

# Circular Economy Think Tanks Series – Project Summary



# The Think Tank Series

## About this project

The Southern Sydney Regional Organisation of Councils (SSROC), NSW Circular and the University of New South Wales Sustainable Materials Research and Technology Centre (SMaRT Centre) collaborated to run a series of three Circular Economy Think Tanks during 2019/20.

The project objectives for SSROC were to partner with a research centre based in the region, to investigate which materials could be recovered from the domestic general waste and recycling streams and be returned to the productive economy; and to collaborate with other organisations on developing beneficial circular economy opportunities for this region, by remanufacturing or reforming materials from the domestic waste stream.

The series brought together stakeholders from SSROC councils, UNSW, state government and the design, manufacturing, resource and charity sectors to establish collaborative ways of working and to progress our understanding of how to transition to a circular economy with a focus on specific materials. It was funded by the NSW Environment Protection Authority's 'Waste Less, Recycle More' initiative under the waste levy.



Recycled plastic granules. Source: iStock by Aykuterd

The project included:

- 1. Think Tank One** - Introduction to the series and material pathways from the recycling bin: Held on 29 August 2019, this Think Tank was focused on understanding material pathways and key barriers and opportunities to recover more materials from the kerbside recycling bin.
- 2. Think Tank Two** - Textiles: The second think tank held on 26 November 2019 was focused on textiles recovery. These first two think tanks were face-to-face events and the key findings are captured in reports for each think tank.
- 3. Think Tank Three** – Plastic remanufacturing: Due to COVID-19 restrictions on face-to-face events, the third think tank consisted of one-on-one interviews rather than a collaborative workshop. The findings from this research were compiled in *Research On Recovering More Kerbside Plastics*. A webinar was also held on 20 August 2020 to share key findings from the report and to bring stakeholders together to discuss barriers, opportunities and next steps.

## Outcomes

- With 36 attendees from 28 different organisations, this session brought together experts from design, engineering, manufacturing, government and research fields.
- Participants mapped the pathways of material collected in the household (kerbside) recycling bin, including identifying the key stakeholders and their goals, what is working well and what needs improvement.
- This information was then used by participants to work in cross-sectoral teams to identify opportunity areas to increase the circularity of materials. These ideas were then voted on by participants. The top opportunities included:
  - Government-led collaboration with research centres, businesses, start-ups and manufacturers to develop trials to increase material recovery options.
  - Extending the NSW Container Deposit Scheme to include a wider range of containers and increase collection points at all shopping centres where possible.
  - Mandated recycled content in packaging products and in government procurement policies.
  - Phasing out difficult to recycle materials through tax incentives or punitive measures.
- More details are captured in the [report](#) for this think tank.

## Learnings:

- This first think tank served as an introduction to the series and helped establish relationships with key stakeholders to get their input on designing the textiles and plastic remanufacturing think tanks. It highlighted to the project team that we needed to focus on a narrower range of materials for the next think tanks and try to engage more manufacturers.

# Think Tank One: Material Pathways

*"The event was high energy and brought together a lot of stakeholders."*

*"Liked the collaborative, practical thinking."*



# Think Tank Two: Textiles

## Outcomes

- 46 participants from 27 different organisations attended, including representatives from government, NSW Circular, SMaRT Centre, the charity sector, universities and peak bodies from the textile and product stewardship sectors.
- Participants mapped the pathways for focus materials, including unwanted clothing and manchester, carpets, latex mattresses, flock and mixed fibres. Participants also identifying the key stakeholders and their goals, what is working well and what needs improvement.
- 15 great ideas were presented at the culmination of the think tank ranging from finding solutions to the lack of latex recycling, to certification and product stewardship schemes for different types of textiles, low- and high-tech collection and sorting systems to improve recoverability, and the need for a shared textiles waste and recovery data platform.
- 10 participating organisations reported that they had followed up on partnership opportunities after the think tank.
- All participants rated the session as either worthwhile or very worthwhile.
- More details are captured in the [report](#) for this Think Tank.

## Learnings:

An incubation session between the three partnering organisations held after the think tank identified that some of the opportunities raised require a multi-sector approach that would be better led by industry rather than local government (this included further research into latex recycling and carpet recycling and improving sorting technologies for separating fibres).

Currently, there is limited onshore processing or remanufacturing of recycled textiles. Opportunities where local government could add value included support for the establishment of a textiles network (being investigated by Australian Circular Textiles Association (ACTA), Sydney ROCs (SSROC, NSROC and WSROC) and analysis of textile waste data gaps; and through preferencing recycled textile products in procurement. SMaRT Centre and NSW Circular are also investigating different product applications for recycled textiles and glass.

*“Very informative, a great way to get an overview of existing opportunities and the future.”*

*“Brings professionals together, brings to light barriers/opportunities, expands thinking.”*

*“It increased my understanding of the challenges with other types of textiles like carpets.”*



# Think Tank Three: Plastic Remanufacturing



## Outcomes

### Research on Recovering More Kerbside Plastics

- Exploring how to recover more polypropylene (PP), high-density polyethylene (HDPE), polystyrene (PS) and expanded polystyrene (EPS) from the domestic recycling stream and return it to the productive economy.
- Representatives from 31 different organisations involved in collecting and recovering plastic packaging were interviewed, including plastic manufacturers and recyclers, material recovery facilities (MRFs), local and state government and industry associations.
- This research identified a number of opportunities for councils and industry to increase recovery through preferencing recycled plastic products (made from Australian feedstock) and collaborating with the supply chain on creating end markets for coloured PP and HDPE. The research confirmed there is high demand for PP from manufacturers with opportunities for councils to recover source-separated PP from pot plant containers (councils with nurseries), bread and milk crates and potential for a trial to recover more PP from kerbside collections. More opportunities are captured in the research [report](#).

### Plastic remanufacturing webinar – 20 August 2020:

Over 60 people from 38 different organisations joined a webinar to share the key findings from the research on recovering more kerbside plastics. The webinar also included a panel discussion on some of the barriers and opportunities raised in the research.

## Learnings:

There is considerable interest from the waste and manufacturing sector in increasing recovery of kerbside plastics. A number of companies have expressed interest in using kerbside recycled PP and HDPE plastics if they are clean and there is increased procurement demand for their recycled plastic products. A few companies interviewed expressed interest in PS and EPS collected at council community recycling centres (CRCs) and drop-off points if collections could be aggregated to offset logistical costs.

Organisations interviewed saw a role for local government to facilitate collaboration between organisations in the supply chain to increase the recovery of plastics and understanding of the needs of each part of the supply chain. A needs analysis was shared at the webinar to action this (see the next page).

## Learnings:

# Understanding the needs of each part of the kerbside plastic supply chain

### Collection



#### Councils need:

- Data
- ↓ contamination
- Recycling campaigns
- Packaging designed for recyclability
- Buy back products made from kerbside recycling.

### Sorting



#### Sorting facilities need:

- ↓ contamination
- No PVC, PS & EPS
- Recycling campaigns
- Packaging designed for recyclability
- Shorter planning approval processes.

### Plastics recovery



#### Plastic recyclers and manufacturers need:

- Clean feedstock
- No PVC
- Prefer single polymer streams
- Consistent quality
- ↓ price of recycled plastic
- ↑ purchasing demand

# Evaluation

## What did we learn about opportunities to close the loop on specific materials in the domestic waste stream?

- **Textiles** – There is still limited onshore processing or remanufacturing capacity at scale. Focus is on establishing a network for textiles, advocacy for product stewardship schemes and addressing major data gaps in textiles waste and recycling.
- **Textiles and glass** - UNSW SMaRT Centre and NSW Circular are looking at different product applications for recycled textiles and glass, including tiles and caesarstone products.
- **Polypropylene (PP)** - Containers and crates from council nurseries and depots can be recycled into products that councils can buy back. There is also potential to conduct a trial to recover more PP from kerbside collections if councils can work with MRFs or secondary processors to get it to manufacturing standards.
- **High-Density Polyethylene (HDPE)** – There are a number of landscaping and construction products made from HDPE that councils could preference in procurement to help create a pull market for these materials.
- **Soft plastics** – Further investigation is needed on trialling aggregated collection if procurement of recycled plastic products increases.
- **PS and EPS** – Further investigation is needed on trialling aggregated collection from recycling centres if logistical barriers can be overcome.



Kerbside recycling bin. Source: WSROC

These opportunities will be investigated more in 20/21 through SSROC's Procure Recycled project.

# Evaluation

## Which recovered materials could councils procure to help create a ‘pull market’?

Councils and other government agencies can help create a pull market by preferencing recycled plastic products (made from Australian feedstock) in a number of applications where timber or virgin plastic would be used. Examples identified in this project include:

- Stormwater and drainage pipes made from 100% recycled HDPE.
- Noise barriers/walls can be made from a mixture of recycled plastics.
- Furniture such as stadium seating, outdoor pool seating, tables and office furniture.
- Garbage bins (already contain recycled content, further research is needed to see if the amount can be increased).
- Traffic control equipment such as parking curbs, safety netting, witches hats, bollards etc.
- Poles, base plates (under poles) and edging in playground equipment.
- Decking, boardwalks, retaining walls, fencing, garden edging and a range of landscaping products.
- Signage.
- Worm farms and compost bins.
- Dog agility equipment.
- Soft plastic pallets in concrete underlay.
- Office and community centre fit-outs.

**Next Steps:** SSROC councils have already signed a commitment to prioritise recycled content in procurement. SSROC’s *Procure Recycled* project in 2021-22 will work with civil engineers and facilities managers to increase their awareness and understanding of recycled HDPE plastic piping, recycled plastic infrastructure, landscaping and furniture products and provide training on how to specify them in council projects at the design stage.



100% Post consumer HDPE stormwater pipes.  
Source: The Green Pipe



Shade structures with recycled plastic.  
Source: Integrated Recycling



# Evaluation

## What collaboration was achieved?

**Overall:** A total of 93 organisations were involved in this project either through the think tank sessions, the research conducted and/or the webinar over the one-year period. Some of these organisations gave time and resources to help co-design or speak at the think tank sessions or the webinar including the Australian Circular Textiles Association (ACTA), Charitable Recycling Australia, Australian Packaging Covenant Organisation (APCO), NSW Department of Planning, Industry and Environment (DPIE), Plastics Industry Manufacturers of Australia (PIMA) and Waste Contractors and Recyclers Association of NSW.

**Project team:** This project was a partnership between SSROC, UNSW SMaRT Centre and NSW Circular, who collaborated closely to deliver the think tank sessions and research. A number of learnings resulted from this collaboration, including:

- NSW Circular and UNSW SMaRT Centre reported a deeper understanding of the local government sector and the challenges in recovering materials from the domestic waste stream.
- SSROC reported increased knowledge of the manufacturing sector particularly the plastics manufacturing sector from working alongside technical experts at the SMaRT Centre to deliver this project.
- All three partners contributed more in-kind staff time to manage this project than anticipated, particularly to deliver the events which were labour-intensive to organise. This also reflected in the budget where a higher proportion of the budget was spent on event management than on technical research. In retrospect it would have been better to reduce the number of engagements to two rather than three sessions.
- This project helped raise awareness of all three partners' work on circular economy initiatives and has enabled further discussions with the different sectors engaged in the project.

## Next Steps

SSROC is further investigating the opportunities identified for recycled plastics in the next phase of its Procure Recycled project. SSROC is also working with WSROC and NSROC on developing a regional circular textiles action plan that identifies opportunities for councils to reduce textile waste.

UNSW SMaRT Centre is working on a number of initiatives to remanufacture recycled glass, textiles, e-waste, aluminum and steel back into valuable products.

NSW Circular is working on a number of collaborative projects to progress circular economy outcomes. For more information visit: [www.nswcircular.org](http://www.nswcircular.org)



Think Tank Two – Textiles. Source: SSROC

***This project is a NSW Environment  
Protection Authority, Waste Less  
Recycle More initiative funded from  
the waste levy.***

