



Department of  
Primary Industries and  
Regional Development

Protect  
Grow  
Innovate

Food Waste PRO (Prevention and Reduction Opportunity) Toolkit  
Step 2: Walk the Chain

# Mapping Guide for Industry Groups



Curtin University

**ENDFOODWASTE**  
AUSTRALIA

[dpird.wa.gov.au](http://dpird.wa.gov.au)



## INTRODUCTION

The Food Waste PRO Toolkit steps, resources, and decision-making tools are an outcome of the project, Validating WA Food Waste Opportunities, funded by the Department of Primary Industries and Regional Development (DPIRD) and supported by the End Food Waste Australia and Curtin University.

This resource guide outlines the steps for mapping business processes, product flows, waste flows, and supply chains. Undertaking the steps in this guide will help businesses complete Step 2 in the Food Waste PRO process.

Walking the chain, or mapping, is an essential first step for industry groups that have not visualised or measured their food waste flows previously or within the last two years.

For guidance on how to map for individual businesses, please refer to the 'Individual Businesses' resources on the Food Waste PRO Toolkit webpage.

This guide can be cited as: Loo, Lynne and Howieson, Janet. (2026). *Mapping Guide for Industry Groups in Food Waste Prevention and Reduction Opportunity (PRO) Toolkit*. <https://dpird.wa.gov.au/foodwastepro>

## INDUSTRY PARTNERS



Department of  
Primary Industries and  
Regional Development

### Department of Primary Industries and Regional Development (DPIRD)

This program is funded through DPIRD's Food Industry Innovation program. The Food Industry Innovation program aims to offer WA food and beverage businesses tools and support to address market gaps, build capacity, and improve access to domestic and international markets.



### End Food Waste Australia (EFWA)

Previously known as the Fight Food Waste Co-operative Research Centre, EFWA was launched in July 2018 to support industry-led collaborations between research institutions, government, and industry partners.

This project was supported through EFWA's TRANSFORM program, which focuses on transformation of food waste into innovative products. TRANSFORM is just one of three research and development program streams that also include ENGAGE (industry and consumer research) and REDUCE (addressing food waste across the supply chain).

## | PROGRAM DEVELOPERS



### | Curtin University

The steps, resources, and tools, have been developed by an inter-disciplinary team of researchers who are subject matter experts on food waste reduction and total by-product utilisation at Curtin University.



### | Lynne Loo, Research Associate, Curtin University

Lynne is an early-career researcher specialising in developing solutions for reducing pre-retail food waste. Lynne has expertise in areas of supply chain analysis, mass flow analysis, total utilisation of surplus food and by-products, market research, multi-criteria decision making, and financial cost-benefit analysis. She has worked collaboratively with SMEs in horticulture, seafood, grains, and food and beverage manufacturing for several years to find solutions for their food waste.



### | Dr Janet Howieson, Associate Professor, Curtin University

Janet is a leader in post-harvest seafood industry research with over 30 years' experience across multiple seafood sectors, and more recently, the horticulture industry. Janet has expertise in areas of supply chain monitoring and intervention, value chain analysis, new product development, market strategy development, traceability and provenance, and total utilisation of waste and by-products.

## | WHAT IS 'WALKING THE CHAIN'?

Walking the chain involves two key aspects:

- i. Setting your scope and boundaries
- ii. Drawing the map while physically walking the steps and documenting common process among the businesses as much as possible. However, if this is not practical or possible, ensure that practices, processes, and details as they occur day-to-day (i.e. 'in real life' vs. in an ideal situation or in theory) aren't overlooked in the group mapping process.

### | Scope vs Boundaries

**'Scope'** defines what by-products/waste streams you will focus on mapping. These should align with the results of the self-assessed screening from Step 1.

- **Example:** By-products from a specific product line; second-grade and composite grade fruit; waste from batch changeovers.

**'Boundaries'** refers to how much of your process or supply chain you want to include in the mapping and waste audit.

- **Example:** The group may choose to only include post-harvest losses rather than on-farm or pre-harvest food losses.

## STEP 1 Establish Scope

Which food waste streams do you want to focus on initially?

The group might wish to choose up to three streams for the initial waste mapping and audit based on products/ingredients that generate a high volume of waste.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

## STEP 2 Establish Boundaries

We recommend that groups focus on mapping common processes, as well as the supply chain before (e.g. suppliers) and after the common core business (e.g. customers and end markets).

Common businesses processes should be mapped in as much detail as is required to understand exactly the points where food waste is generated. Supply chain stages before and after (i.e. suppliers, customers) can be less detailed and more broadly focused.

- **Example:** a group of vertically integrated seafood businesses share many common processes. The group will map the whole supply chain from harvest to wholesale/retail distribution. However, the highest volume of food waste tends to be generated in the post-harvest processing stage, so the group will map the following processes in most detail:

From: ..... To: .....

**Which common processes and food waste streams will the group map in most detail?**

From: ..... To: .....

## STEP 3 Walk Your Chain (Draw The Map)

A blank mapping sheet has been provided on Page 5.

A real-world mapping example has been provided on Page 7.

### Method:

- Simply use pen and paper to draw the map – it does not have to look perfect. Most note-taking functions on handheld tablets also have a drawing function, which may also be useful.
- It is recommended you physically draw the map before formatting it using a computer or soft copy.
- The businesses in the group may already require HACCP plans. You can use the HACCP plan as a model or template for the food waste mapping, or vice versa.
- Start at the point of harvest or product origin. If it is not possible to walk this part of the chain, that's ok. Include some general steps and who is involved anyway.
- Walk the part of the chain that the group wants to focus on in most detail (identified in Step 2).
- End with your distributors or customers, then end markets. These can be general in nature since the focus is on waste generation from business-specific processes.

## | Walk Your Chain (Draw The Map)

## | CASE STUDY: MAPPING AT AN INDUSTRY LEVEL

The supply chain and process map in Figure 1 is a real-world example of an industry-level map that focuses on mapping a commodity at an industry level. This type of mapping works for industries that produce one, or at most, three distinct but homogenous waste streams (i.e. shells from one type of seafood; stems and peels from one type of fruit).

In this example, the single waste stream consists of octopus heads generated from three Western Australian wild-harvest fisheries.

Industry-level mapping is generally applicable to horticulture, seafood, meat, grains, and some beverage manufacturing (i.e. wine, beer, juice).

## | MAPPING RESOURCES

‘Walking the chain’ is a concept developed by Mike Rother and John Shook, leaders in the Value Chain Mapping and Lean Thinking approach to business strategy and supply chain management.

For more in-depth information on walking the chain, supply chain mapping and management, these resources may be of interest to you:

- Rother, M., & Shook, J. (2003). *Learning To See: Value Stream Mapping To Add Value And Eliminate Muda* (Version 1.3 ed.). The Lean Enterprise Institute.
- Womack, J.P. (2022). *Jim Womack Explains the Origins — and Value — of Value-Stream Mapping*. Lean Enterprise Institute. <https://www.lean.org/the-lean-post/articles/jim-womack-explains-the-origins-and-value-of-value-stream-mapping/>

**Industry Supply Chain and Process Map**  
**Octopus djinda, 2022-23 catch**

**Mapping legend:**

Supply chain stages

General processing steps



Supply chain stakeholders



Disposal

General product flow

By-product flows

West Coast Rock Lobster Fishery catch

Cockburn Sound Line and Pot Fishery catch

Octopus Interim Managed Fishery catch

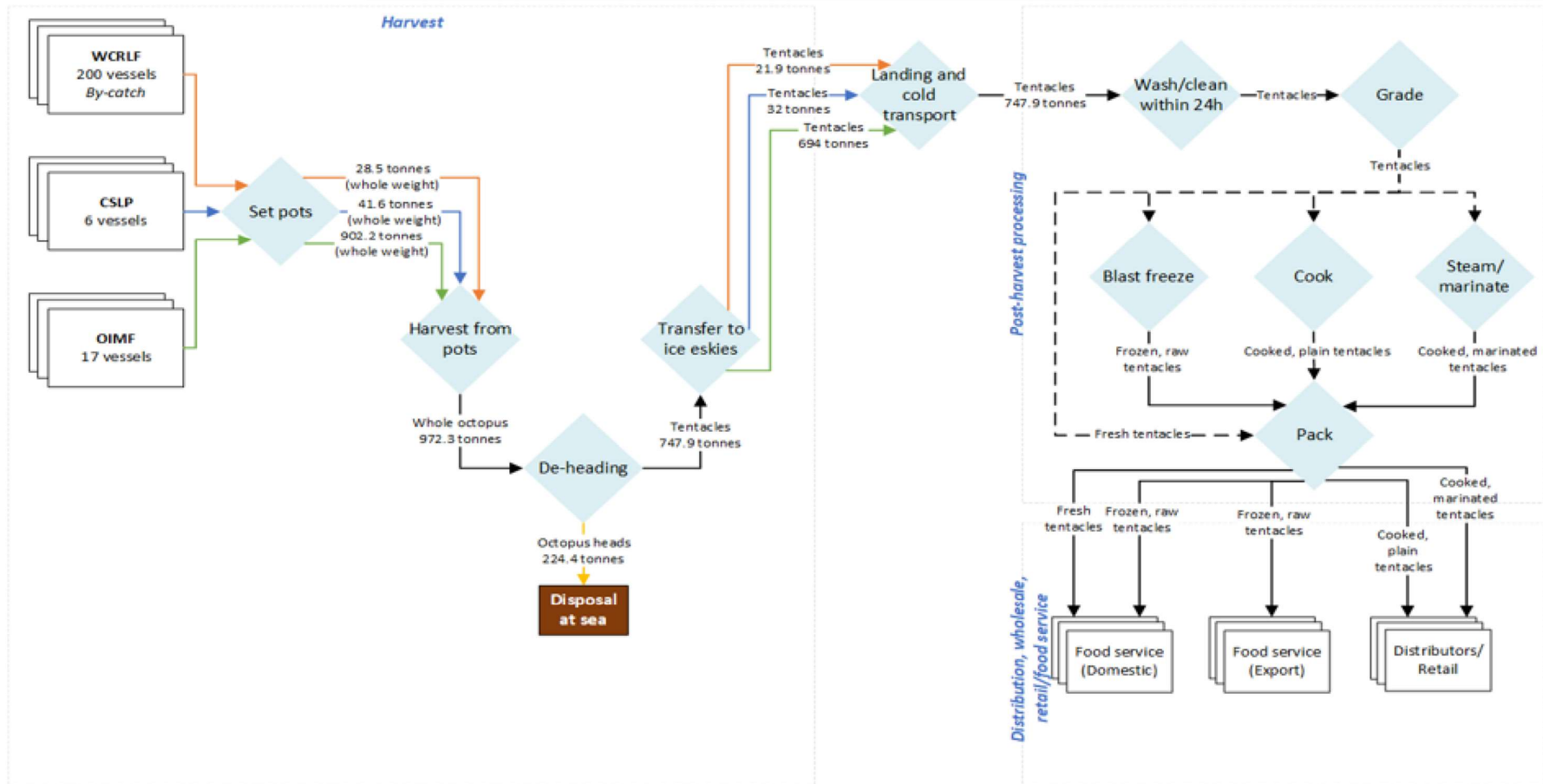


Figure 1. Case study map. Volumes or percentage (%) of waste can be added to the map after completing Step 2 (Measure) of the Food Waste PRO process.

## CONCLUSION

Your group has now completed the first important step in the process to identifying opportunities to reduce food waste across the industry.

The next step is to measure the volume of by-products that you have mapped and determine the associated financial cost to your business. Some SMEs will already be measuring this to some extent.

If your industry already has data on production volumes, yield or waste streams, you can simply populate the calculators and tools provided on the Food Waste PRO Toolkit webpage and move on to Steps 3 to 6. However, if the level of waste is unknown or has not been measured within the last two years, it is recommended that the group undertakes the steps to measuring (Step 2) that are outlined in the Food Waste PRO resources.

A list of guides and completion times is provided below. All guides, resources, and tools are available on the Food Waste PRO Toolkit webpage:

| Steps    |                                                                                                                             | Minimum Expected Completion Times                     |
|----------|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| 1        | Set expectations                                                                                                            | 1 hour                                                |
| 2        | Walk the chain                                                                                                              | 2 hours                                               |
| Measure: |                                                                                                                             |                                                       |
| 3        | <ul style="list-style-type: none"><li>• If business has existing data</li><li>• If business needs to collect data</li></ul> | 1-2 hours<br>7-10 hours per business (over 3-5 weeks) |
| 4        | Identify opportunities                                                                                                      | 10+ hours                                             |
| 5        | Make stop/go decisions                                                                                                      | 30+ hours depending on depth of research              |
| Conduct: |                                                                                                                             |                                                       |
| 6        | <ul style="list-style-type: none"><li>• Cost benefit analysis and/or</li><li>• Direct cost comparison</li></ul>             | Variable depending on chosen solution                 |