



Western Parkland City Authority



# Circular solutions: The construction sector in focus.

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# Western Parkland City Authority: Driving economic growth across the region



**The Western Parkland City** is a rapidly growing area of Sydney, encompassing the eight local government areas of:

Blue Mountains, Camden, Campbelltown, Fairfield, Hawkesbury, Liverpool, Penrith and Wollondilly.

**Western Parkland City Authority (WPCA)** has a number of roles including:

- Designing the new city of Bradfield in the Western Sydney Aerotropolis
- Attracting new businesses to the region
- Supporting existing businesses to grow, innovate and adopt sustainable practices

# 1

## Growth underway in the Western Parkland City

# The Western Parkland City: One of the fastest-growing regions in Australia



The Western Parkland City will account for 20% of NSW's population growth by 2036, with a forecast **population of 1.4 million people**.



**Major residential development** is occurring across the region, with 52,681 new residential dwellings built between 2016 to 2021 (the majority being separate houses).



Infrastructure is being constructed across the region to enable connectivity and liveability, including the **airport, roads, metro, intermodals, hospitals, town centres** and more.





# Western Sydney Aerotropolis: Building the new city of Bradfield



Bradfield City Centre, 115-hectare development



First Building – Advanced Manufacturing Research Centre

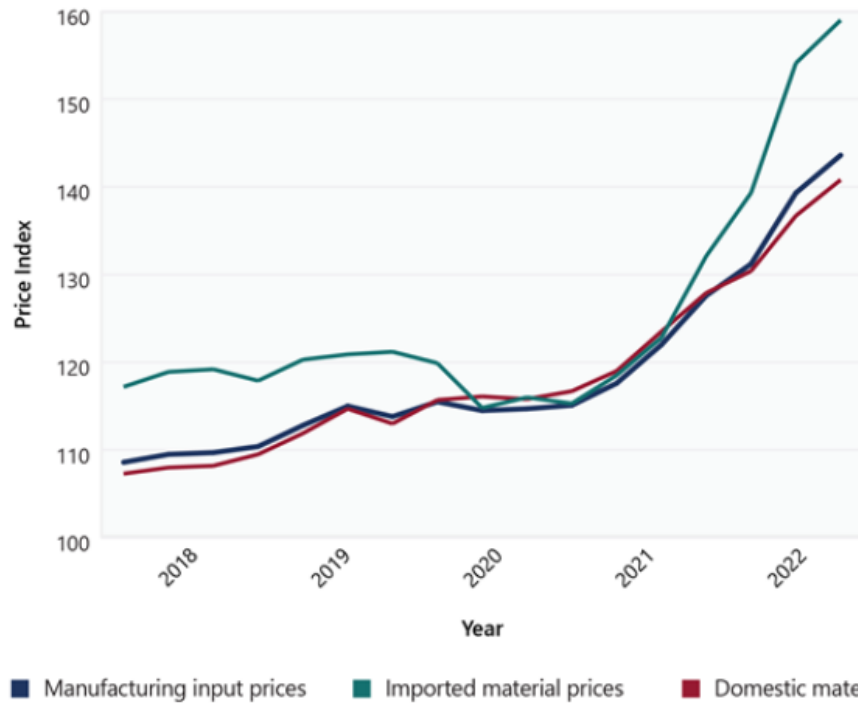
# 2

Factors driving the need to procure locally, use less materials, and re-use precious resources.

# External factors driving local procurement and circularity: Supply chain disruptions and cost increases

## Manufacturing input and material prices

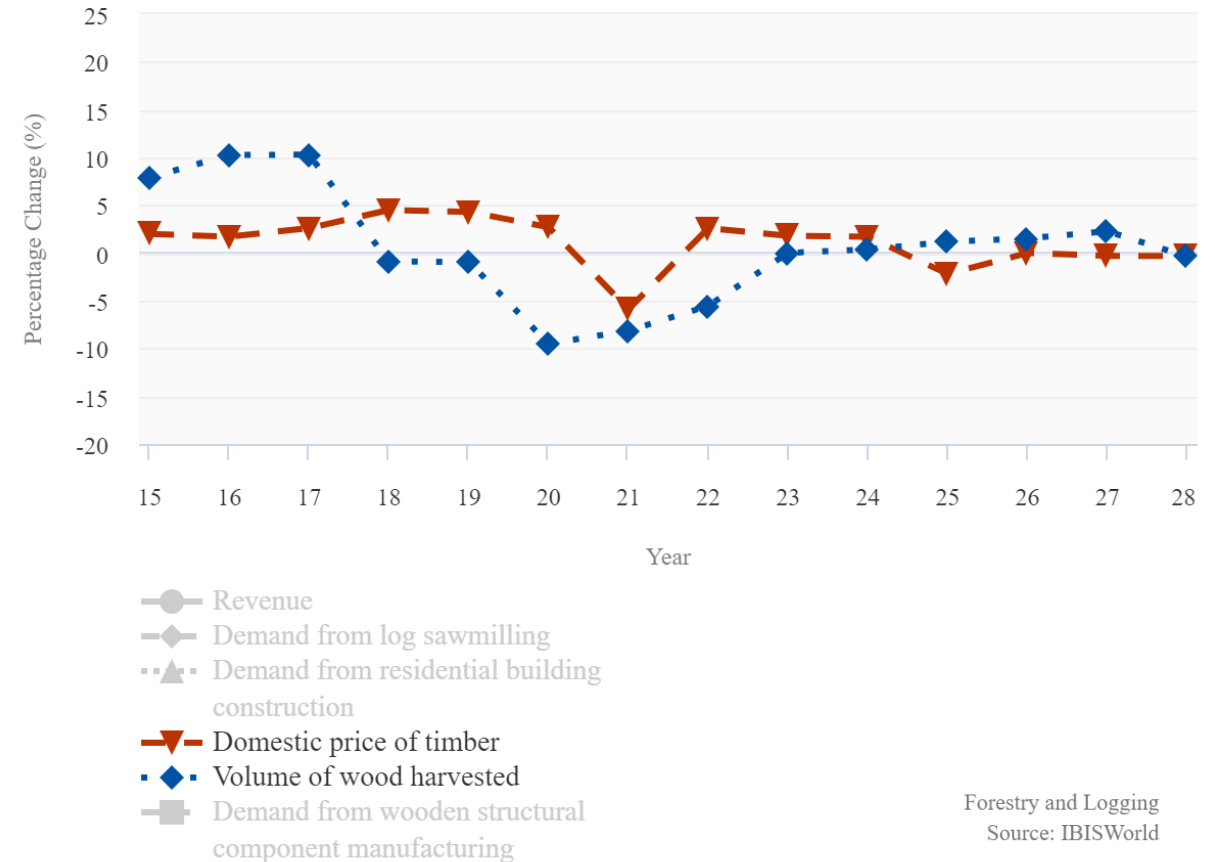
The rising price of imported materials is driving up production material costs.



SOURCE: ABS, Producer Price Index, Australia, June 2022



## Key External Drivers 2015–2028



Forestry and Logging  
Source: IBISWorld



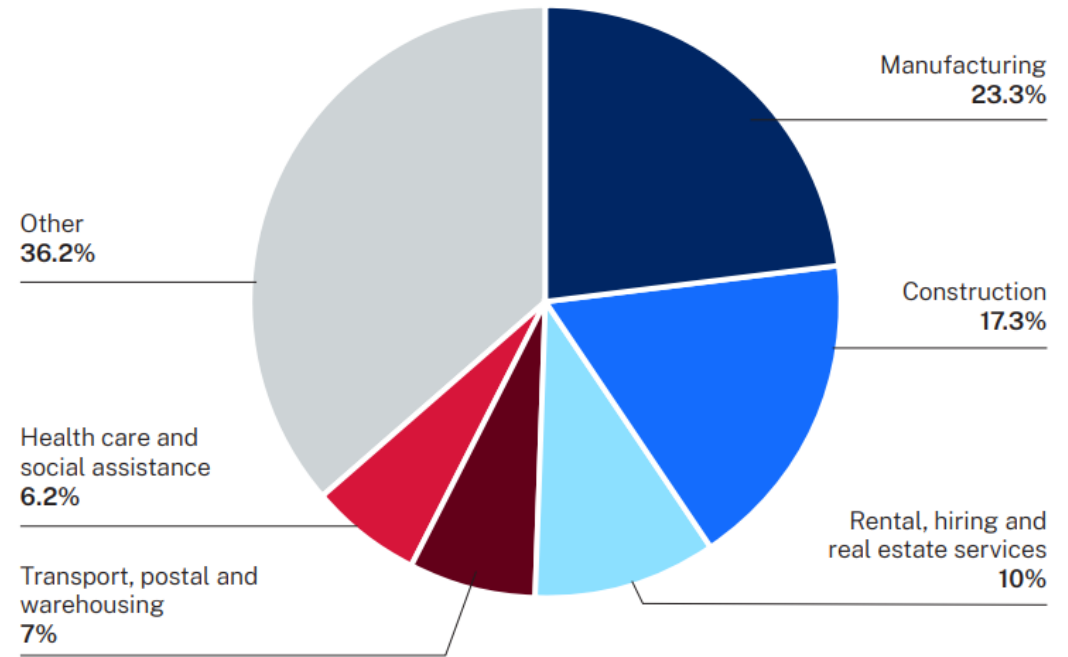
# Localised supply chains: Access to a strong existing industrial base

Western Parkland City is home to a **strong industrial base**, with major corporations and innovative companies headquartered in the region.

**Manufacturing** is the largest industry, generating an estimated \$30.4 billion total gross revenue in 2021 (23.3% of the region's total).

In 2021, the **construction industry** accounted for 17.3% of total gross revenue, and **transport, postal and warehousing** accounted for 7%.

Major industries by gross revenue generated (output), 2021

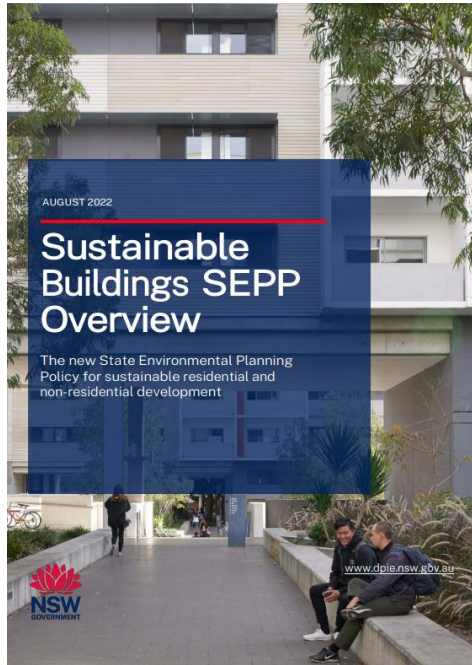


Source: 2021 ABS Census data



# Other factors driving local procurement and circularity: Government mandates and preferences

## Embodied emission measurement and reporting

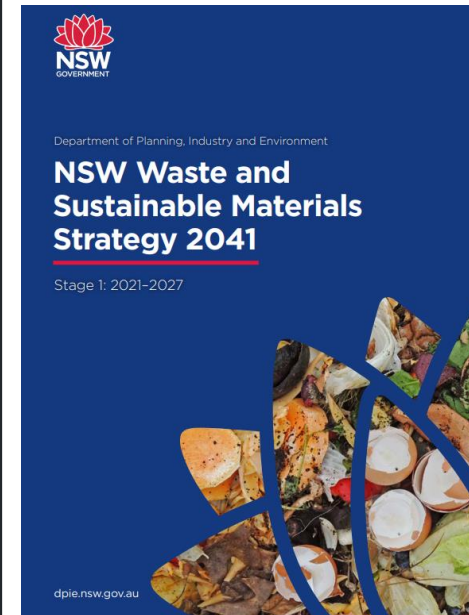


The Sustainable Buildings State Environmental Planning Policy (SEPP) encourages the design and delivery of more sustainable buildings across NSW.

New provisions for non-residential development include **embodied emission measurement and reporting for all developments from October 2023**.

<https://www.planning.nsw.gov.au/policy-and-legislation/buildings/sustainable-buildings-sepp>

## Government agencies preferring recycled content



Key reform: Having government agencies prefer recycled content.

NSW Government will publish:

- **A directory of recycled material suppliers**
- A register of upcoming government infrastructure and construction projects that will procure recycled material.

<https://www.dpie.nsw.gov.au/our-work/environment-energy-and-science/waste-and-sustainable-materials-strategy>



# How can businesses move to more circular solutions?

## Circular economy in the built environment



### Design out waste and pollution

- Design for longevity
- Design buildings to be adaptable for multiple uses
- Minimise harm to human health and the environment



### Keep products and materials in use

- Select products with re-used or recycled components
- Repurpose existing assets and materials on site
- Use tools to promote end-of-life repurposing



### Regenerate natural systems

- Reduce the need to extract virgin materials to preserve natural areas

# 3





Keeping products and materials in use within the Western Parkland City



## The Why:

# Data has the potential to both catalyse and support Circular Economy initiatives

### Solution users:

Solution user	Goal	Pain points
NSW Government (DPE, WPCA, RGDC)* 	I want to quantify the benefits of circular economy investments to support planning, decision making and benefit realisation	<ul style="list-style-type: none"> <li>Attracting the right industrial tenants</li> <li>Promoting synergy between business-suitability assessments</li> <li>Understanding the economic benefits</li> <li>Managing and measuring circularity performance</li> </ul>
Businesses 	I want to access, track and share waste and consumption data to understand and plan circular economy activities for my business	<ul style="list-style-type: none"> <li>Understanding business opportunities in CE</li> <li>Understanding the economic benefits of more efficient resource use and designing out waste</li> <li>Managing and measuring circularity performance</li> <li>Lack of data on available resource streams</li> </ul>
Utilities 	I want to access information on waste availability to inform waste-to-energy initiatives, including waste water recycling and bioenergy	<ul style="list-style-type: none"> <li>Understanding innovation opportunities through waste requires data on waste and resource availability</li> <li>Managing and measuring circularity performance through technology/data</li> <li>Incentive costs and benefits to participating in CE initiatives</li> </ul>
Local Councils 	I want to adopt smart asset and waste management principles informed by meaningful and up to date data sources	<ul style="list-style-type: none"> <li>Recognising opportunities to improve the asset management and disposal lifecycle</li> <li>Lack of data on consistency of supply and timing of available resource streams</li> <li>Lack of clarity on role in waste management (collect, transport, store)</li> </ul>

\* DPE –Department of Planning and environment WPCA –Western Parkland City Authority  
RGDC –Regional Growth Development Corporation

With NSW Government policy experts, we identified goals and pain points for key players in the circular economy.

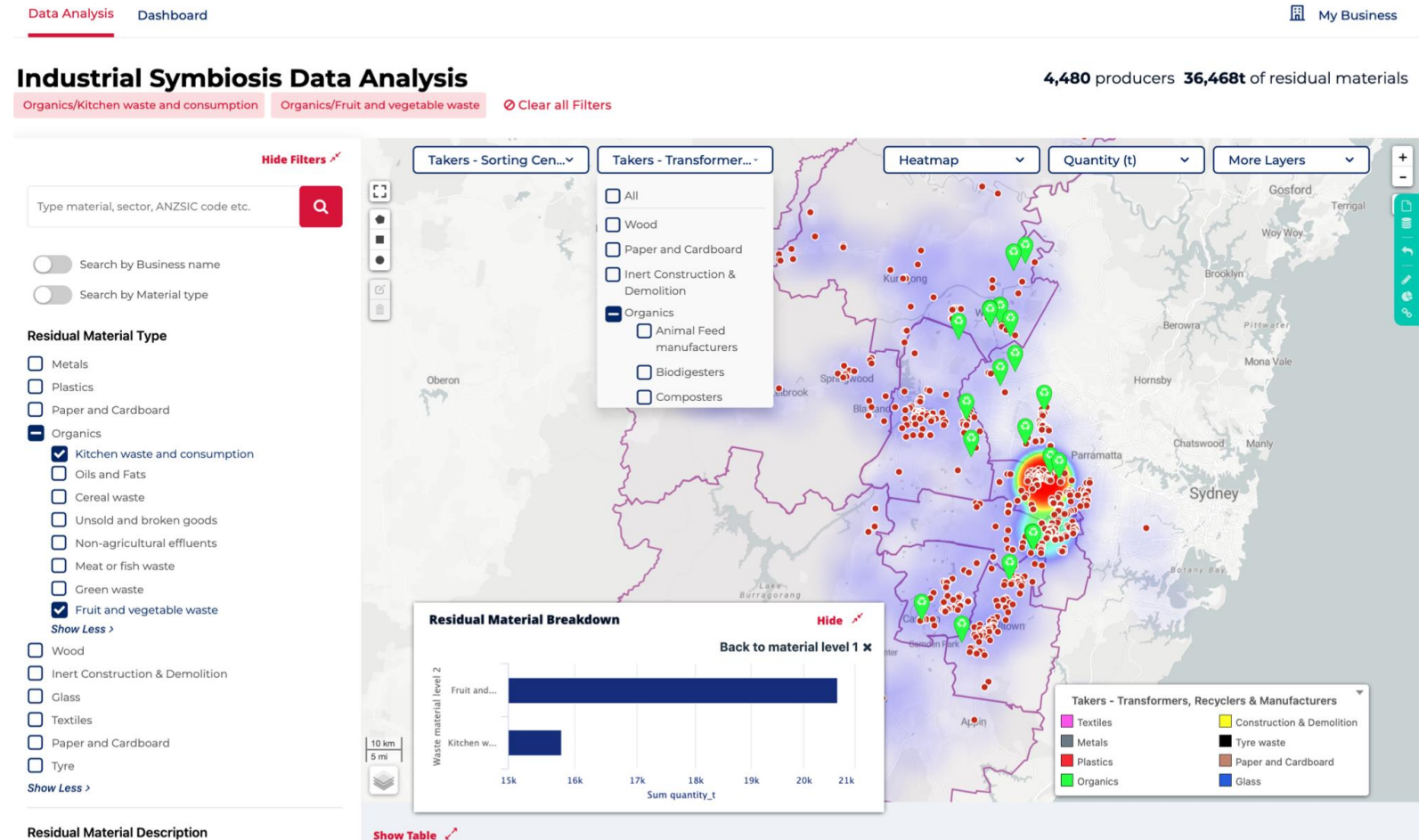
These identified a common theme: stakeholders need **data** mapping waste volumes, material flows, and gaps or dead-ends in the material lifecycle at precinct level.

# Circular Economy Platform: Policymakers and planners will be able to visualise, manipulate and export



## Platform functions:

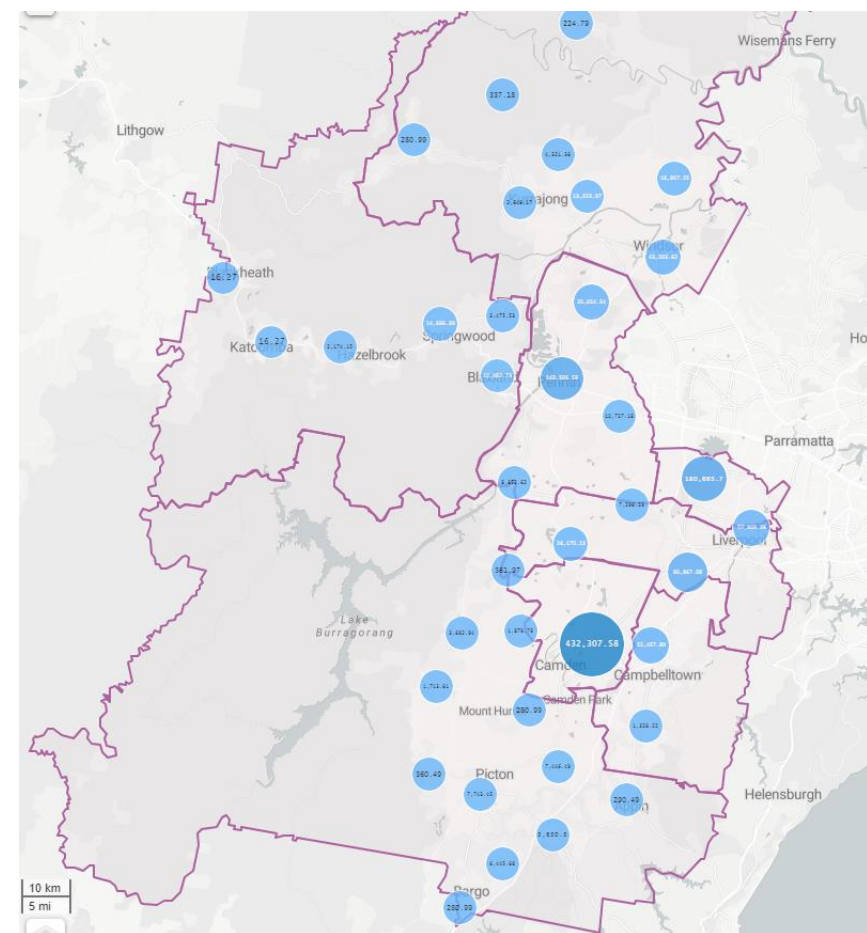
- Filter waste / residual material producers by material type and sub-type
- Overlay potential Takers
- Slice and dice data based on location (e.g. suburb), industry class, material type
- Analyse information using map view and dashboard view (map+charts)
- Export selected data
- Overlay relevant planning layers (e.g zoning, land parcels, roads, utilities networks, satellite view etc.)
- Segregate data for different user profiles (e.g. Government users vs. External)
- See key material categories mapped to the BinTrim classification (35 material types)



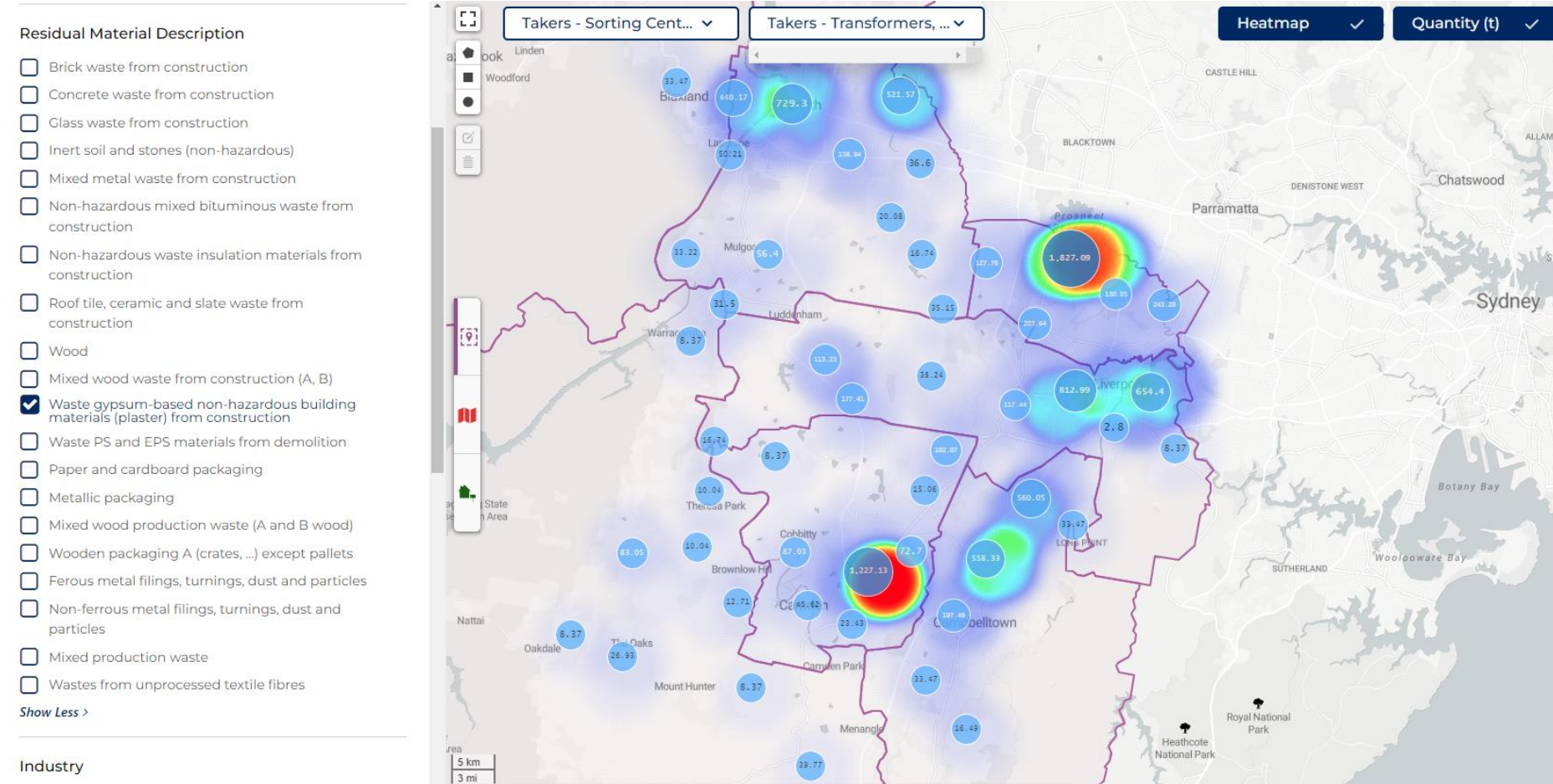


# Circular Economy data portal for the Western Parkland City: Materials generated by construction industry

Material type	Tonnes p/a
Inert soil and stones (non-hazardous)	933,786
Concrete waste	106,259
Non-hazardous mixed bituminous waste	55,428
Wood	14,766
Mixed wood waste	14,678
Gypsum-based non-hazardous building materials (plaster)	12,058
Mixed metal waste	11,642
PS and EPS materials from demolition	11,455
Brick waste	10,032
Roof tile, ceramic and slate waste	10,032
Non-hazardous waste insulation materials	1,146
Mixed wood production waste	645
Glass waste from construction	524



# Looking at where residual material is generated: Gypsum-based materials



Gypsum-based non-hazardous building materials (plaster) from construction:  
12,058 tonnes per annum

# Circular Economy data portal for the Western Parkland City: Plastic material residue produced

 Search by Business name

 Search by Material type

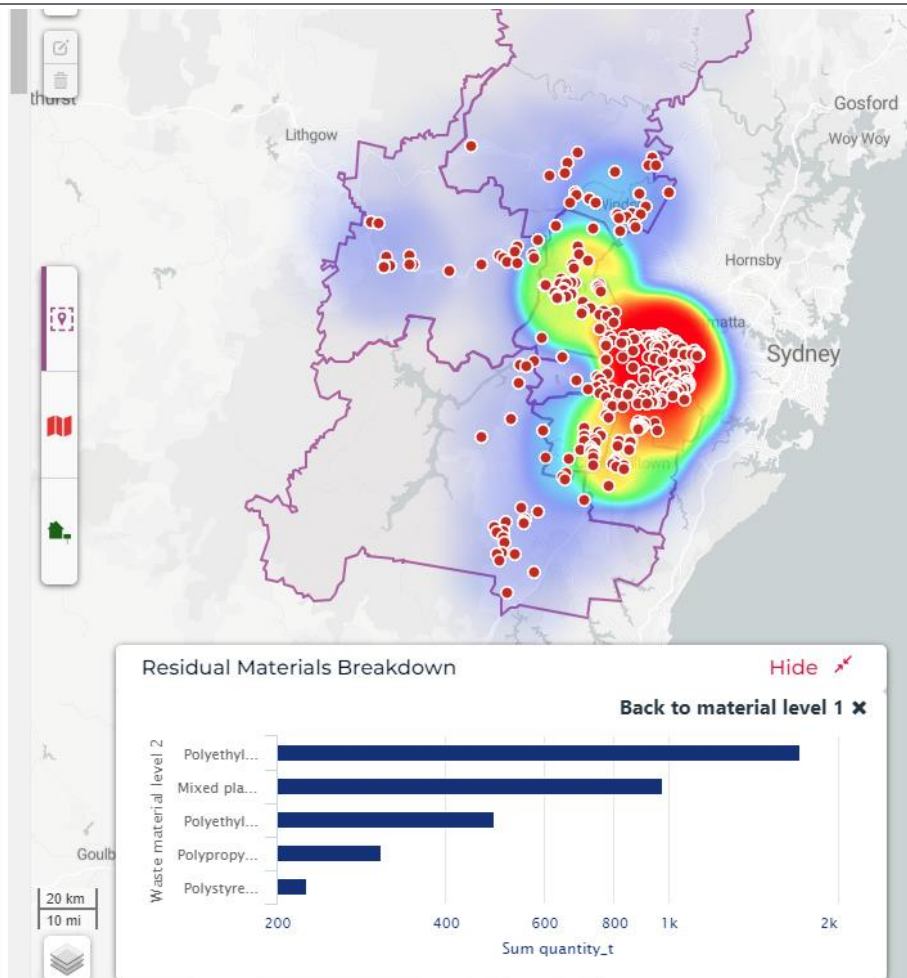
## Residual Material Type

- Plastics
  - Polyethylene (PE)
  - Polystyrene (PS)
  - Polypropylene (PP)
  - Polyethylene terephthalate (PET)
  - Mixed plastics
- Glass
- Inert Construction & Demolition
- Wood
- Paper and Cardboard
- Metals

[Show More >](#)

## Residual Material Description

- Plastic packaging in LDPE (soft like packaging films, packs, packets) ⓘ
- Industrial plastic packaging in HDPE (box, pallets, IBC, buckets)
- Plastic packaging in PP (buckets, big-bags)
- Plastic packaging in PET (bottles)
- Plastic packaging in EPS (fish boxes, cushioning foam, health boxes, ...)



## Plastics:

2,797 producers / 3,714 tonnes p/a

## Types:

- Polyethylene (PE) (1,718t)
- Mixed plastics (974t)
- Polyethylene terephthalate (PET) (488t)
- Polypropylene (PP) (366t)
- Polystyrene (PS) (226t)



# 4

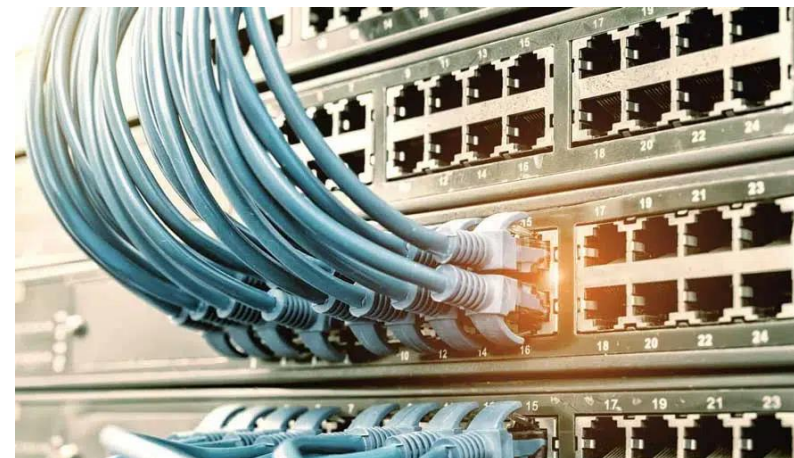
## Examples of industrial symbiosis and material re-use

# Keeping materials in use at their highest value: e-waste into landscaping product

Resource recovery business Shred-X decommissioned a major data centre and securely disposed of **600 racks of electronic equipment**.

Computers, cables and server systems were transported to Warragamba (Wollondilly LGA) where they were sorted to be re-used or recycled.

The **plastic component (ABS thermoplastic polymer)** was **extracted and used to manufacture eWood**. This product, manufactured from electronic waste, is being used for garden edging and privacy barriers across Western Sydney.



# Keeping materials in use at their highest value: Timber pallets into particleboard

reDirect Recycling **repurpose and process untreated wood products** (such as timber pallets) in their Ingleburn and St Marys facilities.

Processed wood is transported to the Borg site in Oberon to be **manufactured into particleboard**.

A large number of joinery businesses in the Western Parkland City use the recycled particleboard in **kitchen cabinet making**.





# Keeping materials in use at their highest value: Businesses that support repair and re-use



**Circonomy** have a number of mobile repair teams who go into warehouses to repair and clean goods. They also repair office furniture for re-use or re-sale.



**Egans Asset Management** refurbish, sell, donate and recycle Furniture, Fittings and Equipment. The Wise Office Furniture Program sells second hand office furniture and workstations (Marrickville).



**Green Furniture Hub** redistributes and recycles surplus furniture such as office chairs, pedestals and fridges (Glendenning).

# Circular solutions in building and construction.

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