

Graham Condon Leisure Centre

Christchurch City Council

Introduction to the Project

The Graham Condon Leisure Centre construction started in August 2010 and was completed in September 2011.

This waste reduction case study demonstrates that with careful on-site and off-site waste sorting; at least 80% of construction waste can be recovered for reuse and recycling.

Client: Christchurch City Council

Site: Graham Condon Leisure Centre

Location: Papanui, Christchurch

Demolition and Construction Contractor: Armitage Williams

Construction Waste Contractor: EnviroWaste

The Graham Condon Leisure Centre includes:

- An eight-lane, ramped 25-metre indoor swimming pool
- A ramped spa pool and learners' pool
- A separate toddlers' pool with wet deck and water toys
- An indoor sports hall
- A new fitness centre

Armitage Williams agreed to participate in this Target Sustainability waste reduction project. The objective of the project was to reduce waste going to landfill and cleanfill.



Internal view of the completed Graham Condon Leisure Centre
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External view of Graham Condon Leisure Centre under construction
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Construction Waste and Recycling

With the help of EnviroWaste and the sub-contractors (predominantly Texco and Andrew Wunderink) Armitage Williams achieved the following results:

Waste Materials	Recycling	Reuse	Disposal	Comments
Type	Off-site (tonnes)	On-site (tonnes)	Off-site (tonnes)	
Concrete	24.1			This was collected in a dedicated skip. It was crushed off-site and used as an aggregate for roading projects.
Hardfill	12.5	508	750	Material that was reused off-site was crushed and used as aggregate for roading projects. The material reused on-site was dug up from the old tennis courts and stockpiled for use during the construction process. Material that was disposed off-site was placed in an old quarry.
Asphalt			79.3	This was placed at an old quarry.
Timber (untreated)	14.84			This was collected in a dedicated skip. This was used as fuel in consented industrial boilers.
Timber (treated)			5.6	Sent to landfill.
Vegetation (including topsoil)	2792.6			This was screened and recycled at other landscaping projects.
MDF			3	Sent to landfill.
Plasterboard	4.3			This was collected in a dedicated skip. This was crushed and used for fertiliser.
Polystyrene	0.8			This was collected, condensed and sent to offshore markets for recycling.

Waste Materials	Recycling	Reuse	Disposal	Comments
Type	Off-site (tonnes)	On-site (tonnes)	Off-site (tonnes)	
Urethane insulation	3.3			This was sent for recycling.
Metal	2.8			This was collected in a dedicated skip. It was sent for recycling.
Cardboard	3.3			The cardboard was collected in a dedicated cage. It was sold to the paper fibre market.
Paper	0.2			The paper was collected in a dedicated cage. It was sold to the paper fibre market.
Plastic	12.6			Plastics were collected in a dedicated skip. It was sent for recycling.
Co-mingled material (cans, bottles, paper)	0.4			This was sent for recycling.
Metal fence		Unable to be weighed		A metal chain link fence was pulled from the site and used to surround the tennis courts adjacent to the site.
Timber pallets		Unable to be weighed		Approximately 32m ³ of pallets were reused.
Timber off-cuts		Unable to be weighed		This was reused.
Trees	Unable to be weighed			Two large trees on-site were felled. These were chipped and used for landscaping work.
General waste			29.1	Sent to landfill. This included sweepings, building paper and other miscellaneous waste that could not be recycled.
TOTAL (TONNES)	2,871.7	508	867	
Percentage	68%	12%	20%	

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

Construction Waste Recycling

Armitage Williams aimed to reuse and recycle 75% of the materials from the construction project. They reused and recycled 80% (3,379.7 tonnes) of the materials from the construction project.

Armitage Williams agreed a procedure with EnviroWaste to ensure that every general waste skip removed from site would be sorted off-site at a recovery plant to allow recyclable materials to be separated and diverted from landfill. EnviroWaste compiled waste and recycling information and sent this information to Armitage Williams monthly.

Armitage Williams did the following to achieve these results:

- Prepared a waste management plan using the REBRI (Resource Efficiency in the Building and Related Industries) Construction Waste Plan (this was in development for some time but completed about halfway through the project).
- Had a central waste area with separate collection units for the main type of waste being produced at that time. During the peak construction period there were bins for metals, wood, plastics, co-mingled recyclables, hardfill, lunch waste (organics and wet items) and general waste.
- Ensured that appropriate collection units would be placed near the source of the waste (i.e. if blocks were being laid a collection unit for concrete was provided next to this area).
- Located a co-mingled recycling collection unit outside the staff room for staff and sub-contractors to use.
- Placed clear signage on all collection units.
- Reused excavated material on-site including a metal chain link fence and 508 tonnes of aggregate.
- Ensured the site induction procedure included instruction on waste management and minimisation and the location and use of the central waste area. The education linked practices on-site with those at home “separate waste – just like you would do at home”.
- Provided a food and lunch waste collection unit with bag for ‘wet’ waste. This bag was then tied and placed in the general waste skip for disposal. The sealing of the bag ensured that the ‘wet’ material did not contaminate the general waste bin and make it harder to sort and recover materials.
- Timber off-cuts were kept in a separate pile for on-site reuse.
- Ensured the site was kept tidy thereby encouraging staff and sub-contractors to deal with waste at the time rather than letting waste build up.
- Gave two staff members responsibility for cleaning the site weekly and ensuring items were placed in the correct skips.



Fence line that has been reused from another part of the site © Copyright



Timber off-cuts stacked for reuse © Copyright



Hardfill that has been dug up and stockpiled for reuse © Copyright



Sorted roof material ready for recycling © Copyright



Block laying waste in a dedicated collection unit © Copyright

Staff and Sub-Contractor Engagement

As part of the site briefing, staff and sub-contractors were told about the waste and recycling system in use. Most sub-contractors were expected to take their waste with them and all were encouraged to keep a tidy site.

The waste and recycling collection units were clearly labelled allowing users to place items in the correct bin.

Only the two main sub-contractors (Texco and Andrew Wunderink) were asked to provide waste and recycling information. However this was done once work had already commenced and was difficult to get. If this requirement had been made before the project began, and the provision of information specified in the contract, then information may have been provided in a timely manner.

Difficulties

- Contamination in the bins required constant monitoring. **TIP: If possible, allocate one person to regularly monitor the bins.**
- There were many sub-contractors on-site and effective communication was sometimes difficult which made it hard to ensure the waste management and minimisation systems were used correctly. **TIP: Keep delivering consistent messages about the waste management system on-site, particularly during the final project stages.**
- At the latter stages of the project there were a large number of paint tubs which were very difficult to deal with. **TIP: Always try and anticipate likely waste types and find alternative uses for them prior to the waste being generated.**
- During the initial earthworks some vegetation was cleared and sent to landfill when it could have been mulched and recycled. **TIP: Ensure there is a comprehensive waste management and minimisation plan developed before the project commences to ensure opportunities to divert waste from being sent to landfill are maximised.**
- Getting waste and recycling information from sub-contractors who took their own material off-site was difficult. **TIP: Make the provision of the quantities and types of waste, recycled and reused materials taken off-site a mandatory part of a sub-contractor's contract.**

Summary

The Graham Condon Leisure Centre construction started in August 2010 and was opened in September 2011. The Graham Condon Leisure Centre includes: an eight-lane, ramped 25-metre indoor swimming pool; a ramped spa pool and learners' pool; a separate toddlers' pool with wet deck and water toys; an indoor sports hall and; a new fitness centre.

“Target Sustainability was a great success on the project. The amount of waste able to be recycled and saved from going to landfill was staggering. The assistance given by Target Sustainability was really appreciated as they took the time to monitor the site and educate the contractors, sub-contractors and suppliers on sustainable practices and areas for improvement. It was a great team effort.” Simon Battick, Council Recreation & Sport Unit's Area Recreation Manager

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