

Christchurch Civic Building

Ngāi Tahu Property Ltd,
Christchurch City Council

Introduction to the Project

This Christchurch Civic Building waste reduction case study demonstrates that with careful on-site and off-site waste sorting; at least 86.9% of construction and demolition waste can be recovered for reuse and recycling.

The new Christchurch Civic Building was refitted from the former New Zealand Post Centre. The renovation started in September 2008 and was completed in July 2010.

Client: Ngāi Tahu Property Ltd, Christchurch City Council

Site: Christchurch Civic Building

Location: Hereford St, City Centre, Christchurch

Demolition and Construction Contractor: Hawkins Construction

Demolition Sub-contractor: Southern Demolition

Construction Waste Contractor: Mastagard



Christchurch Civic Building Refurbishment © Copyright

Ngāi Tahu Property and the Christchurch City Council agreed to participate in this Target Sustainability project. The objective of the project was to reduce waste going to landfill and cleanfill.

Construction and Demolition Waste Recycling

The use of skips and further off-site waste sorting was undertaken to ensure maximum recovery of materials for reuse and recycling. During demolition materials were separated on-site for off-site reuse and recycling. During construction, Mastagard provided separate skips and cages for separation of the different waste streams on-site. The construction and demolition figures are reported together due to both of these activities occurring on-site simultaneously.

With the help of Southern Demolition, Mastagard and the carpet contractor, Interface, Hawkins Construction achieved the following results:

Waste Materials	Reuse and Recycling	Disposal	Comments
Type	Off-site - unless specified (tonnes)	Off-site (tonnes)	
Hardfill	3,618.29		This included concrete and other inert materials. This was collected in a dedicated skip. It was crushed off-site and used as an aggregate for roading projects.
Concrete panels	156 (on-site)		These panels were removed from the building and then placed back as decorative features in the lobby and walkway.
Timber (untreated)	355.21		This was collected in a dedicated skip. It was chipped for use as a hog fuel for consented industrial boilers.
Plasterboard	81.79		This was collected in a dedicated skip. It was crushed and reused for soil conditioner for horticultural seed germination.
Metal (steel)	673.98		This was collected in a dedicated skip. It was sent for recycling.
Cardboard	5.61		The cardboard was collected in a dedicated cage. It was sent for recycling.
Paper	0.12		The paper was collected in a dedicated cage. It was sent for recycling.
Plastic	3.88		This was soft plastics collected in a dedicated skip. It was sent for recycling.
Carpet	3.4		All carpet scraps and off-cuts were collected by the carpet contractor and sent for recycling into new carpet.
Salvaged building components	No tonnage figures available		Included fluorescent lights, windows, plant, lift motors, insulation. These were removed by Southern Demolition and sent to the Southern Demolition salvage yard for sale.
General and Hazardous waste		738.38	This was material from the general waste skips that could not be recovered for recycling. It included vinyl, hazardous waste (asbestos), carpet glue containers and treated timber.
TOTAL (TONNES)	4,898.28	738.38	
Percentage	86.9%	13.1%	

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

Construction and Demolition Waste Recycling

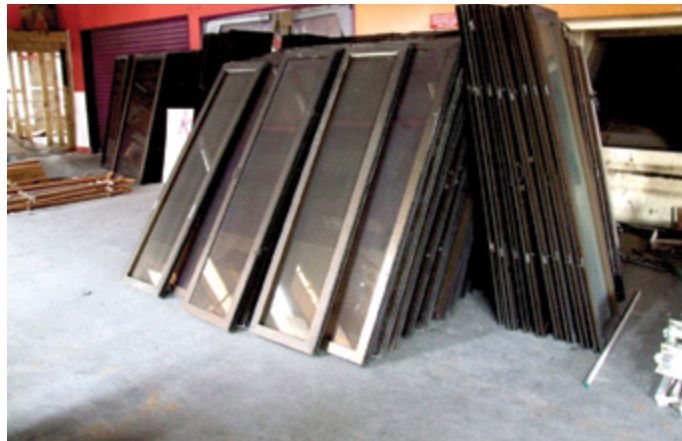
Hawkins Construction aimed to reuse and recycle 70% of the materials from demolition and construction. They reused and recycled 86.9% (4,898 tonnes) of demolition and construction material off-site. Mastagard compiled waste and recycling information in an Excel spreadsheet and sent this information to Hawkins monthly.

Hawkins Construction did the following to achieve these results:

- Prepared waste management plans for demolition and construction with clear waste minimisation objectives.
- Encouraged suppliers to re-think the way they packaged their products in order to reduce the amount of polystyrene, plastic and cardboard delivered to site. For example, light fittings were delivered to site in reusable wooden crates, instead of in disposable cardboard boxes.
- Reused parts of the original building. Concrete panels saved from demolition have been reused on the building facade. Timber and particle board was reused in the temporary site offices.
- Separated construction materials, e.g. timber off-cuts and framing for reuse on-site where possible.
- Encouraged sub-contractors to investigate reusing packaging where possible.
- Had a central waste area with separate collection units for metal, untreated timber, hardfill (mainly concrete), paper, cardboard, soft plastics, plasterboard and general waste.
- Sub-contractors sorted materials into wheelie bins and wool sacks and then removed these to the central waste sorting area and sorted waste into the appropriate skips. The bins were clearly labelled with the sub-contractor's name and were the responsibility of the sub-contractors. This method was chosen as central waste areas could not be located on each floor due to access limitations, and was considered to be the most effective way to manage waste over a number of floors.
- Gave two staff members responsibility for policing waste management on-site. They checked the bin contamination at the end of each day; any contamination was removed to the correct waste skip.
- Worked with their carpet contractor (Interface) to arrange recycling of carpet off-cuts.



Temporary site office meeting room made from re-used timber and particle board © Copyright



Aluminium windows for re-sale © Copyright



Panels from the original building reused in the refurbished building © Copyright



Wheelie bins used to transport waste to the central sorting area © Copyright

Staff and Sub-contractor Engagement

There were approximately 300 people and 50 different companies on-site at any one time. Engaging staff and sub-contractors was an ongoing part of managing the waste system on-site.

Hawkins used a combination of the following methods to ensure staff and sub-contractor engagement in the waste management system:

- Explained waste management targets and the waste management system as part of the induction for all staff and sub-contractors.
 - Waste management reminders were undertaken during regular tool box talks.
 - In some tool box talks, general waste skips were emptied and the contamination examined to show sub-contractors what the contamination in the skips was.
 - In every project meeting, waste management was included as an item on the agenda and included in the minutes.
- Provided wheelie bins to enable easy movement of material around the site.
 - Clearly labelled the separate collection units.
 - Rewarded staff and sub-contractors for good waste sorting e.g. a workplace shout.
 - Sub-contractors were also contracted to recycle at least 75% of their waste. If contamination was found in the central waste sorting area, the sub-contractor was identified by the nature of the waste and given a written warning. If the contractor caused contamination again they were charged for the cost of sorting the waste (approximately \$200). This approach was implemented several times during the project and was found to be a useful deterrent to causing contamination.



Signage in the central waste sorting area © Copyright

Difficulties

- Contamination in the bins required constant monitoring. **Tip: If possible, allocate one person to constantly monitor the bins.**
- There were up to 300 people and 50 companies on-site at any one time. This made it difficult to police waste management. **Tip: Keep delivering consistent messages about the waste management system on-site, particularly during the final project stages.**

Summary

The new Christchurch Civic Building was refitted from the former NZ Post Centre. The new Civic Building renovation started in September 2008 and was completed in July 2010.

The refit was funded by a joint venture company, 50% owned by the Christchurch City Council and 50% owned by Ngāi Tahu Property Ltd. Each partner contributed 50% to the \$107 million redevelopment cost of the building. The redevelopment was managed by Ngāi Tahu Property Ltd.

The Christchurch Civic Building is the first renovated building in New Zealand to achieve a 6 Green Star rating and the first building to achieve a 6 Green Star Built rating.

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