

Jellie Park Development, Christchurch

Christchurch City Council

Introduction to the Project

This case study demonstrates how waste can be separated for recycling and reuse. This may take place during construction or demolition and can be done on site or off site.

Client: Christchurch City Council

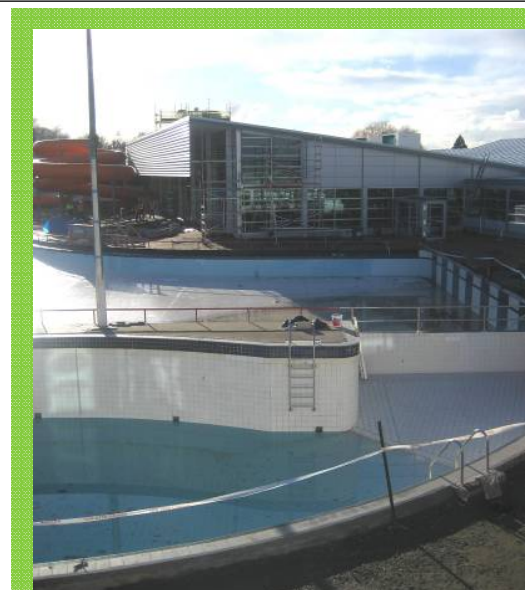
Site: Jellie Park, Burnside, Christchurch

Lead construction contractor: MainZeal Property and Construction Ltd

Construction Waste Contractor: Waste Management/Budget Bins

Demolition Contractor: Christchurch Demolition and Salvage

MainZeal signed a Memorandum of Understanding with Christchurch City Council agreeing to reduce waste going to landfill and cleanfill. Christchurch City Council also had waste reduction conditions in their contract with MainZeal.



Jellie Park Development © Copyright

Demolition Waste Recycling

Christchurch Demolition and Salvage achieved the following results:

Waste Materials	Reuse and Recycling		Disposal	Comments
	On-site (tonnes)	Off-site (tonnes)	Off-site (tonnes)	
Type				
Pavers	102			The pavers were removed during demolition and re-laid during construction.
Soil	514	394		Over 500 tonnes of soil was stockpiled and reused on-site. Almost 400 tonnes of soil was screened and reused on commercial and industrial sites.
Vegetation/green waste	4	1		4 tonnes was mulched and used on-site. The remainder went to a commercial green waste recovery centre. It was mulched and reused on properties.
Trees		2		Taken to a private property as living trees and replanted.
Metal		20		Taken to Metalman in Kaiapoi for resale/export. Non ferrous metals (copper) were exported. Ferrous metals were sold to New Zealand businesses for reuse.
Plasterboard		10		Crushed and reused as soil conditioner.
Timber (untreated)		18		12 tonnes recovered for hog-fuel. 6 tonnes reused by a wood turner.
Timber (treated)		5		This was sent to Christchurch Demolition to be resold.
Polystyrene		1		Donated for use for a chiller.
Glass		12		Either sold as windows or reused for fish tanks.
Acoustic fibre cement board		2	0.2	Reused through Terra Nova (waste exchange).
General		40		Carpets, hardieboard, chipboard etc. Sorted at Reworks and resold.
Concrete			1,251	Sent to cleanfill.
Bricks & tiles			150	Sent to landfill.
Asbestos			2	Sent to landfill.
General			29	Sent to landfill.
TOTAL (TONNES)	620	504	1,432	
Percentage	24%	20%	56%	

NB: The tonnage figures in the table include actual and estimated tonnage.

Demolition Waste Recycling

The demolition was undertaken by Christchurch Demolition and Salvage. They achieved a total reuse and recycling rate of 44% (24% on-site and 20% off-site). More than 1,100 tonnes of materials were recovered for reuse/recycling. Christchurch Demolition and Salvage did the following to achieve these results:

- Removed 30,000 pavers during demolition to re-lay during construction.
- Stockpiled over 500 tonnes of soil for reuse on-site during construction.
- Mulched and reused 4 tonnes of vegetation on-site.
- Donated 2 tonnes of fibre cement board for reuse through the waste exchange (www.terranoa.org.nz).

The proportion of material sent to landfill and cleanfill from demolition was 56% (1,432 tonnes). This was largely due to the large amount of concrete (approximately 1,200 tonnes) sent to cleanfill. Unfortunately, the original plan to crush and reuse the concrete on-site was abandoned by the contractor due to the concrete crusher breaking down. The concrete went to cleanfill for use as face shearing.



Fibre cement board reused through Terra Nova © Copyright



Pavers removed during demolition and re-laid during construction © Copyright



Vegetation mulched and reused on-site © Copyright

Construction Waste Recycling

MainZeal and Waste Management achieved the following results:

Waste Materials	Reuse and recycling	Disposal	Comments
Type	Off-site (tonnes)	Off-site (tonnes)	
Mixed Recycling	0.5		Plastic and glass bottles and cans went to a recycling plant.
Concrete	26.8		Crushed for base course for construction projects as a substitute for new aggregate.
Cardboard	5.9		This went for recycling.
Timber (treated and untreated)	31.8		The treated timber was stockpiled for trialing as a fuel in a consented, high-temperature furnace. Untreated timber was shredded (nails and screws were recycled). The shredded untreated timber was used for hog fuel, for processing into pellets or for calf bedding.
Polystyrene	0.1		This went to NZ Recycling for recycling.
Plastic	4.0		This went for recycling.
Plasterboard	1.2		Plasterboard off cuts were stockpiled and shredded to order. This material is used in soil and compost conditioning.
General waste		37.7	Sent to landfill.
TOTAL (TONNES)	70.3	37.7	
Percentage	65%	35%	

NB: The tonnage figures in the table include actual and estimated tonnage.

Construction Waste Recycling

MainZeal and Waste Management working together diverted around 65% of the waste from the site during construction, recovering approximately 70 tonnes of materials for reuse and recycling. This included timber, cardboard, plastic, polystyrene and plasterboard. MainZeal did the following to achieve these results:

- Prepared a waste management plan using the REBRI (Resource Efficiency in the Building and Related Industries) guide.
- Set up separate bins for plasterboard, cardboard, plastic, timber, cleanfill and general waste, and wool sacks for polystyrene. The bins had clear signage.
- Allocated one person to manage waste on-site. They arranged bins / sacks to be delivered to site, reminded staff to separate waste and checked the bins regularly. Any contamination of the materials was sorted out quickly.
- Only purchased what they needed, kept materials under cover and sent leftovers to other sites or back to the yard.
- Provided induction on the waste separation system for all staff and sub-contractors as they arrived, and did reminders during tool box meetings.
- Located a recycling wheelie bin for staff and contractors outside the staff room and erected a sign detailing what could go in it.

Waste Management and Budget Bins compiled the waste information using the REBRI Project Waste Management Record and forwarded this to MainZeal.



Wool sack for separating polystyrene © Copyright



Skip for waste to landfill © Copyright



Recycling bin for staff room © Copyright

Difficulties (Demolition and Construction)

- The original plan was to crush the concrete during demolition for reuse. This was abandoned because the concrete crusher owned by the demolition contractor was broken at the time. Despite the contractual obligations requiring materials recovery, the concrete was sent to cleanfill instead. **TIP: Mobile concrete crushers are available. The contractor should have hired one. Contract specifications could include a penalty clause if recovery is not implemented.**
- MainZeal found that sub-contractors often didn't sort their waste as well as staff did. As sub-contractors weren't on-site for long periods, they didn't see waste as their problem. **TIP: Put responsibility for waste reduction into the sub-contractor's contracts.**
- MainZeal found that keeping the recycling bins free of contamination when working with lots of different sub-contractors was difficult. People need to be constantly reminded of what waste to put in what bin. **TIP: Provide incentives for good waste sorting such as morning tea shouts.**
- Packaging waste was a problem during fit-out. While some of this material could be separated for recycling, avoiding packaging waste in the first place was difficult as materials arrived on-site pre-packaged. **TIP: Talk to suppliers about taking back their packaging waste for reuse/recycling.**

Summary

The redeveloped Jellie Park has undergone a \$12 million dollar redevelopment and has four indoor pools, including a 25m, eight-lane, 2m-deepwater pool suitable for aquatic sports and a toddlers' pool. The complex also features an indoor water slide, spa, sauna and steam room and the refurbished outdoor pool.

Want more information? Visit the Target Sustainability website at www.target sustainability.co.nz

The REBRI guides are available at www.rebri.org.nz