



Re-use it

Case studies from
demolition waste
to valuable resources



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Projects changing the landscape of sending demolition waste to landfill

“Construction and demolition accounts for 40 per cent of waste and landfill across Auckland. In an attempt to do things better, Auckland Council created a guide for developers and building contractors to reduce this figure. A key suggestion was for sites to adopt a Site Specific Waste Plan (SSWP) focused on diverting materials from landfill or cleanfill to be re-used, recycled or recovered.

As a result, Auckland Council now offers contracts for the safe salvaging of materials from demolition projects”.

Mark Roberts – Senior Waste Planning Advisor

Auckland Council estimates for the year ending 30 June, 2019, Auckland produced 568,935 tonnes of construction and demolition waste. That is the equivalent of 196 Auckland town Halls filled to the brim with waste and stacked on top of each other.

This is an issue we want to tackle head on.

Demolition contractors typically recycle materials that have a ready market but often lament the volume of good reusable demolition materials that go to landfill.

They are aware community-based centres take these materials, but lack real connections to distribute material. They are also wary of adding time, complexity and risk to the project.

Auckland Council are working to adopt a deconstruction and soft strip approach as a standard.

The deconstruction methodology sees buildings carefully taken down, bit by bit, to recover materials so they can be re-used elsewhere. This can include building fittings and fixtures such as seating, light fittings, kitchen and bathroom sinks as well as important building componentry and materials like trusses, timber, corrugated iron and steel.

These stories from projects across Auckland show how Council is changing its approach to demolish a construction site, not the environment.

**He ao para kore tēnei i tōna orokohanga mai.
Me hoki anō ia i a tātou hei ao para kore
i te mutunga.**

**This was a world of zero waste in the beginning.
We must make her waste-free once more.**



Project: Ranui Community House

Location:

Ranui, West Auckland

Date of Deconstruction:

2015

Contractors:

Practec Limited

Zero waste in total transformation

When the Ranui Library relocated from its shared space at the Ranui Community Centre, an ideal opportunity opened up for the community to attempt a **zero-waste** demolition and renovation of the building site.

The library was attached to the Ranui Community Centre and accompanying café. Although an Auckland Council owned building, the space is operated by a community committee. When the library relocated, the committee decided to renovate and reinvent the café to better serve the community.

Led by Ranui Community House Administrator Buffie Mawhinney, with support from Council's Waste Minimisation and Innovation Fund, the project aimed to save all the old building materials to be reused and recycled. **Not a single rusty nail was to end up in landfill.**

Auckland based contractor Practec worked in partnership with the Community House to develop a waste plan.

Materials were removed by the contractor's own team using methods to retained integrity and value as much as possible. A contract which specified deconstruction as opposed to demolition was signed allowing the **Community House to retain possession of all the deconstruction material.**

Over the **20-week project a whopping 6.63 tonnes** was removed from the building, **including over three tonnes of treated and untreated timber**, every door and hinge, a mountain of plasterboard, carpet, linoleum and more.

"In New Zealand, 99 per cent of all building refits don't employ any recycle or upcycle plans of original materials from site." Mawhinney says. "Ranui wanted to show everyone there is a better way."

With an absolute **'No skip onsite'** rule, the plan from paper to practice was simple. Save everything coming out of the building. An onsite salvage yard was created and a team of volunteers helped sort, weigh, de-nail, shred and transport all the deconstructed materials. Materials were sorted into keep, sell and donate piles. Once word circulated, many people came by to claim materials they needed for home projects. A garden shredder turned plasterboard gypsum into fertiliser for the local community garden, and timber from the deconstruction has been widely used in the new café design.

"The builders were the most sceptical, which did shock me as I thought they must surely be used to working in this way," Mawhinney says. "It became a bit of a joke for them in the beginning. They would save every bit of scrap paper, give it to me and say 'here, you can use this'."

"It wasn't until the end of the project when they saw the café being put together by all the reclaimed materials that they could actually see the benefits of working this way. They were truly amazed at what we'd accomplished. It's hard to know if that experience did change their behaviour, but I hope so."

Upon completion, not only did the community build a modern and vibrant café, employing four local staff, but it also created a sense of pride and ownership.

TOTAL TONNES

SALVAGED	RECOVERED	LANDFILL
6.60t	6.02t	0.58t

The social good

Advice 101 – fight to be onsite

Advocating to remain onsite for the entire project renovation is vital to ensure waste plans are enforced.

"When I left the site, things started to slide and the skips turned up. My biggest learning; remain onsite. In fact, fight to be onsite."

Buffie Mawhinney



Project: Three Kings Recovery and Salvage

Location:

Corner Mt Albert and Mt Eden Roads

Date of Deconstruction:

2016

Contractors:

Corbel Construction, Greenway, TROW Group and Earth Action Trust

Partnership paramount for success

A full-scale collaborative process between **four contracted groups** was undertaken to make the most of waste from the redevelopment of the former Mt Roskill Borough Council building

The building, on the corner of Mt Albert and Mt Eden roads was built in 1957, but was closed to public in 2011 after mould was found riddled inside. The building's heritage value led Council to agree on a restoration project, coinciding with a demolition project of the four-storey addition built in 1990.

The aim was to reuse and recycle, to recover and salvage as much of the materials as possible, to connect community groups to the salvage process and to build on community networks to provide training and employment opportunities in the local area.



Immediately dubbed the 'Three Kings Recovery and Salvage Project', successful collaboration between contracted parties was essential for the diversion of materials from the deconstruction. It was the first time Auckland Council had offered a tender for salvaging materials from the demolition of a council building, with the materials to go to community organisations.

In practice, this allowed lead contractors (Corbel Construction) and the demolition contractors (Greenway) to collaborate with two community partners, TROW Group (a civil construction company) and Earth Action Trust, a local environmental organisation.

Greenway worked closely with TROW Group and its wide network of community groups to develop a waste plan and identify material from the early 'soft-strip' stage of the project that would be recovered. This included fixtures and fittings that remained after the building had been vacated.

Over three tonnes of material was recovered and delivered to ten community-based organisations, such as marae, churches, community groups and social enterprises.

Another key objective was to build the capacity of the community by providing materials, training and job opportunities.

TROW Group contacted two unemployed trainees from the local WINZ office to assist in the handling and distribution of the collected materials. The trainees had previously experienced long term under or minimum wage employment. With the backing of the local board, the trainees were provided with Site Safe and First Aid training, personal protection equipment as well as drug testing, all necessities for working on a building site.

This gave the two trainees the basic requisites for commencing a career in the construction industry.

Both of the trainees have gone into ongoing employment in the construction industry.

Overall, the cost of the project was kept within the total budget allocated for demolition and disposal without incurring additional cost. The Recovery and Salvage project was completed on time, with no delay to demolition and zero lost time injuries.

TOTAL TONNES

SALVAGED	ITEMS RECOVERED	COMMUNITY GROUPS BENEFITTING
3.0t	1300	10t

The social good

Advice 101 – take the opportunity

This project was the very first council-contract undertaken by TROW Group and provided key learnings for future endeavours.

“Many hours were spent debriefing and questioning the effort put in to soft strip this site, and future sites. By asking these very hard questions of ourselves we found immense value in the ‘why’ we do this. We found the benefit of working with the environment and communities of need is well worth the time and effort.”

Saia Latu



Project: War Memorial Park Grandstand

Location:

Birkenhead, North Shore

Date of Deconstruction:

2018

Contractors:

Greenway, TROW Group

Iconic grandstand gains new life

Officially opened in 1958 by governor-general Lord Cobham the Birkenhead War Memorial Park grandstand on the North Shore was closed due to safety concerns in 2016.

The iconic grandstand was an original fixture in the park – home to many local sports clubs - but had become a **target of vandalism**. In one break-in a fire hydrant was left on to flood the basement. As a result, the base of the steel frames supporting the grandstand were rusted and the grandstand was subsequently declared structurally unsafe.

The grandstand, which housed tiered spectator seating, changing rooms and storage areas, was **cordoned off for two years** until the deconstruction project began in October 2018.

Going into the deconstruction, Council aimed to take all reusable materials and make them accessible to the community.



“On top of this, we made sure the resident sports clubs all recovered items and memorabilia from the building. The Birkenhead Rifle Club had only recently installed specialist ventilation equipment when the building was condemned. Contractors, Greenway, removed this in case it could be used elsewhere,” Mark Roberts, Senior Waste Planner from Auckland Council says.

“A real win for us was not only recovering the big reusable items like doors, chairs, but also being able to recover and reuse the actual materials of the building itself. Local timber recycling company, The Kauri Warehouse, recovered approximately 535 lineal meters of Matai cladding and flooring that was reprocessed and sold for recycled feature flooring.”

Northcote Tigers Rugby League chairwoman Bobbie Randolph says members only truly understood the full waste minimisation plan after the deconstruction.

Randolph refers to the fact recovered gypsum was converted into powder form and sold to the primary industry sector. Meanwhile, paper from the gypsum was sent to the Visy Recycling Plant. All other cardboard, paper and steel were also sent to various places to be recycled back into other products.

Concrete from the site was granulated to make ‘gap’ products used for commercial and domestic fill, temporary roading, etc. Other clean soil was converted into engineered hardfill and used in the backfilling of quarries and landfills, and the untreated timber was made into woodchips used for animal bedding and landscape mulch.

“I really wasn’t thinking about the grandstand in a waste and reuse type of way,” she admits. “I know there was an opportunity to apply for anything we wanted from the site, and another member made an application for some bench seats and he’s made a mini grandstand from them.

“Our members were really pleased to hear the materials were reused in the way they were. We didn’t think about the building materials in that way regarding waste and re-use.”

TOTAL TONNES

NATIVE TIMBER SALVAGED	REUSABLE ITEMS SALVAGED	RESOURCE RECOVERY	COMMUNITY GROUPS BENEFITTING
3.0t	1300	219t	10t

The social good

Advice 101 – be open to learn from each other

Part of true growth and development happens when information is shared and received equally.

Partnerships with communities, businesses, mana whenua and mataawaka will be critical for Auckland Council to reach waste minimisation goals. Recognising that these same communities, mana whenua, mataawaka, industry and stakeholders need to understand, and be involved, in developing solutions.



Project: Herne Bay Masonic Centre

Location:

Salisbury Reserve, Herne Bay

Date of Deconstruction:

2016

Contractors:

Greenway, TROW Group

Materials help rebuild communities

A converted wooden villa located on Salisbury Reserve, Argyle Street in Herne Bay, had been used as a Masonic Hall. Owned by Auckland Council, the building had been added to over the years. These additions included a hollow stone block hall at the rear of the villa. In 2016 the building was vacated.

The Local Board made a decision to **remove and repurpose** the original wooden villa part of the building for further community use. The hollow stone block addition was to be demolished and crushed for use as aggregate.

Contractors Greenway and TROW Group led the deconstruction, recovering items such as roofing tiles, aluminium windows, benches and carpet. Many of the items were donated to community churches in South Auckland, and also to help rebuild schools in Tonga after cyclone Gita.

Once the site was deconstructed and cleared it was turned into an open and active green space.

Greenway director Sebastian Jonsson says making a conscious decision to take the building apart and reuse as much as possible is the sensible decision to make.

“The alternative is bowling the building with a digger from the word go, and then it’s all gone, lost. Deconstruction in this way is absolutely the future. We can’t keep putting things in the ground or taking things out of the ground without consequence. We have to start using what we already have,” he explains.

Jonsson adds working collaboratively with other like-minded organisations makes the job easier.

“When we identified the materials we were unable to recycle, like timber from this project, we gave it to TROW knowing it would go to good use in the community.”

For this project the roofing was reused, weatherboards were reconditioned into floorboards, joists into reusable timber, internal elements ie carpets went to TROW Group, all timber was reconditioned for reuse, concrete and block walls crushed into fill, created woodchips from timber for biofuel, gip board used a fertilizer.

“It can be hard to see the difference on site at the time, the difference really comes after when you see everything neatly piled and taken away for repurpose. Other, traditional sites just lump it all into trucks and off to landfill,” adds Jonsson.

TOTAL TONNES

SALVAGED	RECOVERED	LANDFILL
202	195.1	6.68

The social good

Advice 101 – look beyond the dollar

Understand value comes in more forms than the dollar. Investing time and energy into pre-planning has a far-reaching impact beyond a quote or invoice.

“We do lose out in contracts because other companies do it ‘cheaper’, but without the same environmental focus. It can be cheaper to put everything in a truck and dump it. There is no responsibility yet for clients to say ‘we want more than that’. Surely we all want more than that.”

Sebastian Jonsson, Greenway Director.



Project: Grounds shed deconstruction

Location:

Whitford War Memorial Park

Date of Deconstruction:

2017

Contractors:

TROW Group

Reducing waste one project at a time

A former storage shed for groundskeeper equipment at the Whitford Park was in such poor condition the only real decision for the Council owned property was deconstruction versus demolition.

Posing as a safety risk to the public who access the park Council sought quotes for the work based on taking the shed down, piece by piece and salvaging as much as possible, or a straight demolition with materials all heading to landfill.

Contractors TROW Group, were not only cheaper, but promised to breakdown and dispose of the shed materials and salvage as much as possible for either community use elsewhere or via a recycling process.

“This made deconstruction a sensible move,” says Senior Waste Planner Mark Roberts.

Almost all the materials were salvaged with metal and concrete going to recyclers and native timbers made available to local marae. The only materials sent to landfill were PVC guttering and downpipes.

TOTAL TONNES

SALVAGED	RECYCLED	REUSED	WASTE MATERIAL REUSED FROM ANOTHER SITE FOR REINSTATEMENT	LANDFILL
11.6t	10t	1.6t	.2t	1kg

The social good

Advice 101 – don’t waste anything

Understand everything has a contribution to make to waste minimisation.

“We want to make sure every material has a chance to be reused, repurposed or recycled.”

Saia Finau Latu, TROW Group General Manager



Project: Barn deconstruction

Location:

Pioneers Memorial Park, Puhoi

Date of Deconstruction:

2019

Contractors:

UMS NZ Limited, TROW Group

Conservation a core community value

Located on the 35.7-hectare council reserve at Puhoi Pioneers Memorial Park stood a dilapidated old barn. Due to the public access to the park and barn it became a necessity for Council to take the it down for safety reasons.

The Puhoi barn was an **important historical farming** landmark for the local community. It was important for the Council to honour the building's history so the decision to recover resources and materials from the deconstruction seemed a fitting way to fulfil this.

Building contractor UMS NZ Limited and sub-contractors TROW Group led the deconstruction.

Using a four-wheel drive scissor lift, TROW Group recovered as much reusable corrugated iron and timber as possible. Aside from the building fixtures, the kitchen, bathroom and light fittings were also saved for reuse.

Materials were transported to TROW's yard in Swanson and redistributed to local charities and community groups as well as further afield to help rebuild community structures – such as schools and churches – in the Pacific islands destroyed by recent cyclone events.

Puhoi NZ community group member Mike Swain says recycling and reuse of materials is something the people of Puhoi adopt naturally in everyday life.

“We tend to focus on conservation ourselves anyway, so anything that can be reused gets reused. I am thankful Council is seeing this needs to happen now,” he says.

“The other part of this project were the old sheep pens coming down too. I personally took these down and reused all the timber. I got permission for this to happen. It was great to be able to reuse these materials locally.”



TOTAL TONNES

SALVAGED	LANDFILL
4.5t	25kg

The social good Advice 101 – value community assets

Understand everything has a contribution to make to waste minimisation.

“We want to make sure every material has a chance to be reused, repurposed or recycled.”

Saia Finau Latu, TROW Group General Manager



Project: Piha flood recovery

Location:

Glenesk Rd in Piha

Date of Deconstruction:

2020

Contractors:

TROW Group

Rain events in 2018 created flooding issues for properties along Glenesk Road in Piha with two properties being identified as unsafe should another flooding event occur. Council purchased these properties to effectively manage the risk associated with their future use.

In the past, the methodology for removing such houses would have been demolition practices. However, the houses presented an opportunity to implement a more sustainable approach. A careful deconstruction method was implemented to remove the houses, with a concerted effort towards the recovery and reuse of materials.

The intention was for as much of the deconstructed materials as possible to be retained for reuse within the Piha community. An expressions of interest process

allowed groups to indicate materials they would like to reuse. A schedule of materials that were expected to be salvaged from the building was provided to interested organisations and local residents.

The contractor, TROW Group played a central role in connecting with the community and safely providing recovered materials.

The deconstruction of the two houses resulted in 50 tonnes of material being recovered -redirecting the materials from entering the landfill. Regrettably, some plumbing fittings and floorboards were stolen from the site.

Seven community and art destinations and two residents benefitted from the materials. This included:

- a permaculture garden
- a local environmental group
- Piha First Responders
- two artists
- McLaren Park and Henderson South Community Trust
- The Re-creators upcycling collective.

In total, 7.9 tonnes of materials were distributed to community groups and residents. Only 3.8 tonnes of rubbish was sent to the landfills due to flooding damage. The remaining materials were taken to the TROW yard in Swanson.

Examples of how some of the remaining material has been reused:

- **Polystyrene:** Sent to Divert NZ. A 'Landfill Avoidance Specialist' that compacts the polystyrene and sends it overseas to be converted into plastics
- **Metal:** Sent to various processing facilities to be recycled back into products
- **Concrete:** Crushed to make various General All Passing (Gap) products
- **Trusses and timber:** Sent to Tonga to rebuild cyclone-prone homes.



TOTAL TONNES

RECOVERED	COMMUNITY GROUPS	LANDFILL
50t	7.9t	3.8t

The social good

Don't underestimate how much there could be local demand for the materials being salvaged. Community groups and residents were able to rehome close to 8 tonnes of building materials locally. Some of the

salvaged materials went to Tonga to aid in the rebuild of cyclone-prone homes. Even with flood damage, there were still plenty of materials to recover, and engaging the community provided.



Who:

Te Puea Marae Manaaki Tangata Programme

What:

Recipients of deconstructed materials; filing cabinets, desk chairs, whiteboards, couches, kitchen sink, pantry units, tables

When:

2016 – current

Contractors:

TROW Group

Helping us help them

Desk chairs are tucked under desks and tables fill the room, while filing cabinets and whiteboards line the walls. The office space is small and simple, but vital to the operations of Te Puea Marae Manaaki Tangata programme.

Wedged between files and future plans, marae chairman Hurimoana Dennis has claimed a small space to finish some administration work that plagues even the most successful of social change agencies.

The Manaaki Tangata programme was started by Te Puea Memorial Marae in Mangere Bridge in 2016 as a direct response to the alarming number of whanau facing homelessness. Working with whanau the programme helps address immediate issue like food and shelter, while also providing ongoing support for other social issues like employment, mental health, drug and alcohol addiction, whanau violence and long-term housing solutions.

Since opening marae doors to address this issue, the programme has helped 460 whanau into homes within an average of just over five weeks and approximately 25 per cent of adults into employment.

“The issue of not having somewhere to live isn’t the only issue people face when they arrive at the door. We know things don’t happen in isolation, so the wrap around support on tap here is vital to our success,”

Hurimoana says. *“To be honest, the housing issue is the easy one to address. The other conversations we have are hard but make the real changes.”*

Rewind back to 2016 when the first whanau groups arrived looking for support. Desire to help was in abundance, but resources to do so were low on the ground. TROW Group, a civil construction company, answered the prayer.

“We didn’t know TROW, but they’d heard about what we were trying to do and thought they could help,” Hurimoana explains. *“They asked us if we needed things like desks, desk chairs, couches, filing cabinets, whiteboards. All of the things we would need to set up an office to be able to run the administration side of the idea.*

It was very helpful and very unexpected. We didn’t have a lot and to have a big truck rock up here, not just once but a number of times, with furniture and office materials to help us do our business took a lot of stress and worry away.

We could focus our efforts on the people we were helping and put the money we did have where it was needed most; helping the homeless community.”

The relationship between TROW Group and the marae didn’t end with one delivery. It remains strong to this day, with more donations over time.

The Manaaki Tangata whanau kitchen is home to a kitchen sink unit and two large pantry units also donated by TROW Group. The programme’s social services and conference rooms are home to more desks, chairs and white boards.

“Although not a social service, a counselling or drug addiction service TROW Group are a massive part of our network to reaching success for our whanau. They play an integral part in this mahi.”

Contributing to the reduction of materials in landfill also has many spinoffs. Implementing a four-bin waste programme helps programme participants understand the responsibility individuals play in achieving a zero-waste society.

“One of the families the marae had put into a home recently made the front of a magazine for winning an Auckland Council recycling competition,” Hurimoana boasts.

Reflections and learnings

A number of themes are present in these stories which provide valuable information on how future deconstruction projects can play a part in reducing waste.

Own the outcome

Set baseline behaviours and detail specifics in contracts with partners that allow ownership of recovered materials to remain with the proprietor. Include salvage and recovery at concept stage of the project and normalise waste minimisation specifications in contracts. Don’t just set waste diversion targets, be prescriptive; such as discourage plasterboard going to landfill, ensure cardboard, plastic film and recyclables are separated.

Intention

Plan deconstruction projects based on the outcome you want to own.

Ask questions like:

- Is a skip needed onsite?
- What materials can be re-used?
- Who could benefit from these items?
- What can we do differently this time?

Adapt project planning based on the answers. Learn through action and embrace the small steps contributing to ongoing change.

Be aware of how resource allocation from the project has the ability to enhance capacity empowerment and attain wellbeing for those not directly linked with the construction industry.

Be clear on the results you want to achieve and set the pathways to deliver on these.

Think big but act local

Be aware of the big picture, the end result of zero waste and what this means for the environment. But understand the small actions taken onsite to achieve this have multiple impacts. The investment of local leadership and community consultation on projects can lead to developing skills and capacity of local leaders.

Think about the site land, it’s history and what you might be taking away. Think about how this land and deconstructed materials might be used in the future and seek local guidance to strengthen relationships with neighbours and local user groups.

Better outcomes for local environments can also mean even distribution of resources.

Participation and collaboration

Understand the role you play in the project. Effective partnerships allow for articulation of overall project vision and outcomes, which results in a more efficient process.

Seek guidance from local community networks to sustain the vision and hold absolute trust in those relationships. Know what limitations you have and find the connection to support those gaps.

Reciprocation / connect the dots

Share information, resources and networks to ensure deconstructed materials are kept in use and enrich the lives of others. This takes time and effort to invest in relationships but places value on growth and prosperity, not just financial but environmental and societal.

Place others as the experts and value the community assets they possess, while linking them to what they need rather than what outsiders may decide they want.

Manaakitanga is steeped in the ethics of care and reciprocity. It enhances mana on both sides of the relationship.



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