Sydney WATER

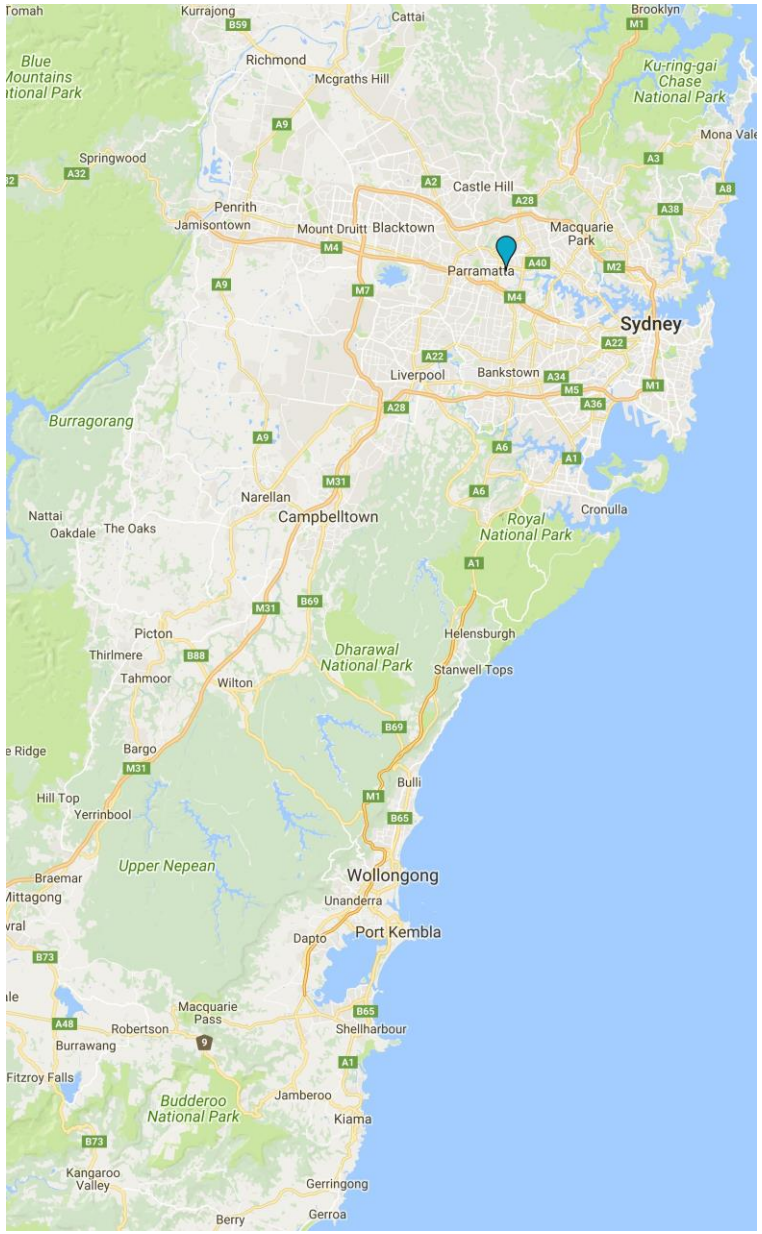
Turning organic waste into energy

delivering a resource efficient, high energy productivity future

Waste Strategy Summit, 28 June 2018
Phil Woods, Service Planning Lead (Energy)

Question:
How many commercial, large scale AD sites in Sydney?

1 (Earthpower)?

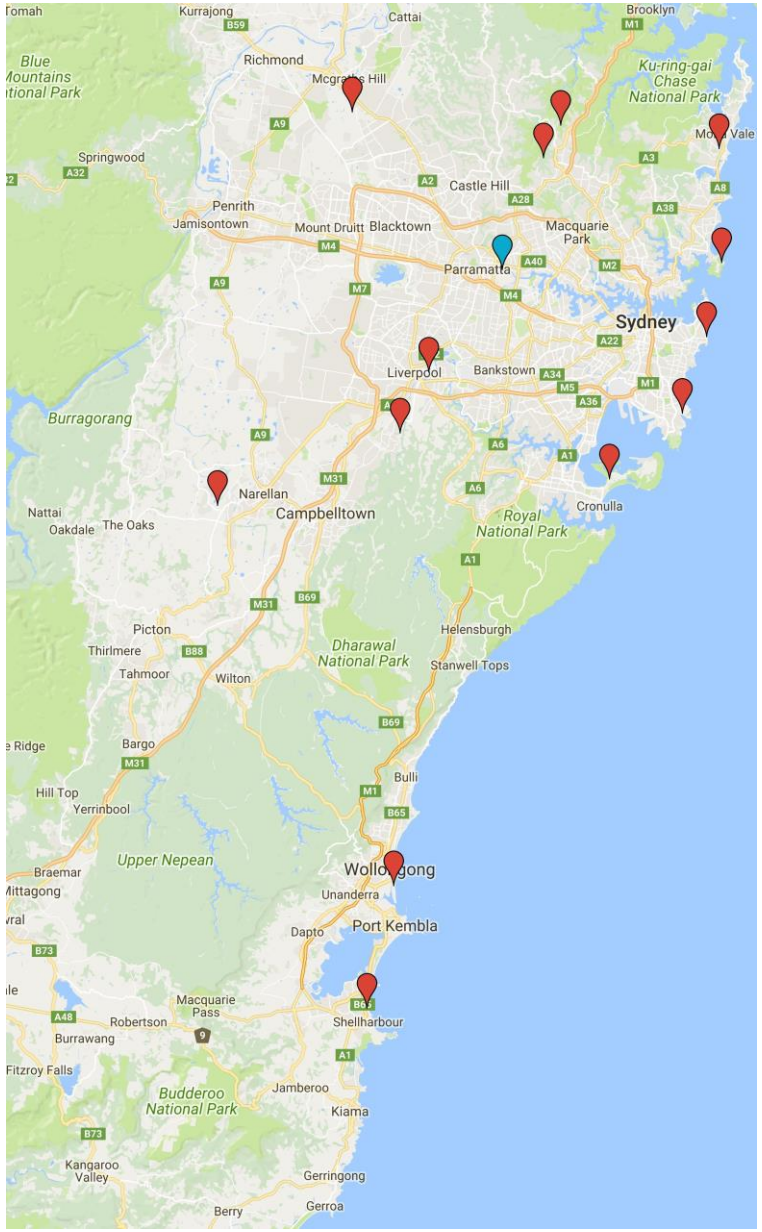


Question:
How many commercial, large scale AD sites in Sydney?

Or **14**

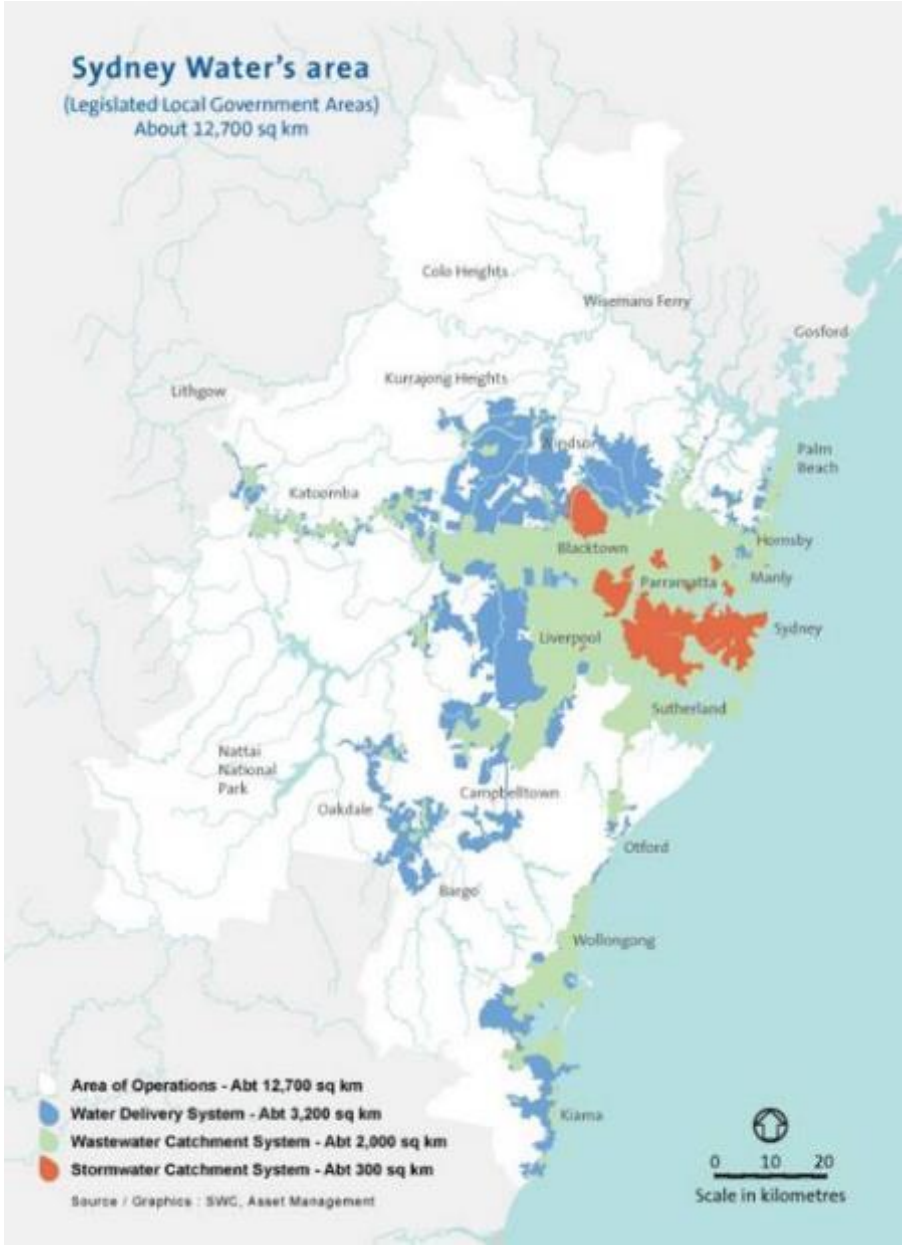
1 (Earthpower) + 13 (Sydney Water)

……and at least 1 more to come



Sydney Water

- 4.9 million customers
- 29 wastewater treatment plants
- 1 billion litres of wastewater per day
- 13 anaerobic digestion plants
  - 8 with cogeneration
- In the top 100 electricity users in Australia
- Self generate ~20% of our electricity



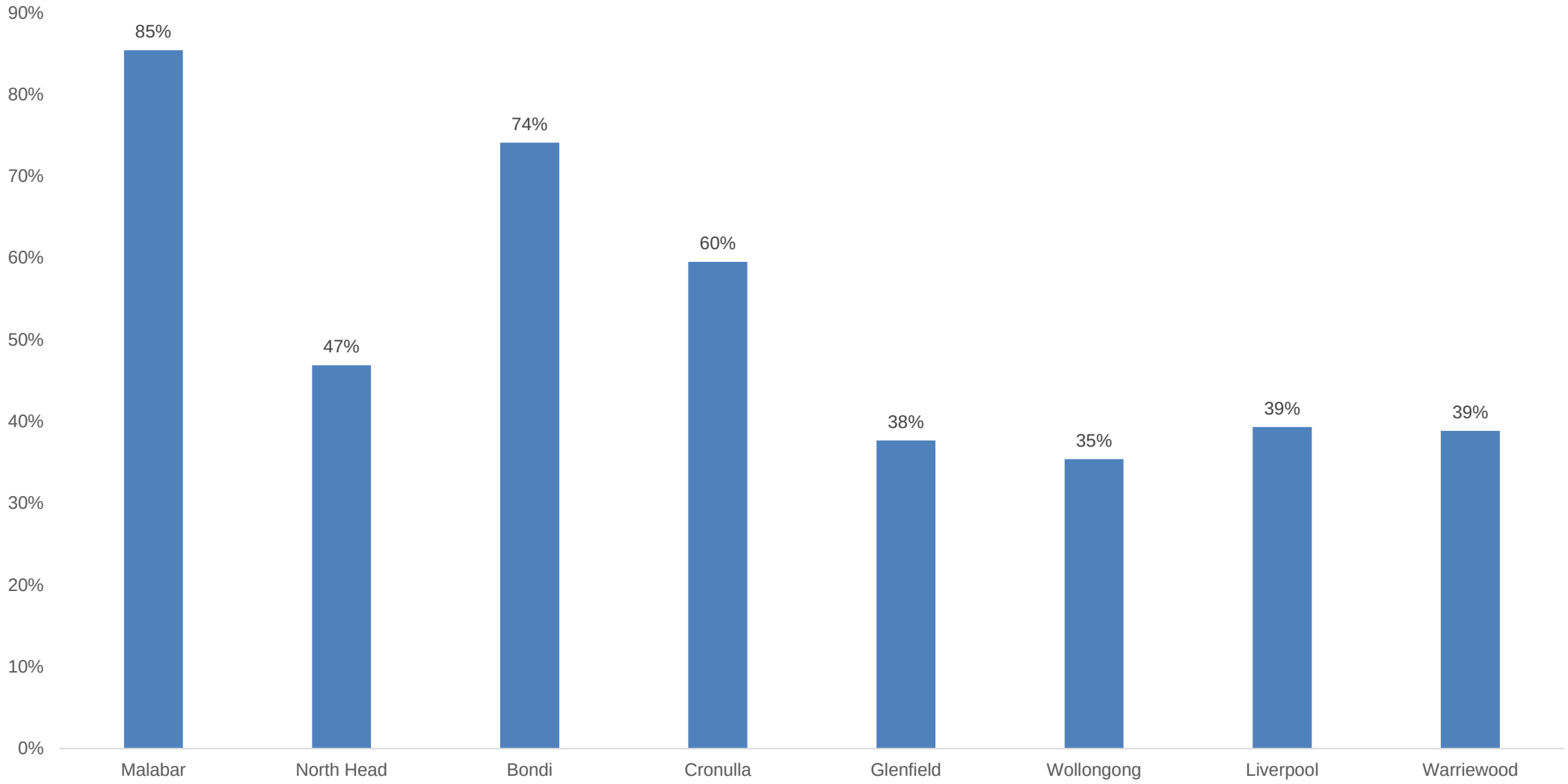
Renewable generation

- Hydro
  - Pressure reductions and gravity flows
  - 3 generators in the water and wastewater system
  - 6 MW Installed capacity – 5 GWh in 2016-17
- Solar
  - Solar PV
  - 160 kW produced 183 MWh in 2016-17
  - Approval for another 160 kW
- Biogas
  - Generation using biogas from wastewater treatment
  - 8 wastewater treatment plants
  - 10MW installed capacity – 60 GWh in 2016-17

Energy value ~$15m per year

Energy positive wastewater treatment?

Energy generated as a % of total demand (2017)

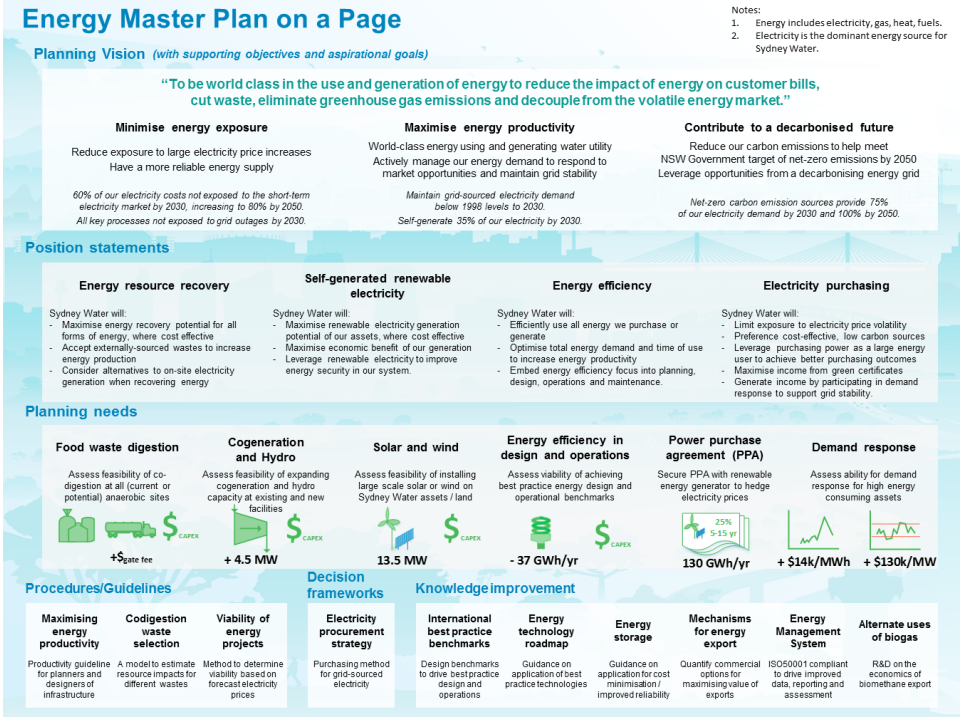


Energy Master Plan
2030 Goals

- Double energy self generation
  - Mostly biogas
- +4.5MW generation from sewage sludge
- +4.0MW from food waste

"Sydney Water will:
- Maximise energy recovery potential for all forms of energy, where cost effective
- Accept externally-sourced wastes to increase energy production
- Consider alternatives to on-site electricity generation when recovering energy."

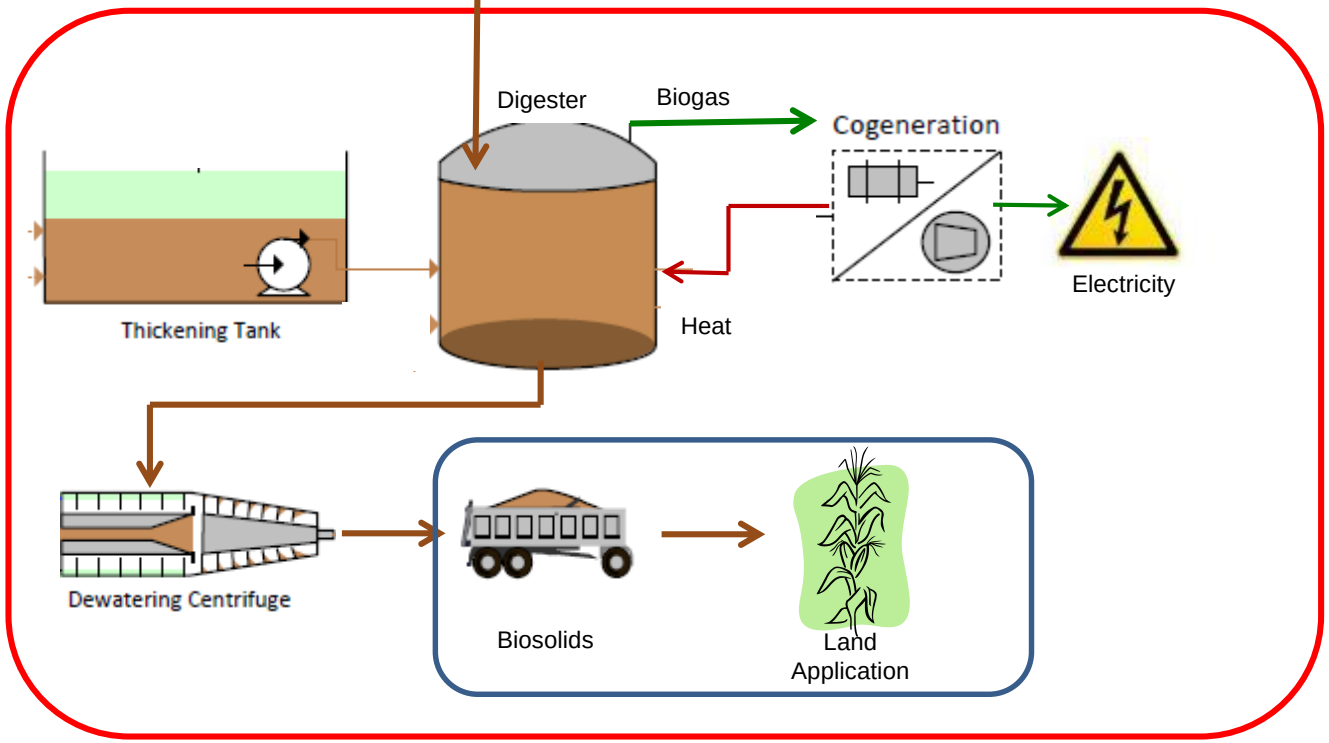
Energy Master Plan 2018



Co-Digestion

Converting organic (food) waste to energy and fertiliser

Food waste



Combining research with trials as the basis for moving forward

Bondi Glycerol Pilot

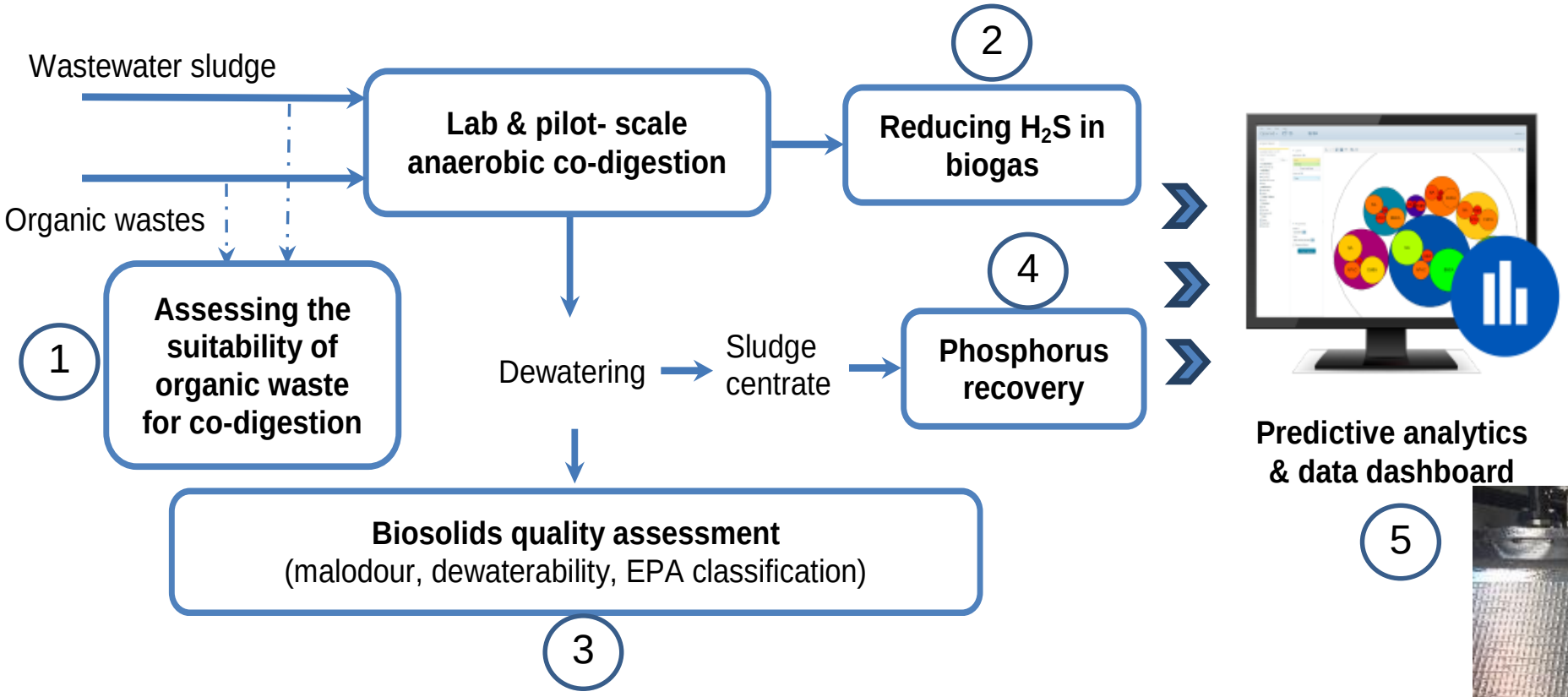
- 12 month trial completed in 2016
- Learn about waste handling and co-digestion dosing regimes
- Increased biogas production

Cronulla Commercial Food Waste

- Pulped fruit and vegetable waste
- Averaging 10kL per day
- Commenced October 2016

Shellharbour R&D

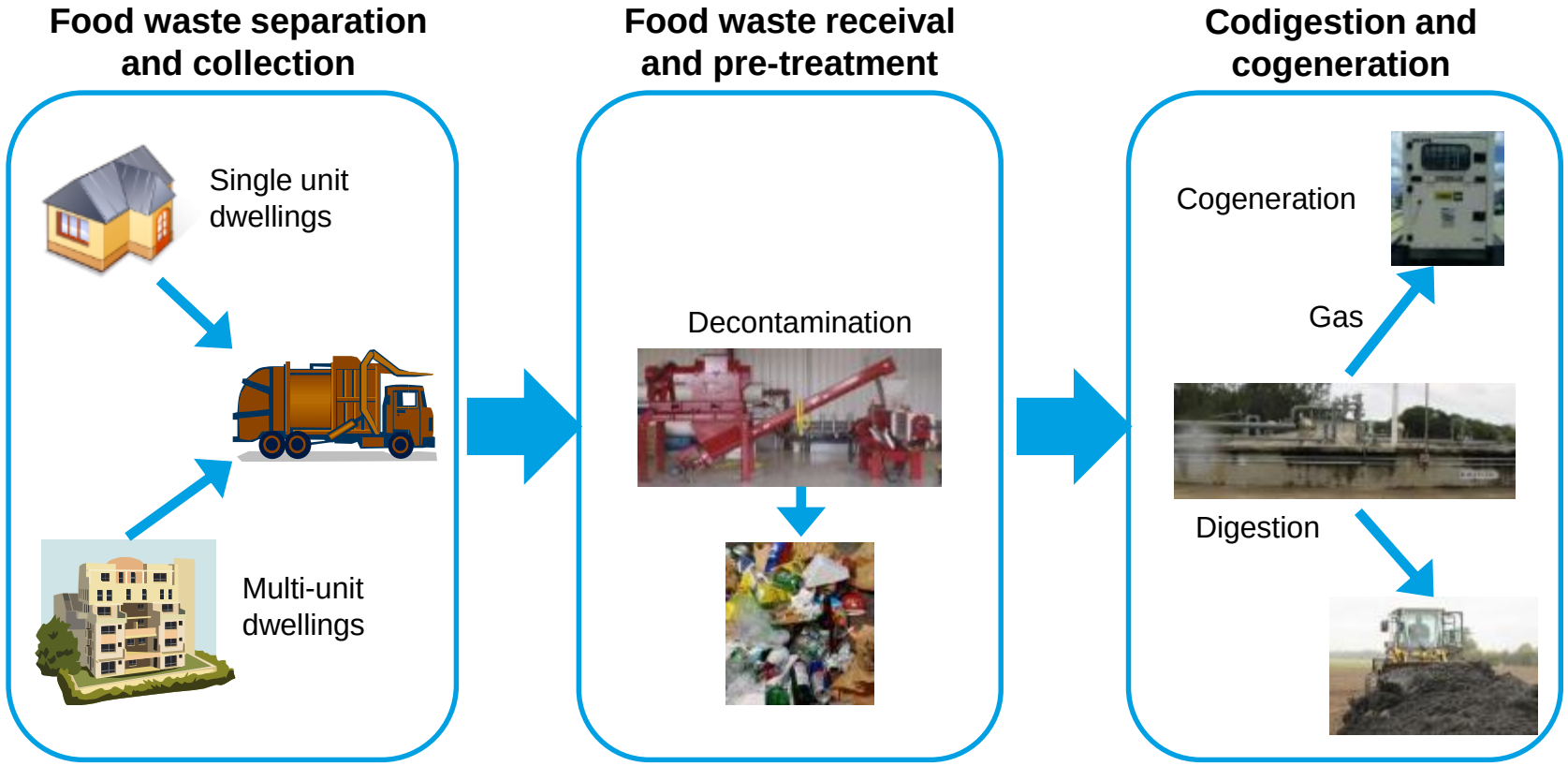
Australian Research Council linkage project



In partnership with Wollongong University & DC Water

Malabar Food Waste Feasibility

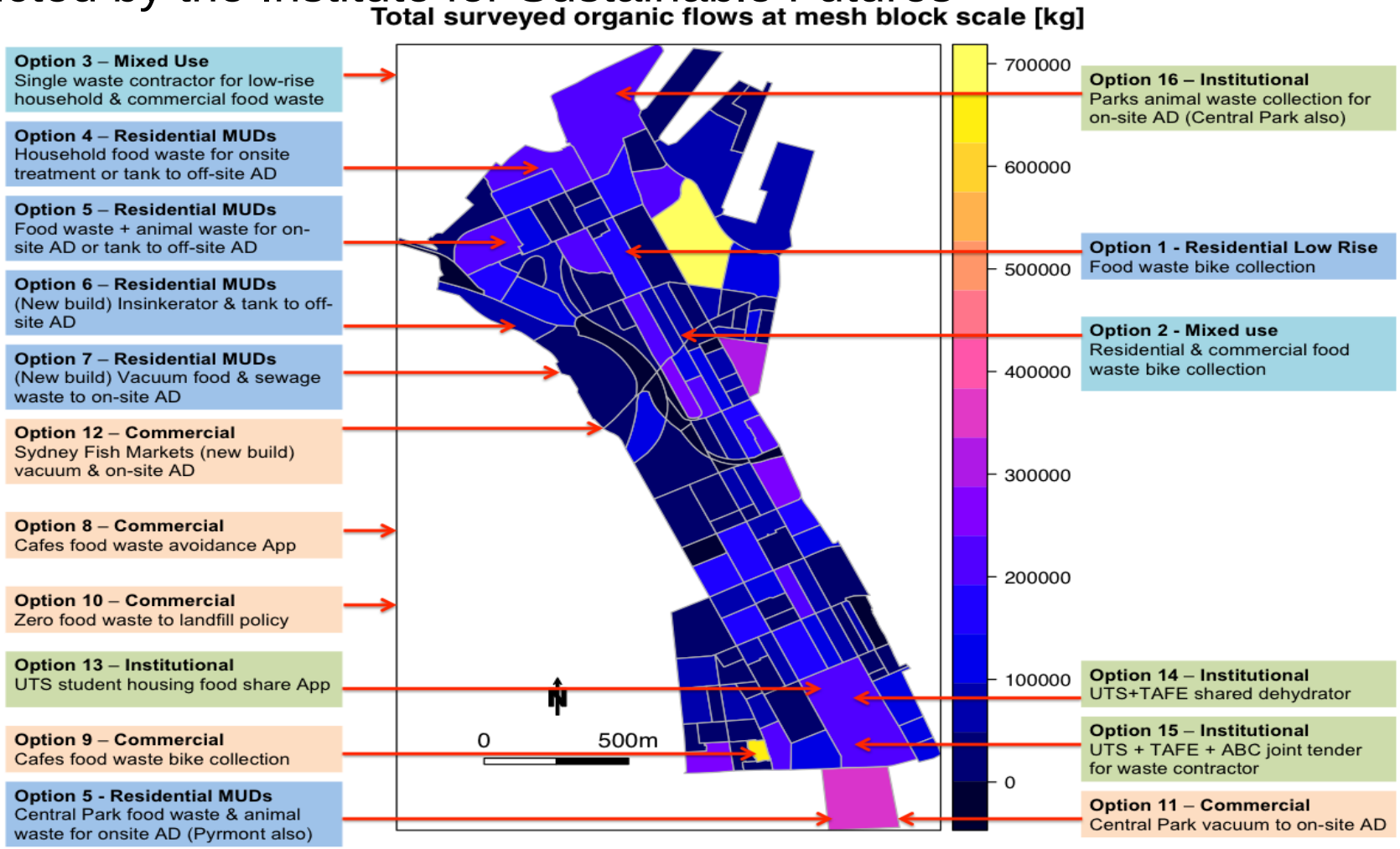
Partnership with Randwick City Council (2014)



Pyrmont Ultimo Precinct

Funded by Sydney Water and NSW EPA (2017)

Conducted by the Institute for Sustainable Futures

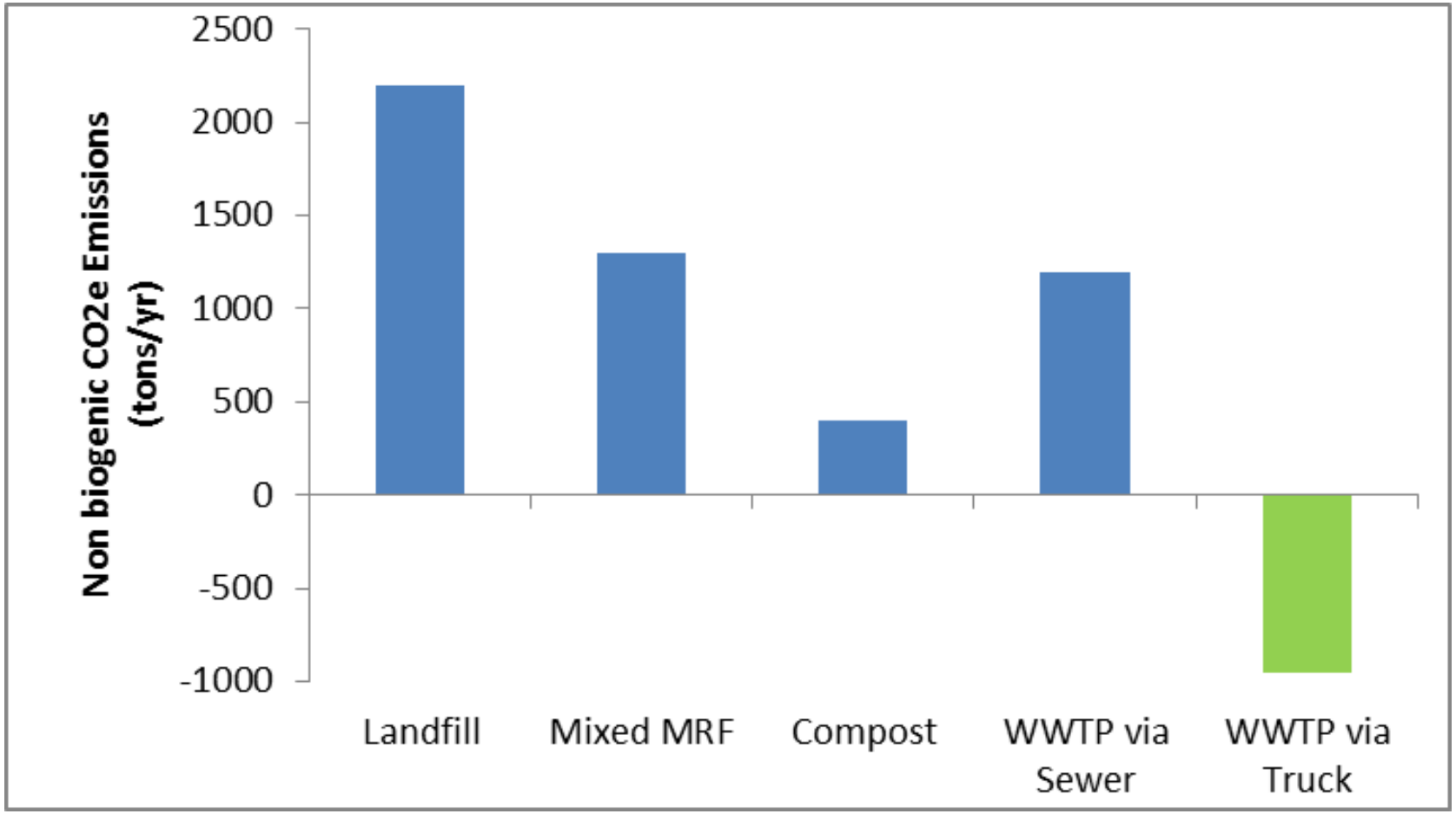


Why food waste at WWTPs?

- Financial win-win
- Diverts high strength organics from land-fill, soil injection or sewers
- Existing, decentralised infrastructure
- High on-site energy demand
- Maximise resource recovery
  - Renewable energy generation
  - 100% re-use of biosolids
- Lowest carbon emissions

Comparison of alternatives to landfill

Carbon emissions



Water Environment Research Foundation (WERF), 2012

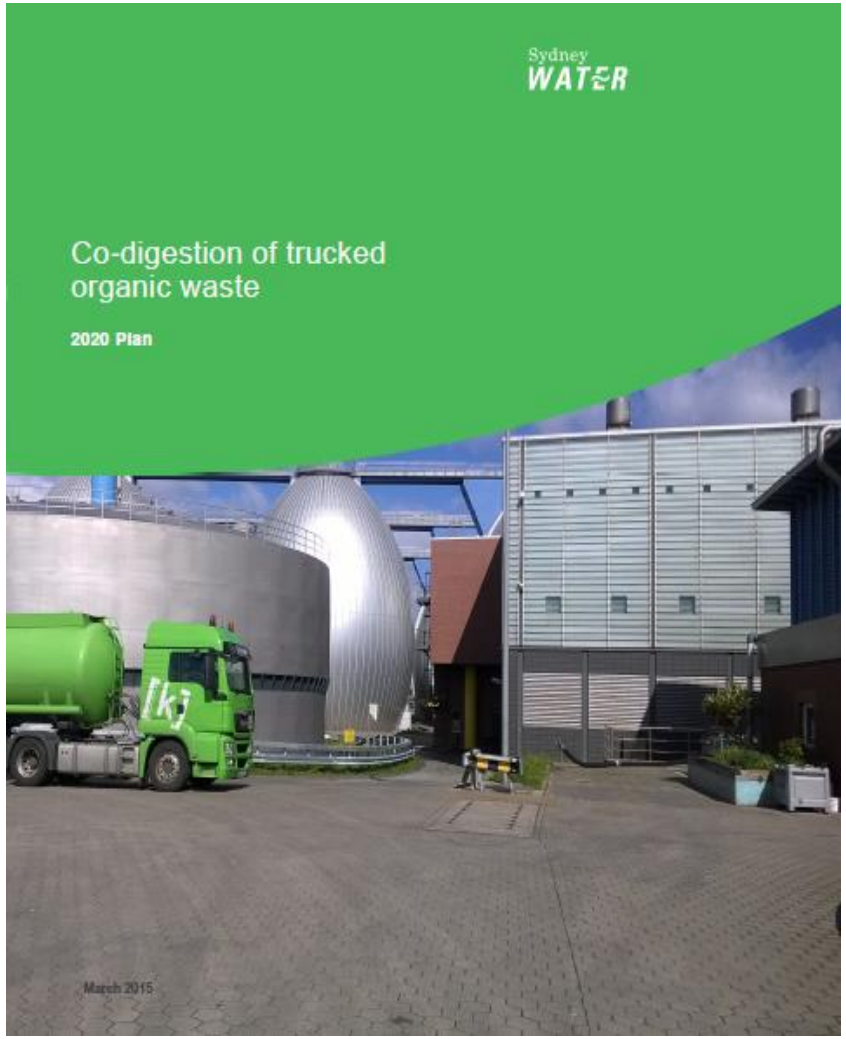
Challenges and next steps

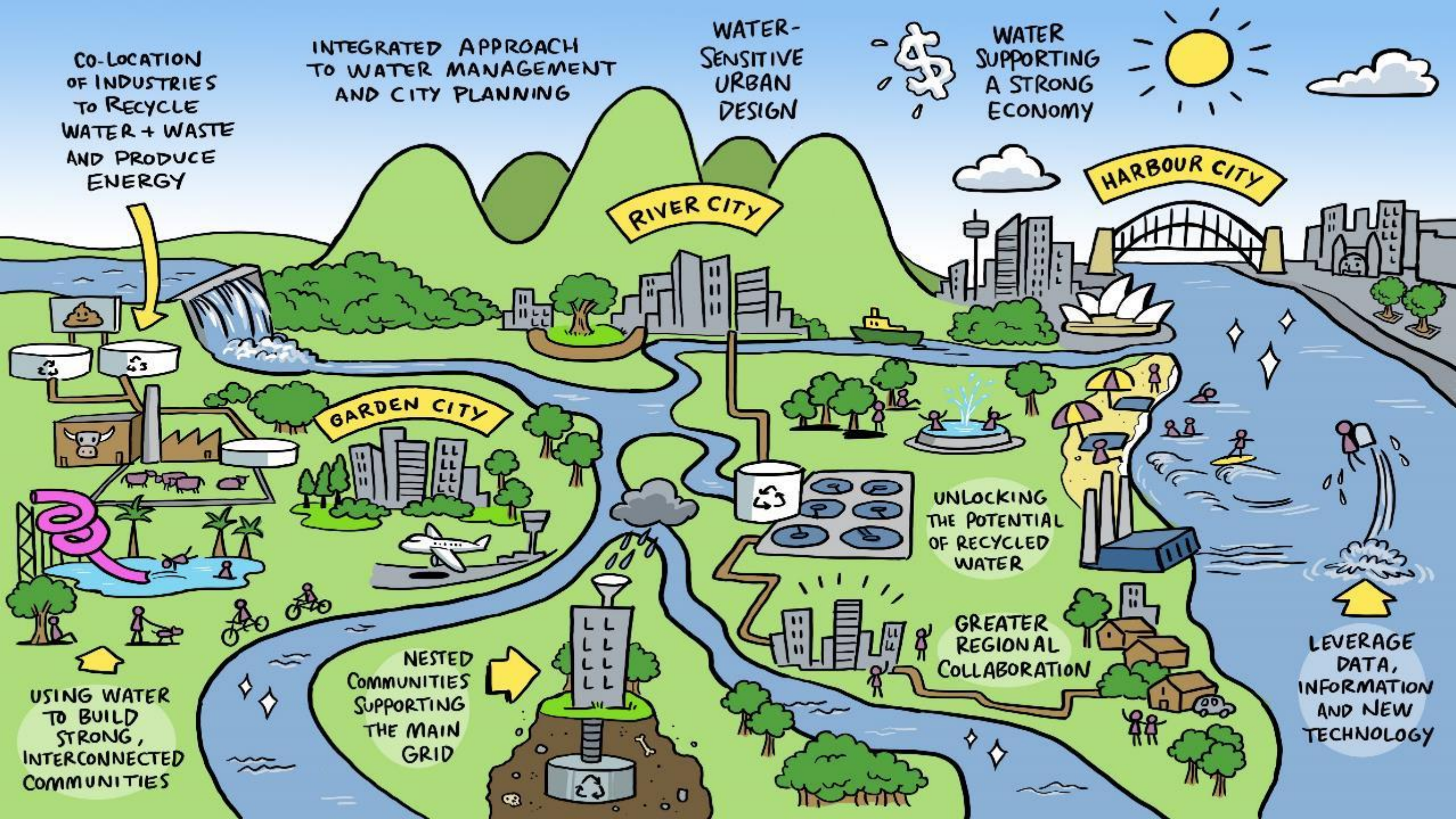
Challenges

- Removing the historical silos between the solid waste and wastewater sectors
- Further engagement and partnerships
  - city planning, waste operators, local government, others
- Source control
- Combining regulated and unregulated businesses

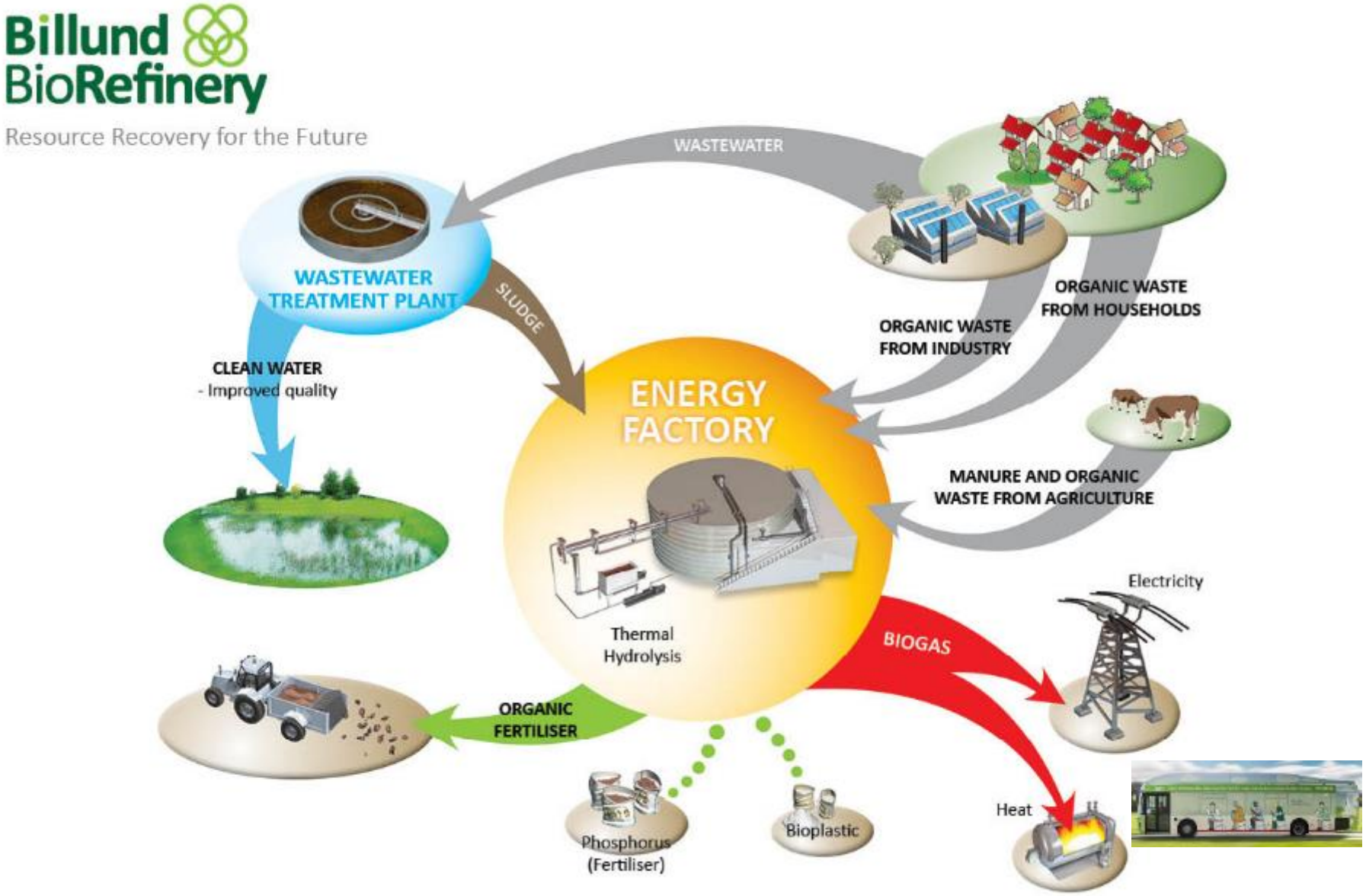
Next steps

- Continue building our knowledge & experience
- Identify new opportunities and integrate into our planning
- Assess potential business models




CO-LOCATION OF INDUSTRIES TO RECYCLE WATER + WASTE AND PRODUCE ENERGY
INTEGRATED APPROACH TO WATER MANAGEMENT AND CITY PLANNING
WATER-SENSITIVE URBAN DESIGN
WATER SUPPORTING A STRONG ECONOMY
RIVER CITY
HARBOUR CITY
GARDEN CITY
UNLOCKING THE POTENTIAL OF RECYCLED WATER
GREATER REGIONAL COLLABORATION
LEVERAGE DATA, INFORMATION AND NEW TECHNOLOGY
NESTED COMMUNITIES SUPPORTING THE MAIN GRID
USING WATER TO BUILD STRONG, INTERCONNECTED COMMUNITIES

The plant of the future?



Questions?

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