

Health and Safety Guidelines:

for the Solid Waste and Resource Recovery Sector – parts one, two, three, four and five

WasteMINZ, 2022

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PO Box 305426, Triton Plaza, North Shore 0757, New Zealand

Available on the WasteMINZ website: www.wasteminz.org.nz.

The information contained in these guidelines is freely available for use, provided this source is acknowledged.

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- Accident Compensation Corporation
- Earthcare Environmental New Zealand Ltd
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- Onyx Environmental Services Ltd
- REMONDIS New Zealand Ltd
- Smart Environmental Ltd
- WasteMINZ

These guidelines were developed in consultation with a number of organisations. They could not have been created without the time and expertise of the following working groups:

- WasteMINZ Health and Safety Guidelines Technical Working Group for parts one and two
- WasteMINZ Health and Safety Guidelines Technical Working Group for part two
- WasteMINZ Health and Safety Guidelines Technical Working Group for part three
- WasteMINZ Health and Safety Guidelines Technical Working Group for part four
- WasteMINZ Health and Safety Guidelines Technical Working Group for part five
- WasteMINZ Health and Safety Guidelines Technical Working Group for Health and Safety at Work Act 2015 updates
- WasteMINZ Low Entry Vehicle Working Group
- WasteMINZ Health and Safety Sector Group Steering Committee (throughout the development of the guidelines)

About WasteMINZ

WasteMINZ is the largest representative body of the waste, resource recovery and contaminated land sectors in New Zealand. Formed in 1989, it is a membership-based organisation with over 1,300 members – from small operators through to councils and large companies.

As the authoritative voice on waste, resource recovery and contaminated land issues in New Zealand, WasteMINZ seeks to achieve ongoing and positive development of the industry through strengthening relationships, facilitating collaboration, knowledge sharing and championing the implementation of best practice standards.

Disclaimer

Every effort has been made to ensure that these guidelines are as comprehensive and accurate as practicable; however, WasteMINZ will not be held responsible for any action arising out of their use. The sample templates in the appendices should be tailored to reflect individual business practices and places of work, adding additional business processes as required. If the reader is uncertain about issues raised in these guidelines, they should refer to the Health and Safety at Work Act 2015 and other applicable legislation and seek further expert advice as necessary.

Foreword

Following two fatalities in 2001, the Accident Compensation Corporation and the Department of Labour approached the chief executive officers of the major waste companies operating in New Zealand, to express their concern. They strongly encouraged the development of guidance material for the sector. And so began WasteMINZ' strong and ongoing commitment to health and safety in the solid waste and resource recovery industry.

In 2002, WasteMINZ produced draft *'New Zealand guidelines for waste and recoverable resource collection, processing and disposal - operation of rear loading compaction collection trucks safety requirements*. Following on from this we published the *'Health and safety in the waste industry – industry strategy'* in 2006. Updated in 2012 and retitled *'Health and Safety Strategy for the Solid Waste and Resource Recovery Sector'*, the strategy aims to provide guidance and leadership and to significantly reduce accident and death rates. A key goal of the strategy is to develop and promote relevant good practice standards and guidelines and to encourage their adoption throughout the sector.

WasteMINZ began developing the guidelines in 2009 with an initial funding contribution of \$30,000 from its reserves combined with significant resource and technical contributions from WasteMINZ members.

A technical working group was established to advance the guidelines with representation from right across the sector; they worked closely with risk and safety management specialists Impac to develop parts one and two of the guidelines using national and international sources to reflect good practice.

In 2013, further funding was secured, including significant support from industry leaders and partners. Burke Consulting Ltd and First 4 Safety Ltd were contracted by WasteMINZ to develop parts two, three, four and five supported by new technical working groups and the updated guidelines were published in 2014.

The Health and Safety at Work Act 2015 (HSWA) came into effect on 4 April 2016, repealing the Health and Safety in Employment Act 1992 and this required the guidelines to be updated with the relevant sections of the HSWA. WasteMINZ' Strategic Investment Fund contributed funding for this project in 2016, First 4 Safety Ltd was contracted to update the guidelines and a technical working group was formed to assist.

The guidelines are a 'living' and ever evolving document comprising five parts:

- Part one: introduction, legislation, and regulations
- Part two: generic modules and waste collection modules
- Part three: pandemic management within your business continuity plan (bcp), material recovery facilities and resource recovery parks
- Part four: refuse transfer stations

- Part five: landfills.

The guidelines, including any updates, will be freely available on the WasteMINZ website (www.wasteminz.org.nz).

These documents were developed by the sector for the sector; to provide guidance and leadership. I'm pleased to say our industry has come a long way since 2001, with cross sector collaboration and cooperation strongly influencing good practice throughout the supply chain.

On behalf of WasteMINZ and the industry as a whole I would like to extend my sincere thanks to all those who have contributed to these guidelines, your tireless work has come to fruition.

In closing, excellence in health and safety is more than complying with guidance documents. It is about creating a culture that will provide a safe and healthy environment for everyone engaged in the sector.

Darren Patterson

Chair, WasteMINZ

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1. Introduction

Good practice in health and safety is about more than legal compliance; it is about creating a healthier and safer workplace culture through good leadership, management of risk and engagement with workers.

The solid waste and resource recovery sector is striving to move towards good practice in health and safety management. The purpose of these guidelines is to provide practical advice to help achieve this goal. The guidelines also aim to help organisations achieve the 'bottom line': compliance with the Health and Safety at Work Act 2015 (HSWA) and associated regulations. The guidelines are developed by the sector, for the sector.

What are guidelines?

Guidelines set out the standards and guidance that constitute good practice within a sector, to assist with the effective management of health and safety. Although not legally binding, guidelines are admissible in court and may be used in evidence of good practice. These guidelines are designed to help a Person Conducting a Business or Undertaking (PCBU), and their managers, supervisors and workers understand how to meet their legal requirements.

The HSWA and associated regulations are the primary legislation governing health and safety in New Zealand. The guidelines sit beneath health and safety legislation in a hierarchy of compliance (Figure 1) which also includes codes of practice and standards.

Other key legislation, including the Employment Relations Amendment Act 2018 and the Hazardous Substances and New Organisms Act 1996, is listed in Appendix 8.

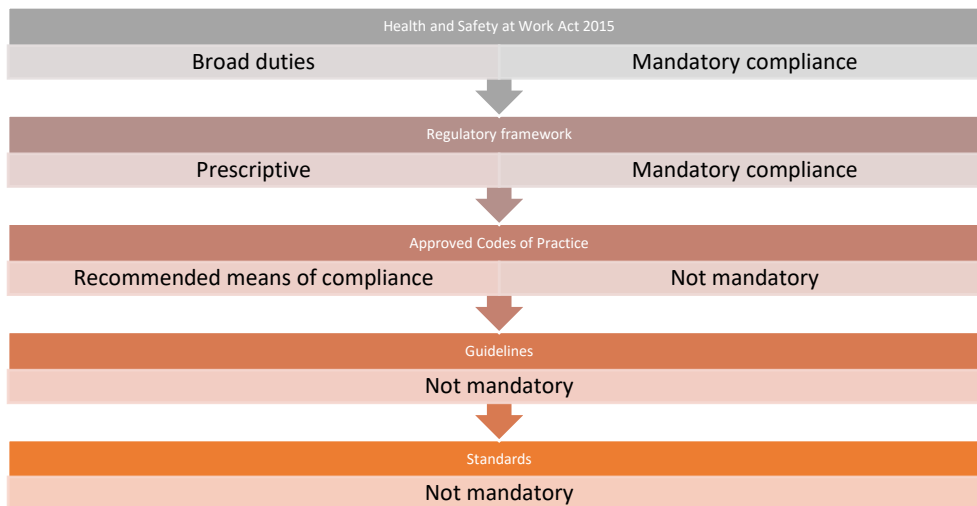


Figure 1:
The hierarchy for legal compliance under the HSWA

The HSWA requires PCBU’s to take reasonable steps to ensure the safety of workers at work. This requirement can be daunting, especially for those who are just getting started with health and safety terminology or requirements.

How to use these guidelines

[The Introduction section](#) outlines legal requirements and their implications in practice within the New Zealand solid waste and resource recovery sector; the symbols used throughout the document; and how to establish whether actions are recommended practices or legal requirements.

[The generic modules](#) are listed alphabetically and contain information on activities or practices that are common to New Zealand’s solid waste and resource recovery sector. Each topic is split into specific legal requirements, an explanation of what is needed in practice to meet those requirements, and recommended actions.

[The waste collection modules](#) and the [waste processing facilities modules](#) follow the same format, applying to those activities or hazards that are specific to collecting, managing and processing materials for the solid waste and resource recovery sector.

What do the symbols in the guidelines mean?



THE LAW: Indicates that there is a legal obligation and refers to a specific piece or pieces of legislation.



MORE INFORMATION: Explains **what the sector needs to know** or to do to meet legal requirements or good practice.



ACTION POINT: Provides suggestions on what could or should be **implemented** in order to meet good practice and legal compliance.



PROSECUTIONS: If there has been a relevant prosecution, a summary of findings and the penalty is provided as an example.



IMPORTANT: Highlights or summarises key messages.

Interpretation

Use of the words '**must**', '**ensure**', '**require**' or '**mandatory**' in the context of a legal requirement indicates that compliance is *compulsory*.

Use of the word '**should**' indicates a *recommended* course of action. The guidelines intend a good practice imperative here, rather than a legal one. An alternative or equally effective method of achieving a safe workplace can be chosen, but the suggestions in these guidelines are considered a minimum requirement.

2. What is good practice?

Good practice is different to an industry standard. ‘Industry standard’ refers to the generally accepted practices occurring within an industry at a given time, which may or may not reflect good practice. Good practice is benchmarked against national and international standards and processes and starts from the very top of an organisation. Achieving good practice in health and safety requires a planned and systematic approach, which considers both national and international standards and practices.

Changes in both process and behaviour are required to achieve health and safety excellence in an organisation. Excellence in health and safety can be driven in two ways: through systematic processes and by developing a safety culture. Health and safety culture generally means shared values (what is important) and beliefs (how things work) that interact with an organisation’s structures and control systems to produce behavioural norms (the way we do things around here).

It is a combination of attitude and practice – organisational values related to health and safety and the structures set in place so that those beliefs are translated into healthy and safe work practices and operational procedures. Organisations with a strong health and safety culture are more effective at preventing both large-scale industrial accidents and individual injuries at work.

Access to competent advice

The sector operates in a very high-risk environment and access to competent advice is crucial to help operators to understand health and safety requirements, and to assist the sector to improve its health and safety standards. Sources of competent advice may include external consultants, WorkSafe New Zealand, the Accident Compensation Corporation, Health & Safety Association NZ, (HASANZ) and in-house resources.

Setting up a Health and Safety System

Setting up a health and safety management system can follow the concepts of Plan Do Check Act (PDCA) with a health and safety context, refer Figure 2.

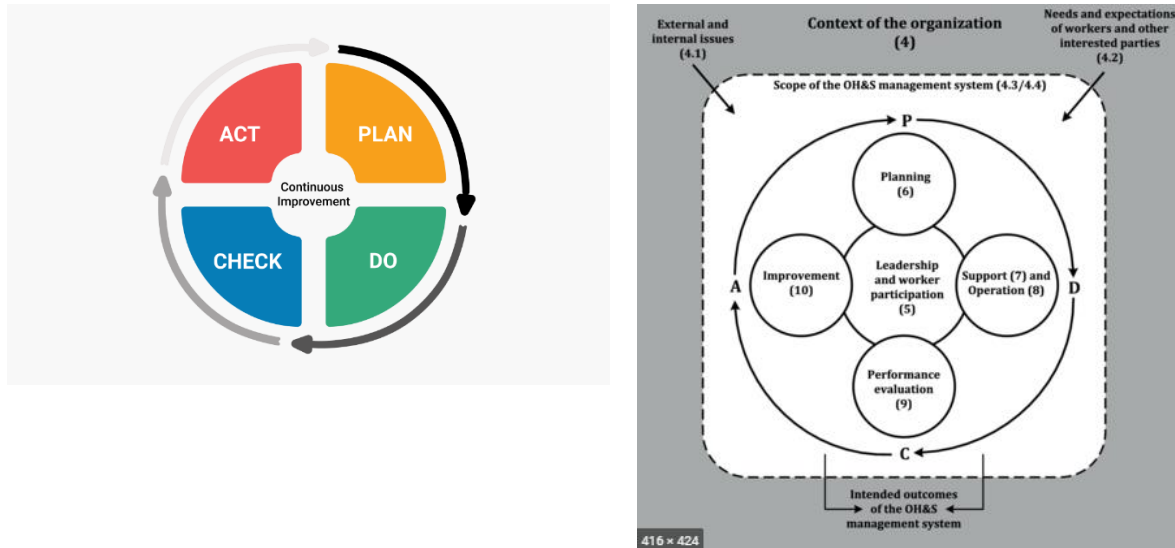


Figure 2:
PLAN DO CHECK ACT Cycle

PDCA from an OHS Perspective
(Source AS/NZS ISO 45001:2016)

The cycle process involves reviewing systems, as follows:

1. Plan – Assess risk and identify control measures
 - a. Identify risks to your workers and others
 - b. Assess risks to determine which risks to deal with first.
 - c. You must eliminate or minimise risks as far as reasonably practicable.
 - d. Engage with your workers when identifying and assessing risks, and when making decisions about the ways to eliminate or minimise the risks.
2. Do – Implement Control Measures
 - a. Implement controls that effectively eliminate or minimise the risks.

- b. Give preference to control measures that protect multiple 'at risk' workers at the same time.
 - c. Personal Protective Equipment (PPE) should not be the first and only control measure considered
3. Check – Monitor performance of control measures
- a. Implement appropriate means for workers to report incidents and near misses
 - b. Monitor workers' exposure and worker health so far as it is reasonably practicable.
 - c. Engage with workers when making decisions about procedures for monitoring.
4. Act - Take action on lessons learnt
- a. Routinely review the effectiveness of control measures at scheduled periods
 - b. Review incidents or near misses and talk to your workers to check that the control measures are effectively eliminating/minimising the risk.
 - c. Use the results of your reviews, investigations into incidents or near misses, and monitoring results to continuously improve control measures.

Commitment

Officers must exercise due diligence to make sure that the Person Conducting a Business or Undertaking (PCBU) complies with its health and safety duties. They must exercise the care, diligence, and skill a reasonable officer would exercise in the same circumstances, taking into account matters, including the nature of the business, or undertaking, and officer's position and nature of their responsibilities.

Commitment to health and safety management is required throughout an organisation, from the directors of a company downwards, and includes providing enough resources (time, money, people, guidelines, operating manuals, leadership, and communication tools) to make this a reality. Health and safety **must** be prioritised within organisations, and it is

recommended that it has the same status as other business and production goals within an organisation. The governance procedures for health and safety may include:

Transparency: Requiring the company to provide information on the costs of accidents (including hidden costs such as replacement workers and retraining) to the Board as part of standard reporting procedures.

Reporting: Requiring the company to report on Risk management and mitigation activities to the Board.

Leadership: Having a company director nominated to be directly responsible for the oversight of health and safety in the company, including setting health and safety strategies and overall direction for the company.

Consultation, cooperation, and coordination (Overlapping Duties)

Businesses have duties to all workers and others affected by their work – not just those they directly employ or engage. When the work of two or more businesses overlap, they must consult, cooperate, and coordinate activities to meet their health and safety responsibilities to workers and others. By consulting with each other, you can avoid unnecessary duplication of effort. Consultation helps prevent any gaps in managing work health and safety risks. It will also help businesses to reach a common understanding and establish clear roles, responsibilities, and actions.



Auditing

Auditing occurs at all levels of a health and safety system. Auditing asks, “Are we doing what

we say we are doing?” and looks for evidence of stated processes.

A robust auditing process can also assist in identifying items to be ‘reviewed’ (see Figure 2: The PDCA cycle.)

Audits are conducted in accordance with appropriate Legislative and good practice requirements. In addition to the interviewing of workers, observations of the facility, equipment, conditions and controls, an audit will review and evaluate existing documentation, and management philosophy and practices to determine degree of compliance and performance.

Health and safety management

A good health and safety management system includes:

Leadership & Resourcing: Two functions that overlay the system are leadership and resourcing. Leadership should be shown at all levels throughout the organisation.

Management must define its commitment to health and safety, establish objectives, targets, and plans for giving effect to this commitment, and lead the organisation in their achievement. The organisation must be provided with the resources required for it to operate safely. This includes people, plant and equipment, systems, and budget. **Hazard and risk management:** Organisations must identify and assess work-related health and safety hazards and the risks they create. During organisational change, risk assessments should be undertaken so that the health and safety impacts can be understood and managed. There must be processes to eliminate or minimise risks to health and safety caused by the work.

Worker engagement, participation, and representation: Organisations must have processes for engaging with their workers on health and safety matters. These processes should cover engagement generally and the specific circumstances when an organisation is legally required to engage with its workers.

Worker participation practices should be put in place so that workers can effectively participate in improving health and safety on an ongoing basis. Participation practices should provide workers with ongoing ways to raise health and safety concerns, obtain and share information about health and safety issues, offer suggestions for improving health and

safety, contribute to decisions which affect work health and safety, and be kept informed about health and safety decisions. Organisations must have appropriate processes for receiving and considering information regarding incidents, hazards, and risks and for responding in a timely way to that information.

Organisations must have processes in place to consult and co-ordinate with other organisations where they also have duties under the HSWA in relation to the same task or activity.

Incident management: Organisations should have well-defined processes for reporting and investigating incidents to identify root causes and then to respond to these in a timely way. The aim of incident management is to identify and implement remedial actions to prevent the incident happening again.

Emergency management: Organisations should develop plans for managing potential emergencies that may arise in the workplace. These plans should be communicated to all persons working on site. Plans should be regularly tested by simulation.

Injury management: Organisations must have processes for ensuring that injured persons are properly cared for. In the case of serious injuries and fatalities, this care should extend to families and workmates.

Continuous improvement: Continuous improvement is a fundamental part of any management system. Continuous improvement also includes the audit and review process.

3. Legislation

Principal objective

This section of the guidelines summarises the over-arching legal requirements of the HSWA as they relate to the solid waste and resource recovery sector. Readers should also refer to the exact wording of the official version of the legislation for the avoidance of doubt. Specific requirements of the Land Transport Act 1998 in relation to engaging contractors are also summarised. Section four of these guidelines addresses regulations. Legislative requirements relating to specific waste collection, management and processing activities are addressed in the relevant sections of this document.



THE LAW: Part 1, subpart 1, section 3 of the HSWA notes that *the main purpose of this Act is to provide for a balanced framework to secure the health and safety of workers and workplaces by—*

- (a) protecting workers and other persons against harm to their health, safety, and welfare by eliminating or minimising risks arising from work or from prescribed high-risk plant; and*
- (b) providing for fair and effective workplace representation, consultation, co-operation, and resolution of issues in relation to work health and safety; and*
- (c) encouraging unions and employer organisations to take a constructive role in promoting improvements in work health and safety practices, and assisting PCBU's and workers to achieve a healthier and safer working environment; and*
- (d) promoting the provision of advice, information, education, and training in relation to work health and safety; and*
- (e) securing compliance with this Act through effective and appropriate compliance and enforcement measures; and*
- (f) ensuring appropriate scrutiny and review of actions taken by persons*

performing functions or exercising powers under this Act; and

(g) providing a framework for continuous improvement and progressively higher standards of work health and safety.

(2) In furthering subsection (1)(a), regard must be had to the principle that workers and other persons should be given the highest level of protection against harm to their health, safety, and welfare from hazards and risks arising from work or from specified types of plant as is reasonably practicable (HSWA).



IMPORTANT: Workplace means:

- (a) place where work is being carried out, or is customarily carried out, for a business undertaking; and
- (b) includes any place where a worker goes, or is likely to be, while at work.

In this section, place includes a vehicle or other mobile structure.

Primary duty of care (section 36 of the HSWA)

A PCBU must ensure, so far as is reasonably practicable, the health and safety of workers, and that other people are not put at risk by its work. This is called the ‘primary duty of care’.

This means ensuring, so far as is reasonably practicable:

- The health and safety of workers who work for the PCBU (e.g. employees or contractors, including their subcontractors or workers) while they are at work in the business or undertaking
- The health and safety of workers whose work activities are influenced or directed by the PCBU while the workers are carrying out the work (e.g. a franchise company whose franchise requirements influence or direct the workers of the franchisee)
- That other persons are not put at risk by the work of the business or undertaking (e.g.

a visitor to the workplace, or members of the public who could be affected by a work activity).

A PCBU, who is a self-employed person, must also ensure, so far as is reasonably practicable, his or her own health and safety while at work.

The primary duty of care is a broad overarching duty. It includes, but is not limited to, so far as is reasonably practicable:

- providing and maintaining a work environment that is without risks to health and safety
- providing and maintaining safe plant and structures
- providing and maintaining safe systems of work
- ensuring the safe use, handling and storage of plant, structures, and substances
- providing adequate facilities for the welfare at work of workers in carrying out work for the business or undertaking, including ensuring access to those facilities
- providing any information, training, instruction, or supervision that is necessary to protect all persons from risks to their health and safety arising from work carried out as part of the conduct of the business or undertaking
- monitoring the health of workers and the conditions at the workplace for the purpose of preventing injury or illness of workers arising from the conduct of the business or undertaking.

PCBUs must also maintain any worker accommodation that is owned or managed by the PCBU and provided because other accommodation is not reasonably available. The PCBU must, so far as is reasonably practicable, maintain the accommodation so the worker is not exposed to health and safety risks arising from the accommodation.

PCBUs cannot contract out of their duties but can enter reasonable agreements with other PCBUs to meet their duties.

PCBUs who manage or control workplaces (section 37 of the HSWA)

Most duties under the HSWA relate to the conduct of work. However, certain duties relate

to workplaces.

- A PCBU who manages or controls a workplace must ensure that, so far as is reasonably practicable, the workplace, the means of entering and exiting the workplace, and anything else arising from the workplace are without health and safety risks to any person.
- A 'workplace' is any place where a worker goes or is likely to be while at work, or where work is being carried out or is customarily carried out.
- This workplace duty recognises that a workplace may not permanently be a workplace for the PCBU.
- PCBUs who manage or control workplaces do not owe this duty to anyone who is at the workplace for an unlawful purpose.

PCBUs who manage or control fixtures, fittings, or plant at a workplace (section 38 of the HSWA)

PCBUs who manage or control fixtures, fittings or plant at a workplace must, so far as is reasonably practicable, ensure that the fixtures, fittings, or plant are without risks to the health and safety of any person. This could include consideration of the potential health effects from using the plant (e.g. the long-term use of a vibrating tool causing damage to nerves or blood vessels in the arms or hands).

PCBUs who manage or control fixtures, fittings or plant do not owe this duty to anyone who is at the workplace for an unlawful purpose.

The duty of a worker (section 45 of the HSWA)

A PCBU must ensure, so far as is reasonably practicable, the health and safety of workers.

This means ensuring, so far as is reasonably practicable:

- The health and safety of workers who work for the PCBU (e.g. employees or contractors, including their subcontractors or workers) while they are at work in the business or undertaking

- The health and safety of workers whose work activities are influenced or directed by the PCBU while the workers are carrying out the work (e.g. a franchise company whose franchise requirements influence or direct the workers of the franchisee).

Workers have their own health and safety duties. Workers must:

- Take reasonable care for their own health and safety
- Take reasonable care that what they do or do not do does not adversely affect the health and safety of other persons
- Co-operate with any reasonable workplace health and safety policy or procedure that has been notified to workers
- Comply, so far as reasonably able, with any reasonable instruction given by the PCBU, so the PCBU can comply with the HSWA and regulations.

So far as is reasonably practicable (section 22 of the HSWA)

The primary duty of care requires a PCBU to ensure health and safety 'so far as is reasonably practicable'. When used in this context, something is reasonably practicable if it is reasonably able to be done to ensure health and safety, having weighed up and considered all relevant matters, including:

- How likely are any hazards or risks to occur?
- How severe could the harm that might result from the hazard or risk be?
- What a person knows or ought to reasonably know about the risk and the ways of eliminating or minimising it (e.g. by removing the source of the risk or using control measures such as isolation or physical controls to minimise it).
- What measures exist to eliminate or minimise the risk (control measures)?
- How available and suitable is the control measure(s)?

Lastly weigh up the cost:

- What is the cost of eliminating or minimising the risk?

- Is the cost grossly disproportionate to the risk?



MORE INFORMATION: It is essential to keep up to date with current good practices and any legislative changes in health and safety legislation.

Sources of information on risk management can be found on

<https://www.worksafe.govt.nz>

www.business.govt.nz/worksafe/

Providing any information, training, instruction, or supervision that is necessary to protect all persons from risks to their health and safety arising from work carried out as part of the conduct of the business or undertaking.

PCBUs must, so far as is reasonably practicable, make sure its workers and others are provided training, information, instruction or supervision to protect them from risks to health and safety.

The type of training, instruction or supervision required will depend on the nature of the work carried out and the experience of the workers, and the risk that workers and others, such as clients and customers, are exposed to.



IMPORTANT: Induction training for workers is essential to make sure that PCBUs meet their legal duties. It is an ideal way to ensure that workers obtain health and safety information that is relevant to both the company and their specific functions.



ACTION POINT: If English is not a person's first language, or they are unable to read, then '*information in a form and manner that the person is reasonably likely to understand*' Health and Safety at Work (General Risk and Workplace Regulations) 2016, **must** be introduced to **ensure** that the person receives the

necessary information in a manner in which they can understand it.

Worker engagement, participation, and representation (sec 58)

Workers must be engaged about health and safety issues likely to directly affect them and be given reasonable opportunities to participate in the ongoing improvement of health and safety of the PCBU they work for.

Worker engagement and worker participation practices can be direct or through representation. Health and Safety Representatives (HSRs) and Health and Safety Committees (HSCs) are two well established methods of representation. Workers can also be represented by unions, community or church leaders, lawyers, respected members of ethnic communities, or people working on specific projects.

HSRs elected under the HSWA have functions and powers including representing workers on health and safety, entering, and inspecting workplaces, making recommendations relating to work health and safety and promoting the interest of workers who have been harmed at work.

A HSC enables PCBU representatives, workers and other HSC members to meet regularly and work co-operatively to ensure workers' health and safety. The functions of HSCs include to assist in the development of health and safety standards, rules, policies or procedures, and to make recommendations relating to work health and safety.



IMPORTANT: The duty to involve all workers in the health and safety process applies to all workplaces, irrespective of the size of the company.



MORE INFORMATION: For further information on worker engagement, participation and representation, refer to Part 3 'Worker engagement, participation, and representation' in the HSWA.

Duty to a notifiable event (sec 56)

Notifiable events

A PCBU must ensure the regulator is notified as soon as possible after it becomes aware of a notifiable event arising from the conduct of the business or undertaking. This notification must be done even if emergency services attend. Only one notification is required for each notifiable event.

If multiple PCBUs are involved in the work, one PCBU should be nominated to notify the regulator. However, all PCBUs are responsible for ensuring a notification is made.

<https://www.worksafe.govt.nz/notifications/notifiable-event>

When must PCBUs notify the regulator?

A notifiable event is when the following occurs as a result of work:

- A death
- A notifiable illness or injury or
- A notifiable incident.

Notifiable injuries, illnesses and incidents are specified in the HSWA.

The regulator must be informed of all notifiable events. This notification allows the regulator to investigate or follow up on significant events immediately.

Notifiable incidents (section 24 of the HSWA)

You can use the Notify WorkSafe tool to submit a notifiable illness, injury or incident. The tool will guide you through the notification process and determine whether the event is a notifiable injury, illness or incident.

<https://www.worksafe.govt.nz/notify-worksafe/>

A notifiable incident is an unplanned or uncontrolled incident in relation to a workplace that exposes the health and safety of workers or others to a serious risk arising from immediate or imminent exposure to:

- A substance escaping, spilling, or leaking

- An implosion, explosion, or fire
- Gas or steam escaping
- A pressurised substance escaping
- Electric shock
- The fall or release from height of any plant, substance, or object
- Damage to or collapse, overturning, failing, or malfunctioning of any plant that is required to be authorised for use
- The collapse or partial collapse of a structure
- The collapse or failure of an excavation or any shoring supporting an excavation
- The inrush of water, mud, or gas in workings in an underground excavation or tunnel
- The interruption of the main system of ventilation in an underground excavation or tunnel
- Any other incident declared in regulation to be a notifiable incident (e.g. specified incidents in the Health and Safety at Work (Petroleum Exploration and Extraction) Regulations 2016).

Notifiable incidents do not include controlled activities that form part of the business or undertaking (e.g. the controlled release of water from a dam).

What does a PCBU need to do if a notifiable event occurs (sections 55-57 of the HSWA)?

If a notifiable event occurs, PCBUs should follow the steps below.

Step 1: The PCBU who manages or controls the workplace where the notifiable event occurred must preserve the site

- The PCBU who manages or controls the workplace must take all reasonable steps to ensure the site of a notifiable event is not disturbed until authorised by an Inspector (i.e. an Inspector gives permission for normal work to resume at the site of a notifiable event. There are exceptions to this. These are if the disturbance is:
 - To help an injured person

- To remove a deceased person
- Essential to make the site safe or to minimise the risks of a further notifiable event
- By or under direction of a constable (police officer)
- Permitted by the regulator or an Inspector.
- Regulations can also exclude particular sites from the requirement to preserve sites in particular circumstances (note: there are none at present).
- To ensure that the site is not disturbed:
 - The work set-up should not be changed
 - Any plant, substances or other things involved in the event should stay where they are
 - Work that could interfere with the scene of the event should stop
 - No alterations should be made to the plant, vehicles, or structures involved.
- Work can continue in other parts of the workplace. The most important thing is preventing further harm.

Step 2: A PCBU must notify the regulator as soon as possible

- A PCBU must ensure the regulator is notified as soon as possible after it becomes aware of a notifiable event arising out of the conduct of the business or undertaking. This notification must be done even if emergency services attend.
- Only one notification is required for each notifiable event. If multiple PCBUs are involved, one PCBU should be nominated to notify the regulator. However, all PCBUs are responsible for ensuring a notification is made.
- The regulator must be notified by the fastest means possible given the circumstances.

Step 3: PCBUs must keep records of notifiable events

- The PCBU must keep records of notifiable events for at least five years from the date

the regulator was notified about the event.



THE LAW: PCBUs cannot contract out of their legal responsibilities through contract disclaimers.

OFFENCE	INDIVIDUAL WHO IS NOT A PCBU OR OFFICER (EG A WORKER OR OTHER PERSON AT A WORKPLACE)	OFFICER OF A PCBU OR AN INDIVIDUAL WHO IS A PCBU (EG SELF-EMPLOYED)	ANYONE ELSE (EG AN ORGANISATION THAT IS A PCBU)
Section 47 (reckless conduct in respect of duty that exposes an individual to a risk of serious injury, serious illness or death)	Five years in prison or \$300,000 fine, or both	Five years in prison or \$600,000 fine, or both	\$3 million fine
Section 48 (failure to comply with a duty that exposes an individual to a risk of serious injury, serious illness or death)	\$150,000 fine	\$300,000 fine	\$1.5 million fine
Section 49 (failure to comply with a duty)	\$50,000 fine	\$100,000 fine	\$500,000 fine

Figure 2:

Maximum penalties for health and safety duty offences (WorkSafe New Zealand, 2016)



THE LAW: The Land Transport Act outlines specific requirements for anybody who influences a commercial driver’s behaviour and compliance, which includes PCBUs employing contractors. The chain of responsibility holds that all the people who influence drivers’ behaviour and compliance should, and **must**, be held accountable if that influence results in non-compliance with traffic rules and laws. A person convicted of a chain of responsibility offence can be fined up to \$25,000.

4. Regulations

The Health and Safety at Work (General Risk and Workplace Management) Regulations 2016 are legally enforceable and stipulate specific duties of PCBUs and others. A number of other health and safety-related regulations also affect the solid waste and resource recovery sector, relating to activities such as working with asbestos and other prescribed matters.

10 Duty in relation to general workplace facilities

- (1) *A PCBU must ensure, so far as is reasonably practicable, that—*
- (a) *the layout of the workplace allows, and the workplace is maintained to allow persons to enter and exit the workplace and to move within it without risks to health and safety, both under normal working conditions and in an emergency:*
 - (b) *work areas have sufficient space for work to be carried out without risks to health and safety:*
 - (c) *floors and other surfaces are designed, installed, and maintained to allow work to be carried out without risks to health and safety:*
 - (d) *there is suitable and sufficient lighting to enable—*
 - (i) *each worker to carry out work without risks to health and safety; and*
 - (ii) *persons to move within the workplace without risks to health and safety; and*
 - (iii) *safe evacuation in an emergency:*
 - (e) *there is suitable and sufficient ventilation to enable workers to carry out work without risks to health and safety:*
 - (f) *workers carrying out work in extremes of heat or cold are able to do so without risks to health and safety.*
- (2) *A PCBU who contravenes this regulation commits an offence and is liable on conviction, —*

- (a) *for an individual, to a fine not exceeding \$10,000:*
- (b) *for any other person, to a fine not exceeding \$50,000.*

11 Duty to provide certain workplace facilities

(1) *A PCBU must ensure, so far as is reasonably practicable, that adequate facilities are provided for workers at a workplace, including—*

- (a) *toilets:*
- (b) *drinking water:*
- (c) *hand-washing facilities:*
- (d) *facilities where workers can eat and take breaks:*
- (e) *if it is not reasonable for workers to leave the workplace if they become unwell, facilities where workers can rest.*

(2) *In addition, a PCBU must ensure that the following facilities are provided for workers at a workplace if the work is of such a nature that the facilities are reasonably likely to be required:*

- (a) *facilities for washing the body:*
- (b) *a place in which to change clothes that become contaminated or wet:*
- (c) *facilities for keeping clothes that will not be used at work clean and dry:*
- (d) *if it is reasonable for workers to perform work while seated, facilities for sitting:*
- (e) *if it is not reasonable for workers to perform work while seated, facilities for sitting that enable workers to take any reasonable opportunity for rest that may occur in the course of the work:*
- (f) *facilities that prevent workers from becoming wet from a wet floor, whether by way of drainage of the floor or otherwise:*
- (g) *facilities that enable any airborne contaminants to be controlled as closely as possible to their source and to be treated or carried off.*

- (3) A PCBU who contravenes sub clause (1) or (2) commits an offence and is liable on conviction, —
- (a) for an individual, to a fine not exceeding \$10,000:
- (b) for any other person, to a fine not exceeding \$50,000.

13 Duty to provide first aid

- (1) A PCBU must ensure that—
- (a) adequate first aid equipment is provided for the workplace; and
- (b) each worker at the workplace has access to the equipment; and
- (c) workers have access to facilities for the administration of first aid (HSWA, 2015).



THE LAW: As collection trucks and other waste vehicles are by definition a place of work, PCBUs are required to provide facilities such as safe drinking water and hand sanitiser/hand washing facilities within trucks.

PCBUs' general duties

PCBUs have general duties that relate to the management of particular hazards, for example:

- Working at heights
- Activities under raised objects
- Earthworks and excavations
- Dust and odours
- Harmful noise
- Cleaning, maintenance, and repair of machinery
- Protective structures of self-propelled plant
- Employment of young persons (under 15 years of age)

For further information on these hazards and their specific requirements, refer to WorkSafe New Zealand's website <https://www.worksafe.govt.nz/> and where applicable to the relevant sections of these guidelines.

Notifiable work Notifiable work involves (but is not limited to) activities such as:

Restricted work relating to asbestos

Logging or tree-felling

Construction work involving the risk of a person falling five metres or more (with certain exceptions)

Erecting or dismantling scaffolding from which any person may fall five metres or more

Use of a lifting appliance (in certain situations)

Work in any pit, shaft, trench, or excavation (in certain circumstances)

Work involving explosives

Work involving breathing compressed air or a respiratory medium other than air.

The Regulations may contain specific requirements relating to these activities and should be checked before the activity commences.

The requirement to notify 'Particularly Hazardous Work' as defined in section 26 of the Health and Safety in Employment Regulations 1995 is still valid. PCBUs **must** provide the nearest WorkSafe New Zealand office with the following details in writing at least 24 hours prior to beginning any notifiable work: This can be completed online at

<https://forms.worksafe.govt.nz/hazardous-work-notification>

WORKSAFE

Notification Forms	Particular Hazardous Work Notification Form
Notification Forms	Use this form to notify WorkSafe New Zealand of Particular Hazardous Work as required under Regulation 26 of the Health and Safety in Employment Regulations (1995).
Adventure Activity Operator's Notification	You must provide WorkSafe New Zealand with 24 hours notice of work that is particularly hazardous.
Notifiable Event Notification Form	If you want to notify WorkSafe New Zealand of the death of a person, injury/illness sustained by someone or a workplace incident that exposed someone to serious risk, please click on the following link: http://forms.worksafe.govt.nz/notifiable-event-notification
Particular Hazardous Work Notification	Fields marked with an * are required
Notification of Licensed Asbestos Removal	NATURE OF PARTICULAR HAZARDOUS WORK (Tick all that apply):
Amusement Device Incident	<input type="checkbox"/> Construction work with a risk of falling 5 metres or more (see exclusions below) Exclusions: <ul style="list-style-type: none">• work in connection with a residential building up to and including 2 full storeys• work on overhead telecommunications lines and overhead electric power lines• work carried out from ladder only• maintenance and repair work of a minor or routine nature.

Other Regulations

Regulations made under a variety of other legislation may also need to be considered. All relevant regulations **must** be complied with.

- Health and Safety at Work (Hazardous Substances) Regulations 2017
- Health and Safety at Work (Asbestos) Regulations 2016
- Hazardous Substances and New Organisms Act 1996
- Health and Safety in Employment (Regulations) 1995

5. Contractor Management



THE LAW: Section 36 of the HSWA states that the primary duty of care requires a PCBU to ensure health and safety “so far as is reasonably practicable” of workers and that of other people. This means ensuring, so far as is reasonably practicable, the health and safety of workers who work for the PCBU (employees or contractors, including subcontractors or workers) while they are at work in the business or undertaking.



THE LAW: PCBUs cannot contract out their legal responsibilities through contract disclaimers.

It is vital that health and safety arrangements and responsibilities for managing contractors are clearly identified, and that these arrangements and responsibilities form part of the health and safety management system that the company implements. The contractor selection process **must ensure** that the contractor selected has adopted good health and safety practices, and it is recommended that this process be followed throughout the tendering stage.

A company can increase its risk by failing to have a robust contractor selection process in place. Failure to determine and implement such a process could find the company unable to prove that it is ensuring health and safety of workers ‘so far as is reasonably practicable’.



ACTION POINT: Contractors **must** provide health and safety plans as part of the information provided to the PCBU.

- A simple sample questionnaire and checklist that could be used as part of a tender process is provided in Appendix 3: Example health and safety questionnaire for a pre-tender process for territorial authorities.

- Larger-scale, more complex and hazardous activities may need a more comprehensive contractor accreditation process. A good example for consideration is the *'Collection of Domestic Waste Code of Practice'*.



ACTION POINT: The following actions will help PCBUs meet their legal requirements when preparing to engage other PCBUs (contractors):

- Ensure that compliance with all the WorkSafe New Zealand's legal requirements forms part of the contractor selection and tender process.
- Ensure that internal health and safety management systems include information on how contractors will be selected and monitored, including how any non-conformance will be managed.
- Ensure that nominated contractors are provided with copies of all relevant health and safety documentation and rules for the place of work to inform them of the standards expected.
- PCBUs should periodically monitor contractor compliance with the health and safety documentation to ensure that contractors are meeting their obligations and working in accordance with their respective safety management systems and procedures, as well as with the relevant health and safety documentation or rules for the place of work.
- Ensure that suitable documentation is retained in the event that there is a requirement to address any non-conformances with agreed safety systems and relevant health and safety documentation and rules for the place of work, as set out in Appendix 2: Example contractor management procedure for territorial authorities.



MORE INFORMATION:

- Refer to Appendix 2: Example contractor management procedure for territorial authorities.
- WorkSafe NZ Guidelines “PCBU’s working together – Advice when contracting.

<https://forum.org.nz/assets/Uploads/CEO-stories/Supply-chain-leadership-in-practice-2020.pdf>

6. Design and operation of plant (including role of designers, suppliers, importers, and those who lease to others)



THE LAW: Section 39 - 43 of the HSWA places a duty on a PCBU who conducts a business or undertaking that manages, designs, manufactures, imports, supplies, or installs plant, substances or structures that are to be used, or could reasonably be used, expected to be used, as or at a workplace.

Responsibilities of each party

The responsibilities of each party are summarised as follows:

Managers:

A PCBU who manages or controls a workplace must ensure, so far as is reasonably practicable, that the workplace, the means of entering and exiting the workplace, and anything arising from the workplace are without risks to the health and safety of any person.

(2)

Despite subsection (1), a PCBU who manages or controls a workplace does not owe a duty under that subsection to any person who is at the workplace for an unlawful purpose.

Designers:

During the design process of plant or fleet, the designers should identify and take reasonably practicable steps to control hazards associated with the use of the plant. A risk assessment should be undertaken for use of the plant in relation to:

All hazards associated with its use in a specific work environment.

The range of environmental locations and operations in which the plant is intended to be used.

Ergonomic considerations, including dual hand use, so that plant is operable by both left and right-handers.

Requirements for guarding.

Use, visibility, audibility and access to warning devices and signage.

Emergency stops.

The ability to maintain plant and to carry out maintenance schedules.

Designers should also:

Provide information to manufacturers and users on safe systems of work and any competency requirements of the user.

Consider and provide information on technical standards and engineering principles.

Manufacturers and suppliers of plant should:

Carry out research, testing, and examination of plant.

Provide user manuals and include information on the research, testing and examination of plant and the safe use of it in these manuals.

Ensure that all plant is safe to operate and that hazards are identified and controlled.

Provide training and records, where appropriate, for the correct use of their plant so that the customer is using it as designed and the customer is 'competent' to use it.

Provide instructions, signage, and user manuals in the required language.

Importers

The importer must, so far as is reasonably practicable, ensure that the plant, substance, or structure is without risks to the health and safety of persons—

- a) who, at a workplace, use the plant, substance, or structure for a purpose for which it was designed or manufactured; or
- b) who handle the substance at a workplace; or
- c) who store the plant or substance at a workplace; or
- d) who construct the structure at a workplace; or
- e) who carry out any reasonably foreseeable activity (such as inspection, cleaning, maintenance, or repair) at a workplace in relation to—

- i) the assembly or use of the plant for a purpose for which it was designed or manufactured, or the proper storage, decommissioning, dismantling, or disposal of the plant; or
 - ii) the use of the substance for a purpose for which it was designed or manufactured, or the proper handling, storage, or disposal of the substance; or
 - iii) the assembly or use of the structure for a purpose for which it was designed or manufactured, or the proper demolition or disposal of the structure; or
- f) who are at or in the vicinity of a workplace and who are exposed to the plant, substance, or structure at the workplace or whose health or safety may be affected by a use or an activity referred to in any of paragraphs (a) to (e)

Suppliers who hire out, lease or loan plant to others:

Have a responsibility to ascertain what the plant is intended to be used for, and to be satisfied that the user is 'competent' to use the plant safely. They do not have to view certificates or training records, but they must document that they have carried out their obligations. For further information on these obligations, refer to Section 39 of the HSWA.

Are required to discuss any hazards and risks associated with the use of the equipment and explain how safety features work or any limitations they may have.

Must ensure the equipment is safe for its intended use, including maintenance, installation, or arrangement in the workplace, and is legally certified where required.

Retain appropriate records relating to the maintenance and hiring of the equipment.

Suppliers who sell plant:

Are only permitted to sell unserviceable or unsafe plant if it is clearly marked as 'Sold as is'.

Should provide, in writing, any information pertaining to unserviceable components and indicate that plant should not be used until made serviceable.

Should provide all inspection and appropriate servicing and maintenance documentation relating to the plant's history.

Installers

The PCBU must, so far as is reasonably practicable, ensure that the way in which the plant or structure is installed, constructed, or commissioned ensures that the plant or structure is without risks to the health and safety of persons—

who install or construct the plant or structure at a workplace; or

who use the plant or structure at a workplace for a purpose for which it was installed, constructed, or commissioned; or

who carry out any reasonably foreseeable activity at a workplace in relation to the proper use, decommissioning, or dismantling of the plant or demolition, or disposal of the structure; or

who are at or in the vicinity of a workplace and whose health or safety may be affected by a use or an activity referred to in any of paragraphs (a) to (c).



ACTION POINT: The following actions will help designers, manufacturers and suppliers of plant meet their legal requirements:

- Ensure all plant is safe to operate and that all hazards are identified and controlled.
- Obtain sufficient information on the use, limitations and servicing records for any plant that is leased to others.
- Discuss requirements and intended work use for new plant purchases with the supplier and obtain necessary information and documentation relating to functionality, safety devices and any limitations.
- Upon purchase, obtain manufacturers' user manuals, instructions, and signage (if any) to enable workers to use and maintain the equipment safely. If any of these is not available, seek to implement processes and procedures to ensure that all plant is safe for workers and that they are adequately trained in

the safe use of all plant.

- Keep accurate records of any maintenance and inspection of the equipment and ensure that such testing is undertaken by competent persons.



MORE INFORMATION: Refer to NZTA's 'Standards for Heavy Vehicles' which sets out specific requirements for different classes of heavy vehicle.

<https://www.nzta.govt.nz/vehicles/vehicle-types/heavy-trucks/>

7. Drugs and alcohol

The use of alcohol and/or drugs (prescription or illicit) can affect an individual's ability to function effectively and may place them at risk of injury, or of injuring others.

Many drugs, even prescribed ones, can have an effect on a person's ability to work machinery safely as their responses or reflexes may be affected.



THE LAW: Section 36 of the HSWA states that every PCBU has a primary duty of care as detailed below.

- (1) *A PCBU must ensure, so far as is reasonably practicable, the health and safety of—*
 - (a) workers who work for the PCBU, while the workers are at work in the business or undertaking; and
 - (b) workers whose activities in carrying out work are influenced or directed by the PCBU, while the workers are carrying out the work (HSWA).

The HSWA defines a hazard as *including a person's behaviour where that behaviour has the potential to cause death, injury, or illness to a person (whether or not that behaviour results from physical or mental fatigue, drugs, alcohol, traumatic shock, or another temporary condition that affects a person's behaviour (HSWA).*

The consumption of alcohol and the use of drugs (illicit or prescribed) to the extent that it could impair the worker's abilities, or increase the risk of accidents occurring, is unacceptable.



ACTION POINT: Include reference to pre-employment, post-incident, and periodic or random drug and alcohol testing in employment agreements. Where testing forms part of a worker's agreement, workers will be expected to

participate if requested to do so.



IMPORTANT: Any testing for drugs and/or alcohol conducted as part of a PCBU's procedures **must** comply with the Privacy Act 2020 and amendments, Employment Relations Act 2000, and the Human Rights Act 1993.



IMPORTANT: The recruitment and training processes for workers within an organisation should include training about the organisation's drug and alcohol policy. Workers need to be aware of the company's stance and process for dealing with workers who attend work under the influence of drugs and/or alcohol. This training should include the possible outcomes of breaching the company's policy.



ACTION POINT: The following actions will help PCBUs meet their legal requirements:

- Involve the human resources department in the formulation of any drug and alcohol policy so that it meets the requirements of any employment legislation and forms part of the employment agreement or 'collective'.
- Ensure workers are fully aware of the requirements of the policy, and that this forms part of induction training. Keep records of such training as appropriate.
- Enlist the assistance of 'competent persons' to conduct any drug and alcohol testing.
- Determine whether drug and alcohol testing following health and safety incidents will be compulsory under the policy, especially for those incidents relating to use of company vehicles or machinery.

Ensure that workers who drive company vehicles are reminded of their personal responsibility regarding use of illicit substances and the effect of these substances on drivers' abilities.



MORE INFORMATION: Refer to:

- Employment NZ – Drugs, Alcohol and Work
- WorkSafe – Impairment and testing for drugs at work

Note: Synthetic cannabinoids

Synthetic cannabis is smokeable plant material that has been adulterated with one or more chemical compounds that are referred to as synthetic cannabinoids. The synthetic cannabinoids are added to the dried plant material so that it can be smoked in the same way as cannabis. As there currently are no approved products in New Zealand it is illegal to import or sell these synthetic cannabinoids or products that contain them. Synthetic cannabinoid products are known as herbal highs, cannabinoids, synnies, synthetics, and party pills.

Refer to:

<https://www.drugfoundation.org.nz/info/drug-index/synthetic-cannabinoids/>

8. Emergency preparedness



THE LAW: Section 14 of the Health and Safety at Work (General Risk and Workplace) Regulations 2016 **requires** a PCBU to prepare, maintain, and implement an emergency plan. Section 14 states that:

- (1) *A PCBU must ensure that an emergency plan is prepared for the workplace.*
- (2) *The emergency plan must—*
 - (a) *provide emergency procedures, including—*
 - (i) *an effective response to an emergency; and*
 - (ii) *evacuation procedures; and*
 - (iii) *procedures for notifying emergency service organisations at the earliest opportunity; and*
 - (iv) *medical treatment and assistance procedures; and*
 - (v) *procedures to ensure effective communication between the person authorised by the PCBU to co-ordinate the emergency response and all other persons at the workplace:*
 - (b) *provide for testing of the emergency procedures, including the frequency of testing:*
 - (c) *provide for information, training, and instruction to be given to relevant workers in relation to implementing the emergency procedures.*
- (3) *The PCBU must maintain the emergency plan for the workplace so that it remains effective.*
- (4) *In complying with subclauses (1) to (3), the PCBU must have regard to all relevant matters, including—*
 - (a) *the nature of the work being carried out at the workplace:*

- (b) the nature of the hazards at the workplace:
 - (c) the size and location of the workplace:
 - (d) the number and composition of the workforce at the workplace.
- (5) The PCBU must implement the emergency plan for the workplace in the *event of an emergency*.
- (6) A PCBU who contravenes this regulation commits an offence and is liable on conviction, —
- (a) for an individual, to a fine not exceeding \$10,000:
 - (b) for any other person, to a fine not exceeding \$50,000 (*Health and Safety at Work (General Risk and Workplace) Regulations, 2016*).

Other relevant laws which require procedures and information on dealing with emergency situations include:

- Fire and Emergency New Zealand (Fire Safety, Evacuation Procedures, and Evacuation Schemes) Regulations 2018
- Civil Defence Emergency Management Act 2002
- Hazardous Substances and New Organisms Act 1996

Epidemic Preparedness Act 2006



IMPORTANT: A PCBU **must** implement procedures for dealing with emergencies and **must** provide workers with information on hazards at work and the risks they pose.



ACTION POINT: Whatever the emergency or ‘disaster,’ it is important that all organisations have tested the emergency procedures.



ACTION POINT: It is good practice to involve external emergency services when developing the emergency plan and the local Civil Defence ‘team’ in testing or reviewing the plan.



MORE INFORMATION: Further information can be found on <http://www.civildefence.govt.nz/>

Given the geographical spread of our sector throughout New Zealand, some emergency situations will be more relevant to a given location than others. ‘Typical’ emergencies include:

Natural Disasters / Weather Events	Industry Specific Emergencies
Earthquakes	Bomb threat/robbery/terror threat
Floods	Chemical spillage or contamination
Pandemic, e.g. influenza	Collapse of landfill
Road closure caused by damage/slippage	Fire/explosion
Slippage	Gas explosion at landfill
Storms	Hazardous Substance release
Tsunami	Notifiable Events/injury, illness, incident
Volcanic eruption	Vehicle accident



ACTION POINT: The following actions will help PCBUs meet their legal requirements:

- Ensure that all disasters or emergencies to which workers may typically be exposed have been identified and appropriately addressed in plans or procedures.
- Ensure all workers are familiar with the local Emergency Preparedness

Plan for their geographical area.

- Ensure all fire/emergency wardens are aware of their responsibilities and can easily be identified during an evacuation.
- Ensure that all escape routes are clearly marked.
- Carry out fire evacuation drills at least twice yearly and record them.
- Test the emergency equipment (sirens etc.) monthly and maintain a record of these tests.
- Test the emergency preparedness plan for the range of 'typical' events referred to in the table above (earthquakes, chemical spills etc.) at least annually.
- Business Continuity Plans (BCP) should be developed and tested at least annually to ensure the business is able to continue operating during an emergency or situation that is out of the boundaries considered to be normal operations
- Ensure all workers receive induction training in emergency evacuation procedures and the use of any necessary equipment.
- Ensure that there is a suitably stocked civil defence kit or equipment and that workers are trained in its location and correct usage.
- Ensure arrangements are in place for regular inspection and replenishing of chemical spillage kits and that workers are trained in their location and correct usage.
- In the event of an emergency, the person in charge of the place of work is the Chief Warden, not the CEO or site manager (unless the site manager is also the chief warden), and they hold this responsibility until the emergency is over.

9. Fatigue

What is fatigue?

Fatigue is the temporary inability, or decrease in ability, or a strong disinclination, to respond to a situation because of previous over-activity; physical, mental, environmental, personal, or emotional. People who are fatigued may be unable, less able or unwilling to respond to things that happen, including emergencies. Given this definition, it is highly likely that fatigue could be classified as a ‘hazard’, and it therefore, requires identification in terms of causal factors and effective risk management or reduction strategies.

Work has the potential to harm a person’s health, and a person’s health can affect safety at work. Figure 3 shows examples of work-related health risks and health-related safety risks

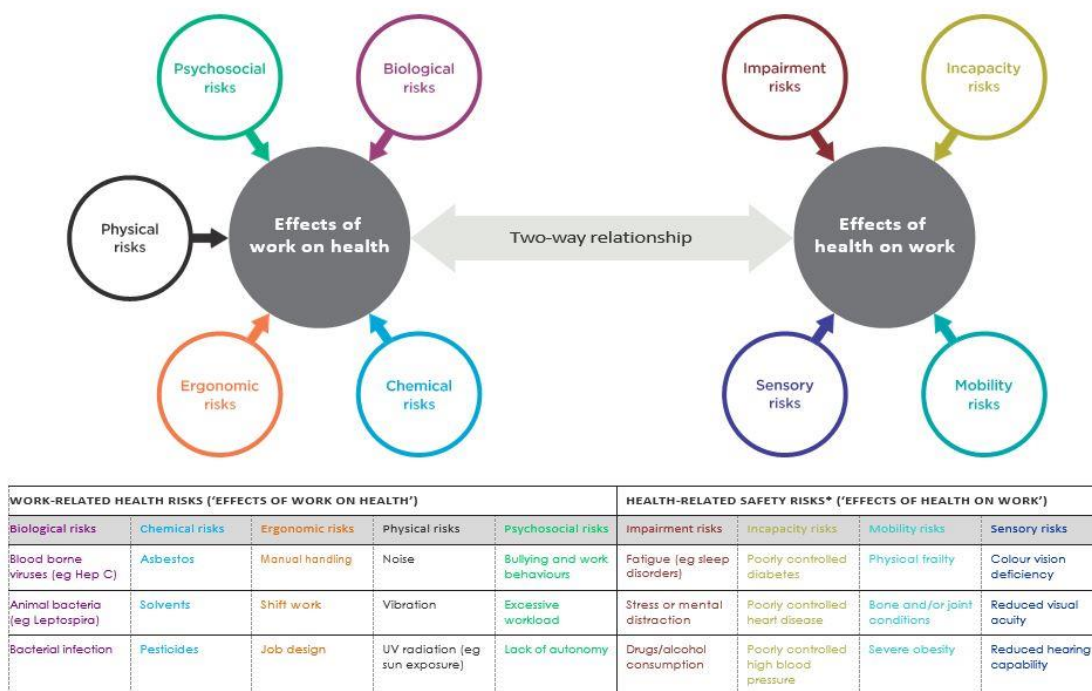
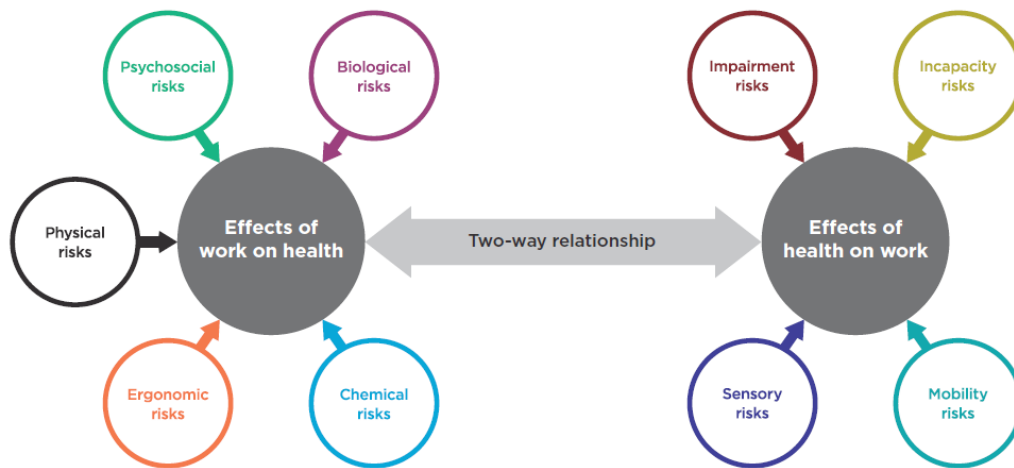


FIGURE 3: Examples of work-related health risks and health-related safety risks

* Health-related safety risks are specific to the tasks, situation and work environment that they exist within and are not a risk in all circumstances.



WORK-RELATED HEALTH RISKS ('EFFECTS OF WORK ON HEALTH')					HEALTH-RELATED SAFETY RISKS* ('EFFECTS OF HEALTH ON WORK')			
Biological risks	Chemical risks	Ergonomic risks	Physical risks	Psychosocial risks	Impairment risks	Incapacity risks	Mobility risks	Sensory risks
Blood borne viruses (eg Hep C)	Asbestos	Manual handling	Noise	Bullying and work behaviours	Fatigue	Poorly controlled diabetes	Physical frailty	Colour vision deficiency
Animal bacteria (eg Leptospira)	Solvents	Shift work	Vibration	Excessive workload	Stress or mental distraction	Poorly controlled heart disease	Bone and/or joint conditions	Reduced visual acuity
Bacterial infection	Pesticides	Job design	UV radiation (eg sun exposure)	Lack of autonomy	Drugs/alcohol consumption	Poorly controlled high blood pressure	Severe obesity	Reduced hearing capability

Figure 3:
Effects of work on health and health on work.

The Land Transport Act 1998 has specific legislative requirements for drivers as follows:



THE LAW: Section (30ZC) of the Land Transport Amendment Act 2020 places limits on the hours a driver can work:

Work time includes all time spent working regardless of whether it is time spent driving or doing other work. Refer to below:

<https://www.nzta.govt.nz/assets/resources/factsheets/02/docs/02-work-time.pdf>

- (1) *A driver subject to this subpart—*
 - a) *may not exceed the work time restrictions specified in this section, the rules, or any variation granted under section 30ZA; and*
 - b) *must comply with the rest time requirements specified in this section, the rules, or any variation granted under section 30ZA.*

- (2) *In any cumulative work day, a driver—*
 - a) *may not exceed 13 hours of work time; and*
 - b) *must have at least 10 hours of continuous rest time.*

- (3) *In any cumulative work period, a driver may not exceed 70 hours of work time.*

- (4) *To avoid doubt, the rules may extend the limits for a cumulative work day or period for a specified activity or service (Land Transport Act, 1998).*

What can affect or cause fatigue at work?

Fatigue is a state of physical and/or mental exhaustion. It can reduce a person's ability to perform work safely and effectively. Fatigue reduces alertness. This may lead to errors, and an increase in workplace incidents and injuries. For example

Work schedules – hours of work, night work and shift work (including breaks between shifts)

- Sleep disruption
- Environmental conditions
- Physical and mental work demands
- Emotional well-being



ACTION POINT: The following actions will help PCBU meet their legal requirements and help minimise the risk of workers developing fatigue through work practices:

- Review the work design, such as the physical and mental work demands, the work intensity and rest breaks, and modify these as appropriate
- Review organisational factors such as work schedules, payment systems and chain-of-supply issues
- Provide information regarding work hours and rest breaks to workers who drive company vehicles or have another ‘place of work’ within the workplace
- Review environmental factors that contribute to fatigue, and where practicable, modify these to establish a comfortable thermal work environment
- Introduce administrative controls such as developing work practices to reduce fatigue in the workplace (e.g. job rotation or regular breaks)
- Seek to have a full complement of workers to manage rosters effectively

Ensure adequate and comfortable facilities for meal breaks and personal ablutions.



MORE INFORMATION: Further information can be found in:

- ‘Healthy work, managing stress and fatigue in the workplace’

- NZTA's 'Work time and logbooks (Factsheet 2)', which provides advice about work time and logbooks
- NZTA's 'Fatigue: staying alert while you're driving', which gives general advice for drivers on managing fatigue.

10. First aid



THE LAW: The specific requirements of PCBUs with regard to the provision of first aid, and first aid equipment and facilities are contained within the Health and Safety at Work (General Risk and Workplace Management) Regulations:

Section 13:

Duty to provide first aid:

- (1) *A PCBU must ensure that—*
 - (a) *adequate first aid equipment is provided for the workplace;*
and
 - (b) *each worker at the workplace has access to the equipment;*
and
 - (c) *workers have access to facilities for the administration of first aid.*
- (2) *A PCBU must ensure that—*
 - (a) *an adequate number of workers are trained to administer first aid at the workplace; or*
 - (b) *workers have access to an adequate number of other persons who have been trained to administer first aid.*
- (3) *In complying with subclauses (1) and (2), the PCBU must have regard to all relevant matters, including—*
 - (a) *the nature of the work being carried out at the workplace;*
 - (b) *the nature of the hazards at the workplace;*
 - (c) *the size and location of the workplace;*
 - (d) *the number and composition of the workforce at the workplace.*

(4) A PCBU who contravenes this regulation commits an offence and is liable on conviction, —

(a) for an individual, to a fine not exceeding \$10,000;

(b) for any other person, to a fine not exceeding \$50,000

(Health and Safety at Work (General Risk and Workplace Management) Regulations, 2016).



MORE INFORMATION: Further reading on meeting these requirements is contained within <https://www.worksafe.govt.nz/managing-health-and-safety/businesses/general-requirements-for-workplaces/first-aid/>

How many first aiders are needed?

Deciding upon the number of trained first aiders, first-aid boxes and additional equipment, such as a first-aid room, should be subject to a needs assessment (explained in the WorkSafe New Zealand Good Practice Guide), taking into account the following:

- Types of hazards and risks at the workplace
- Types of injuries that could occur (worst case scenario)
- Proximity to hospital or other emergency services
- Shift patterns
- Reporting lines – i.e. who do I tell? Who contacts family/next of kin?

First-aid boxes

First-aid boxes should be:

- Made of suitable material and designed to protect contents from damp and dust
- Marked with a white cross on green background
- Easily accessible to all workers
- Provided on a ratio of at least one box per floor of a multi-level place of work

- Available in each works vehicle (at least one first-aid box per vehicle)
- Regularly checked for contents and expiry dates and replenished as required
- Site specific – contents should depend on needs and employee numbers



IMPORTANT: It is not recommended that first-aid boxes contain over-the-counter medicines or drugs such as painkillers.



ACTION POINT: The following actions will help PCBUs meet their legal requirements regarding the provision of suitable first aid arrangements:

- Carry out a needs assessment to determine how many trained first aiders and first-aid kits are required (and what types)
- Ensure first aiders attend appropriate training and refresher courses
- Ensure workers are aware of their nearest first aider and that first-aid boxes are easily accessible
- Keep a register of workers' contact details for cases of emergency
- Ensure documented procedures are in place for the contents of kits to be regularly inspected and replenished
- If defibrillators form part of the first-aid equipment, then first-aid workers should be trained in their use
- Provide hand sanitiser or wipes for first-aid kits to reduce the opportunities for infection

11. Forklift operations



MORE INFORMATION:

- The approved code of practice for training operators and instructors of powered industrial lift trucks (forklifts) outlines the responsibilities for providing appropriate training for workers who use such vehicles, and for maintaining the equipment.
- Refer to WorkSafe - <https://www.worksafe.govt.nz/topic-and-industry/https://www.worksafe.govt.nz/topic-and-industry/vehicles-and-mobile-plant/>

<https://www.nzta.govt.nz/commercial-driving/forklifts-construction-machines-and-cranes/forklifts/>



THE LAW: S.36 of the HSWA **requires** that a PCBU *so far as is reasonably practicable ensures the safety of workers while at work; and in particular shall so far as is reasonably practicable ensure —*

(c) *the provision and maintenance of safe plant and structures (HSWA).*



PROSECUTIONS:

Company A was fined \$6000 for failing to provide audible reversing warning devices on its forklifts, one of which struck a non-employee when it was reversing.

Company B was fined \$5000 under s6 and \$7500 under s13(b) of the HSE Act after an employee fell under a forklift he was driving when it struck overhead racking. The victim, whose leg was broken and crushed, did not hold a current forklift licence. Improvement and prohibition notices had previously been served on the company relating to untrained forklift drivers, and there had been a number of accidents involving forklifts and overhead racking.

Forklift trucks are an ideal means of transferring awkward objects or loads from one place to another. Selection of the most appropriate type of forklift (e.g. electric versus LPG, reach

truck versus side loader), along with the selection and training of workers in the correct use and limitations of chosen equipment, will assist in effective management and reduction of hazards or injuries related to forklift use.

Regular and periodic maintenance schedules should form part of the agreed management process, along with employee training in undertaking daily checks.



MORE INFORMATION: Refer to Appendix 4: Forklift safety checklist.

The location of the charging unit, correct signage, and the availability of ancillary equipment in the work area should also be considered.



ACTION POINT: The following actions will help PCBUs meet their legal requirements:

- Ensure all workers who drive forklift trucks are appropriately trained (logbook recording training should be included) and hold current certificates.
- Forklift drivers should undertake daily inspections, and the results recorded appropriately.
- The location of the battery charging unit should be appropriately marked and correct equipment provided in accordance with the operator's manual (refer to the forklift's certification plate).
- Procedures should be in place to periodically monitor that workers are using vehicles as intended.
- Safe working load limits should be clearly marked on each forklift or reach truck.
- Display speed restriction signage and other appropriate warning signage, including on overhead beams and racking.
- Place mirrors around areas where forklift trucks are in use (if required).

- Where practicable, clear demarcation should be in place to separate pedestrians from moving vehicles (e.g. marked crossings, barriers, signage).
- Do not permit workers to use additional equipment (e.g. access cages) fitted to the tines, unless it is fit for purpose and the employee is trained in the correct use.
- Some equipment and modifications may need to be certified prior to use (e.g. access cages).
- All access cages should be fully secured to the forklift when in use.
- Ensure workers receive training for forklifts fitted with rotational lifting heads.
- Diesel or petrol forklifts require adequate ventilation when operating indoors or in confined areas.

12. Hazard identification and Risk management



THE LAW: section 30 of the HSWA notes that risks to health and safety arise from people being exposed to hazards.

A hazard is anything that could cause harm. The HSWA notes that *hazard includes behaviour that has the potential to cause death, injury, or illness (whether or not that behaviour results from physical or mental fatigue, drugs, alcohol, traumatic shock or another temporary condition that affects behaviour).*

A risk is the likelihood, probability, or chance of something happening.

Regulation 5 of the Health and Safety at Work (General Risk and Workplace) Regulations 2016 places a duty to identify '*hazards*'. These must be managed under Regulation 6, through an established hierarchy of controls (eliminate, substitute, engineering controls, administrative controls, and PPE).

In general, to meet health and safety duties, risks that arise from work must be effectively managed.



MORE INFORMATION: Hazard identification and risk management doesn't need to be complicated, but it does need to be specific to a task or work area, as a person's place of work may vary (e.g. vehicle, office or transfer station) and change throughout the day. To **ensure** that legal requirements are met, workers who undertake hazard identification and complete hazard registers or other agreed documentation should be suitably trained. Risks must be eliminated so far as is reasonably practicable. If a risk cannot be eliminated, it must be minimised so far as is reasonably practicable. PCBUs must take these steps to the extent to which they have, or would reasonably be expected to have, the ability to influence and control the matter to which the risks relate.



IMPORTANT: Refer to the example of a hazard/risk register in Appendix 6. Full guidance is given in AS/NZS IEC 310010:2019 Risk management – Risk assessment techniques.

The entire process of risk management is based upon the requirement to take ‘reasonably practicable steps’, which is defined in the HSWA as meaning *all steps to achieve the result that it is reasonably practicable to take in the circumstances, having regard to—*

- (a) the likelihood, duration of the hazard or the risk concerned occurring; and*
- (b) the degree of harm that might result from the hazard or risk; and*
- (c) what the person concerned knows, or ought reasonably to know, about—*
 - (i) the hazard or risk; and*
 - (ii) ways of eliminating or minimising the risk; and*
- (d) the availability and suitability of ways to eliminate or minimise the risk; and*
- (e) after assessing the extent of the risk and the available ways of eliminating or minimising the risk, the cost associated with available ways of eliminating or minimising the risk, including whether the cost is grossly disproportionate to the risk*
(HSWA).

Hierarchy of Controls

The Hierarchy of Control in the HSWA (see Figure 4) requires that risks for hazards are managed as follows:

- **Eliminate:** Where there is a hazard to workers at work, the PCBU shall take reasonably practicable steps to eliminate it (e.g. remove the hazard completely).
- **Minimise:** Hazards to workers to be minimised, and workers to be protected, where elimination is impracticable. Minimisation measures include, but are not restricted to, substitution of the source of the hazard with a method that lessens the risk from the hazard, isolation of the hazard through the installation of guarding around the hazard,

other engineering controls. Other methods of minimisation include, information, training and instruction, written procedures, maintenance of equipment, good housekeeping and signage and the provision of personal protective equipment.

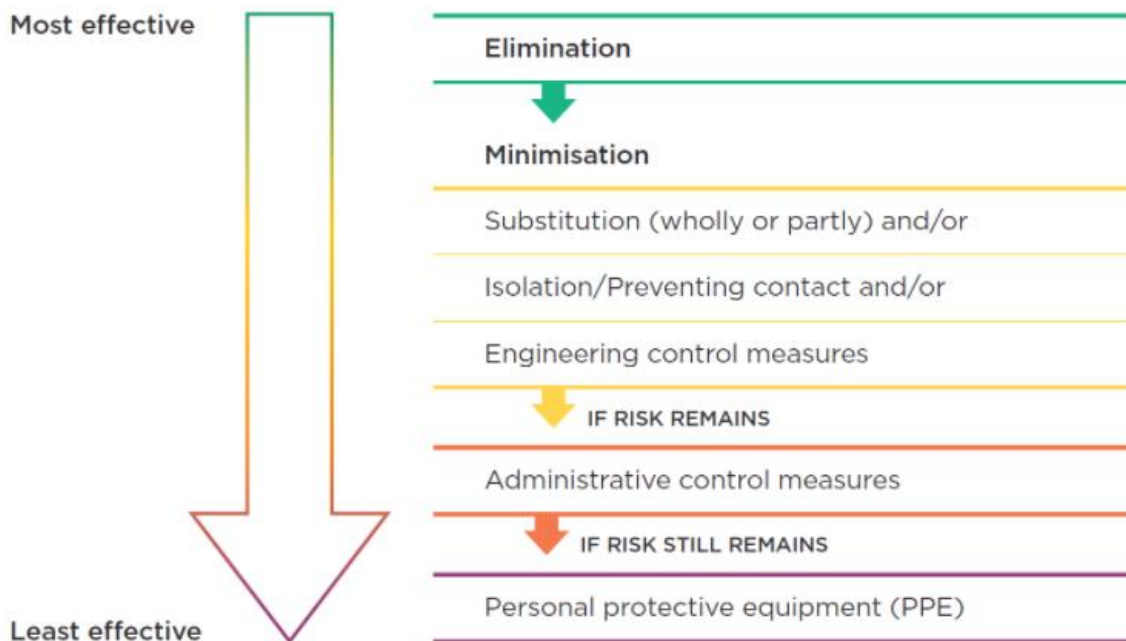


Figure 4:
Hierarchy of control measures (WorkSafe New Zealand,)



IMPORTANT: When using the hierarchy of controls to minimise risk, you first take one or more of the above actions that are the most appropriate and effective, taking into account the nature of the risk: PPE is only used when other control measures alone can't adequately manage the risk. PPE should not be the first or only control measure considered and WorkSafe expects you to give preference to other control measures that protect multiple at-risk workers at once.

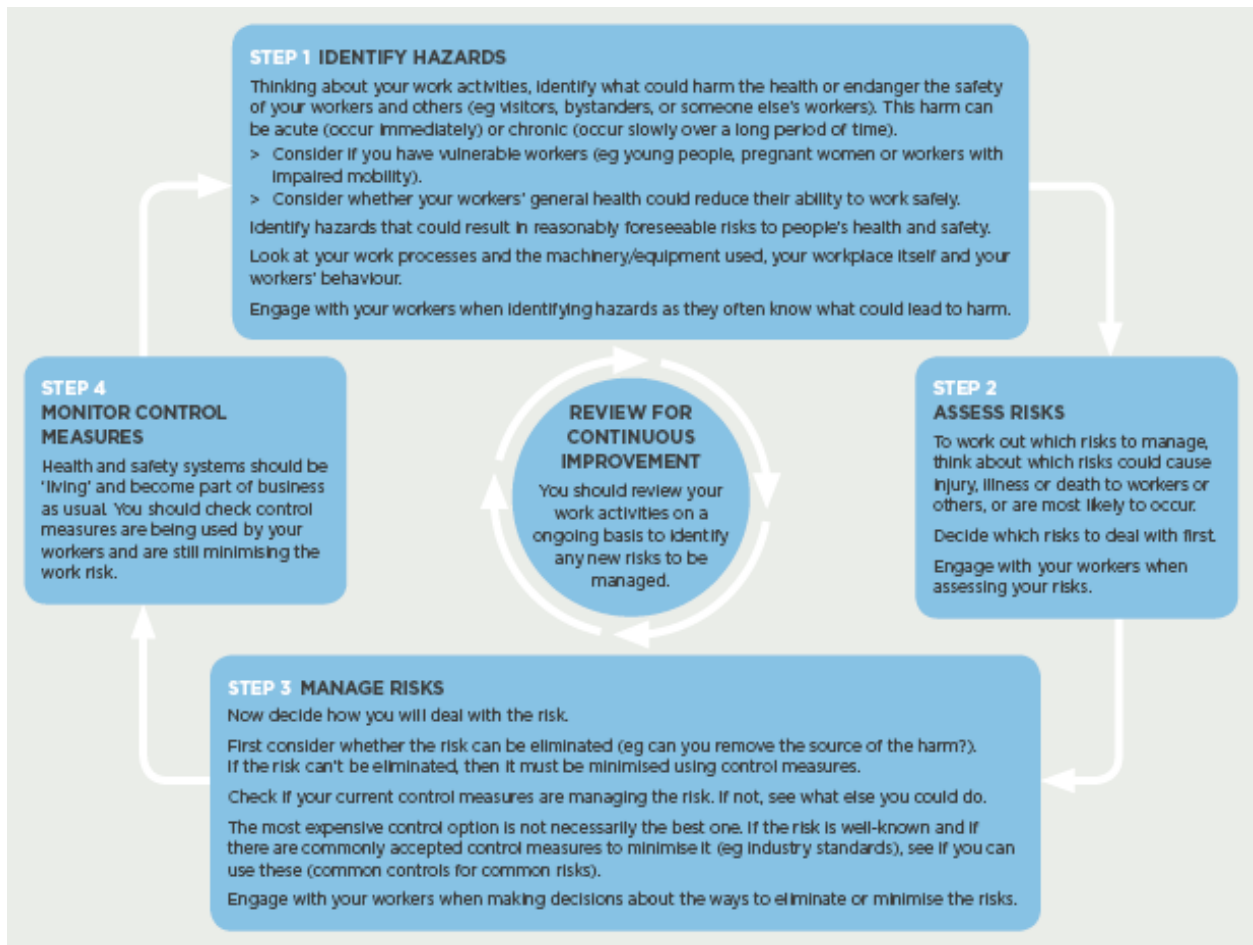


Figure 3:
The risk management process (WorkSafe New Zealand 2016)

The following action points provide a framework to complete the hazard identification process, see figure 6.

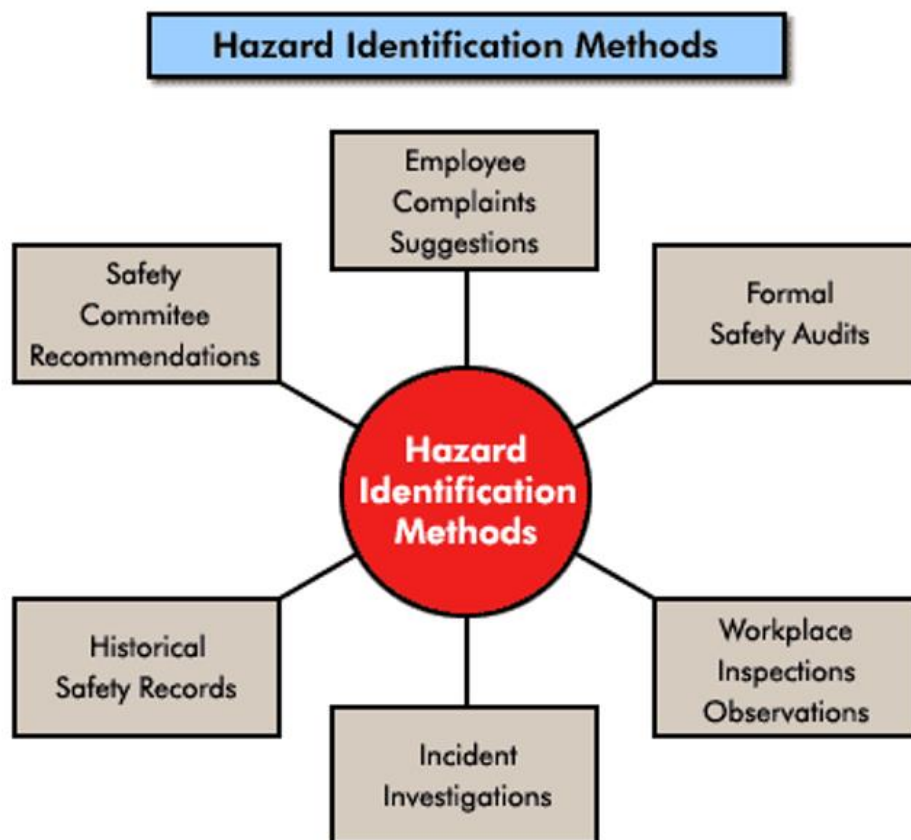
Step One: Hazard identification

- To aid identification, hazards can be broken down into 'types'. This system can help to ensure you have identified all the hazards associated to the event. It's worth noting that you could also add your environmental hazards to your risk assessment, but this does not form part of this document.

Hazard Groups	
Biological	Bacteria, viruses, fungi, animals, bites & stings

Physical	Noise, spills, heights, machinery, electrical, light, dark, heat, cold, sharp items, radiation, uneven surfaces, weather, earthquakes, vibration
Chemical	Chemicals, asphyxiation, explosion, fires, burns, vapours, carcinogenic, sensitizing, mutagenic, toxic, corrosive, dust
Ergonomic	Lifting, poor posture, workstations, VDU's, confined hazards - space, occupation overuse syndrome (Musculo skeletal)
Psychosocial	Violence, workloads, intensity, repetitive, hazards - harassment, lone work, fatigue, alcohol, drugs, bullying
Environmental	Noise/dust/pests as an environmental nuisance to people and property, stormwater (creeks, rivers, sea), groundwater (aquifers), soil (chemical contamination, flood risk), air (dust), trade waste etc

- Some hazards are obvious, for example glass bottles could cause cuts, especially if glass is broken but you also need to consider what was in the bottle as this could also introduce a hazard Some hazards need to be 'looked for'.
- One practice to identify hazards is to break down the steps of a task and ask, "What could hurt someone? How could someone be hurt?"
- Learn from mistakes or previous accidents and make sure arrangements are put in place to stop a similar accident occurring. There are multiple ways to obtain information on workplace hazards



- Don't just look at day-to-day tasks; consider what could happen when something goes wrong, e.g. jam up or breakdowns. What about infrequent tasks such as annual maintenance?
- Don't forget to consider other people who could be affected by or exposed to hazards - not just the workers (e.g. pedestrians, public and contractors).
- When bringing your team together to assess your risks, try to get a broad spectrum of workers. Preferably with an H&S professional on the team. If you only have a team of workers who 'do the job' they may have a different perception of the risks involved. They can often have higher risk tolerance of risks familiar to them.
- It is unlikely that we will be able to get all of our workplace activities risk as 'low'. Risk Appetite is the amount of risk an organisation is willing to take to get the activity completed. It can also be described as an organisation's risk capacity, or the maximum amount of residual risk it will accept after controls and other measures have been put in place.
- Risk Intensification – When putting in risk controls for one hazard, we need to be

aware that these controls may have a negative effect on other hazards.

Example - For lifting bags, we could easily consider that dropping the bag could hurt the toes. Hence, we put steel top capped boots as a control. We should look at the historical data to see if this is an actual occurrence or just a *perceived risk*. If data shows it is an actual risk, we can quantify the risk in number of events per man hours worked. This number could be an acceptable or unacceptable risk depending on the company's risk appetite.

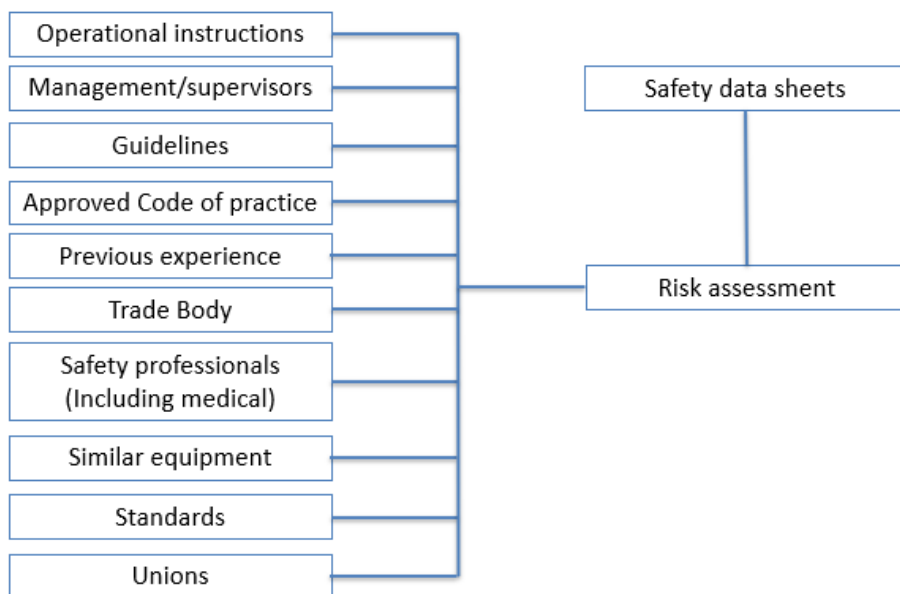
However, the wearing of steel toe work boots could have a negative impact on the fatigue of the drivers. Getting in and out of the trucks many times in a shift, the reduced comfort of boots compared to runners, the angle of the boots when driving stood up (LEV's), the increased weight of the boot will all significantly increase the fatigue level for all the driver during their shift.

We would need to assess which of the events is more likely to create an incident with the most damaging outcome and decide if boots make the overall safety of the driver better or worse.

Steps Two and Three: Risk assessment and control/recovery

- Most companies formulate a simple risk assessment matrix, based on the likelihood of a hazard occurring and the consequence of the exposure or extent of injury. Control measures are then implemented in accordance with the Hierarchy of Control (Figure 4).

Input to a risk assessment



- For simple systems the risk assessment matrix is adequate to quantify the risks. However, for complex activities/systems then the risk assessment matrix provides a useful screening tool. Activities within a higher risk can then be fully risk assessed using techniques such as a Bow tie risk assessment. Methods of risk assessment are detailed in AS/NZS IEC 310010:2019 Risk management – Risk assessment techniques.
- For lifting operations, we may have to do a special risk assessment called a TILE risk assessment (Task, Individual, Load, Environment).
- Hazardous chemicals may need additional risk assessment that will include toxicological and exposure data (CoSHH assessments, used in the UK, are a good example).



MORE INFORMATION: An example of a risk matrix is provided in Appendix 10. An electronic version can be downloaded from the WasteMINZ website

Steps Four and Five: Monitor hazards and regularly review hazard controls

- Having implemented appropriate control measures, systems need to be implemented to make sure they are effective and that workers are using them.
- There are a number of ways to go about this. Inspections, audits, environmental monitoring (especially for noise or dust) and results of health monitoring are all useful methods.
- Hazards and their associated risks should regularly be reviewed, following the process in Figure 6. This is especially important when an incident has occurred, or a new process/equipment is introduced.



ACTION POINT: The following actions will help PCBUs meet their legal requirements:

- Nominate workers to be trained in hazard identification/risk assessment
- Agree a template for the risk assessment and ensure that the completed document is readily available for workers to refer to
- Ensure hazard management processes are in place and that workers are trained in these
- Regularly monitor control measures (once these are agreed)
- Review the risk assessments on a regular basis, in line with an appropriate company policy
- Ensure hazard and risk information is communicated to workers at induction and at regular intervals thereafter
- Remember that a risk assessment is a 'living' document, and as such, needs to be updated or altered as circumstances change, particularly when new practices, people or equipment are introduced

13. Infection control



THE LAW: Section 37 of the HSWA notes that a PCBU must, so far as is reasonably practicable, monitor its workers' health and the workplace conditions. Monitoring is not a control measure to manage risk and does not replace the need for control measures to reduce exposure. Results from monitoring should be used to improve control measures where needed.



THE LAW: Sections 74 and 74AA of the Health Act 1956 place duties on medical practitioners and medical laboratories.



THE LAW: Section 77 of the Health Act 1956 enables a *medical officer of health, or any medical practitioner authorised in that behalf by the medical officer of health or by the local authority of the district to enter any premises, including a workplace in which they have reason to believe that there is or recently has been any person suffering from a notifiable infectious disease or recently exposed to the infection of any such disease, and may medically examine any person on those premises for the purpose of ascertaining whether that person is suffering or has recently suffered from any such disease* (Health Act, 1956).



ACTION POINT: Exposure to hazards **must** be effectively controlled. Where hazards cannot be eliminated, they **must** be minimised. The risk of exposure to biological hazards in our sector is considered high, especially when handling waste and recyclable materials. Typical sources of such hazards are:

- Waste from medical clinics, vets, and tattooists, and IV needles from drug users
- Other waste types such as sanitary products and nappies
- Environmental conditions such as dust that can transport harmful microbes and odours that can cause infection and/or respiratory disease.



IMPORTANT: If dangerous or hazardous goods are being transported, a dangerous goods (D) licence is required. Dangerous goods include substances and articles that have explosive, flammable, toxic, infectious, or corrosive properties. Refer to NZTA's information sheet on 'Transporting dangerous or hazardous goods'.

Appropriate controls against exposure to biological hazards include the provision of suitable containment, then PPE to protect against exposure, providing adequate hygiene facilities and, if necessary, vaccination and health monitoring.

In New Zealand, the recommendations of Standards AS/NZS 1715 (Selection, Use and Maintenance of Respiratory Protective Equipment) and AS/NZS 1716 (Respiratory Protective Devices) should be followed as a minimum.



ACTION POINT: The following actions will help PCBUs meet their legal requirements:

- Regular cleaning of plant and equipment to remove build-up of contamination.
- Good hygiene practices such as handwashing and drying.
- Use of PPE, including gloves, masks, eye shields and goggles.
- Clear policies for correct handling and collection of clinical waste and sharps.
- Procedures and provision of equipment for when hand-washing facilities are not available (e.g. using antibacterial hand wipes or liquids).
- Training and education in the use of PPE and correct hand washing techniques.
- Frequent washing/renewal of clothes worn during waste collection, to

protect the health and safety of the wearer and others.

- Training and education in signs and symptoms of infectious diseases such as gastroenteritis.
- Preventative management of infectious diseases.
- Provide an information wallet card or similar for workers to inform doctors of the potential exposure to leptospirosis/Weil's Disease. Infection is commonly transmitted by allowing water that has been contaminated by animal urine to come in contact with unhealed breaks in the skin, the eyes or with the mucous membranes.
- Regular health surveillance of workers and environmental health monitoring in relation to hazard exposure (e.g. noise and dust).
- Encouraging the prompt and early reporting of illness.
- Training in the early identification and separation of hazardous/contaminated waste.

14. Lockout-tagout (LOTO) isolation procedures



THE LAW: Section 36 of the HSWA **requires** that a PCBU, *so far as is reasonably practicable ensures the safety of workers while at work; and in particular shall so far as is reasonably practicable ensure —*

(c) *the provision and maintenance of safe plant and structures* (HSWA).



MORE INFORMATION: The following legislation, guidance notes and industry Standards apply either directly or indirectly to the use of lockout-tagout (LOTO).

WORKSAFE
Mahi Haumarū Aotearoa



January 2021

Keeping workers safe when servicing machinery

This guidance advises small to medium PCBUs¹ how to use lockouts to safely isolate and de-energise the parts of machinery that could cause harm to workers when servicing² this machinery.

WKS-5 Machinery – Keeping Workers Safe When Servicing Machinery

Good Practice Guide – Safe Use of Machinery, Sections 8.1.9 - 8.1.11 - WorkSafe New Zealand

Standard AS 4024:1201 – 2014, Safety of Machinery Part 1201: General Principles – Basic Terminology and Methodology

European Standard EN 1037:1995 + A1:2008 – comprehensive discussion of energy dissipation, isolation devices, locking devices and design strategies to prevent unintentional start-up



PROSECUTIONS:

Company A was fined \$18,000 following injury to an employee when a machine was activated during a maintenance procedure. Company A failed to have an effective LOTO procedure in place which would have prevented the accident.

What is lockout?

- Lockout or LOTO is a specific procedure that renders machinery or equipment inoperable by isolating the energy source.
- All sources of energy (including electrical, pneumatic, hydraulic, mechanical and stored energy) are isolated so that they pose no danger.
- The purpose of zero energy and lockout is to prevent the release of an energy source that could activate moving parts on equipment or machinery.



IMPORTANT: Clearly communicate with and train workers in appropriate good practice for lockouts.



IMPORTANT: Switchgear: Access to switchgear is by authorised persons only. The door to this equipment is to be locked at all times.

Why is lockout important?

- PCBU, supervisors and workers all have individual responsibilities regarding lockout under the HSWA, as it is a means to control or manage hazards.

- Lockout is important for operators, maintenance workers, contractors, cleaners, and other people required to work near moving parts of machinery.
- Every year, workers in New Zealand are killed or seriously injured because machinery or equipment was not properly locked out. For example, accidents where workers are caught in machinery, can result in severed fingers, crushed limbs, or death. Many of these accidents can be prevented if machinery is locked out properly.

Situations where lockout is unsuitable

Sometimes machinery or equipment has to be energised for a specific task – for example, when making fine adjustments or doing troubleshooting that can only be done with part of the equipment working. In those cases, only the parts that are vital to the maintenance process may remain energised.

Work on energised equipment **must** only be performed by workers who are competent to do the work and who have been provided with, and follow, written safe work procedures. In addition, work should only be performed by workers who have been authorised by the PCBU to do the work. PCBU should consider whether additional supervision is required.

Steps to locking out

Once it is determined that lockout is required, a competent person should follow these basic steps to lock out all sources of energy:

- Identify the machinery or equipment that needs to be locked out.
- Identify and de-activate the main energy-isolating device for each energy source. This may include:
 - Disconnecting the electrical power to the pump or compressor
 - Closing the valve feeding the cylinder
- Apply a personal lock to the energy-isolating device for each energy source, and make sure that all parts and attachments are secured against inadvertent movement.

- Test the lockout to make sure it is effective and to verify that each energy source has been effectively locked out. (First, **ensure** that all workers are in the clear and that no hazard will be created if the lockout is not effective).
- The lockout test should confirm:
 - that zero energy is in effect (e.g. press start button)
 - that the pump or compressor won't start and that the flow doesn't bypass the valve
 - that there is no residual pressure in the lines, reservoirs, or accumulator feeding the cylinder - if there is, make sure it is bled
 - that there is zero energy in the system (mechanically support any raised load)
 - that inadvertent start up is ruled out – consideration should be given to light beams, pressure sensors and computer-controlled systems that may activate a machine automatically
- Shut off the machinery or equipment.
- Make sure that all moving parts have come to a complete stop.
- Be aware that the act of shutting off equipment should not cause a hazard to other workers.
- If required, shut down any connected machinery, such as machinery in a production line. A group lockout procedure should be considered (refer to the following page).
- The only person who can unlock the machinery should be the person who locked it out, or their authorised delegate.



ACTION POINT: The following actions will help PCBUs meet their legal requirements:

- Identify all main isolation points on machinery and equipment (not just the electrical ones).
- Prepare written work instructions or procedures on lockout-tagout

(LOTO) for the place of work.

- Identify workers who will be permitted to undertake LOTO and ensure that they receive adequate training on how to carry out the procedure and any limitations. They will be considered a competent person for the purposes of LOTO.
- Ensure there are sufficient tags and padlocks or isolation devices for the number of isolation points to enable a number of items of machinery to be locked out at the same time. (N.B. alternative isolation devices for pneumatics or hydraulic systems may need to be obtained).
- Ensure requirements around LOTO procedures form part of induction training for workers new to the place of work.

Other points to consider

A group lockout procedure can be used if a number of workers are working on machinery or equipment and a large number of energy-isolating devices need to be locked out. This procedure is effective, creates efficiencies and reduces the number of locks required.

Ensure a written procedure for group lockout is developed by a competent person prior to a group lockout situation occurring.

This written procedure is to be prominently placed where the system is in use.

The authorised delegate should hold all keys to the machinery on their person at all times until the machinery is to be re-activated.

Correct lockout of a machine does not necessarily mean that there are no other hazards present. Be aware of such things as tripping and fall hazards if working at height or in awkward locations.

15. Machine guarding and controls



THE LAW: Section 36 of the HSWA notes that a PCBU must ensure, so far as is reasonably practicable, the health and safety of workers who work for the PCBU, while the workers are at work in the business or undertaking; and workers whose activities in carrying out work are influenced or directed by the PCBU, while the workers are carrying out the work. A PCBU must also ensure, so far as is reasonably practicable, the provision and maintenance of safe plant and structures; the provision and maintenance of safe systems of work; and the safe use, handling, and storage of plant, substances, and structures.



MORE INFORMATION: WorkSafe New Zealand recommends the following sources of information:

<https://www.worksafe.govt.nz/topic-and-industry/manufacturing/safe-use-of-machinery/>

- British Standard BS EN 1501-1:2011 Refuse collection vehicles. General requirements and safety requirements. Rear loaded refuse collection vehicles.
- British Standard BS EN 1501-5: 2011 Refuse collection vehicles. General requirements and safety requirements. Lifting devices for refuse collection vehicles.
- Ergonomics of machine guarding guide.
- Guidelines for Guarding Principles and General Safety for Machinery 1995.
- Guidance notes for electrical interlocking for safety in industrial process 1994.
- AS 4024:1201 – 2014, Safety of Machinery Part 1201: General Principles – Basic Terminology and Methodology.

- Machinery and Equipment Safety - An Introduction.

Types of guards

The purpose of guards is to put a barrier between people and operational areas of machinery.

Static fixed guard

A static fixed guard remains in a fixed position and cannot be moved or adjusted while the machine is in use. The effectiveness of any fixed guard should be regularly confirmed by testing whether or not any employee is able to access any moving part (e.g. a pinch point). Static fixed guards include screens and covers.

Adjustable fixed guard

An adjustable fixed guard is one that can be adjusted or changed to suit an operating process, for example, to change the size of a feed opening to suit different sizes of materials being fed into a machine. The adjustable fixed guards are usually connected by an interlock arrangement to the machinery control mechanism, so that if the guard is not locked in place, the machine will not start.

Photoelectric guards

Photoelectric guards use a laser to detect motion between two sensors. The machine will shut off if the beam is broken. Light curtains can be used at the rear of a rear-loading compactor truck by routing the rear switches through an interlocked relay contact. Regular maintenance of light curtains and mirrors is required to **ensure** they are clean and maintain operational efficiency.

Controls and emergency stops

All controls and emergency switches **must** be inspected at regular intervals, to **ensure** that they are operational and fit for purpose. Any equipment with a switch found to be faulty **must** be immediately locked out until it is replaced by a switch designed for the same function and reliability. All controls should be located for both left- and right-hand operation. They **must** be identified by clear English instructions and pictograms.

Operators **must** be trained in the use of all controls as part of their induction and at other regular intervals.



ACTION POINT: If English is a second language for many workers, consider making the hazard signs also in the language(s) most common to all.

16. Manual handling

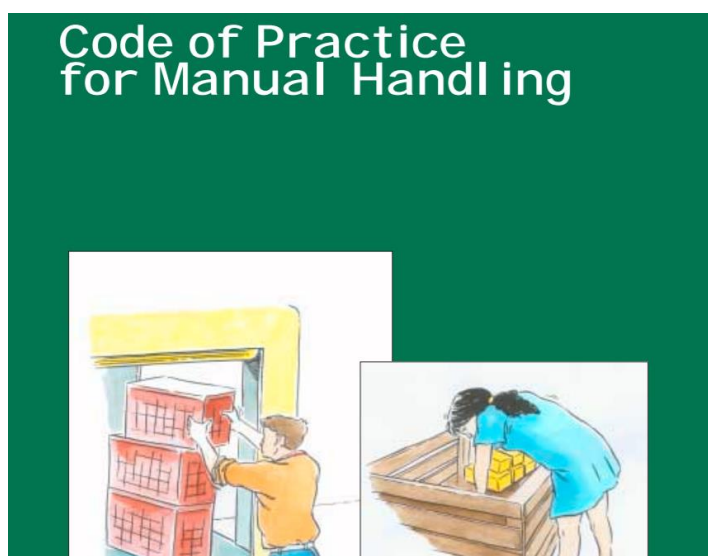


THE LAW: Manual handling is a hazard within the waste sector. It is required to be effectively managed in accordance with section 30 of the HSWA.



MORE INFORMATION: The Code of practice for manual handling 2001 and the ACC programme 'Preventing and managing discomfort, pain and injury' outline additional requirements, and methods to manage or reduce risk for such activities.

<https://www.worksafe.govt.nz/topic-and-industry/manual-handling/preventing-manual-handling-injuries-acop/>



From the Code of Practice, Manual handling is *'any activity requiring a person to interact with their environment and use any part of their muscles or skeletal system to lift, lower, push, pull, carry, throw, move, restrain or hold any animate, or inanimate, object'* (



IMPORTANT: Manual handling tasks must be effectively managed and where

practicable, eliminated, or minimised.

For lifting operations, we can do a special risk assessment called a TILE risk assessment (Task, Individual, Load, Environment).

- **Task:** Does the object have to be lifted higher than waist height? Does the load have to be taken from one area to another?
- **Individual:** Gender; age; general health and wellbeing; previous back, skeletal or musculoskeletal injury.
- **Load:** Actual weight. Does it have handles? If containing liquid, is the liquid considered dangerous? Will the centre of balance shift when it is moved? Does it have sharp edges or slippery surfaces? Shape, length, height, density, surface grip and stability.
- **Environment:** Is there sufficient lighting to see where any obstacles may be? Is it wet or icy, increasing risk of slipping? Is the work area cramped, meaning that workers have to stoop to get around?

We can then put in specific controls such as **Equipment:** Lifting devices, gloves, handling hooks, leverage, dragging, trolleys, ramps.

Ability to lift safely is dependent upon a number of factors including the person's physical capabilities, the actual activity or task, the load itself, equipment (if any) and also the working environment.

By regularly addressing these factors, it is possible to reduce the risks of injury associated with manual handling greatly.



ACTION POINT: The following actions will help PCBU meet their legal requirements:

- Ensure all manual handling tasks are reviewed to reduce manual

handling, which may include physically handling waste, consider automation (partial or full) or the use of lifting devices.

- Ensure workers receive adequate training and information on correct lifting techniques, tool/equipment use and lifting devices, and on how to reduce their risk of injury when engaged in manual handling.
- Ensure that workers are aware that they should report any physical or psychological conditions or medical problems that could increase their risk of injury.
- Document all reported physical conditions and medical issues.
- Where possible, arrange for containers/items to be marked with their weight or the recommended total fill weight.
- Where containers cannot be marked with their weight (or an indicative weight), consider marking the container with a 'DO NOT FILL BEYOND THIS LEVEL' sign.
- Ensure the place of work is adequately lit and that housekeeping is managed to reduce obvious slip and trip hazards.
- Ensure that additional resources are available for loads that are known or suspected to be heavy for a single individual to lift (i.e. indicate when two people should be used, or consider double-manning some activities).

17. Mental Wellbeing or Mentally Healthy Work

Work can have a negative or positive impact on people’s mental health and wellbeing. Mentally healthy work is about preventing negative impacts from work, which can cause mental harm, by creating work conditions to support positive mental health and wellbeing. This can be achieved by businesses and workers working together to design work and foster a positive workplace culture.

Employees are the foundation of your business, and they need looking after. Some employers offer extra benefits as part of an employee health and safety or wellness plan. An employee assistance programme (EAP) can offer your employees, and often their families, support – for example counselling – to help them cope with workplace issues and personal problems that could have a negative effect on their work performance.

What challenges do we face?



Knowledge



Capacity & capability



Effective controls



Co-ordination



THE LAW: Workplaces have a legal responsibility to manage risks to mental wellbeing and mental health just like they do any other health and safety risk.

This includes making sure there’s no discrimination or bullying taking place in the workplace. If we can take steps to reduce work stress, we can reduce or prevent psychological harm.

They have a legal responsibility to adapt the way they organise things at work to help people who experience mental distress, such as by being more flexible with their working arrangements.



MORE INFORMATION:

Refer to the following websites:

<https://wellplace.nz/facts-and-information/mental-wellbeing/>

<https://mentalhealth.org.nz/>



<https://1737.org.nz/>

[Free call](#) or [free text 1737](#) any time, 24 hours a day. You will get to talk to (or text with) a trained counsellor or talk to a [peer support](#) worker. Their service is completely free.



ACTION POINT:

- Mental wellbeing is one of the most valuable business assets. Workplaces that prioritise mental health have better engagement, reduced absenteeism, and higher productivity, while people have improved wellbeing, greater morale, and higher job satisfaction.
- Promote the case for action and leadership
- Actively communicate with and engage the team
- Talk openly about mental health and wellbeing
- Evaluate the impact and celebrate the successes

18. Remote and Isolated Work

Worker who operates in remote and isolated locations may be at increased risk of confrontation or even injury where some work tasks are more challenging to do alone.

The effects can reduce productivity and disrupt workplaces through:

- impaired performance
- increased absence
- low morale
- more mistakes and accidents
- loss of company reputation
- resignations and difficulty recruiting
- poor customer service and/or product quality.



THE LAW: Workplaces have a duty to manage the risks associated with remote or isolated work (Regulation 21 of the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016)

- (1) A PCBU must manage, in accordance with regulations 5 to 8, risks to the health and safety of a worker who performs remote or isolated work.
- (2) To minimise risks to the health and safety of a worker associated with remote or isolated work, a PCBU must provide a system of work that includes effective communication with the worker.



ACTION POINT:

- Understand the situations where people work in remote or isolated situations of work alone and consider how to eliminate the risk where reasonably able to.
- Consider handling equipment, such as portable ladders or trestles, that one person could have difficulty handling.
- Consider if chemicals or hazardous substances are being used that may pose a particular risk someone working alone.

- Consider if the work involves lifting objects too large for one person.
- If the lone worker's first language is not English, are suitable arrangements in place to ensure clear communications, especially in an emergency.
- Consider social isolation - employees working alone are at risk of social isolation, managers should make sure that there are regular opportunities to keep in touch and to bring the person together with the rest of the team (even if this is by email, telephone conferences, video conferences etc.)
- Consider organisation isolation- employees working alone must receive the same information, training and development opportunities, and consultation as other employees. Managers should invite these employees to attend when there are events, both social and work related.
- Consider technological isolation - employees working alone should have access to the same or more advanced technology as other employees (depending on the job requirements).

19. Workplace Exposure



THE LAW: According to the Approved code of practice for the management of noise in the workplace 2002 and primary duty of care (section 36 of the HSWA), a PCBU must ensure, so far as is reasonably practicable, the health and safety of workers, and that other people are not put at risk by its work. This is called the ‘primary duty of care’.

This means ensuring, so far as is reasonably practicable:

- The health and safety of workers who work for the PCBU (e.g. employees or contractors, including their subcontractors or workers) while they are at work in the business or undertaking.
- PCBUs must, so far as is reasonably practicable, provide and maintain a work environment that is without health and safety risks. The work environment includes:
 - The physical work environment, including lighting, ventilation, dust, heat, noise, and chemicals **requires** PCBUs to take reasonably practicable steps to **ensure** that no worker is exposed to noise above the following levels:
 - Eight-hour equivalent continuous A-weighted sound pressure level, $L_{Aeq,8h}$, of 85 dB(A); and
Peak sound pressure level, L_{peak} , of 140 dB—whether or not the worker is wearing a personal hearing protector.



MORE INFORMATION: Many people take exposure to noise as the ‘norm’ when working with machinery. However, exposure to noise over a certain level or period of time can cause irreversible damage to a person’s hearing, particularly if the person is unprotected. This damage is known as Noise-Induced Hearing Loss (NIHL).

Dusts are discrete particles suspended in air, originating from the attrition of solids or the stirring up of powders or other finely divided materials. Dusts encountered in the workplace typically contain particles covering a wide range of sizes.

Airborne particulates are associated with a variety of adverse health effects and may have one or more of the following properties:

- infectious
- carcinogenic
- fibrogenic
- allergenic
- irritative.

The total concentration of the substance in air, either in terms of the weight or number of particles per unit volume, is not the only factor influencing its toxic potential. The toxic potential of a substance is influenced by a number of factors including concentration, particle size, mass, surface area and solubility.

Inhalable and respirable dust

Inhalable dust is the portion (or fraction) of airborne dust that is taken in through the mouth and nose during breathing.

Respirable dust corresponds to the fraction of total inhalable dust that is able to penetrate and deposit in the lower bronchioles and alveolar region.

Resources to refer to are:

<https://www.worksafe.govt.nz/topic-and-industry/noise>

<https://www.legislation.govt.nz/regulation/public/1995/0167/latest/DLM202736.html>

<https://www.worksafe.govt.nz/topic-and-industry/monitoring/exposure-standards-and-biological-exposure-indices/>

PCBUs have four main responsibilities to **ensure** they meet their duties to control exposure to noise and dust etc. These are to:

- Identify hazardous noise in the workplace
- Control hazardous noise either at source or by isolating noise from workers or vice versa, or failing that, to protect workers from it
- Arrange hearing tests for workers who work in areas with hazardous noise, and notify WorkSafe if a notifiable injury or illness is diagnosed
- Undertake environmental monitoring at least every five years if PPE is provided or sooner if significant changes to work practices occur.
- Pre-employment and periodic audiometry is used in many companies where workers work in environments known to be noisy. Their hearing is checked for early detection of problems and as part of a proactive hearing conservation programme.



MORE INFORMATION: If a worker has to shout to be heard over a distance of one metre, then it is likely that the work environment is 'noisy' and needs to be assessed. See

<https://www.legislation.govt.nz/regulation/public/1995/0167/latest/DLM202736.html> (Section 11 - Noise)



IMPORTANT: Reducing noise and dust at source is the first priority (an 'eliminate' action). Issuing hearing and respiratory protection (PPE - a minimise action) is appropriate if noise or dust cannot practicably be reduced. Refer to Figure 3: The Hierarchy of Control. In many cases, external assistance may be required when identifying methods of noise and dust reduction at source.



ACTION POINT: The following actions will help PCBUs meet their legal requirements:

- Arrange for noise and dust hazards to be risk assessed, using preliminary or detailed

surveys and maintain records.

- If a detailed survey is to be undertaken, it should be carried out by a 'competent person'.
- Ensure that noise and dust are eliminated where possible.
- When 'managing' noise always look to reduce noise output to a level below the exposure limits stated in Regulation 11 of the Health and Safety in Employment Regulations 1995.
- Arrange for workers working in noise hazard areas to receive hearing tests, firstly at pre-employment and on an annual basis thereafter. Ensure that WorkSafe New Zealand is notified of any hearing test that reveals a hearing loss which equals or exceeds WorkSafe New Zealand's criteria.
- Ensure that workers and visitors are provided with appropriate hearing and respiratory protection to suit the work environment.

Hearing protection should conform to AS/NZS 1270:2002 Acoustics – Hearing Protectors and be of the correct classification. Respirator protection should conform to AS/NZS 1715:2009 Selection, use and maintenance of respiratory protective equipment ensure that any PPE (e.g. appropriate earmuffs, dust mask) fits as intended.

- Consider the limitations of hearing protection (e.g. wear time).
- Ensure that workers are provided with sufficient training and information in the correct use and any limitations of selected PPE.



MORE INFORMATION: For further information on NIHL.

<https://www.worksafe.govt.nz/the-toolshed/tools/respirator-selection-tool/>

20. Personal Protective Equipment (“PPE”) and Signage



THE LAW: Section 15 of the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016 states that *A PCBU who directs the carrying out of work at a workplace must provide personal protective equipment to workers carrying out the work unless the personal protective equipment has been provided by another PCBU. A PCBU who contravenes sub clause (2) commits an offence and is liable on conviction, —*

- (a) *for an individual, to a fine not exceeding \$10,000:*
- (b) *for any other person, to a fine not exceeding \$50,000.*

Protective clothing and equipment are often referred to as Personal Protective Equipment ('PPE').



THE LAW: Section 16 of the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016 notes that a worker may choose to provide personal protective equipment.

- (1) *A PCBU does not have to comply with regulation 15(2) if—*
 - (a) *a worker genuinely and voluntarily chooses to provide his or her own personal protective equipment for reasons of his or her comfort or convenience; and*
 - (b) *the PCBU is satisfied that the personal protective equipment provided by the worker is suitable in terms of regulation 17(1).*
- (2) *A worker who has chosen to provide his or her own personal protective equipment under sub clause (1) may, after giving reasonable notice to the PCBU, choose that the PCBU provide personal protective equipment under regulation 15(2) instead of providing it himself or herself, and the PCBU*

must then provide the personal protective equipment to the worker.



IMPORTANT: PPE issued to workers undertaking any kerbside collection activities should comply with the requirements of NZTA's Code of Practice for Temporary Traffic Management: Kerbside collection activities and Kerbside Collection Traffic Leader.



IMPORTANT: PPE should only be used as a minimisation control for hazards when other control measures have been considered and are deemed impracticable or insufficient to control the risk '*as far as reasonably practicable*'.

Standard PPE that could be provided to workers in the sector includes (but is not limited to):

- Safety footwear including steel mid-soles where appropriate
- High visibility jacket or vest (orange high vis with reflector strips as required by the Waka Kotahi New Zealand Transport Agency for persons "working on the road")
- Gloves that are fit-for-purpose to protect from cuts or abrasions
- Appropriate PPE for weather conditions
- Hearing protectors and dust masks.

The selection of PPE should take into account the activity that the person is undertaking and should not affect or interfere with any additional equipment that they may need to wear as part of their job, or equipment that they need to operate. Where several items need to be worn at the same time, none should interfere with the effectiveness of another.



MORE INFORMATION:



IMPORTANT: To ensure that the selected PPE is fit for purpose and provides the necessary level of protection, it should conform to the relevant NZ/AS Standards, which include:

- AS/NZS 2210.1:2010 Safety, protective and occupational footwear – Guide to selection, care and use
- AS/NZS 1906.4:2010 Retroreflective materials and devices for road traffic control purposes – High-visibility materials for safety garments.



ACTION POINT: Addressing the following points will help PCBUs meet their legal requirements:

- Clothing/equipment should be fit for purpose, comfortable, correctly fitted, provide appropriate protection, and allow free movement
- Clothing/equipment should be properly maintained and, if necessary, separate storage arrangements provided to reduce the risk of contamination
- Damaged clothing/equipment should be promptly and properly repaired or replaced
- Where workers are collecting bags or similar, appropriate leg protection should be considered
- Hearing protection should be worn where noise levels are above (or likely to be above) 85dB(A) $L_{Aeq,8hr}$ and elimination of noise sources is not considered to be reasonably practicable
- Eye/face protection should be considered where there is potential for injury to the eyes or face
- Gloves should be fit for purpose and selected to provide protection from cuts and

any contact with liquids or chemicals

- Respiratory protective devices should be used where there is potential harm from inhalation or exposure to known dust, respiratory sensitisers, irritants, or other infectious odours.

Maintenance, repair, and replacement R Regulations 17(1) and (2): Other duties of PCBU relating to personal protective equipment

PCBUs must ensure PPE (either provided by the PCBU or the worker) is maintained, repaired, and replaced so it continues to minimise health and safety risks to the worker who uses it. PCBUs must ensure the equipment is clean and hygienic and in good working order. Often this will mean creating an inspection, repair, and destruction schedule for the PPE. Workers must be provided information about, and training and instruction on the storage and maintenance of PPE. Training should include how to clean PPE, change filters (if needed), and how to check and replace valves and straps

Signage and visibility



IMPORTANT: Identify work activities where either workers or equipment are not clearly visible. Ensure the PPE requirements apply to all relevant workers. All vehicles and other equipment should be clearly identified with the correct signage.

People

Wear appropriate approved high visibility clothing

When working close to roads and traffic routes, use footpaths or work closest to pavements.

Vehicles

Consider fitting external search lights to vehicles to assist with illumination in poor visibility environments such as landfill sites

Audible reversing sirens and lights or sensors should be fitted to vehicles

Install reversing mirrors and a CCTV camera on relevant vehicles to increase rear visibility.

Equipment

All hazard or warning signage on equipment such as emergency stop signs or trap points should be clearly marked, ideally with pictorial signage, as per section D7 of the Code of Practice for Temporary Traffic Management: Kerbside collection activities.



ACTION POINT: To review and establish correct signage on equipment, refer to AS/NZS 1319-1994 Safety Signs for the Occupational Environment.

All safety devices or warning signage on equipment must be clearly visible to the user

All work areas must have a suitable level of lighting so that shadows and poor visibility are eliminated

21. Pre-employment health screening and monitoring



THE LAW: Section 33 of the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016 **requires** PCBUs to monitor workers' exposure to hazards where the hazards have been minimised. It is usual to separate pre-employment screening (undertaken prior to an employee commencing employment to establish health baselines) from ongoing health monitoring.

All identified hazards that may be faced by workers in their particular role **must** be monitored.

Informed consent



All workers **must** provide written, informed consent prior to any medical testing being carried out, and the results **must** be explained to them in a way they are reasonably likely to understand.

Pre-employment



ACTION POINT: Implement suitable health tests for pre-employment and at regular intervals for workers.

Pre-employment/baseline tests may include:

- Hearing test (audiometry) for drivers/operators working around heavy machinery and in environments where noise is over 85dB(A) $L_{eq,8hr}$
- Lung function test (spirometry) for drivers/operators in dusty environments
- Vision test for drivers/operators using heavy machinery

- Epworth Sleepiness Scale for drivers/operators
- Range of motion test for manual handling
- A drugs test (for drugs that cause impairment) may be a practicable step for drivers/operators of heavy machinery and for those working in safety-sensitive operations
- Status check for hepatitis A and B followed by offer of vaccination, if needed for both tetanus and hepatitis A and B
- Tests for diabetes, obesity, and mental health disorders, where relevant.

Health monitoring

Health monitoring looks at whether a worker's health is being harmed because of what they are being exposed to while they are at work. Examples: –

- carrying out hearing tests to check for hearing loss from being exposed to noise –
- checking for skin damage from being exposed to chemicals –
- checking for nerve, muscle, or circulation damage from being exposed to vibration.

Well-being programmes, employment pre-screening and fitness-to-work examinations are not health monitoring. Monitoring should be carried out at the beginning of a worker's employment (to get baseline readings). Then regular (ongoing) monitoring should be carried out. It should be carried out by suitably qualified, trained, and experienced health practitioners with the knowledge, skills, training, and experience to carry out the monitoring you need.

Appropriate tests may include:

Hearing test (audiometry) for drivers/operators working around heavy machinery and in environments where noise is over 85dB(A) $L_{eq,8hr}$

Lung function test (spirometry) for drivers/operators in dusty environments

Vision test for drivers/operators using heavy machinery

Range of motion test for manual handling

Reasonable cause, random, and post-incident drug testing, and breath alcohol testing.

Exposure Monitoring

Exposure monitoring measures and evaluates what your workers are being exposed to while they are at work. This can involve workers wearing a device while they work. Examples of personal exposure monitoring: –

- *measuring the level of noise workers are being exposed to –*
- *measuring the amount of a chemical workers are being exposed to –*
- *measuring the amount of vibration workers' arms, hands or whole body are being exposed to.*
- *Measuring the amount, and type of dust, that workers are being exposed to*

It should be carried out by suitably qualified, trained, and experienced people who know how to carry out the monitoring you need (such as Occupational Hygienists).

Early reporting of discomfort

22. Truck driving

The Land Transport Act 1998 has specific legislative requirements for drivers as follows:



THE LAW: Section 30ZC of the Land Transport Act 1998 places limits on the hours a driver can work:

- (1) *A driver subject to this subpart—*
 - a) *may not exceed the work time restrictions specified in this section, the rules, or any variation granted under section 30ZA; and*
 - b) *must comply with the rest time requirements specified in this section, the rules, or any variation granted under section 30ZA.*

- (2) *In any cumulative workday, a driver—*
 - a) *may not exceed 13 hours of work time; and*
 - b) *must have at least 10 hours of continuous rest time.*

- (3) *In any cumulative work period, a driver may not exceed 70 hours of work time.*

- (4) *To avoid doubt, the rules may extend the limits for a cumulative workday or period for a specified activity or service (Land Transport Act, 1998).*

Truck driving is an integral part of day-to-day activities for many teams. It brings with it its own hazards, associated not only with the vehicle itself, but also with road conditions, the driver and other road users and pedestrians.

A driver may have only limited control over some of these factors (e.g. poor road conditions caused by potholes and uneven surfaces). However, the following control measures should be considered:

- Ensuring that workers are adequately trained in the correct use of their vehicles
- Providing information to workers on how best to deal with such hazards
- Ensuring the vehicles are appropriately maintained.

Driver suitability and physical capability can be monitored or controlled. Refer to sections 7 (drugs and alcohol) and 9 (fatigue) of these guidelines for further information.



ACTION POINT: A pre-employment health assessment and driving assessment are practicable steps to ensure that truck drivers are able and competent to perform their jobs.

Good communication between all parties and feedback to other workers or departments will also help our workers learn from others' experiences.



ACTION POINT: The following actions will help PCBUs meet their legal requirements:

Ensure workers are adequately trained, competent and physically fit to drive the vehicle or range of vehicles required to carry out their duties, and hold appropriate driving licences

Ensure appropriate maintenance regimes are in place for the vehicles and that workers who repair equipment are competent to do so

Ensure workers who are not competent to repair equipment do not attempt to do so

Ensure workers are trained in, and know the process for, reporting repairs and maintenance

to equipment

Ensure hazards associated with driving and truck safety are included in the hazard identification process

Review accidents associated with driving and ensure appropriate measures are introduced to prevent similar occurrences

Introduce daily inspection checks for all vehicles to be carried out by competent workers to ensure that vehicles are roadworthy, similar to the checks required for forklift trucks

Instruct drivers that they should have three points of contact when entering and exiting the cab

Instruct drivers that they must follow all site health and safety requirements when entering or exiting the cab and loading or unloading waste.



MORE INFORMATION: Refer to:

- Appendix 5: Truck Safety Checklist
- NZTA's 'Commercial Road Transport Toolkit for Drivers and Operators'
- NZTA's 'The official New Zealand Road code for heavy vehicle drivers'

IMPORTANT: Driveshaft (also known as Cardan Shaft) Parking Brakes

Driveshaft (also known as Cardan Shaft) parking brakes can be fitted to small, medium trucks or plant. Driveshaft parking brakes act on a single drum attached to the driveshaft of the vehicle.

WorkSafe NZ produced advice and technical information of driveshaft parking brakes failing to keep vehicles stationary.

<https://www.worksafe.govt.nz/about-us/news-and-media/driveshaft-parking-brake-failures-in-commercial-and-industrial-vehicles>

23. Working at height on trucks



THE LAW: Section 22 of the HSWA states that *every PCBU shall take reasonably practicable steps to ensure the safety of workers while at work*. It also sets out a hierarchy of duties to be considered:

Meaning of reasonably practicable

In this Act, unless the context otherwise requires, **reasonably practicable**, in relation to a duty of a PCBU set out in subpart 2 of Part 2, means that *which is, or was, at a particular time, reasonably able to be done in relation to ensuring health and safety, taking into account and weighing up all relevant matters, including—*

- (a) the likelihood of the hazard and the risk of it; and*
- (b) the degree of harm that might result from the hazard or risk; and*
- (c) what the person concerned knows, or ought reasonably to know, about—*
 - (i) the hazard risk; and*
 - (ii) ways of eliminating or minimising the risk; and*
- (d) the availability and suitability of ways to eliminate or minimise the risk; and*
- (e) after assessing the extent of the risk and the available ways of eliminating or minimising the risk, the cost associated with available ways of eliminating or minimising the risk, including whether the cost is grossly disproportionate to the risk (HSWA).*

Section 21 of the Health and Safety in Employment Regulations 1995 states that if a person is exposed to a fall of greater than three metres, a system **must** be put in place to prevent a person from falling.

Work at height means working in a place where a person could be injured if they fell from one level to another. This can be above or below ground level.

Work at height does not include slipping, tripping, or falling at the same level.

Regulation 21

Regulation 21 of the HSE Regulations is the source of the often-quoted “three-meter rule”. It is mistakenly believed that no controls are needed where a person faces a fall of less than three meters. That belief is wrong and ignores the overarching duties in the HSE Act.

The HSE Act requires that if there is a potential for a person at work to fall from any height, reasonable and practicable steps must be taken to prevent harm from resulting.

Doing nothing is not an option.

Short duration height work

Short duration work at height shall be treated the same way as any other activity at height. Appropriate fall prevention controls shall be put in place, regardless of the time duration of the task.

Short duration work means work that lasts minutes rather than hours. It may not be reasonably practicable to provide full edge protection for short duration work, but it still needs to be considered during the risk assessment process of hazards and should not be discounted.

MORE INFORMATION: Titled working at height



IMPORTANT: The seriousness, or type of injury from a fall is not determined by the height of the fall. A fall of one meter or less could result in serious injury or death.

Many activities in the solid waste and resource recovery sector place persons at risk of a fall. Examples include riding on rear footboards, climbing to access compactors, use of ladders and working on sort line platforms. Each activity **must** be subject to a hazard identification and management process. The hierarchy of control **must** be applied when determining the most appropriate control measures.



ACTION POINT: The following actions will help PCBUs meet their legal requirements:

Avoid work at heights where workers may fall and cause themselves harm

- Use long-handled tools from ground level
- If applicable use a guard railed work platform in wash bays
- Regularly review the suitability and stability of rear footboards or platforms on refuse collection vehicles
- Review and consider solutions when working on sloping or slippery surfaces (e.g. tread resilience)
- Ensure appropriate measures are implemented when work is being conducted close to edges or in the proximity of a hole, shaft, or pit through which a person could fall
- Ensure ladders are properly used, maintained, and secured
- Provide training in correct use and inspection of access equipment
- Have clear policies and procedures relating to use of access equipment
- Keep staircases and platforms clean and tidy, along with other good housekeeping practices.



PROSECUTIONS:

Department of Labour v Company A: Company A was fined \$55,000 plus costs and reparation following the death of a worker. Although this case had a number of factors which lead to the prosecution, one of the failures by the company was the use of a defective vehicle which contributed to the fall that caused the fatality.

24. Young people at work



THE LAW: Section 43 of Part 4 of the Health and Safety at Work (General Risk and Workplace Regulations) 2016, Young persons at workplace states that:

- (1) *A PCBU must ensure, so far as is reasonably practicable, that no worker aged under 15 years carries out the following types of work:*
- (a) *the manufacture or preparation of goods for trade or sale:*
 - (b) *construction work:*
 - (c) *logging or tree-felling:*
 - (d) *the manufacture, use, or generation of hazardous substances:*
 - (e) *any other work of a type that is likely to cause harm to the health and safety of a person aged under 15 years.*

- *work with machinery*
- *drive a vehicle, or ride on a vehicle with something attached (e.g. a trailer).*

Subclause (1) of this section does not apply to a worker aged under 15 years who is carrying out administrative or retail work in a business or undertaking that does work of a type specified in any of paragraphs (a) to (e) of subclause (1).

PCBUs should refer to Part 4 sections 43–48 for specific details of Young Persons, in particular workplaces or undertaking particular tasks.

25. Hazards associated with the collection of waste

Waste is collected by a variety of vehicles (including front loading compactors, rear loading compactors, side loading compactors, hook lift, low entry, and gantry trucks) and in a variety of receptacles – all of which have a range of hazards associated with them.

The following matters apply to all waste collection methods:



ACTION POINT: The following actions will help PCBUs meet their legal requirements:

- Ensure that there is a suitable and specific hazard register for the types of vehicles and activities that workers use (i.e. apply the generic principles identified in the sample hazard register (Appendix 7) to the place of work).
- Ensure that all workers are competent persons to undertake their respective tasks.
- Ensure that there are arrangements in place to periodically review, monitor compliance with and, if necessary, to update hazard registers and safe operating procedures ('SOPs').
- Pre-start and post-use checks should be conducted and recorded by drivers and faults, or defects addressed before vehicles are used.
- Prepare written SOPs for operators and drivers and ensure that they are trained in these and are aware of the correct use of the vehicle and any associated hazards and control measures.
- Obtain relevant manufacturers and suppliers' instruction documentation and handbooks and ensure relevant workers are aware of these.
- Consider placing a copy of the operational guide and diagrams of control panels and height dimensions in the driver's cab, for ease of access and referral by the driver and emergency services.

Other safety considerations

Training



THE LAW: As required by Section 9 of the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016, *A PCBU must ensure, so far as is reasonably practicable, that every worker who carries out work of any kind, uses plant of any kind, or deals with a substance of any kind that is capable of causing a risk in a workplace—*

- (a) *either—*
 - (i) *has adequate knowledge and experience of similar places, and work, plant, or substances of that kind, to ensure that the worker carrying out the work, using the plant, or dealing with the substance is not likely to adversely affect the health and safety or cause harm to the worker or any other person; or*
 - (ii) *is adequately supervised by a person who has that knowledge and experience; and*
- (b) *is adequately trained in the safe use of—*
 - (i) *all plant, objects, substances, or equipment that the worker is or may be required to use or handle; and*
 - (ii) *all personal protective equipment that the worker is or may be required to wear or use (Health and Safety at Work (General Risk and Workplace Management) Regulations, 2016).*



IMPORTANT: The Code of Practice for Temporary Traffic Management (CoPTTM) is a standard reference for all temporary traffic management on state highways and local roads. It includes guidance on the different levels of temporary traffic management, along with the signs and forms used, and a

series of traffic management plans. It sets out good practice requirements for all temporary traffic management activities on a national basis. Section D7: Kerbside Collection Activities is particularly relevant.

Sources of appropriate training for workers may include:

- Formal qualifications such as those available from the New Zealand Qualifications Authority
- Provision of clear, concise safe operating procedures (SOPs), including vehicle checklists and corrective action follow-up
- Induction and periodic in-house training courses
- Specific health and safety training (e.g. confined space entry, lockout-tagout, guarding principles)
- Use of manufacturer and supplier documentation (especially useful for maintenance).
- Retention of appropriate training records, along with details of training providers and any refresher requirements and briefings, such as KCTL, is strongly recommended.

26. Bag collection

Bag collection involves the manual collection of household refuse (and occasionally recycling materials) from the kerbside. On rare occasions, bags may be collected from a residential property ('back-door' collection).

Approved bags range in size. Bags are supplied by the local council, purchased from supermarkets or other retailers, or bought from refuse collection companies under user-pays systems. Some councils sell stickers to place on unbranded bags. These bags may not achieve the strength or puncturing specifications required of branded bags, leading to manual handling risks.



Figure 4:

Examples of bags used for kerbside refuse collection



IMPORTANT: Kerbside bag collections should only be undertaken from the left-hand side of the road, unless a dual-sided collection risk assessment has been performed and the risk of being hit by a vehicle is assessed as low. This risk assessment should be used to develop the Traffic Management Plan required by the Code of Practice for Temporary Traffic Management (CoPTTM).



IMPORTANT: Every driver undertaking kerbside collections should be warranted as a 'Kerbside Collection Traffic Leader' (KCTL) as noted by the



THE LAW: Operators **must ensure** they are aware of and comply with relevant legislation. This includes but is not limited to:

- Health and Safety at Work Act 2015
- Land Transport Act 1998
- Land Transport (Road User) Rule 2004 61001, which contains certain requirements including that *a person must not ride in or on a vehicle, or in or on an object conveyed on a vehicle, in a manner or position that may be liable to cause injury to that person.*



MORE INFORMATION: Further information on legislation can be found in section 3 and Appendix 8 of these guidelines.



IMPORTANT: Personal Protective Equipment (PPE) issued to workers undertaking any kerbside collection activities should comply with the requirements of the CoPTTM and KCTL.

Design and operations

- The primary aim of ‘safety in design’ is to identify and manage risks. Safety in design is a process that integrates hazard identification and risk assessment methods early when designing the collection methodology process; to eliminate or minimise the risks of injury to those who will construct, operate, maintain, decommission, and demolish the asset.
- The opportunity to eliminate a hazard in the early design stages by involving all stakeholders, and considering the life cycle of the project, is recommended.



PROSECUTIONS:

A company was fined \$60,000 and ordered to pay reparation of \$80,000 over the death of a worker who was hit by a vehicle while collecting rubbish. The company had pleaded guilty to a charge under a section of the Health and Safety in Employment Act that requires PCBU's to take all practicable steps to ensure the safety of workers while at work.

The Department of Labour said the object of the Act was to promote the prevention of harm in the workplace and within the vicinity of the workplace. This could be achieved by promoting excellence in health and safety management and by defining hazards and harm in a comprehensive way.

The Department said that "Hazard identification and control in the workplace are an integral part of keeping workers safe, as part of the employer's responsibility under the Health and Safety in Employment Act." It went on to say "The identification of hazards is not enough. All practicable steps must be taken to control hazards by elimination, minimisation or isolation to prevent workers from being harmed."

A company was fined \$32,400 and ordered to pay reparation of \$60,000 over the death of a non-rostered employee who was struck by a reversing waste collection truck.

The employee was on sick leave and was riding with the crew of the truck at the time of the incident.

The company plead guilty to a charge under Section 15 of the Health and Safety in Employment Act 1992, which states that every employer shall take all practicable steps to ensure that no action or inaction of any employee while at work harms any other person.

A driver of a rear loading compactor truck was charged and sentenced for careless driving causing the death of a fellow worker.

The driver reversed the truck whilst runners were on the rear step. One of the runners lost his balance and fell under the rear of the truck.

The driver was sentenced to two months' community service and disqualified from driving for six months.

The truck was subsequently fitted with reversing cameras and audible warning devices.

Activities involved in bag collection

- Bag collection is undertaken manually by a one-person operation or teams using a variety of different vehicle types (rear-load collection vehicles, low-entry vehicles, or

left-hand collection vehicles).

- One-person operators frequently alight from their collection vehicle to load bags manually into the hopper. Team operations usually involve a driver and one or more runners.



IMPORTANT: Operators or runners should never alight from a moving vehicle (see NZTA Road User Rule 2004 clause 7.1 (3)).



IMPORTANT: If the vehicle is travelling at more than 25kph, runners should not travel on the outside of the vehicle at any time.



IMPORTANT: Runners should not travel on the outside of a truck when it is reversing.

Hazards

There are a wide range of hazards associated with the collection of bags, and a significant risk of injury associated with manual handling. These hazards can cause injuries such as strains and sprains, cuts, bruising and vehicle damage. They include, but are not limited to:

- Traffic and other road users, for example, vehicles following or turning; conflicting vehicle paths; cyclists; cars turning into or emerging from driveways; pedestrians; mobility scooters on footpaths; and collecting bins from single- and multiple-lane one-way streets.
- Driver operators and runners' risk being struck by other road users including vehicles, cyclists, or the collection vehicle.
- Collecting in adverse conditions including temperature or weather extremes (hot sun, severe frost, heavy snow, rain, high winds, fog), in poor lighting, poor visibility or a noisy environment.
- Clothing and electronic equipment which reduces peripheral vision, hearing ability or

creates distraction (e.g. hoodies, Headphones/ ear pieces, or mobile phones).

- Varying terrain, uneven or sloped surfaces, kerbs and channels, slippery steel manhole covers and wet grass.
- Hazards associated with road works and other infrastructure maintenance activities on the collection route.
- Hazards associated with properties accessed for back-door collection.
- Bag weight may be difficult to judge by eye, as bags are collected from ground level.
- Drivers alighting from kerbside collection vehicles into the 'live lane' are exposed to passing traffic.
- Operators and/or runners alighting from the vehicle to collect bags risk slipping, tripping, or falling.
- Bag collection while standing on a moving vehicle (sometimes referred to as 'scooping') – a dangerous practice.
- Bags may contain a variety of flammable, corrosive, or explosive waste such as hot ash, LPG cylinders, car batteries, used oil and other chemicals.
- Bags may have no handles and could be wet, damp, slippery and difficult to lift.
- Bag weight may be unpredictable.
- Lifting multiple bags may create an unbalanced lift, overloading specific muscle groups which can potentially cause overuse muscle strains.
- Bags may need to be thrown above shoulder height into the collection truck.
- Stockpiling collections ('batching' or 'bagging up') introduces the need to handle bags multiple times.
- Bags may contain:
 - Unwrapped sharp items, for example, glass, can lids, rose thorns, broken branches, and needles.
 - Medical wastes (dialysis tubing etc.).
 - Human biological wastes (nappies, adult incontinence products).

- Hazardous wastes (e.g. containers holding chemicals, household cleaners).
- Bags may be unfastened, damaged, or ripped due to animal attack or animal strike requiring clean-up and exposing the collector to the uncontained or spilled contents and microbial infection.
- Attack from aggressive animals.
- Bags may have been urinated on by dogs.
- Pressure on operators to increase the speed of collection activities potentially increases the level of risk to which runners are exposed, and may encourage short cuts and unsafe practices (e.g. working at speed to lift and move bags, or running across roads).



ACTION POINT: All hazards and risks **must** be identified, assessed, recorded, controlled, and reviewed regularly. Workers should be regularly reminded of all relevant hazards, risks, and the controls in place.



IMPORTANT: Discourage 'job and finish' arrangements and other employment terms and conditions that allow workers to maximise their wage rate by working faster. Company procedures should make allowance for collections to be performed at a speed that is reasonable yet efficient, to avoid creating hazardous work conditions.

Recommended good practice controls



ACTION POINT: The following measures will help PCBUs to meet legal and good practice requirements.

Vehicles and drivers

- Drivers of kerbside collection vehicles should be trained and assessed on a regular basis in line with CoPTTM and KTCL requirements.
- Vehicles should have signage and beacons that comply with the requirements of the CoPTTM and KTCL.
- Consider measures to protect runners and other pedestrians from being run over by the collection truck. Drivers should remain aware of the location of their runners to ensure that they can stop the truck without striking a runner who slips or trips. The inclusion of side intrusion bars may be a suitable control.
- Operators should follow documented procedures for emergency situations such as a fire in the truck and spills.
- Operators should follow documented procedures (e.g. lockout-tagout) for retrieval of non-conforming waste.
- Where two or more people per vehicle are conducting the collections, a daily safety briefing should be held and documented by the KTCL.
- Implement additional traffic management controls when collecting bins from single- and multiple-lane one-way streets.
- Report significant hazards in the road corridor to the appropriate roading authority.



IMPORTANT: Operators should report bags that contain prohibited items (defined by individual council and/or collection company waste acceptance criteria) to management and/or council. Actions to discourage or prevent these types of incidents include enforcement by council; council or management communication with residents; and labelling and not collecting bags containing prohibited items.



Figure 5:

Example of a bag that contains prohibited items

Clothing, Equipment, and PPE

- As weather conditions greatly affect the safety of kerbside collections, consider the impact of hot, cold, wet, or dry conditions and extreme events such as heavy snow, severe frost, high winds, fog or other states of emergency.
- It is recommended that appropriate PPE is available to operators (i.e. high-vis clothing, gloves, sun block, hat, long sleeves, eye protection from glare, and wet weather attire). For very hot or cold conditions, consider clothes that are comfortable to exercise in and help regulate body temperature, along with other items such as towels, a change of clothes and additional layers.
- A vaccination programme should be in place to immunise workers against infection. Suitable PPE should be provided to protect against microbial and viral infection from handling waste and recyclable materials. Hand washing and sanitising systems should be available to encourage good hygiene practices.
- Forearm and leg protection should be considered for those handling bags as serious injuries can be suffered if sharp objects are hidden inside refuse bags.
- Where hazards associated with terrain and surfaces (including kerbs and channels, slopes, manholes etc.) have been assessed as significant, workers **must** be provided with, and required to wear, appropriate footwear (sturdy, lightweight and comfortable with good traction).



MORE INFORMATION: See section 20 of these guidelines for further information on personal protective equipment.



IMPORTANT: Clothing and electronic equipment which reduces peripheral vision, hearing ability or creates distraction should not be worn or used while undertaking kerbside collections. Examples are hoodies, iPods and mobile phones.

Additional hazards en-route

- Identify and assess hazards introduced by road works or other infrastructure or amenities work on a collection route and implement suitable controls.
- Identify and assess hazards associated with entering properties for back door collection and implement suitable controls.

Manual handling

- Operators should consider methods to reduce exposure to manual handling hazards. This consideration may include reducing both manual collection methods and the number of people involved in manual collection.¹ Bags with handles may reduce some manual handling risks.
- Bags should not be collected by workers standing or riding on a vehicle.
- When picking up more than one bag, ensure loads are evenly distributed in both hands.
- Councils and operators define standards for bagged refuse or recycling. Any non-conforming bags that are identified (for example overweight bags, incorrect bag types, bags containing unacceptable or hazardous waste or recyclables) should be labelled

¹ The 2010 WasteMINZ Position Report '*An Assessment of the Health and Safety Costs and Benefits of Manual vs Automated Waste Collections*' reported a marked difference in the injury rates between manual and automated collection methods, with manual methods more likely to result in injury. Bag collection represented 32% of the collections, and resulted in 36% of injuries.

and not collected.

- Cases of non-conforming bags should be recorded and reported in line with company operating procedure.
- Bags that have a degree of transparency, allowing workers to see the contents, should be considered for early identification of hazards.
- Stockpiling bags for subsequent loading into the collection truck increases exposure to handling risks. This practice should only be permitted when strictly necessary to reduce more significant risks: for example, where road construction restricts vehicle access, or at the top of a narrow street that has no turning area (to prevent the collection vehicle reversing into or out of the street).
- Where possible, throw the bag into the hopper using an underarm throw.
- Ensure early reporting of musculoskeletal symptoms.



MORE INFORMATION: See section 16 of these guidelines for further information on manual handling. The 2010 WasteMINZ Position Report ‘An Assessment of the Health and Safety Costs and Benefits of Manual vs Automated Waste Collections’ also provides more information on hazards associated with non-automated and loose collection methods.



IMPORTANT: Bags can be extremely heavy and adherence to correct manual handling practices is essential to minimise the risks to operators. There is no maximum safe level for lifting specified in employment or health and safety legislation. This is because the load posed on a person by lifting an item depends on factors such as the posture used to lift the weight, the grip the person can get on the weight, the number of times an hour they lift, the shape and size of the load and the starting and ending heights of the lift. Different people have different tolerances; what is manageable for one person may be too heavy for another.



IMPORTANT: Where operators and runners are required to lift heavy items or items above shoulder height, mechanical assistance should be provided.



MORE INFORMATION: The assessment tools in the Code of practice for manual handling 2001 provide further guidance regarding heavy items.

Training



THE LAW: As required by Section 9 of the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016, *A PCBU must ensure, so far as is reasonably practicable, that every worker who carries out work of any kind, uses plant of any kind, or deals with a substance of any kind that is capable of causing a risk in a workplace—*

(a) *either—*

(i) *has adequate knowledge and experience of similar places, and work, plant, or substances of that kind, to ensure that the worker carrying out the work, using the plant, or dealing with the substance is not likely to adversely affect the health and safety or cause harm to the worker or any other person; or*

(ii) *is adequately supervised by a person who has that knowledge and experience; and*

(b) *is adequately trained in the safe use of—*

(i) *all plant, objects, substances, or equipment that the worker is or may be required to use or handle; and*

(ii) *all personal protective equipment that the worker is or may be required to wear or use (Health and Safety at Work (General Risk and Workplace Management) Regulations, 2016).*

There are many methods of ensuring that workers receive appropriate training, for

example:

- Under CoPTTM requirements, every driver undertaking kerbside collections should be a warranted KCTL operator.
- Runners and operators should be trained in the hazards of their job.
- Every six months the Site Traffic Management Supervisor (STMS) should deliver refresher training for all kerbside collection workers on the Traffic Management Plan (TMP). Refresher training should also occur when the TMP is amended.
- Provision of clear and concise safe operating procedures (SOPs) including vehicle checklists and corrective action follow-up.
- Induction and regular in-house training courses and refresher sessions.
- All drivers should be trained in safe methods for alighting from the cab of their vehicle ensuring they:
 - Check their mirror for passing traffic prior to opening the door.
 - Exit the cab facing inwards.
 - Maintain three points of contact at all times.
 - Safely move themselves out of the 'live lane' and onto the footpath.
- Where left-side drive vehicles are used, specific training and assessments should be provided.
- Specific health and safety training e.g. driver training, lockout-tagout and manual handling.
- Daily safety meetings discussing safe and correct operational practices.

Retention of appropriate training records, along with details of training providers and any refresher requirements and briefings, such as KCTL, are strongly recommended.



MORE INFORMATION: Appendix 7 sets out examples of hazards/risks associated with waste collection and processing methods, along with

recommended control measures. The following table sets out additional hazards/risks associated with bag collections.

Table 1: Additional hazards/risks for bag collection

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities	Actions			
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?	
<ul style="list-style-type: none"> Lifting bags 	<ul style="list-style-type: none"> Injury from manual handling 	<ul style="list-style-type: none"> Ergonomic 	<ul style="list-style-type: none"> Workers 	<ul style="list-style-type: none"> Back strains, leg strains, pulled muscles, arm strains etc 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	Elimination:	•	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
								Substitution:	•								
								Isolate:	•								
								Engineering Controls:	•								
								Administrative Controls:	<ul style="list-style-type: none"> Ensure all operators receive adequate training in manual handling (Code of practice for manual handling 2001) Do not stockpile bags to avoid double-handling Throw the bag into the hopper using an underarm throw Early reporting of musculoskeletal symptoms Runners to complete warm up exercises prior to commencing collections Provide rules for the content and weight of bags and a system to educate residents when bags do not comply with these criteria 								
PPE:	•																
<ul style="list-style-type: none"> Riding trucks when collecting bags 	<ul style="list-style-type: none"> Injury to runners from falling off/ impact with trucks 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers Other road users 	<ul style="list-style-type: none"> Physical injury 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	Elimination:	•	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
								Substitution:	•								
								Isolate:	•								
								Engineering Controls:	•								
								Administrative Controls:	<ul style="list-style-type: none"> Ensure compliance with CoPTTM and KCTL requirements No person to travel on the outside of a vehicle if it is 								

Table 1: Additional hazards/risks for bag collection

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities	Actions		
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
									travelling in excess of the recommended speed of 25kph <ul style="list-style-type: none"> Operators should wear high-vis clothing ensuring they are compliant with the NZTA CoPTTM Allocate enough time for the route to eliminate time pressure Undertake waste collection from the left-hand side of the road No person is to alight from a moving vehicle Awareness training in avoiding uneven/slippery surfaces Provide methods for easy and regular communication with the driver Runners not to ride on a vehicle when it is reversing Driver awareness of runners when truck in motion Safe riding positions for runners between pickups 							
								PPE:	<ul style="list-style-type: none"> Ensure operators are wearing appropriate footwear (e.g. lightweight, sturdy footwear for runners that provides good traction) Operators should wear high-vis clothing ensuring they are compliant with the NZTA CoPTTM 					•	•	•
• Handling waste and recyclables	• Infection from contact with waste	• Biological	• Workers	• Infection that causes a disease/illness/ infection	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•					•	•	•
								Isolate:	•					•	•	•
								Engineering	• Ensure vaccination					•	•	•

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Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities	Actions		
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
								Controls:	for common diseases including Hepatitis							
								Administrative Controls:	<ul style="list-style-type: none"> Develop and implement a 'needle stick' response policy Seek medical attention for any needle stick injuries Immediately clean and dress all wounds. Cover dressing with durable waterproof gloves Train staff in good hygiene practices e.g. washing hands before eating, drinking or smoking Educate customers of infectious waste segregation for specialised customers such as doctors & hospitals 					•	•	•
								PPE:	<ul style="list-style-type: none"> Suitable gloves 							
• Kerbside collection	• Aggressive dogs	• Biological	• Workers	• Bites from dogs from manor to very serious bites/mauling	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•					•	•	•
								Isolate:	•					•	•	•
								Engineering Controls:	•					•	•	•
								Administrative Controls:	<ul style="list-style-type: none"> Training for workers in management of aggressive dogs If confronted with aggressive dog/s contact the local territorial authority's Animal Control Department (or equivalent) 					•	•	•
								PPE:	<ul style="list-style-type: none"> Appropriate leg protection and fit-for-purpose gloves are the recommended PPE to reduce injury from serious dog bites 					•	•	•
• Kerbside	• Aggressive	• Psychosocial	• Workers	• Physical injury to	•	•	•	Elimination:	•	•	•	•	•	•	•	•

Table 1: Additional hazards/risks for bag collection

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Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities	Actions		
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
collection,	persons	<ul style="list-style-type: none"> Physical 		<ul style="list-style-type: none"> driver through being hit/struck Mental health trauma through verbal and/or physical attack/attack Vehicle/property damage 				Substitution: <ul style="list-style-type: none"> 						•	•	•
								Isolate:	•					•	•	•
								Engineering Controls:	•					•	•	•
								Administrative Controls:	<ul style="list-style-type: none"> Training for workers in conflict avoidance or management of aggressive people If unable to retreat, staff to contact police Body cams for issue areas. No collection for offenders 					•	•	•
								PPE:	•							
<ul style="list-style-type: none"> Kerbside collection 	<ul style="list-style-type: none"> Prohibitive and/or hazardous wastes in bags 	<ul style="list-style-type: none"> Physical Chemical 	<ul style="list-style-type: none"> Workers Environmental Vehicle & Plant 	<ul style="list-style-type: none"> Chemical products in the bid cause irritation to burns etc Physical objects such as knives, metal rids & broken glass etc causing cuts & puncture wounds Spills to the environment 	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•					•	•	•
								Isolate:	•					•	•	•
								Engineering Controls:	•					•	•	•
								Administrative Controls:	<ul style="list-style-type: none"> Training in hazardous wastes and spill control Clear bags to see the contents Procedures to isolate hazardous waste Educate public with acceptable wastes. Council enforcement with repeat offender. 					•	•	•
								PPE:	•					•	•	•
<ul style="list-style-type: none"> Collecting the bags - runners 	<ul style="list-style-type: none"> Exhaustion or fatigue from running 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers 	<ul style="list-style-type: none"> Running can cause the worker to become tired/fatigued which makes them more likely to have an accident such as 	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•					•	•	•
								Isolate:	•					•	•	•
								Engineering Controls:	•					•	•	•

Table 1: Additional hazards/risks for bag collection

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities	Actions		
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
				trips and falls leaning to cuts and possible fractures etc				Administrative Controls:	<ul style="list-style-type: none"> • Drink plenty of water to prevent dehydration, avoiding sugary drinks. Use mineral/electrolyte sachets. • Eat regular healthy meals, stay physically fit, get plenty of sleep, and adhere to rest breaks to avoid fatigue • Ensure clothing is appropriate for the conditions under a heavy exercise load 					•	•	•
								PPE:	<ul style="list-style-type: none"> • Ensure operators are wearing appropriate footwear (e.g. lightweight, sturdy footwear for runners that provides good traction) 							

27. Bin collection

Bin collection refers to the collection of waste or recyclables in wheelie bins, mobile garbage bins (MGBs) or mobile recycling bins (MRBs). The bins are collected from the kerbside or more rarely, from a residential property ('back-door' collection). Bins can be used to collect general refuse, recyclables or green/kitchen waste and come in a variety of sizes: typically, 240 litres, 120 litres or 80 litres.



Figure 6 :
Bins of different sizes



IMPORTANT: Kerbside semi-automated bin collections should only be undertaken from the left-hand side of the road, unless a dual-sided collection risk assessment has been performed and the risk of being hit by a vehicle is assessed as low. This risk assessment should be used to develop a Traffic Management Plan.



IMPORTANT: Every driver undertaking kerbside bin collections should be warranted as a 'Kerbside Collection Traffic Leader' (KCTL) as noted in the Code of Practice for Temporary Traffic Management (CoPTTM), Section D7.3 Kerbside Collection Activities.



THE LAW: Operators **must** ensure that they are aware of and comply with relevant legislation. This includes but is not limited to:

- Health and Safety at Work Act 2015
- Land Transport Act 1998

- Land Transport (Road User) Rule 2004 61001, which contains certain requirements including that *a person must not ride in or on a vehicle, or in or on an object conveyed on a vehicle, in a manner or position that may be liable to cause injury to that person.*



IMPORTANT: Personal Protective Equipment (PPE) issued to workers undertaking any kerbside collection activities should comply with the requirements of the CoPTTM and KCTL.

Design and operations

- The primary aim of ‘safety in design’ is to identify hazards and manage risks. Safety in design is a process that integrates hazard identification and risk assessment methods early when designing the collection methodology process; to eliminate or minimise the risks of injury to those who will construct, operate, maintain, decommission, and demolish the asset.
- The opportunity to eliminate a hazard in the early design stages by involving all stakeholders, and considering the life cycle of the project, is recommended.

Activities involved in bin collection

- Bins are collected from the kerbside by rear load vehicles, side loaders or low entry vehicles (LEVs). Trucks are either semi-automated (fitted with a bin-lifter) or use an automated mechanical arm.
- Drivers of automated collection vehicles operate the bin lifter from inside the cab using a joystick. They must occasionally exit the truck to manoeuvre bins around obstacles.
- Semi-automated collection involves the driver, or a runner frequently alighting from the collection vehicle to push or pull bins to the side or rear of the truck, placing the bin into or onto a bin lifter, and then activating the lifter to invert the bin to tip the contents into the hopper. The bin is then lowered back to the ground and wheeled

back to the kerbside.

- One-person operators frequently alight from their collection vehicle to manually empty the contents of the bin into the hopper.



IMPORTANT: Operators should never alight from a moving vehicle (see NZTA Road User Rule 2004 clause 7.1 (3)).



IMPORTANT: If the vehicle is travelling at more than 25kph, runners should not travel on the outside of the vehicle at any time.



IMPORTANT: Runners should not travel on the outside of a truck when it is reversing.

Hazards

The wide range of hazards associated with the collection of bins can cause injuries such as strains and sprains, cuts, bruising and vehicle damage. Hazards include, but are not limited to:

- Traffic and other road users, for example, vehicles following or turning; conflicting vehicle paths; cyclists, cars turning into or emerging from driveways; pedestrians; mobility scooters on footpaths; or collecting bins from single- and multiple-lane one-way streets.
- Driver operators and runners' risk being struck by other road users including vehicles, cyclists, or the collection vehicle.
- Collecting in adverse conditions including temperature and weather extremes (hot sun, severe frost, heavy snow, rain, high winds, fog or in states of emergency), in poor lighting, poor visibility or a noisy environment.
- Clothing and electronic equipment which reduces peripheral vision, hearing ability or creates a distraction (e.g. hoodies, or mobile phones).
- Varying terrain, uneven or sloped surfaces, kerbs and channels, slippery steel manhole

covers and wet grass.

- Hazards associated with road works and other infrastructure maintenance activities on a collection route.
- Hazards associated with properties accessed for back-door collection.
- Bins may be overloaded and heavy, and operators may sometimes need to move them manually.
- Drivers alighting from kerbside collection vehicles into the 'live lane' are exposed to passing traffic.
- Operators and/or runners alighting from the vehicle to manoeuvre bins risk slipping, tripping, or falling.
- Contents may have been spilt in high winds or by vandals, requiring clean-up which exposes the collector to the contents and the risk of microbial infection.
- Bins may contain a variety of flammable, corrosive, or explosive waste such as hot ash, LPG cylinders, car batteries, used oil and other chemicals.
- People risk being struck by mechanical lifting arms when these are in use.
- Some operators manually lift bins and tip them into the truck to save time, introducing potentially significant manual handling risks.
- Musculoskeletal discomfort from repetitive movements. e.g. bin control joysticks.
- Attack from aggressive animals.



ACTION POINT: All hazards should be identified, risk assessed, controlled, recorded, and reviewed regularly. Workers should regularly be reminded of all relevant hazards, risks, and the controls in place.

Pressure on operators to increase the speed of bin collection activities potentially increases the level of risk to which runners are exposed, and may encourage short cuts and unsafe practices (e.g. working at speed to lift, push, pull and move bins, or running across roads).



IMPORTANT: Discourage 'job and finish' arrangements and other employment terms and conditions that allow workers to maximise their wage rate by working faster. Company procedures should make allowance for collections to be performed at a speed that is reasonable yet efficient, to avoid creating hazardous work conditions.

Recommended good practice controls



ACTION POINT: The following measures will help PCBUs meet legal and good practice requirements.

Vehicles and drivers

- Drivers of kerbside collection vehicles should be trained and assessed on a regular basis in line with CoPTTM and KCTL requirements.
- Vehicles should have signage and beacons that comply with the requirements of the CoPTTM and KCTL.
- Trucks should be fitted with cameras to observe bin contents.
- Consider measures to protect runners and other pedestrians from being run over by the collection truck. Drivers should remain aware of the location of their runners to ensure that they can stop the truck without striking a runner who slips or trips. The inclusion of side intrusion bars may be a suitable control.
- Operators should follow documented procedures for emergency situations such as a fire in the truck and spills.
- Operators should follow documented procedures (e.g. lockout-tagout) for retrieval of non-conforming waste.
- Where two or more people per vehicle are conducting the collections, a daily safety briefing should be held and documented by the KCTL.

- When mechanical lifting arms are in use, bystanders should be kept clear of the work area.
- Implement additional traffic management controls when collecting bins from single and multiple-lane one-way streets.
- Report significant hazards in the road corridor to the appropriate roading authority.



IMPORTANT: Operators should report contaminated waste incidents to management and/or council. Actions to discourage or prevent contaminated waste incidents include enforcement by council; council or management communication with residents; and labelling and not collecting bins containing prohibited items.

Clothing, Equipment and PPE

- As weather conditions greatly affect the safety of kerbside collections, consider the impact of hot, cold, wet, or dry conditions and extreme events such as heavy snow, severe frost, high winds, fog, or other states of emergency.
- It is recommended that appropriate PPE is available to operators (i.e., high-vis clothing, gloves, sun block, hat, long sleeves, eye protection from glare, and wet weather attire). For very hot or cold conditions, consider clothes that are comfortable to exercise in and help regulate body temperature, along with other items such as towels, a change of clothes and additional layers.
- A vaccination programme should be in place to immunise workers against infection. Suitable PPE should be provided to protect against microbial and viral infection from handling waste and recyclable materials. Hand washing and sanitising systems should be available to encourage good hygiene practices.
- Where hazards associated with terrain and surfaces (including kerbs and channels, slopes, manholes etc.) have been assessed as significant, workers **must** be provided with, and required to wear, appropriate footwear (sturdy, lightweight and

comfortable with good traction).



MORE INFORMATION: Refer to Section 18 of these guidelines for more information on personal protective equipment.



IMPORTANT: Clothing and electronic equipment which reduces peripheral vision, hearing ability or creates distraction should not be worn or used while undertaking kerbside collections. Examples are hoodies and mobile phones.

Additional hazards en-route

- Identify hazards and assess risks introduced by road works and other infrastructure or amenities work on a collection route and implement suitable controls.
- Identify hazards and assess risks associated with entering properties for back door collection and implement suitable controls.

Manual handling

- Operators should consider methods to reduce risk for manual handling hazards. This consideration may include reducing manual collection methods and the number of people involved in manual collection.² It may also involve educating ratepayers and other user-pays customers about bin placement, to limit the need to manoeuvre bins around parked cars, trees, and other obstacles.
- Operators should adhere to correct manual handling practices if manoeuvring large or heavy bins.

² Automated bin collection has a critical health and safety advantage over other collection methods. The 2010 WasteMINZ Position Report “*An Assessment of the Health and Safety Costs and Benefits of Manual vs Automated Waste Collections*” reported a marked difference in the injury rates between manual and automated collection methods, with manual methods more likely to result in injury. Automated bin collection accounted for 46% of all collections, yet only 5% of the total injuries. Non-automated bin collection accounted for 17% of injuries.

- Bins that are overloaded should not be collected.
- Alternate duties and have regular breaks from repetitive use of joystick controls.
- Ensure early reporting of musculoskeletal symptoms.



MORE INFORMATION: See section 16 of these guidelines for further information on manual handling. The 2010 WasteMINZ Position Report ‘An Assessment of the Health and Safety Costs and Benefits of Manual vs Automated Waste Collections’ provides further information on hazards associated with non-automated and loose collection methods.



IMPORTANT: Bins should not be manually lifted and tipped into the truck (e.g. to save time). Where operators and runners need to lift heavy items or items above shoulder height, mechanical assistance should be provided.



MORE INFORMATION: The assessment tools in the Code of practice for manual handling 2001 provide further guidance regarding heavy items.

Training



THE LAW: As required by Section 9 of the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016, *A PCBU must ensure, so far as is reasonably practicable, that every worker who carries out work of any kind, uses plant of any kind, or deals with a substance of any kind that is capable of causing a risk in a workplace—*

(a) *either—*

- (i) *has adequate knowledge and experience of similar places, and work, plant, or substances of that kind, to ensure that the worker carrying out the work, using the plant, or dealing with the substance is not likely to adversely affect the health and safety or cause harm to the worker or any other person; or*

(ii) is adequately supervised by a person who has that knowledge and experience; and

(b) is adequately trained in the safe use of—

(i) all plant, objects, substances, or equipment that the worker is or may be required to use or handle; and

(ii) all personal protective equipment that the worker is or may be required to wear or use (Health and Safety at Work (General Risk and Workplace Management) Regulations, 2016).

There are many methods of ensuring that workers receive appropriate training, for example:

- Under CoPTTM requirements, every driver undertaking kerbside collections should be a warranted KCTL operator.
- Runners and operators should be trained in the hazards and risks of their job. This can include aggressive customers when stickering bin contamination.
- Every six months the Site Traffic Management Supervisor (STMS) should deliver refresher training for all kerbside collection workers on the Traffic Management Plan (TMP). Refresher training should also occur when the TMP is amended.
- Provision of clear and concise safe operating procedures (SOPs) including vehicle checklists and corrective action follow-up.
- Induction and regular in-house training courses and refresher sessions.
- All drivers should be trained in safe methods for alighting from the cab of their vehicle ensuring they:
 - Check their mirror for oncoming traffic prior to opening the door.
 - Exit the cab facing inwards.
 - Maintain three points of contact at all times.
 - Safely move themselves out of the 'live lane' and onto the footpath.

- Where left-side drive vehicles are used, specific training and assessment should be provided.
- Specific health and safety training (e.g. driver training, lockout-tagout and manual handling).
- Daily safety meetings discussing safe and correct operational practices.

Retention of appropriate training records, along with details of training providers and any refresher requirements and briefings, such as KCTL, are strongly recommended.



MORE INFORMATION: Appendix 7 sets out examples of hazards/risks associated with waste collection and processing methods, along with recommended control measures. The following table addresses additional hazards/risks associated with bin collections.

Table 2: Additional hazards/risks for bin collection

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification				Uncontrolled risk assessment			Controlled Risk Assessment						Development opportunities	Actions		
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they/it be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
<ul style="list-style-type: none"> Collection of bins 	<ul style="list-style-type: none"> Being struck by the bin/ or lifting equipment 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers Bystanders or property damage 	<ul style="list-style-type: none"> Physical injury Property damage 	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•							
								Isolate:	•							
								Engineering Controls:	<ul style="list-style-type: none"> Sensors in place, Cameras in place to assist with incidents, reporting and driver assessments and driver improvements 							
								Administrative Controls:	<ul style="list-style-type: none"> Safe operating procedures are in place – workers are competent and capable. Annual assessments are held. Operator to check that no person is between the vehicle and bin before operating the bin lifter Regular schedule maintenance is in place and grabber arm is tested and checked Operator Report bin lifter faults immediately Post incident retraining and assessments. Operator or runners to ensure bystanders are clear of danger areas before commencing lifting activities Ensure exclusion working zone is managed by Operator 							
PPE:	•															
<ul style="list-style-type: none"> Moving bins and loading onto lifter 	<ul style="list-style-type: none"> Manual Handling 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers 	<ul style="list-style-type: none"> Physical injury Property damage 	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•							
								Isolate:	•							
								Engineering Controls:	•							
								Administrative Controls:	<ul style="list-style-type: none"> Safe operating procedures are in place – workers are competent and capable. Annual assessments are held. Ensure all operators receive adequate training in manual handling (Code 							

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Hazard identification				Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities	Actions			
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they/it be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
									of practice for manual handling 2001) <ul style="list-style-type: none"> Operators to wear fit-for-purpose gloves and other PPE to prevent cuts from sharp objects and to maintain good hygiene Bins should not be lifted by hand Training in correct pushing, pulling, and positioning should be provided Early reporting of musculoskeletal symptoms 							
								PPE:	Appropriate PPE gear worn							
<ul style="list-style-type: none"> Workers outside of the truck 	<ul style="list-style-type: none"> Impact with traffic 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers Members of the public 	<ul style="list-style-type: none"> Physical injury Property damage 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	Elimination:	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
								Substitution:	<ul style="list-style-type: none"> 					<ul style="list-style-type: none"> 		
								Isolate:	<ul style="list-style-type: none"> 					<ul style="list-style-type: none"> 		
								Engineering Controls:	<ul style="list-style-type: none"> 					<ul style="list-style-type: none"> 		
								Administrative Controls:	<ul style="list-style-type: none"> Safe operating procedures are in place – workers are competent, capable, and audited annual assessments are held Ensure compliance with CoPTTM and KCTL requirements No person to travel on the outside of a vehicle if it is travelling in excess of the recommended speed of 25kph Allocate enough time for the route to eliminate time pressure Undertake waste collection from the left-hand side of the road No person is to alight from a moving vehicle Awareness training in avoiding uneven/slippery surfaces Provide methods for easy and regular communication with the driver Runners not to ride on a 					<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">

Table 2: Additional hazards/risks for bin collection

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Table 2: Additional hazards/risks for bin collection																	
Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities		Actions		
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they/it be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?	
									<ul style="list-style-type: none"> vehicle when it is reversing Driver to maintain awareness of runners when truck is in motion Safe riding positions for runners between pickups 								
								PPE:	<ul style="list-style-type: none"> Appropriate PPE gear worn Ensure clothing is appropriate for the conditions under a heavy exercise load Operators should wear high-vis clothing ensuring they are compliant with the NZTA CoPTTM Ensure operators are wearing appropriate footwear (e.g. lightweight, sturdy footwear for runners that provides good traction) 								
<ul style="list-style-type: none"> Handling waste and recyclables 	<ul style="list-style-type: none"> Broken glass left at the kerb side 	<ul style="list-style-type: none"> Injury 	<ul style="list-style-type: none"> Workers 	<ul style="list-style-type: none"> Infection Illness 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	Elimination:	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	
								Substitution:	<ul style="list-style-type: none"> 								
								Isolate:	<ul style="list-style-type: none"> 								
								Engineering Controls:	<ul style="list-style-type: none"> 								
								Administrative Controls:	<ul style="list-style-type: none"> Safe operating procedures are in place – workers are competent and capable. Annual assessments are held. Spills to be cleaned/swept up Only council-approved bins to be collected Council rules to prohibit overloaded bins to reduce the occurrence of dropped bottles Follow contamination procedure 								
								PPE:	<ul style="list-style-type: none"> Appropriate PPE gear worn 								
<ul style="list-style-type: none"> Handling waste and recyclables 	<ul style="list-style-type: none"> Non hygienic 	<ul style="list-style-type: none"> Infection 	<ul style="list-style-type: none"> Workers 	<ul style="list-style-type: none"> Infection Illness 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	Elimination:	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	
								Substitution:	<ul style="list-style-type: none"> 								

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Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities	Actions			
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they/it be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?	
	practices							Isolate:	•					•	•	•	
								Engineering Controls:	•					•	•	•	
								Administrative Controls:	<ul style="list-style-type: none"> Safe operating procedures are in place – workers are competent and capable. Annual assessments are held. Ensure vaccination for common diseases including Hepatitis Develop and implement a 'needle stick' response policy Immediately clean and dress all wounds Cover dressing with durable waterproof gloves Seek medical attention for any needle stick injuries Train staff in good hygiene practices e.g. washing hands before eating, drinking or smoking 						•	•	•
								PPE:	• Appropriate PPE gear worn					•	•	•	
• Kerbside collection	• Aggressive dogs	• Physical	• Workers	• Physical injury	•	•	•	Elimination:	•	•	•	•	•	•	•	•	
								Substitution:	•					•	•	•	
								Isolate:	•					•	•	•	
								Engineering Controls:	•					•	•	•	
								Administrative Controls:	<ul style="list-style-type: none"> Training for workers in management of aggressive dogs If confronted with aggressive dog/s contact the local territorial authority's Animal Control Department (or equivalent) 					•	•	•	
								PPE:	• Appropriate leg protection and fit-for-purpose gloves are the recommended PPE to reduce injury from serious dog bites					•	•	•	

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Table 2: Additional hazards/risks for bin collection																
Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities	Actions		
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they/it be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
<ul style="list-style-type: none"> Kerbside collection 	<ul style="list-style-type: none"> Aggressive persons 	<ul style="list-style-type: none"> Physical Psychosocial 	<ul style="list-style-type: none"> Workers 	<ul style="list-style-type: none"> Physical injury Biohazard Mental health trauma 	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•							
								Isolate:	•							
								Engineering Controls:	•							
								Administrative Controls:	<ul style="list-style-type: none"> Training for workers in conflict avoidance or management of aggressive people (retreat if confronted by an aggressive person) If unable to retreat, staff to contact police 							
								PPE:	•							
<ul style="list-style-type: none"> Waste hazards 	<ul style="list-style-type: none"> Prohibited waste in bins 	<ul style="list-style-type: none"> Biological hazard Chemical hazard Physical 	<ul style="list-style-type: none"> Workers Members of the public 	<ul style="list-style-type: none"> Physical injury Environmental harm 	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•							
								Isolate:	•							
								Engineering Controls:	•							
								Administrative Controls:	<ul style="list-style-type: none"> Waste acceptance Policy Public education (Council advertisement) Education - Contamination stickers or tags Report offender to Council - Non-compliance (to follow up enforcement) Labelling of prohibited items on the bin Bins are identifiable with the property or customer (i.e. address label or serial number unique identifier) Install camera to observe bin contents Procedures for fire in the truck Spill procedures Procedures for retrieval of non-conforming waste, including LOTO Enforcement by council Communication with 							

Table 2: Additional hazards/risks for bin collection

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Table 2: Additional hazards/risks for bin collection																	
Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities		Actions		
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they/it be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?	
									residents								
								PPE:	<ul style="list-style-type: none"> Workers to wear appropriate PPE gear at all times when handling bin/products 					•	•	•	
• Lifting bags	• Injury from manual handling	• Ergonomic	• Workers	• Back strains, leg strains, pulled muscles, arm strains etc	•	•	•	Elimination:	•	•	•	•		•	•	•	
								Substitution:	•					•	•	•	
								Isolate:	•								
								Engineering Controls:	•					•	•	•	
								Administrative Controls:	<ul style="list-style-type: none"> Safe operating procedures are in place – workers are competent and capable. Annual assessments are held Ensure all operators receive adequate training in manual handling (Code of practice for manual handling 2001) Do not stockpile bags to avoid double- handling Throw the bag into the hopper using an underarm throw Early reporting of musculoskeletal symptoms Runners to complete warm up exercises prior to commencing collections Provide rules for the content and weight of bags and a system to educate residents when bags do not comply with these criteria 					•	•	•	
								PPE:	•					•	•	•	
• Riding trucks when collecting bags	• Injury to runners from falling off/ impact with	• Physical	• Workers • Other road users	• Physical injuries from falling off the truck	•	•	•	Elimination:	•	•	•	•		•	•	•	
								Substitution:	•					•	•	•	
								Isolate:	•					•	•	•	
								Engineering Controls:	•					•	•	•	
								Administrative	• Ensure compliance with					•	•	•	

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Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities	Actions		
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they/it be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
	trucks							Controls: <ul style="list-style-type: none"> CoPTTM and KCTL requirements No person to travel on the outside of a vehicle if it is travelling in excess of the recommended speed of 25kph Allocate enough time for the route to eliminate time pressure Undertake waste collection from the left-hand side of the road No person is to alight from a moving vehicle Awareness training in avoiding uneven/slippery surfaces Provide methods for easy and regular communication with the driver Runners not to ride on a vehicle when it is reversing Driver awareness of runners when truck in motion Safe riding positions for runners between pickups 								
								PPE: <ul style="list-style-type: none"> Ensure operators are wearing appropriate footwear (e.g. lightweight, sturdy footwear for runners that provides good traction) Operators should wear high-vis clothing ensuring they are compliant with the NZTA CoPTTM 								
<ul style="list-style-type: none"> Handling waste and recyclables 	<ul style="list-style-type: none"> Infection from contact with waste 	<ul style="list-style-type: none"> Biological 	<ul style="list-style-type: none"> Workers 	<ul style="list-style-type: none"> Infection that causes a disease/illness / infection 	•	•	•	Elimination: <ul style="list-style-type: none"> • 	•	•	•	•	•	•	•	
								Substitution: <ul style="list-style-type: none"> • 						•	•	
								Isolate: <ul style="list-style-type: none"> • 						•	•	
								Engineering Controls: <ul style="list-style-type: none"> Ensure vaccination for common diseases including Hepatitis 						•	•	
								Administrative Controls: <ul style="list-style-type: none"> Develop and implement a 'needle stick' response policy Seek medical attention for any needle stick injuries Immediately clean and dress all wounds. Cover dressing with durable waterproof gloves 						•	•	

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Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities	Actions			
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they/it be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?			Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
									<ul style="list-style-type: none"> Train staff in good hygiene practices e.g. washing hands before eating, drinking or smoking 								
								PPE:	<ul style="list-style-type: none"> Workers to wear appropriate PPE gear at all times when handling bin/products 					•	•	•	

28. Crate collection

Crate collection involves the kerbside collection of household recyclable materials in 45 to 70-litre crates. The crates are collected from the kerbside or more rarely, from a residential property ('back-door' collection). The materials collected typically include glass, plastics, paper or cardboard and metals – either commingled or separated.³



Figure 7:

Example of a crate (L) and kerbside sorting of recyclables (R)



IMPORTANT: Kerbside crate collections should only be undertaken from the left-hand side of the road, unless in low speed and low traffic-level environments, a dual-sided collection risk assessment has been performed and the risk of being hit by a vehicle is assessed as low. An example of this could be a narrow urban laneway. This risk assessment must be included in the Traffic Management Plan and approved by the RCA.



IMPORTANT: Every driver undertaking kerbside collections should be warranted as a 'Kerbside Collection Traffic Leader' (KCTL) as noted in the Code of Practice for Temporary Traffic Management (CoPTTM) section D7.3 Kerbside Collection Activities.

³ depending on the collection system operated by individual operators or territorial authorities.



THE LAW: Operators **must ensure** they are aware of and comply with relevant legislation. This includes but is not limited to:

- Health and Safety at Work Act 2015
- Land Transport Act 1998.
- Land Transport (Road User) Rule 2004 61001, which contains certain requirements including that *a person must not ride in or on a vehicle, or in or on an object conveyed on a vehicle, in a manner or position that may be liable to cause injury to that person.*



MORE INFORMATION: Further information on legislation can be found in section 3 and Appendix 8 of these guidelines.



IMPORTANT: Personal Protective Equipment (PPE) issued to workers undertaking any kerbside collection activities should comply with the requirements of the CoPTTM and KCTL.

Design and operations

- The primary aim of 'safety in design' is to identify and manage risks. Safety in design is a process that integrates hazard identification and risk assessment methods early when designing the collection methodology process; to eliminate or minimise the risks of injury to those who will construct, operate, maintain, decommission, and demolish the asset.
- The opportunity to eliminate a hazard in the early design stages by involving all stakeholders, and considering the life cycle of the project, is recommended.
- An example of this would be to have a standardised and approved crate design and size which takes into consideration the weight of the material being collected and includes drainage holes and handles. Glass weighs more than commingled recycling.



PROSECUTIONS:

A company was fined \$60,000 and ordered to pay reparation of \$80,000 over the death of a worker who was hit by a vehicle while collecting rubbish. The company had pleaded guilty to a charge under a section of the Health and Safety in Employment Act that requires PCBUs to take all practicable steps to ensure the safety of workers while at work.

The Department of Labour said the object of the Act was to promote the prevention of harm to everyone at work and nearby. This could be achieved by promoting excellence in health and safety management and by defining hazards and harm in a comprehensive way.

The Department said that "Hazard identification and control in the workplace are an integral part of keeping workers safe, as part of the employer's responsibility under the Health and Safety in Employment Act." It went on to say that "The identification of hazards is not enough. All practicable steps must be taken to control hazards by elimination, minimisation or isolation to prevent workers from being harmed."

A company was fined \$32,400 and ordered to pay reparation of \$60,000 over the death of a non-rostered employee who was struck by a reversing waste collection truck.

The employee was on sick leave and was riding with the crew of the truck at the time of the incident.

The company plead guilty to a charge under Section 15 of the Health and Safety in Employment Act 1992 which states that every employer shall take all practicable steps to ensure that no action or inaction of any employee while at work harms any other person.

A driver of a rear loading compactor truck was charged and sentenced for careless driving causing the death of a fellow worker.

The driver reversed the truck whilst runners were on the rear step. One of the runners lost his balance and fell under the rear of the truck.

The driver was sentenced to two months' community service and disqualified from driving for six months.

The truck was subsequently fitted with a reversing camera and audible warning devices.

Activities involved in crate collections

- Crate collection is undertaken by a one-person operation or teams using a variety of vehicle types including rear-load collection vehicles, low entry vehicles (LEVs) and left-hand collection vehicles.
- Crates are picked up manually from the kerb at ground level, carried a short distance to the collection vehicle and either emptied or sorted into the vehicle, or passed to another operator to empty and/or sort. Some vehicles use on-board sorters to sort recyclables by colour or type.
- Crates may need to be lifted up to between hip and shoulder height, presenting significant risk of manual handling injury.
- One-person operators frequently alight from their collection vehicle to manually empty the contents of the crate into the vehicle. Team operations usually involve a driver and one or more runners.



IMPORTANT: Operators or runners should never alight from a moving vehicle (NZTA Road User Rule 2004 clause 7.1 (3)).



IMPORTANT: If the vehicle is travelling at more than 25kph, runners should not travel on the outside of the vehicle at any time.



IMPORTANT: Runners should not travel on the outside of a truck when it is reversing.

Hazards

The wide range of hazards associated with the collection of crates can cause injuries such as strains and sprains, cuts, bruising, and vehicle damage. Hazards can include, but are not limited to:

- Traffic and other road users, for example, vehicles following or turning; conflicting vehicle paths; cyclists; cars turning into or emerging from driveways; pedestrians;

mobility scooters on footpaths; or collecting bins from single- and multiple-lane one-way streets.

- Driver operators and runners' risk being struck by other road users including vehicles, cyclists, or the collection vehicle.
- Hazards associated with unrestrained passengers (e.g. on-board sorters).
- Hazards associated with road works and other infrastructure maintenance activities on a collection route.
- Operators and/or runners alighting from the vehicle to collect crates risk slipping, tripping or falling.
- Drivers alighting from kerbside collection vehicles into the 'live lane' are exposed to passing traffic.
- Excessive number of lifts per day of crates.
- Collecting from non-standard containers exposed the collector to excessive weight (non-draining), unpredictable movement and difficulty sorting from.
- Crates may be overloaded, or contents may have been spilt requiring clean-up, which exposes the collector to the contents and risk of microbial infection.
- Crate weight may be difficult to judge by eye, as crates are collected from ground level. Larger crates are likely to be heavier.
- Crate weight may vary or be unpredictable depending on the type of recyclables in the crate.
- Lifting crates above shoulder height for transfer into the collection truck may increase the risk of shoulder injury.
- Airborne glass particles/shards from bottles breaking during the sorting process.
- Crates may contain contaminated materials including:
 - Broken glass and other sharp materials including sharp tin lids, broken window glass and broken crockery.
 - Medical wastes (discarded hypodermic needles etc.).

- Hazardous wastes (e.g. containers holding chemicals, household cleaners).
- Refuse and other sources of contamination.
- Handling wastes and recyclables introduces the potential for microbial infection.
- Collecting in adverse conditions including temperature or weather extremes (hot sun, severe frost, heavy snow, rain, high winds, fog or in states of emergency), in poor lighting, poor visibility or a noisy environment.
- Clothing and electronic equipment which reduces peripheral vision, hearing ability or creates a distraction (e.g. hoodies or mobile phones).
- Varying terrain, uneven or sloped surfaces, kerbs and channels, slippery steel manhole covers and wet grass.
- Hazards associated with properties accessed for back-door collection.
- Attack from aggressive animals.
- Crates may have been urinated on by dogs.



ACTION POINT: All hazards should be identified, assessed, controlled, recorded, and reviewed regularly. Workers should regularly be reminded of all relevant hazards and the controls in place.

Pressure on operators to increase the speed of collection activities potentially increases the level of risk to which runners are exposed, and may encourage short cuts and unsafe practices (e.g. working at speed to lift and move crates, or running across roads).



IMPORTANT: Discourage 'job and finish' arrangements and other employment terms and conditions that allow workers to maximise their wage rate by working faster. Company procedures should make allowance for collections to be performed at a speed that is reasonable yet efficient, to avoid creating hazardous work conditions.

Recommended good practice controls



ACTION POINT: Implementing or addressing the following measures will help PCBUs meet legal and good practice requirements.

Vehicles and drivers

- Drivers of kerbside collection vehicles should be trained and assessed on a regular basis in line with CoPTTM and KCTL requirements.
- Vehicles should have signage and beacons that comply with the requirements of the CoPTTM and KCTL.
- Consider measures to protect collection runners and other pedestrians from being run over by the collection truck. Drivers should remain aware of the location of their runners to ensure that they can stop the truck without striking a runner who slips or trips. The inclusion of side intrusion bars may be a suitable control.
- Operators should follow documented procedures and industry guidelines for emergency situations such as a fire in the truck and spills.
- Operators should follow documented procedures (e.g. lockout-tagout) for retrieval of non-conforming waste.
- Where two or more people per vehicle are conducting the collections, a daily safety briefing should be held and documented by the KCTL.
- Implement additional traffic management controls when collecting bins from single and multiple-lane one-way streets.
- Report significant hazards in the road corridor to the appropriate roading authority.



IMPORTANT: Operators should report contaminated waste incidents to management and/or council. Actions to discourage or prevent contaminated waste incidents include enforcement by council; council or management communication with residents; and labelling and not collecting crates

containing prohibited items.

Clothing, Equipment and PPE

- As weather conditions greatly affect the safety of kerbside collections, consider the impact of hot, cold, wet, or dry conditions and extreme events such as heavy snow, severe frost, high winds, fog, or other states of emergency.
- It is recommended that appropriate PPE is available to operators (i.e. high-vis clothing, gloves, sun block, hat, long sleeves, eye protection from glare, and wet weather attire). For very hot or cold conditions, consider clothes that are comfortable to exercise in and help regulate body temperature, along with other items such as towels, a change of clothes and additional layers.
- A vaccination programme should be in place to immunise workers against infection. Suitable PPE should be provided to protect against microbial and viral infection from handling waste and recyclable materials. Hand washing and sanitising systems should be available to encourage good hygiene practices.
- Suitable PPE should be provided to protect against sharp objects (e.g. broken glass, jagged edges on cans, or discarded hypodermic needles). Forearm protection should also be considered for those handling sharp items.
- Consider eye protection for workers sorting or tipping glass into a truck to protect against glass shards.
- Where hazards associated with terrain and surfaces (including kerbs and channels, slopes, manholes etc.) have been assessed as significant, workers **must** be provided with, and required to wear, appropriate footwear (sturdy, lightweight and comfortable with good traction).



MORE INFORMATION: Refer to Section 18 of these guidelines for more information on Personal Protective Equipment.



IMPORTANT: Clothing and electronic equipment which reduces peripheral vision, hearing ability or creates distraction should not be worn or used while undertaking kerbside collections. Examples are hoodies and mobile phones.

Additional hazards en-route

- Identify hazards and assess risks introduced by road works or other infrastructure or amenities work on a collection route and implement suitable controls.
- Identify hazards and assess risks associated with entering properties for back door collection and implement suitable controls.

Manual handling

- Operators should consider methods to reduce exposure to manual handling hazards. This consideration may include reducing manual collection methods and the number of people involved in manual collection.
- A manual handling risk assessment should be completed. This should include the type and weight of material being collected and the number of crates being collected.
- To reduce manual handling risk, trucks should be fitted with a table or platform on which to place crates while sorting recyclables.
- Crates loaded with glass material can be extremely heavy, and operators should consider appropriate crate size when selecting crates in the design phase. Adherence to correct manual handling practices is essential to minimise the risks to operators. Collections should only be undertaken using council-approved crates.
- Crates that are overloaded should not be collected.
- Ensure early reporting of musculoskeletal symptoms.



MORE INFORMATION: Refer to section 16 of these guidelines for further

information. The 2010 WasteMINZ Position Report 'An Assessment of the Health and Safety Costs and Benefits of Manual vs Automated Waste Collections' provides further information on hazards associated with non-automated and loose collection methods.



IMPORTANT: There is no maximum safe level for lifting specified in employment or health and safety legislation. This is because the load posed on a person by lifting something depends on factors such as the posture used to lift the weight, the grip the person can get on the weight, the number of times an hour they lift, the shape and size of the load and the starting and ending heights of the lift. Different people have different tolerances; what is manageable for one person, therefore, may be too heavy for another.



IMPORTANT: Where operators and runners are required to lift heavy items or items above shoulder height, mechanical assistance should be provided.



MORE INFORMATION: The assessment tools in the Code of practice for manual handling 2001 provide further guidance regarding heavy items. The code of practice for manual handling does consider the weight being lifted and the number of lifts to determine the level of risk for the worker.

Training



THE LAW: As required by Section 9 of the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016, *A PCBU must ensure, so far as is reasonably practicable, that every worker who carries out work of any kind, uses plant of any kind, or deals with a substance of any kind that is capable of causing a risk in a workplace—*

(a) *either—*

(i) *has adequate knowledge and experience of similar places, and work, plant, or substances of that kind, to ensure that the worker carrying out the work, using the plant, or dealing with the substance is not likely to adversely affect the health and safety or cause harm to the worker or any other person; or*

(ii) *is adequately supervised by a person who has that knowledge and experience; and*

(b) *is adequately trained in the safe use of—*

(i) *all plant, objects, substances, or equipment that the worker is or may be required to use or handle; and*

(ii) *all personal protective equipment that the worker is or may be required to wear or use (Health and Safety at Work (General Risk and Workplace Management) Regulations, 2016).*

There are many methods of ensuring that workers receive appropriate training, for example:

- Under CoPTTM requirements, every driver undertaking kerbside collections should be a warranted KCTL operator.
- Runners and operators should be trained in the hazards of their job. Consideration to be given to runners who may operate mechanisms on the truck such as glass troughs and compactors as part of their tasks.

- Every six months the Site Traffic Management Supervisor (STMS) should deliver refresher training for all kerbside collection workers on the Traffic Management Plan (TMP). Refresher training should also occur when the TMP is amended.
- Provision of clear and concise safe operating procedures (SOPs), including vehicle checklists and corrective action follow-up.
- Induction and regular in-house training courses and refresher sessions.
- All drivers should be trained in safe methods for alighting from the cab of their vehicle ensuring they:
 - Check their mirror for oncoming traffic prior to opening the door.
 - Exit the cab facing inwards.
 - Maintain three points of contact at all times.
 - Safely move themselves out of the 'live lane' and onto the footpath.
- Where left-side drive vehicles are used, specific training and assessment should be provided.
- Specific health and safety training (e.g. driver training, lockout-tagout and manual handling).
- Daily safety meetings discussing safe and correct operational practices.

Retention of appropriate training records, along with details of training providers and any refresher requirements and briefings, such as KCTL, are strongly recommended.



MORE INFORMATION: Appendix 7 sets out examples of hazards/risks associated with waste collection and processing methods, along with recommended control measures. The following table addresses additional hazards/risks associated with crate collections.

Table 3: Additional hazards/risks for crate collection

This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment				Development opportunities	Actions			
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they / it be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
<ul style="list-style-type: none"> Collecting and lifting of crates 	<ul style="list-style-type: none"> Bystanders Manual handling 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers Members of the public 	<ul style="list-style-type: none"> Physical injury 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	Elimination:	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
								Substitution:	<ul style="list-style-type: none"> 							
								Isolate:	<ul style="list-style-type: none"> 							
								Engineering Controls:	<ul style="list-style-type: none"> Standard approved crate design based on the material being collected 							
								Administrative Controls:	<ul style="list-style-type: none"> Operator or runners to ensure bystanders are clear of danger areas before commencing collection activities Standard approved crate design based on the material being collected. Limit of crates collected per day Ensure all operators receive adequate training in manual handling (Code of practice for manual handling 2001) Do not stockpile crates (to avoid double-handling crates) Early reporting of musculoskeletal symptoms Reporting of damaged crates 							
PPE:	<ul style="list-style-type: none"> Operators to wear fit-for-purpose gloves and other PPE to prevent cuts from sharp objects and to maintain good 															

Table 3: Additional hazards/risks for crate collection

This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Table 3: Additional hazards/risks for crate collection																
Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities	Actions		
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they / it be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
									<ul style="list-style-type: none"> hygiene Sorters to wear other PPE equipment as appropriate, including safety glasses and hearing protection 							
<ul style="list-style-type: none"> Riding trucks when collecting crates 	<ul style="list-style-type: none"> Runners falling off/impact with obstacles 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers Other road users 	<ul style="list-style-type: none"> Physical injury 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	Elimination:		<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
								Substitution:								
								Isolate:								
								Engineering Controls:	<ul style="list-style-type: none"> Safe riding positions for runners between pickups 							
								Administrative Controls:	<ul style="list-style-type: none"> Ensure compliance with CoPTTM and KCTL requirements Allocate enough time for the route to eliminate time pressure Undertake waste collection from the left-hand side of the road No person is to alight from a moving vehicle Awareness training in avoiding uneven/slippery surfaces. Provide methods for easy and regular communication with the driver Provide rules for the content and weight of crates and a system to educate residents when crates do not 							

Table 3: Additional hazards/risks for crate collection

This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Table 3: Additional hazards/risks for crate collection																
Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities	Actions		
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they / it be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
									comply with these criteria <ul style="list-style-type: none"> Runners not to ride on a vehicle when it is reversing Driver to maintain awareness of runners when truck is in motion No person to travel on the outside of a vehicle if it is travelling in excess of the recommended speed of 25kph 							
								PPE:	<ul style="list-style-type: none"> Ensure operators are wearing appropriate footwear (e.g. lightweight, sturdy footwear for runners that provides good traction) 					•	•	•
<ul style="list-style-type: none"> Handling waste and recyclables 	<ul style="list-style-type: none"> Broken glass left at the kerbside 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers Members of the public 	<ul style="list-style-type: none"> Physical Injury 	•	•	•	Elimination:		•	•	•	•	•	•	•
								Substitution:						•	•	
								Isolate:						•	•	
								Engineering Controls:						•	•	
								Administrative Controls:	<ul style="list-style-type: none"> Spills to be cleaned/swept up Council rules to prohibit overloaded crates to reduce the occurrence of dropped bottles Only council-approved crates to be collected Follow contamination procedure 					•	•	
PPE:	•	•	•													

Table 3: Additional hazards/risks for crate collection

This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification				Uncontrolled risk assessment			Controlled Risk Assessment				Development opportunities	Actions				
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they / it be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
<ul style="list-style-type: none"> Handling waste and recyclables 	<ul style="list-style-type: none"> Non hygienic practices Infection 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers Members of the public 	<ul style="list-style-type: none"> Infection 	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	<ul style="list-style-type: none"> Ensure vaccination for common diseases including Hepatitis 					•	•	•
								Isolate:	•					•	•	•
								Engineering Controls:	•					•	•	•
								Administrative Controls:	<ul style="list-style-type: none"> Develop and implement a 'needle stick' response policy Immediately clean and dress all wounds Cover dressing with durable waterproof gloves Seek medical attention for any needle-stick injuries Train staff in good hygiene practices e.g. washing hands before eating, drinking or smoking 					•	•	•
PPE:	•	•	•	•												
<ul style="list-style-type: none"> Kerbside collection 	<ul style="list-style-type: none"> Aggressive dogs 	<ul style="list-style-type: none"> Biological 	<ul style="list-style-type: none"> Workers 	<ul style="list-style-type: none"> Bites from dogs from minor to very serious bites/mauling 	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•					•	•	
								Isolate:	•					•	•	
								Engineering Controls:	•					•	•	
								Administrative Controls:	<ul style="list-style-type: none"> Training for workers in management of aggressive dogs If confronted with aggressive dog/s contact the local territorial 					•	•	•

Table 3: Additional hazards/risks for crate collection

This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities	Actions		
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they / it be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
									authority's Animal Control Department (or equivalent)							
								PPE:	<ul style="list-style-type: none"> Appropriate leg protection and fit-for-purpose gloves are the recommended PPE to reduce injury from serious dog bites 					•	•	•
• Kerbside collection	• Aggressive persons	<ul style="list-style-type: none"> Psychosocial Physical 	• Workers	<ul style="list-style-type: none"> Physical injury to driver through being hit/struck Mental health trauma through verbal and/or physical attack/attack Vehicle / property damage 	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•					•	•	•
								Isolate:	•					•	•	•
								Engineering Controls:	•					•	•	•
								Administrative Controls:	<ul style="list-style-type: none"> Training for workers in conflict avoidance or management of aggressive people If unable to retreat, staff to contact police Body cams for issue areas. No collection for offenders 					•	•	•
								PPE:	•					•	•	•
• Recyclable hazards	• Prohibited and or hazardous waste in bag recyclables in crates	• Physical	<ul style="list-style-type: none"> Workers Environmental Vehicle & Plant 	<ul style="list-style-type: none"> Physical injury Minor injuries Environmental harm 	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•					•	•	•
								Isolate:	•					•	•	•
								Engineering Controls:						•	•	•
								Administrative Controls:	<ul style="list-style-type: none"> Labelling of prohibited items on the crate Procedures for fire in the truck Spill procedures Procedures for retrieval of non-conforming 					•	•	•

Table 3: Additional hazards/risks for crate collection

This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment				Development opportunities	Actions			
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they / it be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
									recyclables, including LOTO <ul style="list-style-type: none"> Enforcement by council Communication with residents 							
								PPE:	•					•	•	•
<ul style="list-style-type: none"> Collecting the crates - runners 	<ul style="list-style-type: none"> Exhaustion or fatigue from running 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers 	<ul style="list-style-type: none"> Running can cause the worker to become tired/fatigued which makes them more likely to have an accident such as trips and falls leaning to cuts and possible fractures etc 	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•					•		
								Isolate:	•					•		
								Engineering Controls:	•					•		
								Administrative Controls:	<ul style="list-style-type: none"> Drink plenty of water to prevent dehydration, avoiding sugary drinks. Use mineral/electrolyte sachets. Eat regular healthy meals, stay physically fit, get plenty of sleep, and adhere to rest breaks to avoid fatigue Ensure clothing is appropriate for the conditions under a heavy exercise load 					•	•	
PPE:	<ul style="list-style-type: none"> Ensure operators are wearing appropriate footwear (e.g. lightweight, sturdy footwear for runners that provides good traction) 	•	•	•												



29. Front loading collection vehicles

Several different types and models of front-loading collection vehicle are in use throughout New Zealand. Front loading collection vehicles consist of a designated truck cab/chassis to which a compaction-type body with an arm system is mounted. The arm has forks that extend over the front of the cab to pick up commercial waste bins.



Figure 8:

Example of a front loading collection vehicle

The driver lowers the forks using the controls inside the cab and drives forward to insert the forks into the pockets of each side of the waste bin, which is then lifted up and over the cab. The bin is then tilted to empty the contents into the hopper.



IMPORTANT: All truck operators must be licensed, competent, capable, and trained to work this type of vehicle. The compaction mechanism, located within the hopper area, must also be operated by a competent and capable person. The Waka Kotahi New Zealand Transport Agency (NZTA) requirements on road operating rules, regulations and practices must also be adhered to (see www.nzta.govt.nz/).

Activities involved with front loading collection vehicles

There are four main types of activities in relation to front loading collection vehicles for which

hazards **must** be identified, risk assessed, and control mechanisms developed: emptying the bin into the hopper; compaction; load ejection; and cleaning, maintenance, and repair.

When emptying the bin, drivers should be aware of the possibility of people sleeping in the bin.



IMPORTANT: A risk assessment should be undertaken to establish the most appropriate method of compaction operation, taking into account people in close proximity. Examples of compaction methods include two-handed compaction, hold-to-run and interrupted cycling. Compaction controls must only be operated by a competent and capable person.

Lockout procedures for front loading collection vehicles

Lockout instructions for each front-loading collection vehicle **must** be provided to enable activities to be conducted safely. Power to moving parts **must** always be locked out.

Situations requiring lockout may include:

Repairing any mechanical malfunctions or breakdowns affecting the safe operation of the compaction or other equipment.

Regular maintenance and inspections of all front-loading collection compaction vehicles and their compacting mechanisms.

Specific inspection of all safety interlocks, switches, and other protective devices to ensure that devices have not been disabled or bypassed.



IMPORTANT: If safety devices are bypassed or damaged, the truck must not be used until they are fully functional.



MORE INFORMATION: Further information on LOTO procedures can be found in section 14 of these guidelines.

Cleaning, maintenance, modifications, and repair

Before cleaning any part of the compactor, full lockout procedures should be used.

Maintenance should be undertaken frequently, at scheduled times.

Operating instructions must be available for the use, cleaning and care of the unit or components.

Modifications should only be carried out by trained and competent and capable persons.

Risk assessments relating to any modifications must be conducted and recorded.

Training



THE LAW: As required by Section 9 of the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016, A PCBU must ensure, so far as is reasonably practicable, that every worker who carries out work of any kind, uses plant of any kind, or deals with a substance of any kind that is capable of causing a risk in a workplace—

(a) *either—*

(i) *has adequate knowledge and experience of similar places, and work, plant, or substances of that kind, to ensure that the worker carrying out the work, using the plant, or dealing with the substance is not likely to adversely affect the health and safety or cause harm to the worker or any other person; or*

(ii) *is adequately supervised by a person who has that knowledge and experience; and*

(b) *is adequately trained in the safe use of—*

(i) *all plant, objects, substances, or equipment that the worker is or may be required to use or handle; and*

(ii) *all personal protective equipment that the worker is or may be*

required to wear or use (Health and Safety at Work (General Risk and Workplace Management) Regulations, 2016).

There are many methods of ensuring that workers receive appropriate training, some examples being:

- Provision of clear and concise safe operating procedures (SOPs) including vehicle checklists and corrective action follow-up
- Induction and periodic in-house training courses
- Specific health and safety training (e.g. driving training, lockout-tagout and manual handling)
- Use of manufacturing and supplier documentation (particularly for maintenance).

Retention of appropriate training records, along with details of training providers and any refresher requirements and briefings, such as KCTL, are strongly recommended.

- Ensure your driver is aware and knows how to complete pre and post trip vehicle inspections, they are competent and trained in how to complete Daily (VCRs) Vehicle Condition Reporting. By recording any defects to be fixed, or maintenance to be follow up this will ensure your fleet/vehicle is managed, and safely maintained.

Modifications

Modifications shall only be carried out by trained and competent and capable persons.

Where modifications occur, operating instructions must be available for the use, cleaning and care of the unit or components associated with the reconstruction.

Operating instructions shall include precautionary notices associated with the reconstruction or modification.

Risk assessments of the modifications must be completed and recorded.



MORE INFORMATION: Appendix 7 sets out examples of hazards/risks associated with waste collection and processing methods, along with recommended control measures. The following table sets out additional hazards/risks associated with front loading collection vehicles.

Table 4: Additional hazards/risks associated with front loading collection vehicles

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities	Actions		
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
<ul style="list-style-type: none"> Bin location & aligning vehicle to collect bin 	<ul style="list-style-type: none"> Poor bin placement, vehicle/ pedestrian/ property interaction People in the bin 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers Members of the public 	<ul style="list-style-type: none"> Impact causing Fatality Physical injury Property damage Damage/injury to person in bin 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	Elimination:	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
								Substitution:	<ul style="list-style-type: none"> 							
								Isolate:	<ul style="list-style-type: none"> 							
								Engineering Controls:	<ul style="list-style-type: none"> If the bin is in an unsecured location, fit a lockable lid 							
								Administrative Controls:	<ul style="list-style-type: none"> Place bin in secure area away from the public Training - Only trained, competent and capable operators to undertake collection activities Driver to check other vehicles and pedestrians are not in the vicinity when collecting bins – exclusion zone Check bin has been placed appropriately by customer If the bin is unlocked in an unsecured location, then shake or bump the bin before lifting 							
PPE:	<ul style="list-style-type: none"> 															
<ul style="list-style-type: none"> Cleaning 	<ul style="list-style-type: none"> Removing debris from under raised tailgate 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers 	<ul style="list-style-type: none"> Loss of hydraulic pressure, causing the tail gate to suddenly drop Fatality Personal injury 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	Elimination:	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
								Substitution:	<ul style="list-style-type: none"> 							
								Isolate:	<ul style="list-style-type: none"> 							
								Engineering Controls:	<ul style="list-style-type: none"> Use tailgate props when the tail gate is raised It is recommended that there is a minimum 20-second lowering time on the tailgate Vehicles to be fitted with an audible warning alarm to indicate that the tailgate is closing 							
								Administrative Controls:	<ul style="list-style-type: none"> Ensure the machine is 							

Table 4: Additional hazards/risks associated with front loading collection vehicles

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment				Development opportunities	Actions			
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
									<ul style="list-style-type: none"> isolated, locked-and tagged-out by a competent and capable person prior to clearing debris No person may walk or work under a hydraulically operated raised tailgate unless it is securely propped Use long-handed brooms and implements to scrape debris from the raised tailgate. Signage to use tail props 							
								PPE:	•					•	•	•
<ul style="list-style-type: none"> Clearing debris from cab cover 	<ul style="list-style-type: none"> Slip/trip or fall 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers 	<ul style="list-style-type: none"> Falling from height or falling debris Fatality Physical injury Fractures 	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•					•	•	•
								Isolate:	•					•	•	•
								Engineering Controls:	<ul style="list-style-type: none"> Have a gantry or mobile safety steps rather than ladders 					•	•	•
								Administrative Controls:	<ul style="list-style-type: none"> Raise the cab protector to remove waste Use fall restraints systems when working at height and provide appropriate training Maintain three points of contact on the vehicle when entering or exiting the cab/using ladders Inspect ladders/steps before use 					•	•	•
								PPE:	•					•	•	•

Table 4: Additional hazards/risks associated with front loading collection vehicles

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities	Actions		
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
<ul style="list-style-type: none"> Manual manoeuvring of bins 	<ul style="list-style-type: none"> Manual handling 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers 	<ul style="list-style-type: none"> Strains, sprains, cuts and lacerations 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	Elimination:	•	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
								Substitution:	•							
								Isolate:	•							
								Engineering Controls:	<ul style="list-style-type: none"> Bins in good condition eg wheels working. 							
								Administrative Controls:	<ul style="list-style-type: none"> Only trained, competent and capable operators to undertake this activity. Driver to undertake SOP and manual handling training When sales are placing bins then assess to location for safety eg not on a slope. Encourage customers to place bin in appropriate position Do not attempt to manoeuvre overfull bins 							
								PPE:	<ul style="list-style-type: none"> Driver to wear appropriate PPE when manually manoeuvring bins 							
<ul style="list-style-type: none"> Raising or lowering of bin 	<ul style="list-style-type: none"> Striking overhead objects Bin falling off 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers Member of the public 	<ul style="list-style-type: none"> Electrocution Property damage Plant damage Fatality Physical injury 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	Elimination:	•	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
								Substitution:	•							
								Isolate:	•							
								Engineering Controls:	<ul style="list-style-type: none"> Forks to have stops on end Good design of pockets on bins. Check for wear. 							
								Administrative Controls:	<ul style="list-style-type: none"> Vehicle should be stationary during this manoeuvre Driver to check surroundings in close proximity to vehicle (for people, vehicles, overhead power lines, etc) before manoeuvring takes 							

Table 4: Additional hazards/risks associated with front loading collection vehicles

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification				Uncontrolled risk assessment			Controlled Risk Assessment				Development opportunities	Actions					
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?	
									<ul style="list-style-type: none"> place • Driver to be aware of total height of the vehicle and lifter in the raised position • Driver to use mirrors fitted to the cab to monitor the external environment • Drivers to be trained in emergency response in the event of fallen power lines • Signage • Pre bin placement risk assessment to look for powerlines/objects above 								
								PPE:	•					•	•	•	
<ul style="list-style-type: none"> • Removal of jammed objects 	<ul style="list-style-type: none"> • Mechanical entrapment and fall into hopper 	<ul style="list-style-type: none"> • Physical 	<ul style="list-style-type: none"> • Workers 	<ul style="list-style-type: none"> • Physical injury • Property damage 	•	•	•	Elimination:	•	•	•	•	•	•	•	•	
								Substitution:	•								
								Isolate:	•								
								Engineering Controls:	•								
								Administrative Controls:	<ul style="list-style-type: none"> • Only trained, competent and capable operators to undertake this activity • Avoid overfilling the hopper • Appropriate lockout procedures should be used prior to manually unblocking the jam • Training customer of permitted waste types 								
								PPE:	• Suitable gloves								
<ul style="list-style-type: none"> • Vehicle moving during discharging 	<ul style="list-style-type: none"> • Persons being buried under or 	<ul style="list-style-type: none"> • Physical 	<ul style="list-style-type: none"> • Workers 	<ul style="list-style-type: none"> • Fatality • Physical injury • Cuts and 	•	•	•	Elimination:	•	•	•	•	•	•	•	•	
								Substitution:	•								

Table 4: Additional hazards/risks associated with front loading collection vehicles

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment			Development opportunities	Actions			
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?	Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
process	struck by discharged loads			bruises				Isolate:					•		
								Engineering Controls:					• In-cab cameras, external buzzers and flashing lights		
								Administrative Controls:					<ul style="list-style-type: none"> • Only trained, competent and capable drivers to undertake activity • Driver to check that all persons are clear of the rear door before activating the ejector lever – exclusion zone • Use of in-cab cameras • Discharge on a good level surface 		
								PPE:					•		

30. Gantry collection vehicles

Several different types and models of gantry collection vehicles are in use throughout New Zealand. Gantry collection vehicles consist of a truck cab/chassis to which a boom is mounted, extending horizontally over the truck bed. Chains attached to both sides of the boom are used to secure the skip to the vehicle and to assist in discharging the load.



Figure 9 :

Example of a gantry collection vehicle

Gantry bins or skips come in a range of sizes and have either fixed ends or doors. The handling characteristics of different bins or skips vary.



IMPORTANT: All truck operators **must** be licensed, competent, capable, and trained to work this type of vehicle. The Waka Kotahi New Zealand Transport Agency (NZTA) requirements on road operating rules, regulations and practices **must** also be adhered to.



MORE INFORMATION: The correct loading of heavy vehicles is vital in the prevention of injury to drivers and members of the public and the prevention of damage to materials and equipment.

Vehicle loads must be sufficiently restrained to prevent movement from the forces arising from the vehicle passing over road undulations, changing direction or when it is being braked or accelerated. It requires much more force to stop a load that has started moving than it does to prevent the movement in the first place. It is essential that the load is restrained to prevent movement in any direction relative to the vehicle.

Further information can be found in the following link.

<https://www.nzta.govt.nz/roadcode/heavy-vehicle-road-code/the-truck-loading-code>

Activities involved with gantry collection vehicles

The main types of activities for which hazards **must** be identified, risk assessed, and control mechanisms developed in relation to gantry collection vehicles include tarping/untarping; transporting containers; loading skips; emptying skips; and cleaning, maintenance, and repair.

Lockout procedures for gantry collection vehicles

Lockout instructions for each gantry collection vehicle **must** be provided to enable activities to be conducted safely. Power to moving parts **must** always be locked out.

Situations requiring lockout may include:

Repairing any mechanical malfunctions or breakdowns affecting the safe operation of the equipment.

Regular maintenance and inspections of all gantry collection vehicles.

Specific inspection of all safety interlocks, switches, and other protective devices to ensure that devices have not been disabled or bypassed.



IMPORTANT: If safety devices are bypassed or damaged, the truck must not be used until they are fully functional.



MORE INFORMATION: Further information on LOTO procedures can be found in section 14 of these guidelines.

Cleaning, maintenance, modifications, and repair

All chains should be checked and certified annually by an independent assessor.

Maintenance shall be undertaken frequently, at scheduled times.

Operating instructions must be available for the use, cleaning and care of the unit or components.

Modifications shall only be carried out by trained and competent, capable persons.

Risk assessments relating to any modifications must be conducted and recorded.

Training



THE LAW: As required by Section 9 of the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016, *A PCBU must ensure, so far as is reasonably practicable, that every worker who carries out work of any kind, uses plant of any kind, or deals with a substance of any kind that is capable of causing a risk in a workplace—*

(a) *either—*

- (i) *has adequate knowledge and experience of similar places, and work, plant, or substances of that kind, to ensure that the worker carrying out the work, using the plant, or dealing with the substance is not likely to adversely affect the health and safety or cause harm to the worker or any other person; or*
- (ii) *is adequately supervised by a person who has that knowledge and experience; and*

- (b) *is adequately trained in the safe use of—*
- (i) *all plant, objects, substances, or equipment that the worker is or may be required to use or handle; and*
 - (ii) *all personal protective equipment that the worker is or may be required to wear or use* (Health and Safety at Work (General Risk and Workplace Management) Regulations, 2016).

There are many methods of ensuring that workers receive appropriate training, some examples being:

- Provision of clear and concise safe operating procedures (SOPs) including vehicle checklists and corrective action follow-up
- Induction and periodic in-house training courses
- Specific health and safety training (e.g. driving training, lockout-tagout and manual handling)
- Use of manufacturing and supplier documentation (particularly for maintenance).

Retention of appropriate training records, along with details of training providers and any refresher requirements and briefings are strongly recommended.

- Ensure your driver is aware and knows how to complete pre and post trip vehicle inspections, they are competent and trained in how to complete Daily (VCRs) Vehicle Condition Reporting. By recording any defects to be fixed, or maintenance to be follow up this will ensure your fleet/vehicle is managed, and safely maintained.

Modifications

Modifications shall only be carried out by trained and competent, capable persons.

Where modifications occur, operating instructions must be available for the use, cleaning and care of the unit or components associated with the reconstruction.

Operating instructions shall include precautionary notices associated with the

reconstruction or modification.

Risk assessments of the modifications must be completed and recorded.



MORE INFORMATION: Appendix 7 sets out examples of hazards/risks associated with waste collection and processing methods, along with recommended control measures. The following table sets out additional hazards/risks associated with gantry collection vehicles.

Table 5: Additional hazards/risks associated with gantry collection vehicles

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification				Uncontrolled risk assessment			Controlled Risk Assessment			Development opportunities	Actions					
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
<ul style="list-style-type: none"> Entry/exit vehicle 	<ul style="list-style-type: none"> Slip, trip or fall 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers 	<ul style="list-style-type: none"> Physical injury 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	Elimination:	•	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	•	•	•
								Substitution:	•					•		
								Isolate:	•					•		
								Engineering Controls:	•					•		
								Administrative Controls:	<ul style="list-style-type: none"> Vehicle to always be stationary before operator enters or exits it Maintain three points of contact on the vehicle when entering and exiting the cab Manual handling training 					•	•	
PPE:	<ul style="list-style-type: none"> Good sturdy footwear with good grip 	•	•	•												
<ul style="list-style-type: none"> Loading and unloading skip 	<ul style="list-style-type: none"> Sloping or uneven surfaces causing run away Struck by ascending/ descending bin Being caught between chains, hooks and eyes, bin and deck Striking overhead objects Damage to surface from stabilisers 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers Members of the public 	<ul style="list-style-type: none"> Property damage Physical injury Plant and property damage Electrocution 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	Elimination:	•	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	•	•	•
								Substitution:	•					•		
								Isolate:	•					•		
								Engineering Controls:	<ul style="list-style-type: none"> Use of stabilising legs Lifting chains are certified 					•	•	
								Administrative Controls:	<ul style="list-style-type: none"> Only trained, competent and capable operators to load or unload skip Operator to check surroundings in close proximity to vehicle (for people, vehicles, overhead power lines, etc), before manoeuvring takes place Check chains are securely in place Hoist to be raised only when the vehicle is on a level and stable platform/surface Check locks are securely closed on bins Driver to check surroundings in close proximity to vehicle (for people, vehicles, overhead power lines, etc) before manoeuvring takes place Driver to be aware of total height of the vehicle and lifter in the raised position Driver to use mirrors fitted to the cab to monitor the 					•	•	

Table 5: Additional hazards/risks associated with gantry collection vehicles

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification				Uncontrolled risk assessment			Controlled Risk Assessment			Development opportunities	Actions						
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?	
								external environment • Drivers to be trained in emergency response in the event of fallen power lines • Spread weight of stabilisers using suitable materials to prevent damage									
								PPE: • Operators to wear appropriate PPE						•			
• Skip doors or lifting lugs are broken, bent, or jammed	• Struck by skip doors	• Physical	• Workers	• Physical injury	•	•	•	Elimination:	•	•	•	•	•	•	•	•	
								Substitution:	•					•			
								Isolate:	•					•			
								Engineering Controls:	•					•			
								Administrative Controls:	• Chains and lifting lug plates should be regularly inspected for wear or damage • Chains and lifting lug plates shall be tested and tagged • All damage to be reported and repaired • Operators to stand beside the bin door, not in front of it, maintaining a maximum distance from the edge of the bin door • Check that the latch and hinges operate freely					•			•
								PPE:	• Wear safety gloves when opening doors					•			•
• Tarping/ untarping load	• Slip, trip, fall, falling waste	• Physical	• Workers	• Physical injury	•	•	•	Elimination:	•	•	•	•	•	•	•	•	
								Substitution:	•					•			
								Isolate:	•					•			
								Engineering Controls:	•					•			
								Administrative Controls:	• Training -Lower bin onto the ground prior to tarping or untarping load • Do not overload bins					•			•
								PPE:	• Wear suitable footwear with good grip					•			•
• Transportation	• Loss of refuse in	• Physical	• Workers	• Environmental	•	•	•	Elimination:	•								

Table 5: Additional hazards/risks associated with gantry collection vehicles

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification				Uncontrolled risk assessment			Controlled Risk Assessment			Development opportunities	Actions					
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
	transit • Movement of bin on truck during transportation		• Members of the public	hazard • Physical injury				Substitution: •								
								Isolate: •								
								Engineering Controls: • Loads are to be covered • Use appropriate engineering controls to suitably restrain the gantry bin during transit								
								Administrative Controls: • Only trained, competent and capable drivers to operate vehicles • Check doors are closed and securely latched • Do not overload bins								
								PPE: •								

31. Hook lift collection vehicles

Several different types and models of hook lift collection vehicles are in use throughout New Zealand. Hook lift collection vehicles consist of a cab and tray bed with a hooking mechanism to lift or draw the bin onto the load bed.



Figure 10 :

Example of a hook lift collection vehicle



IMPORTANT: All truck operators must be licensed, competent, capable, and trained to work this type of vehicle. The Waka Kotahi New Zealand Transport Agency (NZTA) requirements on road operating rules, regulations and practices must also be adhered to.

Activities involved with hook lift vehicles

The main types of activities for which hazards **must** be identified, risk assessed, and control mechanisms developed in relation to hook lift collection vehicles include transporting bins; loading bins; tarping/untarping; unloading bins; tipping bins; and cleaning, maintenance, and repair.

Specific lockout procedures for hook lift collection vehicles

Lockout instructions for each hook lift collection vehicle **must** be provided to enable activities to be conducted safely. Power to moving parts **must** always be locked out.

Situations requiring lockout may include:

Repairing any mechanical malfunctions or breakdowns affecting the safe operation of equipment.

Regular maintenance and inspections of all hook lift vehicles or bins.

Specific, regular inspections of all safety interlocks, switches, and other protective devices to ensure that devices have not been disabled or bypassed.



IMPORTANT: If safety devices are bypassed or damaged, the truck must not be used until they are fully functional.



MORE INFORMATION: Further information on LOTO procedures can be found in section 14 of these guidelines.

Cleaning, maintenance, modifications and repair

Before any cleaning is undertaken while the hook is in the raised position, full lockout procedures shall be used.

Maintenance shall be undertaken frequently, at scheduled times.

Operating instructions must be available for the use, cleaning and care of the unit or components.

Modifications should only be carried out by trained and competent, capable persons.

Risk assessments relating to any modifications must be conducted and recorded.

Training



THE LAW: As required by Section 9 of the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016, *A PCBU must ensure, so far as is reasonably practicable, that every worker who carries out work of any kind, uses plant of any kind, or deals with a substance of any kind that is capable of causing a risk in a workplace—*

(a) *either—*

(i) *has adequate knowledge and experience of similar places, and work, plant, or substances of that kind, to ensure that the worker carrying out the work, using the plant, or dealing with the substance is not likely to adversely affect the health and safety or cause harm to the worker or any other person; or*

(ii) *is adequately supervised by a person who has that knowledge and experience; and*

(b) *is adequately trained in the safe use of—*

(i) *all plant, objects, substances, or equipment that the worker is or may be required to use or handle; and*

(ii) *all personal protective equipment that the worker is or may be required to wear or use (Health and Safety at Work (General Risk and Workplace Management) Regulations, 2016).*

- **MORE INFORMATION:** Ensure your driver is aware and knows how to complete pre and post trip vehicle inspections, they are competence and trained in how to complete Daily (VCRs) Vehicle Condition Reporting. By recording any defects to be fixed, or maintenance to be follow up this will ensure your fleet/vehicle is managed, and safely maintained.

Modifications

Modifications shall only be carried out by trained and competent, capable persons.

Where modifications occur, operating instructions must be available for the use, cleaning and care of the unit or components associated with the reconstruction.

Operating instructions shall include precautionary notices associated with the reconstruction or modification.

Risk assessments of the modifications must be completed and recorded.

Design, manufacture and purchase of bins

Bins should be safe and fit for purpose, with reinforced welding or double plating where the bin is likely to be exposed to significant strain or heavy wear.

All standard provisions about safety in design and purchasing (Section 39 of the HSWA) apply to bins.



MORE INFORMATION: Appendix 7 sets out examples of hazards/risks associated with waste collection and processing methods, along with recommended control measures. The following table sets out additional hazards/risks associated with hook lift collection vehicles.

Table 6: Additional hazards/risks associated with hook lift collection vehicles

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment				Development opportunities	Actions			
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
• Discharge of bin	• Instability of vehicle leading to vehicle tipping over	• Physical	• Workers • Surrounding people	• Physical injury	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•							
								Isolate:	•							
								Engineering Controls:	•							
								Administrative Controls:	• Driver to check that the vehicle is on a firm, flat surface before discharging the load • Trained driver to follow vehicle SOP							
PPE:	•															
• Discharge of bin	• Persons being buried under or struck by discharged loads	• Physical	• Workers • Surrounding people	• Physical injury	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•							
								Isolate:	•							
								Engineering Controls:	•							
								Administrative Controls:	• Driver to check that all persons are clear of rear before unloading or discharging bin • Secure door of bin (if fitted) so the door does not swing open during discharge • Trained operator to follow vehicle SOP							
PPE:	•															
• Loading/ unloading hook bins onto truck bed	• Bin striking other persons when being lifted into position	• Physical	• Workers • Surrounding people	• Physical injury	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•							
								Isolate:	•							
								Engineering Controls:	•							
								Administrative Controls:	• Operator to check surroundings in close proximity to vehicle (for people, vehicles, overhead)							
PPE:	•															

Table 6: Additional hazards/risks associated with hook lift collection vehicles

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Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
									power lines, etc) before manoeuvring takes place <ul style="list-style-type: none"> • Driver/operator to remain either in cab to use controls, or at a designated manual operating point which is 'well clear' of bin lifting area 							
								PPE:	•					•	•	•
<ul style="list-style-type: none"> • Loading/ unloading hook bins onto truck bed 	<ul style="list-style-type: none"> • Failure of wishbone bale bar 	<ul style="list-style-type: none"> • Physical 	<ul style="list-style-type: none"> • Workers • Surrounding people 	<ul style="list-style-type: none"> • Physical injury 	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•					•		
								Isolate:	•					•		
								Engineering Controls:	•					•		
								Administrative Controls:	<ul style="list-style-type: none"> • Driver/operator to check that no persons are close to bin before manoeuvring takes place • New bins to utilise a hook bar that passes through reinforced side plates and is welded on both sides, rather than a wishbone welded on with a single weld (www.hse.gov.uk/waste/wishbone.htm) • Crack test hook periodically 					•	•	
PPE:	•	•	•													
<ul style="list-style-type: none"> • Loading/ unloading hook bins onto truck bed 	<ul style="list-style-type: none"> • Lifting hook slipping behind hook bar/ connecting to wrong part of bin 	<ul style="list-style-type: none"> • Physical 	<ul style="list-style-type: none"> • Workers • Surrounding people 	<ul style="list-style-type: none"> • Physical injury 	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•					•		
								Isolate:	•					•		
								Engineering Controls:	•					•		
								Administrative Controls:	<ul style="list-style-type: none"> • If possible, retro-fit a back-plate to prevent hook slippage on bins • Driver to check that the hook is slung properly prior to lift 					•	•	

Table 6: Additional hazards/risks associated with hook lift collection vehicles

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Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment				Development opportunities	Actions			
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
									<ul style="list-style-type: none"> Diver training to do this task 							
								PPE:	<ul style="list-style-type: none"> 							
<ul style="list-style-type: none"> Loading/ unloading hook bins onto truck bed 	<ul style="list-style-type: none"> Noise Striking overhead objects 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers Surrounding people Property damage 	<ul style="list-style-type: none"> Physical injury 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	Elimination:	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
								Substitution:	<ul style="list-style-type: none"> 							
								Isolate:	<ul style="list-style-type: none"> 							
								Engineering Controls:	<ul style="list-style-type: none"> Crack test hook periodically 							
								Administrative Controls:	<ul style="list-style-type: none"> Operators to remain in the cab with doors and windows closed whilst loading bin where possible, to reduce noise Operators to wear appropriate PPE Driver to check surroundings in close proximity to vehicle (for people, vehicles, overhead power lines, etc) before manoeuvring takes place Driver to be aware of total height of the vehicle and lifter in the raised position Driver to use mirrors fitted to the cab to monitor the external environment Drivers to be trained in emergency response in the event of fallen power lines Placement of bin risk assessed prior to dropping off the bin 							
PPE:	<ul style="list-style-type: none"> 															
<ul style="list-style-type: none"> Waste in bins 	<ul style="list-style-type: none"> Movement of load, vehicle over safe working load Overload Uneven distribution 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers 	<ul style="list-style-type: none"> Physical injury Vehicle roll over/plant property damage 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	Elimination:	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
								Substitution:	<ul style="list-style-type: none"> 							
								Isolate:	<ul style="list-style-type: none"> 							

Table 6: Additional hazards/risks associated with hook lift collection vehicles

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Hazard identification				Uncontrolled risk assessment			Controlled Risk Assessment				Development opportunities	Actions				
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
								Engineering Controls:	•					•	•	•
								Administrative Controls:	<ul style="list-style-type: none"> Do not collect overfull bins Educate customers about the safe load limit and weight distribution Redistribute weight Ensure drivers are trained in loading hazards 					•	•	•
								PPE:	•					•	•	•
<ul style="list-style-type: none"> Preparing bin for loading/ unloading 	<ul style="list-style-type: none"> Contact with pinch points when securing fastenings and checking bin. Damaged bin resulting in unstable load 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers 	<ul style="list-style-type: none"> Physical injury 	•	•	•	Elimination:	•	•	•	•		•	•	•
								Substitution:	•					•		
								Isolate:	•					•		
								Engineering Controls:	•					•		
								Administrative Controls:	<ul style="list-style-type: none"> Only trained, competent and capable drivers to secure such vehicles Driver to visually inspect bin to check all parts are in place and in good working order (e.g. rollers operational/pick up bar not damaged, etc) Driver to check that bin is securely locked into 'locking mechanism' 					•	•	
PPE:	• Correct PPE to be worn	•	•													
<ul style="list-style-type: none"> Removal of bin from truck bed 	<ul style="list-style-type: none"> Striking overhead objects or persons in vicinity 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers 	<ul style="list-style-type: none"> Property damage Physical injury 	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•					•		
								Isolate:	•					•		
								Engineering Controls:	•					•		
								Administrative Controls:	<ul style="list-style-type: none"> Only trained, competent and capable operators to undertake this activity Vehicle should be stationary 					•	•	

Table 6: Additional hazards/risks associated with hook lift collection vehicles

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Hazard identification				Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities	Actions				
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?	
									<ul style="list-style-type: none"> during this manoeuvre • Driver to check surroundings in close proximity to vehicle (for people, vehicles, overhead power lines etc) before manoeuvring takes place • Driver to use mirrors and/or CCTV to monitor the external environment during the manoeuvre 								
								PPE:	<ul style="list-style-type: none"> • • • 					•	•	•	
• Tarping	• Fall from height	• Physical	• Workers	<ul style="list-style-type: none"> • Fatality • Physical injury 	•	•	•	Elimination:	•	•	•	•	•	•	•	•	•
								Substitution:	•								
								Isolate:	•								
								Engineering Controls:	•								
								Administrative Controls:	<ul style="list-style-type: none"> • Undertake a working-at-height risk assessment • Utilise auto-tarping systems, if available • Utilise elevated work platforms, if available and appropriate • Place bin on ground for tarping/untarping • Use pole and hook to put on tarp 								
PPE:	•																
• Transportation of bins	<ul style="list-style-type: none"> • Flying debris from bin • Debris from rear tyres 	<ul style="list-style-type: none"> • Physical • Environmental 	• Workers	<ul style="list-style-type: none"> • Injury through impact with waste • Crash caused by driver behind turning from lost waste • Pollution of the environment from lost waste 	•	•	•	Elimination:	•	•	•	•	•	•	•	•	•
								Substitution:	•								
								Isolate:	•								
								Engineering Controls:	•								
								Administrative Controls:	• Driver/operator to check that no persons are close to								

Table 6: Additional hazards/risks associated with hook lift collection vehicles

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Hazard identification				Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities	Actions				
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?	
									<ul style="list-style-type: none"> the bin before manoeuvring takes place Hook to be regularly inspected by a competent, capable person and replaced if damaged Bin to be covered during transportation Driver to check between rear tyres for stuck/wedged waste eg stones or bricks 								
								PPE:	•					•	•	•	
• Transportation of bins	• Pinch points • Failure of lifting equipment	• Physical	• Workers	• Physical injury	•	•	•	Elimination:	•	•	•	•	•	• Eliminate	•	•	
								Substitution:	•					• Minimise	•	•	
								Isolate:	•					•	•	•	
								Engineering Controls:	•					•	•	•	
								Administrative Controls:	<ul style="list-style-type: none"> Driver/operator to check that no persons are close to the bin before manoeuvring takes place Hook to be regularly inspected by a competent, capable person and replaced if damaged Pinch point signage 					•	•	•	
PPE:	•	•	•	•													

32. Low entry collection vehicles

Several types of low entry collection vehicles (LEV) are in use throughout New Zealand. The LEV has dual controls in the cab (for left and right-hand drive), and the driver stands, when driving, from the left-hand side. The driver can enter or alight from both sides of the cab.

Recycling, refuse, and food waste are collected by the driver from bins, crates and bags that are loaded into the vehicle's body manually, with wheelie bins mechanically lifted by a side arm or bin-lifter system.

The configuration of the back of the vehicle is varied and depends on the type of the collection methodology, which may include the additional use of a runner. There are various designs that could include additional features like those listed below (NOTE, not all LEVs will have these features):

- A sentry box (working platform) on the rear of the vehicle
- A sentry box (working platform) on the side of the vehicle
- A sentry box (working platform) between the cab and the body of the vehicle

Companies that operate this procedure must complete a risk assessment.

When the vehicle's body is full, the recycling, refuse and food waste is emptied at a disposal facility.

The advantages of operating an LEV are:

- It minimises the exposure of the operator to traffic in a live lane.
- It allows recycling, refuse and food waste to be collected by one operator.
- The operator has better visibility of the work zone; and
- Entry and egress from the left-hand side of the vehicle is more easily facilitated as the operator is moving from a standing position.



Figure 11:

Example of low entry collection vehicle



IMPORTANT: LEVs vary in design. Because the driver operates from the left-hand side, unrestrained and frequently exiting the vehicle, LEV risk assessments should consider physical controls as well as behavioural controls and the environment the LEV is operating in.



IMPORTANT: The driver is the person in control of the place of work and **must** have a driver licence for the class of vehicle being driven. Any person who performs a work function with this type of vehicle must be deemed competent and capable.



IMPORTANT: Where an additional person is in the cab, for training purposes, or when a runner is in the cab being transported between collection tasks, secure seating must be available.



IMPORTANT: When the vehicle is not collecting (travelling to the collection area or disposal point), the trainer and runner must be restrained by a seat or lap belt.



IMPORTANT: Any person exiting or entering the right-hand side of the vehicle needs to be mindful of traffic when in a live lane.



MORE INFORMATION: Information on LOTO procedures can be found in section 14 of these guidelines.

Cleaning, maintenance and repairs

People are exposed to different types of hazards and risks while carrying out these types of activities and it is important to identify the types of hazards and risks associated with them before commencing the task, for example:

Before any cleaning of the compactor is undertaken, full lockout procedures should be used for energy sources, such as potential stored energy (i.e. when something can be released), consider hazards associated with the specific tasks, involving:

Gravity (raised bucket, blade or boom which may fall);

Energised equipment (electrical, pneumatic, hydraulic);

Equipment or vessels which may be pressurised;

Equipment or vessels containing chemicals, vapours or gases;

Equipment with flammable fuel tanks or cells; and

Mobile equipment which may roll or move.

Maintenance should be performed according to the manufacturer's instructions and the person who is carrying out the maintenance of the vehicle needs to be competent, capable, and familiar with the vehicle.

Training



THE LAW: Section 7.20 of the Land Transport (Road User) Rule 2004 states that A driver may not drive a vehicle fitted with a dual steering system from the left-hand driving position unless that driver is—

- (a) *carrying out the task for which the vehicle was constructed; or*
- (b) *evaluating or testing the vehicle, including (but not limited to) carrying out a road test in connection with inspection and certification.*



THE LAW: Section 7.11(3)(d) of the Land Transport (Road User) Rule 2004 also states that a driver is not required to wear a seat belt if the driver:

is engaged in the course of his or her employment in the delivery or collection of mail or newspapers or other goods, or the servicing of the vehicle, or meter reading or other similar duties, or spraying or other similar duties from the vehicle; and

- (i) for that purpose, is required to alight from and re-enter the vehicle at frequent intervals, so long as the vehicle is travelling at a speed not exceeding 50 km per hour*



THE LAW: As required by Section 9 of the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016, *A PCBU must ensure, so far as is reasonably practicable, that every worker who carries out work of any kind, uses plant of any kind, or deals with a substance of any kind that is capable of causing a risk in a workplace—*

- (a) either—*

- (i) has adequate knowledge and experience of similar places, and work, plant, or substances of that kind, to ensure that the worker carrying out the work, using the plant, or dealing with the substance is not likely to adversely affect the health and safety or cause harm to the worker or any other person; or*
- (ii) is adequately supervised by a person who has that knowledge and experience; and*

- (b) is adequately trained in the safe use of—*

- (i) all plant, objects, substances, or equipment that the worker is or may be required to use or handle; and*
- (ii) all personal protective equipment that the worker is or may be required to wear or use.*

There are many methods of ensuring that operators receive appropriate training, some

examples being (this list is not exhaustive):

A critical component of driver training is familiarisation with working and manoeuvring the vehicle from the left-hand side of the driver's cab

- Standard Operating Procedures (SOPs)/work instructions, including safeguarding devices on the vehicle (e.g. spill kits, first aid kits, emergency stops, fire extinguishers, emergency response (accidents, spills, fires etc.)
- Induction and periodic in-house training courses
- Specific health and safety training (e.g. use of plant and equipment, lockout-tagout and manual handling); and
- Use of manufacturing and supplier documentation (especially useful for maintenance).
- Ensure your driver is aware and knows how to complete pre and post trip vehicle inspections, they are competent and trained in how to complete Daily (VCRs) Vehicle Condition Reporting. By recording any defects to be fixed, or maintenance to be follow up this will ensure your fleet/vehicle is managed, and safely maintained.



IMPORTANT: All truck drivers **must be** licensed, competent, capable and trained to work this type of vehicle. The Waka Kotahi New Zealand Transport Agency (NZTA) requirements on road operating rules, regulations and practices **must** also be adhered to. All drivers who operate this vehicle must hold a Kerbside Collection Traffic Leader qualification, as per the Waka Kotahi New Zealand Transport Agency's Code of Practice for Temporary Traffic Management.

Modifications

Modifications should only be carried out by trained and competent, capable persons in alignment with the company's management of change process.

Existing components should not be modified without agreement from the manufacturer of those components and approved by a heavy vehicle specialist engineer.

Where modifications occur, a risk assessment must be carried out, operating instructions must be reviewed and amendments made where applicable, as noted in the Health and Safety at Work Act 2015

Operating instructions should include precautionary notices associated with the reconstruction or modification.

Additional safety features

The following safety features need to be considered by a PCBU:

Barrier arm (a form of support to prevent drivers and runners from exiting from the left-hand side of the vehicle when it is in motion)

Implementation of a speed restriction device

Front bumper sensors

Rear and front facing side cameras

Oval mirrors on the front of the vehicle

AI (artificial intelligence) detection devices



MORE INFORMATION: Appendix 7 sets out examples of hazards/risks associated with waste collection and processing methods, along with recommended control measures. The following table sets out additional hazards/risks associated with LEVs.

Table 7: Additional hazards/risks associated with low entry collection vehicles

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Table 7: Additional hazards/risks associated with low entry collection vehicles																
Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities	Actions		
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
<ul style="list-style-type: none"> Left hand operation of vehicle 	<ul style="list-style-type: none"> Potential impact from Increased exposure when operating from left-hand side – blind spots 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers Members of the public 	<ul style="list-style-type: none"> Physical injury Damage to property or vehicles 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	Elimination:	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
								Substitution:	<ul style="list-style-type: none"> 							
								Isolate:	<ul style="list-style-type: none"> 							
								Engineering Controls:	<ul style="list-style-type: none"> Well placed mirrors 							
								Administrative Controls:	<ul style="list-style-type: none"> Drivers must switch from right-hand drive to left-hand drive operator positions safely before completing any left-hand side collections Annual driving competency assessments are completed Driver audits and site assessment reviews are completed by Supervisor/driver trainer for feedback and continuous improvements When collecting from the left-hand side, park safely, and as close to the kerb as possible, ensure headlights are on and beacons are operating while undertaking collection activities Kerbside collection operators must be briefed at least six monthly on TMP controls and ensure the TMP is current by the site based STMS (static traffic management supervisor) Where fitted, drivers MUST ensure mirrors and monitors are set up correctly before operating from the left-hand side Drivers MUST be trained as a Kerbside Collection Traffic Leader (KCTL) to undertake kerbside collection activities. This must be completed within four months of commencement of employment Drivers to wear seat belts when NOT in collection mode 							
PPE:	<ul style="list-style-type: none"> 															
<ul style="list-style-type: none"> Unexpected exiting 	<ul style="list-style-type: none"> Slips/trips/and 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers 	<ul style="list-style-type: none"> Physical injury 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	Elimination:	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">

Table 7: Additional hazards/risks associated with low entry collection vehicles

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification				Uncontrolled risk assessment			Controlled Risk Assessment			Development opportunities	Actions					
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?	Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?	
from vehicle when operating from left-hand side • Slipping or tripping when entering or exiting LEV	falls • Worn anti-slip floor plate or product in LEV left-hand drive operating position • Wet or oily surfaces • Failure of safety arm • Runaway vehicle							Substitution:					•	•	•	
								Isolate:								•
								Engineering Controls:								• Install a safety arm • Safety arm only activates when the vehicle has come to a complete stop • Regular maintenance of safety arm and air line
								Administrative Controls:								• Safe operating procedures are in place – workers are capable, competent, and audited, annual assessments are held. • ALWAYS wait until the collection vehicle has come to a complete stop before entering/exiting the cab • Drivers MUST always maintain a minimum of three points of contact when operating from the left. The correct driving position should be standing comfortably. This could include leaning against the backrest and using both the steering wheel and the backrest as support. The driver should not use the barrier arm (if fitted) as a form of support while driving, as it is designed to prevent the driver from exiting the collection vehicle when it is in motion. The driver should also ensure the standing area is free from slip hazards, e.g. wet floor, or worn floor covering • Drivers are to monitor the condition of the flooring in the left-hand standing well and report defective flooring to their supervisor, e.g. worn or slippery surfaces. Where flooring is deemed to be badly worn, LOTO the collection vehicle until flooring is replaced • ALWAYS adjust speed to the conditions

Table 7: Additional hazards/risks associated with low entry collection vehicles

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Table 7: Additional hazards/risks associated with low entry collection vehicles																
Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities	Actions		
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
								PPE:	<ul style="list-style-type: none"> Check condition of PPE footwear and replace as required 					•	•	•

33. Rear loading collection vehicles

Rear loading collection vehicles consist of a designated cab/chassis to which a compaction type body is mounted. At the rear of the vehicle is an open hopper, and on some vehicles, a bin lifter.



Figure 12:

One of several types of rear loading collection vehicle in operation in New Zealand

Waste in refuse bags or mobile garbage bins is collected and loaded into the hopper at the rear of the truck. In general, waste receptacles are placed in or on the vehicle by an operator. A compaction mechanism located within the hopper area is activated by the operator at periodic intervals to compact the waste within the transfer body of the truck. When the truck body is full, the compacted waste is emptied via the tailgate at a waste disposal facility.



IMPORTANT: All truck drivers **must** be licensed, competent, capable and trained to work this type of vehicle. The compaction mechanism, located within the hopper area, **must** also be operated by a competent, capable person. The Waka Kotahi New Zealand Transport Agency (NZTA) requirements on road operating rules, regulations and practices **must** also be adhered to.

Activities involved with rear loading collection vehicles

There are four main types of activities for which hazards **must** be identified, risk assessed and control mechanisms developed in relation to rear loading collection vehicles: loading refuse into the hopper; compaction of hopper contents; load ejection; and cleaning, maintenance and repair.

Operation of the compactor mechanism



IMPORTANT: A risk assessment should be undertaken to establish the most appropriate method of compaction operation, taking into account people in close proximity. Examples of compaction methods include two-handed compaction, hold-to-run and interrupted cycling. Compaction controls **must** only be operated by a competent, capable person.

Push button controls

Compactor control buttons are normally arranged so the emergency stop button is found either at the top or bottom of the control panel, with an additional stop button located on each side of the compaction equipment. Emergency buttons **must** be tested regularly. Emergency stop buttons **must** lock off the movement of the compacting ram. Ram movement of compactors **must** not be able to be restarted without operating a reset control.

Lever controls

The control levers are normally located at the rear of the truck and are designed to be safely operated by a trained worker in a two-handed hold-to-run manoeuvre. Where possible, the controls should be tamper-proof. All buttons and lever controls should be clearly labelled in English.

Manual operation

The automatic, continuous cycle, single cycle, or multi-cycle operation of a compactor

occurs when the 'Manual Forward' button is operated. This button is usually found at the top of the compactor control panel at the rear of the vehicle.



IMPORTANT: Automatic and continuous cycles **must** only occur with closed systems and should only be used when the system is fully guarded.



IMPORTANT: All controls should be on the left-hand side of the vehicle.

Lockout procedures for rear loading collection vehicles

Lockout instructions for each rear loading collection vehicle **must** be provided to enable activities to be conducted safely. Power to moving parts **must** always be locked out.

Hydraulic accumulators may be used in some bin lifter systems to automatically lift the bin lifter in the reverse mode. Where an accumulator is used, provision should be made to release the associated stored energy. Suitable warning notices shall be provided (e.g. *"Release stored energy in the accumulator before carrying out any servicing or maintenance work"*).

Situations requiring lockout may include:

Repairing any mechanical malfunctions or breakdowns affecting the safe operation of compaction or other equipment.

Regular maintenance and inspections of all rear loading compaction collection vehicles and their compacting mechanisms.

Specific, regular inspection of all safety interlocks, switches, and other protective devices to ensure that devices have not been disabled or bypassed.



IMPORTANT: If safety devices are bypassed or damaged, the truck must not be used until they are fully functional.



MORE INFORMATION: Further information on LOTO procedures can be found in section 14 of these guidelines.

Cleaning, maintenance, modifications and repair

Before any internal compactor cleaning is undertaken, a safety prop and lockout procedures shall be used.

Maintenance shall be undertaken frequently, at scheduled times.

Operating instructions must be available for the use, cleaning and care of the unit or components.

Modifications should only be carried out by trained, competent and capable persons.

Risk assessments relating to any modifications must be conducted and recorded.

Training



THE LAW: As required by Section 9 of the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016, *A PCBU must ensure, so far as is reasonably practicable, that every worker who carries out work of any kind, uses plant of any kind, or deals with a substance of any kind that is capable of causing a risk in a workplace—*

(a) *either—*

(i) *has adequate knowledge and experience of similar places, and work, plant, or substances of that kind, to ensure that the worker carrying out the work, using the plant, or dealing with the substance is not likely to adversely affect the health and safety or cause harm to the worker or any other person; or*

(ii) *is adequately supervised by a person who has that knowledge and experience; and*

(b) *is adequately trained in the safe use of—*

- (i) *all plant, objects, substances, or equipment that the worker is or may be required to use or handle; and*
- (ii) *all personal protective equipment that the worker is or may be required to wear or use (Health and Safety at Work (General Risk and Workplace Management) Regulations, 2016).*

There are many methods of ensuring that workers receive appropriate training, some examples being:

- Provision of clear and concise safe operating procedures (SOPs) including vehicle checklists and corrective action follow-up
- Induction and periodic in-house training courses
- Specific health and safety training, e.g. use of plant and equipment, lockout-tagout and manual handling
- Use of manufacturing and supplier documentation (especially useful for maintenance)
- Ensuring that no worker disables or bypasses safety interlocks, switches, or other protective devices. The compactor should not be operated unless these devices are fully functional.
- Ensure your driver is aware and knows how to complete pre and post trip vehicle inspections, they are competent and trained in how to complete Daily (VCRs) Vehicle Condition Reporting. By recording any defects to be fixed, or maintenance to be followed up this will ensure your fleet/vehicle is managed, and safely maintained.

Modifications

Modifications shall only be carried out by trained competent and capable persons.

Where modifications occur, operating instructions must be available for the use, cleaning and care of the unit or components associated with the reconstruction.

Operating instructions shall include precautionary notices associated with the reconstruction or modification.

Risk assessments for the modifications must be completed and recorded.



MORE INFORMATION: Appendix 7 sets out examples of hazards/risks associated with waste collection and processing methods, along with recommended control measures. The following table sets out examples of additional hazards/risks associated with rear loading collection vehicles.

Table 8: Additional hazards/risks associated with rear loading collection vehicles

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification				Uncontrolled risk assessment			Controlled Risk Assessment			Development opportunities		Actions				
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
• Bin being hydraulically lifted	• Hit by moving objects	• Physical	• Workers • Members of the public	• Physical injury	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•							
								Isolate:	•							
								Engineering Controls:	• Two handed hold-to-run controls should be fitted							
								Administrative Controls:	• Only trained, competent and capable operators to undertake this activity • Check that the bin has been correctly placed onto the bin lifter BEFORE use • Operator to be at the side of the vehicle when activating control panel • Only once the bin has returned to ground level can the operator retrieve the bin from the rear of the vehicle							
								PPE:	•							
• Compacting	• Foreign object	• Physical	• Workers	• Physical injury	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•							
								Isolate:	• Guarding of hopper may be used							
								Engineering Controls:	• Use single cycle only - under no circumstance should continuous or automatic cycle be activated unless the system is fully closed							
								Administrative Controls:	• Operators to be clear of the compactor before activating compactor controls							
								PPE:	• Safety glasses should be worn							
• Compacting	• Mechanical entrapment	• Physical	• Workers	• Fatality • Physical injury	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•							
								Isolate:	•							
								Engineering Controls:	• Compacting control device to be two-handed 'hold to run' to prevent operator placing a hand close to pinch point							

Table 8: Additional hazards/risks associated with rear loading collection vehicles

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification				Uncontrolled risk assessment			Controlled Risk Assessment			Development opportunities	Actions				
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?	Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
								Administrative Controls: <ul style="list-style-type: none"> • Only trained, competent and capable operators to undertake this activity • Operators to be clear of the compactor before activating the compactor controls • Compactor should not be operated if runners are riding on the footplate • Follow company process and safe operating processes regarding this task 					•	•	•
								PPE:					•	•	•
• Ejection of load	• Mechanical entrapment (e.g. involving the compactor, bin lifter or moving tailgate)	• Physical	• Workers	• Fatality • Physical injury	•	•	•	Elimination:	•	•	•	•	•	•	•
								Substitution:	•				•		
								Isolate:	•				•		
								Engineering Controls:	<ul style="list-style-type: none"> • The tailgate should have a minimum 20-second descent (closing) time • An audible alarm to be fitted to the vehicle to indicate that the tailgate is in motion or closing 				•		
								Administrative Controls:	<ul style="list-style-type: none"> • Driver to check that all persons are clear of rear of tailgate before activating the ejector lever • Vehicles should be stationary when tailgates are lowered • No person may walk or work under a raised tailgate unless it is safely propped • Follow site rules, process and procedures if disposing at a nominated site. 				•		
								PPE:	•				•		
• Loading, compacting or discharging load	• Mechanical entrapment (e.g. involving the compactor, bin lifter or moving tailgate)	• Physical	• Workers	• Fatality • Physical injury	•	•	•	Elimination:	•	•	•	•	•	•	•
								Substitution:	•				•		
								Isolate:	<ul style="list-style-type: none"> • Where fitted, guards should comply with AS4024 or a similar standard 				•		
								Engineering Controls:	<ul style="list-style-type: none"> • Appropriate handholds to be installed and workers trained in their use • Emergency stop devices to be fitted where they are easily 				•		

Table 8: Additional hazards/risks associated with rear loading collection vehicles

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification				Uncontrolled risk assessment			Controlled Risk Assessment			Development opportunities	Actions						
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?	
									accessible, be clearly labelled and visible, and tested on a regular basis								
								Administrative Controls:	<ul style="list-style-type: none"> Only trained, competent and capable operators to undertake this activity Bin lifter to be carried in 'stowed position' when travelling Never reach into or climb into the hopper, even when the compactor is not operating Tailgates should be fully closed and locked before operations begin Compactor should not be operated if runners are riding on the footplate Use appropriate signage to indicate hazard 								
								PPE:	<ul style="list-style-type: none"> 								
<ul style="list-style-type: none"> Removal of jammed objects 	<ul style="list-style-type: none"> Clearing debris from raised tailgate 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers 	<ul style="list-style-type: none"> Fatality Physical injury 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	Elimination:	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	
								Substitution:	<ul style="list-style-type: none"> 								
								Isolate:	<ul style="list-style-type: none"> 								
								Engineering Controls:	<ul style="list-style-type: none"> Safety props to be used 								
								Administrative Controls:	<ul style="list-style-type: none"> Appropriate lockout procedures should be used to manually unblock a jam Use long-handled brooms and implements to scrape debris from the raised tailgate No person shall walk or work beneath a hydraulically operated raised tailgate unless it is securely propped 								
								PPE:	<ul style="list-style-type: none"> 								
<ul style="list-style-type: none"> Removal of jammed objects 	<ul style="list-style-type: none"> Mechanical entrapment 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers 	<ul style="list-style-type: none"> Physical injury Fatality 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	Elimination:	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	
								Substitution:	<ul style="list-style-type: none"> 								
								Isolate:	<ul style="list-style-type: none"> 								
								Engineering Controls:	<ul style="list-style-type: none"> 								

Table 8: Additional hazards/risks associated with rear loading collection vehicles

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity. This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification				Uncontrolled risk assessment			Controlled Risk Assessment			Development opportunities	Actions					
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?	Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?	
								Administrative Controls: <ul style="list-style-type: none"> • Avoid overfilling hopper • Appropriate lockout procedures should be used to manually unblock a jam • Only trained, competent and capable operators to undertake these activities 					•	•	•	
								PPE:					•	•	•	
• Riding/ mounting/ dismounting vehicle	• Slip, trip, fall	• Physical	• Workers	• Fatality • Physical injury	•	•	•	Elimination:	•	•	•	•	•	•	•	
								Substitution:	•							
								Isolate:	•							
								Engineering Controls:	<ul style="list-style-type: none"> • Running boards should be designed to provide for the safety of the runner/s • A vertical kick plate of at least 25mm high to be provided to prevent feet from slipping and mud from road being sprayed onto surface rendering it slippery • Reversing beepers and lights • Mirrors/CCTV should be fitted to improve driver visibility to rear of vehicle 							
								Administrative Controls:	<ul style="list-style-type: none"> • Only trained, competent and capable persons are permitted to ride on running boards • No person to travel on the outside of a vehicle if it is travelling in excess of the recommended speed of 25kph • Operators should maintain three points of contact when travelling on a vehicle • Never stand on the step while the vehicle is reversing • Only mount/dismount while the vehicle is stationary or moving at a slow walking pace • Signed training records/ SOPs should be in personnel files prior to operation of the vehicle 							
								PPE:					•	•	•	

34. Side loading collection vehicles

There are several different types of side loading collection vehicles in operation throughout New Zealand. However, all vehicles have a hydraulically operated arm on the left-hand side of the cab. Some vehicles may also have dual controls.



Figure 13:

Example of a side loading collection vehicle



IMPORTANT: All truck drivers **must be** licensed, competent, capable and trained to work this type of vehicle. The Waka Kotahi New Zealand Transport Agency (NZTA) requirements on road operating rules, regulations and practices **must** also be adhered to. All drivers who operate this vehicle must hold a Kerbside Collection Traffic Leader qualification, as per the Waka Kotahi New Zealand Transport Agency's Code of Practice for Temporary Traffic Management.

Side loading vehicles collect waste using a hydraulic arm operated by a joystick. On some vehicles, this arm comes down and out to grab the MGB, while on other vehicles the arm moves straight out from the chassis to uplift the MGB. Extreme care must be taken when operating the Bin Lifter that the work safety area is clear of all by-standers and persons and any road user. The MGB is then emptied into the hopper and returned to its original

position safely. Once the bin is released, the vehicle moves along the kerbside to the next one. The driver should never try to travel with the bin lifter slide extends – the driver then repeats the process, while ensuring all hazards are managed while in collection mode.

When the truck body is full to capacity, the compacted waste is emptied via the tailgate at a waste disposal facility.

Activities involved with side loading collection vehicles

The main types of activities for which hazards **must** be identified and control mechanisms developed in relation to side loading collection vehicles include emptying of recycling or refuse waste into the vehicle body; compaction; unloading the waste; and cleaning, maintenance, and repair.



IMPORTANT: A risk assessment should be undertaken to establish the most appropriate method of compaction operation, taking into account people in close proximity. Examples of compaction methods include two-handed compaction, hold-to-run and interrupted cycling. Compaction controls **must** only be operated by a competent and capable person.

Lockout procedures for side loading compaction collection vehicles

Lockout instructions for each side loading collection vehicle **must** be provided to enable activities to be conducted safely. Power to moving parts **must** always be locked out.

Hydraulic accumulators may be used in some bin lifter systems to automatically lift the bin in the reverse mode. Where an accumulator is used, provision should be made to release the associated stored energy. Suitable warning notices shall be provided, e.g. *'Release stored energy in the accumulator before carrying out any servicing or maintenance work'*.

Situations requiring lockout include:

Repairing any mechanical malfunctions or breakdowns affecting the safe operation of compaction or other equipment.

Regular maintenance and inspections of all side loading collection vehicles and their compacting mechanisms.

Specific inspections of all safety interlocks, switches, and other protective devices to ensure that devices have not been disabled or bypassed.



IMPORTANT: If safety devices are bypassed or damaged, the truck must not be used until they are fully functional.



MORE INFORMATION: Further information on LOTO procedures can be found in section 14 of these guidelines.

Cleaning, maintenance, modifications, and repair

Before any internal compactor cleaning is undertaken, full lockout procedures shall be used.

Maintenance shall be undertaken frequently, at scheduled times.

Operating instructions must be available for the use, cleaning and care of the unit or components.

Modifications shall only be carried out by trained, competent and capable persons.

Risk assessments relating to any modifications must be conducted and recorded.

Training



THE LAW: As required by Section 9 of the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016, *A PCBU must ensure, so far as is reasonably practicable, that every worker who carries out work of any kind, uses plant of any kind, or deals with a substance of any kind that is capable of causing a risk in a workplace—*

(a) *either—*

- (i) *has adequate knowledge and experience of similar places, and work, plant, or substances of that kind, to ensure that the worker carrying out the work, using the plant, or dealing with the substance is not likely to adversely affect the health and safety or cause harm to the worker or any other person; or*
- (ii) *is adequately supervised by a person who has that knowledge and experience; and*
- (b) *is adequately trained in the safe use of—*
 - (i) *all plant, objects, substances, or equipment that the worker is or may be required to use or handle; and*
 - (ii) *all personal protective equipment that the worker is or may be required to wear or use (Health and Safety at Work (General Risk and Workplace Management) Regulations, 2016).*

There are many methods of ensuring that workers receive appropriate training, some examples being:

Ensure that training is given to workers on operating vehicles with dual controls

- Provision of clear and concise safe operating procedures (SOPs) including vehicle checklists and corrective action follow-up
- Induction and periodic in-house training courses
- Specific health and safety training (e.g. use of plant and equipment, lockout-tagout and manual handling with training details kept on record)
- Use of manufacturing and supplier documentation (especially useful for maintenance)
- Ensure your driver is aware and knows how to complete pre and post trip vehicle inspections, they are competent and trained in how to complete Daily (VCRs) Vehicle Condition Reporting. By recording any defects to be fixed, or maintenance to be followed up this will ensure your fleet/vehicle is managed, and safely maintained. Ensure that no worker disables or bypasses safety interlocks, switches or other protective devices.

Modifications

Modifications shall only be carried out by trained, competent and capable persons.

Where modifications occur, operating instructions must be available for the use, cleaning and care of the unit or components associated with the reconstruction.

Operating instructions shall include precautionary notices associated with the reconstruction or modification.

Risk assessments of the modifications must be completed and recorded.



MORE INFORMATION: Appendix 7 sets out examples of hazards/risks associated with waste collection and processing methods, along with recommended control measures. The following table sets out additional hazards/risks associated with side loading collection vehicles.

Table 9: Additional hazards/risks associated with side loading collection vehicles

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Table 9: Additional hazards/risks associated with side loading collection vehicles																
Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment				Development opportunities	Actions			
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
<ul style="list-style-type: none"> Driving along kerbside during standard operation 	<ul style="list-style-type: none"> Damage to kerbside, plant/equipment, and injury to pedestrians due to unfamiliar left-hand driving position and use of the joystick to manoeuvre the lifter 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers Members of the public Property damage 	<ul style="list-style-type: none"> Property damage Physical injury 	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•							
								Isolate:	•							
								Engineering Controls:	<ul style="list-style-type: none"> Orange flashing beacon to be switched on during kerbside collection 							
								Administrative Controls:	<ul style="list-style-type: none"> Safe operating procedures are in place – workers are competence annual assessments are held. Only trained, competent and capable drivers to undertake this activity All mirrors, cameras, and video screens to be in good working order and able to provide an unrestricted view Driver to check that no person or object is between vehicle and MGB prior to using joystick (safe zone) Lifter to be in returned to 'fully parked' position before moving on to next MGB 							
PPE:	•															
<ul style="list-style-type: none"> Driving along kerbside during standard operation 	<ul style="list-style-type: none"> Striking overhead or side objects or pedestrians due to lifter position being raised when driving 	<ul style="list-style-type: none"> Physical 	<ul style="list-style-type: none"> Workers Members of the public 	<ul style="list-style-type: none"> Property damage Physical injury 	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•							
								Isolate:	•							
								Engineering Controls:	•							
								Administrative Controls:	<ul style="list-style-type: none"> Safe operating procedures are in place – workers are competent, annual assessments are held. Only trained competent and capable drivers to undertake this activity Under no circumstances should the vehicle be driven along the kerbside 							

Table 9: Additional hazards/risks associated with side loading collection vehicles

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification				Uncontrolled risk assessment			Controlled Risk Assessment			Development opportunities	Actions						
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?	
								with the lifter in a raised position									
								<ul style="list-style-type: none"> • Driver to be aware of any overhead lines or objects on route • Driver to be aware of the total height of the vehicle and lifter in a raised position • Staff are trained in emergency procedures 									
								PPE:	•					•	•	•	
• Ejection of load	• Persons being struck by tailgate when being raised at end of ejection cycle	• Physical	• Workers	• Fatality • Physical injury	•	•	•	Elimination:	•	•	•	•	•	•	•	•	•
								Substitution:	•								
								Isolate:	•								
								Engineering Controls:	<ul style="list-style-type: none"> • Vehicles to be fitted with an audible warning alarm to indicate that tailgate is closing • Safe operating procedures are in place – workers are competent, annual assessments are held • All tailgate doors should have a minimum 20-second descent (closing) time 								
								Administrative Controls:	<ul style="list-style-type: none"> • Vehicles should be stationary when tailgates are lowered • No person may walk or work under a raised tailgate unless it is safely propped 								
								PPE:	•								
• Retrieval of MGB fallen into hopper	• Unplanned confined space entry	• Physical	• Workers	• Fatality • Physical injury	•	•	•	Elimination:	•	•	•	•	•	•	•	•	•
								Substitution:	•								
								Isolate:	•								
								Engineering Controls:	•								
								Administrative	• Safe operating								
								PPE:	•								

Table 9: Additional hazards/risks associated with side loading collection vehicles

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment			Development opportunities	Actions				
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?	Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?	
								Controls: procedures are in place – workers are aware of Risks and this area is prohibited. <ul style="list-style-type: none"> Under no circumstances should the driver climb into the body to retrieve the MGB until the vehicle has been fully locked out and tagged out and additional assistance is at hand. Refer also to company confined space and working at height procedures Inform depot of incident and await advice Finally, when appropriate, attempt to retrieve MGB using tools provided 								
								PPE:					•	•	•	

35. Compactors, Bin lifters and Balers

Introduction

Waste management companies often use additional equipment to manage wastes more efficiently on site. They can include compactors, balers, and bin lifters. The compactor section contains public sector information licensed under the UK Open Government Licence v3.0.

Compactors

These are used to compress waste or recyclable materials so more can be stored in the bin for increased transport efficiency. Compactors are designed to push waste into a bin. Usually transported by a Huka or gantry truck. They are often situated on retail premises, offices, commercial sites or RTS's. Most are stored in areas with public access.



Compactor bin with built in bin lifter



Applicable guidance

- New Zealand Guidelines for Refuse Collection 1999, Processing and Disposal Equipment – stationary compactors: safety requirements ISBN 0-477-03618-X (not in caps)
- USA ANSI Z245.2-2013 Stationary Compactors – Safety Requirements for Installation, Maintenance and Operation

- UK WISH guidance for compactors WASTE-08 2015
- AS/NZS 4024.1204:2019 Safety of machinery - Electrical equipment of machines - Part 1204: General requirements

Hazards

Serious injury or death can result if the machine is then operated, or when containers are collected or replaced. Injury can be caused by inadequate guarding and by unsafe systems of work, including inadequate isolation/lock-off procedures when changing skips, clearing blockages, when wastes are being loaded into the waste hopper by members of the public at RTS's etc.

Where compactors are located in areas where the public may, or will, have access, such as retail and commercial premises service areas and civic amenity sites, there is the potential for members of the public and others (children and adults) to gain unauthorised access to the dangerous parts of compaction/packer equipment.

The operators of compactor units at retail and similar premises may not be familiar with the general principles of machinery safety, in the way that a waste management operative may be. This may include temporary workers and others whose previous exposure to machinery may be limited.

Risk Assessment

Compactors normally include a feed inlet, a compaction chamber and an outlet to a container/skip that receives the waste. A ram compresses material under automatic or manual control into a container/bin/skip which is later removed for emptying off site. On some portable compactors the waste container is integral to the compaction unit. The feed inlet to the compaction chamber usually includes a hopper that can be loaded by: hand, lift truck, bin lift mechanism for lifting and tipping wheeled bins containing waste, conveyor system, or chute.

It is good practice to risk assess the main machinery/equipment associated with compactors. These include, but are not limited to risks from:

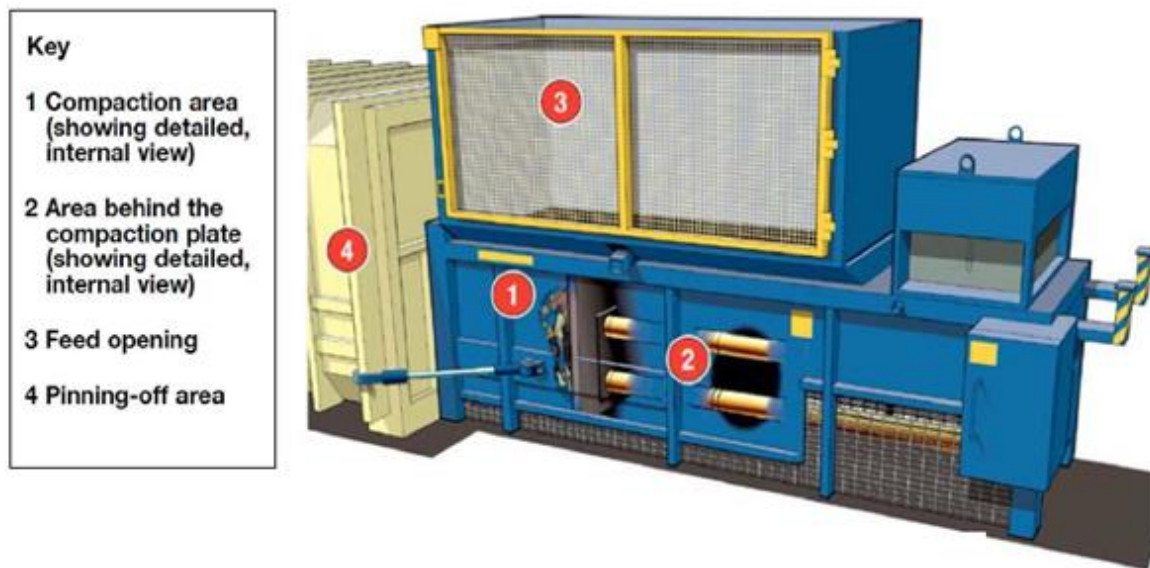
- Compaction rams (both forward and reverse motion of the ram)

- Other moving parts
- Electrical safety
- Bin lifters
- Closing/opening lids/doors
- Slips and trips around the compactor
- Maintenance/servicing/lockout of the compactor

The image below shows the principal machinery danger areas on a compactor unit.

In addition, container/skip exchange activities, ie the risk of being: struck by the vehicle or container; or being trapped or crushed between the container and a fixed object, eg a wall, particularly if the container is in a restricted area.

Figure 1 The principal danger areas of a typical compactor



Compactor danger areas

It is recommended to take account that compactors are often positioned in areas remote from frequent and direct supervision, and this can influence the safety of site employees, truck drivers and members of the public. It is recommended that your risk assessment addresses:

- Their positioning – how secure is the area, do persons other than those authorised to use the compactor potentially have access etc
- The activities that do or could potentially take place at them (including bin servicing, possible interactions with the public etc) – could members of the public and other unauthorised persons have access during bin changes etc

Your assessment should also include other risks, which are not covered in this guidance and may be revealed during your risk assessment, including:

- Transport and traffic risks associated with truck servicing the compactor, changing bins etc
- Falls from height if persons climb onto the compactor
- Slips and trips in the area around the compactor
- Manual handling issues associated with loading wastes, changing bins etc

Work involving compactors should be monitored/inspected at appropriate intervals. This will help you identify potential flaws in your systems of work. For example:

- Do employees follow your agreed safe systems of work? If not, why not?
- Are your systems adequate to control the risk? Do they need revising?
- Have any changes occurred since your last risk assessment?
- Are your measures to exclude unauthorised access effective?

It is good practice to review your risk assessment regularly.

Control Measures

Safe site

It is good practice that compactor be located and positioned to avoid or minimise transport risks (such as access by waste vehicles to change bins) and access by unauthorised people. This is particularly important if the compactor is located in a public area, such as a shopping centre service area.

Providing lockable fencing around compactor units can be an effective way of preventing

unauthorised access. For example, placing a security fence around the area a compactor unit is located in with locked doors, the keys for which are only held by authorised persons. The height and design of such fencing should reflect the risks under foreseeable circumstances particular to the unit's location. Typically, 2-metre-high fencing is found at these units. Fencing should be difficult to climb, and any gaps provided to assist cleaning should be small enough to prevent unauthorised access. Fences and guards should be in accordance with the Machinery Guarding Standard 4024 ([Link to the standard above](#))

Consideration should be given to any existing security measures, such as traffic barriers to prevent access to retail premises service areas. However, such measures may effectively stop unauthorised vehicles, such as member of the public's cars, from entering but provide little block to pedestrians.

Adequate lighting will assist safe operation and may deter unauthorised access.

In areas where the public may have access, the doors to closed skips attached to compactors should be locked at all times when they are not in use, especially 'out of hours'.

Areas immediately around the unit should be kept free from obstructions, accumulated rubbish and other items which may interfere with bin exchange activities or may enable people to use them as a means of access to the dangerous parts, for example a pile of pallets which may defeat distances to waste load hopper designed to provide safe loading away from machinery hazards.

Safe Equipment

All dangerous parts of machinery should be adequately guarded. Guarding should take account of both routine use and foreseeable problems and misuse.

Where the equipment is in public areas, gaps in guarding and machine fencing (such as those provided for cleaning) should effectively prevent potential access by children. The 'standard' gap requirements in machinery safety standards may not be adequate for children who have smaller limbs and bodies and may be able to squeeze into gaps an adult could not.

All guarding provided to prevent access to the dangerous parts, and any interlocking devices fitted, should be adequately maintained.

Controls should be secured so that unauthorised operation is effectively prevented. Effective electrical isolation, lockable controls and/or dedicated key operation are methods commonly used to achieve this (see below on safe systems of work).

Where a bin lift is used to load the unit, the hoist-way should be fitted with a perimeter machine fence to prevent access during lift use. Since access is regularly required, doors/gates in this fencing should be fitted with interlocks to prevent access during hoist movement. Controls should be situated outside this enclosure away from bin lift movement and hold-to-run controls (where release of the control will arrest all machinery movement) are preferred.

Signs on compactor units need to be simple and bold (such as pictograms) to take account of possible use by those for whom English is not their first language.

Instructions on basic use need to be placed on the unit itself – users may not have easy access to operating manuals.

Safe System of Work

Good practice is to use your risk assessment to identify safe systems of work. In particular, safe systems of work should include (but not be limited to) two specific activities in which several serious, and fatal, accidents have occurred:

- Dealing with blockages
- Bin/container transfer and exchange activities
- Loading the hopper

There is a history of workers being killed while clearing blockages at compactors. Dealing with blockages should therefore be well thought out and subject to a written safe system of work.

In addition to your written safe system of work for clearing blockages, it is recommended that you have a permit-to-work system in place for access to the compaction chamber, ram and other dangerous parts of machinery.

Before attempting to clear any blockage, you should ensure that:

- As required, job safety analysis is issued and that it clearly sets out how the job should be done

- Operation of the equipment is prevented by isolating the electrical supply and effectively 'locking off' the machine controls. To prevent dangerous parts moving under gravity or residual pressure, it may be necessary to use physical chock or relieve stored pressure in fluid power systems before attempting to clear blockages. Likewise, any lifting equipment may need to be propped to prevent movement under gravity – hydraulic valves should not be trusted to prevent lift arm movement
- All guards, fencing etc are replaced before the equipment is reinstated

You may decide that you do not have sufficient expertise in-house, and therefore have to rely on specialist contractors, the supplier or other competent external party to deal with blockages.

Safe operators & training

Manufacturers and suppliers should provide information on the safe operation of packer units. This information should be used in your safe systems of work and be freely available to operators of compaction equipment.

Compactors should only be operated by competent, capable, and suitably trained staff. Training should cover operation, identifying and reporting defects, and what actions should be taken if a defect or blockage is found. To prevent blockages and problems during container removal and tipping of waste, training should include what materials are suitable/unsuitable as feedstock.

Signs and instructions on units should be maintained in a readable condition. Consider the special training needs of temporary or part-time workers, and those who may not have English as their first language.

It is good practice to carry out refresher training periodically and regularly monitor/review operations to ensure that safe working procedures are carried out and remain effective.

Bin lifters

Bin lifters are used to manage manual handling issues. They generally lift heavier weight bins into a skip or Huka bin. There are various sized lifters, and some are even directly attached to

compactors to feed into the hopper.



Large size bin lifter into a Huka bin



MGB bin lifter into a FEL bin



Bin lifter attached to compactor



Applicable Guidance

- New Zealand Guidelines for Refuse Collection 1999, Processing and Disposal Equipment – stationary compactors: safety requirements ISBN 0-477-03618-X (lower case)
- ANSI Z245.5-2013 Baling Equipment Safety Requirements for Installation, Maintenance and Operation
- AS/NZS 4024.1204:2019 Safety of machinery - Electrical equipment of machines - Part 1204: General requirements

Hazards

Bin lifter location is generally on a worksite away from the general public. Access on site to the lifter should be restricted in a compound or via a lockout system such as a keypad or key. This should only be accessible to trained workers.

Serious injury can result if the machine is then operated, or when containers are loaded or lifted. Injury can be caused by inadequate guarding and by unsafe systems of work, including inadequate guarding when loading bins, moving lifters (not locked into position), unsafe electrics, unsecure loads etc

Risk Assessment

It is good practice to risk assess the main machinery/equipment associated within lifters. These include, but are not limited to risks from:

- Lifting mechanism (can be electrical or manual)
- Electrical safety
- Tipping mechanism
- Quality of bin being lifted (damaged bin, overweight, has liquids/chemicals etc)
- Closing/opening lids/doors/interlocks/stop switches etc
- Slips and trips around the lifter (especially if connected by electrical lead)

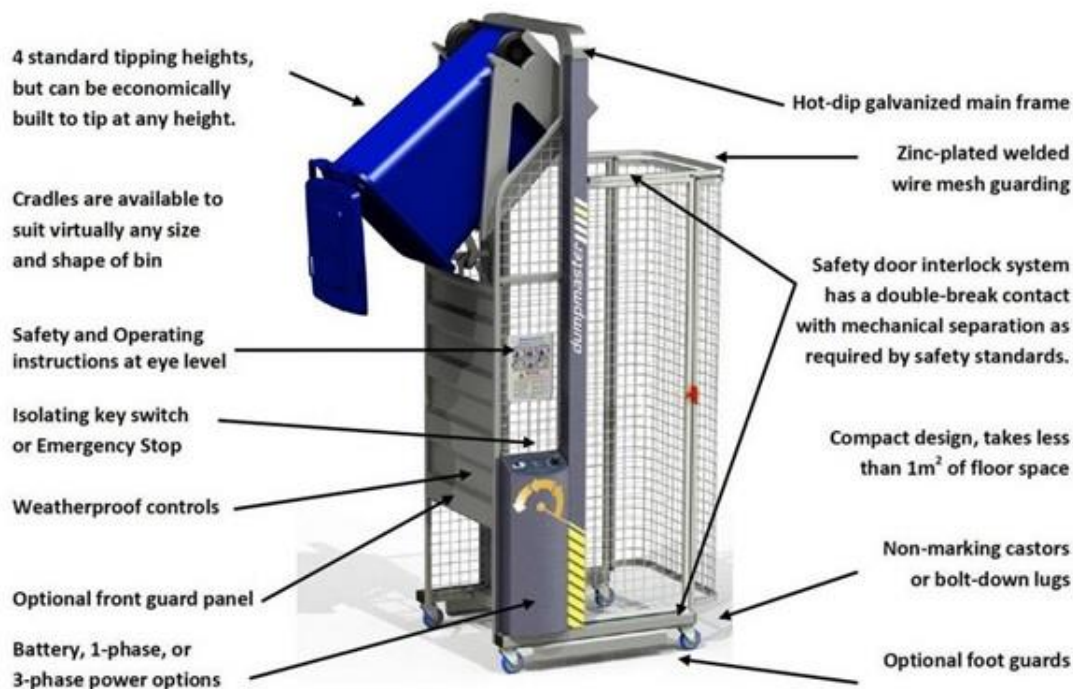
- Safety signage/instructions etc
- Wheel lockout/ lifter stability/ condition of flooring
- Manual handling issues associated with loading wastes, changing bins etc
- The positioning of the lifter – how secure is the area, do persons other than those authorised to use the bin lifter potentially have access etc?
- Hazards from tipping at height (breakages of contents such as glass bottles etc)

Work involving bin lifters should be monitored/inspected at appropriate intervals. This will help you identify potential flaws in your systems of work. For example:

- Do employees follow your agreed safe systems of work? If not, why not?
- Are your systems adequate to control the risk? Do they need revising?
- Have any changes occurred since your last risk assessment?
- Are your measures to exclude unauthorised access effective?

It is good practice to review your risk assessment regularly.

The image below shows the principal machinery danger areas on a bin lifter.



Bin lifter danger areas

Control Measures

Safe site

An effective way to prevent unauthorised access is to provide keys to authorised persons only. Consideration should be given to any existing security measures, such as traffic barriers to prevent access to retail premises service areas. However, such measures may effectively stop unauthorised vehicles, but consideration may be needed to prevent pedestrians from entering through the traffic barriers. Adequate lighting will assist safe operation and may deter unauthorised access.

Safe Equipment

All dangerous parts of machinery should be adequately guarded. Guarding should take account of both routine use and foreseeable problems and misuse. All guarding provided to prevent access to the dangerous parts, and any interlocking devices fitted, should be adequately maintained.

Controls should be secured so that unauthorised operation is effectively prevented. Effective electrical isolation, lockable controls and/or dedicated key operation are methods commonly used to achieve this. Signs on bin lifters units need to be simple and bold (such as pictograms) to take account of possible use by those for whom English is not their first language.

Instructions on basic use need to be placed on the unit itself – users may not have easy access to operating manuals.

Safe operators & training

Manufacturers and suppliers should provide information on the safe operation of bin lifter. This information should be used in your safe systems of work and be freely available to operators of compaction equipment.

Bin lifters should only be operated by suitably trained staff. Training should cover operation, identifying and reporting defects, and what actions should be taken if a defect or blockage is found.

Signs and instructions on units should be maintained in a readable condition. Consider the special training needs of temporary or part-time workers, and those who may not have English as their first language. It is good practice to carry out refresher training periodically and regularly monitor/review operations to ensure that safe working procedures are carried out and remain effective.

Balers

Balers compress the waste into a 'bale' so it is more dense and easy to store and/or transport. They are commonly used for plastics and cardboard. The baler generally wraps twine or metal cable/wire around the bale to keep its form.



Small cardboard vertical baler



Large scale cardboard horizontal baler



Applicable guidance

- New Zealand Guidelines for Refuse Collection 1999, Processing and Disposal Equipment – stationary compactors: safety requirements ISBN 0-477-03618-X (not caps)
- ANSI Z245.1-2017 Mobile Wastes and Recyclable Materials Collection, Transportation, And Compaction Equipment
- AS/NZS 4024.1204:2019 Safety of machinery - Electrical equipment of machines - Part 1204: General requirements

Balers follow similar principles to compactors as they act in the same way and have related hazards. They both use hydraulics to minimise the volume of the waste. Follow the same system for balers and in the compactor section.

The main difference is that smaller balers in sensitive areas, such as food production, will be run on a pneumatic system (air) rather than a hydraulic system (oil). A compressor will create

pressurised air and it is stored in a tank for use by the baler. The hazards of pressurised system should be included in the risk assessment.

Table 10: Additional hazards/risks for bailers, bin lifters and compactors

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment				Development opportunities	Actions			
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who or what might be harmed / damaged?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
• Loading waste into the equipment	• Musculoskeletal • Lifting excessive weight	• Physical	• Workers	• Physical injury	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•					•	•	
								Isolate:	•					•	•	
								Engineering Controls:	• Use bin lifting devices to get waste into the compactor hopper • Key or pad operation to limit access to compactor					•	•	•
								Administrative Controls:	• Training in manual handling • Training in the plants SOP and the operators guide • Ongoing workplace assessments and/or observation					•	•	•
								PPE:	•					•	•	
• Electrics	• Electrocutation	• Physical	• Workers • Members of the public	• Physical injury • Fatality	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•					•	•	
								Isolate:	• Have equipment locked away with fencing or accessible with a key or keypad					•	•	
								Engineering Controls:	• Install cut-off switches for inspection panels • Install RCD					•	•	
								Administrative Controls:	• Use certified electricians/engineers for the equipment. • Regular servicing of the equipment • Document visual inspections before use. Include equipment in H&S site inspections • Use signs to display electrical hazards • Tag and test electrics • LOTO system when working on the system by suitably qualified electrician					•	•	

Table 10: Additional hazards/risks for bailers, bin lifters and compactors

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Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment				Development opportunities	Actions			
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								PPE:	•					•	•	•
• Moving parts	• Crushing/ amputation of limbs	• Physical	• Workers	• Physical injury • Fatality	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•							
								Isolate:	• Cage around bin lifters with proxy switch • Moving parts covered where possible • Door on hopper with isolation/proxy switch							
								Engineering Controls:	• Hopper into compactor at shoulder height (approximately) • Emergency stops							
								Administrative Controls:	• Use of LOTO when servicing • • Training in the plants SOP and the operators guide • • Serviced only by qualified electrician/engineer • • Ongoing workplace assessments and/or observations • • Don't overload bins being lifted • • Clear signage of dangers							
PPE:	•															
• Dangerous wastes in equipment	• Struck by ejected waste • Splashed with unknown liquids • Dust from waste • Explosion from pressurised vessels	• Physical • Chemical • Biological	• Workers	• Physical injury • Infection	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•							
								Isolate:	• Additional screening to protect against splashes etc •							
								Engineering Controls:	• Two hands to operate – places operator out of the							

Table 10: Additional hazards/risks for bailers, bin lifters and compactors

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									way.							
								Administrative Controls:	<ul style="list-style-type: none"> Signs to say what waste is allowed/not allowed. Good alternative management of chemical, biological & pressurised wastes Training of workers who use the equipment in waste acceptance Strict management of who can use the compactor 							
								PPE:	<ul style="list-style-type: none"> Where wet wastes being compacted then goggles/safety glasses/gloves/ overalls (depends on waste types) 							
• Hydraulic oil	• Blown or leaking hydraulic hoses	<ul style="list-style-type: none"> Physical Chemical Environmental 	<ul style="list-style-type: none"> Workers Members of the public 	• Physical injury	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•							
								Isolate:	•							
								Engineering Controls:	<ul style="list-style-type: none"> Regular servicing of the equipment by suitable competent and capable engineer 							
								Administrative Controls:	<ul style="list-style-type: none"> Training in spill management Include plant in H&S site inspections Have hydraulic oil SDS available Do not site plant near stormwater drains if possible 							
								PPE:	•							
• Bin lifter stability	• Bin lifter falling over causing harm or damage	• Physical	<ul style="list-style-type: none"> Workers Members of the public Property damage 	<ul style="list-style-type: none"> Physical injury Property damage 	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•							
								Isolate:	<ul style="list-style-type: none"> Keep lifter away from the public and away from other 							

Table 10: Additional hazards/risks for bailers, bin lifters and compactors

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									equipment							
								Engineering Controls:	<ul style="list-style-type: none"> Lock wheels when used. If static, then bolt bin lifter down. 					•	•	•
								Administrative Controls:	<ul style="list-style-type: none"> Training in correct use of bin lifter Good bin lifter SOP Safety observations using the bin lifter (safe positioning) Lifter on level ground Don't overload bins being lifted 					•	•	•
								PPE:	•					•	•	•
								Substitution:	•					•	•	•
								Isolate:	•					•	•	•
								Engineering Controls:	•					•	•	•
								Administrative Controls:	•					•	•	•
								PPE:	•					•	•	•

36. Pandemic Management within your Business Continuity Plan (BCP)



ACTION POINT: The following questions will help PCBUs develop the pandemic management within their BCP.

Purpose of this Plan

- To provide assurance to customers that the business has a sound safety plan to manage risk during a pandemic.
- To ensure compliance with the Health and Safety at Work Act 2015 during a pandemic.

Business Continuity Planning Process



What needs to be done and who is responsible?

- What will be done to manage risks resulting from restarting business after a pandemic?
- How will you ensure all your employees know how to keep themselves safe from exposure?
- How will the business manage a large-scale absenteeism?
- How will you gather information on the wellness of your workers to ensure that they are safe to work?
- How will you operate your business and workplace in a way that keeps employees and others safe from exposure?
- How will you manage an exposure or suspected exposure?
- How will you evaluate whether your work processes or risk controls are effective?
- How do these changes impact on the risks of the work that you do?
- How will you manage prevention or delay in the provision of services due to widespread infection of the population?
- How will you work with the clients, applicable agencies such as Ministry of Health, Ministry of Business, Innovation and Employment (MBIE) and Civil Defence to work collaboratively to best manage your response.

Risk Description	Risk Score	Impact of loss (Cost)	Recovery time objective	Contingency Plans
Impact on site or facility				Alternative site Relocation to temporary facilities
Impact on vehicles and fixed plant				Rental or hire vehicles Reallocation from other branches Pool fleet
Impact on communications, data, or IT				Back up systems
Impact on human resources				Identification of critical resources It is recommended to have adequate succession planning
Impact on customer or suppliers				Alternative suppliers identified

37. Material recovery facilities

A material recovery facility (MRF) is a specialised plant that uses a combination of mechanical and manual sorting processes to separate and prepare bulk recyclable materials for sale. Recyclables are generally collected as part of a kerbside collection service and may include glass bottles, steel or aluminium cans, paper and cardboard, and plastic containers.⁴ Some collections use a commingled methodology, which might include:

- All materials commingled
- All materials except glass, co-mingled
- Separate glass collection, separate paper and cardboard collection and all other materials commingled

Operators should have a clear understanding of the materials coming into their facilities for processing. This includes the type of material, the volume involved as well as levels of potential contamination and output. This will ensure that the range of hazards and risks to worker health and safety arising from facility operations are adequately managed.



⁴ WasteMINZ Resource Recovery Park Design Guide August 2008



Figure 14:

Examples of material recovery facilities



IMPORTANT: Separate chapters in these guidelines relate to resource recovery parks, material recovery facilities and refuse transfer stations. Operators should ensure they apply the correct section of the guidelines to their facility. If you have a pit on site, please refer to the refuse transfer station module.



THE LAW: Operators of MRFs **must** ensure they are aware of, and comply with, relevant legislation, approved codes of practice, standards and guidelines. This includes but is not limited to:

- Health and Safety at Work Act 2015
- Electricity Act 1992
- Building Act 2004
- Hazardous Substances and New Organisms Act 1996
- Land Transport Rule: Dangerous Goods 2005



MORE INFORMATION: Further information on legislation can be found in section 3 and Appendix 8 of these guidelines.

Design and operations

- The primary aim of 'safety in design' is to identify and manage risks. Safety in design is a process that integrates hazard identification and risk assessment methods early when designing the material recovery facility; to eliminate or minimise the risks of injury to those who will construct, operate, maintain, decommission, and demolish the asset.
- The opportunity to eliminate a hazard or risk in the early design stages by involving all stakeholders, and considering the life cycle of the project, is recommended.



PROSECUTIONS:

An employee lost his arm whilst operating a baling machine which baled plastic and metal for recycling. After noticing an item of a different grade of plastic, the worker attempted to retrieve it from the baling machine but caught his sleeve, leading to his arm being crushed as the baler operated. The company was fined \$40,000 and ordered to pay reparation of \$50,000.

A forklift operator was fatally injured after being crushed by bales of paper, each weighing more than half a tonne. An investigation by the Department of Labour found that the company's stacking procedures for recycled paper were at fault. The company did not have a code of practice for stacking, despite employee concerns about the height of stacks. The stack that fell was leaning dangerously and at seven bales high, was higher than Department of Labour guidelines allow. The employee was found face down, two and a half metres from the forklift he had been using. The machine was in reverse gear with its engine still switched on. It was unclear what the employee had been doing at the time of the accident. However, the Department of Labour concluded that the employee might have survived had he followed basic safety procedures and stayed inside the protective cage of his machine.

The company was fined \$35,000 and ordered to pay reparations of \$40,000 to the family, in addition to \$20,000 the company had already tendered. It has since introduced detailed safe stacking guidelines.

Activities involved with Material Recovery Facilities

- Site access is usually via a weighbridge.
- Recyclable materials are dropped off by a variety of collection trucks or delivered in bulk.
- A variety of mobile plant is used around the facility to unload, move, and store recyclable materials. This might include forklifts, bobcats, and loaders.
- Materials are delivered to a single point and transferred to a conveyor system in preparation for sorting.
- Contaminated materials can be separated at the collection point, on arrival at the MRF or during the processing phase.
- Materials are sorted using a combination of conveyors which feed into baling machines or stockpiles. One method of separating items is by personnel removing materials as they travel along a conveyor system; other methods include combinations of automated separation including optical, magnetic, eddy current, and air-assisted automated separation technology.
- Once materials are sorted and baled, where applicable, they are likely to be stored on site to await transport off site. Bulk recyclable materials may sometimes be moved around the site to meet storage needs of the facility.
- Plant and equipment undergo regular cleaning and maintenance to ensure efficiency, smooth running, and the control of hazards such as fire.

Hazards

The wide range of hazards associated with the operation of MRFs include (but are not limited to):

- Hazards associated with stationary and mobile plant and equipment, which may include balers, conveyors, compactors, forklifts, excavators, tractors or loaders and trucks.
- Stationary equipment which introduces the risk of pinch and crushing points.

- Processing materials through a MRF creates various hazards such as a dusty working environment and sharp edges arising from steel can lids, broken glass and plastic.
- A MRF may receive a range of contaminated and non-recyclable materials which includes hazardous substances, dangerous goods, sharps, animal and medical/veterinary waste and general refuse.
- Poor ergonomics (e.g. resulting from conveyor height, width and speed; sorting station setup; and workflow).
- Environmental health hazards such as noise, fumes, exhaust, dust, and lighting.
- Site traffic management including delivery, site vehicle movements, material load-out and reversing vehicles.
- Pedestrian and vehicle interaction created by site traffic, including risks associated with customer and operator deliveries, material load-out, excessive speed, reversing vehicles and site tours.
- Manual handling such as repetitive sorting, lifting and twisting movements while sorting.
- Stacking and storage requirements for stability of bales or pallets (maximum height).
- Fire arising from combustible materials including paper and cardboard, plastics, LPG cylinders, batteries and explosives. Additional sources of combustion may include maintenance activities involving hot work, discarded cigarettes and heat caused by mechanical and electrical sources.
- Poor housekeeping including lack of cleanliness, spillage of materials off conveyors, residual detritus, slippery surfaces, poor organisation of materials and clutter.
- Unprotected edges such as stairways, pits or raised tipping platforms, and negotiating obstacles and terrain. Walking through and around stockpiles, baled material, uneven surfaces, pits or tunnels may also create a significant slip, trip or fall risk.
- Unprotected edges or working at height when undertaking cleaning, modifying and maintenance activities.
- Actions or behaviour of visitors including customers, contractors, commercial operators, tour groups and children.
- Pests including birds, cats, wasps and rodents.

- Magnets and eddy currents have a very high magnetic current that can have a harmful effect on pacemakers.
- Conveyor speeds greater than 10 metres per minute can lead to motion-sickness-like symptoms in operators working perpendicular to the belt.⁵
- Working in confined or restricted spaces.
- Weather conditions (e.g. temperature, humidity, light, wind-blown particles and objects).
- Use of compressed air and high-pressure water.
- Multiple business operations on one site.



ACTION POINT: All hazards **must** be identified, assessed, controlled, recorded, and reviewed regularly. Workers should regularly be reminded of all relevant hazards and the controls in place.

Recommended good practice controls



ACTION POINT: The following measures will help PCBUs meet legal and good practice requirements:

Plant and equipment

- Stationary and mobile plant and equipment should be used for the purposes for which it was designed. Users **must** be licensed, trained, and authorised to operate specific plant; all equipment should be maintained in accordance with manufacturer's

⁵ Health and Safety Executive, December 2012, www.hse.gov.uk/pubns/geis4.htm. Conveyor Belt Workstation Design

recommendations and certified, where necessary. Operating procedures should describe the safe and correct use of the plant or equipment.

- Guarding, interlocking systems, lockout-tagout procedures, warning beacons and audible warning devices should all be considered as appropriate hazard controls for plant and machinery at a MRF (e.g. for conveyors and baling machines). For further information, refer to Australian Standard AS 4024 Safety of Machinery.
- A permit system for repairs and maintenance (e.g. hot work, confined/restricted spaces and working at height).
- Methods for protecting workers while working at heights may include scaffolding, handrails, work positioning systems and fall restraint or arrest systems.
- Training and Personal Protective Equipment (PPE) should be provided for staff using compressed air.
- Signage and information, pre-employment health assessments, induction and training are to be provided to ensure all persons on site are aware of the existence of magnetic, eddy current and optical sorting plant that could adversely affect health or medical conditions.

Handling of materials

- Workers who are required to handle materials and/or waste should have appropriate vaccinations to protect against the risk of infection.
- Appropriate PPE **must** be provided to minimise the risk of exposure to noise, dust, sharps, medical wastes, and other identified hazards.
- Adherence to correct manual handling practices is essential to minimise risks to operators. Repetitive movements, lifting or moving items, twisting movements and over-reaching should be managed through the implementation of suitable controls. These controls might include the use of mechanical lifting devices, revising sorting station setup, job rotation, manual handling training and PPE.
- Sorting stations, conveyors and benches should be designed and organised to ensure they allow enough space to perform all tasks. They should also be of a suitable height and width for each worker.

- Activities should be reviewed in terms of their impact on each other to ensure workflow does not create additional hazards.
- Conveyor speed should be managed to reduce potential harm due to repetition and motion sickness.



IMPORTANT: There is no maximum safe level for lifting specified in employment or health and safety legislation. This is because the load imposed on a person by lifting something depends on factors such as the posture used to lift the weight, the grip the person can get on the weight, the number of times an hour they lift, the shape and size of the load and the starting and ending heights of the lift. Different people have different tolerances; what is manageable for one person, therefore, may be too heavy for another.



MORE INFORMATION: Refer to Section 16 of these guidelines for more information on manual handling.



MORE INFORMATION: The assessment tools in the Code of practice for manual handling 2001 provide further guidance regarding the completion of a manual handling risk assessment.

Housekeeping and site management

- A suitable site traffic management plan should be developed to ensure the safe passage of vehicles and pedestrians around the site. This plan should address hazards associated with all vehicle movements on site, including mobile plant. Operators should consider the use of a spotter or points-person for reversing vehicles, and vehicles raising their hoists. Management of speed, traffic flow and pedestrian movements should all be considered. Clear separation of mobile plant and pedestrians should be factored into the site layout design.
- Items that are stacked or stored should follow an appropriate storage plan which includes details on maximum bale heights and stability of stored items and stockpiles.

- MRF operators should ensure housekeeping practices are implemented to maintain a safe workplace. This includes keeping walkways and access ways clear, storing materials safely to prevent stockpiles spilling out of storage bays, cleaning up spills immediately after they occur and keeping emergency exits and emergency equipment clear of stored items and debris. Care should be taken to avoid the accumulation of potentially flammable dusts generated by the handling and processing of paper and cardboard.
- Appropriate PPE **must** be provided to minimise the risk of exposure to noise, fumes, dust, sharps, irritants, medical waste, and other identified hazards.
- Site security and fencing should be in place to prevent unauthorised access.
- Suitable clothing should be worn by workers to manage body temperature in extreme weather conditions adequately. Workers should ensure they take on nutritious foods and adequate water for hydration.
- Facilities should be designed to ensure hazards created by weather conditions are suitably controlled. This includes the ability to control temperature, air flow, wind-blown dust and particles, and to provide adequate lighting.
- Systems should be in place to protect the personnel and the site from fire including alarm systems, sprinklers, extinguishers and hoses, and a suitable emergency plan and evacuation procedure which is known by all workers on site.
- Pest eradication plans and systems should be in place.
- Operators should collaborate on hazard management and emergency procedures when there are multiple business operations on one site.
- Systems to identify and control combustible materials such as paper, cardboard and plastic should be implemented. This might include training of staff, the provision of fire prevention and firefighting equipment and emergency plans. Materials should not be stacked outside against the wall of the building. A monitored alarm system and internal sprinkler systems should also be considered.

Site visitors and contractors

- MRFs should have contractor management systems in place which include induction, hazard identification, accident reporting, and contractor monitoring and emergency evacuation.
- Visitors should be accompanied at all times. Commercial operators should be directed and monitored to ensure safe behaviour and assisted where necessary.
- Specific plans should be developed to manage tour groups, including the consideration of parent-to-child ratios.
- All site customers, visitors and tour groups should use all required PPE, including solid, closed toed shoes, high-visibility clothing, eye, and hearing protection (where required).
- Avoid exposing loose clothing to moving parts, tie back long hair and remove scarves.

Materials acceptance

- MRFs should have procedures for the identification, handling and disposal of non-complying materials (e.g. general refuse, non-recyclable materials, hazardous substances and dangerous goods).
- Clear guidance and training should be provided to site workers on waste acceptance criteria to ensure compliance with relevant requirements.
- Procedures should be available for the management of hazardous substances and dangerous goods in respect of storage, segregation, handling, and disposal.
- PPE **must** be issued where hazards have been unable to be eliminated or minimised. Workers **must** be required to use the equipment, and PCBUs **must** provide training in the use of any PPE supplied.



MORE INFORMATION: Refer to Section 18 of these guidelines for more information on Personal Protective Equipment.

Lockout procedures for vehicles and equipment used at material recovery facilities

- Lockout instructions for each piece of equipment and vehicle **must** be provided to enable activities to be conducted safely. Power to moving parts **must** always be locked out.
- Ensure requirements around lockout procedures form part of induction training for workers new to the place of work.

Situations requiring lockout may include:

Repairing any mechanical malfunctions or breakdowns affecting the safe operation of plant or equipment.

Regular maintenance and inspections of all pieces of plant, equipment, and vehicles.

Specific inspection and testing of all safety interlocks, switches, and other protective devices to ensure that devices have not been disabled or bypassed.



IMPORTANT: If safety devices are bypassed or damaged, the piece of equipment or vehicle should not be used until they are fully functional.



MORE INFORMATION: Further information on LOTO procedures can be found in section 14 of these guidelines.

Cleaning, maintenance, modifications, and repair

Before any cleaning, maintenance, modification or repair of plant or equipment is undertaken, full lockout procedures should be used.

Maintenance should be undertaken frequently, at scheduled times.

Operating instructions should be available for the use, cleaning and care of the unit or components, including after modifications have been made.

Modifications should only be carried out by trained, competent and capable persons.

Operating instructions should include precautionary notices associated with the reconstruction or modification.

Risk assessments relating to any modifications must be conducted and recorded.

Methods for protecting workers while working at heights may include scaffolding/handrails, work positioning systems, and fall restraint or arrest systems.



IMPORTANT: Modifications may include changes in plant, equipment, materials, processes, or tasks.

Training



THE LAW: As required by Section 9 of the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016, *A PCBU must ensure, so far as is reasonably practicable, that every worker who carries out work of any kind, uses plant of any kind, or deals with a substance of any kind that is capable of causing a risk in a workplace—*

(a) *either—*

(i) *has adequate knowledge and experience of similar places, and work, plant, or substances of that kind, to ensure that the worker carrying out the work, using the plant, or dealing with the substance is not likely to adversely affect the health and safety or cause harm to the worker or any other person; or*

(ii) *is adequately supervised by a person who has that knowledge and experience; and*

(b) *is adequately trained in the safe use of—*

(i) *all plant, objects, substances, or equipment that the worker is or may be required to use or handle; and*

- (ii) *all personal protective equipment that the worker is or may be required to wear or use (Health and Safety at Work (General Risk and Workplace Management) Regulations, 2016).*

Examples of methods to ensure that workers receive appropriate training include:

- Provision of clear and concise safe operating procedures (SOPs), including vehicle checklists and corrective action follow-up.
- Induction and regular in-house training courses and refresher sessions.
- Specific health and safety training, e.g. driver training, lockout-tagout (LOTO) and manual handling.
- Toolbox meetings discussing safe and correct operational practices.

Retention of appropriate training records, along with details of training providers and any refresher requirements, is strongly recommended.



MORE INFORMATION: Appendix 7 sets out examples of hazards/risks associated with waste collection and processing methods, along with recommended control measures. The following table sets out additional hazards/risks associated with material recovery facilities.

Table 10: Additional hazards/risks for material recovery facilities

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification				Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities	Actions			
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who might be harmed?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
• Handling of materials	• Handling recyclables and sharp objects	•	•	• Notifiable Event	•	•	•	Elimination:	•	•	•	•	• Automated sorting • Minimise handling frequency in the work process • Vaccinations • PPE	• Eliminate	•	•
								Substitution:	•					• Minimise	•	•
								Isolate:	•					•	•	•
								Engineering Controls:	•					•	•	•
								Administrative Controls:	•					•	•	•
								PPE:	•					•	•	•
• Handling of materials	• Manual handling	•	•	• Notifiable Event • Strains/sprain	•	•	•	Elimination:	•	•	•	•	• Mechanical lifting devices • Manual handling risk assessment • Ensure all workers receive adequate training in manual handling (Code of practice for manual handling 2001) • Workers to wear fit-for-purpose gloves and other PPE to prevent cuts from sharp objects and to maintain good hygiene • Pre-employment monitoring and annual health monitoring • Early reporting of musculoskeletal symptoms • Workers to wear other PPE equipment, as appropriate, including safety glasses and hearing protection	• Minimise	•	•
								Substitution:	•					•	•	•
								Isolate:	•					•	•	•
								Engineering Controls:	•					•	•	•
								Administrative Controls:	•					•	•	•
								• PPE:	•					•	•	•
• Handling of materials	• Poor ergonomics	•	•	• Discomfort, pain, and injury	•	•	•	Elimination:	•	•	•	•	• Workstation assessment • Workstation setup (height, width) • Anti-fatigue mats • PPE • Conveyor speed control • Early reporting procedures	• Minimise	•	•
								Substitution:	•					•	•	•
								Isolate:	•					•	•	•
								Engineering Controls:	•					•	•	•
								Administrative Controls:	•					•	•	•
								PPE:	•					•	•	•

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Table 10: Additional hazards/risks for material recovery facilities																
Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities	Actions		
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who might be harmed?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
• Housekeeping and site management	• Confined space entry	•	•	• Notifiable Event	•	•	•	Elimination:	•	•	•	•	• Avoid entry under weighbridge • Lock access ways and signpost • Confined space entry procedures • Rescue procedures	• Eliminate	•	•
								Substitution:	•					• Minimise	•	•
								Isolate:	•					•	•	•
								Engineering Controls:	•					•	•	•
								Administrative Controls:	•					•	•	•
								PPE:	•					•	•	•
• Housekeeping and site management	• Environmental health hazards e.g. dust, biological, fumes, noise	•	•	• Notifiable Event	•	•	•	Elimination:	•	•	•	•	• Environmental monitoring • PPE • Health monitoring • Induction and signage – magnetic eddy current and optical sorting equipment • Dust and fume control systems.	• Minimise	•	•
								Substitution:	•					•	•	•
								Isolate:	•					•	•	•
								Engineering Controls:	•					•	•	•
								Administrative Controls:	•					•	•	•
								PPE:	•					•	•	•
• Housekeeping and site management	• Fire	•	•	• Fatality • Notifiable Event • Burns and scalds	•	•	•	Elimination:	•	•	•	•	• Storage and segregation/bales away from building walls • Emergency plans and training • Fire warning and protection systems • No smoking	• Minimise	•	•
								Substitution:	•					•	•	•
								Isolate:	•					•	•	•
								Engineering Controls:	•					•	•	•
								Administrative Controls:	•					•	•	•
								PPE:	•					•	•	•
• Housekeeping and site management	• Pests	•	•	• Infection	•	•	•	Elimination:	•	•	•	•	• Procedures for managing site hygiene • Bait stations • Building maintenance	• Minimise	•	•
								Substitution:	•					•	•	•

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Hazard identification				Uncontrolled risk assessment			Controlled Risk Assessment				Development opportunities	Actions				
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who might be harmed?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
								Isolate:	•				<ul style="list-style-type: none"> programme Bird wires PPE First Aid training in minor wound care Removal of birds' nests 	•	•	•
								Engineering Controls:	•					•	•	•
								Administrative Controls:	•					•	•	•
								PPE:	• • •					•	•	•
• Housekeeping and site management	• Poor housekeeping	•	•	• Notifiable Event	•	•	•	Elimination:	•	•	•	<ul style="list-style-type: none"> Keep walkways/stairways/access ways clear of debris Safe storage of items Spill procedures Workplace inspections 	• Minimise	•	•	
								Substitution:	•				•	•		
								Isolate:	•				•	•		
								Engineering Controls:	•				•	•		
								Administrative Controls:	•				•	•		
								PPE:	•				•	•		
• Housekeeping and site management	• Site traffic	•	•	• Fatality • Notifiable Event	•	•	•	Elimination:		•	•	<ul style="list-style-type: none"> Traffic Management Plan Perimeter signage and site security Speed limits Road markings/cones/barriers Signage and direction PPE 	• Minimise	•	•	
								Substitution:	•				•	•		
								Isolate:	•				•	•		
								Engineering Controls:	•				•	•		
								Administrative Controls:	•				•	•		
								PPE:	•				•	•		
• Housekeeping and site management	• Slips, trips and falls	•	•	• Notifiable Event	•	•	•	Elimination:	•	•	•	<ul style="list-style-type: none"> Fall protection and/or restraint systems Anti-slip treads on stairs Avoid walking on recyclable and waste materials Guards and handrails Spill procedures 	• Minimise	•	•	
								Substitution:	•				•	•		
								Isolate:	•				•	•		
								Engineering	•				•	•		

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Hazard identification				Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities	Actions			
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who might be harmed?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
								Controls:								
								Administrative Controls:	•					•	•	•
								PPE:	•					•	•	•
• Housekeeping and site management	• Unsafe stacking and storage arrangements	•	•	• Fatality • Notifiable Event	•	•	•	Elimination:	•	•	•	• Certified racking • Storage plan (weights and locations of stored items) • Maximum bale heights • Stable storage of bales and stockpiles • Secure racking for earthquake protection	• Minimise	•	•	
								Substitution:	•				•	•		
								Isolate:	•				•	•		
								Engineering Controls:	•				•	•		
								Administrative Controls:	•				•	•		
								PPE:	•				•	•		
• Housekeeping and site management	• Weather conditions	•	•	• Illness • Cuts/ lacerations • Foreign bodies in eye	•	•	•	Elimination:	•	•	•	• Suitable clothing • Control temperature, air flow, wind-blown dust and particles • Ensure adequate lighting • Nutritious foods and adequate water for hydration	• Minimise	•	•	
								Substitution:	•				•	•		
								Isolate:	•				•	•		
								Engineering Controls:	•				•	•		
								Administrative Controls:	•				•	•		
								PPE:	•				•	•		
• Materials acceptance	• Hazardous substances and dangerous goods	•	•	• Notifiable Event	•	•	•	Elimination:	•	•	•	• Procedures for identification, isolation, handling, segregation of incompatible substances, storage, disposal and ceasing of work activities • HSNO approved handlers • Signage/safety data sheets • Emergency procedures • Emergency PPE available • Trained operators	• Minimise	•	•	
								Substitution:	•				•	•		
								Isolate:	•				•	•		
								Engineering Controls:	•				•	•		
								Administrative Controls:	•				•	•		
								PPE:	•				•	•		
• Plant and	• Mobile plant, for	•	•	• Fatality	•	•	•	Elimination:	•	•	•	• Risk assessment to determine	• Minimise	•	•	

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Hazard identification				Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities	Actions			
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who might be harmed?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
equipment	example, forklifts, loaders, excavators			<ul style="list-style-type: none"> • Notifiable Event 				Substitution:	•				<ul style="list-style-type: none"> if elimination of hazards is possible • Separate mobile plant from pedestrians • Alarms, lighting and beacons • Use of reversing beepers and cameras • Maintenance and Lockout-tagout procedures • Scheduled preventative maintenance and permit systems • Pre-start check • Licensed, trained, authorised competent and capable operators • Operating procedures • Signs and labels 	•	•	•
								Isolate:	•					•		
								Engineering Controls:	•					•		
								Administrative Controls:	•					•		
								PPE:	•					•		
<ul style="list-style-type: none"> • Plant and equipment 	<ul style="list-style-type: none"> • Stationary plant and equipment, for example, balers or conveyors 	•	•	<ul style="list-style-type: none"> • Fatality • Notifiable Event 	•	•	•	Elimination:	•	•	•	•	<ul style="list-style-type: none"> • Risk assessment to determine if elimination of hazards is possible • Guards, interlocks, emergency stops and warning devices • Maintenance and Lockout-tagout procedures • Scheduled preventative maintenance and permit systems • Pre-start checks • Licensed, authorised, competent, capable and trained operators • Use of reversing beepers and cameras • Operating procedures • Signs and labels • Scaffolding/handrails, work positioning systems, fall restraint or arrest systems • Restrain loose clothing and tie back long hair 	• Eliminate	•	•
								Substitution:	•					• Minimise	•	•
								Isolate:	•					•	•	
								Engineering Controls:	•					•	•	
								Administrative Controls:	•					•	•	
								PPE:	•					•	•	
<ul style="list-style-type: none"> • Visitors to site 	<ul style="list-style-type: none"> • Tour groups 	•	•	<ul style="list-style-type: none"> • Notifiable Event 	•	•	•	Elimination:	•	•	•	•	<ul style="list-style-type: none"> • Site introduction • Site rules • Isolate tour groups from operational areas • PPE where appropriate • Full-time escort 	• Minimise	•	•
								Substitution:	•					•	•	
								Isolate:	•					•	•	

Table 10: Additional hazards/risks for material recovery facilities

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities	Actions		
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who might be harmed?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
								Engineering Controls:	•				<ul style="list-style-type: none"> • Adult/child ratios • Specific plans for tour groups 	•	•	•
								Administrative Controls:	•					•	•	•
								PPE:	•					•	•	•
• Visitors to site	• Visitors including children and contractors	•	•	<ul style="list-style-type: none"> • Fatality • Notifiable Event 	•	•	•	Elimination:	•	•	•	•	<ul style="list-style-type: none"> • Contractor management systems • Accompany visitors • Direction, monitoring and assistance for customers, and supervision where required 	• Minimise	•	•
								Substitution:	•					•	•	
								Isolate:	•					•	•	
								Engineering Controls:	•					•	•	
								Administrative Controls:	•					•	•	
								PPE:	•					•	•	

38. Resource recovery parks

A resource recovery park (RRP) is 'a facility established for the recovery of resources from the waste stream for subsequent use as raw materials or for re-use, and for the consolidation of residual waste for transfer to landfill'. The facility may be publicly or privately owned and operated and may include associated resource recovery and processing operations in addition to collection, separation and transfer activities⁶.

The range of materials coming into a RRP includes green waste, timber, glass, plastics, metals, hard fill, construction and demolition waste, paper, cardboard, electronic waste, car batteries, LPG bottles, plasterboard and household items. Green waste may be shredded in preparation for transportation off-site and/or composting.



Figure 15:

Examples of resource recovery parks



IMPORTANT: Resource recovery parks, material recovery facilities and refuse transfer stations are each addressed in separate chapters of these guidelines. Operators should ensure they apply the correct section of the guidelines to their facility.

⁶ WasteMINZ Resource Recovery Park Design Guide August 2008



THE LAW: Operators of RRP's **must** ensure they are aware of and comply with relevant legislation, approved codes of practice, standards and guidelines, including those related to the sale of second-hand goods. These goods may include (but are not limited to) electrical goods, bicycles, children's prams and strollers, and waste electronic equipment. Legislative requirements include but are not limited to:

- Health and Safety at Work Act 2015
- Secondhand Dealers and Pawnbrokers Act 2004
- Electricity Act 1992
- Building Act 2004
- Hazardous Substances and New Organisms Act 1996
- Land Transport Rule: Dangerous Goods 2005



MORE INFORMATION: Further information on legislation can be found in section 3 and Appendix 8.

Design and operations

- The primary aim of 'safety in design' is to identify and manage risks. Safety in design is a process that integrates hazard identification and risk assessment methods early when designing the resource recovery park; to eliminate or minimise the risks of injury to those who will construct, operate, maintain, decommission and demolish the asset.
- The opportunity to eliminate a hazard in the early design stages by involving all stakeholders, and considering the life cycle of the project, is recommended.

Activities involved with resource recovery parks

The size and scale of resource recovery park operations vary, and may include:

- Site access via a weighbridge and/or kiosks. Waste and recyclable materials may be dropped off by members of the public, delivered by a variety of collection trucks, or delivered in bulk. Materials may be delivered to a single point to be sorted by site workers into various categories. Alternatively, materials may be pre-sorted on site by customers at the time of delivery.
- Materials may be sorted manually or mechanically, possibly using heavy equipment or conveyor systems.
- Goods may be moved around the site to improve storage layout and access, or to address future storage requirements.
- Some RRP's operate second-hand goods stores to sell re-usable items to the public.
- Processing and dismantling of re-usable products may occur on site. This may include the dismantling of waste electrical and electronic equipment (WEEE), whiteware and de-gassing cylinders.
- Some facilities may accept and process hazardous substances and/or dangerous goods.
- Once sorted, bulk re-usable materials are likely to be stored temporarily before being transported off-site.

Hazards

There are a wide range of hazards associated with the operation of a RRP. These hazards can include, but are not limited to:

- Hazards associated with stationary and mobile plant and equipment (e.g. balers, conveyors, compactors, forklifts, excavators, tractors, loaders or green-waste shredders).
- Waste handling relating to the type and makeup of the materials delivered including, dust, sharps, animal and medical/veterinary waste.

- Poor ergonomics arising from factors such as workbench heights and depth, workbench or workstation setup, workflow and lighting. The way goods are received at the site should be considered to ensure hazards are not introduced.
- LPG cylinders, either empty or partially full, may be found in the waste.
- Hazardous substances and dangerous goods handling, storage and disposal.
- Environmental health hazards such as noise, fumes, exhaust, dust and lighting.
- Pedestrian and vehicle interaction created by site traffic, including risks associated with customer and operator delivery, material load-out, excessive speed and reversing vehicles.
- Manual handling such as repetitive sorting; lifting or moving heavy or awkward items; and twisting movements while sorting.
- Working in adverse conditions including temperature or weather extremes (hot sun, severe frost, heavy snow, rain, high winds, fog), in poor lighting, poor visibility or a noisy environment.
- Stacking and storage of bales or pallets (maximum height and stability).
- Fire associated with combustible materials including clothing, paper and cardboard, plastics, and ashes. Additional sources of combustion may include landfill gas (where RRP facilities adjoin a landfill), discarded cigarettes and heat caused by mechanical and electrical sources.
- Poor housekeeping including lack of cleanliness; slippery or uneven surfaces; poor organisation of materials and clutter; negotiating obstacles and terrain; and walking through and around refuse, recyclables or recovered goods.
- Unprotected edges on stairways, pits, raised tipping platforms, etc.
- Obstacles and terrain may create significant slip, trip or fall risks for pedestrians on site. For example, negotiating pits, tunnels or uneven surfaces; and walking around stockpiles and baled material.
- Actions and behaviour of visitors including customers, contractors, commercial operators, tour groups and children.
- Armed or unarmed hold ups, break-ins and unauthorised access.
- Use of compressed air and high water pressure.
- Multiple business operations on one site.

- Pests including birds, cats, wasps and rodents.
- RRP sites located in rural areas or small towns may have to consider the risks associated with remote and isolated workers.



ACTION POINT: All hazards **must** be identified, risk assessed, controlled, recorded and reviewed regularly. Workers should be regularly reminded of all relevant hazards and the associated controls.

Recommended good practice controls



ACTION POINT: The following measures will help PCBUs meet legal and good practice requirements.

Plant and equipment

- Stationary and mobile plant and equipment should be used for the purposes for which it was designed.
- Users **must** be licensed, trained and authorised to operate specific plant.
- All equipment should be maintained in accordance with manufacturers' recommendations and certified, where necessary. Operating procedures should describe the safe and correct use of the plant or equipment.
- Guarding, interlocking systems, lockout-tagout procedures, warning beacons and audible warning devices should all be considered as appropriate hazard controls for plant and machinery at a RRP (e.g. conveyors and baling machines). For further information, refer to Australian Standard AS 4024 Safety of Machinery.
- Permit systems for repairs and maintenance (e.g. hot work, confined/restricted spaces and working at height).
- Methods for protecting workers while working at heights, which may include scaffolding, handrails, work positioning systems and fall restraint or arrest systems.

Handling of Materials

- Workers who are required to handle re-use materials and/or waste should have appropriate vaccinations to protect against the risk of infection.
- Appropriate PPE **must** be provided to minimise the risk of exposure to noise, dust, sharps, medical waste and other identified hazards.
- Adherence to correct manual handling practices is essential in minimising the risks to operators. Repetitive movements, lifting or moving heavy or awkward items, and twisting movements should be managed through the implementation of suitable controls. These controls might include the use of mechanical lifting devices, job rotation, manual handling training and PPE.
- Workstations, benches and conveyors should be designed and organised to ensure they allow enough space to perform all tasks, are of a suitable height for each worker, and are not too wide to reach across.
- Activities should be reviewed in terms of their impact on each other to ensure workflow does not create additional hazards.
- Containers or receptacles that are used to receive delivered goods should be suitably designed to enable safe storage and manual handling.



IMPORTANT: There is no maximum safe level for lifting specified in employment or health and safety legislation. This is because the load imposed on a person by lifting something depends on factors such as the posture used to lift the weight, the grip the person can get on the weight, the number of times an hour they lift, the shape and size of the load, and the starting and ending heights of the lift. Different people have different tolerances; what is manageable for one person may be too heavy for another.



MORE INFORMATION: Refer to Section 16 of these guidelines for more information on manual handling.



MORE INFORMATION: The assessment tools in the Code of practice for manual handling 2001 provide further guidance regarding the completion of a manual

handling risk assessment.

Housekeeping and site management

- A suitable site traffic management plan should be developed to ensure the safe passage of vehicles and pedestrians around the site. This plan should address hazards associated with all vehicle movements on site, including mobile plant. Operators should consider the use of a spotter or points-person for reversing vehicles, or vehicles raising their hoists. Management of speed, traffic flow and pedestrian movements should all be considered. Clear separation of mobile plant and pedestrians should be factored into the site layout design.
- Items that are stacked or stored should follow an appropriate storage plan, which includes details on safe weight limits of racking systems and stored products, and stability of stored items. Items should be stored away from buildings to reduce the risk of fire spreading.
- RRP operators should ensure housekeeping practices are implemented to maintain a safe workplace. This includes keeping walkways and access ways clear, storing materials in places where they do not protrude into walkways, cleaning up spills immediately after they occur and keeping emergency exits and emergency equipment clear of stored items and debris.
- Walking on stockpiled materials should be avoided to reduce the risk of slips and trips. Steel mid-sole boots should be considered.
- All unprotected edges created by pits and raised platforms **must** be fenced, guarded or barricaded to isolate workers from fall risks.
- Site security and fencing should be in place to prevent unauthorised access.
- There should be clear rules around scavenging of materials to prevent harm to site visitors and staff.
- Pest eradication plans and systems should be in place.
- Suitable clothing should be worn by workers to manage body temperature in extreme weather conditions adequately. Workers should ensure they take on nutritious foods and adequate water for hydration.

- Facilities should be designed to ensure hazards created by weather conditions are suitably controlled. This includes the ability to control temperature, air flow, wind-blown dust and particles, and to provide adequate lighting.
- Systems to protect the personnel and site from fire include alarm systems, sprinklers, extinguishers and hoses, and suitable emergency plans and evacuation procedures which are known by all workers on site.
- Operators should collaborate on hazard management and emergency procedures when there are multiple business operations on one site.
- Cash handling practices should include consideration of security, storage, electronic monitoring, regular removal of cash from the site, and training staff to deal with hold-ups. Emergency plans should include response to armed or unarmed hold-ups and break-ins.

Site visitors and contractors

- RRP's should have contractor management systems in place including induction, hazard identification, accident reporting, and contractor monitoring and emergency evacuation.
- Visitors should be accompanied at all times. Commercial operators should be directed, monitored to ensure safe behaviour, and assisted where necessary.
- Specific plans should be developed to manage tour groups including the consideration of parent-to-child ratios.
- Careful consideration should be given to visitors regarding the supervision of children on site. Children **must** be accompanied at all times when at RRP drop-off points and when in second-hand shops.
- Pets should remain in vehicles.
- All site customers, visitors and tour groups should use all required PPE including solid, closed toed shoes, high-visibility clothing, and eye and hearing protection (where required).
- Avoid exposing loose clothing to moving parts, tie back long hair and remove scarves.

- Systems should be implemented to allow workers to deal effectively with aggressive customers. These systems might include training in customer service and conflict management, escalations procedures, panic alarms, emergency phone numbers and segregation screens.

Materials acceptance

- RRs should have procedures to identify hazardous substances and dangerous goods on arrival. The procedures should address acceptance, storage, segregation, handling and disposal.
- Clear guidance and training should be provided to site workers on waste acceptance criteria to ensure compliance with relevant legislative requirements.
- Systems should be in place to identify and control combustible materials that may enter the RR. These systems might include training of staff to identify combustible items, the provision of fire prevention and firefighting equipment, and emergency plans. RRs should have suitably labelled storage and segregation arrangements for combustible materials.
- Personal Protective Equipment **must** be issued where hazards have been unable to be eliminated or isolated. Workers **must** be required to use the equipment and PCBUs **must** provide training in the use of any PPE supplied.



MORE INFORMATION: Refer to Section 18 of these guidelines for more information on Personal Protective Equipment.



MORE INFORMATION: Refer to The New Zealand Resource Recovery Park Design Guide (2008) or further information.

Lockout procedures for vehicles and equipment used at resource recovery parks

- Lockout instructions for each piece of equipment and vehicle **must** be provided to enable activities to be conducted safely. Power to moving parts **must** always be

locked out.

- Ensure requirements around lockout procedures form part of induction training for workers new to the place of work.

Situations requiring lockout may include:

- Repairing any mechanical malfunctions or breakdowns affecting the safe operation of plant or equipment.
- Regular maintenance and inspections of all pieces of plant, equipment and vehicles.
- Specific inspection of all safety interlocks, switches and other protective devices to ensure that devices have not been disabled or bypassed.



IMPORTANT: If safety devices are bypassed or damaged, the piece of equipment or vehicle should not be used until they are fully functional.



MORE INFORMATION: Further information on LOTO procedures can be found in section 14 of these guidelines.

Cleaning, maintenance, modifications and repair

- Before any cleaning, maintenance, modification or repair of plant or equipment is undertaken, full lockout procedures should be adhered to.
- Maintenance should be undertaken frequently, at scheduled times.
- Operating instructions should be available for the use, cleaning and care of the unit or components including after modifications have been made.
- Modifications should only be carried out by trained competent and capable persons.
- Operating instructions should include precautionary notices associated with the reconstruction or modification.
- Risk assessments relating to any modifications must be conducted and recorded.



IMPORTANT: Modifications may include changes in plant, equipment, materials, processes or tasks.

Training



THE LAW: As required by Section 9 of the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016, *A PCBU must ensure, so far as is reasonably practicable, that every worker who carries out work of any kind, uses plant of any kind, or deals with a substance of any kind that is capable of causing a risk in a workplace—*

(a) *either—*

(i) *has adequate knowledge and experience of similar places, and work, plant, or substances of that kind, to ensure that the worker carrying out the work, using the plant, or dealing with the substance is not likely to adversely affect the health and safety or cause harm to the worker or any other person; or*

(ii) *is adequately supervised by a person who has that knowledge and experience; and*

(b) *is adequately trained in the safe use of—*

(i) *all plant, objects, substances, or equipment that the worker is or may be required to use or handle; and*

(ii) *all personal protective equipment that the worker is or may be required to wear or use (Health and Safety at Work (General Risk and Workplace Management) Regulations, 2016).*

Examples of methods to ensure that workers receive appropriate training include:

- Provision of clear and concise safe operating procedures (SOPs), including vehicle checklists and corrective action follow-up.

- Induction and regular in-house training courses and refresher sessions.
- Specific health and safety training (e.g. driver training, lockout-tagout and manual handling).
- Toolbox meetings discussing safe and correct operational practices.

Retention of appropriate training records, along with details of training providers and any refresher requirements, is strongly recommended.



MORE INFORMATION: Appendix 7 sets out examples of hazards/risks associated with waste collection and processing methods, along with recommended control measures. The following table sets out additional hazards/risks associated with resource recovery parks.

Table 1: Additional hazards/risks for bag collection

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities	Actions		
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who might be harmed?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
•	•	•	•	•	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•					•	•	•
								Isolate:	•					•	•	•
								Engineering Controls:	•					•	•	•
								Administrative Controls:	•					•	•	•
								PPE:	•					•	•	•
•	•	•	•	•	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•					•	•	•
								Isolate:	•					•	•	•
								Engineering Controls:	•					•	•	•
								Administrative Controls:	•					•	•	•
								PPE:	•					•	•	•
•	•	•	•	•	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•					•	•	•
								Isolate:	•					•	•	•
								Engineering Controls:	•					•	•	•
•	•	•	•	•	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•					•	•	•
								Isolate:	•					•	•	•
								Engineering Controls:	•					•	•	•

Table 1: Additional hazards/risks for bag collection

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification				Uncontrolled risk assessment			Controlled Risk Assessment				Development opportunities	Actions				
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who might be harmed?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?		Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
								Administrative Controls:	•					•	•	•
								PPE:	•					•	•	•
•	•	•	•	•	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•					•	•	•
								Isolate:	•					•	•	•
								Engineering Controls:	•					•	•	•
								Administrative Controls:	•					•	•	•
								PPE:	•					•	•	•
•	•	•	•	•	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•					•	•	•
								Isolate:	•					•	•	•
								Engineering Controls:	•					•	•	•
								Administrative Controls:	•					•	•	•
								PPE:	•					•	•	•
•	•	•	•	•	•	•	•	Elimination:	•	•	•	•	•	•	•	•
								Substitution:	•					•	•	•
								Isolate:	•					•	•	•
								Engineering Controls:	•					•	•	•
								Administrative Controls:	•					•	•	•
								PPE:	•					•	•	•

Table 11: Additional hazards/risks for resource recovery parks

This hazard/risk register should be read in conjunction with ‘**Appendix 7: Generic hazards/risks associated with all waste collection and processing methods**’

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual risk rating	Review Frequency	Review Date
Handling of materials	Infection and illness from handling waste	<ul style="list-style-type: none"> Notifiable Event 		Minimise	<ul style="list-style-type: none"> Ensure vaccination for common diseases, including hepatitis Avoid walking on waste materials Develop and implement a ‘needle stick’ response policy and seek medical attention for any needle stick injuries Immediately clean and dress all wounds Cover dressing with durable waterproof gloves Workers to wear appropriate PPE to maintain good hygiene Provide hygienic washing and welfare facilities Train staff in good hygiene practices, e.g. washing hands before eating, drinking or smoking 			
	Manual handling	<ul style="list-style-type: none"> Notifiable Event Strains/sprains 		Minimise	<ul style="list-style-type: none"> Mechanical lifting devices Manual handling risk assessment Ensure all workers receive adequate training in manual handling (Code of practice for manual handling 2001) Workers to wear fit-for-purpose gloves and other PPE to prevent cuts from sharp objects and to maintain good hygiene Pre-employment monitoring and annual health monitoring 			

Table 11: Additional hazards/risks for resource recovery parks

This hazard/risk register should be read in conjunction with ‘Appendix 7: Generic hazards/risks associated with all waste collection and processing methods’

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual risk rating	Review Frequency	Review Date
					<ul style="list-style-type: none"> • Early reporting of musculoskeletal symptoms • Workers to wear other PPE equipment, as appropriate, including safety glasses and hearing protection • Trailers not to be unhitched from vehicles 			
	Poor ergonomics	<ul style="list-style-type: none"> • Strains/sprains 		Minimise	<ul style="list-style-type: none"> • Workstation assessment • Workstation setup • Anti-fatigue mats • Early reporting of symptoms 			
Housekeeping and site management	Armed or unarmed hold-ups	<ul style="list-style-type: none"> • Fatality • Notifiable Event • Traumatic harm 		Minimise	<ul style="list-style-type: none"> • Procedures to deal with armed hold-up • Secure cash handling • Regular removal of cash from the site 			
	Confined space entry	<ul style="list-style-type: none"> • Notifiable Event 		Eliminate Minimise	<ul style="list-style-type: none"> • Avoid entry under weighbridge • Lock access ways and signpost • Confined space entry procedures • Rescue procedures 			
	Environmental health hazards, e.g. noise, dust	<ul style="list-style-type: none"> • Notifiable Event 		Minimise	<ul style="list-style-type: none"> • Environmental monitoring • PPE • Health monitoring • Dust and fume control systems. 			

Table 11: Additional hazards/risks for resource recovery parks

This hazard/risk register should be read in conjunction with ‘**Appendix 7: Generic hazards/risks associated with all waste collection and processing methods**’

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual risk rating	Review Frequency	Review Date
	Fire	<ul style="list-style-type: none"> Fatality Notifiable Event Burns and scalds 		Minimise	<ul style="list-style-type: none"> Storage and segregation/bales away from building walls Emergency plans and training Fire warning and protection systems No smoking 			
	Pests	<ul style="list-style-type: none"> Infection 		Minimise	<ul style="list-style-type: none"> Procedures for managing site hygiene Bait stations Building maintenance programme Bird wires PPE First Aid training in minor wound care Removal of birds’ nests 			
	Poor housekeeping	<ul style="list-style-type: none"> Notifiable Event 		Minimise	<ul style="list-style-type: none"> Keep walkways/stairways/access ways clear of debris Safe storage of items Spill procedures Workplace inspections 			
Housekeeping and site management	Site traffic	<ul style="list-style-type: none"> Fatality Notifiable Event 		Minimise	<ul style="list-style-type: none"> Traffic Management Plan Speed limits Road markings/cones/barriers Signage and direction 			

Table 11: Additional hazards/risks for resource recovery parks

This hazard/risk register should be read in conjunction with ‘**Appendix 7: Generic hazards/risks associated with all waste collection and processing methods**’

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual risk rating	Review Frequency	Review Date
					<ul style="list-style-type: none"> PPE Points person 			
	Unprotected edges, slippery and uneven surfaces	<ul style="list-style-type: none"> Notifiable Event 		Minimise	<ul style="list-style-type: none"> Guards and handrails Fall protection and/or restraint systems Avoid walking on waste materials Spill procedures 			
	Unsafe stacking and storage arrangements	<ul style="list-style-type: none"> Fatality Notifiable Event 		Minimise	<ul style="list-style-type: none"> Certified racking Storage plan (weights and locations of stored items) Maximum bale heights Stable storage of bales and stockpiles Secure racking for earthquake protection 			
	Weather conditions	<ul style="list-style-type: none"> Illness Cuts/lacerations Foreign bodies in eye 		Minimise	<ul style="list-style-type: none"> Suitable clothing/sunscreens/long sleeves/wet weather gear Control temperature, air flow, wind-blown dust and particles Ensure adequate lighting Nutritious foods and adequate water for hydration 			
Materials acceptance	Hazardous substances and dangerous goods	<ul style="list-style-type: none"> Notifiable Event 		Minimise	<ul style="list-style-type: none"> Procedures for identification, isolation, handling, segregation of incompatible substances, storage, disposal and ceasing of work activities 			

Table 11: Additional hazards/risks for resource recovery parks

This hazard/risk register should be read in conjunction with ‘**Appendix 7: Generic hazards/risks associated with all waste collection and processing methods**’

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual risk rating	Review Frequency	Review Date
					<ul style="list-style-type: none"> • HSNO approved handlers • Signage/safety data sheets • Emergency procedures • Emergency PPE available • Trained operators 			
Plant and equipment	Stationary and mobile plant and equipment	<ul style="list-style-type: none"> • Fatality • Notifiable Event 		Minimise	<ul style="list-style-type: none"> • Risk assessment to determine if elimination of hazards is possible • Guards, interlocks, lighting, beacons, emergency stops and warning devices • Licensed, authorised, competent, capable and trained operators • Scheduled preventative maintenance and permit systems • Pre-start checks • Use of reversing beepers and cameras • Maintenance and lockout-tagout procedures • Operating procedures • Signs and labels • Restrain loose clothing and tie back long hair • RRP design should completely segregate mobile plant for pedestrians 			

Table 11: Additional hazards/risks for resource recovery parks

This hazard/risk register should be read in conjunction with ‘**Appendix 7: Generic hazards/risks associated with all waste collection and processing methods**’

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual risk rating	Review Frequency	Review Date
Visitors to site	Tour groups	<ul style="list-style-type: none"> Notifiable Event 		Minimise	<ul style="list-style-type: none"> Site introduction Site rules Isolate tour groups from operational areas PPE where appropriate Full-time escort Adult/child ratios Specific plans to manage tour groups 			
	Visitors including children and contractors	<ul style="list-style-type: none"> Fatality Notifiable Event 		Minimise	<ul style="list-style-type: none"> Contractor management systems Visitor management systems Direction, monitoring and assistance for customers; supervision where required Children and pets to remain in vehicles Train staff to deal with aggressive customers Provide an employee assistance programme 			

39. Refuse transfer stations

A refuse transfer station is a facility where solid waste materials, including commercial, industrial and household refuse, are delivered by commercial and domestic customers, then sorted and transferred into bulk vehicles for efficient transport to landfills, recycling centres, and other disposal sites.

Typically, there is limited separation of incoming materials; items that are usually separated include metals, timber, green waste, tyres, e-waste, and construction and demolition materials.

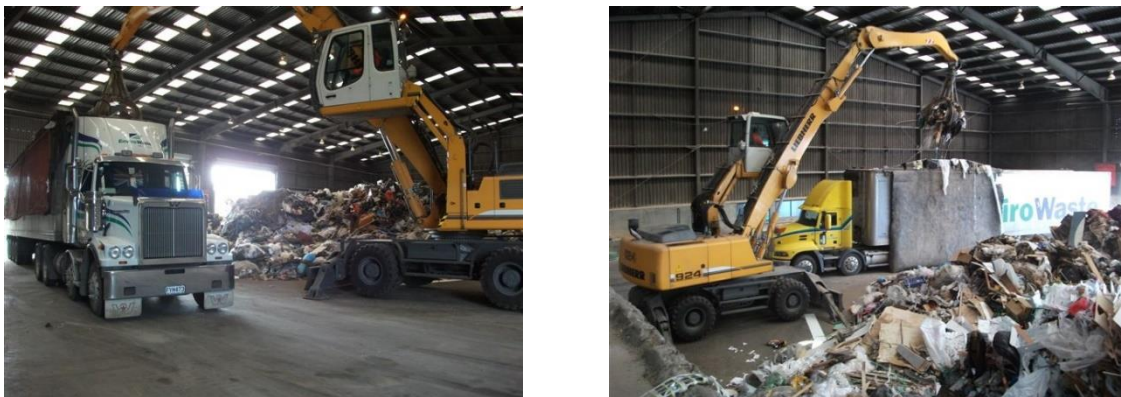


Figure 16: Examples of refuse transfer stations



IMPORTANT: Resource recovery parks, materials recovery facilities and refuse transfer stations are addressed in separate chapters of these guidelines.

Operators should ensure they apply the correct section of the guidelines to their facility.



THE LAW: Operators of RTSs **must** ensure they are aware of, and comply with, relevant legislation, approved codes of practice, standards and guidelines.

These include (but are not limited to):

- Health and Safety at Work Act 2015
- Electricity Act 1992
- Building Act 2004
- Hazardous Substances and New Organisms Act 1996
- Land Transport Rule: Dangerous Goods 2005



MORE INFORMATION: Further information on legislation can be found in section 3 and Appendix 8 of these guidelines.

Design and operations

- The primary aim of ‘safety in design’ is to identify and manage risks. Safety in design is a process that integrates hazard identification and risk assessment methods early when designing the refuse transfer station; to eliminate or minimise the risks of injury to those who will construct, operate, maintain, decommission and demolish the asset.
- The opportunity to eliminate a hazard in the early design stages by involving all stakeholders, and considering the life cycle of the project, is recommended.

Activities involved with refuse transfer stations

- Waste and recyclable materials may be dropped off either by members of the public (using a car and trailer, ute or boot-loads), or by commercial operators (using a variety of collection trucks).
- Various designs are used for RTS facilities. Some include the use of a pit, where waste is tipped by customers from a raised platform, the height of which varies from facility to facility. Other designs include a flat floor, onto which customers deposit waste directly. Consideration should be made to falls from height with two level designs. Further guidance can be sought from the WasteMINZ website on edge protection <https://www.wasteminz.org.nz/pubs/refuse-transfer-station-edge-protection-fact->

[sheet/](#)

- Materials are then processed in accordance with the waste acceptance criteria for the facility. This generally requires the removal of any dangerous or hazardous waste from the waste stream, and separation of construction and demolition waste, green waste, metals, e-waste, and tyres. These materials are sorted into their separate categories for removal off-site.
- RTS facilities may include other operations on site such as green waste shredding and mulching, hazardous substance collection points, landscape supplies, and material recovery facility or resource recovery park operations.
- Once the waste material is processed, it is moved by a suitable item of plant (e.g. a front-end loader or excavator) either into a large waste compactor, open-top bins or directly into bulk haulage trucks.
- Facilities that accept and store hazardous substances and/or dangerous goods should consider the following:
 - Clear guidance and training for site workers on waste acceptance criteria to ensure compliance with relevant legislative requirements.
 - Compliance with relevant legislation, including the Hazardous Substances and New Organisms Act 1996 and the Land Transport Rule: Dangerous Goods 2005.

Hazards

There are a wide range of hazards associated with the operation of a RTS including, but not limited to:

- Hazards associated with stationary and mobile plant and equipment, which may include compactors and balers, forklifts, excavators, tractors, loaders, gantry cranes or material handlers.
- Tipping from a raised platform into a pit creates hazards associated with unprotected edges, which might result in a fall into the pit (either onto waste materials, the pit floor, or into the path of mobile plant working in the pit). The use of wheel stops can also create trip hazards when customers are depositing waste from their vehicle.
- Tipping from saw-tooth shaped raised platforms into adjacent bulk bins might result in a fall into the bulk bin or onto waste materials.

- Tipping onto a flat floor introduces the potential for pedestrian and vehicle/mobile plant collision and vehicle/vehicle collision.
- Staff working in pits or below raised tipping platforms may be exposed to falling objects, vehicles and machine operations.
- Disconnecting trailers from vehicles or the use of tipping trailers introduces the risk of sudden loss of control of a heavily laden or unevenly loaded trailer.
- Waste handling (relating to the type and makeup of the materials delivered including hazards associated with fumes, fungal spores from decomposing green waste, dust, sharp items, animal waste, and medical/veterinary waste).
- LPG cylinders, either empty or partially full, may be found in the waste and are sometimes intentionally hidden.
- Hazardous substance and dangerous goods handling, storage and disposal.
- Environmental health hazards such as noise, fumes, exhaust, dust, sunburn, lighting and biohazards.
- Site traffic management including:
 - The risks associated with customer and operator delivery
 - Queuing vehicles and customers backing their vehicles up to pit edges
 - Domestic customers being in close vicinity to commercial vehicles
 - Domestic customers being in close vicinity to mobile plant
 - Bulk haulage vehicles involved in loading out materials
- Manual handling such as lifting, moving, pulling or twisting while extracting heavy or awkward items from the waste stream.
- Working in adverse conditions including temperature or weather extremes (hot sun, severe frost, heavy snow, rain, high winds, fog), in poor lighting, poor visibility or a noisy environment.
- Weighbridges introduce risks such as slippery surfaces and risks associated with workstation design. In some cases, cleaning and maintenance of the weighbridge may involve confined space entry.
- Fire arising from combustible, flammable, corrosive and oxidising materials, including clothing, paper and cardboard, plastics, hardeners from two-pot epoxy adhesives, batteries and dangerous goods.

- Poor housekeeping including lack of cleanliness; slippery or uneven surfaces; poor organisation of materials and clutter; negotiating obstacles and terrain; and walking through and around refuse, recyclables or recovered goods.
- Actions and behaviour of visitors including customers, contractors, commercial operators, tour groups and children. Aggressive customers can cause mental and physical harm to workers.
- Armed or unarmed hold ups, break-ins and unauthorised access.
- Use of high-pressure water.
- Multiple business operations on one site.
- Pests including birds, cats, wasps and rodents.



IMPORTANT: There have been many incidences where RTS customers have lost control of their vehicles and reversed over wheel stops and into pits., or not applied handbrakes correctly resulting in vehicles rolling away



ACTION POINT: All hazards **must** be identified, risk assessed, controlled, recorded and reviewed regularly. Workers should be regularly reminded of all relevant hazards and the controls in place.

Recommended good practice controls



ACTION POINT: The following measures will help PCBUs to meet legal and good practice requirements.

Plant and equipment

- Stationary and mobile plant and equipment should be used for the purposes for which it was designed, and users **must** be trained and authorised. All equipment should be maintained in accordance with manufacturer's recommendations and certified where necessary. Operating procedures should describe the safe and correct use of the plant or equipment.
- Guarding, interlocking systems, lockout-tagout procedures, warning beacons and audible warning devices should all be considered as appropriate hazard controls for plant and machinery at a RTS (e.g. for compactors and baling machines). For further information, refer to Australian Standard AS 4024 Safety of Machinery.
- Permit systems for repairs and maintenance (e.g. for hot work, confined/restricted spaces and working at height).
- Site staff and visitors should be isolated from manoeuvring vehicles, and from waste falling from above when they are working in the pit.
- When customers are tipping waste, operational vehicles should keep clear. Operators of RTS sites should consider the use of a spotter to direct vehicles.

Handling of materials

- Workers who are required to handle waste should have appropriate vaccinations to protect against the risk of infection.
- Appropriate Personal Protective Equipment (PPE) **must** be provided to minimise the risk of exposure to noise, fumes, dust, sharps, biohazards (e.g. fungal spores), animal and medical/veterinary waste and other identified hazards.
- Adherence to correct manual handling practices is essential in minimising the risks to operators. Repetitive movements, lifting or moving heavy or awkward items, and twisting movements should be managed through the implementation of suitable controls. These controls might include the use of mechanical lifting devices, job rotation, manual handling training and PPE.
- Materials should be extracted using suitable plant and equipment. If manual handling is required when extracting items from the waste stream, then a manual handling risk

assessment should be undertaken as described in the Code of practice for manual handling.



IMPORTANT: There is no maximum safe level for lifting specified in employment or health and safety legislation. This is because the load imposed on a person by lifting something depends on factors like the posture used to lift the weight, the grip the person can get on the weight, the number of times an hour they lift, the shape and size of the load, and the starting and ending heights of the lift. Different people have different tolerances; therefore, what is manageable for one person may be too heavy for another.



MORE INFORMATION: Refer to Section 16 of these guidelines for more information on manual handling.



MORE INFORMATION: The assessment tools in the Code of practice for manual handling 2001 provide further guidance regarding the completion of a manual handling risk assessment. Check Worksafe website for more information

Housekeeping and site management

- A suitable site traffic management plan should be developed to ensure the safe passage of vehicles and pedestrians around the site. This plan should address hazards associated with all vehicle movements on site, including mobile plant. Reversing vehicles, speed, traffic flow and pedestrian movements should all be considered and RTS operators should ensure clear segregation between pedestrians and mobile plant and vehicles (for example, through the use of physical barriers or distance). Additional measures that should also be considered to ensure people are not exposed to crush injuries include spotters directing traffic, rotating beacons/strobes, audible alarms,

reversing beepers and clear and concise signage and exclusion zones around working equipment.

- Pedestrians should be kept clear of weighbridge areas.
- Workstations should be ergonomically assessed to ensure they are safe to operate.
- Where cleaning and maintenance is required under the weighbridge, confined space entry systems should be adopted.
- RTS operators should ensure housekeeping practices are implemented to maintain a safe workplace. This includes keeping walkways and access ways clear, avoiding walking on slippery surfaces, maintaining drain covers, storing materials in places where they do not protrude into walkways, cleaning spills up immediately after they occur and keeping work areas, emergency exits and emergency equipment clear of stored items and debris. Consider use of odour management systems where required
- Walking on waste materials should be avoided to reduce the risk of slips, trips, cuts, penetration wounds and lacerations. Steel mid-sole boots should be considered.
- All unprotected edges, including raised platforms and platforms that border bins, should be barricaded off to isolate workers and site visitors from fall risks.
- Prohibit any person being in the vicinity of vehicles reversing up to a pit edge and the rear of a vehicle tipping waste into a pit. Pedestrians should never be in a pit when machinery is operating.
- Unhitching trailers by either customers or RTS workers **must** be avoided to eliminate the risk of sudden loss of control due to heavily laden or unevenly loaded trailers.
- Environmental health monitoring for hazards such as dust and noise should be undertaken. Associated health monitoring should also be conducted based on the results of the environmental health monitoring, for example, lung function testing for dust exposure, hearing tests for noise exposure and mole mapping for workers with high exposure to the sun.
- Emergency plans should include the risk of and response to armed or unarmed hold ups. For example consider silent alarms, portable radio transmitters, exterior lighting, fencing and CCTV. Cash handling practices should include consideration of security, storage, electronic monitoring, regular removal of cash from the site and training of staff to deal with hold ups.

- Suitable clothing should be worn by workers to manage body temperature in extreme weather conditions adequately. Workers should ensure they take on nutritious foods and adequate water for hydration.
- Systems to protect the personnel and the site from fire include alarm systems, sprinklers, extinguishers and hoses, and suitable emergency plans and evacuation procedures which are known by all workers on site.
- Pest eradication plans and systems should be in place.

Site visitors and contractors

- RTSs should have contractor management systems in place, which include induction, hazard identification, accident reporting, contractor monitoring, and emergency evacuation.
- Visitors should be accompanied at all times and provided with appropriate safety clothing and equipment.
- Specific plans should be developed to manage tour groups, including the consideration of parent-to-child ratios.
- Customers and commercial operators should be directed and monitored to ensure safe behaviour and assisted where necessary.
- Children and animals should remain in vehicles at all times when at drop-off points and **must** be accompanied by parents or guardians.
- Systems should be implemented to allow workers to deal effectively with aggressive customers. These systems might include training in customer service and conflict management, escalations procedures, panic alarms, emergency phone numbers and segregation screens.

Materials acceptance

- RTSs should have waste acceptance criteria and procedures to identify hazardous substances on arrival. Procedures should also be in place to identify hazards in the waste stream to ensure compliance with the Hazardous Substances and New

Organisms Act 1996 requirements in respect of acceptance, storage, segregation, labelling, handling and disposal. Specific procedures are required to identify, extract and store LPG cylinders, wherever possible.

- Systems should be implemented to identify and control flammable, corrosive and oxidising materials that may enter the RTS. This might include training of staff to identify hazardous substances and dangerous goods, the provision of fire prevention and firefighting equipment and emergency plans for the site. RTSs should have suitably labelled storage and segregation arrangements for hazardous substances and dangerous goods.
- Dust, fume and exhaust control systems should be considered to reduce the risk of exposure to these environmental health hazards.
- Clear guidance and training should be provided to site workers on waste acceptance criteria to ensure compliance with relevant legislative requirements.
- Appropriate PPE **must** be provided to minimise the risk of exposure to noise, fumes, dust, sharps, irritants, medical waste and other identified hazards.
- Clear rules around scavenging of materials should be in place to prevent harm to site visitors.



MORE INFORMATION: Refer to Section 18 of these guidelines for more information on Personal Protective Equipment.

Lockout procedures for vehicles and equipment used at refuse transfer stations

- Lockout instructions for each piece of equipment and vehicle **must** be provided to enable activities to be conducted safely. Power to moving parts **must** always be locked out.
- Ensure requirements around lockout procedures form part of induction training for workers new to the place of work.

Situations requiring lockout may include:

Repairing any mechanical malfunctions or breakdowns affecting the safe operation of plant or equipment.

Regular maintenance and inspections of all pieces of plant, equipment and vehicles.

Specific inspections of all safety interlocks, switches and other protective devices to ensure that devices have not been disabled or bypassed.



IMPORTANT: If safety devices are bypassed or damaged, the piece of equipment or vehicle should not be used until they are fully functional.



MORE INFORMATION: Further information on lockout-tagout (LOTO) procedures can be found in section 14 of these guidelines.

Cleaning, maintenance, modifications and repair

Before any cleaning, maintenance, modification or repair of plant or equipment is undertaken, full lockout procedures should be used.

Maintenance should be undertaken frequently, at scheduled times.

Operating instructions should be available for the use, cleaning and care of the unit or components, including after modifications have been made.

Modifications should only be carried out by trained, competent and capable persons.

Operating instructions should include precautionary notices associated with the reconstruction or modification.

Risk assessments relating to any modifications must be conducted and recorded.



IMPORTANT: Modifications may include changes in plant, equipment, materials,

processes or tasks.

Training



THE LAW: As required by Section 9 of the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016, *A PCBU must ensure, so far as is reasonably practicable, that every worker who carries out work of any kind, uses plant of any kind, or deals with a substance of any kind that is capable of causing a risk in a workplace—*

(a) *either—*

(i) *has adequate knowledge and experience of similar places, and work, plant, or substances of that kind, to ensure that the worker carrying out the work, using the plant, or dealing with the substance is not likely to adversely affect the health and safety or cause harm to the worker or any other person; or*

(ii) *is adequately supervised by a person who has that knowledge and experience; and*

(b) *is adequately trained in the safe use of—*

(i) *all plant, objects, substances, or equipment that the worker is or may be required to use or handle; and*

(ii) *all personal protective equipment that the worker is or may be required to wear or use (Health and Safety at Work (General Risk and Workplace Management) Regulations, 2016).*

Examples of methods to ensure that workers receive appropriate training include:

- Provision of clear and concise safe operating procedures (SOPs), including vehicle checklists and corrective action follow-up.
- Induction and regular in-house training courses and refresher sessions.

- Specific health and safety training (e.g. driver training, lockout-tagout and manual handling).
- Toolbox meetings discussing safe and correct operational practices.

Retention of appropriate training records, along with details of training providers and any refresher requirements, is strongly recommended.

Ensure your driver and operators are aware and know how to complete pre and post trip vehicle or mobile plant inspections, they are competent and trained in how to complete Daily (VCRs) Vehicle Condition Reporting. By recording any defects to be fixed, or maintenance to be follow up this will ensure your fleet/vehicle is managed, and safely maintained



MORE INFORMATION: Appendix 7 sets out examples of generic hazards/risks associated with all waste collection and processing methods along with recommended control measures. The following table sets out additional hazards/risks associated with refuse transfer stations.

Table 1: Additional hazards/risks for bag collection

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities		Actions		
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who might be harmed?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?			Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
								Elimination:	Substitution:	Isolate:							
								Elimination:									
								Substitution:									
								Isolate:									
								Engineering Controls:									
								Administrative Controls:									
								PPE:									
								Elimination:									
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								Elimination:									
								Substitution:									
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								Isolate:	Engineering Controls:	Administrative Controls:							
								Isolate:									
								Engineering Controls:									
								Administrative Controls:									
								PPE:									
								Elimination:									
								Substitution:									
								Isolate:									
								Engineering Controls:									
								Administrative Controls:									
								PPE:									
								Elimination:									
								Substitution:									
								Isolate:									
								Engineering Controls:									
								Administrative Controls:									
								PPE:									

Table 12: Additional hazards/risks for refuse transfer stations

This hazard/risk register should be read in conjunction with ‘**Appendix 7: Generic hazards/risks associated with all waste collection and processing methods**’

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual risk rating	Review Frequency	Review Date
Handling of materials	Infection and illness from handling waste	<ul style="list-style-type: none"> Notifiable Event 		Minimise	<ul style="list-style-type: none"> Ensure vaccination for common diseases, including hepatitis Avoid walking on waste materials Develop and implement a ‘needle stick’ response policy and seek medical attention for any needle stick injuries Immediately clean and dress all wounds Cover dressing with durable waterproof gloves Workers to wear appropriate PPE to maintain good hygiene Provide hygienic washing and welfare facilities Train staff in good hygiene practices, e.g. washing hands before eating, drinking or smoking 			
	Manual handling	<ul style="list-style-type: none"> Notifiable Event Strains/sprains 		Minimise	<ul style="list-style-type: none"> Mechanical lifting devices Manual handling risk assessment Ensure all workers receive adequate training in manual handling (Code of practice for manual handling 2001) Workers to wear fit-for-purpose 			

Table 12: Additional hazards/risks for refuse transfer stations

This hazard/risk register should be read in conjunction with ‘**Appendix 7: Generic hazards/risks associated with all waste collection and processing methods**’

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual risk rating	Review Frequency	Review Date
					gloves and other PPE to prevent cuts from sharp objects and to maintain good hygiene <ul style="list-style-type: none"> Pre-employment monitoring and annual health monitoring Early reporting of musculoskeletal symptoms Workers to wear other PPE equipment, as appropriate, including safety glasses and hearing protection Trailers not to be unhitched from vehicles 			
Housekeeping and site management	Armed or unarmed hold ups	<ul style="list-style-type: none"> Fatality Notifiable Event Traumatic harm 		Minimise	<ul style="list-style-type: none"> Procedures to deal with armed holdup Secure cash handling Regular removal of cash from the site 			
	Confined space entry	<ul style="list-style-type: none"> Notifiable Event 		Eliminate Minimise	<ul style="list-style-type: none"> Avoid entry under weighbridge Lock access ways and signpost Confined space entry procedures Rescue procedures 			
	Environmental health hazards eg dust, biological, fumes, noise	<ul style="list-style-type: none"> Notifiable Event 		Minimise	<ul style="list-style-type: none"> Environmental monitoring Dust and fume control systems, misting systems PPE 			

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Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual risk rating	Review Frequency	Review Date
					<ul style="list-style-type: none"> Health monitoring 			
	Falling objects (refuse, uncontrolled vehicles, trailers)	<ul style="list-style-type: none"> Struck by falling objects 		Minimise	<ul style="list-style-type: none"> Exclusion zones Procedures Monitoring customer behaviour 			
	Fire	<ul style="list-style-type: none"> Fatality Notifiable Event Burns and scalds 		Minimise	<ul style="list-style-type: none"> Storage and segregation/bales away from building walls Emergency plans and training Fire warning and protection systems No smoking 			
	Pests	<ul style="list-style-type: none"> Infection 		Minimise	<ul style="list-style-type: none"> Procedures for managing site hygiene Bait stations Building maintenance programme Bird wires PPE First Aid training in minor wound care Removal of birds’ nests 			
	Poor ergonomics	<ul style="list-style-type: none"> Strains/sprains 		Minimise	<ul style="list-style-type: none"> Workstation assessment and postural setup for weighbridge/kiosk operator 			

Table 12: Additional hazards/risks for refuse transfer stations

This hazard/risk register should be read in conjunction with ‘**Appendix 7: Generic hazards/risks associated with all waste collection and processing methods**’

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual risk rating	Review Frequency	Review Date
					<ul style="list-style-type: none"> • Anti-fatigue mats • Early reporting procedures 			
	Poor housekeeping	<ul style="list-style-type: none"> • Notifiable Event 		Minimise	<ul style="list-style-type: none"> • Keep walkways/stairways/access ways clear of debris • Safe storage of items • Spill procedures • Workplace inspections 			
	Site traffic	<ul style="list-style-type: none"> • Fatality • Notifiable Event 		Minimise	<ul style="list-style-type: none"> • Traffic Management Plan • Speed limits • Road markings/cones/barriers • Signage and direction • PPE • Points person • No pedestrians in pit when machines are operating 			
Housekeeping and site management	Slips, trips and falls	<ul style="list-style-type: none"> • Notifiable Event 		Minimise	<ul style="list-style-type: none"> • Fall protection and/or restraint systems • Spill procedures • Isolation barriers at raised pit edges • Guards and handrails • Isolation of pedestrians from 			

Table 12: Additional hazards/risks for refuse transfer stations

This hazard/risk register should be read in conjunction with ‘**Appendix 7: Generic hazards/risks associated with all waste collection and processing methods**’

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual risk rating	Review Frequency	Review Date
					slippery surfaces <ul style="list-style-type: none"> • Avoid walking on waste materials • Consider use of steel mid-sole footwear 			
	Unsafe stacking and storage arrangements	<ul style="list-style-type: none"> • Fatality • Notifiable Event 		Minimise	<ul style="list-style-type: none"> • Certified racking • Storage plan (weights and locations of stored items) • Maximum bale heights • Secure racking for earthquake protection • Stable storage of bales and stockpiles 			
	Weather conditions	<ul style="list-style-type: none"> • Sun/heat stroke • Foreign bodies in eye • Hypothermia 		Minimise	<ul style="list-style-type: none"> • Suitable clothing/sunscreens/long sleeves/wet weather gear • Control temperature, air flow, wind-blown dust and particles • Ensure adequate lighting • Nutritious foods and adequate water for hydration 			
Materials acceptance	Hazardous substances and dangerous goods	<ul style="list-style-type: none"> • Notifiable Event 		Minimise	<ul style="list-style-type: none"> • Procedures for identification, isolation, handling, segregation of incompatible substances, storage, disposal and ceasing of work activities • HSNO approved handlers • Signage/safety data sheets 			

Table 12: Additional hazards/risks for refuse transfer stations

This hazard/risk register should be read in conjunction with ‘**Appendix 7: Generic hazards/risks associated with all waste collection and processing methods**’

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual risk rating	Review Frequency	Review Date
					<ul style="list-style-type: none"> Emergency procedures Emergency PPE available Trained operators 			
Plant and equipment	Stationary and mobile plant and equipment	<ul style="list-style-type: none"> Fatality Notifiable Event 		Minimise	<ul style="list-style-type: none"> Risk assessment to determine if elimination of hazards is possible RTS design should completely segregate mobile plant from pedestrians Licensed, authorised, competent, capable and trained operators Guards, interlocks, lighting, beacons, emergency stops and warning devices Use of reversing beepers and cameras Scheduled preventative maintenance and permit systems Pre-start checks Signs and labels Maintenance and lockout-tagout procedures Operating procedures Restrain loose clothing and tie back long hair Exclusion zones 			

Table 12: Additional hazards/risks for refuse transfer stations

This hazard/risk register should be read in conjunction with ‘**Appendix 7: Generic hazards/risks associated with all waste collection and processing methods**’

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual risk rating	Review Frequency	Review Date
Visitors to site	Tour groups	<ul style="list-style-type: none"> • Notifiable Event 		Minimise	<ul style="list-style-type: none"> • Site introduction • Site rules • Isolate tour groups from operational areas • PPE where appropriate • Full-time escort • Adult/child ratios • Specific plans to manage tour groups 			
	Visitors including children and contractors	<ul style="list-style-type: none"> • Fatality • Notifiable Event 		Minimise	<ul style="list-style-type: none"> • Contractor management systems • Accompany visitors • Direction, monitoring and assistance for customers; supervision where necessary • Children and pets stay in vehicles • Train staff to deal with aggressive customers • Provide an employee assistance programme 			

40. Landfills

The state of landfilling has changed significantly in New Zealand over the past 30 years. There is an increasing trend towards well-sited and well-designed landfills, and many unsuitable facilities have closed.

Alongside improvements to landfill siting and design, landfill operation practices have also improved immensely. There is a strong focus on control of environmental and nuisance effects, and a much wider adoption of practices to protect the health and safety of workers and the public.

In health and safety terms, a landfill is essentially a large-scale, ongoing construction project. It encompasses the range of hazards and risks to worker health and safety typically associated with such projects, as well as hazards specific to landfill facilities. The most significant hazards related to a landfill operation are:

- landfill gas;
- the presence and use of large vehicles and mobile plant; and
- handling of solid waste and hazardous materials.

For the purposes of this document, a landfill encompasses a range of facilities⁷:

- Class 1 landfill: Municipal solid waste landfills
- Class 2 landfill: Construction and demolition landfills
- Class 3 landfill: Managed fills
- Class 4 landfill: Clean fills
- Closed Landfill: A landfill that no longer accepts any material for disposal.



MORE INFORMATION: Not all of the hazards and control measures identified in

⁷ WasteMINZ Technical Guidelines for Disposal to Land April 2016

this guideline will relate to every type of landfill.



Figure 17: Examples of landfills



THE LAW: Operators of landfills **must** ensure they are aware of, and comply with, relevant legislation, approved codes of practice, standards and guidelines. These include (but are not limited to):

- Biosecurity Act 1993 (relevant to those sites that are Ministry of Primary Industries Transitional Facilities)
- Building Act 2004
- Electricity Act 1992
- Gas Act 1992
- Hazardous Substances and New Organisms Act 1996
- Health Act 1956
- Health and Safety at Work Act 2015
- Land Transport Rule: Dangerous Goods 2005
- Resource Management Act 1991



MORE INFORMATION: Further information on legislation can be found in section 3 and Appendix 8 of these guidelines.

Design and operations

- The primary aim of ‘safety in design’ is to identify and manage risks. Safety in design is a process that integrates hazard identification and risk assessment methods early when designing plant, materials and structures, to eliminate or minimise the risks of injury to those who will construct, operate, maintain, decommission and demolish the asset.
- The opportunity to eliminate a hazard in the early design stages by involving all stakeholders, and by considering the life cycle of the project, is recommended.



PROSECUTIONS:

A company was fined \$60,000 and ordered to pay reparation of \$50,000 and costs of \$130, in respect of a fatality at a landfill when a worker was killed when his dump truck lost traction, whilst hauling excavated material, and rolled on a downhill section of a temporary road. The company had pleaded guilty to a charge of failing to take all practical steps to ensure the safety of its employees at work, and failing to take all practical steps to ensure it employees were not exposed to hazards arising out of the operation of wheeled vehicles.

The judge noted that there is a positive duty on an employer to seek out hazards and determine how to eliminate and minimise them and it is a principal objective of the Health and Safety in Employment Act that employers promote safety. He also noted that there were a number of failures by the company which included the following:

- Construction of the road to a safe gradient for wheeled vehicles, as opposed to vehicles with tracks
- Not accurately assessing the gradient or the risks involved
- Less than satisfactory methods of measuring and communicating to others the actual gradient in the road
- Relying on information provided by other organisations, such as the diagram and gradient on the vehicle itself, rather than carrying out its own research
- Lack of clear guidelines, protocols, processes and communication for stopping the work in dangerous conditions.

Activities involved with landfills

The highest risk activities at landfills generally involve the extraction, reticulation, processing

and flaring of methane gas; and in some cases, electricity generation. Another high-risk activity is the use of heavy plant and machinery and its interaction with people and the landfill environment.

The range of activities undertaken at a landfill is summarised as follows:

- Site and cell construction activities occur at various times during the lifespan of the landfill. These activities may be carried out by third party contractors.
- Waste and fill materials are primarily delivered by commercial operators using a variety of collection trucks and bulk transfer methods. Some landfills allow for members of the public to deliver materials using cars and trailers, boot loads or utility vehicles. It is not always possible to tell the origin of this material prior to its delivery.
- Sites may include construction, operation and maintenance of gas and leachate systems (including reticulation, storage and processing), and electricity generation and supply.
- There is on-site traffic in tip face areas and on surrounding haul roads.
- Once the material is discharged onto the tip face, it is moved and compacted by heavy mobile plant.
- Deposited material may be covered overnight to contain litter, reduce surface water intrusion, contain gas and odour emissions, and to control vermin and birds.
- Intermediate and final cover may be used for contour and profile shaping, and to control leachate, gas, vermin, odour and other environmental effects.
- Odour control, stormwater treatment, leachate treatment and landfill gas systems may be established and operated.
- Environmental monitoring activities for water (surface and groundwater), land (litter) and air discharges.
- Heavy plant and equipment maintenance activities.
- Administrative functions including engineering, operational management and kiosk and weighbridge operations.

- Other material disposal activities that may occur on site include green waste shredding and mulching, and hazardous and/or special waste disposal.
- Activities associated with adjacent land for which the landfill operator has a duty of care (e.g. farming, forestry and quarrying).
- Excavation for special wastes e.g. sludge pits, special waste burial and asbestos.
- Grounds maintenance such as mowing, maintenance of planted areas and wetland management.
- Operation of a workshop for plant and machinery maintenance.

Hazards

There are a wide range of hazards associated with the operation of a landfill, which include, but are not limited to:

General landfill hazards

- Landfill gas
- Traffic on haul roads and access roads
- Mobile plant – excavators, bulldozers, graders, compactors and other mobile construction plant
- Access to and egress from mobile plant
- Uneven or slippery surfaces
- Actions and behaviour of contractors, bystanders and visiting truck drivers
- Aggressive customers
- Fire and combustible materials
- Working in adverse conditions including temperature or weather extremes (hot sun, severe frost, heavy snow, rain, high winds, fog, lightning, poor visibility or a noisy environment)
- Ground instability

- Trucks or trailers tipping over while discharging as a result of mechanical failure, stuck loads or ground instability
- Vehicle / pedestrian interface at tip face – for example, pedestrians being struck by reversing vehicles, or vehicles undertaking other manoeuvres
- Towing of vehicles
- Fatigue
- Manual handling
- Hazardous substance and dangerous goods handling, storage and disposal
- Biohazard exposure
- Chemicals (e.g. solvents, cleaners, oils and fuels)
- Plant and equipment maintenance and cleaning
- The use of power tools
- Noise from pumps, blowers, mobile plant and other equipment
- Uncontrolled energy (e.g. raised hoists and pressurised systems)
- Unprotected edges
- Services (e.g. gas mains, power lines and buried cables, etc.)
- Environmental monitoring, activities by contractors and subcontractors, and grounds maintenance
- Open bodies of water such as leachate and stormwater ponds
- Working alone

Design and Construction

- Batters, benches, excavation, shafts and trenching
- Delivery of liner materials and liner installation
- Lifting pipework into trenches

- Traffic management and separation from operational activities
- Interaction with operational activities (e.g. gas and confined spaces)
- Underground and overhead services

Operations

- Delivery of materials (e.g. refuse, fill, cover, drainage materials) by vehicles
- Material of unknown origin (non-compliant waste, LPG cylinders, chemicals, tyres)
- Dust and particulate matter
- Impact of refuse on heavy plant (e.g. waste caught in bulldozer tracks and refuse build-up which could cause a fire)
- Pests including birds, cats, wasps and rodents
- Pest management using firearms
- Actions and behaviour of commercial operators
- Un-tarping waste transport vehicles (working at height)
- Vehicle washing including wheel washes and truck and machinery wash-down facilities
- Inspection of trucks in preparation for road travel
- Walking on refuse
- Hazards associated with the waste material or special wastes e.g. biosolids, heavy metals, asbestos or hydrocarbon contaminated material
- Health hazards as a result of exposure to a variety of substances, for example, landfill gas, particulate matter, ammonia, leachate, mercury vapour, H₂S, and biological hazards specific to industrial waste landfills

Gas/leachate/electricity

- Confined spaces and spaces (low points) where gas could accumulate

- Drilling
- Plastic pipe welding
- Electricity
- Sealing of electrical conduits
- Exposure to extreme heat from gas plant
- Electrical magnetic fields generated by power plants that could affect people with pacemakers

Maintenance

- Welding
- Open vehicle pits
- Fixed plant and equipment
- Falling objects
- Manual handling, lifting heavy objects, parts, etc.
- Fluids under pressure (hydraulic fluids, engine fluids and water)
- Uncontrolled energy

Weighbridge and Administration

- Workstation design
- The risks associated with operator delivery, for example, unsafe loads
- Vehicle /pedestrian interaction (access to weighbridge, drivers getting dockets)
- Slippery weighbridge surfaces
- Cash handling
- Stacking and storage
- Abusive and threatening customers, or abuse from the public or others on-site

Other activities

- Site-specific activities associated with the landfill, e.g. loose stock, tree felling, quarrying, farm vehicles and vegetation maintenance



ACTION POINT: All hazards **must** be identified, assessed, controlled, recorded and reviewed regularly. Workers should be regularly reminded of all relevant hazards and the controls in place.

Recommended good practice controls



ACTION POINT: The following measures will help PCBUs to meet legal and good practice requirements:

General landfill hazards

- Responsibilities for ultimate control of the site should be clearly documented and communicated, and all personnel instructed accordingly. (For example, the owner/operator of the site should have a health and safety system that is clearly communicated and accessible to all staff, contractors and site workers).
- Appropriate personal protective equipment (PPE) **must** be provided to minimise the risk of exposure to noise, fumes, dust, sharps, biohazards (e.g. fungal spores), animal and medical/veterinary waste and other identified hazards. Typical PPE for all workers on a landfill would include high visibility clothing; steel capped, steel-soled lace up boots; hard hats; safety goggles; gloves; and wrist-to-ankle clothing coverage. Other specific PPE for certain areas of operation may be required including hearing protection, and specific items to protect against special or hazardous waste (such as disposable clothing and respiratory protection).

- Landfill operators should ensure they have appropriate procedures for managing exposure to extreme weather conditions. This might include ensuring workers wear suitable clothing, have access to shelter and adequate hydration, and take appropriate rest breaks.
- High visibility clothing should conform to AS/NZS 4602.1:2011 High visibility safety garments - Part 1: Garments for high-risk applications.
- Landfill operators should assess the risk associated with any open bodies of water that exist on site and develop suitable controls to isolate these from workers and any unauthorised persons who might enter the site. Controls might include fencing, signage, methods for egress from a pond, and the siting of flotation devices (for example life rings or life jackets). A 'permit to work' system may also be appropriate.
- Landfill operators should undertake a review of site access controls to ensure only authorised persons access the site. Controls may include perimeter fencing and signage.
- Stationary plant and equipment (i.e. gas plants, leachate equipment, pump stations, chipping and composting plant, mobile litter fences, lighting equipment and generators) should be used for the purposes for which they were designed, and users **must** be trained, assessed and authorised. Stationary plant and equipment should be intrinsically safe and comply with the Electricity (Safety) Regulations 2010.
- Guarding, interlocking systems, lockout-tagout procedures, warning beacons and audible warning devices should all be considered as standard hazard controls for plant and machinery at a landfill and subject to appropriate operational procedures, maintenance programmes and inspections. For further information, refer to Australian Standard AS 4024 Safety of Machinery.
- Radio telephones and mobile phones should be used for communication across the site.
- Where landfill operators cannot avoid workers working alone in remote parts of the site, procedures should be in place to record and manage the task, location, departure, expected return time and communication methods place. Communication plans

should also be in place for checking in at regular intervals and for emergency situations.

- Operators and contractors **must** ensure compliance with the Excavation Safety Good Practice guidelines⁸
- Designated areas should be set aside for stockpiling and storage of materials (for example liner materials) and plant and equipment.
- Plant and equipment should be designed and maintained to reduce noise levels. Monitoring to determine noise levels should be undertaken and suitable controls to minimise exposure should be implemented including sound proofing, reducing exposure times and provision of PPE. Regular hearing checks should be undertaken where there is a risk of noise-induced hearing loss.
- At any time when confined space entry is required on site, appropriate procedures should be developed and implemented to require permitting, trained, competent, capable workers, signage, emergency planning, and provision for environmental monitoring.
- Where tasks require operators to work at height, suitable systems must be implemented to reduce the risk of a fall, such as edge protection, fall restraint, fall arrest or work positioning systems. Any person required to use a harness should be trained and assessed as competent and capable.



IMPORTANT: A rescue plan must be developed and implemented whenever confined space entry or working at height activities are being undertaken.

- Suitable procedures should be developed for the handling of and exposure to hazardous materials, including the availability of Safety Data Sheets; emergency procedures; signage; and use of correct PPE. Procedures should also address waste

⁸ [Excavation Safety Good Practice guidelines.](#)

segregation, HSNO approved handlers, and specific training related to the hazardous material.

- Procedures should be in place to manage non-conforming waste delivered to site (for example, materials of unknown origin) to ensure compliance with waste acceptance criteria.
- Systems should be in place for monitoring and managing actions and behaviour of contractors.
- Landfill operators should ensure that housekeeping practices are implemented to maintain a safe workplace.
- Environmental health monitoring for hazards such as dust, noise, landfill gas, hydrogen sulphide, leachate and exposure to the sun may need to be undertaken. For industrial waste landfills, other specific hazards may require health monitoring.
- A suitable vaccination programme should be in place against known health risks within a landfill environment, including (but not limited to) hepatitis A and B, and tetanus.
- Workers should ensure they take on nutritious foods and water for adequate hydration.
- Systems to protect the personnel and site from fire include alarm systems, sprinklers, extinguishers and hoses, and suitable emergency plans and evacuation procedures which are known by all workers on site.
- Litter should be regularly collected ensuring workers have appropriate protection from handling waste materials. Litter fences should also be installed to reduce the spread of detritus.
- Pest eradication plans and systems should be in place.
- Processes should be in place to identify, monitor and manage fatigue due to work and lifestyle impacts.
- Policies to manage the risk of workers who may be unfit for work should be implemented, including policies addressing drug and alcohol use and fatigue.
- Power tools and manual tools should be used for the purposes for which they were

designed and in accordance with the manufacturer's instructions. Workers should be trained, competent, capable and authorised in the use of all tools. Power tools should be included in all electrical test and tag protocols. Residual Current Devices (RCDs) should be used. Care should be taken when using extension cords and multi-boards. Appropriate PPE should be worn when using tools.

- Workers should be trained in good customer service practices including managing difficult and aggressive customers, contractors and other site personnel or visitors.
- Landfills should have contractor management systems in place which include induction, hazard identification, accident reporting, contractor monitoring, and emergency evacuation.
- Visitors should be accompanied at all times and provided with appropriate safety clothing and equipment.
- Specific plans should be developed to manage tour groups.
- Customers and commercial operators should be directed and monitored to ensure safe behaviour, and assisted where necessary.
- All landfill workers should be trained in good hygiene practices including hand-washing before eating or smoking (in designated areas only); wound management; and minor first aid.

General landfill hazards – manual handling

- Adherence to correct manual handling practices is essential in minimising the risks to operators. Repetitive movements, lifting or moving heavy or awkward items, and twisting movements should be managed through the implementation of suitable controls. These controls might include the use of mechanical lifting devices, job rotation, manual handling training and PPE.
- If manual handling is required, then a manual handling risk assessment should be undertaken.

- A task assessment should be conducted and suitable controls introduced to minimise bending and repetitive movements.



IMPORTANT: There is no maximum safe level for lifting specified in employment or health and safety legislation. This is because the load imposed on a person by lifting something depends on factors like the posture used to lift the weight, the grip the person can get on the weight, the number of times an hour they lift, the shape and size of the load, and the starting and ending heights of the lift. Different people have different tolerances; therefore, what is manageable for one person may be too heavy for another.



MORE INFORMATION: Refer to section 16 of these guidelines for more information on manual handling.



MORE INFORMATION: The assessment tools in the Code of practice for manual handling 2001 provide further guidance regarding the completion of a manual handling risk assessment.

General landfill hazards – traffic & mobile plant

- A suitable site traffic management plan should be developed to ensure the safe passage of vehicles and customers around the site. This plan should address hazards associated with all vehicle movements on site, including mobile plant. The plan should identify construction areas and the access routes to be used by construction vehicles.
- Reversing vehicles, speed, traffic flow and customer movements should all be considered, and landfill operators should ensure clear segregation between customers and mobile plant and vehicles (for example, through the use of physical barriers or distance).

- When towing stuck vehicles, landfill operators should undertake a risk assessment prior to towing a stuck vehicle; use properly engineered towing points on trucks and mobile plant; ensure chains, wire ropes and strops are certified; complete a pre-use inspection process for chains, wire ropes and strops; enforce an exclusion zone during the towing process; ensure only essential personnel are involved in the process; and ensure people are properly trained in towing procedures.
- Additional measures that should be considered to ensure people are not exposed to crush injuries include spotters directing traffic at the tip face, rotating beacons/strobes, audible alarms, reversing beepers and/or reversing cameras, and clear and concise signage and exclusion zones around working equipment.
- Reversing should be minimised wherever possible by implementing a good traffic management plan.
- Construction and operation zone traffic should be subject to a Haul Road Management Plan, which isolates interaction between different activities to minimise risk (e.g. interaction between environmental monitoring traffic and personnel, and construction traffic).
- Landfill operators shall ensure the tip face area is made safe for vehicles discharging waste including consideration of ground stability and evenness; traffic and pedestrian management; sufficient distance between unloading vehicles; management of stuck loads; control of vehicles while backing; and edge protection when tipping off a wall/batter.
- Drivers of vehicles should ensure three points of contact are maintained when entering and exiting vehicle cabs and should always face the vehicle when entering or exiting. Handholds should be installed and steps maintained in a non-slip condition.
- Mobile plant should be used for the purposes for which it was designed, and users **must** be trained, assessed and authorised. Operating procedures should describe the safe and correct use of the mobile plant. All mobile plant should be maintained in accordance with the manufacturer's recommendations and certified where necessary.

- Landfill operators should refer to machine operations manuals, develop and implement maintenance schedules and conduct daily inspections. Externally performed maintenance schedules should also be developed for each machine.
- Pre-start and shutdown inspections should be completed and records retained on all mobile plant.
- Measures to warn other operators and workers of mobile plant movements should be considered, such as reversing buzzers, cameras, flashing beacons and lighting.
- Spotters and/or points-persons should monitor tip face activities and ensure pedestrians keep clear of trucks when they are in the process of tipping waste and the body is raised. Procedures should be in place to ensure exclusion zones are enforced. Spotters should be adequately trained in the process of 'spotting' to ensure they are knowledgeable in all aspects of being a spotter (e.g. overhead hazards, ground conditions, hung loads, visibility while reversing, and communication).
- Spotters should also monitor drivers undertaking tasks associated with tipping their loads to ensure no driver positions themselves beneath a hydraulically operated rear door or truck body.
- Where required, all mobile plant shall be fitted with a suitable Operator Protective Structure (ROPS, TOPS, COPS, FOPS)⁹.
- Strict rules should be applied in respect of mobile plant access and egress including rules requiring handrails and guards, maintaining three points of contact, and ensuring steps and surfaces used to access mobile plant are non-slip.
- Seatbelts should be used at all times.
- Mobile plant should be fitted with suitable fire protection devices.

Design and Construction

- The requirement to enter confined spaces should be eliminated in design as far as

⁹ [Approved Code of Practice for Operator Protective Structures](#)

practicable, to avoid potential exposure to high concentrations of landfill gas.

- Operators and contractors **must** ensure compliance with WorkSafe NZ's Good Practice Guidelines for Excavation Safety
- A lift permit and plan should be in place prior to the use of any equipment (e.g. diggers, excavators or cranes) to install pipework into trenches, liners, manholes and other structures. Lifting strops and chains should be certified. A suitable communication process should be in place with a nominated spotter trained in effective hand signals or verbal instructions. Exclusion zones should be in place to ensure bystanders keep clear when lifting operations are underway and at no time should any person stand beneath a raised load.
- If diggers are being used as lifting devices, they should have anti-drop protection installed.¹⁰ Lifting should only be performed using certified lifting points and certified lifting chains and slings.
- All diggers and excavators should ensure quick hitches and safety pins are used as per the manufacturer's instructions.
- If using a digger bucket to move equipment around the site, the equipment should be secured when the digger is in motion to stop the item from falling out.
- A procedure should be in place for the identification of underground and overhead services prior to any digging activities occurring. This procedure should include requirements for:
 - Obtaining and having service plans on site.
 - Having the asset owner or agent mark any underground services on the ground (before commencing the operation).
 - Hand digging near identified services that have been positively located.
 - Calling the asset owner of a service to the site in cases where a notified or marked service cannot be found, to further locate the service before any

¹⁰ [WorkSafe Fact Sheet - Using quick hitches safely](#)

mechanical plant is utilised.

- Ensuring that where an excavator is used, a copy of the service plans is held by the excavator operator.
 - Obtaining an overhead power lines permit if necessary.
 - Not working within defined distances of electrical support structures.
 - Excavating and trenching work. Refer to the Guide for Safety with Underground Services, and report to www.beforeudig.co.nz when excavation and trenching work is undertaken.
- The presence of methane on adjacent operational areas should be considered when developing controls for construction zones. If working in close proximity to or on the operational area, for example, the controls applying to the operational area should be followed. These controls might include gas detection, the use of intrinsically safe equipment, hot work procedures and fire protection systems.
 - Pipes should be colour coded by type for ease of identification (blue = water and so on).
 - Where possible, overhead hazards should be eliminated (e.g. by placing power lines underground in areas where a collision could potentially occur). If it is impractical to do so, warning signs should be displayed.

Operations

- Landfills should have waste acceptance criteria and procedures to identify hazardous substances on arrival. Procedures should also be in place to identify hazards in the waste stream to ensure compliance with the Hazardous Substances and New Organisms Act 1996 in respect of acceptance, storage, segregation, labelling, handling and disposal.
- Systems should be implemented to identify and control flammable, corrosive and oxidising materials that may enter landfills. This might include training of staff to identify hazardous substances and dangerous goods, the provision of fire prevention

and fire-fighting equipment, and emergency plans for the site. Landfills should have suitably labelled storage and segregation arrangements for hazardous substances and dangerous goods.

- Clear guidance and training on waste acceptance criteria should be provided to site workers to ensure compliance with relevant legislative requirements.
- Appropriate PPE **must** be provided to minimise the risk of exposure to noise, fumes, low light conditions, dust, sharps, irritants, medical waste and other identified hazards.
- Dust and fume control systems.
- Designated stopping and parking areas should be sited away from operational areas to enable trucks to complete activities such as removal and installation of covers and tarps, cleaning waste or spoil from drawbars and rear door seals, and delivery of plant and equipment.
- When vehicles are approaching the tip face, there should be a point at which they are stopped. Good communication systems should be in place to enable clear directions to be given between delivery vehicles and landfill operational plant, for example using radio telephone communications or a points-person. This applies to vehicles arriving and leaving the tip face area.
- If spotters or a points-person and site staff are used, they should be isolated from manoeuvring vehicles.
- Wherever possible, the potential for pedestrian access to the tip face should be eliminated, as should any pedestrian interaction with mobile plant and vehicles.
- Where there is public access, there **must** be very clear separation or an isolation barrier to separate customers from operational activities.
- When customers are tipping waste, all staff, other personnel and operational vehicles should keep clear.
- Operators of collection vehicles with hydraulically operated rear doors should be monitored to ensure drivers never walk between a raised door and the vehicle body when no support stay is in place.

- All tipping vehicles should ensure they are on a stable, level tipping area to reduce the chance of rollover. Landfill operators are responsible for providing a properly engineered level and firm tip face to reduce the risk of tip-over events.
- Tarps should be removed using an appropriate method which controls the risk of working at height.
- Walking on waste materials should be avoided to reduce the risk of slips, trips, cuts, penetration wounds and lacerations. Steel mid-sole boots should be considered.
- All users of firearms for the purposes of pest control **must** hold a suitable license, and be trained and authorised to use such equipment. Firearms **must** be suitably stored in accordance with the Arms Code 2013.
- Trucks should be inspected in preparation for road travel.
- Specific procedures such as Special Waste Permits should be developed for the management of the unique hazards associated with special wastes disposed at municipal or industrial waste landfills (e.g. asbestos, biosolids, heavy metals, or hydrocarbon contaminated material). Landfill operators should refer to the Health and Safety at Work (Asbestos) Regulations 2016.
- Measures should be in place for the prevention of landfill fires, including waste acceptance criteria, regular landfill and load inspections, and gas well temperature monitoring. Landfill operators should have procedures in place to deal with hot, smouldering or smoking loads that arrive in commercial collections and in bulk transfer vehicles. All landfill fires – no matter how small – are to be reported.

Gas/leachate/electricity

- Operators and contractors **must** ensure compliance with WorkSafe NZ's Good Practice Guidelines for Excavation Safety
- When drilling gas wells, monitoring wells or installing services, eliminate the need to weld where possible; for example, through the use of alternative engineering solutions. Where there is a risk of fire or explosion, ensure the use of intrinsically safe

equipment, permit systems, gas detection and monitoring, ventilation, and physical barriers.

- Where electricity is generated on-site, landfill operators should ensure compliance with the relevant electricity safety regulations and industry codes of practice.
- Gas management systems should have procedures to ensure plant and equipment is intrinsically safe. Gas management procedures should require regular gas monitoring (for parameters such as oxygen, hydrogen sulphide, carbon monoxide and methane), management of other sources of ignition, and the implementation of appropriate fire control and warning systems.
- Hot surfaces including pipes and tanks should be suitably isolated or protected to prevent burns.
- All electrical conduits exiting the ground **must** be sealed. No electrical work shall be undertaken without testing for methane.

Weighbridge and Administration

- Workstations should be ergonomically assessed to ensure they are safe to use.
- Spills should be cleaned up promptly, and stairs and access ways to kiosks should have suitable non-slip surfaces.
- If manual handling is required, a manual handling risk assessment should be undertaken.
- Appropriate access to and from the weighbridge should be provided to ensure isolation from traffic.
- Materials should be stored in a suitable racking system which minimises the risk of items falling from above, including in the event of an earthquake, and reduces the need to reach above shoulders to lift items down.
- Appropriate measures and access should be provided to allow safe checking of loads where required.

- Procedures should be in place to deal with abusive and difficult customers and with public entering the site. These procedures should include secure cash handling and prompt removal of cash from the site.
- Where cleaning and maintenance under the weighbridge is required, confined space entry systems should be adopted.

Other activities

- Landfill operators should refer to specific industry guidelines when addressing the following activities that may occur on their site:
 - livestock management;
 - tree felling;
 - quarrying; and
 - use of farm vehicles.

Monofills

Landfill operators should implement appropriate procedures to deal with specific hazards in a monofill environment, including:

- the use of suitable PPE;
- appropriate waste handling procedures (e.g. for situations when waste may need blending with general refuse or chemical neutralisers);
- appropriate procedures for operating machinery on unstable ground (e.g. when working with biosolids); and
- vaccinations programmes (where required).

Special Waste

- The covering of special waste should be given high priority to eliminate odour and harmful dust generation.
- The landfill should receive prior notification of special waste arrival to enable a suitable tipping area to be prepared.
- Suitable temporary cover, such as domestic rubbish bags, needs to be available. This delineation of waste types helps to prevent accidental uncovering of the special waste when the landfill is re-opened the next day.



MORE INFORMATION: Refer to section 18 of these guidelines for more information on Personal Protective Equipment.

Lockout procedures for vehicles and equipment used at landfills

- Lockout instructions for each piece of equipment and vehicle **must** be provided to enable activities to be conducted safely. Power to moving parts **must** always be locked out.
- Ensure requirements around lockout procedures form part of induction training for workers new to the place of work.

Situations requiring lockout may include:

- repairing any mechanical malfunctions or breakdowns affecting the safe operation of plant or equipment;
- regular maintenance and inspections of all pieces of plant, equipment and vehicles; and
- specific inspections of all safety interlocks, switches and other protective devices to ensure that devices have not been disabled or bypassed.



IMPORTANT: If safety devices are bypassed or damaged, the piece of equipment or vehicle should not be used until they are fully functional.



MORE INFORMATION: Further information on lockout-tagout (LOTO) procedures can be found in section 14 of these guidelines.

Cleaning, maintenance, modifications and repair

The potential for landfill gas to be present in explosive quantities should be considered when undertaking any repairs or maintenance while on the landfill itself. Machinery repairs and maintenance should always be undertaken off the landfill (aside from repairs necessitated by breakdown which should be kept to a minimum).

Permit systems should be followed for repairs and maintenance (e.g. for hot work, confined/restricted spaces and working at height, and for breakthrough).

Before any cleaning, maintenance, modification or repair of plant or equipment is undertaken, full lockout procedures should be used.

Maintenance should be undertaken frequently, at scheduled times.

Operating instructions should be available for the use, cleaning and care of the unit or components, including after modifications have been made.

Modifications should only be carried out by trained, competent and capable persons.

Operating instructions should include precautionary notices associated with the reconstruction or modification.

Risk assessments relating to any modifications must be conducted and recorded.



IMPORTANT: Modifications may include changes in plant, equipment, materials, processes or tasks.

Monitoring to determine noise levels should be undertaken and suitable controls to minimise exposure should be implemented including sound proofing, reducing exposure times and provision of PPE. Regular hearing checks should be undertaken where there is a risk of noise-induced hearing loss.

Adherence to correct manual handling practices is essential to minimise risks to operators. Repetitive movements, lifting or moving heavy or awkward items, and twisting movements should be managed through the implementation of suitable controls. These controls might include the use of mechanical lifting devices, job rotation, manual handling training and PPE. Consider steam-cleaning plant and equipment before undertaking maintenance to protect against the risk of infection.

Workers (working in the waste stream) who are required to maintain plant and equipment should have appropriate vaccinations to protect against the risk of infection. Appropriate health checks should be conducted annually to ensure their immunisation remains effective.

Suitable PPE should be available to protect against contamination and infection, and from cuts, abrasions and puncture wounds from waste materials.

Systems should be in place for the management of hazardous materials and other substances. These systems should include segregation, storage, HSNO approved handlers (where required), signage, safety data sheets, PPE and emergency procedures.

Regular housekeeping of maintenance areas should be undertaken, including the immediate clean-up of spills.

Vehicle maintenance pits should have covers or edge protection installed when they are not in use.

When climbing on machines, suitable controls for working at height should be implemented to manage the risk of a fall.

Access onto machinery should be via proper access points.

- Systems should be in place to isolate areas where items could fall from above onto bystanders.

- Hot surfaces including exhausts and turbines should be suitably isolated or protected to prevent burns.
- Care should be taken when handling or using fluids such as grease, oil and coolants which may be under pressure and can be injected into or under the skin. This includes specific procedures for using appropriate PPE.

Training



THE LAW: As required by Section 9 of the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016, *A PCBU must ensure, so far as is reasonably practicable, that every worker who carries out work of any kind, uses plant of any kind, or deals with a substance of any kind that is capable of causing a risk in a workplace—*

(a) either—

(i) has adequate knowledge and experience of similar places, and work, plant, or substances of that kind, to ensure that the worker carrying out the work, using the plant, or dealing with the substance is not likely to adversely affect the health and safety or cause harm to the worker or any other person; or

(ii) is adequately supervised by a person who has that knowledge and experience; and

(b) is adequately trained in the safe use of—

(i) all plant, objects, substances, or equipment that the worker is or may be required to use or handle; and

(ii) all personal protective equipment that the worker is or may be required to wear or use (Health and Safety at Work (General Risk and Workplace Management) Regulations, 2016).

Examples of methods to ensure that workers receive appropriate training include:

- Provision of clear and concise safe operating procedures (SOPs), including vehicle checklists and corrective action follow-up
- Induction and regular in-house training courses and refresher sessions
- Specific health and safety training (e.g. driver training, lockout-tagout and manual handling, landfill gas)
- Toolbox meetings discussing safe and correct operational practices.

Retention of appropriate training records, along with details of training providers and any refresher requirements, is strongly recommended.



MORE INFORMATION: Appendix 7 sets out examples of generic hazards/risks associated with all waste collection and processing methods along with recommended control measures. The following table sets out additional hazards/risks associated with landfills.

Table 1: Additional hazards/risks for bag collection

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities		Actions				
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who might be harmed?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?					Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
								Elimination:											
								Substitution:											
								Isolate:											
								Engineering Controls:											
								Administrative Controls:											
								PPE:											
								Elimination:											
								Substitution:											
								Isolate:											
								Engineering Controls:											
								Administrative Controls:											
								PPE:											
								Elimination:											
								Substitution:											
								Isolate:											
								Engineering Controls:											
								Administrative Controls:											
								PPE:											
								Elimination:											
								Substitution:											

Table 1: Additional hazards/risks for bag collection

This table is not a complete list of hazards. It's only a few examples. You will need to identify all the hazards applicable for your site or activity This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Hazard identification					Uncontrolled risk assessment			Controlled Risk Assessment					Development opportunities		Actions		
Area/ Activity/ Plant/ Equipment/ Vehicle/ Tools/ Material/ Environmental	What is the hazard?	Hazard group	Who might be harmed?	How might they be harmed?	Severity	Likelihood	Uncontrolled Risk Level	What controls are you using?			Severity	Likelihood	Controlled Risk Score	Do you need to do anything else to manage the risk?	What are the steps to achieve improvement?	By who?	By When?
								Isolate:	Engineering Controls:	Administrative Controls:							
								Isolate:									
								Engineering Controls:									
								Administrative Controls:									
								PPE:									
								Elimination:									
								Substitution:									
								Isolate:									
								Engineering Controls:									
								Administrative Controls:									
								PPE:									
								Elimination:									
								Substitution:									
								Isolate:									
								Engineering Controls:									
								Administrative Controls:									
								PPE:									

Table 13: Additional hazards/risks for landfills

This hazard/risk register should be read in conjunction with ‘**Appendix 7: Generic hazards/risks associated with all waste collection and processing methods**’

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual risk rating	Review Frequency	Review Date
Design and construction	Interaction between construction and operations	<ul style="list-style-type: none"> Fatality Notifiable Event 		Minimise	<ul style="list-style-type: none"> Consider the presence of methane on adjacent operational areas when developing controls for the construction zone Procedures to communicate responsibilities 			
General landfill hazards	Abusive and threatening customers	<ul style="list-style-type: none"> Traumatic harm 		Minimise	<ul style="list-style-type: none"> Procedures to deal with abusive and threatening customers Train staff to deal with aggressive customers Secure cash handling Regular removal of cash from the site 			
	Confined space entry	<ul style="list-style-type: none"> Fatality Notifiable Event 		Eliminate Minimise	<ul style="list-style-type: none"> Avoid entry into confined spaces including under weighbridges Confined space entry procedures Lock access ways and signpost Rescue procedures 			
	Environmental health hazards e.g. dust, biological, fumes, noise	<ul style="list-style-type: none"> Notifiable Event 		Minimise	<ul style="list-style-type: none"> Environmental monitoring Dust and fume control systems, Engineering controls to reduce noise levels (e.g. guarding, maintenance, sound proofing) 			

Table 13: Additional hazards/risks for landfills

This hazard/risk register should be read in conjunction with ‘Appendix 7: Generic hazards/risks associated with all waste collection and processing methods’

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual risk rating	Review Frequency	Review Date
					<ul style="list-style-type: none"> • PPE • Health monitoring 			
	Falling objects (refuse, uncontrolled vehicles, trailers)	<ul style="list-style-type: none"> • Struck by falling objects 		Minimise	<ul style="list-style-type: none"> • Exclusion zones • Procedures • Monitoring customer behaviour • Storage of weighbridge materials in a suitable racking system 			
	Fire	<ul style="list-style-type: none"> • Fatality • Notifiable Event • Burns and scalds 		Minimise	<ul style="list-style-type: none"> • Storage and segregation for hazardous substances and dangerous goods • Emergency plans, training, evacuation procedures • Fire warning and protection systems • Smoking in designated areas only 			
	Fitness for work	<ul style="list-style-type: none"> • Fatality • Notifiable Event • Other Injuries 		Minimise	<ul style="list-style-type: none"> • Monitor and manage work hours to identify fatigue risks • Policies and procedures to support in the management of non-work-related fatigue • Drug and alcohol policy 			
	Ground instability	<ul style="list-style-type: none"> • Fatality • Notifiable Event • Other injuries 		Eliminate Minimise	<ul style="list-style-type: none"> • Tip face area is made safe for vehicles discharging waste (e.g. ground stability and evenness) • Traffic and pedestrian management, sufficient distance between unloading vehicles 			

Table 13: Additional hazards/risks for landfills

This hazard/risk register should be read in conjunction with ‘Appendix 7: Generic hazards/risks associated with all waste collection and processing methods’

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual risk rating	Review Frequency	Review Date
					<ul style="list-style-type: none"> • Management of stuck loads • Control of vehicles while backing • Where trenching and excavation occurs, ensure compliance with the Excavation Safety Good Practice guidelines. 			
	Hazardous substances and dangerous goods	<ul style="list-style-type: none"> • Fatality • Notifiable Event 		Minimise	<ul style="list-style-type: none"> • Procedures for identification, isolation, handling, segregation of incompatible substances; storage; disposal; and ceasing of work activities • HSNO approved handlers • Signage/safety data sheets • Emergency procedures • Emergency PPE available • Trained operators 			
	Infection and illness from handling waste	<ul style="list-style-type: none"> • Notifiable Event 		Minimise	<ul style="list-style-type: none"> • Equipment should be cleaned prior to being maintained. • Ensure vaccination for common diseases, including hepatitis • Avoid walking on waste materials • Develop and implement a ‘needle stick’ response policy and seek medical attention for any needle stick injuries • Immediately clean and dress all wounds • Cover dressing on hand wounds with durable waterproof gloves 			

Table 13: Additional hazards/risks for landfills

This hazard/risk register should be read in conjunction with ‘Appendix 7: Generic hazards/risks associated with all waste collection and processing methods’

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual risk rating	Review Frequency	Review Date
					<ul style="list-style-type: none"> Workers to wear appropriate PPE to maintain good hygiene Provide hygienic washing and welfare facilities Train staff in good hygiene practices, e.g. washing hands before eating, drinking or smoking Consider use of steel mid-sole footwear 			
	Landfill fire	<ul style="list-style-type: none"> Notifiable Event 		Minimise	<ul style="list-style-type: none"> Load inspections Waste acceptance criteria Procedures for customer waste deliveries with hot, smouldering or smoking loads Landfill inspections Gas well temperature monitoring Reporting procedures 			
	Landfill gas and gas plant	<ul style="list-style-type: none"> Fatality Notifiable Event 	Yes	Minimise	<ul style="list-style-type: none"> Eliminate the need to undertake hot work through the use of alternative engineering solutions Provide intrinsically safe equipment Permit system Gas detection and monitoring Ventilation systems Manage sources of ignition (i.e. heat, smoking) Implement fire control and warning 			

Table 13: Additional hazards/risks for landfills

This hazard/risk register should be read in conjunction with ‘Appendix 7: Generic hazards/risks associated with all waste collection and processing methods’

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual risk rating	Review Frequency	Review Date
					systems <ul style="list-style-type: none"> • All electrical conduits exiting the ground must be sealed • No electrical work should be undertaken without testing for methane • Lock out and tag out system to be implemented before work undertaken on gas plant. • Pipes should be lagged where there is a risk of burns. • Follow appropriate electrical industry safety guidelines. 			
	Manual handling	<ul style="list-style-type: none"> • Notifiable Event • Strains/sprains 	Yes	Minimise	<ul style="list-style-type: none"> • Mechanical lifting devices • Manual handling risk assessment • Ensure all workers receive adequate training in manual handling (Code of practice for manual handling 2001) • Workers to wear fit-for-purpose gloves and other PPE to prevent cuts from sharp objects and to maintain good hygiene • Pre-employment monitoring and annual health monitoring • Early reporting of musculoskeletal symptoms 			
	Non-conforming waste	<ul style="list-style-type: none"> • Fatal • Notifiable Event 	Yes	Isolate Minimise	<ul style="list-style-type: none"> • Waste acceptance criteria • Special waste permit system 			

Table 13: Additional hazards/risks for landfills

This hazard/risk register should be read in conjunction with ‘Appendix 7: Generic hazards/risks associated with all waste collection and processing methods’

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual risk rating	Review Frequency	Review Date
		<ul style="list-style-type: none"> Other health effects 			<ul style="list-style-type: none"> Load inspections Customer reporting protocols Appropriate PPE to be used when receiving, inspecting and for disposal <ul style="list-style-type: none"> GPS monitoring of disposal locations 			
	People working on the landfill who are unfamiliar with the site	<ul style="list-style-type: none"> Fatality Notifiable Event 	Yes	Minimise	<ul style="list-style-type: none"> Contractor management systems Direction, monitoring and assistance for customers and contractors; supervision where necessary Signage to be installed that clearly describes site rules and procedures Provide employee assistance programme No person to walk beneath raised hydraulically operated rear door on waste delivery vehicles 			
	Pests	<ul style="list-style-type: none"> Infection 	No	Minimise	<ul style="list-style-type: none"> Procedures for managing site hygiene Bait stations Building maintenance programme Bird wires PPE Suitable procedure to be developed for the use of firearms First Aid training in minor wound care 			

Table 13: Additional hazards/risks for landfills

This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual risk rating	Review Frequency	Review Date
					<ul style="list-style-type: none"> Removal of birds' nests 			
	Poor ergonomics	<ul style="list-style-type: none"> Strains/sprains 		Minimise	<ul style="list-style-type: none"> Workstation assessment and postural setup for weighbridge/kiosk operator Anti-fatigue mats Early reporting procedures 			
	Poor housekeeping	<ul style="list-style-type: none"> Notifiable Event 		Minimise	<ul style="list-style-type: none"> Keep walkways/stairways/access ways clear Safe storage of items Spill procedures Workplace inspections Litter control/appropriate PPE to be used 			
	Power and hand tools	<ul style="list-style-type: none"> Notifiable Event 		Minimise	<ul style="list-style-type: none"> Guarding on moving parts Training in correct use of power tools and hand tools Procedures Electrical test and tag RCD devices to be used Appropriate PPE to be used Maintenance and lockout-tagout procedures 			
	Site traffic	<ul style="list-style-type: none"> Fatality Notifiable Event 		Minimise	<ul style="list-style-type: none"> Traffic management plan including consideration of construction versus operations traffic 			

Table 13: Additional hazards/risks for landfills

This hazard/risk register should be read in conjunction with 'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual risk rating	Review Frequency	Review Date
					<ul style="list-style-type: none"> • Manage gradients of access roads • Manage roads in line with good engineering practice • Speed limits • Road markings/cones/barriers/exclusion zones • Signage and direction • PPE • Spotters • Vehicles and machines should have beacons, strobes, audible alarms and reversing cameras • Designated areas for mobile plant parking and storage, and for stockpiling • Controls to segregate people entering and leaving the weighbridge kiosk 			
	Slips, trips and falls	<ul style="list-style-type: none"> • Fatality • Notifiable Event • Other Injuries 		Minimise	<ul style="list-style-type: none"> • Suitable access walkways on landfill batters • Guards and handrails • Fall protection, restraint, arrest or work positioning systems • Training in safe working at height including harness use and rescue • Avoid walking on waste materials • Edge protection systems • Edge protection/covers for vehicle 			

Table 13: Additional hazards/risks for landfills

This hazard/risk register should be read in conjunction with ‘Appendix 7: Generic hazards/risks associated with all waste collection and processing methods’

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual risk rating	Review Frequency	Review Date
					maintenance pits			
	Stacking and storage	<ul style="list-style-type: none"> Fatality Notifiable Event 		Minimise	<ul style="list-style-type: none"> Stable storage of stockpiles and materials 			
	Stationary and mobile plant and equipment. (includes lifting using excavators)	<ul style="list-style-type: none"> Fatality Notifiable Event 		Minimise	<ul style="list-style-type: none"> Licensed, authorised, competent, capable and trained operators Communication systems between operators Guards, interlocks, lighting, beacons, emergency stops and warning devices - refer AS 4024 Safety of Machinery. Certified ROPS, FOPS, TOPS, COPS to be fitted, as required, to mobile plant Use of reversing beepers and cameras Scheduled preventative maintenance and permit systems Pre-start checks Signs and labels Maintenance and lockout-tagout procedures Maintenance/repairs to be undertaken off the landfill (aside from breakdown repairs) Operating procedures Exclusion zones Access controls to manage slips, trips and fall risks including handrails and non-slip 			

Table 13: Additional hazards/risks for landfills

This hazard/risk register should be read in conjunction with ‘Appendix 7: Generic hazards/risks associated with all waste collection and processing methods’

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual risk rating	Review Frequency	Review Date
					steps, where applicable <ul style="list-style-type: none"> • Operators to maintain three points of contact for access/egress • Seatbelts to be worn at all times • Fire protection devices to be fitted • Electrical safety regulations must be complied with, including where gas levels may exceed lower explosive levels and may require mobile/stationary plant to be intrinsically safe • Chains, strops and lifting points to be certified • Nominated spotter trained in effective communication and, where possible, isolated from manoeuvring vehicles • No persons to stand beneath raised load • Anti-drop protection on excavator hydraulics • Quick hitch and safety pins to be used • Tie down loads when moving with excavator bucket • Procedure for towing stuck vehicles 			
	Stormwater ponds, leachate ponds and other water-bodies	<ul style="list-style-type: none"> • Notifiable Event 		Minimise	<ul style="list-style-type: none"> • Fencing, signage, rescue methods & flotation devices • ‘Permit to work’ system 			

Table 13: Additional hazards/risks for landfills

This hazard/risk register should be read in conjunction with ‘Appendix 7: Generic hazards/risks associated with all waste collection and processing methods’

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual risk rating	Review Frequency	Review Date
	Tour groups and visitors	<ul style="list-style-type: none"> Notifiable Event 		Minimise	<ul style="list-style-type: none"> Site introduction Site rules Isolate tour groups from operational areas PPE where appropriate Full- time escort Adult/child ratios Children and pets stay in vehicles Specific plans to manage tour groups Signage and warning of electrical equipment/plant for those with pacemakers 			
	Unauthorised public access	<ul style="list-style-type: none"> Notifiable Event 		Minimise	<ul style="list-style-type: none"> Site access controls (including perimeter fences and signage) Segregation/isolation barriers to separate customers from operational activities 			
	Underground and overhead services	<ul style="list-style-type: none"> Fatality Notifiable Event Other injuries 		Minimise	<ul style="list-style-type: none"> Refer to site plans Liaise with asset owner before working near services Where trenching and excavation occurs, ensure compliance with the Excavation Safety Good Practice guidelines Refer Guide for Safety with Underground Services Report to www.beforeudig.co.nz when excavation and trenching work is 			

Table 13: Additional hazards/risks for landfills

This hazard/risk register should be read in conjunction with ‘Appendix 7: Generic hazards/risks associated with all waste collection and processing methods’

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual risk rating	Review Frequency	Review Date
					undertaken <ul style="list-style-type: none"> • If working near overhead power, ensure appropriate permits are in place and keep to required distances • Spotters may be required • Hand digging when excavating near services 			
	Weather conditions	<ul style="list-style-type: none"> • Sun/heat stroke • Foreign bodies in eye • Hypothermia 		Minimise	<ul style="list-style-type: none"> • Suitable high-vis clothing/sunscreens/long sleeves/wet weather gear • Control wind-blown dust and particles • Ensure adequate lighting • Nutritious foods and adequate water for hydration • Control temperature, air flow, in offices and mobile plant 			
	Spilt substances	<ul style="list-style-type: none"> • Environmental harm • Minor injuries 		Minimise	<ul style="list-style-type: none"> • Training in spill procedures and spill kit use • Signage to warn of spills • Procedures to clean up spills immediately after they occur • Adequate number and location of spill kits 			
Lone Workers	<ul style="list-style-type: none"> • Uneven surfaces • Working around water 	<ul style="list-style-type: none"> • Fatality • Notifiable Event • Other injuries 		Minimise	<ul style="list-style-type: none"> • Procedures to record and manage the task and location • Departure time and expected return time • Communication methods • Plans for checking in at regular intervals 			

Table 13: Additional hazards/risks for landfills
 This hazard/risk register should be read in conjunction with **'Appendix 7: Generic hazards/risks associated with all waste collection and processing methods'**

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual risk rating	Review Frequency	Review Date
					and for emergency situations			

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42. Appendix 1: Definitions¹¹

Appropriate footwear: Footwear that is fit for the activity that is being undertaken, taking into account the hazards in the workplace.

Authorised person: means a person approved or assigned by the PCBU to perform a specific type of duty or duties.

Cabin Operator Protective Structure (COPS) means *a structure designed to be attached to or form part of, a mobile plant for the purpose of reducing the possibility that an operator wearing a seatbelt in the driving position from being harmed should the plant roll, receive a blow from a falling object, or tip over, or where there is the possibility of an object entering the cabin. In some cases, the falling object protective structure (FOPS), roll over protective structure (ROPS), cabin operator protective structure (COPS) or tip over protective structure (TOPS) could be the same structure* (Approved code of practice for operator protective structures on self-propelled mobile mechanical plant, 1999).

Clean fill material means *virgin excavated natural materials (VENM) such as clay, soil and rock that are free of:*

- *combustible, putrescible, degradable or leachable components;*
- *hazardous substances or materials (such as municipal solid waste) likely to create leachate by means of biological breakdown;*
- *products or materials derived from hazardous waste treatment, stabilisation or disposal practices;*
- *materials such as medical and veterinary waste, asbestos, or radioactive substances that may present a risk to human health if excavated;*
- *contaminated soil and other contaminated materials; and*
- *liquid waste.*

¹¹ All definitions that relate to legislation are correct as of November 2016

When discharged to the environment clean fill material will not have a detectable effect relative to the background (WasteMINZ Technical Guidelines for Disposal to Land, April 2016).

Closed system: a system that is fully guarded and physically prevents access to the compaction mechanism while compaction is underway, e.g. if the rake rail is 1400mm or more above the level on which the operator is standing, and any pinch point is at least 850mm away from the operator, it shall be deemed to be a closed system. Alternatively, where the height is less than 1400mm, the system shall meet the requirements of Figure 3 in the Booklet 'Ergonomics of machine guarding guide' published by the Department of Labour.

Code of Practice for temporary traffic management (CoPTTM): means the NZ Transport Agency's 'Traffic Control Devices Manual: Part 8 Code of Practice for Temporary Traffic Management' (2004, fourth edition). This manual describes best practice for the safe and efficient management and operation of temporary traffic management (TTM) on all roads in New Zealand and is mandatory on state highways.

Commingled: means a range of recyclables in the one container, e.g. glass, paper, cardboard, cans and plastic containers

Compactor operating cycle: means compacting equipment with one of the following types of operating cycle:

- **AUTO** (continuous cycle) is one that continually cycles until stopped by an independent action. This is only acceptable in a closed system.
- **SINGLE** cycle is one that cycles once and then stops automatically.
- **MULTI** cycle is one that cycles for a given number of times and then stops automatically.
- **CTRL** (controlled cycle) is a single cycle, controlled by the operator by depressing one single button or lever to activate compaction until the pinch point has been passed. The cycle may then complete automatically, even if the button or lever is released.

- SEMI (intermittent cycle) is a cycle where the compaction mechanism is automatically stopped at least 500mm before the rake rail. A 'hold to run' control is required to run the compaction mechanism for the remainder of the cycle (from where a pinch point is created up to the end of the cycle).
- HOLD TO RUN (sometimes referred to as deadman control) is a control that requires continuous pressure by an operator. On release of hand pressure to the control, the dangerous motion of the machine will stop immediately.

Competent person means a person who has acquired, through a combination of training and qualification or experience, the knowledge and skills to perform the task required.

Capable person means Someone who is capable has the skill or qualities necessary to do a particular thing well, or is able to do most things well

Confined space means an *enclosed or partially enclosed space that is not intended or designed primarily for human occupancy, within which there is a risk of one or more of the following:*

- An oxygen concentration outside of the safe oxygen range*
- A concentration of airborne contaminant, that may cause impairment, loss of consciousness or asphyxiation*
- A concentration of flammable airborne contaminant that may cause injury from fire or explosion*
- Engulfment in a stored free flowing solid or a rising level of liquid that may cause suffocation or drowning (Australian Standard AS 2865:2009 'Confined spaces').*

Construction and demolition (C&D) waste means *non-household, non-putrescible construction and demolition wastes. This includes waste generated from the construction, renovation, repair, and demolition of structures such as residential and commercial buildings, roads, and bridges. The composition of C&D waste varies for these different activities and structures. Overall, C&D waste is composed mainly of wood products, asphalt, plasterboard, and masonry. Other components often present in significant quantities including metals, plastics, earth, shingles, insulation, and paper and cardboard (WasteMINZ Technical Guidelines for Disposal to Land, April 2016).*

Contractor: Any person who is engaged, other than as an employee, by another to do work for gain or reward. They may be a self-employed person, corporate entity, or a person engaged on some other basis than as an employee.

Dual sided collection: The act of collecting refuse and recyclables from both sides of the road while the collection vehicle is travelling in one direction, requiring runners or operators to enter a live lane and cross the centre line of a road.

Due diligence: Level of judgement, care, determination and activity that a person would reasonably be expected to do under particular circumstances.

Edge protection means a barrier (e.g. guard rails, covers over holes, solid balustrades) that is put in place to prevent a person falling over edges and into holes.

Equipment carries the same definition as Plant.

Exclusion zone means an area into which unauthorised people are not allowed to go for reasons of safety or security.

Fall arrest system means a system designed to support and hold a person in the event of a fall.

Falling Object Protective Structure (FOPS) means *a structure designed to be attached to, or form part of, mobile plant for the purpose of reducing the possibility that an operator seated beneath the structure in the driving position from being harmed should the FOPS receive a blow from a falling object. FOG is a new type of protection and is the same as the known FOPS: the term FOG stands for Falling Object Guard. In some cases, the FOPS (FOG) and ROPS or TOPS could be the same structure (Approved code of practice for operator protective structures on self-propelled mobile mechanical plant, 1999).*

Guidelines: Health and Safety Guidelines: for the Solid Waste and Resource Recovery Sector – parts one, two, three, four and five.

Hazard: *A source or situation with a potential for harm in terms of human injury or ill-health, damage to property, damage to the environment, or a combination of both (Australian and New Zealand Standard AS/NZS 4801:2001 'Occupational Health and Safety Management Systems'). A person's behaviour can also be a hazard where that behaviour has the potential to cause death, injury, or illness to a person (whether or not that behaviour*

results from physical or mental fatigue, drugs, alcohol, traumatic shock, or another temporary condition that affects a person's behaviour) (HSWA).

Risk assessment: The overall process of estimating the magnitude of risk, based on the likelihood and consequence of exposure by a worker.

Hazardous noise in relation to hearing loss means noise that exceeds the exposure standard for noise in the workplace.

Health and Safety Committee: A Health and Safety Committee (HSC) supports the ongoing improvement of health and safety across the whole workforce. The HSC enables business representatives, worker representatives and others on the HSC to meet regularly and work cooperatively to improve workers' health and safety.

One of the main functions of an HSC is to assist in developing standards, rules, and policies or procedures to improve workplace health and safety outcomes.

Health and Safety Representative (HSR): *A worker who has been elected by the members of their work group to represent them in health and safety matters. The work group can be the whole workplace or it can be workers grouped by work areas, occupations, work sites or other arrangements. How a work group or work groups are organised will depend on what is effective for the business and the workers, given the structure of the business or undertaking* (Health and Safety at Work (Worker Engagement, participation and representation) Regulations 2016).

Hold to run (sometimes referred to as deadman control) is a control that requires continuous pressure by an operator. On release of hand pressure to the control, the dangerous motion of the machine will stop immediately.

HSWA means the Health and Safety at Work Act 2015.

In the vicinity of means that all duty holders are required to consider not just the actual workplace but also where a person passes through or close to the place of work or where the workplace is moving (e.g. members of the public close to vehicle collection points and company-owned or controlled vehicles and transport will be included).

Industrial waste means *waste specific to a particular industry of industrial process. It may contain higher levels of contaminants – such as heavy metals and human-made chemicals –*

than municipal solid waste, or have physical or biological properties that require specific management procedures. Industrial waste needs to be managed with environmental controls appropriate to the specific waste(s) being landfilled (WasteMINZ Technical Guidelines for Disposal to Land, April 2016).

Interlocking: An interlock may operate mechanically, hydraulically, pneumatically, electrically (or a combination of these). It makes the machinery safe by ensuring that the hazard is not present when a guard is opened. This is achieved by disconnecting the machine from its power source so that it cannot be started if a guard is open. If the machine is running and a guard is opened, the power to the machine will be disconnected and the machine stops immediately.

Job and finish: Work without scheduled hours in which the employee leaves when the job is finished.

Landfill gas means *gas generated as a result of the decomposition processes on biodegradable materials deposited in a landfill. It consists principally of methane and carbon dioxide, but includes minor amounts of other components (WasteMINZ Technical Guidelines for Disposal to Land, April 2016).*

LEV: Low entry collection vehicle (See definition for 'low entry vehicle').

Live lane has the same meaning as in the Code of Practice for Temporary Traffic Management (4th Edition), being *a lane available for use by a class or classes of vehicles.*

Lockout-tagout (or LOTO) is a specific procedure to render machinery or equipment inoperable by isolating the energy source, whether electrical, hydraulic, potential or kinetic.

Low entry vehicle (LEV): A heavy, rigid motor vehicle on which a compaction type body is mounted. The vehicle has a modified cab converted to left-hand drive and is designed for the efficient kerbside collection of domestic waste or recyclables using a single operator.

Managed fill material means *predominantly clean fill material that may also contain inert construction and demolition materials and soils from sites that may have contaminant concentrations in excess of local background concentrations, but with specified maximum total concentrations (WasteMINZ Technical Guidelines for Disposal to Land, April 2016).*

Manual handling is defined by WorkSafe New Zealand as *any activity requiring a person to interact with their environment and use any part of their muscles or skeletal system to lift, lower, push, pull, carry, throw, move, restrain or hold any animate, or inanimate, object.*

MGB means mobile garbage bin.

MRB means mobile recycling bin.

Municipal solid waste means *any non-hazardous, solid waste from household, commercial and/or industrial sources. It includes putrescible waste, garden waste, biosolids, and clinical and related waste sterilised to a standard acceptable to the Department of Health. All municipal solid waste should have an angle of repose of greater than five degrees (5°) and have no free liquid component. It is recognised that municipal solid waste is likely to contain a small proportion of hazardous waste from households and small commercial premises that standard waste screening procedures will not detect. However, this quantity should not generally exceed 200 ml/tonne or 200 g/tonne (WasteMINZ Technical Guidelines for Disposal to Land, April 2016).*

Notifiable event: When someone dies or when a notifiable incident, illness or injury occurs. The regulator (WorkSafe New Zealand) must be informed of notifiable events by calling 0800 030 040.

Notifiable incident: *An unplanned or uncontrolled incident in relation to a workplace that exposes a worker or any other person to a serious risk to that person's health or safety arising from an immediate or imminent exposure to—*

- (a) an escape, a spillage, or a leakage of a substance; or*
- (b) an implosion, explosion, or fire; or*
- (c) an escape of gas or steam; or*
- (d) an escape of a pressurised substance; or*
- (e) an electric shock; or*
- (f) the fall or release from a height of any plant, substance, or thing; or*
- (g) the collapse, overturning, failure, or malfunction of, or damage to, any plant that is required to be authorised for use in accordance with regulations; or*

- (h) *the collapse or partial collapse of a structure; or*
- (i) *the collapse or failure of an excavation or any shoring supporting an excavation; or*
- (j) *the inrush of water, mud, or gas in workings in an underground excavation or tunnel; or*
- (k) *the interruption of the main system of ventilation in an underground excavation or tunnel; or*
- (l) *a collision between 2 vessels, a vessel capsize, or the inrush of water into a vessel; or*
- (m) *any other incident declared by regulations to be a notifiable incident for the purposes of subpart 3, section 24 of the Health and Safety at Work Act 2015 (HSWA).*

Permit to work is a document which specifies the work to be done and the precautions to be taken. They allow work to start only after safe procedures have been defined and they provide a clear record that all foreseeable hazards have been considered. ¹³

Person conducting a business or undertaking (PCBU): A PCBU is a ‘person conducting a business or undertaking’. While a PCBU may be an individual person or an organisation, in most cases the PCBU will be an organisation (for example, a business entity such as a company). An individual, such as a sole trader, can also be a PCBU. While the terms ‘business’ and ‘undertaking’ are not defined in HSWA, they usually mean the following:

- Business is an activity carried out with the intention of making a profit or gain
- Undertaking is an activity that is non-commercial in nature, for example, a government department or a local council.

Individuals or organisations can be PCBUs if they carry out work, regardless of their legal structure. The following are examples of PCBUs:

- A business in the form of an incorporated company.
- A sole trader or self-employed person.
- A general partner in a partnership (if the partnership is a limited partnership).
- A partner in a partnership (if the partnership is not a limited partnership).

An organisation created by legislation (e.g. government department, university, school or local authority).

Personal Protective Equipment (PPE): *Anything used or worn by a person to minimise risks to their health and safety (HSWA). PPE also includes air-supplied respiratory equipment.*

Pinch point (shear trap) means the point where two surfaces present a shear hazard and may cause possible injury to any operator's body, body part or may catch on their clothing.

Plant: Includes machinery, vehicles, vessels, aircraft, equipment (including PPE), appliances, containers, implements and tools. Plant also includes any part of these, or anything fitted to these.

Reasonably practicable: *That which is, or was, at a particular time, reasonably able to be done in relation to ensuring health and safety, taking into account and weighing up all relevant matters, including -:*

- a. *the likelihood of the hazard or the risk concerned occurring; and*
- b. *the degree of harm that might result from the hazard or risk; and*
- c. *what the person concerned knows, or ought reasonably to know, about –*
 1. *the hazard or risk; and*
 2. *ways of eliminating or minimising the risk; and*
- d. *the availability and suitability of ways to eliminate or minimise the risk; and*
- e. *after assessing the extent of the risk and the available ways of eliminating or minimising the risk, the cost associated with available ways of eliminating or minimising the risk; and*
- f. *after assessing the extent of the risk and the available ways of eliminating or minimising the risk, the cost associated with available ways of eliminating or minimising the risk, including whether the cost is grossly disproportionate to the risk (HSWA).*

Risk: *The likelihood that a hazard will actually cause its adverse effects, together with a measure of the effect (Health and Safety Executive website, 2016).*

Worker: *Unless the context otherwise requires, a **worker** means an individual who carries out work in any capacity for a PCBU, including work as –*

- a. *An employee; or*
- b. *A contractor or subcontractor; or*
- c. *An employee of a contractor or subcontractor; or*
- d. *An employee of a contractor or subcontractor; or*
- e. *An outworker (including a homeworker); or*
- f. *An apprentice or a trainee; or*
- g. *A person gaining work experience or undertaking a work trial; or*
- h. *A volunteer worker; or*
- i. *A person of a prescribed class.*

A PCBU is also a worker if the PCBU is an individual who carries out work in that business or undertaking (HSWA).

Workplace: *A place where work is being carried out, or is customarily carried out, for a business or undertaking. Includes any place where a worker goes, or is likely to be, while at work. A “place” can also include:*

- *a vehicle, vessel, aircraft, ship, or other mobile structure; and*
- *any waters and any installation on land, on the bed of any waters, or floating on any waters (HSWA).*

43. Appendix 2: Example contractor management procedure for territorial authorities

The territorial authority has a responsibility to select contractors who will not put themselves, other workers, PCBUs or others at risk. This **requires** the PCBU to select competent and capable contractors through a robust procurement process.

Documentation required from contractors

Documented health and safety policies and procedures for subcontractors

Systems for consultation with subcontractors

Maintenance of contracts and service agreements to reflect contractual arrangements and coordination of activities

Clear designation of roles and responsibilities for the management of health and safety for each party in the contract

Clear responsibilities for the identification of hazards, and for the assessment and control of risk in the workplace

Clear responsibilities for the reporting, investigation and management of notifiable injuries/illnesses in the workplace

Evidence of health and safety management systems implemented by the contractor

Processes to clearly identify that the contractor and their workers are suitably trained and qualified for all aspects of the job (e.g. approved handlers)

The health and safety requirements of the job

Obligations with regard to legal, contractual and technical aspects of the work to be undertaken

Provision of appropriate plant maintenance responsibilities

Regular reviews and audits of the health and safety management undertaken by the contractors engaged

Assessment of the impact of the activities undertaken by one contractor on another, and the identification and management of any potential health and safety issues that might

subsequently arise (for example, impact of pest control on cleaners)

Assessment of the likelihood of health and safety risks being exported to another part of the system due to a particular methodology being adopted by a contractor e.g. collecting materials together, shifting risks offshore (to a material recovery facility or another offshore facility if material is exported unsorted)

The inclusion of contracted labour into internal health and safety procedures (for example, induction and emergency procedures)

Procedures for hazard and accident reporting and investigation by contractors

A review schedule is recommended for ongoing management of the above.

44. Appendix 3: Example health and safety questionnaire for pre-tender process for territorial authorities

Contractor's occupational health and safety management information

Please complete the information below and return it with your tender. You are required to substantiate or send copies of the documents referred to below where relevant. **Note: if you are successful in the tender process, you will be required to provide a detailed Site-Specific Health and Safety Plan for approval by **Insert name of Organisation** BEFORE work commences.**

Safety policy and management commitment

		Y	N
A	Do you have a written safety policy? If yes, please enclose a copy		
B	Is the safety policy in (A) above communicated to workers?		
C	Please supply organisation charts and worker descriptions for the tendered job and within your organisation		
D	Name the most senior person who will be co-ordinating safety matters on the tendered job, and their experience and qualifications. Name: Experience:		

Procedures

		Y	N
A	Do you have a health and safety manual? Provide a copy		
B	Do you have written working practices and safety instructions? Provide an example relevant to the tendered job		

Hazard identification

		Y	N
A	Do you have a system to identify hazards prior to the start of the job? If it is not in the safety manual, provide a brief outline.		
B	Do you have a system to identify new hazards during the term of the contract? If it is not in the safety manual, provide a brief outline		
C	Does your system include a Risk Assessment process? Provide a copy of your hazard and risk register (a generic register is acceptable at the tender stage)		

Safety training

		Y	N
A	Is formal safety training given to your workers? Provide details.		
B	What specialised safety training has been provided to workers who will work on this tendered job? (e.g. SiteSafe, NZQA, other). Provide details.		
C	Describe how you conduct induction training and provide a copy of relevant materials, if not in the health and safety manual.		
D	Does the main safety contact hold formal training or qualifications in health and safety? Provide details.		

Safety record

		Y	N
A	What kind of safety records are kept by your organisation?	X	X
	Fatalities		
	Notifiable injuries/illnesses		

	Accidents (including near misses)		
	Environmental incidents or breaches		
B	Please supply your organisation's safety record for the last three years		
	Number of fatalities:	X	X
	Number of notifiable injuries/illnesses:	X	X
	Number of incidents resulting in environmental damage/pollution	X	X
C	Have you or your company received any formal Notices (Prohibition/Improvement) or been prosecuted by an enforcement agency (including WorkSafe New Zealand and formerly the Department of Labour) in the last 5 years? If yes, please provide an explanation of the incidents and the corrective actions taken by the company to prevent recurrence.		

Accident reporting and investigation

		Y	N
A	Does your organisation maintain a register for recording accidents and/or cases where a worker suffers injury at work (including notifiable injuries/illnesses)?		
B	Does your company have a written process for investigating work-related accidents and near misses, including serious accidents? Provide a copy relating to a recent accident.		

Safety awareness and monitoring

		Y	N
A	Do you have in-house safety meetings? If so, how frequently?		
B	Does your organisation conduct safety inspections or audits? Provide an		

	example of a recent audit or inspection		
C	Explain how you involve your workers in safety awareness programmes.		
D	Do you have procedures for selection and management of the safety performance of your subcontractors? Provide an outline of this procedure (if not in the safety manual)		

Emergency procedures

		Y	N
A	Do you have an emergency plan? Provide a copy.		
B	Does the emergency plan identify key responsibilities and procedures to be followed for events other than fire ?		
C	Have all workers received training in emergency procedures?		

45. Appendix 4: Forklift safety checklist

This checklist is to enable a forklift driver to ascertain that the vehicle is considered safe to be used. In the event of any defects being identified, the vehicle **must** be removed from use until the defect is rectified.

a. Vehicle Identification Number	Date and time inspected	Name of Driver
b. Requirement	Yes/No/N.A.	Comments
Does the handbrake and foot brake work effectively?		
Does the horn work?		
Do all lights work?		
Does the critical/emergency stop work, and is it located for both left- and right-hand operation?		
Is the battery sufficiently charged and are battery fluid levels sufficient?		
Are seat belts fitted and do they work correctly?		
Are tyre treads considered to be of sufficient depth to provide 'traction'?		
Does the reversing horn/alarm work and can it be heard above ambient noise?		
Are all oil and water levels correct?		
Is the LPG cylinder correctly fitted and are all		

connections secure and free from obvious defects?		
Is the driver's canopy secure and intact?		
Are all hoses intact and free from obvious leaks or defects?		
Any other observations		

Signed (operator):

Date:

46. Appendix 5: Truck safety checklist

This checklist is to enable a truck driver to ascertain that the vehicle is considered safe to be used. In the event of any defects being identified, the vehicle **must** be removed from use until defects are rectified.

a. Vehicle Identification Number	Date and Time inspected	Name of Driver
b. Requirement	Yes/No/N.A.	Comments
Do the handbrake and foot brake work effectively?		
Does the horn work?		
Do all lights work?		
Does the critical/emergency stop work, and is it located for both left- and right-hand operation?		
Is the battery sufficiently charged and are battery fluid levels sufficient?		
Do seatbelts work correctly?		
Are tyre treads considered to be of sufficient depth to provide 'traction'?		
Does the reversing horn/alarm work and can it be heard above ambient noise?		
Are all oil and water levels correct?		
Are reversing cameras operating correctly?		

Are all hoses intact and free from obvious leaks or defects?		
Are all chains and lifting tackle undamaged?		
Any other observations		

Signed (operator):

Date:

47. Appendix 6: Hazard/risk register example

Work Activity or Area Activity	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual Risk Rating	Review Frequency	Review Date
General	Equipment <ul style="list-style-type: none"> • New • Existing 	<ul style="list-style-type: none"> • Electrocuti on • Laceratio n • Burns 		Minimise	<ul style="list-style-type: none"> • Identify any equipment that could be hazardous and list • Check equipment for electrical faults as part of a regular maintenance regime • Undertake a risk assessment of any new piece of equipment • Place equipment where it is easy to use and does not interfere with the flow of the office 		Annually Check electrical equipment every 3 months	Ongoing
	Trip/slips <ul style="list-style-type: none"> • Slippery floors • Cords • Unsecured floor coverings • Storage 	<ul style="list-style-type: none"> • Falls 		Minimise	<ul style="list-style-type: none"> • Arrange office so extension cords are not across walkways • Use non-slip surfaces on floors • Clean up any spills immediately • Use anti-slip polish • Identify trouble spots and place up signs on wet days • Enforce 'walk rather than run' policies 		Annually	Ongoing

48. Appendix 7: Generic hazards/risks associated with all waste collection and processing methods

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual Risk Rating	Review Frequency	Review Date
Accessing vehicle	Slip, trip or fall	<ul style="list-style-type: none"> Notifiable injuries/illnesses 		Minimise	<ul style="list-style-type: none"> Maintain three points of contact on vehicle when mounting or dismounting vehicle Non-skid surfacing on all steps Dismount vehicle backwards Observe footpath/roadway for slippery surfaces Appropriate footwear to be worn PCBU to maintain all roads, pavements, berms and kerbs in a good condition 			
Cleaning	Contact with sharp objects or parts of equipment during cleaning process	<ul style="list-style-type: none"> Notifiable injuries/illnesses Cuts and bruises 		Minimise	<ul style="list-style-type: none"> Staff to be made familiar with any parts of vehicles that have inherently sharp or protruding areas Brushes and other long-handled cleaning devices should be used where practicable Suitable cut and chemical resistant gloves or gauntlets should be provided 			
	Exposure to environmental and biological hazards during cleaning process	<ul style="list-style-type: none"> Notifiable injuries/illnesses from diagnosed occupational skin or respiratory diseases 		Minimise	<ul style="list-style-type: none"> Pre-Employment health surveillance to be provided in order to determine baseline of employee's health status prior to exposure to environmental and/or biological hazards with possible vaccinations Periodic health monitoring to be 			

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual Risk Rating	Review Frequency	Review Date
					<p>undertaken at frequency to be advised by occupational health provider</p> <ul style="list-style-type: none"> Workers to be made aware of necessity to cover all cuts and areas of broken skin and to report injuries no matter how small (e.g. cuts) Selection and issue of suitable PPE where hazard cannot be controlled by other means. Operators to be trained in correct use and any limitations of cleaning equipment Regular inspection and maintenance of cleaning equipment especially around hoses and 'securing clips' to reduce risk of these malfunctioning Emergency shower to be provided close to work area 		Annual	
	Falls from height when correct equipment is not used or provided, e.g. fall from top of vehicle	<ul style="list-style-type: none"> Fatality Notifiable injuries/ illnesses Soft tissue injury 		Eliminate Minimise	<p>Provision of cleaning equipment that enables worker to remain at ground level or provision of automatic cleaning equipment (e.g. drive through vehicle wash)</p> <p>Suitable access equipment to be provided, e.g. mobile scaffolds or platforms in</p>			

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual Risk Rating	Review Frequency	Review Date
					<p>preference to ladders</p> <p>Anchor points to be provided to enable workers to secure themselves when working at height above 3m.</p> <p>Fall arrest system appropriate to undertakings to be provided and employees trained in correct use</p>			
	Use of cleaning chemicals and substances with known hazardous properties	<ul style="list-style-type: none"> • Notifiable injuries/ illnesses • Contamination of water systems from uncontained spillages 		Eliminate Minimise	<ul style="list-style-type: none"> • Where possible use substances with non-hazardous properties • Operators to be adequately trained in hazards associated with substances or chemicals and correct precautions, including use of PPE if necessary • Correct labelling and storage arrangements to be in place on containers and receptacles • Spill kits to be easily accessible and workers trained in correct containment processes 			

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual Risk Rating	Review Frequency	Review Date
Confined spaces	Working within 'confined space' areas or restricted spaces e.g. body of vehicle	<ul style="list-style-type: none"> • Fatality • Notifiable injuries/ illnesses • Soft tissue injury 		Minimise	<ul style="list-style-type: none"> • If work area is defined as a 'confined space' then the following must be applied: <ul style="list-style-type: none"> ○ Only trained, competent and capable persons to undertake activities ○ Work to be carried out in accordance with Confined Space Entry Procedure ○ Monitoring equipment and rescue plan to be in place and employees conversant with use ○ All sources of energy to be locked out and tagged out by competent, capable person before cleaning commences • Signage and Permit to Work to be utilised as appropriate 			
Driving	Speeding	<ul style="list-style-type: none"> • Notifiable injuries/ illnesses • Property damage 		Minimise	<ul style="list-style-type: none"> • Only trained, competent and capable drivers to drive vehicles • Vehicle to be driven within speed limits to avoid instability or movement of load • Follow Land Transport Act 1998 work time rules for drivers 			
General	Exposure to noise, airborne dusts and odours and other environmental hazards associated with solid waste and recoverable resources	<ul style="list-style-type: none"> • Health-related problems such as noise-induced hearing loss, respiratory problems, skin conditions etc 		Minimise	<ul style="list-style-type: none"> • Provide clean, portable drinking water in trucks • Provide hand sanitiser in trucks to reduce infection risk • Establish policies on personal hygiene to reduce infection risk from dirty hands • Recommend the provision of vaccinations for diseases such as hepatitis and tetanus • Pre-employment health surveillance in order to determine baseline of worker's 			

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual Risk Rating	Review Frequency	Review Date
					<p>health status prior to exposure to known or potential environmental hazards</p> <ul style="list-style-type: none"> • Periodic health monitoring and surveillance of environmental hazards such as noise, respiratory function, audiometry, etc • Selection and issue of suitable PPE where hazard cannot be controlled by other means 			
Load ejection	Entrapment	<ul style="list-style-type: none"> • Fatality • Notifiable injuries/ illnesses (including fractures) • Soft tissue injury 		Eliminate Minimise	<ul style="list-style-type: none"> • Emergency stop devices to be clearly visible within operator zone • If operators work from both sides of vehicle then Emergency Stop devices to be positioned on both sides of vehicle in exactly the same position • Emergency Stop device to be of recognised universal standards, i.e. red mushroom-type, large in comparison to other buttons, markings in clear English and with pictogram to accommodate non-English speakers • All control panels should be suitably guarded to avoid accidental operation • Inspect and test Emergency Stop devices regularly to ensure functionality • All operators made aware of location and operation of emergency devices • Operators to be made aware that the Emergency Stop device is not an alternative to lockout-tagout requirements. • Emergency Stop controls are to be sited for left- and right-hand use • Emergency Stop to have manual resets after any interruptions • Assess the machine to ensure that it is 			

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual Risk Rating	Review Frequency	Review Date
					<p>safe to restart prior to resetting emergency stops</p> <ul style="list-style-type: none"> Only trained, competent and capable operators to operate required equipment Safety prop for tailgate 			
Load Ejection	Vehicle overturning due to high centre of gravity, excessive speed, road conditions, environment	<ul style="list-style-type: none"> Entrapment of driver in overturned vehicle; or pedestrians, cyclists and other road users hit by vehicle or insecure load 		Minimise	<ul style="list-style-type: none"> Driver to check that vehicle is on a firm, flat surface BEFORE discharging load Drive to conditions Plan routes to avoid tight turning areas Take care while cornering Follow instructions from points person, where in place 			
Manual handling	Manual handling	<ul style="list-style-type: none"> Notifiable injuries/ illnesses Strains, sprains 		Minimise	<ul style="list-style-type: none"> Utilise two people for moving large objects (e.g. loose inorganics) or reject overweight bags and waste bins Utilise the Code of practice for manual handling 2001 to assess and manage manual handling activities Provide manual handling training for operators, e.g. viewing of ACC HabitAtWork online tool, www.habitatwork.co.nz/ and completion of test modules Implement and manage an early-reporting system for discomfort, pain, and injury (DPI) 			
Operating machinery	Biohazards Manual handling of waste and Biohazards?	<ul style="list-style-type: none"> Fatality Notifiable injuries/ illnesses 		Minimise	<ul style="list-style-type: none"> Driver/runner to be visually aware of refuse requiring removal. If in doubt regarding contamination or non-conformance, do not touch and inform depot 			

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual Risk Rating	Review Frequency	Review Date
					<ul style="list-style-type: none"> Use dustpan and brush provided Wear fit-for-purpose gloves to protect from cuts or abrasions when handling any items of refuse Inform depot in event of sustaining a scratch, puncture wound or similar injury <p>Recommend the provision of vaccinations for diseases such as hepatitis and tetanus</p> <p>It is recommended that operators/runners wear appropriate leg protection</p> <p>Seek medical treatment in the event of a sharps accident</p>			
Operating machinery	Contact with moving parts and pinch points	<ul style="list-style-type: none"> Notifiable injuries/ illnesses Fatality 		Minimise	<ul style="list-style-type: none"> Where fitted, guards should comply with AS4024 or similar standard All sources of energy to be locked out and tagged out by a competent and capable person Where an accumulator is used, provision should be made to release the associated stored energy and suitable warning notices should be provided, e.g. 'Release stored energy in the accumulator before carrying out any servicing or maintenance work'. 			

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual Risk Rating	Review Frequency	Review Date
	Extremes of temperature	<ul style="list-style-type: none"> Notifiable injuries/illnesses Heat exhaustion Hyperthermia Frostbite Hypothermia 		Minimise	<ul style="list-style-type: none"> Schedule rest breaks Provide sufficient, clean drinking water to prevent dehydration Rotate tasks through crew Appropriate clothing should be worn PPE such as beanies, winter layers, sunglasses, sun hats, and sunscreen may be required depending on location 			
	Fatigue and shiftwork	<ul style="list-style-type: none"> Notifiable injuries/illnesses 		Minimise	<p>Schedule rest breaks</p> <p>Discourage work practices that encourage rushing, e.g. job and finish</p> <p>Rotate tasks through crew</p> <p>Manage shift system to control fatigue, including allowing sufficient time for recovery</p> <p>Follow Land Transport Act 1998 work time rules for drivers</p>			
	Hydraulic fluid	<ul style="list-style-type: none"> Notifiable injuries/illnesses, e.g. chemical splash 		Minimise	Vehicles should be regularly			

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual Risk Rating	Review Frequency	Review Date
		to eye			<p>maintained, and hydraulics regularly drained and checked according to manufacturers' recommendation</p> <p>Driver to check hydraulic hoses for areas of obvious damage as part of daily start-up checks</p>			
	Noise	<ul style="list-style-type: none"> • Notifiable injuries/ illnesses 		Minimise	<ul style="list-style-type: none"> • Ensure machinery is designed and maintained to reduce noise • Drivers to keep windows closed during collection to reduce noise in the cab • Hearing protection may be a practicable step. If contact between crew is required, hearing protection that has an integrated radio system may be required. • A pre-employment hearing test to establish a baseline hearing level, followed by annual health monitoring for hearing for all workers working with and near heavy machinery, may be a practicable step if noise levels are over 85dB(A) <small>Leq,8hr.</small> 			
Operating machinery	Personal security	<ul style="list-style-type: none"> • Assault • Notifiable injuries/ illnesses 		Minimise	<ul style="list-style-type: none"> • Training in basic risk assessment for workers entering properties and working alone to be provided • Provision of a personal alarm to be carried on trucks for use of workers entering properties for collection may be a practicable step 			

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual Risk Rating	Review Frequency	Review Date
	Reversing	<ul style="list-style-type: none"> • Fatality • Notifiable injuries/illnesses 		Eliminate Minimise	<ul style="list-style-type: none"> • Operators should remain in vehicles, where possible • Increase rear visibility using CCTV and additional reversing mirrors • Audible and visual reversing alarms • Runners shall not ride on the rear or side steps of the outside of the vehicle when it is reversing 			
	Traffic, people/pedestrians management	<ul style="list-style-type: none"> • Fatality • Notifiable injuries/illnesses • Minor injuries 		Minimise	<p>An approved traffic management plan</p> <p>Only trained, competent and capable drivers to operate vehicles</p> <p>Prestart and end of day vehicle safety inspections should be completed</p> <p>Where possible, controls should be on the left-hand side of the vehicle to avoid operator being struck by traffic</p> <p>CCTV rear cameras and mirrors</p>			

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual Risk Rating	Review Frequency	Review Date
					<p>should be in good condition and utilised</p> <p>Appropriate PPE must be worn at all times</p> <p>Implement appropriate traffic management procedures as per requirements of the Code of Practice for Temporary Traffic Management</p> <p>No non-rostered people in or on the vehicle</p> <ul style="list-style-type: none"> Take care when exiting the vehicle 			
Operating machinery	Visibility	<ul style="list-style-type: none"> Notifiable injuries/illnesses Fatality 		Eliminate Minimise	<ul style="list-style-type: none"> Schedule runs within daylight hours where possible Ensure warning/flashing lights are operational as per traffic management plans and the Code of Practice for Temporary Traffic Management Appropriate PPE must be worn at all times e.g. high-vis clothing CCTV or reversing mirrors may be a practicable step to increase rear visibility, prevent reversing accidents and to maintain visibility of runners Organise routes to minimise reversing and u-turns 			

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual Risk Rating	Review Frequency	Review Date
					<ul style="list-style-type: none"> Use a spotter, when available 			
	Wet weather	<p>Slips/trips</p> <p>Notifiable injuries/ illnesses</p> <ul style="list-style-type: none"> Fatality 		Minimise	<ul style="list-style-type: none"> Surfaces on vehicles that crew need to step or hold onto should be covered in slip-resistant mesh that allows water and mud to run off Allow extra time for run to reduce the need to rush Appropriate PPE must be worn at all times e.g. overalls, high-vis waterproof clothing, appropriate footwear, hat Operators should take regular breaks to dry out and warm up 			
Waste collection	Traffic, people/pedestrians, management People in bins	<p>Fatality</p> <p>Notifiable injuries/ illnesses</p> <p>Minor injuries</p>		Minimise	<ul style="list-style-type: none"> Dual control vehicles should only be driven from the left during waste and refuse collection, not for general travel Where possible, collect 			

Work Activity or Area	Hazards	Describe risk to worker health and safety	Risk Rating	Eliminate? Minimise?	Control Measures	Residual Risk Rating	Review Frequency	Review Date
					<p>from the left-hand side of the truck only, to reduce road-crossing</p> <ul style="list-style-type: none"> • Runners to give way to traffic at all times • Plan routes to avoid schools and other areas of traffic congestion and schedule collection in these areas at quieter times • Ensure routes are designed not to conflict with high-density traffic movement • If the bin is unlocked in an unsecured location, then shake or bump the bin before lifting 			

49. Appendix 8: Relevant legislation and regulations

Relevant legislation includes, but is not limited to:

Accident Compensation Act 2001

Biosecurity Act 1993

Building Act 2004

Civil Defence Emergency Management Act 2002

Electricity Act 1992

Employment Relations Act 2000

Epidemic Preparedness Act 2006

Gas Act 1992

Hazardous Substances and New Organisms Act 1996

Health Act 1956

Health and Safety at Work Act 2015

Human Rights Act 1993

Land Transport Act 1998

Local Government Act 2002

Privacy Act 1993

Secondhand Dealers and Pawnbrokers Act 2004

Waste Minimisation Act 2008

Regulations include, but are not limited to:

Electricity (Safety) Regulations 2010

Health and Safety at Work (Asbestos) Regulations 2016

Health and Safety at Work (General Risk and Workplace Management) Regulations 2016

Health and Safety at Work (Petroleum Exploration and Extraction) Regulations 2016

Health and Safety at Work (Worker Engagement, Participation and Representation)
Regulations 2016

Health and Safety in Employment Regulations 1995

Fire Safety and Evacuation of Buildings Regulations 2006

50. Appendix 9: Other sources of information

Emergency Services	
Ministry of Civil Defence & Emergency Management	www.civildefence.govt.nz

Drug Testing Services	
Institute of Environmental Science & Research Ltd	www.esr.cri.nz
The Drug Detection Agency Ltd	www.tdda.com

Training services	
New Zealand Qualifications Authority	www.nzqa.govt.nz
NZ Motor Industry Training Organisation (Inc) (MITO)	www.mito.org.nz

Websites	
Accident Compensation Corporation	www.acc.co.nz
Accident Compensation Corporation	www.habitatwork.co.nz
beforeUdig™	www.beforeudig.co.nz
Employment Relations Authority	www.era.govt.nz
Ministry of Business, Innovation & Employment	www.mbie.govt.nz
Ministry of Health	www.health.govt.nz
Motor Trade Association	www.mta.org.nz
New Zealand Legislation	www.legislation.govt.nz
New Zealand Police Commercial Vehicle Investigation Unit (CVIU)	www.police.govt.nz/advice/driving-and-road-safety/commercial-vehicle-enforcement-cviu
Waka Kotahi New Zealand Transport Agency (NZTA)	www.nzta.govt.nz
WorkCover NSW	www.workcover.nsw.gov.au
WorkSafe New Zealand	www.worksafe.govt.nz/worksafe

Recommended Readings

Department of Labour. (2006). *Minimising the risk and impact of an Influenza pandemic on your business: A Practical Guide for Employers*. Retrieved on January 22, 2014 from www.dol.govt.nz/PDFs/pandemic-practical-guide.pdf

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Health and Safety Executive. (2007). *Safe transport in waste management and recycling facilities*. Retrieved January 22, 2014 from www.hse.govt.nz

Health and Safety Executive. (2007). *The safe use of refuse collection vehicle hoists and bins*. Retrieved January 22, 2014 from www.hse.govt.nz

Health and Safety Executive. (2008). *Collecting, transfer, treatment and processing household waste and recyclables*. Retrieved January 22, 2014 from www.hse.govt.nz

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Health and Safety Executive. (2009). *Safe waste and recycling collection services*. Retrieved January 22, 2014 from www.hse.govt.nz

Land Transport (Road User) Rule 2004

Land Transport Rule: Dangerous Goods 2005

Ministry for the Environment. (n.d.). *Guidance principles: Best practice for recycling and waste management contracts: Working draft*. Retrieved January 22, 2014 from www.mfe.govt.nz

National Institute for Occupational Safety & Health. (1997). *Preventing worker injuries and*

deaths from moving refuse collection vehicles. Retrieved January 22, 2014 from www.cdc.gov

Nicholson, R., & Walls, Dr. C. (2004). Perspective on the primary care treatment of leptosporosis. *NZFP*, 31(1). Retrieved January 22, 2014 from www.rnzcgp.org.nz

Pearce, N., Dryson, E., Feyer, A-M., Gander, P., McCracken, S., & Wagstaff, M. (2004). *The burden of occupational disease and injury in New Zealand: Report to the Associate Minister of Labour.* Retrieved January 22, 2014 from <http://ipru3.otago.ac.nz>

Research New Zealand. (2008). *Final Report: Solid waste and recoverable resources industry injury causation study* (memorandum 23/7/08). Retrieved January 22, 2014 from www.wasteminz.org.nz

WasteMINZ. (2002). *Operation of Rear Loading Compaction Collection Trucks: safety requirements (guidelines for consultation).*

WasteMINZ. (2008). *The New Zealand resource recovery park design guide.* Retrieved January 22, 2014 from www.wasteminz.org.nz

WasteMINZ. (2010). *An Assessment of the Health and Safety Costs and Benefits of Manual vs Automated Waste Collections.* Retrieved January 22, 2014 from www.wasteminz.org.nz

51. Appendix 10: Example risk matrix

			Likelihood Score						
			Almost Certain (200)	Likely (100)	Possible (50)	Unlikely (25)	Rare (12.5)		
			Is expected to occur in most circumstances (e.g. occurs weekly or more often)	Will probably occur in most circumstances (e.g. might occur monthly)	Might occur at some time (e.g. might occur 4 to 6 times per year)	Could occur at some time (e.g. might occur annually)	May occur only in exceptional circumstances (e.g. not known to occur)		
Business/ Compliance	Environment Actual or potential effects are:	Health & Safety	Severity	Catastrophic (200)	High	High	High	High	Medium High
Huge financial loss or prosecution,	Off-site release with detrimental effect or high likelihood of enforcement action	Death		Major (100)	High	High	High	Medium High	Medium High
Loss of production capability, major financial loss, small fine, abatement or infringement notice	Off-site release with minor or no detrimental effects	Extensive injury		Moderate (25)	High	Medium High	Medium High	Medium	Medium
High financial loss, legal non-compliance	On-site release contained with outside assistance	Medical treatment required		Minor (10)	Medium High	Medium High	Medium	Low	Low
Medium financial loss, minor or technical consent non-compliance (e.g. reporting)	On-site release - some effect	First aid treatment		Insignificant (5)	Medium High	Medium	Low	Low	Low
No financial loss	On-site release, immediately contained - no effect	No injuries							