

# BUILDING WITHOUT WASTE

## GUIDELINES TO SUPPORT YOUR SITE WASTE PLAN

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Best practise guide to reducing waste on  
construction and demolition sites

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**Hamilton  
City Council**  
Te kaunihera o Kirikiriroa



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— BUILDING WITHOUT WASTE —  
guidelines to support your Site Waste Plan

YOUR  
HANDY  
GUIDE



# INTRODUCTION

## This guide is for:

- Those who have direct responsibility for managing the waste. For example, the site or project manager who will set the tone for waste management at the site and has responsibility for delivering against budget and the clients key performance indicators (KPI); and
- those who produce waste but do not have responsibility for it. For example, sub-contractors who use the sites waste management facilities and comply with the site rules; and
- those who produce Site Waste Plans for Council approval as required under the Hamilton Waste Management and Minimisation Bylaw (2019).

This guide can also be used by organisational, environmental or sustainability managers who are responsible for creating strategies and procedures for waste reduction.

# THE WASTE HIERARCHY

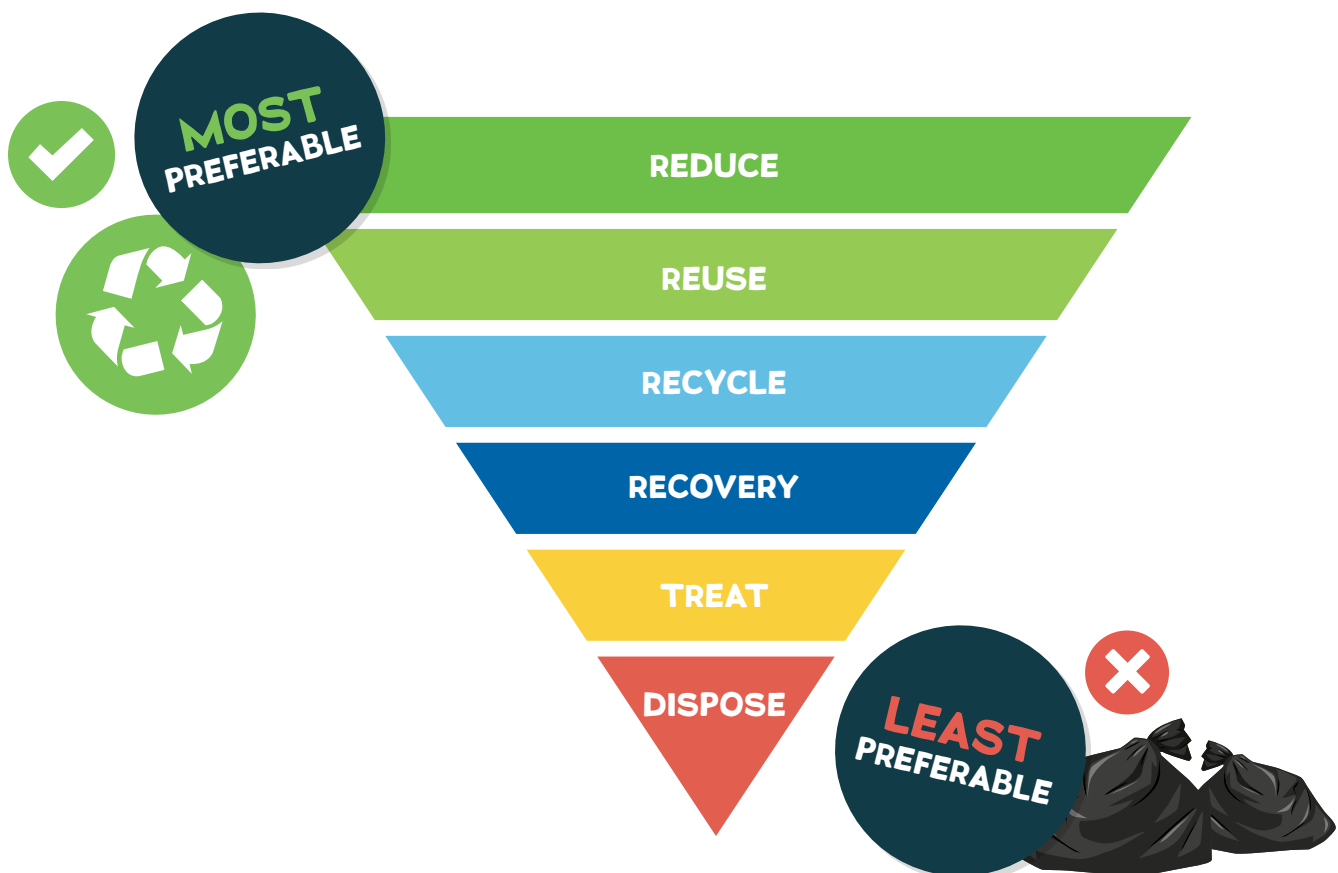
**Waste is costly for business and for the environment.**

The waste hierarchy sets out priorities for using resources in the most efficient way and reducing the amount of waste that is produced. The further up the hierarchy, the better.

The upper part of the waste hierarchy focuses on ways to divert waste from landfill. It helps us to think about how we can:

- **Rethink:** How we can avoid waste being generated in the first place, e.g., design.
- **Reduce:** How we more efficiently use materials to reduce wastage, including by working with suppliers to reduce unnecessary packaging waste.
- **Recover:** How we can recover resources by reusing, recycling, and repurposing.

The lower part of the waste hierarchy shows us how to manage waste and dispose of it in the most environmentally responsible manner.



## WHY WASTE MATTERS

**The true cost of waste in a construction project is often under-estimated - in fact, "... on average, the true cost of construction waste is TEN times the cost of disposal..." (WRAP). We're throwing away a lot of value.**

Most waste is produced onsite through over-ordering, damage by mishandling materials, offcuts, and inadequate storage of materials; and unnecessary packaging (e.g., plastics and polystyrene).

By 'designing out' waste from projects, start to finish, you can:

- save money on purchase costs of wasted materials
- save money on cartage to landfill, disposal costs, and landfill levy
- earn revenue from recovered materials
- have more effective onsite waste practices
- avoid time spent on managing regulatory non-compliance
- make your organisation and your clients feel good about doing the right thing
- future-proof your business from increasing disposal costs.



## KEYS TO MINIMISING WASTE ON CONSTRUCTION PROJECTS

**Include waste reduction at every step of the project. Here's how.**

1. Plan for waste: develop a Site Waste Plan (SWP) for your project. Specify waste reduction actions such as:
  - relocation of existing structures
  - deconstruction
  - reuse, recycling and recovery options.
2. Procurement: work with your suppliers and subcontractors on reducing waste and consider building the SWP and waste reduction targets into contracts.
3. Set up your site: make it easy to sort and store materials for reuse, recycling and recovery.
4. Create a culture of waste reduction: make waste reduction 'the norm' on site and incorporate waste reduction into onboarding processes.
5. Measure and track your waste reduction and celebrate the wins.

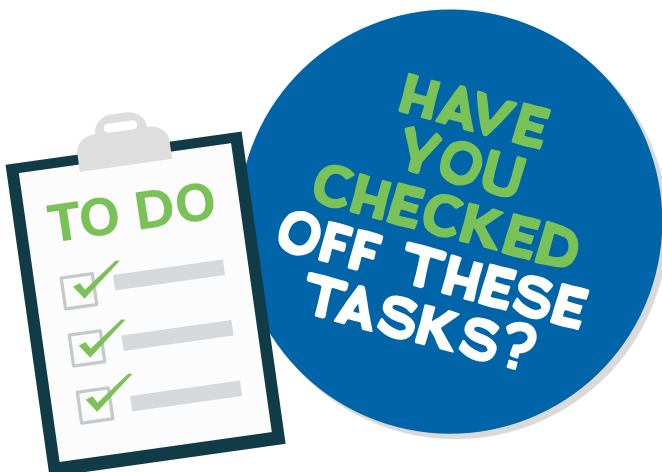
# PROJECT CHECKLIST

**Before you begin your project, carry out the following tasks:**

- Work with clients or owners of construction projects to 'design waste out' of the project.
- Set waste reduction targets and assign ownership within the contractual agreements set up between the client, designer, main contractor and sub-contractors working on the project.
- Include the SWP in contract documentation.
- Make someone responsible for onsite waste management.
- Brief/communicate SWP to all contractors, managers, staff, and subcontractors.
- Set targets for reducing amount of each waste type sent to landfill.
- Direct contractors to [REBRI\\*](#) for resources and practical guides (\*resource efficiency in the building and related industries).
- Work with materials suppliers to ensure they do not over supply or will accept unused returns.
- Engage a waste collector who can support you with your waste reduction goals.

## SITE LOGISTICS

- Throughout the project, consider what materials and wastes will be generated; and ensure that waste-sorting facilities are appropriate for each phase of the development.
- Avoid the creation of waste, by carrying out works in the correct order to avoid remedial actions.
- Set out resource recovery methods for each material, including how many waste containers might be needed, plus storage areas and their locations for each phase.
- Put a waste container near to all reuse or recycle containers, so people can put waste in that, ensuring only the right materials go into the reuse/recycle containers.
- Determine how to move waste materials around the site - how will they get into the right container? Who is responsible?
- Consider how excess materials identified for reuse will be managed. Can you develop a reuse register so excess materials can be reused on other projects? Can they be donated to a community group? Do suppliers have a 'take-back' scheme in place? Ensure there is a dedicated, well-labelled container for such materials.



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#### ONSITE TRAINING

- Ensure the site induction for staff and sub-contractors includes raising awareness of good waste management practices and the specific measures being used at the site. Use images of the containers, in case of language barriers.
- Set aside time to talk to the sub-contractors to ensure they know how to use the site waste systems.
- Use 'toolbox talks' to make sure everyone who comes to the site knows how to manage waste and look after materials onsite to reduce waste from damage.
- Bring up waste management at every job site meeting. Reminders are important. Provide feedback on how people are doing against waste related KPIs.

#### CELEBRATE AND PROMOTE SUCCESS

- Highlight the success of the programme to managers, sub-contractors, clients, onsite staff and the public.
- Consider incentivising staff for reusing materials, by sharing the financial savings made at the site.

#### MONITORING

- Capture information on the volumes of waste types and report this against your targets.
- Review practices and check the containers to ensure the proper materials are going in them. If problems exist, find the person or people responsible and encourage and help them to get up to speed with what they need to do.
- Photographs of damaged material could be kept to aid discussion and help prevent re-occurrence.



Review wastage rates - track the volume of materials coming onto the site and do periodic comparisons with what waste is leaving the site. This will help to highlight poor performance and high wastage. At the end of your project, carry out these four steps:

**1.**

Collate data and feedback from waste and recycling collection contractors.

**2.**

Evaluate results.

**3.**

Calculate savings.

**4.**

Celebrate your achievements.



## SITE WASTE PLANS (SWP)

Prepare and submit a SWP in partnership with the demolition or deconstruction contractor (if any), waste collectors/processors and any community resource recovery organisation(s) that you are working with. The submitted plan could be guided by the [REBRI Waste Management Plan](#) template and should include the following elements:

| Section                             | Description  | Implementation  |
|-------------------------------------|--|---|
| <b>Scope and analysis</b>           | The scope of the waste plan will include building removals and construction.                                     | Indicate the nature of work and expected waste types and sources. Analysis of the proposed job site waste to be generated, including reusable, recyclable and waste materials (by volume or weight).  |
| <b>Personnel and responsibility</b> | Person(s) responsible for implementing and reporting on the SWP.   | The contractor shall provide onsite instruction of salvage, deconstruction and material handling techniques to minimise waste. This includes ensuring all site management, staff, subcontractors, product suppliers, and waste disposal companies are made aware of the SWP and its implementation.   |
| <b>Waste avoidance</b>              | Measures to manage waste avoidance or reduction of waste at source to be taken during the project.               | Methods of deconstruction, reducing construction waste, waste separation and storage. Description of bins/containers that will be used and the signage that will be used on the containers. Identification of measures to be taken to prevent contamination of materials to be reused or recycled and to ensure materials are consistent with requirements for acceptance by designated facilities.   |
| <b>Destination of materials</b>     | Proposed alternatives to landfill and cleanfill disposal.  | A list of each material to be salvaged, reused, or recycled during the course of the project and the destination. Where possible, the contractor shall give consideration to giving community-based organisations access to salvage materials for reuse.  |
| <b>Record keeping</b>               | The contractor will maintain a record of all waste material leaving the site, volume/weight and its destination. | This will be done in partnership with the demolition, deconstruction and salvage contractors (if any), and any community resource recovery organisation engaged in the project. Reporting should be guided by the REBRI C&D Waste Transfer forms or similar. The contractor shall submit to the contract administrator the REBRI Waste Management Plan, REBRI C&D Waste Transfer forms or bills, invoices and other documentation confirming that all materials have been received at the required locations. |



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## PRIORITY MATERIALS

The following table outlines common materials and options for waste reduction.

Materials listed **X** (forbidden) for landfill or cleanfill **MUST NOT** be directed to these destinations. Any materials listed for recovery, recycling or reuse should be handled in a way that maintains their value and increases their chances of achieving those destinations.

### KEY



Preferred



Alternative



Forbidden

|   | Reuse | Recycling | Recovery | Landfill or cleanfill |  |
|---|-------|-----------|----------|-----------------------|--|
| <b>Contaminated or degraded material</b>      |       |           |          |                       | Contaminated (e.g., asbestos, mould, etc.) or degraded (damaged or of an uneconomic size) material should be directed to the appropriate destination.  |
| <b>Whole structures for removal</b>           |       |           |          |                       | Where a structure is sound and suitable for removal, consideration should be given to removing it intact to a new site for reuse.  |
| <b>Strip out items, fixtures and fittings</b> |       |           |          |                       | Any deconstruction should start with a comprehensive and careful strip out of usable fixtures and fittings that have a suitable destination. This includes kitchen and bathroom fittings and furniture. Care shall be taken to remove items and material in a way that preserves their value |
| <b>Metal</b>                                  |       |           |          |                       | Separate and recycle steel reinforcing. Remove metal fixtures and fittings in such a way that maximum value is retained for reuse (first preference) or recycling.   |
| <b>Native timbers</b>                         |       |           |          |                       | Remove native timbers in such a way that maximum value is retained. Only uneconomic lengths to be sent for recovery.   |

*continued >>*

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## PRIORITY MATERIALS CONTINUED...

|                                 | Reuse | Recycling | Recovery | Landfill or<br>cleanfill |   |
|---------------------------------|-------|-----------|----------|--------------------------|---|
| <b>Non-native<br/>timbers</b>   | ✓     |           | ✓        | ✗                        | Separate and store timber for reuse (preferred) or recovery.  |
| <b>Plasterboard</b>             | ✓     |           | ✓        | ✗                        | All plasterboard (including deconstructed) to be sent for recovery.   |
| <b>Concrete and<br/>asphalt</b> | ✓     | ✓         |          | ✗                        | Concrete and asphalt to be sent for crushing or reprocessing  |
| <b>Cardboard</b>                | ✓     | ✓         |          | ✗                        | Cardboard to be sent for recycling or reuse. Cardboard should not be placed in comingled bins. Cardboard should be stored separately to avoid it getting wet? |
| <b>Plastic film</b>             | ✓     | ✓         |          | ✗                        | Plastic film to be sent for recycling. Plastic film should be stored separately and kept clean.   |
| <b>Packaging<br/>containers</b> | ✓     | ✓         | ✓        | !                        | Utilise supplier takeback schemes where they are available. Discourage suppliers from using excess packaging or polystyrene                                   |



A list of service providers handling construction and demolition waste can be found here:  
[fighthelandfill.co.nz/building-development/reducing-construction-and-demolition-waste](https://fighthelandfill.co.nz/building-development/reducing-construction-and-demolition-waste)

# REDUCING WASTE

**The best environmental and most cost-effective solution is to reduce the amount of waste created. Reduction can be encouraged by:**

## PLANNING DELIVERIES

- Just-in-time' deliveries reduces damage from improper storage and weather.
- Arrange deliveries of materials to align with project stages.

## IMPROVING MATERIAL STORAGE

- To avoid deterioration and damage - keep packaging on and ensure storage areas are secure and weatherproof.
- When bad weather is forecast, pay extra attention to securing and protecting materials.

## AVOIDING EXCESS

- Do not order significantly more materials than you need. Work with your suppliers to manage order accuracy.
- Set and crush excess concrete and use it in paths and/or as road aggregate.
- Use mortar silos wherever possible.

## REJECTING DAMAGED MATERIALS

- Reject materials which have been damaged during transit, and request they be returned to the supplier. This ensures the damaged material does not become your responsibility and highlights opportunities for change to the supplier.

## MINIMISING MATERIALS MOVEMENT

- Move materials around the site as little as possible - breakage is more likely to happen during movement.

## ELIMINATE EXCESS PACKAGING

- Work with your suppliers to reduce the need for excess packaging. If needed, reject excessive packaging and request its return to the supplier, e.g., shrink-wrap, transport strapping, collation trays, etc.
- Check contracts with suppliers and the supplier's haulier for return of packaging. Resolve any contractual issues early in the project, e.g., the supplier's contract may include a return clause, but the haulier's contract does not.
- Consider suppliers that offer reusable packaging schemes, or those who are willing to work together on finding solutions.



# REUSING MATERIALS

Where material waste cannot be reduced, reuse should be considered as the next step.

## DECONSTRUCTION

- Where materials are associated with temporary works (e.g., safety doors or rails), affix them so they can be dismantled and reused many times.
- Use mechanical fasteners such as bolts, screws and nails instead of sealants and adhesives.
- Purpose-built reusable products for temporary use may have an initial higher cost, but they will be cheaper in the long term, e.g., hoardings.
- Dismantling buildings rather than knocking them down increases the amount that can be salvaged undamaged – and it often stacks up in terms of cost.

## PLAN IN REUSE

- Pouring concrete can be phased to allow reuse of shuttering on the remaining sections.
- Collect offcuts and use these first instead of new materials.
- Consider options to balance cut and fill quantities onsite. This may require coordination between phases of the project, to ensure that material is available in the right quantities and at the right time.
- Capturing information about materials on a reuse register means they can be easily tracked and used on other projects.



## MAKE BEST USE OF MATERIALS

- Return, sell or donate unused or salvaged materials. Engage with local charities, community groups or schools, as they may be willing to support you with this.
- Repair items (e.g., pallets) so they can be reused or returned to supplier.
- Mix unused paints together and use them as an undercoat or for site hoardings.



## RECYCLING WASTE

**If waste cannot be reduced or reused, it should be segregated for recycling wherever possible. The most important step for recycling is onsite separation. Once separation habits are established, onsite separation can be done at little or no additional cost - and will save you money.**

### MATERIAL SEGREGATION

- Sort different waste materials onsite, using appropriately sized waste containers close to working areas.
- Clearly label waste containers. Use the standard labelling\* across all sites to prevent confusion. Labels should contain images or material icons to assist staff and sub-contractors who may not have English as their first language. (\*See (<https://www.npdc.govt.nz/zero-waste/commercial-rubbish-and-recycling/construction-waste/>).
- Train staff on practical ways to manage and handle materials to maximise their reuse, recycling and recovery potential.
- Keep hazardous waste out of mixed-waste skips. This reduces waste gate fees and increases the value of materials.
- If onsite sorting is not possible, consider sending your mixed waste to a Materials Recovery Facility (MRF) instead of a landfill.

### ASK YOUR WASTE CONTRACTOR

- Find out how they can help you to recycle, and shop around for the service that will help you achieve your waste reduction targets.
- Where space onsite is limited, find out if they can sort your waste for recycling at their facility.

### STAFF/SUB-CONTRACTOR TRAINING

- Specify the materials that can be recycled/recovered on the site and how this should be done through toolbox talks. Use an actual site example and photographs to show how to separate out the materials correctly.
- Recruit senior staff members to act as 'recycling champions' to check bins and promote correct practices.
- Address things that aren't working; and celebrate the things that are.
- Label components, particularly plastics, to identify the material used. This will make recycling more effective.

### STORAGE OF MATERIALS

- Keep materials for recycling clean, dry and separate from other materials or waste. For example, keep plasterboard from getting wet, as it becomes acidic and difficult to recycle.



# CONVERSION TABLE

Handy conversion table for Authority waste plan questions

| Material         | Type           | Average density (KG/M <sup>3</sup> ) |
|------------------|----------------|--------------------------------------|
| Cardboard        | Cardboard      | 38                                   |
| Carpet           | Carpet tiles   | 200                                  |
|                  | Broadloom      | 180                                  |
| Concrete/masonry | Rubble         | 1048                                 |
|                  | Concrete       | 900                                  |
|                  | Tiles          | 1500                                 |
| Glass            | Glass          | 411                                  |
| Hazardous waste  | Asbestos       | 360                                  |
| Metals           | Metal          | 63                                   |
| Other waste      | Insulation     | 100                                  |
|                  | Linoleum       | 350                                  |
|                  | Mixed/other    | 225                                  |
| Plasterboard     | Plasterboard   | 238                                  |
| Plastics         | Plastic - Hard | 72                                   |
|                  | Polystyrene    | 21                                   |
| Paper            | Paper          | 38                                   |
| Sweepings        | Sweepings      | 208                                  |
| Timber/wood      | Timber         | 178                                  |
|                  | Wood sheet     | 200                                  |

## SOURCES

- Building Out Waste - Auckland City Council ([aucklandcouncil.govt.nz](http://aucklandcouncil.govt.nz)).
- Best Practice Guide to improving waste management of construction sites - Resource Efficient Scotland ([zerowastescotland.org.uk](http://zerowastescotland.org.uk)).
- WRAP ([wrap.org.uk](http://wrap.org.uk)).