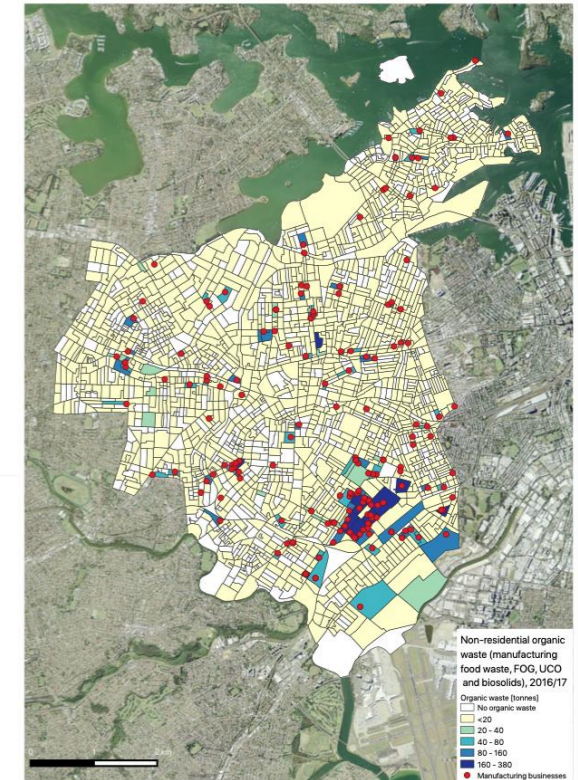
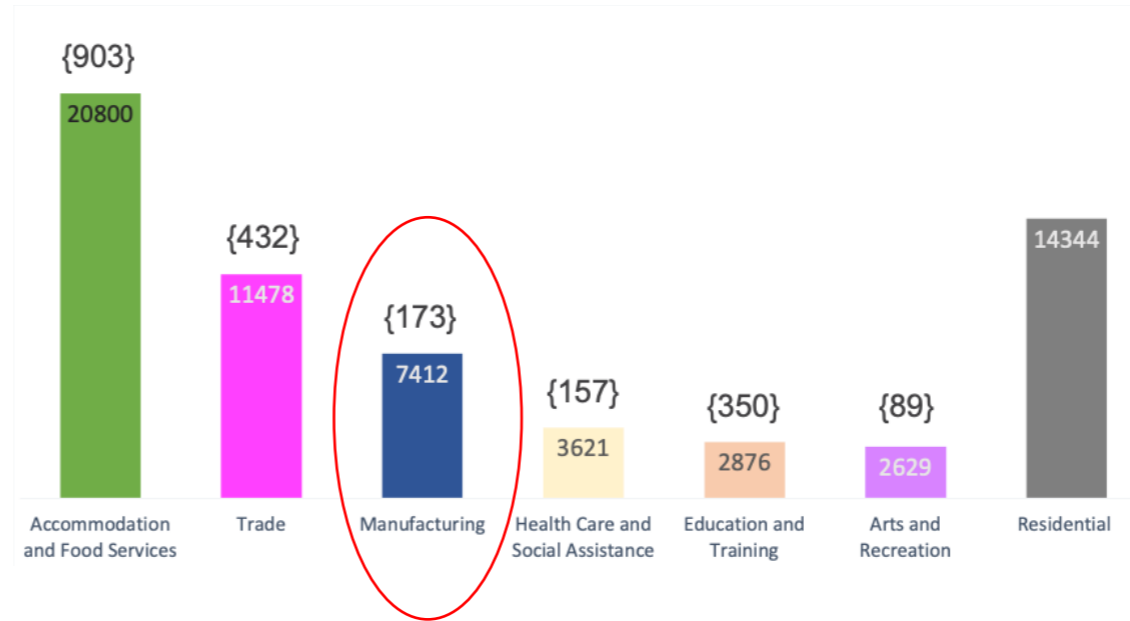
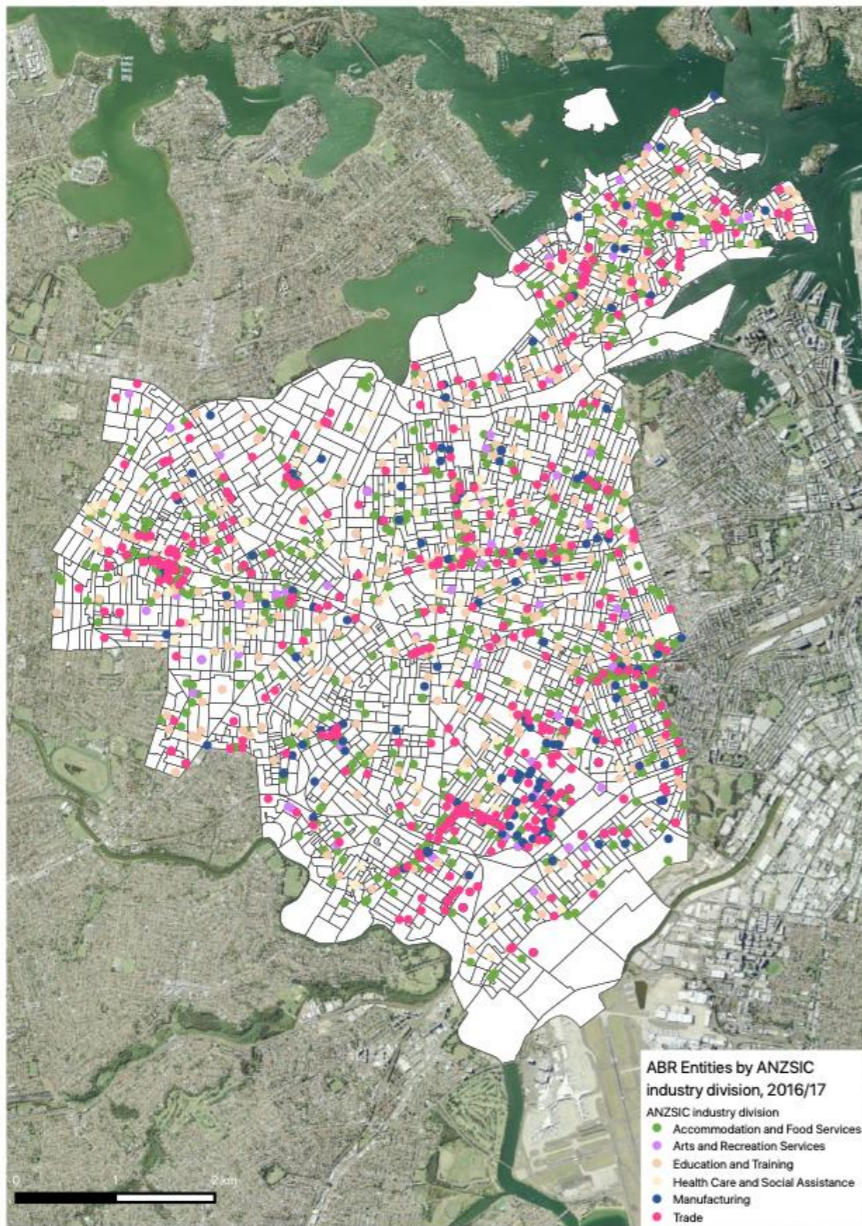
Top six divisions generating food organics [t/y].

# Industry groups generating most food organics - MANUFACTURING



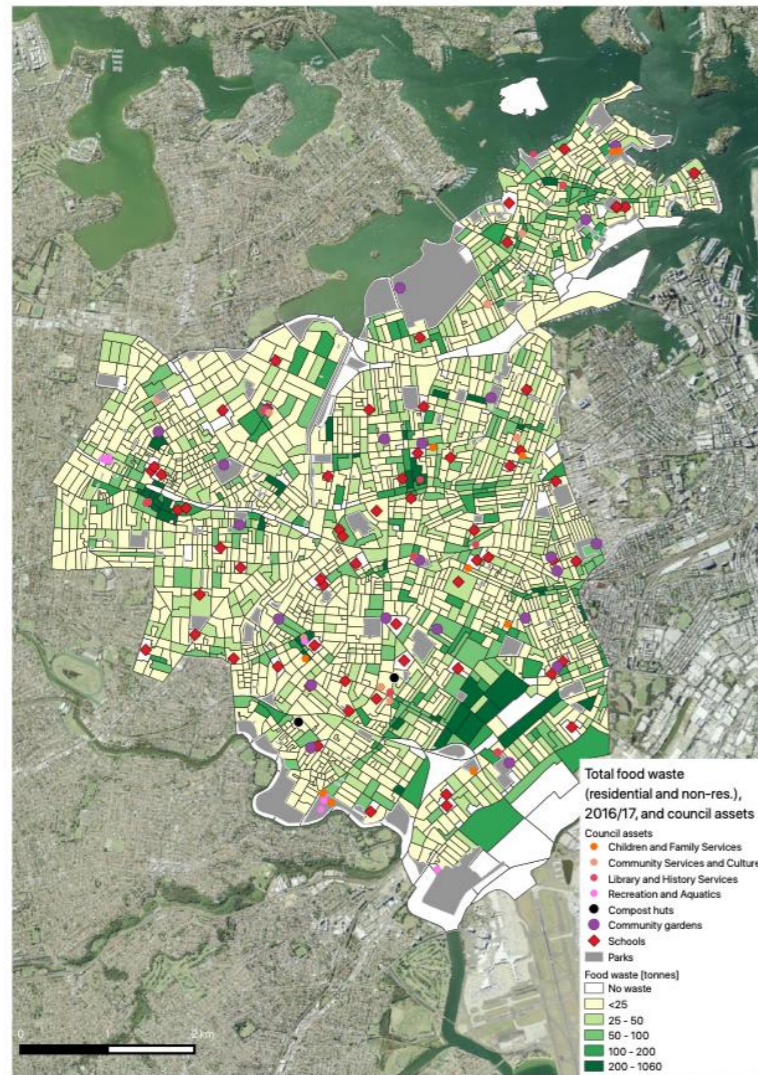
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# Industry groups generating most food organics - MANUFACTURING

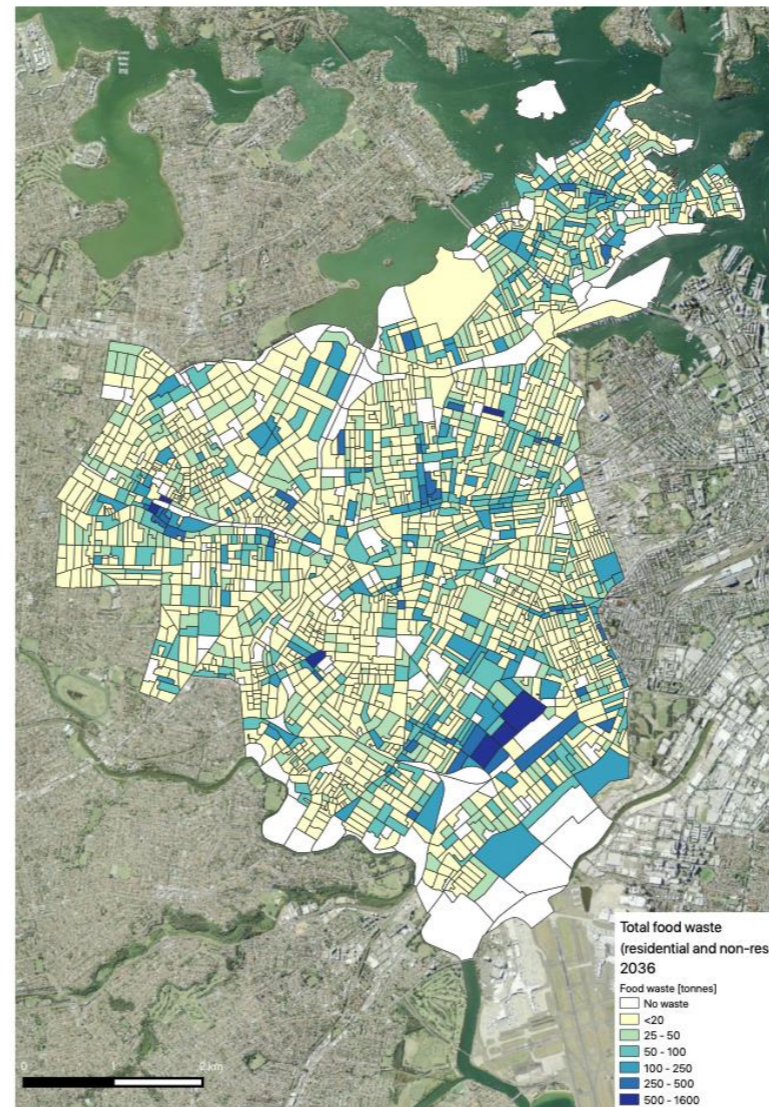


Top six divisions generating food organics [t/y].

# Data analysis informing decision making – food waste intensity and assets

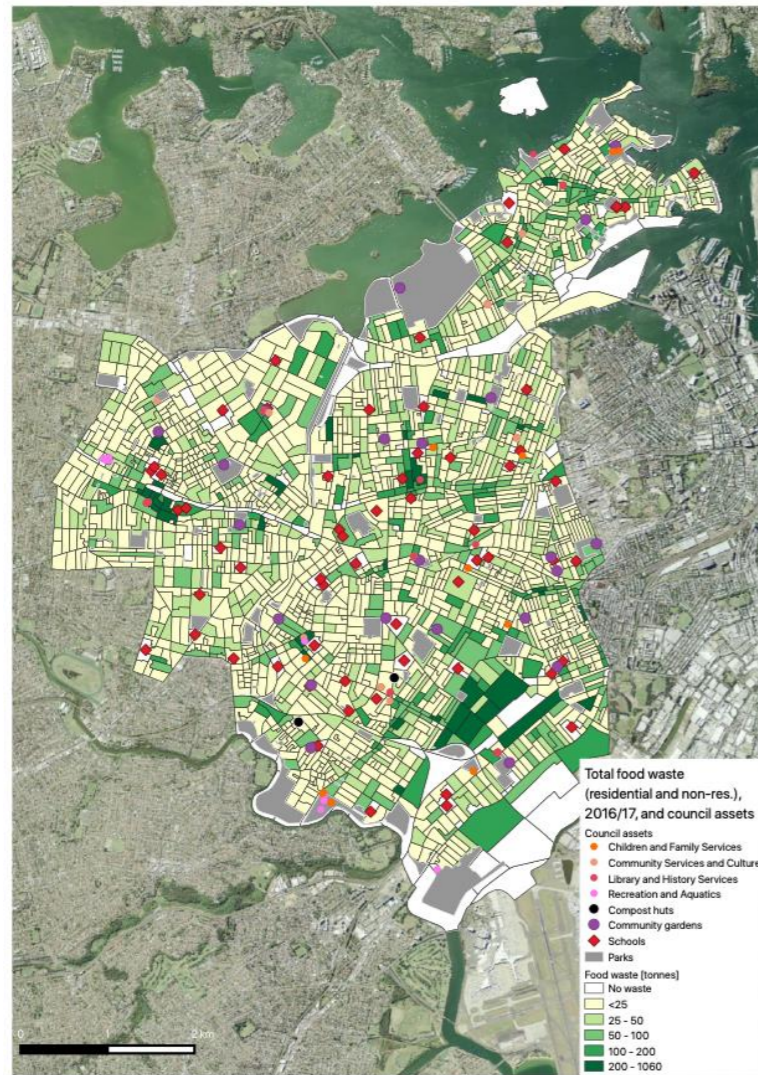


Food waste intensity and assets



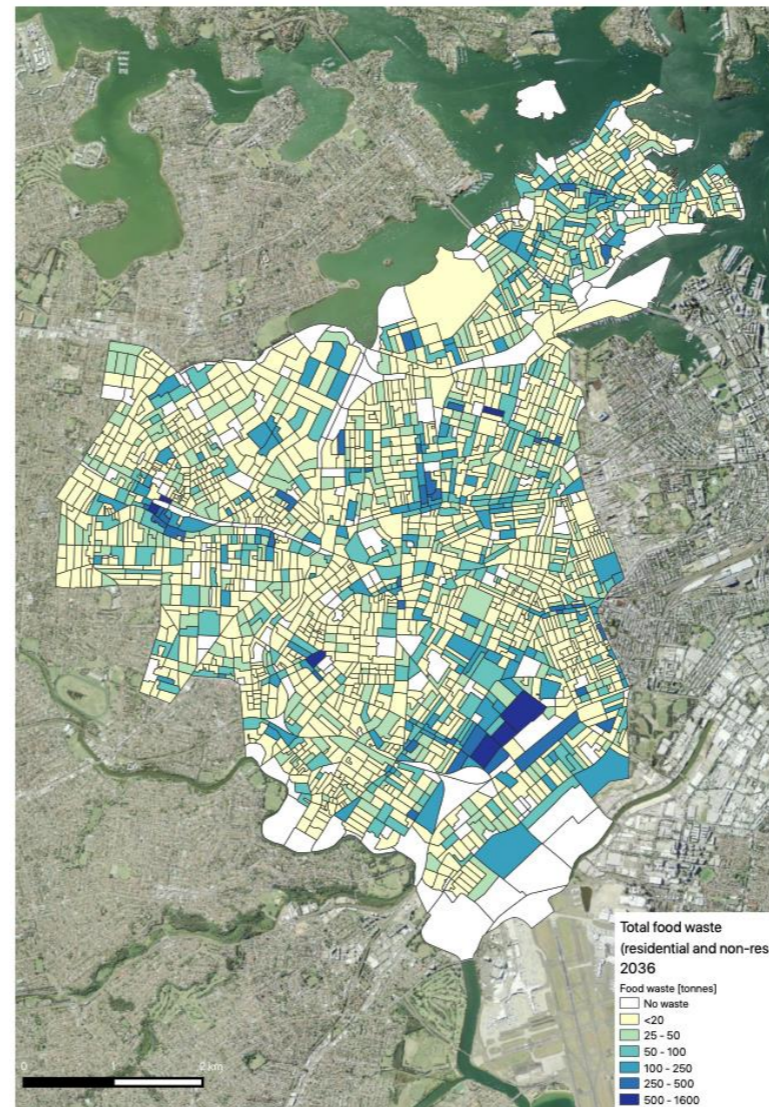
Food waste projections

# Data analysis informing decision making – food waste intensity and assets



Food waste intensity and assets

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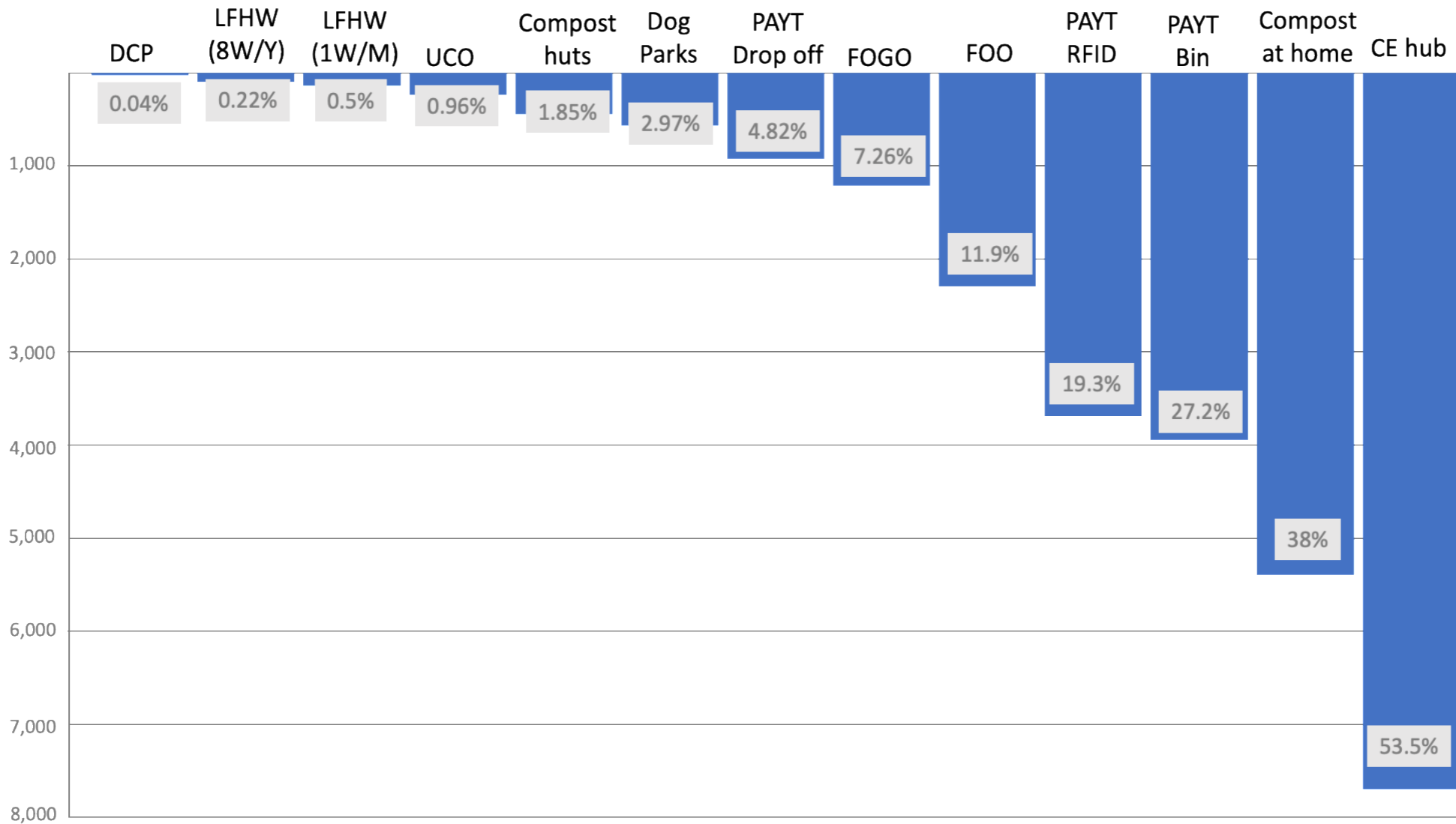
Food waste projections

= Options development

# Options

<p>Food organics avoidance</p>	<p>Compost at home</p>	<p>Food organics in MUDs</p>	<p>FOGO in focused SUDs</p>	<p>Pay as You Throw</p>
				
<p>Circular economy hub</p>	<p>Commercial in LGA</p>	<p>Using council assets</p>	<p>DCP control</p>	<p>Dog Park Waste</p>
				 <p><i>Dog park on-site AD</i></p>

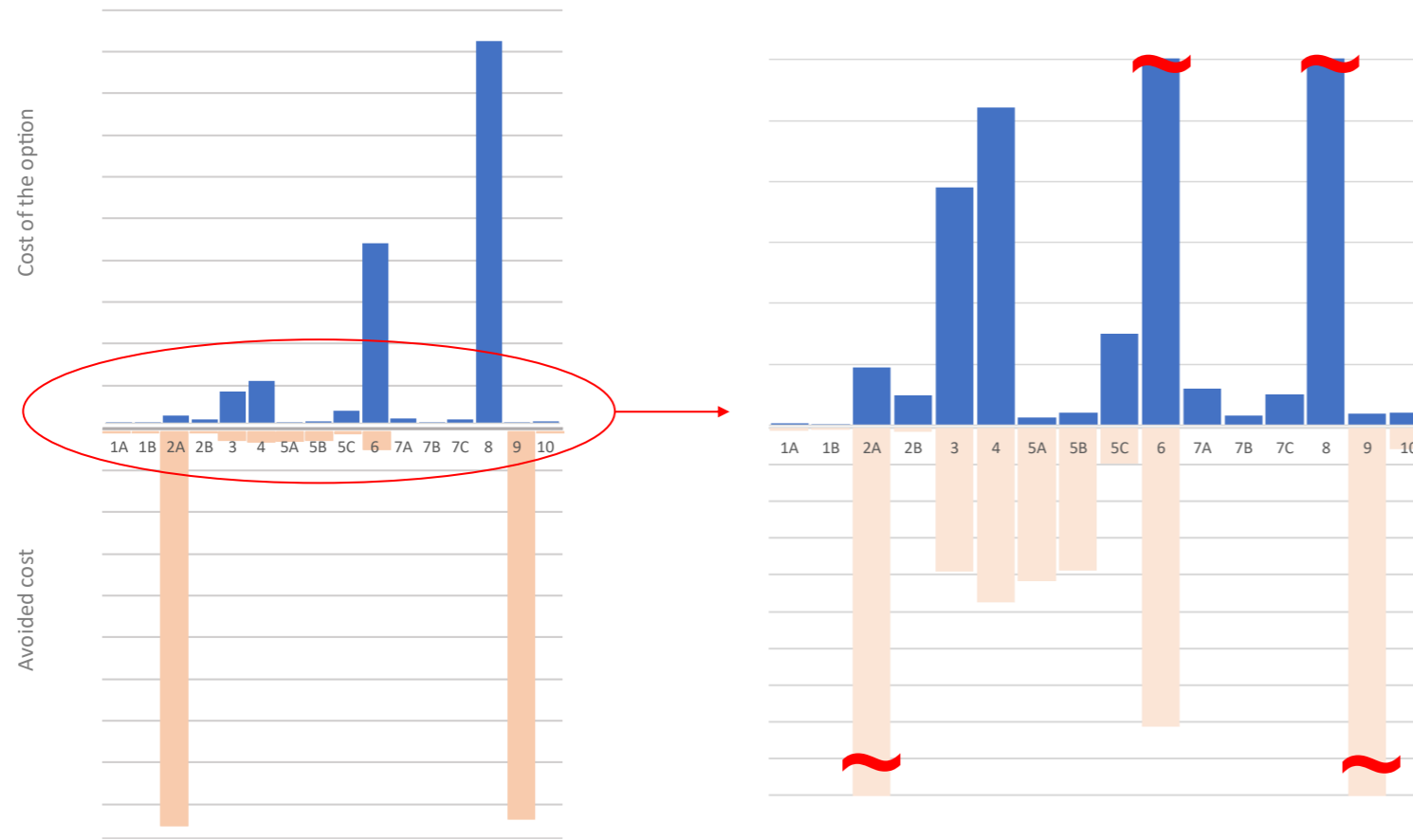
# Organics diverted from landfill [t] in 2036 – residential sector



Organics diverted from landfill [t] in 2036 in residential sector for each option individually and also expressed as diversion rate that each option individually contributes.



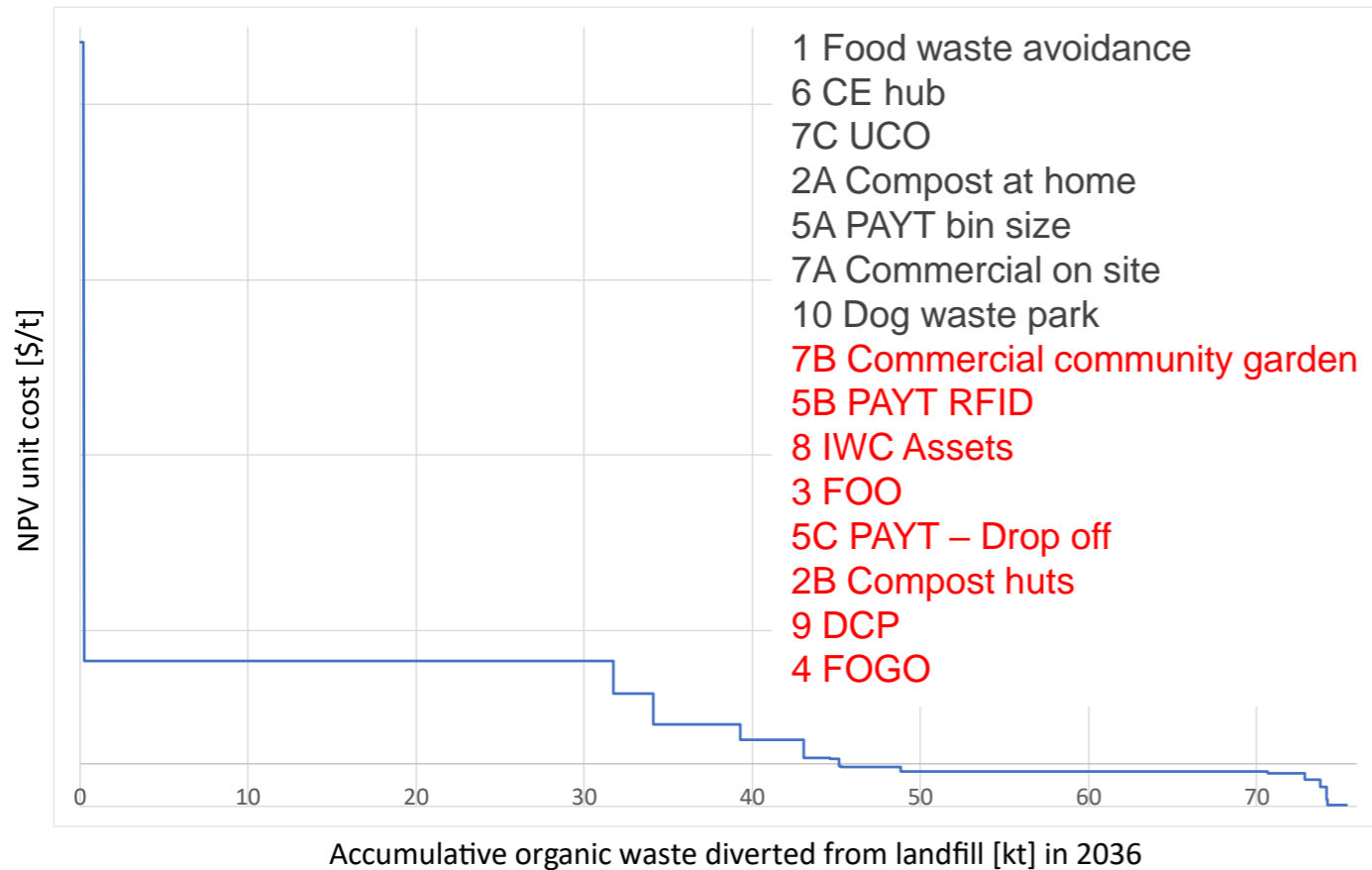
# From council perspective



Cost and avoided cost of the options from council perspective

1A	LFHW (1w/m)	Food waste avoidance
1B	LFHW (8w/y)	
2A	Compost at home	Compost at home
2B	Compost huts	
3	FOO	Food waste in MUDs
4	FOGO	FOGO in SUDs focused area
5A	PAYT-bin	Pay As You Throw
5B	PAYT-RFID	
5C	PAYT-drop off	
6	CE hub	Processing organics within IWC
7A	Comm.-on site	Processing commercial organic waste with the LGA
7B	Comm-com.garden	
7C	UCO	
8	IWC assets	Organics management at own IWC assets
9	DCP	Use of DCP control in new precinct scale development
10	Dog parks	Dog park waste

# Options NPV unit cost and diversion rates from whole economy perspective



## Key messages:

- Importance of food waste avoidance
- Localised solutions for non-residential and residential waste combined
- Opportunities to use assets in the LGA
- Processing to higher value
- Opportunities in the layers of organics, e.g. dog waste

NPV unit cost in \$/t from the whole economy perspective for each option (options with positive NPVs are black and options with negative NPVs are red) and the cumulative organic waste diverted from landfill in kt in 2036.

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# Findings

- **Data mining – opportunities for managing multiple layers of organics in the LGA**
- **Potential within non-residential sector, including institutional**
- **One size does not fit all**
  - Role of residents
  - Low cost and high impact of food avoidance
  - Alternative collection models incentivizing higher organics diversion
  - Precinct scale organics solutions, circular economy hub – AD, maggot farm, UCO processing, ...
  - Non-residential waste – target small number of business producing majority of organics
  - New developments new opportunities
- **Need for organics processing options and infrastructure in Greater Sydney Area – Opportunity to get it right!**
- **Need for collaboration and transparency between residents, businesses, council and levels of government.**
- **This is illustrative study – full options portfolio study, including non-monetizable benefits, needed for decision making**

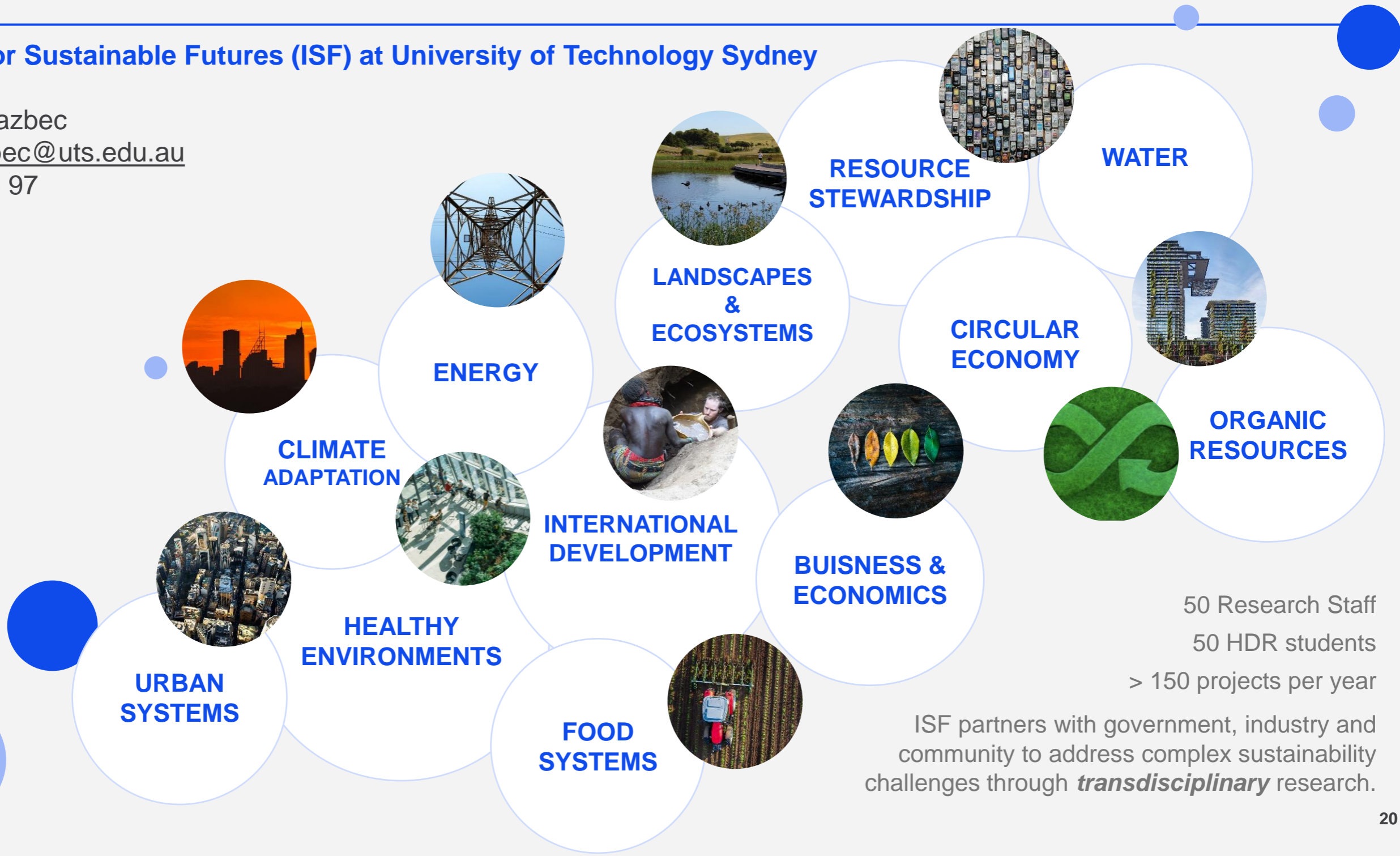
# Institute for Sustainable Futures (ISF) at University of Technology Sydney

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50 Research Staff  
50 HDR students  
> 150 projects per year

ISF partners with government, industry and community to address complex sustainability challenges through *transdisciplinary* research.

Thank you

