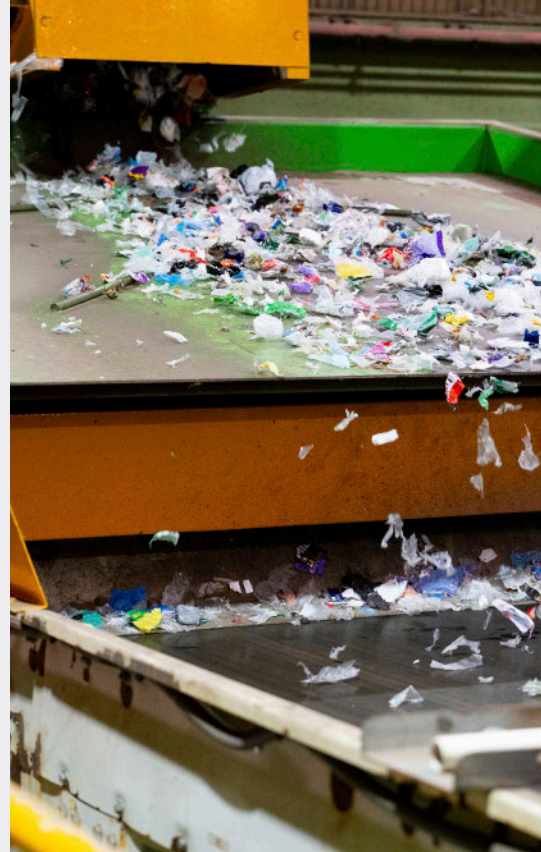




iQRenew's machinery transforms post-consumer soft plastics into pellets, creating valuable materials that can be used by manufacturers to make new products. Credit: iQRenew

The return of soft plastics recycling

Australia's soft plastics recycling system is on its way back, but its success depends on turning recycled material into real products.

In late 2022, soft plastic recycling in Australia suddenly stopped when the national REDcycle program was suspended, leaving around 11,000 tonnes of plastic bags and wrappers stockpiled in warehouses across the country. Three years on, it is slowly being rebuilt, with trial collections underway and new processing facilities beginning to scale up.

One such facility is operated by iQRenew near Taree on the New South Wales mid-north coast. "We were working in the soft plastic recycling space before the REDcycle collapse and developing the missing piece of infrastructure that didn't exist," says Annika Stott, group project manager at iQRenew.

The company drew on its experience processing glass and kerbside recyclables as it expanded into soft plastics. It had already seen the journey from waste to product firsthand: recycled glass is crushed into sand used to make crystalline silica-free benchtops, pool filtration systems and road construction, while other kerbside recyclables such as cardboard and rigid plastics are sent to specialised processors to become new packaging, building materials

and containers.

After several years of trials and development, iQRenew opened its SPEC (Soft Plastic Engineered Commodity) facility, one of the first large-scale plants in Australia designed to process post-consumer soft plastics. One of its first tasks was dealing with the stockpiled REDcycle material. "It's been a fantastic test bed for us," says Annika. "It's given us the opportunity over the last few years to test and learn and refine our processes."

The facility can process around 14,000 tonnes of soft plastics each year, with a further \$9.1 million in government funding to expand capacity to around 24,000 tonnes per year.

Soft plastic trials

The collapse of REDcycle exposed that while soft plastics were being collected, there was nowhere to send them at scale. Industry groups, including the Soft Plastics Taskforce, formed by major supermarkets, and Soft Plastics Stewardship Australia (SPSA), are taking a more cautious approach as the system is rebuilt.



While some households stockpiled bags and wrappers while waiting for a recycling system to return, a few smaller programs helped fill the gap in some locations, such as SPSA council pilots or TerraCycle programs, where households pay to send materials for recycling.

Industry-led soft-plastic collections have gradually returned in a limited way. Woolworths has reintroduced drop-off bins at around 500 stores as part of a pilot run by the taskforce, with much of that material now flowing to processors such as iQRenew.

But supermarket bins are not the only option emerging post-REDcycle. What many households want is the simplicity of adding soft plastics to other recycling streams at home, avoiding the need for a special trip.

This is where Curby, a “bag-in-bin” program being trialled in some council areas, comes in. Instead of taking plastics to a supermarket, residents place them in a separate bag inside their yellow-lid recycling bin, where they can be identified and separated at a material recovery facility. Trials are underway in areas including the Central Coast and Lake Macquarie in NSW, and Boroondara and Moonee Valley in Victoria. Similar “bag-in-bin” trials have also been tested in several council areas across NSW, Victoria and South Australia as part of national recycling pilots.

According to Annika, these programs create another pathway for the material households are already collecting. “Residents wrap their soft plastics in a bag with a QR code and it’s tracked,” she says. The bag is then separated at the recycling facility, baled and transported to iQRenew’s soft plastics plant for processing.

From bag to pellet to bag

Once the material arrives, the recycling process begins on the receivable floor. Bales of mixed soft plastics are unloaded and fed onto conveyor belts. “We receive a huge range of different plastics,” says

Annika. “Bread bags, chip packets, cereal liners and mail satchels are all made from different materials, but we’ve set up a system that can optically sort them so we can recover the highest-grade material.”

From there, the plastics move through a series of sorting stages. Magnets remove stray ferrous metal items such as clips from fruit bags, while optical sorting equipment identifies different polymer types. The material is then shredded, washed and dried before being processed into recycled pellets, along with flakes and shredded plastic.

These materials can then be purchased by manufacturers for a range of products including packaging, bins, bottles and construction materials. Remarkably, the journey from bag to pellet takes less than half an hour.

Annika says soft-plastic recycling only works when the entire chain functions, from households collecting the material, to facilities sorting and processing it, to manufacturers turning the recycled pellets into new products. Without manufacturers using the material, the loop cannot close.



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One example of that loop in action is an Australia Post satchel made from recycled household plastics. Developed as part of a circular pilot involving iQRenew, Australia Post and R.M. Williams, the project shows how soft plastics can be successfully turned into flexible film products. "Blowing film

from post-consumer material is really hard," says Annika. "If there are any imperfections, the film can fail and everything has to start again."

The satchels were included with R.M. Williams boots purchased online, and then used by customers to return unwanted clothing to REMONDIS and BlockTexx for recycling. After use, the satchels were returned to iQRenew and processed again to complete the circular system.

But for soft-plastic recycling to scale up, more products like these need to be made from recycled material.

Creating demand for soft plastics

Creating demand for recycled soft plastics is now one of the biggest challenges for the industry. "There's no point processing this material and putting a whole lot of resources into making a resin pellet if there's no strong end market," says Annika.

Recycled soft plastics offer the advantage of stable pricing. Unlike virgin plastics, which are tied to oil markets, recycled material is produced locally from a controlled supply of waste. "The price of plastic fluctuates

globally," says Annika. "But our resin pellets don't really, because they're made onshore and we've got control over the feedstock."

That stability, alongside the significant environmental benefits of keeping plastic out of landfill, could help attract more manufacturers to recycled materials.

Turning waste into products

The opportunities are growing for manufacturers already experimenting with recycled materials, such as Resourceful Living, a small manufacturing company based in Kurri Kurri in New South Wales. They make their own range of tables, chopping boards and even wheel stops, while also working with clients to design and prototype products made from recycled materials.

Co-founders Jess and Geoff Hodge, a materials engineer, began experimenting with recycled plastics in their garage after witnessing the scale of plastic pollution in South-East Asia. "We were backpacking and seeing litter come in with the tides," says Jess. "It made us realise that 'away' doesn't really exist, it just means out of sight."

Resourceful Living collects some waste locally and also sources raw material from iQRenew, including recycled plastic flake, which Jess says is ideal for compression moulding. Using heat and pressure, the material is formed into large panels that can then be cut and shaped into furniture, construction hoarding and other products.

One of Jess' favourite demonstration pieces is a stool made entirely from soft plastics. "It blows people's minds that they can sit on a plastic bag," she says. The stool contains the equivalent of around 1500 plastic bags, cut from panels that use roughly 60 kilograms of plastic. It helps change people's perceptions on plastic recycling. "People can see how cool recycled plastic is when we're not just taking it and putting some sticky tape on it so it can still be a bag."

The panels are proving durable, too. Recently tested to Australian standards for use in construction formwork, they performed differently to plywood in some applications. Under pressure from a large roller, the plastic panel continued to bend, flexing and returning to shape while the plywood eventually suffered some damage.

Some construction companies are using the panels as site hoarding, as they can be reused across multiple projects without swelling, cracking or absorbing paint. "Because it's plastic, graffiti doesn't stick to it," Jess says. "You can just wipe it off."



Annika Stott with iQRenew CEO Danny Gallagher.

Closing the loop

Resourceful Living's products are designed to last for years and to stay in circulation. "Anything that leaves our factory can come back and be recycled again and again," says Jess. The company shreds the material and remoulds it into new products, although after multiple cycles it may be used in less structural applications.

Like Annika, she sees demand as the next step. "When we first started, it felt like we had to convince people to try it," Jess says. "Now we have clients coming to us asking for recycled alternatives."

For Jess, the real success will be in how people think about plastic. "I think we need to change the conversation," she says. "The exciting part shouldn't just be collecting the plastic, it's that it actually gets made into something useful."

If Australia's soft plastics recycling system is to succeed, that shift in thinking may be just as important as the new recycling plants and collection systems being built.

Resources

- Check for Curby in your area: www.curbyit.com
- Check Recycle Mate for recycling options near you: www.recyclamate.com.au
- Find out more about iQRenew www.iqrenew.com and Resourceful Living www.resourcefulliving.com.au 

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Soft plastics: what you can recycle (and what you can't)

What CAN go in soft plastics recycling

If it can be scrunched into a ball, it's usually okay.

- Bread bags (no ties), pasta and rice bags
- Snack wrappers (chips, biscuits, chocolate, ice cream—outer wrappers only)
- Cereal liners (the plastic bag inside the box)
- Fresh and frozen food packaging
- Cling wrap, bubble wrap and plastic liners
- Press-seal reclosable bags
- Plastic carrier bags and old reusable bags
- Produce bags and netting (remove metal clips)
- Magazine and newspaper wrap
- Plastic postage satchels
- Pet food bags (clean), potting mix and compost bags

Most accepted items are soft, flexible plastics labelled 2, 4 or 5

What CAN'T be recycled as soft plastics

- Rigid plastics (meat trays, punnet trays, containers)
- Biodegradable or compostable plastics
- Foil or aluminium (including alfoil)
- Balloons, straws, gloves
- Blister packs (tablets/medication packaging)
- Polystyrene or foam
- PVC or hard plastic pieces
- Adhesive tape
- Pool toys or inflatables

Where to recycle soft plastics

- Supermarkets: Selected Woolworths stores (see www.spsa.au/collection-locations for drop-off points)
- Curby, via a handful of councils, including the Central Coast and Lake Macquarie in NSW and Boroondara and Moonee Valley in Victoria, with some earlier pilots in Newcastle and Tamworth
- SPSA kerbside recycling trials are now transitioning to ongoing collections in some council areas. Check the SPSA website listed above for locations
- Some community recycling hubs and TerraCycle programs, where soft plastics can be dropped off or posted for recycling (sometimes for a fee).

Soft plastics should be clean and dry, and free from food scraps where possible.

Resourceful Living uses recycled soft plastics to produce 100% recycled sheets, furniture, building materials and bespoke products.

