
# A NEW ZEALAND GUIDE TO OPERATIONAL WASTE FOR BUILDINGS

Te Kaunihera Hanganga Tautaiao | New Zealand Green Building Council

# Foreword Acknowledgements

Te Kaunihera Hanganga Tautaiao | the New Zealand Green Building Council (NZGBC) would like to acknowledge WM New Zealand, and Tyron Reece Hartle from their WM Sustainability Services team, for their assistance in the creation of A New Zealand Guide to Operational Waste for Buildings as well as the Operational Waste Calculator v1.0.

# Introduction

The term 'waste' is generic, but it essentially refers to a 'wasted resource'.

In Aotearoa New Zealand, an average of 706 kilograms of waste per person was sent to landfill according to the Ministry for the Environment's 2022/2023 statistics. That makes us one of the highest generators of waste per person in the OECD. This document and the associated calculator are one way to encourage tenants of buildings to reduce the amount of material going to landfill.

This first version of a New Zealand-based best practice guideline document for sustainable management of operational waste has been developed to provide a structured approach to minimise operational waste generation and maximise the recovery of materials, whether it be proactively within the design phase of a new development, or retrospectively (where applicable) on an existing building.

Operational waste is the term used to describe the waste generated from daily activities. These activities relate to the day-to-day running operations of a business, such as waste created from a manufacturing facility, a storage warehouse, a grocery store or an office building. Operational waste is also created in residential or public settings, examples of which include waste from your home, an apartment building, a retirement village, or a public library.

*Note: Construction & demolition waste generated from the building & construction sector has been excluded.*

# The purpose of this guide

The overarching purpose has been to create guidelines that are relevant within the New Zealand context, and to provide guidance on how all developments, no matter the building typology, can support the progress towards a low waste, circular economy in line with the Ministry for the Environment's Te rautaki para Waste Strategy.

These guidelines have been developed to provide guidance for NZGBC Green Star operational waste related credits, and for the wider New Zealand community and will address two main areas to support and promote a structured approach to best practice management of operational waste in Green Star Buildings NZ:

1. **Minimum Expectations**

Design requirements to meet compliance with **Green Star Buildings Credit 4: Responsible Resource Management** or **Design & As Built Credit 8: Operational Waste** for **Prescriptive Pathway: Facilities**.

*Note: For the **Performance Pathway: Specialist Plan**, a qualified waste auditor or waste specialist prepares and implements an Operational Waste Management Plan (OWMP). Although alignment to these guidelines is preferred, it is not a requirement under the performance pathway.*

**2. Best Practice Guidance**

In addition to the minimum expectations related to the design of a building, best practice guidelines for sustainable operational waste management are provided.

Alignment to these additional guidelines is not a requirement to meet compliance with **Green Star Buildings Credit 4: Responsible Resource Management** or **Design & As Built Credit 8: Operational Waste** but following these guidelines will minimise operational waste generation and maximise the recovery of materials.

# Disclaimer

These guidelines are published by the New Zealand Green Building Council (NZGBC). They are intended to provide guidance on how all developments, no matter the building typology, can support the progress towards a low waste, circular economy in line with the Ministry for the Environment's Te rautaki para Waste Strategy. Information contained in these guidelines is not guaranteed to be correct, current or comprehensive and the NZGBC accepts no responsibility for the accuracy of any information. Readers are specifically advised that specialist advice should be sought in relation to all matters in relation to, or in connection with, the subjects covered.

# Copyright



# Non Endorsement

Unless specifically stated the New Zealand Green Building Council (NZGBC) does not endorse any company, organisation, brand, product or service.

# Table of Contents

# Application

The below section outlines how these guidelines should be applied.

Green Star Buildings NZ Responsible Resource Management - Credit 4

**Outcome**

Operational waste and resources can be separated and recovered in a safe and efficient manner.


There are two pathways available in this credit:

- a 'Performance Pathway' that relies on specialised waste management solutions, or
- a 'Prescriptive Pathway' that outlines specific best practice requirements.

To comply with Credit 4, one of these pathways must be followed.

## Performance Pathway: Specialist Plan

A qualified waste auditor or waste specialist prepares and implements an Operational Waste Management Plan (OWMP) for the project in accordance with best practice approaches and this is reflected in the building's design.

The qualified waste auditor or waste specialist can utilise these best practice guidelines, including the NZGBC Operational Waste Calculator, but this is not a requirement under the performance pathway in the Green Star Buildings NZ Responsible Resource Management credit.

## Prescriptive Pathway: Facilities

The project must comply with all four of the following criteria:

1. The building is designed for the collection of separate waste and resource streams.
2. The building provides a dedicated and adequately sized waste and resource storage area.
3. The building ensures safe and efficient access to waste and resource storage areas for both occupants and the waste and resource collection contractors.
4. A waste specialist or waste contractor must sign off on the final design and provide confirmation that the proposed operational waste management system utilised to inform the final design is accurate and correct.

The above criteria must align with the Minimum Expectations within these best practice guidelines.

# Minimum Expectations

To confirm compliance for **Prescriptive Pathway: Facilities**, the project must comply with all four of the following design criteria:

1. SEPARATION - Separation of waste and resource streams
2. STORAGE - Dedicated waste storage area(s)
3. ACCESS - Safe and efficient access to waste storage area(s)
4. SIGN OFF – A waste specialist or waste contractor signs off on the final designs

## 1. SEPARATION

Bins and/or storage containers must be provided to building occupants to enable them to separate their waste. These bins must be labelled, easy to access, and logically distributed throughout the building, with corresponding bins that are serviced by waste and recovery contractors located in the waste storage area(s).

### Secondary waste areas

Secondary waste areas are the interim, temporary and/or internal storage areas which store materials at the point of generation. These are populated by bin stations, built-in bin cupboards and/or standalone bins such as wheelie bins or Method Recycling® bins.

*Note: There is no requirement for specific sizing of secondary waste areas.*

### Minimum expectations

It is a minimum expectation that the following waste and recovery materials be serviced:

#### General waste

Solid waste that is sent to landfill. This excludes:

- Recoverable materials
- Liquid waste
- Hazardous waste
- Dangerous goods i.e. flammable, corrosive, oxidising etc.

*Note: This exclusion list is intended to be used as a guide only and is not exhaustive. If you are not sure what can or can't go into the general waste, please contact your local council or waste contractor.*

#### Recoverable materials

Materials that can avoid disposal and be recovered via processes such as recycling.

Implementing services for the following recoverable materials is required:

1. Paper
2. Cardboard
3. Plastic bottles, trays and containers marked 1, 2, and 5
4. Glass bottles and jars
5. Aluminium and steel tins and cans.

*Note: These materials are commonly serviced by a Mixed Recycling collection service. If the Mixed Recycling service in your region does not include some of these materials, a single stream service must be implemented to recover it.*

### Organics

Organics are naturally grown materials made from plants or animals.

Implementing services for the following organic materials is required:

6. Food scraps

*Note: Food scraps must be recovered, whether by an on-site solution or a collection service with an off-site solution. Solutions may include composting, vermiculture (worm farms), bioconversion (fly farms), animal feed, anaerobic digestion or any other suitable solution that ensures recovery or conversion of either materials or energy.*

***In addition to the above six (6) minimum expectations for recovery, one additional material must be identified and recovered by the project team.***

### Hazardous waste

Hazardous waste is commonly associated with building typologies such as healthcare or industrial facilities, but daily operations, no matter the typology, are guaranteed to create some form of hazardous materials.

Whether is it expired cleaning chemicals, broken electronics or used batteries, a system must be put in place to ensure these materials are managed safely and do not end up in the general waste.

Hazardous or potentially hazardous materials can't go into the general waste and can't be recovered via standard recovery services. It is therefore important to implement a system for these materials to either ensure safe disposal or recovery via an appropriate service.

It is a minimum expectation for a system to be put in place for the following hazardous materials:

7. Dangerous goods
8. Batteries
9. Printer cartridges
10. E-waste

Although a collection service may not be required as soon as the building becomes fully operational, a proactive system must be put in place to manage these materials to avoid them going into general waste once they are generated. This system may be a recycling bin for the material, confirmation of a drop-off point to utilise, or simply a contact sheet of which supplier to call if this material has been generated.

- Dangerous goods should only be handled, stored, transported and treated by authorised and trained authorities. Contact your local council and/or waste contractor for more information.
- Battery recycling drops off points are available at certain council transfer stations and at selected retail stores. Recycling services are also available via select waste contractors.
- Empty printer cartridge return services are provided by most printer suppliers.

- E-waste recycling drops off points are available at certain council transfer stations and at selected retail stores. Recycling services are also available via select waste contractors.

## Additional materials

The following materials should be recovered if they are generated, but this is not a minimum expectation. Recovering these materials becomes a minimum expectation if:

- Any individual material totals more than 5% of the development or building's annual waste profile either by volume ($m^3$) or weight (kg). This is up to the project team's discretion based on expected waste streams.
- New regulations require them to be recovered.
- New regulations ban them from being sent to landfill.
- Materials are deemed a health and safety risk when going into the general waste.

### Additional recoverable materials

11. Scrap metal
12. PVC pipe (Plastic 3)
13. Clear LDPE shrink wrap (Plastic 4)
14. White expanded polystyrene (Plastic 6)

### Additional organics

15. Garden greenwaste
16. Wooden pallets

Some of the above materials can be characterised as 'bulky waste'. Materials such as wooden pallets or clear LDPE shrink wrap can be stored in skip or FEL bins, but in other cases pallets may be stacked on the ground, and clear LDPE shrink wrap may be baled and stacked on top of each other.

# 2. STORAGE

A dedicated area, or areas, for the storage and collection of the applicable waste and recovery streams must be provided. The storage area(s) must be sized to accommodate all bins or containers for applicable waste and recovery streams, based on suitable and available collection cycles.

## Primary waste areas

The primary waste area(s) are utilised for waste and recoverable materials storage, with this area housing the bins that will be serviced by council and/or a waste contractor.

## Storage area sizing

The primary waste area(s) must be adequately sized to accommodate waste services that encompass all minimum expected waste and recovery materials, with a focus on source separation to reduce contamination and maximise recovery of materials. This includes space for:

- All bins and/or containers
- Bulky waste such as pallets or bales (if applicable)
- Equipment and infrastructure such as balers or compactors (if applicable)
- Access and manoeuvring

To calculate the preliminary sizing, the ***NZGBC Operational Waste Calculator*** must be utilised.

The calculations used to demonstrate that the waste area(s) provided are adequately sized to handle the waste and recovery streams must be based on:

- Actual or calculated operational waste generated by occupants
- Bin type, size and count
- Collection frequency for each waste and recovery stream

***Total volume of waste and recovery materials ≤ (Bin volume x Bin count x Collection frequency)***

The floor area ($m^2$) of the waste area(s) is ordinarily 2x the floor area of all the bins combined. This estimate is merely a guide, as there are many factors to consider when finalising the design of the primary waste area(s). These include, but are not limited to:

- The exact dimensions of the area (length & width)
- The door (opening inward or outward)
- Access for all users (e.g. wheelchair access)
- The types of bins utilised (wheels or no wheels)
- The types of vehicles servicing the waste area (Rear Load, Front Load, Box Body etc.)

Once the preliminary sizing has been determined, this will be used as a guide and the designers must show that the proposed bin setup can work within the final design of the storage area. This will then need to be signed off. Refer to the SIGN OFF section

# 3. ACCESS

Primary and secondary waste areas must be in a convenient and fully accessible location for all applicable users, whether they be occupants or contractors. Not only must the waste areas be accessible, but the overall site must also be accessible for any servicing vehicles.

## Pathways

1. Adequate pathways must be provided for bin movements from secondary waste areas to primary waste areas, and from primary waste areas to collection points (if applicable).
2. The pathway for manually wheeling bins between waste areas and/or collection points is to be as level as possible, free of steps or kerbs, and is recommended not to exceed a grade of 1:14 at any point.
3. If bin movements utilise mechanical support, such as utilisation of quadbikes, electric vehicles, etc., this pathway grade can be increased if signed off by a Health and Safety Officer (or similar).
4. If there is a steep drop in level, such as a lower loading bay, a mechanical system must be put in place. No manual lowering or elevating of bins is allowed.

## Access for occupants

5. The bin layout of the waste area must encourage recycling and recovery of materials and support separation of different materials by all users. All bins should be accessible, with sufficient pathways and manoeuvring space provided to ensure access is not blocked.

## Collection points

6. The collection point is to be an even and hard surface, free from obstructions and with adequate height clearance for all waste activities such as bin lifters, or the mechanical pick up and set down of bins by the collection vehicle.
7. The primary waste area may also be the collection point, but if the collection point and the primary waste areas are in different locations, this should be noted on any technical drawings or designs.
8. The collection point should be at ground level. If the collection point is below or above ground level, this must be approved by the entity performing the collections, whether it be the council and/or the waste contractor.
9. Collection points for residential and non-residential services may be shared, so long as this does not cause any service interferences, such as access issues, and does not hinder any requirements for waste data collection.

## Vehicular access

10. All collection vehicles must enter the site in a forward direction. Exceptions can be made for entering in a reversing manner if all the following conditions are met:
    a. The site has control over access and the traffic flow.
    b. There is approval from the council and/or waste contractor's Operations Manager (or similar).
    c. There is approval from a Health and Safety Officer (or similar).
11. All collection vehicles must exit the site in a forward direction.
12. Collection vehicles must minimise reversing on the property while performing the collection service. It is suitable to perform a reversing manoeuvre to change direction or turn around i.e. 3-point turn. If a collection vehicle needs to reverse to complete a collection run, it must be detailed in the development's traffic management plan and meet the requirements of 10 a-c above.

13. Vehicle turntables can be used to aid with vehicle movements on-site, but this must be reviewed and approved by the council and/or waste contractor's Operations Manager (or similar) and a Health and Safety Officer (or similar).
14. Vehicle dimensions and associated tracking must be done for the vehicles that will service the site.
    a. All vehicle tracking and access requirements must align with Waka Kotahi NZ Transport Agency - RTS 18. On road tracking curves for heavy vehicles 2007. Guidance on operating dimensions is provided below, but the operating dimensions of vehicles differ between waste contractors and are dependent on the types of bins serviced.
    b. The minimum clearance to be added to each side of the tracking curve is 0.5 meters (500 mm).

Note: The exact operating dimensions of the vehicles that will be utilised for your development must be utilised for the tracking curves to confirm access, but below are indicative dimensions.

| Vehicle Type | Bins Collected | Operating Dimension | Measurement |
|---|---|---|---|
| Rear End Loader | Wheelie Bins (MGB): 80L, 140L, 240L, 660L | Vehicle Driving Height | 2,690 mm |
| | | Vehicle Loading Height | 3,088 mm |
| | | Vehicle Width | 2,270 mm |
| | | Vehicle Length | 8,166 mm |
| | | Vehicle + Bin Length | 10,073 mm |
| | | Turning Circle Radius | 8,500 mm |
| | | Turning Circle Diameter | 17,000 mm |

| Vehicle Type | Bins Collected | Operating Dimension | Measurement |
|---|---|---|---|
| Front End Loader | Front Load Bins (FEL): 1.5$m^3$, 3$m^3$, 4.5$m^3$ | Vehicle Driving Height | 4,224 mm |
| | | Vehicle Loading Height | 6,199 mm |
| | | Vehicle Width | 2,485 mm |
| | | Vehicle Length | 9,286 mm |
| | | Vehicle + Bin Length | 11,582 mm |
| | | Turning Circle Radius | 11,100 mm |
| | | Turning Circle Diameter | 22,200 mm |

| Vehicle Type | Bins Collected | Operating Dimension | Measurement |
|---|---|---|---|
| Side Loader | Wheelie Bins (MGB): 80L, 140L, 240L, 660L | Vehicle Driving Height | 3,280 mm |
| | | Vehicle Loading Height | 4,000 mm |
| | | Vehicle Width | 2,482 mm |
| | | Vehicle Length | 9,313 mm |
| | | Arm Swing Clearance | 2,000 mm |
| | | Turning Circle Radius | 11,100 mm |
| | | Turning Circle Diameter | 22,200 mm |

| Vehicle Type | Bins Collected | Operating Dimension | Measurement |
|---|---|---|---|
| Skip | Skips: 3$m^3$, 9$m^3$ | Vehicle Driving Height | 3,565 mm |
| | | Vehicle Loading Height | 4,023 mm |
| | | Vehicle Width | 2,480mm |
| | | Vehicle Length | 6,967 mm |
| | | Vehicle + Bin Length | 10,559 mm |
| | | Turning Circle Radius | 8,500mm |
| | | Turning Circle Diameter | 17,100mm |

| Vehicle Type | Bins Collected | Operating Dimension | Measurement |
|---|---|---|---|
| Box Body | Wheelie Bins (MGB): 80L, 140L, 240L, 660L | Vehicle Driving Height | 3,450 mm |
| | | Vehicle Width | 2,490 mm |
| | | Vehicle Length | 8,630 mm |
| | | Vehicle + Rear Tail Lift Length | 10,855 mm |
| | | Turning Circle Radius | 8,854 mm |

## 4. SIGN OFF

A waste specialist or waste contractor must sign off on the final design and provide confirmation that the proposed operational waste management system utilised to inform the final design is accurate and correct. This includes:

- The waste and recovery services
- The bin types and bin sizes
- The collection frequency
- The waste area sizing and dimensions
- The access for collection vehicles

For Green Star submissions, the Sign Off is to be included as part of the submission along with all other documents outlined in the Submission Template.

# Glossary

**General waste materials**

Materials suitable to be disposed of in a general waste collection service which is destined for landfill. This excludes all materials identified as being recoverable materials, and all liquid and hazardous waste materials.

**Recoverable materials**

Materials that do not require disposal, as they can be recovered via processes such as reuse, recycling, composting, etc.

**Minimum expectations**

If an element of design or best practice is designated as a minimum expectation, this means that this element must be considered and complied with to meet the requirements of these best practice guidelines.

**Dedicated waste area**

An allocated space for storage of waste and recoverable materials which cannot be earmarked or utilised for another purpose such as equipment storage or vehicle parking.

**Primary waste area**

The main waste areas that are utilised for waste and recoverable materials storage, with this area housing the bins that will be serviced by council and/or a waste contractor.

**Secondary waste area**

Interim, temporary and/or internal storage areas, which store the waste at the point of generation. These are populated by bin stations, built-in bin cupboards and/or standalone bins such as wheelie bins or Method Recycling® bins.

**Collection point**

The location where the waste and recovery bins are serviced by the council and/or waste contractor. The collection point may be the primary waste area itself, or be an alternative interim location utilised on collection day, such as a loading bay or kerbside.

**Building Typology**

The purpose or main activity type of a building, which affects the daily operations and determines the type and volume of waste generated.

**Property Management**

A person or group of persons assigned the duty of managing the operational waste for the development or building.

**Health & Safety Officer (or similar)**

A HSEQ professional with suitable qualifications and experience to perform HSEQ audits, risk assessments and create work instructions. This can be a member of the buildings design or operations staff that understands the buildings intended use.

**Operations Manager (or similar)**

A senior waste professional working for council or a waste contractor, with suitable experience to provide insight and feedback on the waste services and operational requirements for a development.

**Waste contractor**

A waste contractor is defined as a company providing waste and/or recovery services in the region the building will be located.

**Gross Floor Area (GFA)**

The buildings GFA is to be used for calculation of waste generation volumes. This includes all areas that were previously known as Primary, Secondary and Tertiary spaces.

# Appendix I: Best Practice Guidance

In addition to the minimum expectations related to the design of a building, the following best practice guidelines for sustainable operational waste management are provided to assist designers, architects, project managers and property managers with an overall understanding of how to manage operational waste as sustainably as possible.

These guidelines provide additional details that build on the Minimum Expectation requirements but note that alignment to these additional guidelines is not a requirement to meet compliance with **Green Star Buildings Credit 4: Responsible Resource Management** or **Green Star Design & As Built Credit 8: Operational Waste**.

**Appendix I** provides additional guidance for the following areas:

- Site Management
- Separation
- Storage
- Safety
- Access

**Appendix II** provides typology specific guidance for the following building typologies:

- Corporate Offices
- Industrial
- Supermarkets
- Healthcare
- Retail
- Accommodation / Hospitality
- Public Building
- Education
- Mixed Use
- Residential

## Site Management

Proper site management should be put in place to ensure best practice guidelines are implemented, maintained and continuously improved upon.

### Roles & responsibilities

1. A person or group of persons should be assigned the duty of managing the operational waste for the development or building. This means that there should be a single point of contact for operational waste to address all waste-related matters that may arise from daily activities.
2. Within these guidelines, this person or group of persons shall broadly be referred to as 'property management'.
3. Property management should engage with council and/or waste contractors to ensure applicable waste services, including bins and signage, are put in place before the building becomes fully operational.
4. Property management should review the waste services within the first six months. This review is to determine if the initial services are suitable and if any changes are required.
5. A review should take place at least once per year thereafter to identify opportunities for continuous improvement and to ensure bins and signage are still accurate and meet required standards. This can be performed by property management or by the waste contractor.
6. It is property management's responsibility to ensure the waste areas are maintained to meet required standards.

### Signage

7. All primary waste areas should be clearly demarcated using clear and concise signage.
8. Signage should be provided for all bins located in primary and secondary waste areas, with the signage being positioned either on the bin, above the bin or on any bin housings.
9. Signage should be clearly visible and legible, meaning it cannot be torn, faded, peeling off or soiled.
10. Signage colours should adhere to the WasteMINZ standard colours of rubbish and recycling bins.
11. Signage should be in English, include the name of the waste or recovery material, along with suitable imagery such as logos, infographics, or photos.
    a. To obtain bilingual signage provided in Te Reo Māori and English, translated by He Kupenga Hao i Te Reo Māori with advice from Para Kore, click here.
    b. Alternative multi-lingual signage should be provided to accommodate the demographics of the development or building (if applicable).
12. It is recommended that signage also include clearly defined acceptance criteria.
13. If a bin is serviced by a waste contractor, the waste contractor should supply the signage for that bin, and the signage should include the waste contractor's contact details.
14. The contact details of property management should be clearly displayed in all primary waste areas.

15. Appropriate health and safety signage should be clearly displayed if any of the waste related activities or areas pose a health and safety risk, such as waste chute discharge points, or areas that utilise machinery such as balers, compactors, or bin lifters. This should be determined by a Health and Safety Officer (or similar).

## Education & training

It is essential that all relevant stakeholders are educated and trained when it comes to management of operational waste. Although this cannot be wholly controlled by property management, sufficient training should be provided to applicable residents, tenants, staff, and visitors.

Education and training can be provided in many forms and can be performed in-house or by an external party such as a waste contractor.

16. For residential typologies, all residents should receive some form of documentation, whether hardcopy or digital, outlining all the implemented waste services, their acceptance criteria, and the methodology that is used to transfer waste and utilise the bins in the primary waste area.
17. For all non-residential typologies, all tenants and/or staff should be trained. Training outlining all the implemented waste services, their acceptance criteria, and the methodology that is used to transfer waste and utilise the bins in the primary and secondary waste area(s) can be provided in multiple forms, such as:
    a. Documentation, whether hardcopy or digital.
    b. In-person sessions or workshops.
    c. Online sessions or workshops.
    d. Induction training videos.
18. It is recommended that visitors should also be educated on the waste practices of the building if they are expected to be involved in any waste generating activities. This may come in the form of the above examples, but if these are not practical or viable, strategically located informative posters may be an option, or including a page on waste and recovery in the sign-in process.
19. A record of all training content and training sessions should be stored by property management.

**Education is key**

All waste and recovery services have an acceptance criterion, meaning the materials that are or aren't allowed to be placed into their respective bins. You may know the acceptance criteria, or the bin label may clearly state the acceptable materials, but without knowing how to identify these materials, you may end up putting the wrong material into a bin, which causes contamination, reduces recovery rates and results in more waste being generated.

Mixed Recycling services most commonly accept Plastic 1, 2 and 5, but with so many plastic varieties, things often get confusing. There is a wealth of educational material that can be accessed on the internet. To view guidance from the Ministry for the Environment, click here.

## Cleaning & hygiene

20. Regular cleaning of the primary and secondary waste areas, along with the collection point (if applicable), should be undertaken to avoid degradation of the area, prevent odours and to reduce the risk of vermin. Regular cleaning will also ensure that there are no incorrectly stored waste streams blocking access or causing health and safety risks.
21. All bins should be maintained to ensure they are clean and fit-for-purpose. They should not be used for storage if they are damaged or visibly soiled.
    a. Cleaning of the bins can be performed on-site if suitable water supply, drainage and trade waste permitting has been provided.
    b. Cleaning of the bins can be performed off-site by a waste contractor if the waste contractor has a suitable wash bay with regular sump collections and applicable trade waste permitting.

## Data & reporting

Accurate waste data and reporting will allow the development to track their operational waste generation and provide insight into how sustainably the operational waste is being managed. You can only manage what you measure, so accurate waste data plays a key role in informing property management on the day-to-day waste and recovery materials that are leaving the site, so action can be taken if waste isn't being minimised or materials aren't being recovered.

At present, council collection services do not provide property management with waste reports. All collections by waste contractors should be reported though, and these reports should be provided to property management.

22. Waste reports should be received monthly and supplied by the waste contractor to property management in an electronic format via email.
23. At a minimum, reports should include:
    a. date of collection.
    b. waste and/or recovery materials serviced.
    c. confirmation of what happened to the material i.e. disposal, recovered etc.
    d. bin information i.e. bin type, bin size and number of bins serviced.
    e. financial information i.e. service charges in NZD.
    f. volume and/or weight information (weight data is preferred).

## Waste targets

The development should aim to achieve a goal or target for the operational waste generated from daily activities. The target could focus on minimising waste and/or maximising recovery but developing the target and tracking progress towards the target can only be achieved by receiving and reviewing accurate waste data and reports.

Waste reduction targets focus on minimising the total amount of waste materials generated. For example, if you generate 1,000kg of waste and recoverable materials, the target may be to reduce this by 50%, meaning that only 500kg of waste and recoverable materials are generated.

Note that reduction targets can include minimising the volume of recoverable materials generated too. A material may be recoverable, but this doesn't mean you should be producing it. For example, even though a single-use plastic water bottle can be recycled, switching to a reusable water bottle would reduce the amount of plastic water bottles put into the recycling bin. Reduction and reuse are always preferable to just recycling in terms of the waste hierarchy.

Waste recovery targets, also known as diversion from landfill targets, focus on the ratio of waste materials sent for disposal vs materials recovered. This is also a very common and popular target metric. For example, if you generate 1,000kg of waste and recoverable materials and 500kg goes to landfill and 500kg is recovered, your recovery ratio is 50%.

To achieve the best sustainable outcomes, it is recommended that both reduction and recovery are incorporated into your targets. This will ensure that the upper levels of the waste hierarchy are considered and implemented.

24. Create baseline waste targets before the development becomes fully operational.
25. Track progress towards these targets on a monthly or quarterly basis.
26. Review targets and determine if it could be improved upon on an annual basis.

## Operational waste management plan

27. To ensure all aspects of these guidelines are implemented, an Operational Waste Management Plan (OWMP) is recommended to be created.
    a. The OWMP can be used as evidence for Green Star Buildings and/or resource consent applications, but they also play a key role in documenting the development's alignment to these guidelines and a learning opportunity for continuous improvement for current and any future projects.
28. The OWMP should include:
    a. A site and/or architectural plan highlighting the location of primary and secondary waste areas along with collection points (if applicable).
    b. Confirmation of the primary waste area sizing, including the calculations used to determine the sizing.
    c. Confirmation of waste services implemented on-site and the layout of the waste areas.
    d. Confirmation of suitable access for people and vehicles.
    e. Confirmation of property management and their contact details

## Separation

The expected operational waste to be generated from a development will need to be serviced, and the design needs to incorporate the real-world service options, not just theoretical ones. The availability of waste services, and their associated acceptance criteria, vary across councils and waste contractors, so an understanding of service availability and its limitations is important.

Council waste collections are on a set collection frequency (either weekly or fortnightly) and waste bins, crates and/or bags come in standard sizes based on the council's service. Councils predominantly service residential homes and buildings, and often have limits to the type of non-residential buildings they will service. Collections from a waste contractor are often more flexible and frequent, provide a larger range of bin types and sizes, and provide a wider range of services for recoverable waste streams.

When designing your storage and access requirements, you need to incorporate the real-world services available to the building or development.

**Method Recycling®**

Method Recycling® bins are a great example of internal bins that assist separation at source to maximise recovery of materials and minimise waste generation.

They come with open or touch lids that adhere to the WasteMINZ standard colours and are made here in Aotearoa New Zealand out of 50%-80% recycled polypropylene collected from the Christchurch and Manawatu regions.

For more information, click here.

Simplified example scenario:

Building A generates 1000kg of general waste per week. The council servicing Building A only collects 1 x 240L wheelie bin once per week, meaning that a standard council service would not be sufficient for Building A.

What are Building A's options?

- Obtain council approval for 5 x 240L wheelie bins collected once per week, ensuring that there is 1,200L of bin capacity to meet the needs of Building A.
- Utilise a waste contractor to supplement the 1 x 240L council collection with an additional 4 x 240L weekly service.
- Shift to a waste contractor collection with some additional flexibility. This could be 1 x 660L wheelie bin collected twice weekly, or 1 x 1.5m$^3$ frontload bin collected weekly.

Every option or variation will influence the size of the waste storage area and the access requirements. The more bins, the more storage space required, with further effects to access and safety. It is important to know that the chosen services should be realistic, practical and available. These chosen services will also impact storage, access and safety for the development or building.

**Standardisation of materials for kerbside collections:**


1 February 2024 saw the implementation of the Ministry for the Environment's notice that all territorial authorities (TAs) that provide a kerbside recycling service must ensure that the following materials (see image) are accepted and recycled.

Standardising the acceptable materials nationally for collections of household kerbside recycling makes it easier for households to know what materials can go into their recycling bin, which results in fewer contaminants, less waste going to landfill, and more materials being recycled overall.

The notice also included requirements for food scraps and FOGO (food organics and garden organics) services.

By 2027, all district and city councils are to provide recycling collections to households in urban areas of 1,000 people or more. Councils with organics processing facilities nearby must also provide a food scraps service by 2027.

By 2030, all district and city councils are to provide food scraps (or FOGO) collections to households in urban areas of 1,000 people or more.

Although this notice is related to household kerbside collection services, they will have an impact on non-residential waste services. From more information, contact your waste contractor.

For more information on the Ministry for the Environment's standardisation of kerbside collections, click here.

**Phasing out hard-to-recycle and single-use plastics:**

In support of the Te rautaki para Waste Strategy and aligning with the standardisation of kerbside recycling, the Government is phasing out certain hard-to-recycle plastics and six single-use items in three tranches.

Hard-to-recycle packaging and products cause contamination of good recyclables and align to a linear economy as they are often only used once before being disposed of.

Shifting away from hard-to-recycle and single-use plastics will help reduce plastic waste, improve our recycling systems and protect our environment. This shift is also part of a wider ambition to move Aotearoa New Zealand towards a low-emissions, low-waste economy.

For more information, click here.

## Storage

Storage spaces are required to ensure a building can manage all waste and recoverables generated from daily activities. The storage spaces should be appropriately sized, located in accessible areas and adhere to all building code and health & safety requirements.

In most cases, more than one storage space will be required, as there are multiple touch points throughout a building related to waste activities.

In the simplest scenario, generated waste may be placed into an applicable bin in an internal waste area, and then this bin is collected or swapped out by a waste contractor.

A more complex scenario may include multiple internal waste areas, emptying these internal bins into larger external bins, and then moving these external bins to a specified collection point for the waste contractor on collection day.

## Waste storage areas

1) More than one waste area may be required to provide adequate storage, or to ensure access and efficient transfer of waste and recoverable materials.
2) Waste areas can be located internally within a building, externally outside of a building, or both.
    a. Internally located primary waste areas should be in a dedicated waste room, or in a clearly demarcated area such as a dedicated portion of a loading bay or basement. If located in an area such as an internal loading bay, it is not required for the waste area to be fully enclosed, fenced or screened, but the waste area should have clear demarcation lines and signage.
    b. Externally located primary waste areas should be clearly demarcated and identifiable. It is preferred for the area to be fully enclosed, fenced or screened, but it is not required if this will hinder access or service requirements. At a minimum, the primary waste area should have clear demarcation lines and signage.
3) Primary waste areas and/or collection points should not be located adjacent to any habitable rooms.
4) Waste areas should be located within the site boundary of the property, unless clear evidence and approvals are provided to justify the waste area being located outside of the property boundary.

## Waste area design

5) Internal and external primary waste areas need to be designed and constructed to ensure they are fit for purpose.
    a. All primary waste areas should comply with the Te Tari Kaupapa Whare Department of Building and Housing's Compliance Document for New Zealand Building Code: Clause G15 – Solid Waste. Refer to Acceptable Solution G15/AS1.
    b. The floors and walls of any waste room should be finished with a rigid, smooth-faced impermeable surface to ensure ease of cleaning.
    c. The dimensions of entry and exits for waste rooms should take the bin sizes into account, to ensure suitable access.
    d. If on-site cleaning of bins is performed, a water supply tap, complying with NZBC G12 should be provided for washing down waste storage areas and applicable drainage complying with NZBC G13 should be provided. Alternatively, off-site cleaning of bins can be performed by a waste contractor.
    e. Indoor or enclosed waste areas should be adequately ventilated, either by a mechanical exhaust ventilation system, or by natural ventilation to open air, in compliance with NZBC G4.
    f. Adequate lighting should also be provided, particularly if an enclosed area or room. If artificial lighting is provided for a waste room, switches should be located both outside and inside the room.
    g. The location of the primary waste area should take building code and safety regulations into account.

### Waste chutes

6) Multistorey buildings and developments may require the use of waste chutes to transfer waste between waste areas or replace the need for a secondary waste area on every level.
7) A waste chute with side-entry hoppers is designed to transfer small daily quantities and is not intended for larger weekly waste and/or recovery bags.
8) The design of the waste chutes should comply with the Te Tari Kaupapa Whare Department of Building and Housing's Compliance Document for New Zealand Building Code: Clause G15 – Solid Waste. Refer to Acceptable Solution G15/AS1:
    a. A minimum internal diameter of 450mm.
    b. Be self-cleaning, vertical and have smooth joints.
    c. Be vented at the top above the roof line and at the bottom above the storage container.
    d. Terminate centrally over a storage container located in a room complying with all other storage guidelines.
    e. The chute cut-off should be kept open except when changing containers, to ensure the chute is always clear.
9) The design of the side-entry hoppers should incorporate the following:
    a. A maximum opening diameter of 250mm.
    b. Self-closing, tight-fitting doors to prevent odours escaping.
    c. Easy to clean wall surfaces surrounding the opening for 300mm (this may be galvanised steel, ceramic tiles or similar material).
    d. Be located outside of and away from any habitable space, enclosed stair access or food preparation area.
    e. Have adequate ventilation, by being in the open air (e.g. on an outside balcony) or inside the building but within a separate ventilated compartment complying with NZBC G4.
10) A suitable water supply tap shall be provided at least every second floor, adjacent to the chute, to facilitate cleaning.

## Safety

Safety is critical to the health and wellbeing of people, business, and communities, and should be treated as a non-negotiable element of all activities associated with operational waste.

### Compliance

1) The design of the primary and secondary waste areas, the chosen bin types and the frequency of collections shall ensure that the entry of trespassers, vermin and/or other animals are restricted.
2) At a minimum, the primary waste area(s) should have clear demarcation lines and signage. This is to ensure the waste areas are clearly visible, and that only appropriate and trained personnel access these areas.

3) Special attention should be provided to typology-specific waste streams as these often pose a higher risk compared to general waste i.e. medical waste, batteries, used oils etc.
4) Storage of waste, even if temporary, can pose a fire risk. The position and location of an external primary waste area relative to the building should therefore comply with the NZS4541:2020 sprinkler system standard. It is recommended that a qualified fire engineer is consulted to ensure your waste area is correctly designed, positioned and compliant with the regulations. A snapshot of the applicable section within the regulation is shown below:

**Referring to Table 2.4: Classification of external fire loads:**

- Type 1 – Waste bin(s) with a capacity of 1,100 litres or less, with no hydraulic presses used for compaction.
- Type 2 – Waste bin(s) with a capacity between 1,101 litres and 8,000 litres, with no hydraulic presses used for compaction.
- Type 3 – Waste bin(s) with a capacity between 8,001 litres and 19,000 litres, with no hydraulic presses used for compaction.

**Referring to Table 2.5: Minimum separation distances:**

| | Blank masonry or concrete wall | Fire resistive or sprinkler protected | Non-combustible, unrated | Combustible |
|---|---|---|---|---|
| Type 1 | Nil | 600mm | 2,000mm | 3,000mm |
| Type 2 | Nil | 600mm | 2,000mm | 6,000mm |
| Type 3 | Nil | 1,500mm | 4,600mm | 9,000mm |

5) If a waste contractor is used, the contractor should:
    a. have the appropriate approvals and licences to operate from the council.
    b. have an Environmental Management System in place such as ISO 14001:2015 or similar.
    c. have an Occupational Health & Safety certification such as ISO 45001:2018 or similar.

For broader knowledge across the entire waste sector, WasteMINZ has compiled a comprehensive guideline document called the Health & Safety Guidelines for the Solid Waste and Resource Recovery Sector, with the aim to help organisations achieve compliance with the Health and Safety at Work Act 2015.

The Waste Collection Modules (pages 85 – 181) are relevant to these guidelines, as they outline the legal framework around waste handling and waste collections.

If you are interested in these guidelines, click here.

**Standardisation of Kerbside Collections – Health and Safety Review**

As part of the standardisation of kerbside collections in Aotearoa New Zealand, the Ministry for the Environment commissioned a health and safety research project to detail the various systems currently in use to collect waste and recyclables from residential households.

The project was undertaken in 2021 by First 4 Safety Ltd, Eunomia Research and Consulting Ltd and Rangiriri Consultants Ltd, with the resulting report providing details on the risks associated with waste collections, along with suggested control measures.

This report provides an in-depth view on why reviewing the risks and hazards associated with operational waste is so important.

Although the report focuses on council kerbside collections, the information can be used for other collection methodologies and for different building typologies.

To download the review document, click here.

**Batteries – the fire risk we need to talk about**

Batteries are a part of everyday life. They are housed within so many of our appliances, tools and almost all things that make our lives easier.

We all need to be more aware of the potential dangers they possess though, particularly when it comes to a very common type: lithium-ion (Li-on) batteries.

Li-on batteries are light, compact, and long-lasting, making them the perfect power source for most of our electronics. But they pose a severe fire risk if they are pierced, damaged, or incorrectly disposed of.

Li-on batteries are found in small electronics such as smartphones, smart watches, laptops and tablets, with the introduction of vapes or e-cigarettes in the past few years bringing a new 'battery-powered' problem to our shores. They are also used within medical devices such as hearing aids and pacemakers.

Some larger electronics that utilise Li-on batteries include cordless power tools, e-scooters, e-bikes and of course electric vehicles (EVs).

In 2022, Auckland Council records showed there had been 46 fires in waste collection vehicles or collection services in the past four years, averaging almost one fire per month! 57% of the fires originated from recycling collections, 35% from waste collections and 8% from inorganic collections.

Note: Batteries should not be put into your general waste bin. They are recyclable, but not within your Mixed Recycling service at home or at the office. They need to be collected via a single stream battery recycling service or dropped off at your nearest battery recycling drop off point.

**Don't:**

- Charge any devices under a pillow, on a bed or on a couch.
- Use or charge a battery that shows signs of swelling, overheating or any other form of damage.
- Leave devices in direct sunlight or hot vehicles.
- Dispose of lithium-ion batteries in general waste.
- Leave discarded batteries in piles.


An improperly disposed of lithium battery caused a fire in a Hamilton recycling truck. Photo: Supplied/ Hamilton City Council

**Do:**

- Only use the battery and charger that are designed for the device.
- Store and charge devices on non-flammable surfaces.
- Recycle lithium-ion batteries at a dedicated recycling service as they can't simply be put in your kerbside recycling bin.

Contact your local council or waste contractor for the locations of recovery services or, if there are none in your area, a hazardous waste drop-off point might be your best option.

## Access

Primary and secondary waste areas should be in a convenient and fully accessible location for all applicable users, whether they be residents, tenants, staff, visitors, council, or waste contractors. Not only should the waste areas be accessible, but the overall site should also be accessible for any servicing vehicles.

### Waste areas

1) The primary and secondary waste areas should be accessible to all applicable users.
2) The bin layout of the waste area should encourage recycling and recovery of materials and support separation of different materials by all users.
    a. All bins should be accessible, with sufficient pathways and manoeuvring space provided to ensure access is not blocked. Blocking access will result in litter, unsafe stockpiling and/or placement of materials into incorrect bins.

### Pathways

3) Adequate pathways should be provided for bin movements from secondary waste areas to primary waste areas, and from primary waste areas to collection points (if applicable).
4) The pathway provided for transferring waste from a secondary waste area to a primary waste area should be unobstructed. In most cases, waste bags or bin liners will be transferred, which can pose a health & safety risk if not done so correctly. If bags are heavy or numerous, the use of a trolley and/or bin with wheels should be considered. For any multistorey buildings, utilisation of a lift and/or chute is required, with the utilisation of stairs being avoided.
5) The pathway provided for transferring waste from a primary waste area to a collection point should be unobstructed. In most cases, wheelie bins and frontload (FEL) bins will be moved, which can pose a health & safety risk if not done so correctly.
    a. Wheelie bins should be moved one at a time, using the correct handling techniques.
    b. Some FEL bins can be manually handled (1.5$m^3$ metal FEL or 3$m^3$ plastic FEL) if they have wheels but should only be manually handled if they are light enough and on a flat and even surface. It is recommended that 2+ persons are required to move a suitable FEL.
    c. Large bins such as Flexibins®, FELs, skips and hookbins should only be moved by the waste contractor, or a suitably qualified forklift driver (if applicable).
6) Manual handling distance should be minimised to reduce health & safety risks, potential for litter or spillage, and for ease of use and convenience.
    a. The default maximum distance from the primary waste area to a collection point is 25m.

   b. If the building or development has a longer manual handling distance, this is suitable if signed off by a Health and Safety Officer (or similar).
7) The handling distance, if mechanically supported by the utilisation of quadbikes, electric vehicles, etc., has no maximum distance, but the methodology should be signed off by a Health and Safety Officer (or similar).

## Collection points

8) Collection points should be located within the property boundaries, apart from suitable and approved kerbside services. Their location and proximity to the property boundary should not cause any noise or odour nuisances to neighbouring properties.
   a. If collection points are external to the property boundary, clear evidence and approvals should be provided to justify the waste being collected from outside of the property boundary.
   b. If collection points are external to the property boundary, it should be no further than 15m from the property boundary unless clear evidence and approvals are provided to justify this.
9) If the collection point is located within the property boundary, the collection vehicle(s) should be able to stand safely and not obstruct any traffic for the entire duration of the service. The collection vehicle should also be able to stand no further than 25m from the bins located at the collection point.
   a. Some leniencies can be provided for traffic obstruction (i.e. blocking a parking bay) if servicing will take no more than 5 minutes, and property management provides approval. This will need to be signed off by a Health and Safety Officer (or similar).
10) If the collection point is located outside of the property boundary, the collection vehicle(s) should be able to stand safely and not obstruct any traffic for the entire duration of the service. The collection vehicle should also be able to stand no further than 10m from the bins located at the collection point.

# Appendix II: Typology Specific Guidance

## Corporate Offices

Office and administrative typologies include standalone corporate office blocks, as well as office space within another building with different typologies.

### Site management

1. Under desk bins should not be used, as these cause a 'throw away' culture which generates more waste as separation of waste and recovery materials does not occur.

### Separation

2. Office furniture and furnishings

A system should be put in place to manage any broken, redundant, or surplus furniture and furnishings from within the building, ensuring they are not put into the general waste without sufficient review of options.

Recovery options for office furniture and furnishings such as desks, tables, chairs, cabinets, couches, and partitions should all be reviewed prior to any disposal option.

It is not a requirement for every single item to be recovered, as the item may not be recoverable based on its condition, but a review system should be put in place to assess the recoverability of the material before disposal, and if a recovery option is viable, to utilise that option instead of disposal.

This system should also be implemented during any refurbishments or office upgrades, as the items being replaced are often aged but still fully usable.

Solutions for these materials include, but are not limited to:

- Charity organisations
- Social enterprises (such as All Heart NZ)
- Staff donations

3. Secure document destruction

Offices and administrative buildings generate paper waste. A portion of the paper printouts will include confidential information, such as a customer's account details or employee records. Utilising on-site shredding is an option, but shredded paper cannot go into a mixed recycling or single stream paper recycling service. Therefore, it is recommended that a waste contractor is utilised for secure document destruction. All confidential documents will be placed into a lockable wheelie bin, and a swap out service is provided once the wheelie bin is full. The documents will then be shred at a secure off-site location and once destructed, the paper output can be recycled.

## Industrial

Industrial typologies include a wide range of developments, such as manufacturing facilities, distribution and logistics, storage and warehousing, workshops, and commercial businesses. Due to this broad range, industrial developments may need to align with multiple typology-specific requirements.

### Separation

1. Liquid & Hazardous waste

If liquid and/or hazardous waste is generated by the industrial development, it should be managed appropriately. Some examples of liquid and/or hazardous waste that require appropriate management include, but are not limited to:

- Waste oils, oil filters and oily rags
- Waste solvents
- Waste paints
- Industrial chemicals
- Batteries (from vehicles such as forklifts and equipment such as pallet stackers)
- Pressurised containers (LPG gas containers and spray paint cans)

2. Clear LDPE shrink wrap (Plastic 4)

It is highly likely that this material will total more than 5% of the annual waste profile either by volume (m3) or weight (kg). The clear LDPE shrink wrap can be serviced either by a wheelie bin and/or FEL collection service. Alternatively, depending on volume, property management may decide to bale on-site, and store enough bales before a collection service is viable.

3. Wooden pallets

It is highly likely that this material will total more than 5% of the annual waste profile either by volume ($m^3$) or weight (kg). The wooden pallets can be recycled by a waste contractor, where the pallets are stacked neatly and safely prior to collection by a flat deck vehicle, or pallets can be stored

within a skip prior to a skip truck collection. Alternatively, a collection can be arranged with the supplier of goods, so pallets are collected when new palletised items are delivered. This swap service is preferred, as it ensures the pallets are reused instead of recycled.

4. Scrap metal

It is highly likely that this material will total more than 5% of the annual waste profile either by volume ($m^3$) or weight (kg). The scrap metal can be serviced by a skip or hook bin collection service by a waste contractor.

5. Used tyres

Depending on the type of industrial activity, used tyres may total more than 5% of the annual waste profile either by volume ($m^3$) or weight (kg). Incorrect storage and stockpiling of tyres poses a significant fire risk. Engage with your waste contractor for recovery options, and for more information on tyre product stewardship, visit the Tyrewise website.

## Supermarkets

Supermarkets, also known as grocery stores, differ from general retail stores primarily due to food and beverage products being the main saleable products. With an expected high proportion of waste materials being organic waste, particular focus should be placed on food waste procedures.

### Separation

1. Food waste

Recovering 'food scraps' is a minimum expectation, but special attention should be provided to the broader 'food waste' category. For supermarket typologies, food waste comes in many forms:

- Unpackaged food products, such as fruit and vegetables, deli meats and bakery goods.
- Packaged food products, such as processed foods, frozen products and grocery staples.
- Beverages, such as bottled water, fizzy drinks and milk cartons.

Recovery solutions will vary, depending on the different types of food, along with the makeup of their specific packaging. It is not a requirement for every single item to be recovered, as the item may not be recoverable based on its condition, but a review system should be put in place to assess the recoverability of the material before disposal, and if a recovery option is viable, to utilise that option instead of disposal.

The following tiered approach to (1) reducing food waste and (2) maximising the recovery of the food waste that is generated should be implemented:

a. **Reduced pricing**: as the product gets closer to its sell-by date, reduce the price to encourage consumers to purchase the product.

b. **Food rescue:** provide the products to food rescue organisations to ensure the items are provided to the less fortunate.
c. **Animal feed:** if not fit for human consumption, some products may still be suitable for animal consumption.
d. **Composting:** if not fit for human or animal consumption, returning the nutrients back to the soil to grow more food is a great option.
e. **Vermiculture (worm farms) / Bioconversion (fly farms):** utilising nature to upcycle organic waste into new valuable organic materials.
f. **Anaerobic digestion (AD) / Energy Park:** utilising natural processes to upcycle organic waste into new valuable organic materials and/or energy.

2. Fats and oils

Supermarkets with a deli should implement a fats and oils collection service. This waste stream is generated when deep-frying foods, and when cooking roast chickens. There are health and safety concerns related to incorrect disposal and storage of this material, so engage your waste contractor for options.

3. Clear LDPE shrink wrap (Plastic 4)

It is highly likely that this material will total more than 5% of the annual waste profile either by volume ($m^3$) or weight (kg). The clear LDPE shrink wrap can be serviced either by a wheelie bin and/or FEL collection service. Alternatively, depending on volume, property management may decide to bale on-site, and store enough bales before a collection service is viable.

4. Wooden pallets

It is highly likely that this material will total more than 5% of the annual waste profile either by volume ($m^3$) or weight (kg). The wooden pallets can be recycled by a waste contractor, where the pallets are stacked neatly and safely prior to collection by a flat deck vehicle, or pallets can be stored within a skip prior to a skip truck collection. Alternatively, a collection can be arranged with the supermarket's supplier, so pallets are collected when new palletised items are delivered. This swap service is preferred, as it ensures the pallets are reused instead of recycled.

## Healthcare

Healthcare facilities cover a broad scope of building typologies, all with a common element of providing medical services. Examples include a doctor's medical practice, a veterinary practice, a hospital, a care home (usually a part of an aged care facility), a mortuary, a blood bank, and a research facility such as laboratory.

Some healthcare typologies, such as aged care facilities, will be classified as Mixed-Use typologies, as there are residential and non-residential components to the building or development.

Detailed best practice guidelines and resources for all aspects of healthcare facilities can be found within the Australasian Health Facility Guidelines (AusHFG), with some specific waste related elements that are worthy of mention:

- Part D – Infection Prevention and Control: includes information of separation of dirty and clean workflows for managing waste.
- Part B – Health Facility Briefing and Planning: includes general requirements for facilities including waste.
- DISP-15: guidelines for disposal rooms.

For aged care facilities specifically, a detailed 'better practice guideline' document has been created by the Government of South Australia and ACSA (Aged & Community Services Australia). This document focusses on waste and recycling in aged care facilities, and can be found here.

### Site management

1. All healthcare typologies generate medical waste, which should be handled, stored, transported, and treated appropriately due to its hazardous nature. All healthcare typologies should therefore adhere to the NZS 4304:2022 New Zealand Standard Management of Healthcare Waste.
2. To ensure all requirements of NZS 4304:2022 are implemented, an Operational Waste Management Plan (OWMP) should be created.
3. A waste tracking programme should be implemented to ensure all documentation and dangerous goods declaration forms are completed, as per Section 4.9 of NZS 4304:2022.
4. Every building should have an Emergency Preparedness Plan, which should include the procedures and plans to be put in place to manage operational waste in the event of an outbreak of illness or the rise of a pandemic (such as Covid-19). These types of events dramatically increase the volume of medical waste generated, as general waste will be treated as medical waste as a safety precaution, and the operational waste areas and services will need to accommodate this increase.
5. Spill kits should be accessible and available in the event of any spillages of medical waste.
6. It is recommended that regular waste audits are to be performed to identify if there are any breakdowns in procedure and if any medical waste is incorrectly ending up in the general waste stream. A waste audit is a process performed by a waste expert, whereby the contents of the waste bin are sorted, photographed, weighed, and characterised to provide a detailed picture of what is being thrown away and what improvements could be made to increase recovery, minimise waste or improve health and safety protocols.

## Separation

7. Medical waste

All healthcare typologies should implement a medical waste service provided by a waste contractor, as utilising general waste services for medical waste is not acceptable.

In addition to waste contractors having an EMS and OHS certification (see Compliance), all waste contractors servicing the medical waste bins should adhere to service specific standards. For example, if reusable containers are used for the collection of sharps, then the contractor should adhere to AS/NZS 4261:1994.

8. Laboratory chemicals and reagents.

These chemicals and reagents are common across healthcare facilities. All chemicals, reagents, containers and apparatus should be appropriately stored, labelled and disposed of in accordance with applicable regulations.

Examples of detailed guidelines from the University of Otago can be found here, and from the University of Canterbury can be found here.

A service to collect, treat and dispose of these materials can be provided by an accredited waste contractor.

## Storage

9. All storage areas should adhere to Section 5 of NZS 4304:2022.
10. Primary waste areas and collection points for medical waste should be within the property boundaries.
11. Kerbside collections for medical waste are not acceptable, as medical waste bins cannot be unattended or unsupervised at the roadside or any other areas where the public may have unsupervised access.
12. Medical waste bins can be stored within the same primary waste area as general waste and recovery services, but suitable signage should be provided to clearly showcase which bins are for medical waste and which categories of waste are stored in the area i.e. infectious substances, cytotoxic etc. See Access section below for more details.

## Access

13. All movement of medical waste should adhere to Section 4.8 of NZS 4304:2022.
14. The location of collection points should allow direct access to the primary waste area for the waste contractor's servicing vehicles.
15. Additional security measures should be put in place to prevent unauthorised personnel accessing the medical waste bins. One of the following options should be implemented:
    a. All medical bins within the primary waste area should be lockable. The bins should always be locked, and only unlocked by an authorised person when being filled or when being serviced by the waste contractor.

b. If each individual bin can't be locked, then the primary waste area itself should be lockable. The primary waste area housing the medical bins should always be locked, and only unlocked by an authorised person when being utilised or when being serviced by the waste contractor.
c. If the entire primary waste area can't be locked, then a lockable section within the primary waste area needs to be designed. This could be a cage or gated portion of the primary waste area, or a primary waste area for just for medical waste could be designed. This area should always be locked, and only unlocked by an authorised person when being utilised or when being serviced by the waste contractor.

# Retail

Retail typologies include a wide range of developments, from standalone retail stores to large shopping centres. Based on the broad nature of the retail sector, a development may include a mixture of stores, from big box retailers through to fast food outlets.

## Site management

### Restaurant / Fast-food

Food courts should provide waste management options for food scraps and food packaging. The system needs to balance providing a service for patrons with the knowledge that most public-facing food scraps and recycling bins are highly contaminated with non-recoverable materials.

1. A system should be put in place to manage the food scraps and food packaging waste generated from food courts.
2. The system can vary between the following two extremes:
    a. Providing a full suite of public-facing bins for waste and materials recovery, with clear signage.
    b. No public-facing bins, but property management provides cleaning staff to collect materials left on the table, with cleaning staff utilising internal bins that are not accessible to the public. Property management also provides signage to educate consumers as to why there are no bins and what they should do with any waste generated i.e. “please leave your leftovers and packaging on the table and we’ll recover it for you”.

### Shopping centres

Shopping centres are publicly accessible spaces. Systems should be put in place for the waste generated from the retail stores themselves, but waste can also be brought onto the premises by the public, which creates a waste management requirement for property management.

3. A system should be put in place to manage the public waste on the retail development’s premises. The system needs to balance the prevention of litter with the knowledge that most public-facing recycling bins are highly contaminated with non-recoverable materials.
4. The system can vary between the following two extremes:
    a. Providing a full suite of public-facing bins for waste and materials recovery, with clear signage.
    b. No public-facing bins, but property management provides signage to educate consumers as to why there are no bins and what they should do with any waste generated i.e. “please take your waste home with you” or “please ask for assistance if you don’t know what to do with your food packaging”.

## Separation

### General retail

5. Clear LDPE shrink wrap (Plastic 4)

It is highly likely that this material will total more than 5% of the annual waste profile either by volume ($m^3$) or weight (kg). The clear LDPE shrink wrap can be serviced either by a wheelie bin and/or FEL collection service. Alternatively, depending on volume, property management may decide to bale on-site, and store enough bales before a collection service is viable.

6. Wooden pallets

It is highly likely that this material will total more than 5% of the annual waste profile either by volume ($m^3$) or weight (kg). The wooden pallets can be recycled by a waste contractor, where the pallets are stacked neatly and safely prior to collection by a flat deck vehicle, or pallets can be stored within a skip prior to a skip truck collection. Alternatively, a collection can be arranged with the store's supplier, so pallets are collected when new palletised items are delivered. This swap service is preferred, as it ensures the pallets are reused instead of recycled.

7. White expanded polystyrene (Plastic 6)

It is likely that this material will total more than 5% of the annual waste profile by volume ($m^3$). Polystyrene is problematic when it goes to landfill, as it takes up a lot of landfill airspace, and when it eventually breaks down, it breaks down into nasty chemicals that the landfill does not want to manage. Waste contractors do offer single stream recycling services in most major cities in New Zealand, but they are not available everywhere. The best option is to reduce the use of polystyrene, by implementing more sustainable packaging options with suppliers.

8. Store products

A system should be put in place to manage any damaged, faulty, or returned store products, ensuring they are not put into the general waste without sufficient review of options. It is not a requirement for every single item to be recovered, as the item may not be recoverable based on its material composition or condition, but a review system should be put in place to assess the recoverability of the material before disposal, and if a recovery option is viable, to utilise that option instead of disposal.

Solutions for these materials include, but are not limited to:

- Selling items at reduced prices (clearly noting any faults / issues).
- Returning items to the manufacturer.
- Refurbishing / fixing items in-house.
- Refurbishing / fixing items through a 3rd party service provider.
- Providing reusable returns to charity organisations or social enterprises.

## Restaurant / Fast-food

9. Food scraps

A solution for food scraps and food preparation waste should be implemented. Solutions may include:

- Animal feed
- Composting
- Vermiculture (worm farms) / Bioconversion (fly farms)
- Anaerobic digestion (AD) / Energy Park

10. Fats and oils

Restaurants / fast-food outlets should implement a fats and oils collection service. This waste stream is generated during the cooking process, with health and safety concerns related to incorrect disposal and storage of this material, so engage your waste contractor for options.

11. Food packaging

It is not a requirement for every single packaging item to be recovered, as the item may not be recoverable based on its material composition or condition, but a review system should be put in place to assess the recoverability of the packaging materials used before disposal, and if a recovery option is viable, to utilise that option instead of disposal.

A review should be implemented to determine if reusable packaging options are viable to reduce the reliance on single-use packaging. In addition, a sustainable procurement review should be conducted to determine whether more sustainable materials can be used to promote waste reduction and materials recovery.

## Shopping centres

A shopping centre will include a mixture of retail stores. Therefore, waste streams generated from this mixture of stores should be considered.

- If the shopping centre includes a supermarket, the supermarket typology recommendations should be followed.
- If the shopping centre includes restaurant and/or fast-food outlets, the above recommendations should be followed.
- If the shopping centre includes general retail stores, the above recommendations should be followed.

## Accommodation / Hospitality

Accommodation typologies, which include buildings such as hotels, motels, and hostels, align with many aspects of the Residential typology. The key difference would be that accommodation facilities are commercial buildings, with the entire building's waste serviced collectively instead of services for individual units.

Therefore, waste services are more likely to be provided by a waste contractor and not by a council, but a mixture of council and waste contractor services is still possible.

Below are the typology specific requirements for accommodation developments:

### Separation

1. Furniture, furnishings, and appliances

A system should be put in place to manage any broken, redundant, or surplus furniture, furnishings, and appliances from within the building, ensuring they are not put into the general waste without sufficient review of options.

Recovery options for furniture and furnishings such as beds, tables, chairs, basins, baths, showers, cabinets, and closets, along with appliances such as fridges, microwaves, ovens, stoves, kettles, irons and washing machines should all be reviewed prior to any disposal option.

It is not a requirement for every single item to be recovered, as the item may not be recoverable based on its condition, but a review system should be put in place to assess the recoverability of the material before disposal, and if a recovery option is viable, to utilise that option instead of disposal.

This system should also be implemented during any refurbishment or facility upgrades, as the items being replaced are often aged but still fully usable.

Solutions for these materials include, but are not limited to:

- Charity organisations
- Social enterprises
- Garage sales
- Staff donations

## Storage

2. All waste rooms and/or internal primary waste areas should be fully enclosed and separated from habitable spaces and food preparation areas.
3. All external primary and/or secondary waste areas should be screened from habitable spaces, adjacent accommodation sites and from the street frontage.
    a. If adjoins or directly faces open or residentially zoned land, the screen should be no less than 1.8m high and constructed of concrete, brick, stone, timber, or other suitable materials.
    b. If adjoins or directly faces the road, the screen should be no less than 1m high and constructed of concrete, brick, stone, timber, or other suitable materials, or alternatively, densely planted vegetation that will screen the area across all seasons of the year.
4. Sufficient bulky storage space should be provided for storage of furniture and appliances.
5. If waste chutes are utilised, it is recommended that no more than 6 units per floor be serviced by each hopper entry to avoid maintenance issues.

## Access

6. The maximum carry distance between any occupancy and the nearest waste chute, waste room or waste area should be no more than 30m.

## Public building

A public building typology encompasses both public and private developments that are open and accessible to the public. This includes facilities such as libraries, community centres, event centres, swimming pools, and museums to name a few examples.

### Site management

Systems should be put in place for the waste generated from the operations of the building, but due to the public access, waste can be brought onto the premises by the public which creates a waste management requirement for property management.

1. A system should be put in place to manage the public waste on the development's premises. The system needs to balance the prevention of litter with the knowledge that most public-facing recycling bins are highly contaminated with non-recoverable materials.
2. The system can vary between the following two extremes:
    a. Providing a full suite of public-facing bins for waste and materials recovery, with clear signage.
    b. No public-facing bins, but property management provides signage to educate consumers as to why there are no bins and what they should do with any waste generated i.e. "please take your waste home with you" or "please ask for assistance if you don't know what to do with your food packaging".

# Education

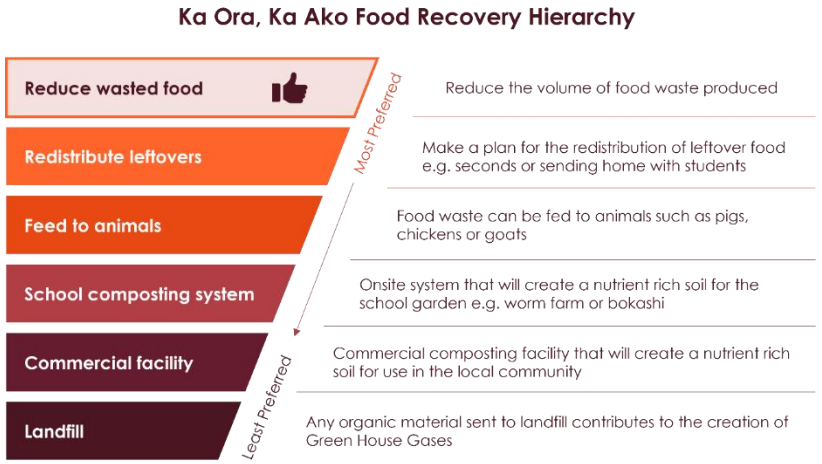
Educational facilities include primary, secondary, and tertiary education-based buildings, whether they be a standalone school, or a university property comprised of multiple buildings.

## Site management

An educational facility is a perfect learning ground for showcasing best practice waste management techniques and implementing solutions that will inspire future generations. Although not a requirement, the below are examples of programmes to maximise recovery and inspire young minds to be future waste champions:

1. Implementing projects focused on reducing food waste and packaging.

Food waste is a problem across the globe, but with 17% of 12 year olds in Aotearoa New Zealand living in food insecurity, this adds additional layers of pressure to ensure we don't waste. Te Mahau Ka Ora, Ka Ako Healthy School Lunches Programme provide fantastic resources and tools to assist with minimising waste at schools. Their food recovery hierarchy, along with information on innovate ways to minimise food and packaging waste can be found here.




On-site composting is also a great educational tool to teach the value of organics and the circular nature of the nutrient cycle. Schools can also use the compost on their sport fields or in their vegetable gardens, which reduces the requirements for purchasing fertiliser. Te Mahau Ka Ora, Ka Ako Healthy School Lunches Programme provide further information here.

2. Nau Mai ki Enviroschools

Enviroschools is an environmental action-based programme designed to empower young people to lead sustainability projects.

*"Enviroschools is a nationwide programme supported by Toimata Foundation, founding partner Te Mauri Tau, and a large network of regional partners. Early childhood centres and schools commit to a long-term sustainability journey, where tamariki/students connect with and explore the environment, then plan, design and take action in their local places in collaboration with their communities."*

To learn more about Enviroschools, click here.

### Separation

3. Laboratory chemicals and reagents.

These chemicals and reagents are common across all tiers of education. Whether it be a small classroom lab to showcase fun and entertaining chemical reactions to primary schoolers, or a commercial grade research laboratory at a university, all chemicals, reagents, containers and apparatus should be appropriately stored, labelled and disposed of in accordance with applicable regulations. Examples of detailed guidelines from the University of Otago can be found here, and from the University of Canterbury can be found here.

A service to collect, treat and dispose of these materials can be provided by an accredited waste contractor.

## Mixed Use

Mixed use developments combine both residential and non-residential typologies or contain multiple non-residential typologies (such as a building with multiple tenancies). Examples include an aged care facility with a care home, independent living units and serviced apartments, or a low-rise apartment building with commercial businesses on the ground floor.

Mixed use developments should adhere to the minimum expectations and each of the typology-specific recommendations for any relevant typologies.

### Site management

1. The waste reports provided by the waste contractor should be able to provide a split of waste data between residential and non-residential and/or between tenancies. The building's storage area and implemented services should support this.

### Storage

2. The primary waste area can contain all waste and recovery bins if the following conditions are met:
   a. The bin setup does not cause any access or safety issues.
   b. All users are provided education and training on how to access and utilise the primary waste area correctly and safely.
   c. The bin setup allows for waste data to be collected separately for the residential and non-residential waste and/or from the different tenancies. To confirm this condition will be met, confirmation should be provided from the waste contractor.
3. If the above conditions aren't met, then the following options are to be considered:
   a. A combined waste area, but the non-residential bins are locked and can only be utilised by persons approved by property management.
   b. A combined waste area, but with a lockable fence, door, gate etc. separating the residential and non-residential bins and/or different tenancies.
   c. Separate waste areas e.g. one for residential bins and another for non-residential bins.

4. The utilisation of a combined residential and non-residential collection point is allowed, but the above requirements for access, safety and data collection should be met.

## Residential

Green Star Buildings focusses on commercial buildings and developments, and not residential developments. Residential developments do create operational waste, and there may be a residential component to a commercial development, so best practice guidance has been created for residential developments, although this is supplementary to these guidelines.

As per the definition provided by Auckland Council's District Plan, a residential unit means a building, a room or a group of rooms, used, designed or intended to be used exclusively by one or more persons as a single, independent and separate household unit.

A residential development is therefore a collection of residential units, with a variety of development types, such as:

- **Residential houses:** standalone houses located off the road, at the end of a shared access way or a private thoroughfare.
- **Gated communities:** residential houses within a walled or gated area with a secure access point.
- **Terraced Houses:** two+ storey houses attached to neighbouring units.
- **Units, single or two storeys:** large building with individual front door access per residential unit.
- **Low-rise and mid-rise apartments:** three to ten storeys with communal entrance.
- **High rise apartments:** greater than ten storeys with communal entrance.
- **Multi-unit development (MUD):** multiple tenancy property comprising of 10 or more separately occupied residential units, whether in the same building or in separate buildings, and held either in common ownership or in separate ownership. This includes a unit title development, a mixed-use premises with business activities, and any development with controlled or restricted access, such as a gated community.

### Regulations

1. All residential developments should adhere to the applicable bylaws of their council. Some examples are linked below:
    a. Auckland
    b. Wellington
    c. Christchurch
2. These bylaws may include a requirement to create an Operational Waste Management Plan (OWMP) for MUDs, such as Auckland council's requirement under Section 16 of their Waste Management and Minimisation Bylaw 2019, Wellington council's requirement under Section 12 of their Solid Waste Management and Minimisation Bylaw 2020 or Christchurch council's requirement under Section 10 of their Waste Management and Minimisation Bylaw 2023.

## Separation

3. If communal collections are chosen as the preferred collection methodology for the development:
    a. The person(s) responsible for managing the waste should be identified. This may be a body corporate or a property manager.
    b. The process for transferring waste and recoverable materials from the units to the communal waste area needs to be established and clearly communicated with all residents.
4. If kerbside collections are chosen as the preferred collection methodology for the development:
    a. approval should be provided by the council, noting that some councils won't approve kerbside collections for developments above six or ten units.
    b. approval should be provided by the waste contractor (if being utilised).
    c. the kerbside space utilised as the collection point should not exceed one-third of the width of the property frontage.
    d. the collection point, including the temporary storage of bins and the servicing vehicle, should not create an obstruction of the pathway or roadway or cause an illegal hazard.
5. Kerbside collections may be at the end of the lane entering the property, or may be outside each unit on the property, which would require the servicing vehicle to enter the property via an access road or driveway. For on-site collections, an access waiver may be required by the relevant council.
6. Hazardous waste from residential buildings is not serviced by a council collection, and the volumes generated are often too small for a waste contractor. These materials should not go into the general waste or recovery services, so public drop off points provided by the council should be utilised. Visit your local council's website for more information.
    a. Example: click here for Auckland council's hazardous waste information.

## Storage

7. All waste rooms and/or internal primary waste areas should be fully enclosed and separated from habitable spaces and food preparation areas.
8. All external primary and/or secondary waste areas should be screened from habitable spaces, adjacent residential sites and from the street frontage.
    a. If adjoins or directly faces open or residentially zoned land, the screen should be no less than 1.8m high and constructed of concrete, brick, stone, timber, or other suitable materials.
    b. If adjoins or directly faces the road, the screen should be no less than 1m high and constructed of concrete, brick, stone, timber, or other suitable materials, or alternatively, densely planted vegetation that will screen the area across all seasons of the year.


NZGBC
TE KAUNIHERA HANGANGA TAUTAIAO