

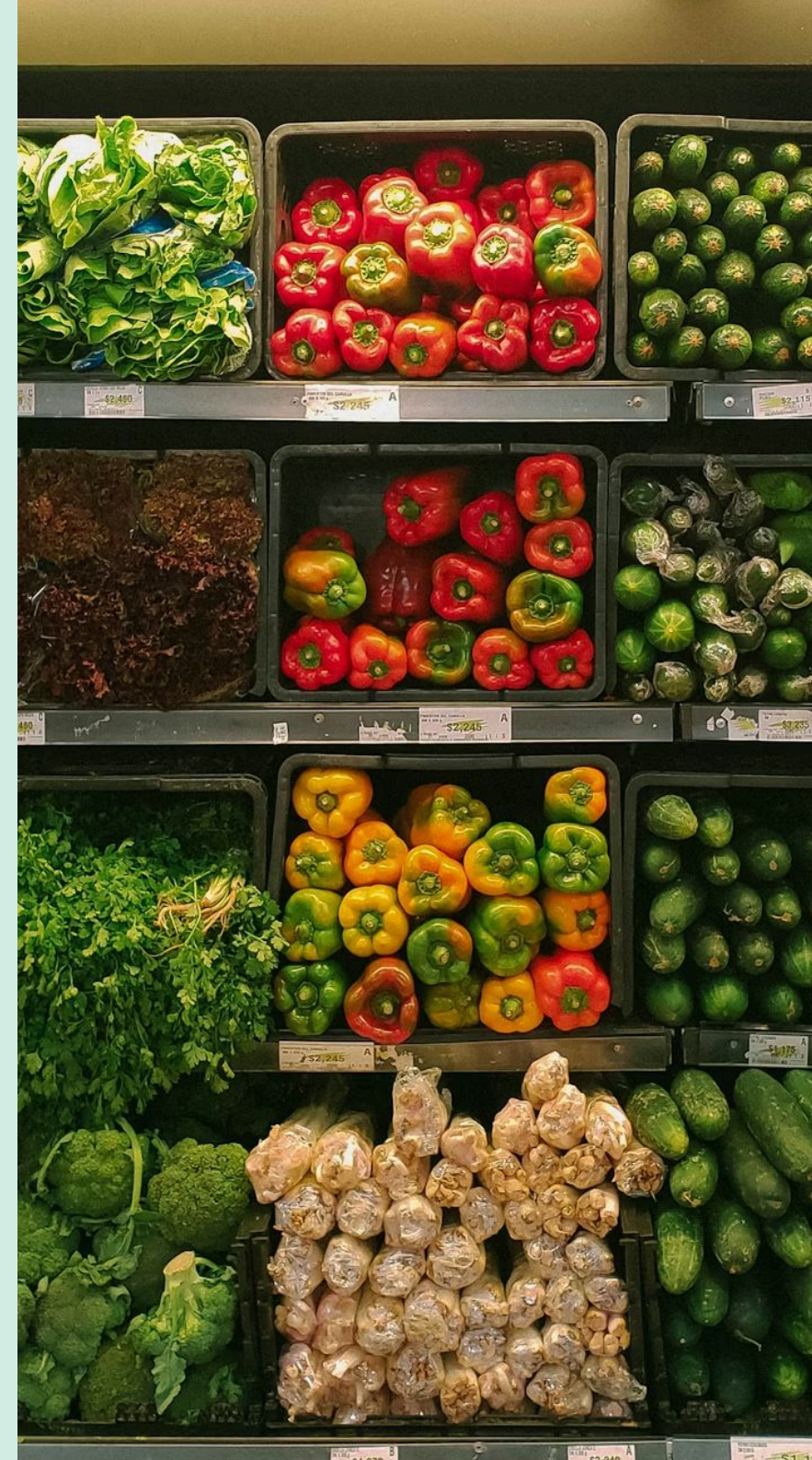


Systems Mapping of Business Food Waste Separation

Universal pain points in food waste
separation in supermarkets
in New South Wales

Prepared by Circular Futures, 2025

circularfutures.co



The [NSW Waste and Sustainable Materials Strategy 2041: Stage 1 2021–2027 \(WaSM\)](#) set the target to halve organics waste going to landfill by 2030 and committed to achieving this target by mandating the diversion of organics waste through a separate Food Organics and Garden Organics (FOGO) waste collection service.

The [NSW Government is implementing FOGO legislation](#) that sets out the requirements to have separate food waste collection service(s) for businesses from 1 July 2026 in NSW. The legislation details the business types captured and the staggered approach (2026, 2028 and 2030) for different-sized waste generators, along with recycling and avoidance strategies.

This research project set out to identify and explore the friction points experienced with food waste recycling within three commercial environments in NSW and to apply a systems lens. A total of nine businesses were engaged to participate in the research, and twelve sites were visited as part of the research. All participating sites were offered anonymity.

The research focused on three types of the larger food waste generators captured by the FOGO legislation:

1. Supermarkets

In this scenario, there are multiple food waste types generated and layers of management (in the store and with the head office).

2. Large Pubs and Clubs

In this scenario, there are multiple kitchens or meal service types for large numbers of people; however, the facility is centrally managed.

3. Shopping Centres

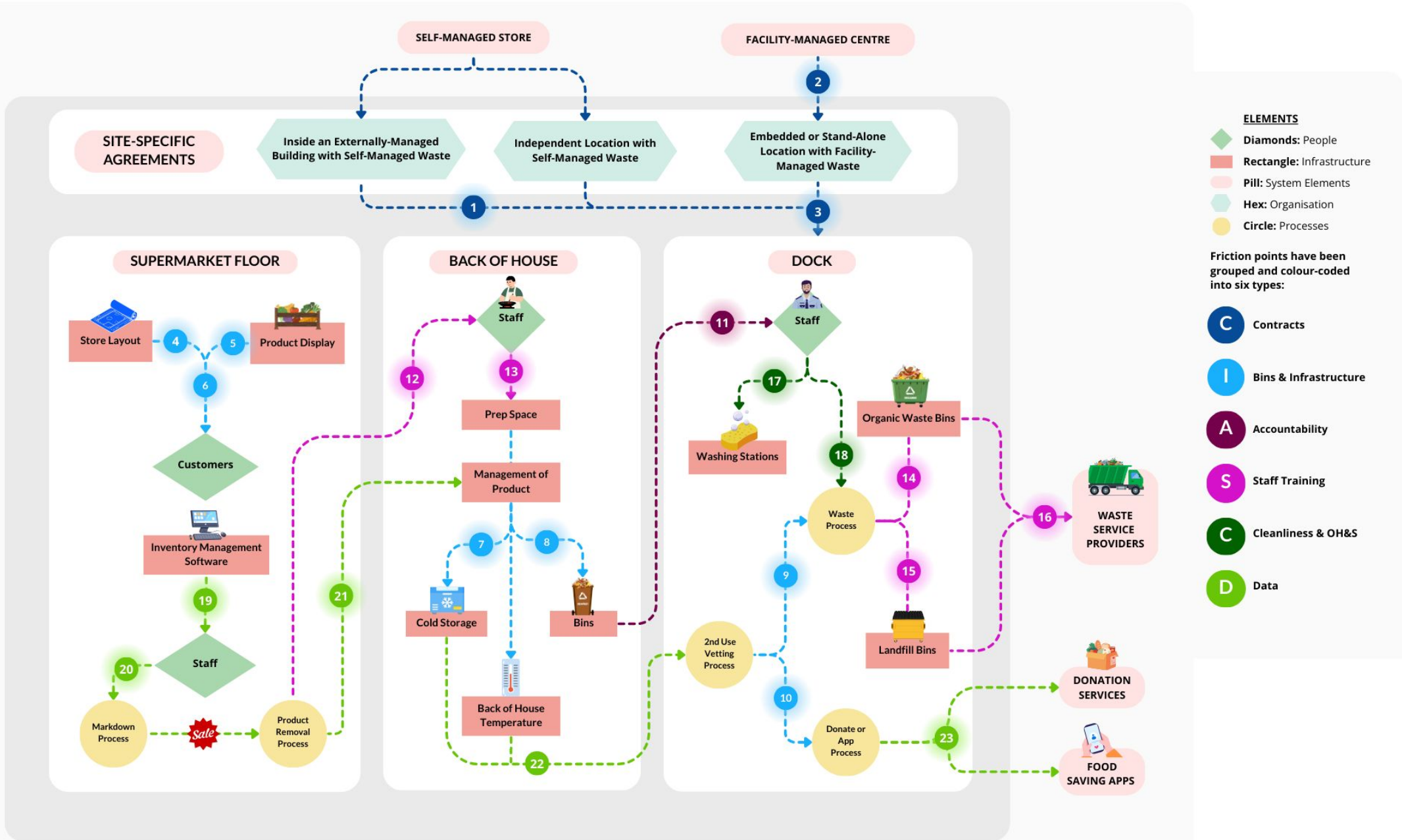
In this scenario, there are multiple independent businesses operating, but they share a central management structure for waste services.

Through desktop, observational, and qualitative research, this project explored the primary and secondary friction points that result in disengagement, contamination, and organic food waste recycling losses in three commercial scenarios in NSW.

A report is available at circularfutures.co.

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C Contracts

1 The store's location within an externally-managed building or a self-managed space will impact the waste management process, contract setup and available waste data. Friction occurs when contracts don't align with the supermarket's specific needs.

2 Supermarkets located in a facility-managed centre may be required to use macerators and waste services established by the management company. Friction occurs when the system is not the desired one, as supermarkets often prefer a packaged food waste collection service to reduce staff time.

3 Contracts with waste removal companies may be based on either the weight of waste collected or a per-bin collection fee. Friction can occur if the type of contract (kg or lift) impacts the fees associated with removal, increasing costs or decreasing savings as more food waste is placed into food recycling bins and less in landfill bins.

I Bins & Infrastructure

4 The store layout affects how customers move through the aisles and their purchasing habits. Friction occurs if the layout inadvertently results in damaged goods, newer rather than older products being sold, or poor sales.

5 Display of products affects customer purchasing rates, the time perishables can remain on the floor, and the associated amount of waste produced. Friction occurs if this is not optimised for quick flow-through, leading to food spoilage.

6 Customers may open packages or create damaged products. Friction occurs when damaged product results from spillage, fallen produce, and other behaviours that affect markdown waste and donation.

7 Food must be stored at a safe temperature for donation or food app resale use. Friction occurs when waste levels are impacted by the temperature in the back of house, and the amount of available cold storage space reduces the longevity of the donatable goods.

8 Room is needed for food waste bins and trolleys. Friction occurs when a lack of space reduces staff efficiency during cutting and trimming of produce and during sorting food waste for donation and recycling.

9 Many supermarkets use donation and/or food saver apps to reduce food waste. Friction occurs when food charities reject surplus unwanted inventory due to quality, quantity, pickup times, etc.

10 Quality and use-by and sell-by dates affect how produce is diverted to donation and food-saving app services. Friction occurs if the facilities are unable to properly store food for these services, increasing food waste.

A Accountability

11 Back of house and docks benefit from management oversight and clarity around expectations for all staff to participate in waste separation, donation, and recycling processes. Friction occurs when there is a lack of reinforcement and leadership demonstrating expected behaviours.

T Training

12 Some supermarkets use either macerators or depackagers to manage food waste. Friction occurs when staff don't have enough time to remove packaging for macerators or aren't adequately trained to use depackagers.

13 The turnover rate of staff and the amount of regular training they receive affect how food is stored, separated, managed, and the resulting waste levels. Friction occurs when there is a lack of onboarding/training.

14 Staff need to be adequately trained (face-to-face training with demonstrations is best) to know what can and cannot be put into either the macerator or the bins. Friction occurs when staff are not trained frequently enough, leading to higher contamination rates, reduced food donations, and poor recycling.

15 Waste is either sent to food waste or landfill bins. Friction occurs without adequate training, resulting in food waste in landfill bins and non-food waste contaminating food waste bins.

16 Food waste service providers, donation services and apps all require different degrees of food quality. Training affects the quality of the diverted or waste stream food. Friction occurs when training is inadequate, leading to higher rejection rates in those differing streams.

C Cleanliness + OH&S

17 Cleaning station setup and availability affect the ease of hygienic practices and the levels of odour, vermin, and insect infiltration. Friction occurs when there isn't a dedicated wash station or when the cleaning process is difficult, unclear, or time-consuming.

18 If an external bin cleaning service is used, the timing of the service will affect if staff use the general waste bins vs food waste bins, as food waste bins must be empty for cleaning. Friction occurs when this is not clearly communicated and the bins are not empty in time for cleaning.

D Data

19 The stock management system used can affect food waste generated and staff engagement with the resulting markdown and removal processes. Friction occurs if there is no robust system in place to manage inventory.

20 To reduce costs, supermarkets prefer to mark down food for fast sale, then sell via 2nds apps and donations to charities before recycling food waste. Friction occurs without data management systems, leading to lower efficiency.

21 Data availability and accuracy for inventory quantity and sell-by dates affect where the product is directed, how it is stored, and how much becomes waste. Friction occurs when accurate data isn't easily accessible to trained staff.

22 Data on which donation and food-saving apps accept waste affect levels of waste diversion. Inventory overstock, food preservation tactics, store display habits, customer misuse and sell-by-date tracking affect quantities of waste produced. Lack of data from and to these services can reduce the amount of food diverted.

23 Data on which types of food donation services will accept, and trends in food-saving apps, affect how much can be picked up by these services. Lack of trend data over time reduces opportunities for food diversion.



Importance of Contracts

Management Contracts

- Contracts between the facility where a supermarket is located (such as a shopping centre) or across a chain of supermarkets may result in predetermined waste management that is not ideally matched to the individual supermarket's needs or location.

Waste Contracts

- Contracts can be used to determine which type of technology and service is the best fit (e.g., inventory management, waste collection based on kg or lift, macerators, depackagers, bin washing, etc.) to ensure the best fit.
- Ensure flexibility in your contract in case your pickup needs change (more or less, timing, etc.).
- Contracts with waste service providers can pose issues if they are not set up to address the specific needs of the supermarket, such as the size and volume of waste produced, pickup frequency and timing, and whether food waste is packaged or unpackaged.
- Contracts (verbal or written) with donation services can reduce food waste and lower waste removal costs while benefiting the community.

Service & Site-Specific Contracts

- External service providers, such as cleaners, can affect hygiene levels and contamination rates in the system (e.g., when and how bins are cleaned, processes to ensure food waste is not sent to landfills, and contamination monitoring).

Example

Optimal Case: Contracts ensure the pickup frequency and bin size are best-fit to optimise cost savings, staff efficiency, and the flow of waste (e.g., more waste on Mondays after the weekend, waste not being collected when food is delivered, etc.).

Sub-Optimal Case: Waste service contracts are not based on best fit for the site, lack real-time data feedback, have infrequent or too frequent pickups, do not integrate cleaners into the process, and lack calibration to site-specific needs.

Recommendations

1. **Conduct a minimum 24/48-hour waste audit** to see how waste flows through the system and available space. This should indicate where improvements can be made in inventory management software, the impact of displays on customer behaviour, and opportunities to reduce food waste and donate excess stock (e.g., freezing meat before the sell-by date to ensure it can be donated). Use it to establish the number of needed bins, the lift frequency, and the cleaning schedule.
2. **Request that data transparency be built into contracts** to have access to information at the store level that will impact efficiency and costs.
3. **Ensure specific requirements are articulated**, such as flexibility to increase the number of food waste bins and decrease the number of landfill bins, and access to real-time data is provided when setting up or renewing waste service provider contracts.



Importance of Bins & Infrastructure

Size

- Bins are often only located in the back of house; smaller bins may be used to collect trimmings (e.g., excess leaves on cauliflower) and transport them to the dock area. They should be wheeled or easily maneuverable/ lifted into the main bins.
- Allocate enough cold storage space to preserve food that will be diverted from waste to donation.

Bin Cleanliness

- Bins should be regularly cleaned for hygiene, which may require an external service.
- Schedule bin cleanings right after pickups. Ensure staff are clear on when bins are cleaned and emptied so they don't put food waste in general waste during this period.

Frequency

- Ensure clear communication and clarity of the pickup schedule so filling can be optimised to save costs, prevent produce from degrading, etc.

Infrastructure

- Back of house needs space available for the addition of dedicated food waste bins.
- Signage in multiple languages that is relevant to staff on site may be helpful.
- Food recycling bins and food donation storage areas should be clearly marked.
- Incorporate waste collection, storage and customer movement patterns into future renovation projects.

Example

Optimal Case: Back of house has adequate storage space, appropriate bins sizes with clear signage, and room for cold storage. Dock has a wash station/or cleaning service aligned with waste pickup schedules.

Sub-Optimal Case: There is no consistency in cleaning schedules, not enough space for cutting and trimming, and food is sent to food waste rather than donation or food-saving apps due to a lack of available cold storage.

Recommendations

1. **Bin & Space Audit:** Conduct an audit of bin sizes and optimal collection times based on waste production frequency, and adjust the system to match back-of-house and dock needs.
2. **Scheduling:** Arrange waste and donation pickup times based on sell-by dates managed via inventory management systems, and make them frequent enough so storage areas don't fill up and waste accumulates.
3. **Signage & Diagrams:** Review current signs and develop new signage that ensures graphics, text, and recommendations are up to date and clear on what is accepted, when pickups occur/when to donate, etc. Include other languages if they are relevant to staff on site, and conduct regular training and orientation so that teams know how to successfully engage with the food waste system.

Importance of Accountability

Dedicated Manager

- Consider having a dedicated manager or other accountable team member, (eg., section manager or dockmaster), to facilitate processes, ensure compliance, and support record-keeping to reduce/redirect food waste.
- Section managers can be leveraged to ensure that stock management effectively redirects and reduces waste through markdowns and donations.

Follow Up

- Conduct regular check-ins on site and with staff to ensure size of bins, pickup frequency, and other parts of the system are working efficiently (cost and time).
- Get real-time data that feeds back to management for system adjustments; consider integrating it into the stock management system to limit food waste.

Processes

- Consider a code of conduct/waste hierarchy that staff must agree to or sign as part of their work responsibilities, including details on the use of bins and separation procedures.
- A daily bin audit system by the dock manager allows tracking of compliance and bin size needs, as well as monitoring which food waste is coming from which departments and why.
- Clear processes and procedures help establish expectations and efficient operations; having someone accountable for them helps ensure they are maintained and updated as needed.

Example

Optimal Case: A dedicated manager facilitates waste separation using regular audits to ensure waste is minimised and moving effectively through the system. An inventory manager tracks donation or food-saving app inventory and ensures food is distributed within the appropriate time frame, with any remaining items being recycled.

Sub-Optimal Case: No person is responsible for waste separation or following inventory management systems; there is no follow-up, resulting in increased food waste and increased waste management fees.

Recommendations

1. **Set up procedures:** Establish clear accountability procedures for management, staff, and the donation/apps process. This could include training and data collection to report on the performance of the food waste and diversion system.
2. **Oversight:** Set up a clear accountability system whereby it's part of a person's role/job to check in bins, implement procedures to avoid contamination, reduce hygiene issues, and reduce mixed waste streams. If available, have a dedicated dock manager to facilitate and guide staff, and to manage food donations.
3. **Seek Feedback:** Develop a formal feedback system to inform staff about the amount of waste separated/donated/saved, and to identify opportunities to increase motivation and streamline systems.



Importance of Training

Initial Training

- Develop a process for new staff onboarding that introduces them to your food waste system. Having another staff member demonstrate is a great way to ensure some accountability.
- Consider developing a waste hierarchy that goes from markdown to donation and then recycling; train staff on the system.

Signage

- Provide clear backup visual communication tools at all places where a staff member needs to make decisions about food waste recycling.
- Provide smaller signage and decals for use inside each store and on bins.
- Visually communicate your waste hierarchy and any steps staff need to take to direct food waste to the right pathway (donation, recycling, etc.).

Reinforcement & Rewards

- Training will need to be reinforced and rewarded regularly, especially as new staff onboard.
- Consider holding a regular new-staff training session to educate on the food waste system.
- Empower your management team to incentivise and motivate staff, and conduct check-ins on how to improve the system.
- Data can be used to check when/where training is needed.

Example

Optimal Case: Training is provided face-to-face for all new staff, and systems are set up to reinforce decision-making to redirect food waste to different pathways (donation, recycling, etc.). There are regular follow-ups for new staff and routine training updates on how to use the system effectively. Clear, visually-engaging signage is used at all points staff need to make decisions.

Sub-Optimal Case: Written materials are provided in only one language, there aren't follow-ups with regular training, and no visual cues are provided to remind staff of best practices.

Recommendations

1. **Start early & often:** Establish initial training sessions right from the start of new staff onboarding, and offer regularly scheduled in-person demonstrations and feedback so everyone is invested and aware of the progress and compliance.
2. **Visual reminders:** Develop and display clear, engaging visual reminders of all the best-practice processes and decisions staff should be making with regards to markdowns, effective storage for donation, and how to use the food waste recycling system well.
3. **Systemise procedures:** Establish standardised routines and processes to maintain consistency and reduce training costs. Consider decision trees or waste hierarchies as additional visual support tools for on-site use.



Importance of Cleanliness + OH&S

Training & Oversight

- Effective management procedures are in place to maintain the cleanliness of bins and dock areas.
- Data is provided by inventory/waste contractors/donation services and food-saver services so managers can monitor and maintain the system.
- Appropriate training has been provided for safe operation of any on site processes (such as macerators and/or depackagers).

Quality Control

- Systems set up to ensure that food is redirected to food-saving apps and donations in ways that preserve its quality and make it a desirable product for collection. This may involve refrigerating or freezing food before collection.
- Integrate stock management into workflows to ensure markdowns and redirects are handled most effectively and efficiently.

Pickup Frequency

- Waste contractors collect accumulated waste from the dock at the required frequency to avoid food waste accumulation; needs may increase/decrease due to seasonal factors, etc.
- Regularly audit the system to ensure operational efficiency and reduce health and safety risks.
- Food-saver app products and donations are stored in cool storage until just before pickup.

Example

Optimal Case: Stock is monitored and managed to flow efficiently via food-saver apps and donation services before being wasted. Effective scheduling and training help ensure bins and general areas are clean and hygienic, with the pickup/cleaning process aligned to flow efficiently and prevent waste from accumulating.

Sub-Optimal Case: Bins aren't emptied in time for cleaning schedules, food donations are left in the dock without refrigeration, washing stations aren't available/not scheduled effectively, and food expires before safety cut-offs for apps/donations, leading to a buildup of food waste. Donatable food is not stored correctly which increases waste.

Recommendations

1. **Incentivise through communication and training:** Motivate everyone to meet expectations for using the system effectively to maintain cleanliness and hygiene. This could be through regular face-to-face training, waste huddles, store rewards, very big signage, etc.
2. **Hire cleaners:** If you don't have space or resources for on-site cleaners, hire a bin cleaning company to regularly wash out the bins to reduce residue buildup and keep the system clean.
3. **Quality control:** Set up processes and systems that enable staff to check stock in time to redirect to food-saver apps and donation services. Implement food donation guidelines that preserve freshness and redirect in time for effective use.



Importance of Data

Data

- Set up data collection systems at the start to establish baselines for comparison, manage compliance, and identify areas within the store that need improvement, such as certain fresh products or meats/dairy.
- Real-time data helps improve the efficiency and cost-effectiveness of your system; build your own or integrate it into your inventory management system.
- Ask waste service providers for real-time data on the amount of waste picked up, contamination rates, and the cost of pickups for all types of waste to see cost reductions overall and improvements in organics.
- Ask donation services and food-saving app services to share data on the desired products to reduce rejections of unwanted/needed products.

Data Management

- Set up systems that enable each section of the store to report on why food is being wasted (e.g., not marked down in time, put on special, etc.) to create a feedback loop that enables changes to stock management that reduce waste.

Systems in Place

- Conduct regular audits to identify potential issues in each department and document improvements over time.
- Establish open communication and feedback systems with donation or food-saver app companies to respond to their needs.

Example

Optimal Case: Internal audits for each department establish baseline data on how and why waste is being produced, providing management and staff with the information needed to efficiently mark down or redirect food waste to donation and food-saver apps, as well as manage cold storage and ordering to avoid surplus inventory. This is managed through a centralised, easy-to-read dashboard.

Sub-Optimal Case: No or limited data is collected, leading to a lack of awareness of the system and resulting in inefficiencies, food waste, and cost increases.

Recommendations

1. **Establish a baseline:** Conduct audits of each department to gather as much data as possible on your existing system. Consider implementing a regular audit (e.g., every 6 or 12 months) to assess performance. This can be done at the same time each month/quarter to see year-on-year data and improvements over time.
2. **Establish a data collection method:** Ask your service partners to provide real-time data and assess your monthly costs and revenues, look to optimise the system for cost savings and revenue potential, and consider building your own dashboard to monitor in real time.
3. **Create a data feedback process:** Share collected data with store managers so they can improve their system's performance. Compare stores to see where and how good performers are making changes, and share this with lower-performing stores.