

Integrated Recycling Operations - planning and implementation

COUNCIL NAME

Shoalhaven City
Council

WEB ADDRESS

[shoalhaven.nsw.gov.a
u](http://shoalhaven.nsw.gov.au)

SIZE

4,567 square
kilometres

POPULATION

108,497

Overview

Shoalhaven City Council set a target to divert 90% of all waste from landfill by 2024. Due to a lack of private recycling infrastructure, Shoalhaven are diversifying their own recycling infrastructure at the West Nowra precinct. Council have launched many projects which identify unique solutions to different waste streams, while a Resource Recovery Learning Centre is providing a centralised hub for tours, workshops, and education.

Background

As the sole landfill operator in the LGA, Council learned that landfill had become the “sink” for most materials in the region.

Council was eager to address this, but was aware tendering to industry for all waste streams was expensive and required material flow guarantees Council could not provide. So Council analysed one landfill cell to better understand what materials were being landfilled. This gave Council Waste Services staff the inspiration to brainstorm and research new recovery options for each material stream identified.

Council has an integrated approach to resource recovery, which prioritises reuse over recycling. Council has outlined this approach in 5 key objectives:

1. Divert over 90% of waste from landfill by 2024.
2. Integrate processes – develop recovery processes that complement each other and achieve higher-order resource recovery outcomes.
3. Quality before quantity – process material to a high standard to ensure there is demand for offtake material.
4. Identify small volume recovery options – focus on quality and separation of small volume materials.
5. Act in collaboration – partner with organisations and academic institutions that provide the science and engineering knowledge required for innovation.

Implementation

Council is achieving these 5 objectives through several actions, including:

- Improved shredding, pasteurisation and screening of garden organics.
- Commissioning of a Glass Recycling Plant in May 2021. The plant recycles contaminated glass fines, bottles, jars and commercial glass into high quality washed glass sand and aggregate.
- Upgrades to Council’s West Nowra polystyrene recycling plant and installation of a mobile polystyrene extruder in Ulladulla.
- Installation of equipment to process copper cables in Council’s electrical cable recycling plant.
- Improved cardboard and plastics operations to minimise loss of material at the infeed stage and maximise output quality.
- Installation of shredders and granulators to process mattresses, lounges, tyres, plastic tanks and PVC pipes.

- Collection of low-value textiles for processing into raw textile materials, mats and other goods.
- Partnering with UNSW SMaRT Centre and the NSW EPA to install a MICROfactorie to produce “green” ceramic tiles and benchtops (using a mixture of glass sand and textiles) and 3D printer filament (from recovered plastics).
- Installation of a rubber crumb plant to process tyres and other rubber items into crumb-rubber.
- Started earthworks on the Bioelektra autoclave site (to process red-bin material).
- Started earthworks on a new materials recovery facility (MRF) with contracts awarded for construction and installation.
- Started works on a surface activated foam fractionation leachate treatment plant.
- Generated 6MW of renewable power by upgrading landfill gas infrastructure, adding solar generation and battery from building roofs.
- Opened the Resource Recovery Learning Centre to provide a centralised hub for circular economy tours, visits, workshops, and education.

Outcomes

From January 2021 to June 2022, Council achieved the following outcomes:

- Processed 21,900t of garden organics, of which 12,700t was given away free.
- Diverted 960t of items through Council’s buy-back recycling shops.
- Diverted 19,800t of recyclable materials from landfill from MRF operations.
- Recovered 195t of problematic and hazardous materials from Council’s Community Recycling Centre.
- Provided 5,500t of washed glass sand for use in asphalt, including for the Albion Park bypass and Nowra bridge duplication.
- Recovered 54t of expanded polystyrene.
- Shredded 518t of mattresses, 400t of lounges and 83t of tyres. Steel was recovered for recycling with residual material used as processed engineered fuel.
- 2,100t of cardboard and paper sold for reprocessing into new products.
- 5.5t of electrical cable separated into copper and plastic granules. Copper sold into metals market and plastics diverted to MICROfactorie for remanufacture.
- Landfill gas contractor drilled gas wells for future 2MW landfill gas power plant.



Advanced Materials Recovery Facility

Key Learnings

Council has learnt much on its path to a circular economy, including:

- How to find pathways to innovate within the Local Government framework.
- The value of providing detailed business cases in gaining key stakeholder support.
- The benefit of communicating with Council executives and elected Councillors at all stages, by providing briefings, site visits and progress reports.
- The need to consider output markets for recycled material at the earliest possible stage.
- The importance of developing partnerships with reputable organisations.



Glass recycling plant

Contact

Name: David Hojem

Position: Waste Services Manager

Phone: 0402255109

Email: david.hojem@shoalhaven.nsw.gov.au

This project was the 2022 winner of the Transition to a Circular Economy Award at the LGNSW Excellence in the Environment Awards