

Event Waste and Emissions Reduction Guide



Contents

1	INTRODUCTION	4
1.1	How to use this guide	6

2	REDUCING WASTE AT YOUR EVENT	7
2.1	Planning phase: Before your event	8
	Step 1: Understanding your waste	8
	Step 2: Setting your objectives and targets in line with the waste hierarchy	10
	Step 3: Waste infrastructure, site planning and logistics	12
2.2	Delivery phase: During your event	25
	Step 4: Site set up and induction	25
	Step 5: Monitor and capture your initiatives	25
2.3	Evaluation phase: After your event	26
	Step 6: Reporting and reflection	26

2.4	Waste minimisation and management checklist	27
2.5	Additional support and funding	28

3	REDUCING GREENHOUSE GAS EMISSIONS AT YOUR EVENT	29
3.1	Planning phase: Before your event	31
	Step 1: Understanding your emissions sources	31
	Step 2: Estimating your event's GHG emissions	31
	Step 3: Set your objectives and targets	31
	Step 4: Get creative!	32
	Step 5: Training and engagement	33
3.2	Delivery phase: During your event	34
	Step 5: Capture your initiatives	34
3.3	Evaluation phase: After your event	35
	Step 6: Reporting and reflection	35
3.4	Greenhouse gas emissions checklist	36

4	WORKING WITH YOUR VENDORS AND SUPPLIERS	37
4.1	Vendors and suppliers checklist	41

5	COMMUNICATIONS AND ENGAGEMENT	43
5.1	Community and engagement checklist	45

6	TOOL KIT	49
----------	-----------------	-----------

7	GLOSSARY	51
----------	-----------------	-----------

8	REFERENCES	53
----------	-------------------	-----------

Acknowledgements

Thank you to Anna Mathieson for gathering information from event organisers, facilitating an internal workshop for content development, and providing input into development of the Event Waste and Emissions Reduction Guide and Toolkit. Thank you also to the teams at Wastebusters and Environmental Accounting Services (EAS) for external review of the final draft.



The Queenstown Lakes District is world renowned for its clean mountain air, stunning landscapes and crystal-clear waters making it an attractive location to host a range of local, national and international events.

The Queenstown Lakes District plays host to a range of local, national and international events, set amongst a spectacular alpine backdrop. Events of all shapes and sizes offer a range of economic, cultural and social benefits for the district, but without careful planning can also have negative environmental impacts, including generation of waste and Greenhouse Gas (GHG) emissions.

There are lots of benefits of reducing event waste and GHG emissions, including:

- financial advantages – conserving energy, reducing waste to landfill, purchasing local products, and simply consuming less can all result in money saved
- positive reputation and improved image – hosting a sustainable event will raise the profile of the event, attract participants that are becoming increasingly aware of sustainability issues and potentially engage the media's attention
- health and safety – a safer and cleaner site makes it easier to manage waste and clean up faster
- improved experience – well-organised, sustainable practices will improve, rather than detract from, your attendees' experiences. For example, ensuring they have access to a convenient public transport system will reduce their travel time, traffic congestion, and parking issues

- supporting local economies and communities
- improved compliance with council / venue regulations
- making your event more attractive to sponsors, funders and attendees
- influence change – a well managed event will leave a positive legacy and inspire those involved to live more sustainably.

Reducing your event waste and GHG emissions doesn't need to be difficult but when you already have a million things to manage, it can be hard to know where to even start.

This guide aligns with Queenstown Lakes District Council's vision for 'zero carbon' communities and a 'zero waste' future¹ and council's **Waste Minimisation and Management Plan** and **Climate and Biodiversity Plan**².

This Event Waste and Emissions Reduction Guide offers practical tips, templates, checklists and supporting information which will help you to:



set waste and emissions reduction objectives



develop action plans



improve communication with suppliers and attendees



measure and report on waste and emissions reduction goals

This guide does not cover everything about event sustainability – the ideas and examples outlined here are just a starting point. Our first and most important tip is to choose what is relevant, realistic, and appropriate for your event.

¹ QLDC (2025) Waste Minimisation and Management Plan 2025-2031

² QLDC (2025) Climate and Biodiversity Plan 2025-2028

1.1 How to use this guide

Organising a sustainable event takes planning and patience. The process starts long before the event takes place and continues well after everyone goes home.

The templates and tools included in this guide can be downloaded as separate, easy to use resources from www.qldc.govt.nz/community/event-planning-and-venues

This guide will help you to reduce waste and GHG emissions at events across three key phases – planning, delivery, and evaluation.

Each chapter includes an overview, best practice steps and key considerations, as well as references to other relevant resources and templates. Case studies also provide practical insights and tips from local and national events that are already successfully incorporating sustainability into their events.



Top tip(s)



Template



Checklist



**Supporting
Information**



Case Study



Credit: Ecomatters and Auckland Council

2

REDUCING WASTE AT YOUR EVENT

Aotearoa New Zealand is one of the most wasteful countries in the developed world sending millions of tonnes of waste to landfill every year³. Locally in the Queenstown Lakes, we are producing more than 40,000 tonnes of waste annually, all of which is going to Victoria Flats Landfill in the beautiful Gibbston Valley.

This needs to change. We all need to take responsibility for how we make, use, manage and dispose of resources and shift to a circular economy where materials are used again and again through sharing, hiring, reusing, repairing, and recycling.

Events are no exception, with attendees, funders and stakeholders increasingly expecting more sustainable approaches to reduce

the environmental footprint of events. As an event organiser, you have an important role to play in meeting these expectations and demonstrating stewardship to actively protect and regenerate our magnificent environment and the local community.

Adopting a zero (or close to zero) waste goal for your event requires everyone to be on board.

It means organisers, suppliers, and vendors need to carefully consider what products and materials are used onsite, and determine what can be avoided, reused, recycled, or composted instead of being sent to landfill after the event. It also requires effective communication and engagement with all relevant stakeholders to ensure they understand and support your goals.



³Ministry for the Environment. 2023. Te rautaki para | Waste strategy. Wellington: Ministry for the Environment

2.1 Planning phase: Before your event

Step 1: Understanding your waste

To effectively minimise waste at your event, you first need a clear picture of how much and what kind of waste will be produced at all stages. Key things to consider when estimating the quantity, type and source of waste include;



Sources of event waste include:

- Pre and post event: waste generated when your event is being set up and packed down.
- Front of house/public areas during the event: where food and drinks are served/consumed (this is usually the biggest source of event waste), performances and onsite activations are common sources of waste, waste your attendees bring to your event.
- Back of house areas during the event: where vendors prepare and food and beverages, backstage areas, onsite production offices.

Your waste collection service provider can help you estimate the waste that could be generated at your event based on their experience of other similar events.



Front of House (FOH) waste examples:



FOOD

Food scraps, plates, cutlery, containers, sachets, serviettes, stirrers, soft plastic bags and wrappers, foil



DRINKS

Bottles, cans, single use cups, lids, paper straws, stirrers, corks



PRINTED MATERIAL/SHOW BAGS

Printed paper, leaflets, plastic wrapped objects, stickers, programs, maps and guides, name tags, giveaways, flags and streamers



MULTI-DAY EVENTS

Campsite litter (tents and fold up chairs)



SPECIALISED EVENTS

Individual and specialised events may generate unique equipment and waste (lines and hooks for a fishing event or swim caps for a swimming event)



OTHER

Weather and health related material (ponchos and sunscreen containers), sanitary waste e.g., nappies

Back of House (BOH) waste examples:



EXHIBITS

Cardboard, paper, broken merchandise, plastic packaging, shrink wrap, wood waste (pallets), tape, cable ties, small e-waste and cords



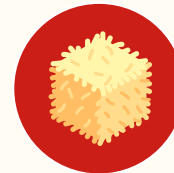
CATERERS

Food scraps, coffee grinds, used cooking oil, cardboards, plastic wrapping, containers (metal, plastics, liquid paperboard)



BARS

Citrus and garnish, plastic and glass bottles, cans, cardboard, plastic wrapping



AGRICULTURAL SHOW

Manure, straw



If your event allows vaping, make sure that you are safely collecting these for specialist recycling or encouraging attendees to take these away with them. Vapes contain lithium batteries that are highly flammable. Vapes or vape batteries should not be disposed of in any onsite rubbish or recycling bin. These cause fires in bins, collection trucks, at the recycling centre (MRF), transfer stations, and the landfill – this is dangerous and costly. Vapes and vape batteries need to be recycled through specialist recycling drop off points. Check out our comprehensive [A-Z Rubbish and Recycling Directory](#) online for more information.

Step 2: Setting your objectives and targets in line with the waste hierarchy

Once you understand how much and what kind of waste will be produced at your event you can set your objectives and targets to minimise and manage this waste. Make sure your objectives and targets are measurable so you can easily report on what worked well or what needs to be improved for next time.

WHAT TO CONSIDER WHEN SETTING TARGETS	EXAMPLE TARGET
Total material generation (avoid and reduce)	By [insert year], we want to reduce landfill waste by 50%, from current generation.
Increase recovery rates (recycle and reuse)	By [insert year], 90% of our event’s total waste generation will be recycled or composted.
Contamination (avoid and reduce)	By [insert year], we want to have a baseline measurement of how much contamination we have in our recycling or compost streams. By [insert year], reduce contamination of mixed recycling, glass and organic waste stream to 2% or less, from current contamination rates.
Litter (avoid and reduce)	By [insert year], reduce the number of items collected during/ after an event by 90%.
Eliminate single use plastics and other items	List the single use items that are banned from front of house and/or back of house use.
Improved awareness and communications	For the [insert year] event we want 80% of our attendees to be aware of our waste minimisation goals and systems.

When setting targets, use the SMART diagram below as guidance. Think about resource and budget allocation and stage your approach to what is achievable and viable within the timeframe.

S	M	A	R	T
SPECIFIC	MEASUREABLE	ACHIEVEABLE	RELEVANT	TIMEBOUND
State what you will do.	Provide a way to measure/ evaluate. Use metrics/ data	Make sure it is within your scope and is attainable.	Improves the event in some way.	State when you will get it done and be specific on date/ timeframe.

Use the **Event Waste Minimisation and Management Plan (WMMP) Template** to record your event objectives, targets, success indicators and initiatives.

OBJECTIVES	TARGET	HOW WILL YOU MEASURE SUCCESS?	INDICATORS FOR SUCCESS	SUPPORTING INITIATIVE
E.g. To reduce the amount of waste generated at the event.	E.g. 10% less than the amount of waste generated at the event.	E.g. Conduct a waste audit and report on the amount of waste generated per person.	E.g. Audit results show less than 10% more than the target.	E.g. Implement waste minimisation measures, front and back of house.
E.g. To reduce the amount of food waste generated at the event.	E.g. 10% less than the amount of food waste generated at the event.	E.g. Conduct a waste audit and report on the amount of food waste generated per person.	E.g. Audit results show less than 10% more than the target.	E.g. Implement food waste minimisation measures, front and back of house.
E.g. To eliminate single use plastics at the event.	E.g. 100% of single use plastics eliminated at the event.	E.g. Conduct a waste audit and report on the amount of single use plastics generated per person.	E.g. Audit results show 100% of single use plastics eliminated at the event.	E.g. Implement single use plastics minimisation measures, front and back of house.
E.g. To improve awareness and communications at the event.	E.g. 80% of attendees aware of waste minimisation goals and systems.	E.g. Conduct a survey and report on the amount of attendees aware of waste minimisation goals and systems.	E.g. Survey results show 80% of attendees aware of waste minimisation goals and systems.	E.g. Implement awareness and communication measures, front and back of house.

The waste hierarchy is a helpful framework to consider when setting your objectives and targets for minimising waste at your event. The hierarchy lays out the most impactful options to reduce and eliminate waste at the top with the less favourable options at the bottom. Your biggest opportunity to minimise event waste is to prioritise refusing, reducing and reusing.

You should be aiming to divert a minimum of 50% of total waste from landfill. Queenstown Lakes District Council have various funding options to help with your event waste minimisation initiatives. Visit www.qldc.govt.nz/community/community-funding for more information



ACTION	ASK YOURSELF IF YOU CAN	EXAMPLES
Refuse/avoid	Avoid wasteful products altogether?	<ul style="list-style-type: none"> Don't allow any single use cups or unnecessary freebies at your event Issue electronic tickets instead of paper ones Eliminate printed promotional material. Don't use Adshells or flyers to promote your event
Reduce	Minimise the amount of waste produced?	<ul style="list-style-type: none"> Offer water refill stations in place of bottled water Opt for reusable or recyclable items over single use. For example, use ink stamps or reusable wristbands instead of paper disposable wristbands; or sell drinks in cans which are infinitely recyclable instead of in plastic bottles Avoid giveaways and promotional material that will get discarded, such as thundersticks, balloons and glowsticks. Even 'sustainable giveaways' like reusable cups and water bottles may become waste as many people already have these. Instead consider offering discounts or vouchers Can you choose food that needs no wrapping or minimal packaging such as a sausage in bread with a serviette? Event merchandise: do you need it? Work with suppliers to produce fewer, better-quality products and sell less
Reuse	Use materials again and again?	<ul style="list-style-type: none"> Choose reusables instead of single use! Hire reusable serveware and cutlery for your event, set up a mug library or cup lending scheme, or encourage event goers to BYO vessels, containers and utensils Reuse signage and props, marketing material, crew uniforms, festoon lighting, lanyards. Choose decorations that can be stored and reused
Recycle	Collect and recycle materials to make new products?	<p>Know your recycling and share this info with vendors and event goers. When setting up your waste systems make sure you understand what can be recycled in our district, check out our Recycling & Packaging Guide.</p> <ul style="list-style-type: none"> Aluminium and tin cans Plastic bottles #1, #2 and #5 Clean cardboard and paper Glass bottles (all colours)
Recover	Recover materials for further use (e.g. collect food scraps for composting or animal feed)?	<ul style="list-style-type: none"> Donate any edible leftover food to local organisations like Kiwi Harvest or Food for Love Food waste can often be separated to be taken for stock food (e.g. pigs or chickens) or composted Cooking oil can be recycled

Most event waste is generated by food or beverage vendors. Consider the best way to engage with them so they understand your goals and the benefits of supporting them. Check out the **Working with your Vendors and Suppliers** section for more detail.

Check out the **Communications and Engagement** section for advice on sharing your goals with your stakeholders including your suppliers, vendors, attendees, and funders.



Step 3: Waste infrastructure, site planning and logistics

So far, you've considered what you can do to avoid or reduce waste being generated in the first place, now to manage what you create to ensure you can further minimise what goes to landfill and keep your site litter free.

Engaging service providers

Finding the right fit of waste service providers for your event is the key to success. Contact local service providers to find out what services they can offer to help you meet your goals. Each event will require different types of service providers which may vary for each waste stream produced. You may need to choose different service providers for reuse, recycling, composting, and waste disposal. Check out the **Supplier Directory** for a list of service providers.

Key considerations for choosing your service provider(s) include;

- Ensure any prospective service provider(s) understand your waste minimisation goals and is committed to helping achieve them.
- When seeking quotes or proposals, specifically request they include information that demonstrates how they will support you to achieve your waste minimisation goals. This will also help to ensure they have the capacity to achieve the goals you have set.
- Another formal way to ensure commitment is by including contractual arrangements in service contracts and agreements.



Find service providers who share your goals and can help facilitate the path to reducing waste at your event. Ask them for a copy of their Sustainability Plan or Policy.



Let your service provider know early on that you expect to receive the data of collected and processed material following the event, so you can track your progress against your objectives and targets.

Choosing your infrastructure

You will need to consider waste infrastructure for your event, including the type and number of bins required in the public areas as well as back of house services. The decision on what infrastructure you need will depend on several factors including the waste streams generated, your waste minimisation goals, and the site layout.

Common types of waste infrastructure include;

- Reuse systems such as water refill stations, reusable serveware w(plates, bowls, cups, and cutlery), collection and wash station or facilities for reusables, reusable signage, etc.
- Bin infrastructure such as wheelie bins and/or skips.
- Signage such a waste station, information boards and feather flags.
- Site clean-up gear such litter grabbers, gloves and reusable bags.
- Gear for sorting your waste back of house, e.g. tables and scales.

Your service provider(s) should be able to provide guidance on what infrastructure will best suit your needs.

Reusable Systems

Implementing reusable systems at your event offers an alternative to single-use and is one of the most effective ways to reduce your waste and greenhouse gas emissions.

Reusables also have the potential to reduce packaging and waste management related costs and can be cost neutral or positive to implement. Setting up an effective reuse system that works well for all users and covers costs for the long-term requires good planning and the buy-in of all involved.

Examples of reusable systems you can consider implementing at your event include:

ASK YOURSELF IF YOU CAN	EXAMPLES
Water refill stations	<p>Options include:</p> <ul style="list-style-type: none"> • Hiring a water tanker • Hiring or purchasing your own mobile water trailer • Hiring or purchasing portable drinking fountains • Borrowing from a club, community group, venue or other events • Installing permanent water fountains
Serveware and utensils	<p>Options include:</p> <ul style="list-style-type: none"> • Hiring from an event supplier like Dishrupt • Borrowing from a club, community group, venue or other events • Establishing your own library from second-hand shops that can be shared with others • Encouraging people to bring their own • Purchasing and allocating a reusable cup to attendees with the cost incorporated into the ticket price
Wash stations	<p>Options include:</p> <ul style="list-style-type: none"> • Permanently installing commercial sanitisation equipment (steriliser and racks, sink, benches and plumbing) into onsite locations • Borrowing a neighbouring restaurant's commercial kitchen • Using a nearby community/council-owned venue kitchen • Setting up your own portable wash station using tubs, a hot water system and dish stacking stands. • Outsourcing entirely to third party providers (e.g. mobile dishwashing trailer, or managed offsite)
Signage	<p>Options include:</p> <ul style="list-style-type: none"> • Work with your AV vendor to project sponsor logos and branding elements onto walls rather than printing banners • Utilise digital screens already installed in your venue or additional rented screens to convey information digitally. Screens can rotate information, so you don't need as many screens as printed signs • Hire an artist to create unique chalkboard signs on reusable frames • Use whiteboards for casual, short-term announcements • Post volunteers in corridors to function as human signs as an alternative to printed directional signs • If printing signage, avoid specific dates or logos so these can be reused
Packaging	<p>Options include:</p> <ul style="list-style-type: none"> • Refillable kegs for beverages • Reusable wooden crates and/or reusable net pallet covers to supply gear in and replace the need for plastic wrap



Credit: Johnny James



Consider implementing a bond system for reusables to encourage people to return items or incorporate the cost into the ticket price.

QLDC has a portable water trailer and two drinking fountains available for hire. Check out the **Supplier Directory** for more information.

The **Reusable serveware/packaging at markets (& events) in Aotearoa New Zealand Information Sheet** developed by Reuse Aotearoa offers guidance and details the key considerations for event operators and/or vendors wanting to set up viable reuse systems at events and markets.

If there is a cost associated with the purchase or hiring of reusables, this will often be offset by the savings from a reduced number of bins or skips being hired and the costs of collection.

Vendors should be consulted early, to co-design a reusable serveware system that works for the event.

Check out the **Choosing a Safe and Sustainable Reusable Serveware Fleet** report commissioned by Takeaway Throwaways. The report aims to support groups in Aotearoa New Zealand who are establishing reusable serveware systems to design and procure the most sustainable and safe reusable serveware possible.

Putting your washing up station somewhere visible is a great way to spark conversation at your event and showcase your efforts.



Case Study: LUMA & DISHrupt

LUMA, an annual arts festival in Queenstown Gardens, draws 30,000 to 50,000 attendees over five days with light sculptures, performances, and immersive zones. Demonstrating a commitment to reducing its environmental impact, LUMA has successfully diminished event waste through proactive vendor engagement and the strategic implementation of Dishrupt.

Recognising the pivotal role vendors play in waste diversion, Luma collaborates closely with them, promoting the use of reusable serveware and encouraging menu designs with minimal packaging. Vendors actively support this approach, contributing innovative ideas to reduce their environmental footprint.

Taking a bold step, Luma has banned single-use cups, and worked to eliminate the typical 'throw-away festival' atmosphere by creating a sustainable ambiance in their two licensed dining areas managed as 'Garden Bars,'.

Their investment in reusable serveware and collaboration with DISHrupt, a Sustainable Queenstown initiative, to manage the washing and return of serveware, has enabled them to significantly reduce the waste stream generated from food and beverage areas.

Complementing these initiatives, LUMATEERS, dedicated staff, manage waste stations and behind-the-scenes sorting, further maximising resource recovery onsite. LUMA's comprehensive approach sets a benchmark for sustainable event practices, showcasing a harmonious blend of artistic expression and environmental responsibility.

DISHrupt is a fantastic initiative of Sustainable Queenstown that provides a waste free solution for events and encourages the removal of single use packaging, cutlery and cups. In its first year, DISHrupt displaced the use of 50,000 disposables.



Credit: Luma and Sustainable Queenstown

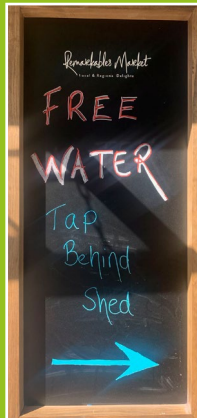
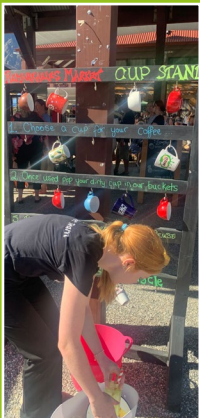


Credit: Tomáš Mácha and Luma



Case Study: Remarkables Market

Remarkables Market implemented a single-use cup ban in 2019. Their coffee carts switched to using second-hand ceramic cups and their juice bar to repurposed glass jars. Used cups and jars were collected during the day, washed and reused. In 2023, the market extended their ban on single-use cups to cover all single-use serveware for both food and drink. In the first 10 weeks of this policy, the market avoided the use of almost 13,500 single-use items. To increase capacity, the market upgraded their dishwashing facility with a second industrial dishwasher and a bespoke dual sink bench funded by Queenstown Lakes District Council's Waste Minimisation Community Fund. Food is served on ceramic or enamel side/dinner plates and bowls, with stainless steel cutlery. The market team washes, sanitises and returns the dishes to vendors during the day for reuse. Vendors and customers are very supportive of the system. Additionally, the market has an agreement with DISHrupt (Sustainable Queenstown) to provide storage of their rentable serveware and cups. In exchange, borrowing some of the DISHrupt owned equipment each market day.



Case Study: RIPE

RIPE, the Wānaka wine and food festival, is committed to delivering a waste free event and strives to lead the way in modelling zero-waste, single-use free events. RIPE has a team of passionate people who, along with the land owners and our front line Green Team, work to divert as much waste as possible from going to landfill. Initiatives include providing reusable cups for every attendee to take home, serving food with reusable plates and cutlery, restricting vendors to only using reusable or compostable packaging, and composting food scraps at Glendhu Station Worm Farm to create compost that feeds the trees on the RIPE site. Green team volunteers inspire and educate guests to take plates to the recycling station and separate waste.



Credit: Ripe



Case Study: Lake Hayes A&P Show

Commencing in 1904, the Lake Hayes A&P Show is one of the Whakatipu's longest running community events. It features all the elements of a traditional A&P show: horses, ponies, sheep, home industries, trade stalls, food stalls and entertainment. The event organisers strive to divert as much waste as possible from landfill. As well as using DISHrupt to reduce single-use items, the event sought funding from the QLDC Waste Minimisation Community Fund to produce two 'mug libraries' of donated and purchased second-hand mugs for hot beverage vendors to use. All compostable food waste is collected at composted through local community solutions.



Photo credit: Johnny James and the A&P Society.

Bin infrastructure

It's best to talk to your chosen waste service provider to figure out how many bins you will need for each waste stream and when these are to be delivered to site, serviced throughout the event, and collected post event.

It's important to avoid having standalone bins for each waste stream e.g., compost, recycling, or landfill waste as these bins will get contaminated. Instead group your bins in stations that will collect all of the waste streams you'll have at your event.



Waste station set up at the Lake Hayes A&P Show, 2023. Photo credit: Johnny James and the A&P Society.



Credit: Wellington City Council

Key considerations when organising your bins include;

FRONT OF HOUSE	BACK OF HOUSE
<ul style="list-style-type: none"> Type of waste streams you'll have at your event (food scraps, glass, mixed recycling, reusables, etc.) Type and size of bins (wheelie bins/ buckets/crates). Frequency of collection may determine size of bin or receptacle Number of bins required on site and for rotations Accessibility – make sure bin stations are visible and can be easily accessed by attendees Design of bin signage for attendees Bin monitoring staff (if used) Movability of bins for servicing – make sure bins can be emptied / replaced easily 	<ul style="list-style-type: none"> Type of waste streams (food scraps, glass, mixed recycling, reusables, soft plastic, used cooking oil, pallets etc.) Type and size of bins/skips/bags Available space for skips and collection servicing Design of bin signage for staff Access for stallholders, vendors, suppliers Make sure your back of house waste stations are separated from bins that event attendees use

New Zealand has nationally agreed colours for different waste types to help guide the public how to sort their waste correctly. Typically, the body of a bin is dark green, with the following lid colours used to identify material streams:





Credit: Organic Wealth

If you're hosting a large event, it's a good idea to have a waste hub in a back of house area, where full bins or bin liner bags can be sorted and stored before they are collected for processing by a service provider.



Think carefully about where people will congregate and create the waste streams expected at your event or venue. Place bin stations near food and beverage vendors, water stations, entrance and exit points, and near toilets.



There are no industrial composting facilities in the Queenstown Lakes district, but if you can access a home compost, community composting hub, or out-of-district facility, make sure you know what type of organic material they are able to accept. Refer to the **Recycling and Packaging Guide** for more information.

Contamination means that something has ended up in the wrong bin (e.g., food scraps in the recycling bin). Too much contamination of a waste stream can impact the ability to recycle or compost material. There are several effective ways to reduce contamination and ensure clean waste streams:



Staff your bin stations – trained zero-waste staff or volunteers can help attendees use the bin stations correctly and build community knowledge. It's much easier to prevent bin contamination as it happens.



Signage – you can prevent contamination of your bins by using clear and consistent signage. More on that in the next section.



Check for bin contamination in your back of house waste sorting area – wearing gloves, inspect the contents of bin liner bags and bins. Remove any contaminants and put them in the correct bin. Beyond the Bin **Video 8: Site Operations** provides more detail on this. Note, some service providers will do this for you.



Be agile – review your bin set up if you're noticing a lot of contamination.

Signage

Clear and simple signage is important. It helps to ensure reuse systems are well used, supports you to reduce contamination and minimise what goes to landfill after your event. Talk to your waste service provider(s) to understand how they can support you with appropriate signage. It's important to be consistent with your signage across your site and where possible align with the [standard NZ waste stream colouring and symbols](#).

When it comes to event signage you have four main options to help people understand reuse systems and identify which items should go in which bins:

WORDS	WORDS AND SYMBOLS	PHOTOS	ACTUAL OBJECTS
<p>Label reuse infrastructure or your different waste stream bins using words that the public can recognise and understand. For example:</p> <ul style="list-style-type: none">• rubbish• mixed recycling (aluminium cans, steel cans, cardboard)• glass• food scraps• dirty mugs	<p>Words and symbols used together show visually what items are being collected for reuse or should go in each bin. This is helpful if there are children or people who don't speak English as a first language.</p> <p>New Zealand Recycling Symbols for all the main types of waste streams are free to download and use.</p> <p>Download them here: Standardised bin colours recycling bin suppliers event signage (wasteminz.org.nz)</p>	<p>If your event is held regularly or if only specific types of reusables or waste are likely to be used or generated by the event, it may be useful to use photos instead of symbols.</p>	<p>Fixing actual examples of what can go in each waste stream to a board above a bin or to the bin cover can be a useful way to help reduce contamination or help recover reusables.</p> <p>If choosing to use actual objects, securely attach items with reusable fasteners such as Crocodile Clips to avoid creating more waste.</p>

You should also:

- Make sure your signage is waterproof.
- Make sure your signs are large enough to be read at a distance. In most cases a minimum of A4 is advised.
- Make sure your sign is easy to read. Don't use italics or capital letters.
- Design your sign so that it can be recycled or reused at the end of the event.

For more details on creating best practice signage for your event check out "Zero Waste events guidance" – it's a guidance document created by WasteMINZ and available from [WasteMINZ website](#).

Recycling symbols and Te reo Māori translations for rubbish and recycling streams are available at:
[Standardised bin colours recycling bin suppliers event signage \(wasteminz.org.nz\)](#)



Feather flag signage is also a good idea to help people easily identify waste infrastructure, for example a waste station or reusables collection point.





Site Layout

Once you have identified the infrastructure you need, it's a good idea to think carefully about where to put it on your event site. For example, when you're planning bin station placement, think about where crowds will form. Where will people be standing, sitting, or waiting?

Consider the following elements and how they might impact your event:

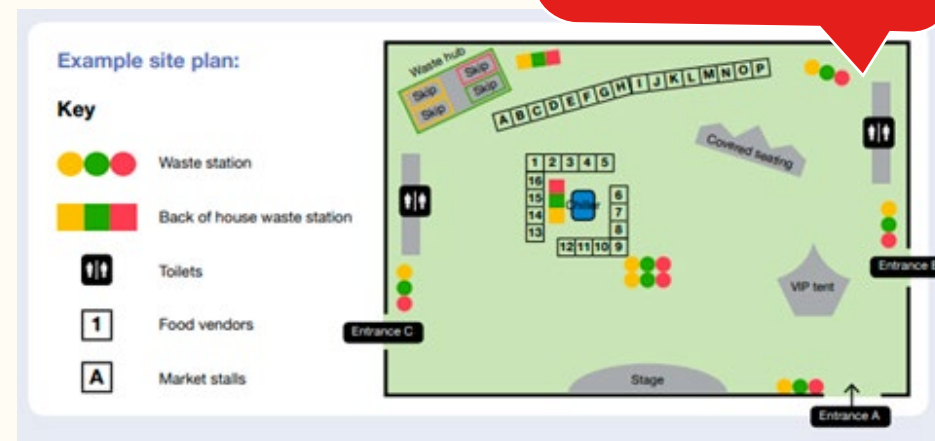
ELEMENTS	POTENTIAL IMPACTS
Waste storage areas – consider suitable access and a stable location (avoid a slope or gradient and windy areas)	Impacts your capacity for the type and size of back of house skips/bins, and ease of access for staff and collection vehicles to clear the material. A stable and enclosed area will ensure waste isn't tipped over or blown away.
Bin stations – consider positioning and education	All bin stations should be easily accessible. Front of house bin stations should be strategically placed close to where waste is generated (i.e. food/drink areas) and/or at event entries and exits. Bin stations should also be close to high activity areas so attendees can easily access the waste services. Clear signage should be used for front and back of house bin stations to avoid contamination of waste streams.
Washing/drop-off stations for reusables – needs access to water, power and drains. Consider positioning, clear signage and educational opportunities	Impacts your washing infrastructure capacity. Requires servicing and significant logistical access for attendees, vendors, and staff. Make sure attendees know where to drop off or return reusables.

The following example site plan demonstrates the following considerations to minimise waste, contamination and litter.

If your event site incorporates public rubbish and recycling bins, you should cover these so that you can capture all of your event waste.



Beyond the Bin **Video 5: Planning & Mapping** is a great resource to help guide your site layout.



Credit: Beyond the Bin **Video 5: Planning & Mapping** | Beyond the Bin

Notice that:

- Waste stations are located at each entrance/exit
- You can see waste stations if you're in a food area
- Waste stations are located on way to toilets
- Back of house waste hub has been identified
- Vendors have been provided back of house waste stations
- Double waste station has been provided at forecasted busiest area (front of stage/food area)
- Waste stations are logically spaced out and no "gaps" exist.

Especially at large events consider assigning an area to be your 'waste hub' (this is a back of house area). The hub is a space where service providers can deliver/collect bins, decontamination/sorting can take place, or provide a meeting point for event waste staff or volunteers.



Staffing

You will need staff (in paid or voluntary roles) to help you minimise the amount of waste sent to landfill. As part of your event planning process, it's important you define the roles and responsibilities of those involved in waste minimisation and management.

It's a great idea to hire a waste operations manager to manage these logistics during your event. This person will be responsible for:

- developing your Event Waste Minimisation and Management Plan
- managing any necessary training for waste staff or volunteers
- organising the placement of bin stations
- managing the emptying and replacement of bins / bin liners
- managing the onsite waste sorting area (if you're sorting onsite)
- liaising with waste collectors and service providers
- assisting vendors and stallholders with onsite separation and bin systems
- managing any volunteers helping with waste
- managing the reusables systems at your event (if applicable)
- troubleshooting during the event
- managing the back of house waste hub
- capturing waste data and initiatives
- post event analysis and reporting.

If you're managing your own event waste, it's especially important to have a waste team to help you implement your Event Waste Minimisation and Management Plan.

The role of waste staff and volunteers can include:

- bin station monitors: interacting with attendees to educate, inform and inspire
- assisting at wash stations for reusables
- litter picking across the event site
- covering permanent rubbish bins if the event is held in a public space
- assisting with bin / bin liner changes
- assisting with setting up and packing down bin stations and reusable systems
- post event waste sorting



To help recruit volunteers to help with your waste minimisation initiatives consider offering free tickets to your event, a free meal, or offer to pay a community group that is fundraising, such as a local sports club or school group. Volunteer organisations or Timebanks might also be able to help recruit volunteers.

Before and during the event, make sure staff and volunteers know what is expected of them in their roles and that they are well briefed about the systems in place.

Validate staff and volunteer importance, look after their health and safety, show appreciation at every point of communication, and ask for their feedback. This will build morale and encourage great staff and volunteers to return to your event.

Beyond the Bin's Video #6: Volunteers provides tips on how to recruit, communicate, train and retain an amazing waste volunteer force.



2.2 Delivery phase: During your event

Step 4: Site set up and induction

Now that you've got a plan, it's important all your stakeholders are well versed on your targets and initiatives, and that they have a copy of your site layout map showing all the waste related infrastructure.

Key considerations:

- Set up all necessary waste infrastructure early – this includes your bins, signage, and reuse services, according to your site map.
- Let your vendors and everyone involved in the set up know how to use the waste infrastructure correctly when they arrive on-site via a site induction or briefing.
- Use the **Vendor Assessment Template** to check that food and beverage vendors and market or merchandise stalls are compliant with your event packaging requirements before, during and after your event.
- Deliver ongoing training and support. In addition to any initial briefings or pre-event communication, staff and volunteers should be updated on your objectives and initiatives when they arrive on-site and at the start of every shift. Be clear about what you expect from them in their roles and make sure they are safe and supported.
- Share your message. Make sure your attendees know that you're working hard to minimise waste and emissions and what they can do to help achieve these goals. This can be highlighted in a programme or verbally as they arrive at your event. Check out the **Communications and Engagement** section for more detail.

Step 5: Monitor and capture your initiatives

It's easy to get caught up in the action on event day, but it's important to monitor and capture data on how your initiatives and systems are working as a prerequisite to reporting. This also allows you to know what is working and what isn't so that you can address issues as they arise.

Things to take note of include:

- Front and back of house bins – do they contain the correct materials/items? Are they contaminated with other items that shouldn't be in there? Are the bins in suitable locations?
- Are the reuse systems in place working well? If the system is not working as well as anticipated, what might be the reasons?
- Is the signage clear and easy to see?
- Are vendors acting in accordance with their verbal or contractual agreements?

Use the **Post Event Waste Report Template** provided as part of the Toolkit to help further identify the key information to capture both during and after the event. Make sure to talk to or survey attendees, vendors, staff and volunteers and take plenty of photos or video!



Have systems in place to measure and record data on your initiatives (e.g., the number of single-use cups or water bottles displaced by reusables) and waste stream volumes.

Collection contractors or service providers can report the volume and weight of each stream they collect. However, be sure to include this as part of the contract or service agreement. If you are doing this yourself, think about whether it will be easiest to weigh each waste stream or use a volume-based measurement.

Surveys, photos or point-of-sale information from vendors such as the number of coffees sold in reusable cups etc. are useful ways to help capture data and initiatives.

2.3 Evaluation phase: After your event

Step 6: Reporting and reflection

Once the event has wrapped up, it's important you gather and report your results. This will help you to assess your progress over time, and enable communication with attendees, sponsors, and the wider community on how well you've been able to divert waste from landfill. It's also useful if you need to report back to Council as part of funding or compliance requirements.

Don't forget to also communicate your results and findings back to your event team, volunteers, and vendors. Seeing the outcomes and progress of an event they were involved in is a powerful way to instil behaviour change and encourage continuous improvement.

The **Post Event Waste Report Template** provided as part of the Toolkit will help you capture the key information.

Key considerations:

- Have you quantified your waste streams including recycling, composting, and landfill? Waste service providers should be able to supply this information. If you didn't hire a waste service provider, appoint someone in your team to measure and record each waste stream by weight or volume after your event.
- Did you achieve your targets including your diversion rate?
- If you noted contamination in your waste streams, did you record or identify the actual items causing contamination so you can communicate them to everyone afterwards?
- Did you have enough staff or volunteers?
- Were the reuse initiatives used to maximum effect?
- Did your vendors participate as much as you hoped? If not, what were the barriers to their participation?
- Did your education methods work well? Was your signage effective?
- How could you improve your systems?

A post event waste audit is a useful way to help you determine if your initiatives were effective and if you met certain targets. It also allows you to understand the sources of your waste to make informed decisions about future initiatives. For example, if your rubbish stream was 60% coffee cups, the introduction of a reusable system would significantly help you reduce this.

Beyond the Bin have some useful videos about auditing and capturing event waste data and how to calculate your waste diversion safely and easily; and how to promote your diversion success to increase the value of your waste minimisation activity. Alternatively, undertake a waste audit yourself using the **Event Waste Audit Guide and Template** provided.

If you are conducting a sample waste audit for a large event, you can then extrapolate the results to your entire waste service. Collection contractors or service providers can report the volume and weight of each stream they collect. However, be sure to include this as part of the contract or service agreement.

Capturing your event waste data is a way to measure how much you've diverted from landfill. The diversion rate is calculated by dividing the weight of diverted waste (e.g., your total recyclables) by the weight of all waste generated. Multiply the amount by 100 to get your percentage (%).



Your attendees, suppliers, and stallholders are your biggest source of information about what's working and what's not so it's important to capture their feedback during or after the event. This feedback provides invaluable information you can share with your event team and sponsors.



2.4 Waste minimisation and management checklist



Use the below checklist to make sure you stay on top of the key actions for reducing waste at your event.

BEFORE THE EVENT	
	Determine your objectives and targets, then develop your Event Waste Minimisation and Management Plan using the template provided.
	Identify your key stakeholders who will impact on or can support your waste minimisation goals and define roles and responsibilities for each.
	Develop key messages to promote your goals and initiatives clearly to them through all stages of your event. Use the Communication and Engagement Plan Template provided as a guide.
	Establish a team (paid or volunteers) for overseeing the implementation of the Event Waste Minimisation and Management Plan.
	Communicate ahead of the event with all staff, volunteers, vendors and suppliers about the waste minimisation objectives and processes, for example through emails or briefing sessions.
	Book and arrange for drop-off and collection of all waste related infrastructure and materials required.
	Arrange all personal protective equipment (PPE) for staff / volunteers who are handling waste during and after the event if applicable.
	Review your Event Waste Minimisation and Management Plan with the team prior to setting up the event.
	Distribute all bins and skips to stations (all bins should be located at stations where more than one waste stream is available) and ensure reuse infrastructure is in place.
	Set up your waste hub (applicable for larger events).
	Install all signage for bin stations and reuse infrastructure.
	Check that bin stations are clearly labelled and signposted: Can attendees see them clearly? Move them if necessary.
	Cover public bins (if applicable) with signage directing visitors to event waste minimisation stations.

DURING THE EVENT	
	Ensure that site inductions or briefings cover off your waste minimisation objectives and the systems in place to help achieve these.
	Make sure that back of house and front of house bins are labelled properly and being used correctly – look for contamination.
	Check that bins are emptied or replaced often enough: avoid overflowing bins. Ensure you have a communications process or system for managing the emptying or replacement of bins for example via a radio or text with staff or volunteers.
	Check in with bin monitors or observe: Are attendees using the bin stations correctly? Is the signage effective? Do bin monitors and your onsite waste team understand how to separate each waste stream?
	Make sure that litter is being collected during the event. Note where and when litter is a problem. This will help you to understand where you need more bins / empty bins more regularly.
	Check to see if reuse systems are working well. Adjust if needed.
	Do a Vendor Assessment to make sure only permitted materials are being used and brief them on how to use back of house sorting areas correctly. Use the Vendor Assessment Template provided.
	Capture data on waste minimisation initiatives. Conduct surveys of vendors and attendees. Take photos.
	Continue to promote minimisation initiatives throughout event.

AFTER THE EVENT

	Monitor stallholders and contractors as they pack up.
	Undertake a post event waste audit or post event sort of your waste streams. See the Event Waste Audit Guide and Template provided if applicable.
	Check that all waste streams, spare bins, signage, and reuse infrastructure have been collected.
	Undertake final site clean-up.
	Write an assessment report, including overview of infrastructure, amount of waste collected by stream, weight and volume, attendee and vendor feedback, and recommendations for the next event. Use the Post Event Waste Report Template provided.
	Communicate results to all stakeholders.

2.5 Additional support and funding

Queenstown Lakes District Council have various funding options to help with your event waste minimisation initiatives. Visit www.qldc.govt.nz/community/community-funding for more information.

Should you require any further information or assistance with your Event Waste Minimisation and Management Plan, please contact the Queenstown Lakes District Council at zerowaste@qldc.govt.nz



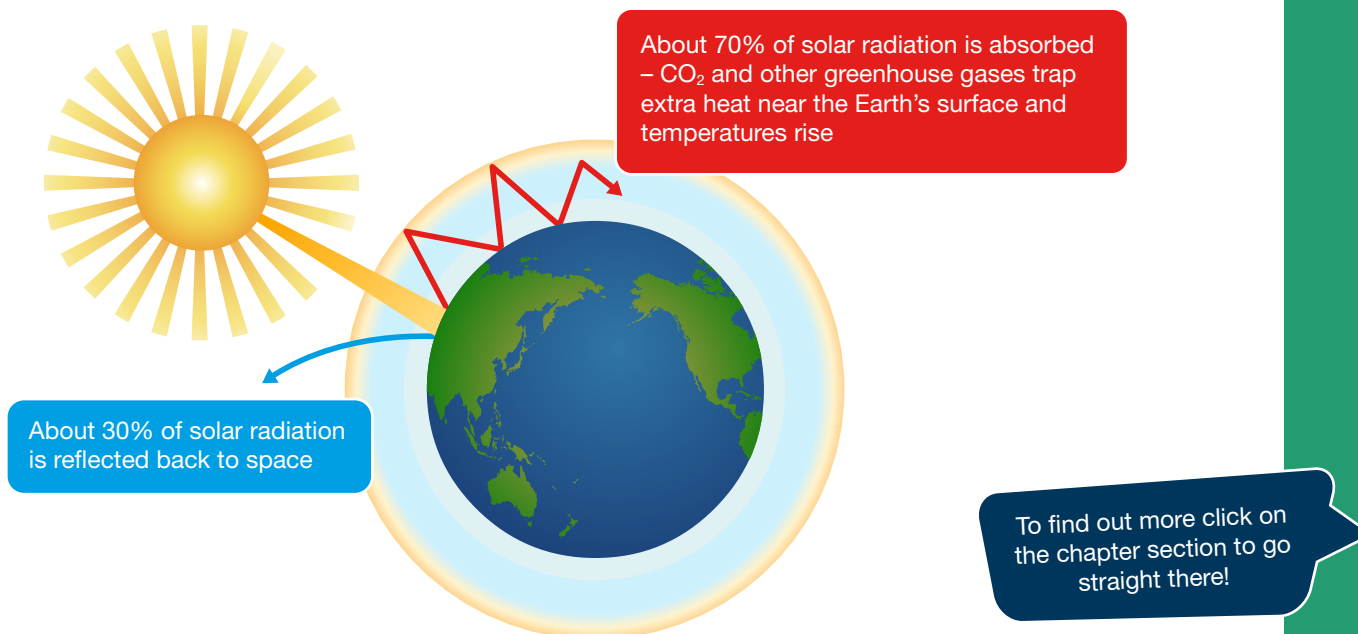


3

REDUCING GREENHOUSE GAS EMISSIONS AT YOUR EVENT

Greenhouse gases (GHGs) such as carbon dioxide, methane, nitrous oxide and fluorinated gases form part of our atmosphere. These gases allow sunlight to enter but trap some of the outgoing infrared radiation. This retention of heat is what we refer to as the Greenhouse Gas Effect.

Human activity has resulted in a rise in concentration of greenhouse gases (GHGs) in the atmosphere since the industrial revolution. This continual rise of GHGs in the atmosphere is resulting in an increase in the average global temperature and man-made climate change. The diagram below shows how this works, the Greenhouse Effect.



Event-based GHG emissions are generally from the use of fossil fuels in transport and heating, decomposition of organic matter such as food waste in landfill, and electricity use. Queenstown Lakes District has a goal to reduce its GHG emissions by 44% by 2030⁴ and achieve net zero GHG emissions by 2050 (QLDC Climate and Biodiversity Plan 2022). The district's regenerative tourism plan 'Travel to a Thriving Future' also aims to achieve a carbon net zero visitor economy by 2030 (Queenstown Lakes Destination Management Steering Group, 2023). All events within the district are expected to minimise their GHG emissions as far as practical. You may wish to engage a Sustainability Manager (volunteer or paid) to help you reduce GHG emissions produced by your event.

Greenhouse gas (or carbon) emissions are expressed in carbon dioxide equivalents (CO₂e) which compare the global warming potential of particular gaseous emissions to that of carbon dioxide. For example, methane emissions from decomposing organic material in landfill have a warming potential 28 times greater than carbon dioxide over 100 years. Diverting food waste from landfill can significantly reduce GHG emissions from your event, by avoiding the generation of methane during decomposition.

Planning phase (before event)

- 1 Understanding your emission sources
- 2 Estimating your event's GHG emissions
- 3 Set your objectives and targets
- 4 Get creative!
- 5 Training and engagement

Delivery phase (during event)

- 5 Capture your initiatives

Evaluation phase (after event)

- 6 Reporting and reflection

⁴Against a 2019 baseline and aligned with the 1.5 degree science-based target pathway outlined in the 2020 Emissions Reduction Roadmap

3.1 Planning phase: Before your event

Step 1: Understanding your emissions sources

The first step to reducing your event GHG emissions is to identify the major sources of emissions from your event and create a reduction plan. Important things to consider include location and venue as well as the activities associated with all stages of the event.



Travel and transport are often the largest contributors to an event's GHG emissions. The location of an event and access to public and active transport routes can significantly affect your event's GHG emissions. Consider a location which reduces the distance people need to travel and is accessible on foot, by bike or public transport.

Common sources of GHG emissions from events include:



fuel used in transport for event production (e.g. staff, volunteers, vendors and supplier travel)



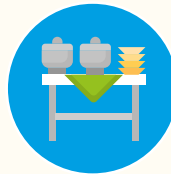
fuel used for patrons to attend the event (e.g. road or air travel for attendees)



fuel used on site (e.g. diesel to power generators)



electricity used on site (e.g. venue lighting, heating)



catering (e.g. indirect emissions with the production and transport of food and beverages)



waste and recycling (e.g. emissions from transport and processing of recycling and waste, decomposition of waste in landfill).

Step 2: Estimating your event's GHG emissions

When you understand the sources and magnitude of your event's GHG emissions, you can take steps to reduce them. If this is the first year running the event, or you have not previously collected information on GHG emissions, then your focus should be on collected data to be able to estimate your event's GHG emissions.

Refer to **How to Estimate Event GHG Emissions** in the Event Toolkit for guidance on understanding what your key sources of emissions are, and how to estimate the emissions from your event.

Step 3: Set your objectives and targets

Once you have estimated your GHG emissions, you can set objectives and targets to reduce these emissions. Think about actions to achieve the target you have set, based on what your largest sources of emissions are. Also consider if there are ways to better optimise data collection. For example, are there large emission sources which you are missing such as travel data from attendees.

You may set targets around a particular activity or opt to calculate your emissions and set a target around reducing emissions. When setting targets, use the SMART principle (specific, measurable, achievable, relevant, timebound) outlined earlier in the guide.

Use the **Event GHG Emissions Reduction Plan Template** to record your event objectives, targets, success indicators and initiatives.

WHAT TO CONSIDER WHEN SETTING TARGETS	EXAMPLES
Prioritising low emission alternatives	Ensure 95% of suppliers and vendors are sourced locally, from within the district
Reduction in activity level	Reduce venue electricity use by 20% from the previous year
Gross and net emissions reduction	By [insert year], reduce GHG emissions calculated from staff and volunteer travel to and from event locations by 90% and offset any remaining emissions

Gross emissions relate to total GHG emissions. It is possible to “net” your emissions and achieve certification standards regarding the “net” position of your event.

Netting your emissions is when you purchase and retire the equivalent amount of carbon credits as your event emissions. It is important to note to achieve certification and make credible market claims your emissions report will need to be verified and all significant emissions sources will need to be included. For more information refer to **How to Estimate Event Greenhouse Gas Emissions**.



Waste disposal to landfill is a significant contributor to greenhouse gas (GHG) emissions. Any goals to reduce GHG emissions at events and venues should incorporate waste minimisation initiatives.

Step 4: Get creative!

Once you’ve selected your perfect low-emission venue, get creative with how you design, set up and run your event. Assign someone to champion GHG emissions reductions.

Think about how you can incentivise staff, volunteers, supplier, vendors and attendees to reduce GHG emissions. Are there co-benefits to emission reduction initiatives such as reduced energy costs for your event, promotion of local businesses, local biodiversity benefits from sequestration activities, or creative ways to make emissions reduction fun? Research what other events are doing and select suppliers and vendors that are being innovative in reducing GHG emissions.

You may want to try:

- Portable battery power stations or solar power instead of diesel generators
- Using bikes or renting e-bikes or electric golf carts for on-site crew movements
- Walking and cycling tours as part of your event
- Providing shuttle buses to transport attendees to and from the event
- Offering incentives for attendees who use public or active transport or carpooling
- Working with low/zero carbon suppliers and vendors
- Incorporating local tree planting as part of your event.

Go to the GHG Emissions Reduction Checklist for more ideas.



Case Study: The WILD



The WILD is a multi-day celebration of trail and mountain running centred around Arrowtown. The event is owned and organised by The Wild For Nature Charitable Trust and proceeds from the event help fund native habitat restoration projects in the areas through which participants run. The event incorporates wilding pine control and removal of other invasive species along the courses to prepare the sites for native plantings, which is undertaken by the Trust.



Credit: The Wild and Sustainable Queenstown

Step 5: Training and engagement

Make sure your team of staff, volunteers, vendors and suppliers understand your targets and are on board with the emissions reduction initiatives.

Simple actions such as carpooling or only lighting and heating spaces that are being used can result in significant emission reductions.

Share your message as part of your event advertising. Brief attendees about your goals and how they can help to achieve them. As part of ticketing, offer sequestration or offset opportunities for unavoidable emissions. Check out the **Communications and Engagement** section for more detail.





3.2 Delivery phase: During your event

Step 5: Capture your initiatives

Record relevant data that will help you understand your key emission sources. For example, you could survey attendees to ask where they travelled from and what mode of transport they used. If you intend to calculate your GHG emissions, you could record fuel use or kilometres travelled. If the event requires significant electricity use, then before and after meter readings will be useful.

Data on organic waste collected and diverted from landfill as part of waste minimisation initiatives can also be useful for calculating emissions (Step 6: Reporting and reflection).

3.3 Evaluation phase: After your event

Step 6: Reporting and reflection

When you understand the sources and scale of GHG emissions from your event, you can take steps to reduce them. From the data collected in Step 5, you can calculate your GHG emissions by multiplying the activity data (e.g. litres of fuel used, or kilometres travelled) by an emissions factor provided by the Ministry for the Environment (MfE, 2022), or industry-specific emission factors.

If you wish to make claims about your event's GHG emissions (e.g. net zero carbon), then it is important that your measurements are audited and verified by a third party. For more information on verification, auditing and certification refer to

[How to Estimate Event Greenhouse Gas Emissions.](#)

Case Study: WAO Summit Transport Planning

When planning the WAO Summit sessions, the team thought about how to avoid transport emissions through the use of virtual technology for speakers and attendees and reduce transport emissions by:

- selecting suitable venues including those with accommodation within walking distance
- requiring suppliers to minimise deliveries
- promoting the use of sustainable travel options such as cycling and walking
- providing facilities on site to park bikes
- promoting the use of public transport and offering shuttle services where possible
- promoting the use of car share / carpooling on the website, on ticketing and through all promotional activity where biking or walking was not possible
- promoting routes that minimise impact and disruption for local communities
- organising the event agenda to avoid rush hour or peak times.

Wao Summit captured audience travel data at the door. When tickets were checked, attendees were asked how they travelled, the type of vehicle, and where they travelled from and to. Other data gathering techniques are used including a simple visual “bean counting” installation where attendees are asked to put a bean into the jar relevant to the mode of transport they arrived at the event in. This data feeds into a more detailed picture of the emissions profile of the event and informs future decisions.



3.4 Greenhouse gas emissions checklist

Choose as many of these initiatives as appropriate to help you achieve your emission reduction objectives and targets. However, don't let this list restrict you. There may be other cool initiatives out there!



BEFORE THE EVENT				DURING THE EVENT		AFTER THE EVENT	
	Choose a location that is easily accessible by public transport, biking or walking		Consider low-emission transport options for site set-up such as on-site cargo bikes or electric golf buggies		Arrange carpool or shuttle transport for staff and volunteers		Review volunteer and staff travel data
	Partner with local transport operators / public transport authority to provide discounted or free travel to your event		Share information with your volunteers and staff on how they can reduce their personal GHG emissions and help attendees reduce theirs		Consider low-emission transport options such as on-site cargo bikes or electric golf buggies to move personnel and goods during the event		Review attendee travel data
	For less accessible locations offer shuttle bus transport as part of the ticket price		Provide information to attendees on booking, on how they can voluntarily offset their travel emissions either through a certified programme or through local initiatives		Clearly mark bus stops, shuttle bus locations and bicycle parking areas		Review on-site fuel use data
	Select a venue with low energy requirements and/or renewable power sources		Charge a car park entry fee or parking pass and use funds to offset your event attendee travel emissions		Offer incentives for attendees who use public transport / ride a bike (e.g. meal or drink voucher)		Review waste emissions data. How much organic waste went to landfill? – Refer to Step 6: Reporting and reflection
	Hire a portable battery power station or solar-power energy supply instead of a diesel generator		Promote your GHG emission reduction initiatives on your event website / social media		Offer priority parking or parking discounts for vehicles with three or more people		Ask your venue manager for energy data if applicable (e.g. electricity meter readings, fuel consumption)
	Select an outdoor venue if it is appropriate for your event and will help reduce energy requirements		Calculate your GHG emissions and what data you need to collect		Offer secure on-site bicycle parking		Ask vendors and suppliers for energy and transport data
	Check if the venue can provide you with electricity information (and fuel use if applicable)		Offset unavoidable GHG emissions for:		Capture attendee travel data at the entry points (e.g. "Where did you travel from? How did you arrive?")		If you estimated your GHG emissions, how did you do against your objectives and targets? What could be improved?
	Prioritise local suppliers and vendors to minimise transport emissions		<ul style="list-style-type: none"> Your organisation (including staff and volunteers) Suppliers and vendors Attendees 		Ensure lighting and appliances are turned off when not needed		What emission reduction initiatives could you consider next time?
	Prioritise low/zero carbon suppliers and vendors		Capture attendee travel data on ticket purchase. Do you want to incorporate travel offsets into attendees' ticket prices?		Use electric or renewable energy sources instead of burning fossil fuels if possible (e.g. electric instead of LPG cooktops)		
	Select food suppliers with a lower carbon footprint (e.g. local seasonal produce, vegan options)				Consider incorporating local tree planting as part of your event		



4

WORKING WITH YOUR VENDORS AND SUPPLIERS

What is sold or given away at your event and where you procure goods and services from has a huge impact on your event waste and emissions. It's important to work closely and collaboratively with your vendors and suppliers throughout all stages of your event to ensure they understand and support your event waste and emissions reduction goals.

In addition to the key considerations listed below, the **Vendor Assessment Template, Recycling and Packaging Guide**, and the **Communication and Engagement Plan Template** can help you work with vendors and suppliers to achieve your waste and emissions reduction goals.

Key considerations for event organisers when engaging with vendors and suppliers:

- **Set clear expectations and communicate**

Clearly communicate your waste reduction and GHG emission reduction goals and expectations to vendors and suppliers early in your event planning and outline the importance of their collaboration in achieving these goals. Where possible involve vendors and suppliers early on when developing your goals, targets and initiatives.

- **Integrate requirements into application forms, contracts and agreements**

Clearly stipulate requirements related to waste minimisation and GHG emissions reduction. This could include specifications for sustainable serveware and packaging, transportation practices, and energy-efficient equipment.

- **Provide guidelines, resources and support**

Offer guidelines and resources that help vendors and suppliers understand how to align their operations with your goals. Ensure that vendors have access to the necessary resources and support to implement sustainable practices that help them to reduce their waste and emissions. This could involve providing them access to educational materials and workshops, facilitating partnerships with sustainable suppliers, or setting up good systems on site from them to access e.g. reusable serveware or back of house recycling systems.

- **Collaborate**

Work collaboratively with suppliers and vendors to develop effective waste and emissions reduction strategies. This may involve finding alternatives to single-use items, implementing take-back programs, encouraging the use of reusable materials, or sustainable sourcing of products and materials. Foster a collaborative environment among vendors, encouraging the sharing of best practices and innovative solutions for waste and emissions reduction.

- **Promote carbon offsetting for unavoidable emissions**

Explore the possibility of carbon offset programs with vendors, where they invest in projects that reduce or capture an equivalent amount of GHG emissions to offset unavoidable emissions. Provide information on reputable carbon offset programs.

- **Provide incentives and recognition**

Consider offering incentives for vendors and suppliers who actively engage in and help achieve your goals. This could be in the form of discounts or qualifying for a preferred supplier panel. Recognise and showcase vendors and suppliers who demonstrate exemplary sustainability practices to motivate others.

- **Measure, track and report progress**

Implement a system for measuring and tracking the sustainability performance of vendors. Regularly assess their progress towards waste and GHG emission reduction goals. Use this information to identify areas for improvement and celebrate successes.

Here are examples of clauses that event organisers can consider including in vendor and supplier agreements to promote waste and emissions reduction:

WASTE REDUCTION CLAUSES	
Packaging	<p>The supplier/vendor agrees to use reusable or recyclable packaging materials for all products and materials provided for the event. Single-use plastics and non-recyclable materials are discouraged.</p> <p>The following items are prohibited from use: e.g. plastic plates and plastic cutlery</p> <ul style="list-style-type: none"> • Item: • Item: • Item: • Item:
Waste separation and disposal	<p>The supplier/vendor shall actively participate in waste separation efforts during the event. All waste generated by the vendor must be separated into designated recycling, composting, and landfill bins as per the event's waste minimisation and management plan. Any items that do not fit the listed waste streams should be taken away with you.</p>
Reusable items	<p>Vendors are encouraged to provide and use reusable items such as cups, plates, and utensils during the event. Single-use items should be minimised, and alternatives that prioritise reusability are preferred.</p>
Return and reuse of materials	<p>The vendor agrees to facilitate the return and reuse of materials, where applicable, at the conclusion of the event. Materials such as signage, banners, and display items should be designed with reuse in mind.</p>
Post-event clean-up	<p>The vendor is responsible for the proper disposal and clean-up of any waste generated as a result of their participation in the event. This includes the removal of any temporary structures or materials.”</p>

EMISSIONS REDUCTION CLAUSES	
Supply chain	<p>The supplier/vendor shall consider GHG emissions from its supply chain and prioritise locally sourced, low emission options (e.g. seasonal, vegetarian and vegan products).</p>
Transportation efficiency	<p>The supplier/vendor shall demonstrate how it proposes to reduce transport emissions (e.g. prioritise the use of fuel-efficient vehicles, optimise transportation routes, collaboration with other vendors to minimise carbon emissions).</p>
Carbon offsetting	<p>The vendor is encouraged to calculate the GHG emissions associated with their participation in the event and offset unavoidable emissions after emission reduction initiatives have been implemented. Documentation of carbon offset efforts may be requested by the event organiser.</p>
Energy efficient practices	<p>Vendors are expected to adopt energy-efficient practices and use low GHG emission appliances during the event (e.g. LED lighting, energy-efficient equipment, minimising idle time for electronic devices and machinery, using electric rather than LPG cooktops).</p>
Sustainable power sources	<p>Vendors are encouraged to use sustainable power sources for their operations during the event.</p>
Emission reporting	<p>The vendor agrees to provide information on their carbon footprint associated with the products or services provided for the event. This may include the use of a standardised emissions reporting template.</p>

Most event waste is generated by food or beverage vendors.



Encourage vendors to use reusable plates, cups, and utensils instead of disposable items. Provide incentives for vendors who adopt and promote reusable serveware options.



Collaborate with food rescue organisations to ensure that surplus food from vendors is donated to those in need rather than being discarded.



Contact food and beverage vendors to check what type of packaging they are planning to use: does it comply with your requirements?



Reduce the need for single-use water bottles by providing water refill stations. Encourage vendors to promote the use of reusable water bottles among event attendees.



Contact food and beverage vendors to remind them of waste separation requirements and what systems will be made available to them.



Incentivise reusables by asking vendors to offer a discount for those attendees with reusables, and charge more when disposable serveware is used.



Inform food & beverage vendors of ticket sales / expected numbers to reduce food waste.



Example of vendor engagement

The travel and transport of goods and services is the biggest contributor to event GHG emissions.

Choose local suppliers and stallholders to minimise transport emissions in the first place.

When selecting food and beverage suppliers, give preference to local, seasonal, Fairtrade, organic, vegetarian and vegan products.

Share your emissions reduction goals with your vendors and suppliers: get them on board with your emissions reduction plan (e.g. use active or public transport, carpool, choose local, organic, fair-trade, vegetarians or vegan products, use electricity instead of LPG for cooking).

Work with your suppliers and vendors to support and encourage them to choose lower emission transport options: streamline deliveries, minimise air and road freight.



4.1 Vendors and suppliers checklist

Use the below checklist to make sure you stay on top of the key actions.

BEFORE THE EVENT	
	Establish clear communication channels with suppliers and vendors to convey your waste and emission reduction goals and initiatives.
	Clearly outline your requirements in contracts and agreements with vendors and suppliers.
	Include specific clauses regarding waste minimisation and GHG emissions reduction.
	Brief vendors and suppliers on what type of reuse systems you will have in place and what waste streams you will be collecting front and back of house at your event and how they need to use these (i.e. rubbish, recycling, food scraps). If your event has a vendor manager, make sure they are across your event waste minimisation and management plan and ensure they communicate it all with the vendors.
	Tell your suppliers that you are measuring your event waste and emissions data. Encourage them to collect information on their waste and emissions also and share it with you, so collectively you can work to reduce waste and emissions.
	Provide guidelines, educational resources and training sessions for vendors on waste and GHG emissions reduction and measurement practices. Share best practices case studies to inspire and guide vendors in adopting sustainable measures.
	Inform food and beverage vendors of ticket sales / expected numbers to reduce food waste.

DURING THE EVENT	
	Establish clearly labelled BOH waste collection stations for event waste streams and ensure that vendors and suppliers are aware of the location of waste stations.
	Check that vendors are using approved serveware, packaging and the BOH waste stations, collection or sorting areas correctly. Use the Vendor Assessment Template provided.
	Check that energy efficient measures are being implemented (e.g. appliances, lighting and heating turned off when not required)
	Plan for any surplus food to be collected and donated or used for crew catering if applicable.
	If applicable check that reuse systems are working for vendors. Adjust if necessary.

AFTER THE EVENT	
	Check that vendor sites are free of litter.
	Check back of house area is free of unsorted rubbish, recycling, or compost.
	Refund waste bond (if using).
	Gather data and feedback from suppliers and vendors: what worked, what could be improved?
	Share results with stakeholders and include feedback in your planning for future events.
	Recognise vendors and suppliers who excel in sustainability practices.



Vendor information sample letter

Vendor Waste & GHG Emissions Plan

Vendor name:

Contact name:

Phone:

Email:

I am selling:

-
-
-

I will be using the following packaging products (please specify materials paper/ plastic/glass etc.)

-
-
-

I will take the following steps to reduce the waste produced:

-
-
-

I will take the following steps to reduce GHG emissions:

-
-
-

With kind regards,

Name.





Credit: Laura Palmieri

5

COMMUNICATIONS AND ENGAGEMENT

Events are a great opportunity to raise awareness among your stakeholders and the local community on ways to reduce waste and emissions. When an event leads by example, it motivates stakeholders to take responsibility for their actions and hopefully be inspired to make changes in their own lives.

By communicating your waste and emissions reduction initiatives consistently you can:

- ensure stakeholder ‘buy in’ with your action plan to ensure the success of your waste and emissions reduction initiatives
- create goodwill and build a rapport with your attendees
- create sponsorship and marketing opportunities
- raise awareness of environmental issues
- inspire behaviour change in stakeholders.

This chapter presents some of the key communication and education considerations for any event, as well as suggestions that could help to promote your key messages. You can use the **Communications and Engagement Plan Template** provided to help you plan specific strategies for your event.

Some key considerations to think about when getting started are;

- Who are your stakeholders or target audiences? Your communication and engagement plan should identify a range of key stakeholders including attendees, the general public, event staff and volunteers, vendors, suppliers, contractors, sponsors and supporters, media organisations etc.
- What are your key messages? What is your event trying to achieve? Use your waste and emissions reduction goals and targets you have developed in your key messaging for the event.
- What communications channels could you use? Think about some of the available platforms you could use for communication around your event and how your target audiences access information.
- What will your event look like? Think about the type, size and duration of your event to help identify the main opportunities and limitations for communication strategies.

- Getting your tone and approach right for your event and your audience is critical. Consider the following when designing your messaging:
 - Positive reinforcement: “This is what we are achieving together”, “Join the change”, “Help us reduce waste”
 - Normalise behaviour and participation: “It’s how we do things around here”, “Everyone is doing this”, “We are doing this together”
 - Contextual information: “What happened to this waste?”
 - Celebrity endorsement: Local leader, industry representative, local community group or resident
 - People are busy so make your messaging simple, accessible and fun!
- Do what you say you are going to go. Make sure your messaging and approach are consistent.

5.1 Community and engagement checklist



Use the below checklist to make sure you stay on top of the key actions.

BEFORE THE EVENT	
	Develop a communications plan for your event using the Communications and Engagement Plan Template provided as a guide.
	Share your waste and emissions reduction strategy and initiatives with your stakeholders before the event. Ask your stakeholders to share your key messages and calls to action throughout their networks.
	Develop content and assets like posters and signage that will help your stakeholders understand your waste and emissions reduction initiatives. Do it yourself or engage a third-party specialist (e.g. communications / marketing company; whether paid or voluntary).
	Any promotions and information conveyed before the event can include some key messages such as “We are reducing our event waste and emissions.” This can occur through the development of posters, essential information included with ticketing, in the event programme and when people enter the site, as well as media promotion.
	Allocate a key representative to answer staff and volunteer questions about your waste and emissions initiatives.
	Look for any opportunities to involve a high-profile spokesperson to act as a champion for your event.
	Develop a media release to be sent to relevant media outlets leading up to your event. Share your goals, targets and initiatives, and include quotes from event organisers. If you don’t have the time or resources to develop a media release, call or email your local newspaper or radio station to tell them about the waste and emissions reduction plans for your event. Invite them to attend the event and offer to supply photos or people to interview, or an area to broadcast their programme live.
	Organise a photographer to take photos at your event. Give them a list of images you want captured.
DURING THE EVENT	
	Keep the momentum going by using informative signage, interactive installations and volunteers as well as including messages by the MC and stallholders at the point of sale.
	Speak to attendees and vendors as much as possible to gather feedback. Make notes on areas for improvement or what is working well.
	Post real-time updates on social media – how are your initiatives tracking? Include photos of patrons using your priority bike parking, bin hubs, reusable crockery and cutlery, rinse stations.
	Take plenty of photos and videos! This will come in handy when sharing results or promoting future events.
AFTER THE EVENT	
	Reiterate your waste minimisation goals to stallholders, staff, volunteers and contractors as they pack down after the event.
	Evaluate and debrief: Review your event to gather statistics about your waste and emissions reduction efforts and whether your goals and targets were achieved. Talk to your staff, volunteers, vendors and contractors and write down what communications and education techniques worked well, what didn’t, and what could be improved next time.
	<p>Why not invite your stakeholders to give you input and feedback? Send a post-event survey to your event attendees and find out where you’re doing well and where you can make improvements. Include questions which capture attendee feedback on how your event waste and emissions action plan worked. For example:</p> <ul style="list-style-type: none"> • ask what they think about bins onsite, • did they bring a reusable bottle? • how did they travel to your event? <p>Use this feedback in your planning. Offer an incentive like free tickets to the next year’s event to complete the survey.</p>
	Don’t forget to communicate your results and findings (how did it go, celebrate success and share lessons learnt) back to staff, vendors, and attendees. Seeing the outcomes and progress of an event they were involved in is a powerful way to instil behaviour change and continuous improvement. Use social media, direct emails and broader media promotions (local newspaper etc.).

Your waste and emissions reduction initiatives will only be effective if your stakeholders know about them. Use a range of techniques to communicate with your stakeholders – these could include:

- Phone calls, texts or emails
- Event website
- Press and media releases
- Radio, newspaper and TV coverage
- Newsletters
- Social media posts
- Promotional videos
- Posters, fliers or brochures (online is best – consider the environmental impact of printed materials)
- Information on tickets
- Electronic billboards
- Signage, including flags
- Public announcements during the event by the MC
- Competitions
- Volunteers
- Word of mouth
- Mascots or costumes



Work on your communication and engagement plan as soon as you start planning your event. This will help you identify and maximise the opportunities to raise awareness of your waste and emissions reduction initiatives and engage your stakeholders on how they can contribute to your goals.

Share your vision at every opportunity through media releases, interviews with local publications, and social media.

Be mindful of 'greenwashing' your stakeholders. Be authentic and make sure you communicate your event waste and emissions reduction initiatives honestly and transparently: it's better to admit there is a problem than to pretend you have a solution.

Keep your messaging simple with clear calls to action. E.g., Help us [achieve goal] at [name of event] or make a difference at [name of event] by [insert goal]



Credit: Wānaka Wastebusters

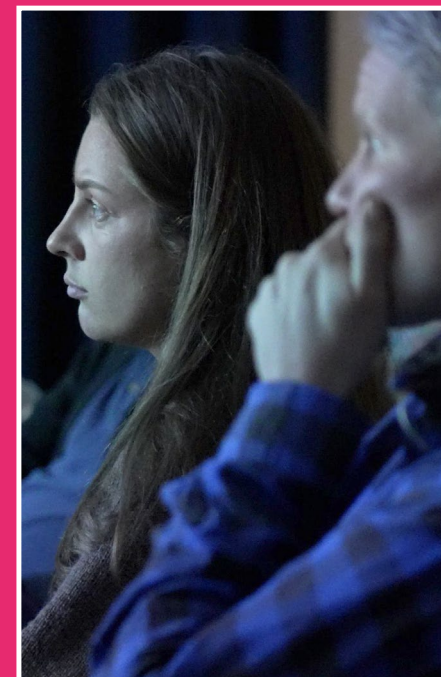




Case Study: WAO

Wao has a full programme of activations to inspire, educate and enable communities to live in balance within a thriving, diverse ecosystem. This includes the annual Wao Summit, which is a six-day event consisting of workshops, kōrero, films, tours and community events about creating tangible, long term social and environmental change. Other events include the Wānaka Autumn Harvest Festival, the Wao Film Festival, the Green Drinks programme, the UN Youth Summit and supporting the Aotearoa Bike Challenge and Biketober initiatives. Targeted programmes include the Food Resilience, Better Building, Climate Action Initiative, Generation Wao and Get SMART/Get Moving programmes.

To support these initiatives, Wao has a website which clearly outlines who they are, what they do and why, and their vision and mission. The website provides a key channel for promoting events, providing detail on the various workstreams underway and links to useful resources. Check out their webpage at www.wao.co.nz





Case Study: NZ Mountain Film & Book Festival

The New Zealand Mountain Film & Book Festival is a week-long event showcasing films and books in local venues and online. To minimise the impact of the festival on the planet and the playground we love to adventure in, the festival endeavours to keep greenhouse gas emissions as low as possible by ensuring all films are entered online, not posted or couriered. The festival pays for offsetting of carbon emissions associated with speakers' flights and road travel, either through Air New Zealand's carbon offsetting programme, or with EKOS. In addition, they also donate \$200 per international speaker and \$50 per local speaker to Te Kāhano to plant trees locally.

To minimise waste, the festival doesn't sell any plastic products (like bottled water) and supplies free filtered water, tea and coffee for attendees who bring their own cup. Food waste is separated for composting, and all café cups and plates are also compostable.



Credit: Mark Sedon





Credit: Mark Sedon

6

TOOL KIT



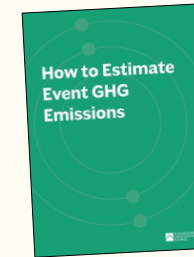
This guide is supported by the Event Toolkit which includes :



Supplier Directory



Event Waste Audit Guide and Template



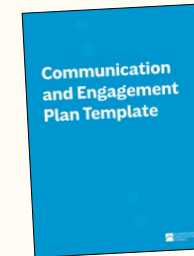
How to Estimate Event GHG Emissions



Additional Supporting Resources



Recycling and Packaging Guide



Communication and Engagement Plan Template



Event Waste Minimisation and Management Plan Template



Event GHG Emissions Reduction Plan Template



Vendor Assessment Template



Post Event Waste Report Template



7

GLOSSARY

Having trouble understanding what all the waste and event jargon means? Use the below glossary to improve your understanding in a quick and easy way.

TERM	MEANING
Anaerobic decomposition	The breakdown of organic matter in the absence of oxygen.
Back of house (BOH)	The area of a venue/event closed to the public including areas designated for administration, kitchens, staff, vendor only areas and service areas. Back of house waste streams are usually generated by performers and crew during set up and pack down or by vendor activity.
Carbon credits	Financial credit given for an activity (e.g. planting forests) that removes greenhouse gases from the atmosphere.
Carbon dioxide equivalent (CO ₂ e)	A unit that compares the global warming potential of 1 tonne of a particular greenhouse gas when compared with the global warming potential of 1 tonne of carbon dioxide.
Carbon footprint	The amount of greenhouse gas emissions released into the atmosphere as a result of the activities of a particular individual, organisation, or community.
Front of house (FOH)	The area of a venue accessed by attendees and visitors, e.g., grassy spaces, marquees, exhibition spaces, bars, dining areas and toilets. Front of house waste streams are usually generated by customers buying food, merchandise, etc. at the event.

TERM	MEANING
Greenhouse gases (GHG)	Greenhouse gases are gases which absorb infrared radiation from the sun, warming the Earth's surface. These include carbon dioxide, methane, nitrous oxide and fluorinated gases. Naturally occurring greenhouse gases enable life to exist on Earth. However, a significant increase in man-made sources since the Industrial Revolution has resulted in warming of the planet, resulting in climate change.
Gross greenhouse gas emissions	Total greenhouse gas emissions calculated before any removal of greenhouse gas emissions from the atmosphere.
Infrastructure	Front of house and back of house waste management systems, consisting of bins, signage and any support infrastructure.
Net emissions	Total remaining greenhouse gas emissions calculated after removal of greenhouse gas emissions from the atmosphere through sequestration.
Net zero carbon Net zero GHG emissions	Removing the same amount of greenhouse gas emissions from the atmosphere through sequestration, as are released into the atmosphere from the event.
Offsets	Purchased carbon credits for sequestration undertaken by another party.
Sequestration	Removal and storage of greenhouse gas emissions from the atmosphere (e.g. through plant growth).

TERM	MEANING
Serveware	Serveware refers to items used for serving or presenting food, such as platters, bowls, and utensils.
SMART Targets	Targets that are: <ul style="list-style-type: none"> • Specific • Measurable • Achievable • Relevant • Timebound
Stakeholders	Event stakeholders are individuals, groups, or entities that have an interest or concern in the outcome of an event. These can include people or organisations directly involved in organising and executing the event, such as event planners, sponsors, and vendors. Additionally, participants, attendees, local communities, and authorities may also be considered stakeholders as their interests and expectations are affected by the event. Identifying and understanding the needs and expectations of these stakeholders is crucial for successful event planning and execution.
Vendors	Any person or company that provides goods or services at an event or venue.
Waste contractor/ service provider	A provider of services and/or infrastructure to manage and/or minimise waste generated through human activity.
Waste processor	A waste processor is a facility designed to handle and manage waste materials. It typically involves various methods such as sorting, recycling, composting, or disposing of waste.
Waste stream	Waste items separated into different categories e.g., cardboard and paper, glass, food scraps etc.



8

REFERENCES

International Standards Organisation (2018). ISO14064-1: Greenhouse gases – Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals. Second edition 2018-12. Source: www.standards.govt.nz/shop/iso-14064-12018

Market Economics (2023). Consumption Emissions Modelling. Prepared for Auckland Council, March 2023. Source: knowledgeauckland.org.nz/media/2593/consumption-emissions-modelling-market-economics-march-2023.pdf

Ministry for the Environment (2020). Guidance for voluntary carbon offsetting – updated and extended until 31 December 2021. Wellington: Ministry for the Environment. Source: environment.govt.nz/assets/Publications/Files/guidance-for-voluntary-carbon-offsetting-updated-and-extended-until-31-December-2021.pdf

Ministry for the Environment (2022). Compostable products: Ministry for the Environment position statement. Wellington: Ministry for the Environment. Source: environment.govt.nz/assets/publications/compostables-packaging-position-statement.pdf#page=14&zoom=100,110,76

Ministry for the Environment (2022). Measuring emissions: A guide for organisations: 2022 detailed guide. Wellington: Ministry for the Environment. Source: environment.govt.nz/publications/measuring-emissions-a-guide-for-organisations-2022-detailed-guide

Ministry for the Environment (2023). Te rautaki para | Waste strategy. Wellington: Ministry for the Environment. Source: environment.govt.nz/publications/te-rautaki-para-waste-strategy

Queenstown Lakes Destination Management Steering Group (2023). Travel to a thriving future: Haereka whakamua ki to ao taurikura. Source: www.queenstownnz.co.nz/regenerative-tourism-2030/the-plan

Queenstown Lakes District Council (2025). Waste Minimisation and Management Plan 2025-2031. Adopted September 2025. Source: qldc-waste-minimisation-and-management-plan-2025.pdf

Queenstown Lakes District Council (2025). Queenstown Lakes Climate & Biodiversity Plan 2025-2028: Te Mahere Āhurarangi me te Rereka Rauropi tō Queenstown Lakes 2025-2028. Adopted August 2025. Source: qldc_climate-and-biodiversity-plan.pdf

Reuse Aotearoa (2023). Reusable serviceware/ packaging at markets (& events) in Aotearoa New Zealand, Information sheet 2023. Source: reuseaotearoa.org.nz/wp-content/uploads/2023/12/Reusable-serviceware-at-markets-December-2023.pdf

Van Petegem, F. (2023) Choosing a Safe and Sustainable Reusable Serviceware Fleet. Full Report, December 2023. Regenerative Business Development. Source: www.rbdevelopment.co.nz

WasteMINZ (2019). It's complicated: A guide to biodegradable & compostable plastic products and packaging. Source: www.wasteminz.org.nz/files/Organic%20Materials/It-s%20complicated%20guide%20final%202019.pdf

World Resources Institute and World Business Council for Sustainable Development (2004). Greenhouse Gas Protocol. Revised March 2004. Source: ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf

