Submission No 10

FOOD PRODUCTION AND SUPPLY IN NSW

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Committee on Environment and Planning
NSW Legislative Assembly, NSW Parliament
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Dear Mr Greenwich

Submission to the Legislative Assembly's Inquiry into food production and supply in NSW

I commend the Legislative Assembly's Committee on Environment and Planning for conducting its timely inquiry into food production and supply in New South Wales (NSW). It is encouraging to see this committee has taken time to specifically investigate the difficult challenges of saving more of our food, and better managing the food we cannot avoid wasting. This is a first for any Australian parliament.

My submission addresses term of reference number 2 Reducing food waste and destruction. My submission also indirectly contributes to these other terms of reference:

4 Preserving productive land and water resources;

5 Managing the impact of climate change; and

6 Limiting the impact of food production has on the environment, including overfishing.

Whilst most researchers and policy documents use the term "food waste", my work uses the term "wasted food". This is to emphasise these are primarily issues about food, and only after this food is wasted do they become issues about waste.

The evidence shows NSW will fail to achieve the national and NSW food waste target of halving the amount of wasted food by 2030. NSW will also fail to achieve the three waste management targets recent adopted in its *NSW Waste and Sustainable Materials Strategy 2041: Stage 1: 2021-2027*.[1] To ensure NSW achieves these targets, it must take stronger steps to save more food, and better manage the food we cannot avoid wasting. My evidence-based recommendations on the smarter steps NSW needs to take in the short, medium and long terms are set out immediately below. The reasons and evidence supporting the need to take these recommendations are set out in the body of my submission.

I am happy to appear before the Committee to answer any questions you may have on finding smarter solutions to the challenges of wasted food in NSW.

[1] Department of Planning, Industry and Environment (NSW), *NSW Waste and Sustainable Materials Strategy 2041: Stage 1 2021-2027* (Department of Planning, Industry and Environment (NSW), June 2021).

Recommendations - NSW needs to take smarter action to meet its food & waste targets

If NSW wants to make more of the food it grows and makes, the simplest course is to save it. At the same time, it must take stronger action to divert more waste away from landfill and back into the productive economy. In other words, to meet its own targets, NSW must take smarter action. At a minimum, such action must include the following:

Short term smarter action

1. Have the NSW EPA consult on and finalise a wasted food strategy, to be finalised in early 2023, setting out targets and concrete action to be taken across all sectors of the food system by 2025 and 2030 (using Victoria's *The Path to Half* as a model); and
2. Subsequently review the two existing NSW waste strategies to take account of the new wasted food strategy, adopting the recommendations below, but also setting out new interim waste targets, rather than merely adopting the national 2030 waste management and food waste targets;
3. By mid-2023, all government agencies should be required to develop and implement food saving plans, which should address how they will minimise the waste of food, safely divert food to food rescue charities and divert any remaining waste away from landfill (although this should form part of all government sustainability plans with respect to energy, water and waste more generally).

Medium term smarter action

4. Bring forward the benefits of mandating food and garden organics (FOGO) separation and collection requirements for all NSW households in a staged manner, with priority given to urban areas in Greater Sydney, the Hunter and the Illawarra by early 2027, and then expanding to regional areas by 2028 and rural areas NSW by 2029;
5. This should be accompanied by a ban on FOGO being sent to any landfill inside or outside of NSW - with appropriate constitutional considerations with respect to interstate trade - in a similarly staged manner. In time this can be expanded to ban all other organic wastes to landfill by 2030 to protect existing landfill space;
6. This should also be accompanied by financial support for local councils across NSW to subsidise the supply of backyard compost bins and worm farms to immediately lower the amount of food waste being sent to landfill;
7. This should be accompanied by a similarly staged expansion of education programs to teach NSW households about the correct use of FOGO systems, and how to save money through a multi-year and expanded use of the *Love Food, Hate Waste* education program operated by the NSW EPA. This should focus on the priority target households and schools, as well as teaching food businesses in the wholesale, storage, transport, manufacturing, retail and

hospitality sectors how to save money by saving food, make better use of food rescue charities and diverting the remaining waste away from landfill. This expanded use of *Love Food, Hate Waste* should adopt the techniques, scale and prominence of the early use of the same system in the UK;

8. Adopting the approach of the current Conservative Government in the UK, pass legislation requiring large and medium-scale food businesses and government institutions in all sectors of the food system to report to the NSW EPA on their levels of wasted food as well as the steps they are taking to save food, as well as the steps they are taking to divert the remaining wasted food away from landfill;
9. Require an appropriate return on NSW Department of Primary Industries' investment in agricultural research, especially in relation to NSW's contributions to the various agricultural and food research centres, by tying this funding to a requirement for all NSW agricultural sub-sectors to prepare and release a peer-reviewed report on the following by no later than late 2024:
    i. the levels and causes of wasted food (over a calendar or financial year) among their constituent sub-sectors;
    ii. how natural disasters result in the waste of pre- and post-harvest food across the NSW food system, including estimates of waste arising from the 2019 drought, the 2019-2020 bushfires, the subsequent flooding, the mouse plague and the more recent flooding in 2021-22.
10. The NSW EPA should conduct a review of the provisions of the *Environmental Guidelines: Use and Disposal of Biosolids Products* in light of the latest scientific evidence regarding the potential risks arising from the land application of biosolids as wells as the best available technology for use in sewage treatment plants to ensure the biosolids they produce are low odour as well as safe for use on agricultural land and in the production of food;
11. IPART or the NSW Department of Fair Trading should conduct a more detailed inquiry into the role of large supermarket chains in the NSW food system, including on how supermarket chains cause the waste of food in other sectors of the system.

Long term smarter action

12. In light of the smart transformations set out above, the *Waste Less, Recycle More* policy should be continued out to 2030, with appropriate and substantial funding, including funding for expanded infrastructure capacity, faster implementation of FOGO collection systems, *Love Food, Hate Waste*, *Bin Trim*, food rescue charities as well as to upgrade sewage treatment plants across NSW to ensure they can meet the new requirements of the updated Biosolids Guideline (see recommendation 10 above).

The scandal of wasted food

Australia, and NSW, grows and makes a lot of food,[2] but scandalous amounts of food are also wasted. This happens in every sector of the Australian food system. It starts on our farms, but also happens in food distribution centres, supermarkets, restaurants and cafes, in our institutions such as prisons, schools, and care facilities and continues in our own homes.[3] We send most of the food we waste to landfill instead of returning this valuable organic material to our farms, greenhouses and backyards.[4] Even worse, this is occurring whilst 20% of Australians experience food insecurity,[5] with many relying on food rescue charities such as Foodbank, OzHarvest and SecondBite to ensure they have enough to eat. This food insecurity crisis deepened during the COVID-19 pandemic.[6] **In short, our waste of food is one of Australia's largest market and regulatory failures.**

The scale of the scandal

The 2021 *National Food Waste Strategy Feasibility Study* estimates Australia wastes 7.7 million tonnes (Mt) of food in 2018-2019 (up from 7.3 Mt in 2016-2017), from a total of 16.8 Mt of food sent to market in Australia.[7] **This is about 312 kilograms of wasted food per person per year**.

NSW generates about 20% (or 1.5 Mt in 2016-2017) of this wasted food. This is approximately proportional to its population and the size of its primary production and food manufacturing industries, with Queensland and Victoria generating more wasted food because of their larger primary production and food manufacturing industries.[8]

The costs of wasting this much food are appalling, and unacceptable. These are summarised in Figure 1 below.

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[2] Australia exports between 60 and 75% of its agricultural produce.

[3] FIAL, *National Food Waste Strategy Feasibility Study - Final Report* (FIAL, 2021) 12.

[4] 43%, or 3.3 million tonnes (Mt), of wasted food is still sent to landfill each year FIAL (n 3); Approximately 855 thousand tonnes (kt) of wasted food was sent to landfill in NSW in 2018-2019 Joe Pickin et al, *National Waste Report 2020* (Department of Agriculture, Water and the Environment (Cth) & Blue Environment Pty Ltd, 4 November 2020) 138.

[5] Foodbank Australia, *Foodbank Hunger Report 2019* (Foodbank Australia, 2019).

[6] Foodbank Australia, *Foodbank Hunger Report 2020: Food Insecurity in the Time of Covid-19* (Foodbank Australia, 2020).

[7] FIAL (n 3) 12–14.

[8] Arcadis, *National Food Waste Baseline: Final Assessment Report* (2019) 7.

Figure 1 Costs of wasted food in Australia[9]

- **The estimated cost to the Australian economy is $36.6 billion (B) each year. For a sense of scale, the Australian defence force budget for 2019-2020 was $38.7 B.**
- 17.5 million tonnes of CO2-e annually is generated from the production and disposal of food that is wasted in Australia (excluding the emissions associated with exported food), this being equivalent to the annual emissions from Hazelwood power station which was considered Australia's highest emitting coal fired power station. This is also equivalent to approximately 3.5% of the nation's emissions at the time of the baseline year (2018-19).
- Wasted food in Australia uses 2628.3 gigalitres of water across its lifecycle.
- **The amount of land used to grow wasted food is covers in excess of 25 million hectares, a landmass larger than the state of Victoria.**

These estimated impacts are very conservative, meaning the true impacts are much higher. This is because of the way "food waste" is defined or measured in Australia:

1. the definition does not include food wasted "pre-harvest", that is, food being grown for human consumption but does not arrive at a point where it is ready for harvest or culling. However, very large amounts of food are wasted in this way in Australia due to natural disasters. In recent years, NSW has experienced a severe drought, the 2019-2020 bushfires, subsequent floods, a mouse plague and further floods, as well as the COVID-19 pandemic lasting from 2020 to date. All of these have increased the levels of wasted food throughout the food system, but also severely impacted the amount of food being grown and whether it arrives at a point where it can be harvested or culled;
2. having only started in 2017, the quantification of wasted food is still in its infancy in Australia and so much of the data is not robust, with estimates for several sectors such as transport or in institutions such as the Australian defence forces either unreliable or missing;
3. Further, the latest estimate does not measure the amount of food households make for human consumption but is then fed to pets, and Australian research shows this amount is substantial.[10]

[9] FIAL (n 3) 18.

[10] Christian J Reynolds et al, 'Estimating Informal Household Food Waste in Developed Countries: The Case of Australia' (2014) 32(12) *Waste Management & Research* 1254.

Finally, a survey of NSW households published by the NSW Environment Protection Authority (EPA) in 2018 estimates that **wasted food costs households an average of $3805 per year in 2017 (or about $73 per week), down slightly from $3866 in 2015**.[11]

Mapping the food system and finding the hotspots

Although there are no set ways to map the sectors of the Australian (or NSW) food system, a simple list of the main sectors helps when considering the problem of wasted food. The following list of sectors is adapted from that used in the *National Food Waste Baseline Final Assessment Report*:[12]

1. Primary production, being the farms, greenhouses, aquaculture plants, fisheries businesses and feedlots used to grow or harvest food;
2. Food wholesalers;
3. Food storage businesses and transporters, including cold-chain businesses;
4. Food manufacturing;
5. Food retail, including supermarkets, as well as smaller food retail businesses;
6. Food hospitality, including hotels, restaurants, fast-food chains, cafes, bar and food courts;
7. Institutional operators, such as NSW government agencies, local governments, schools, universities, prisons, colleges, TAFEs and care facilities;
8. Households; and
9. the Waste management sector, providing recycling, energy-generation, sewage treatment and disposal services.

Of course, each of these can be further separated into sub-sectors and this must be done to properly identify wasted food hotspots and to tailor solutions for particular food types, for example green-leafy vegetables, or particular groups of actors, say high-rise apartment residents.

Although food is wasted in every sector of the food system, there are three sectors which generate the most wasted food in NSW, being:

1. Primary production;
2. Food manufacturing; and
3. Households.[13]

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[11] Environment Protection Authority (NSW), *Love Food Hate Waste Tracking Survey 2017* (Environment Protection Authority (NSW), 2018) 2. This is based on households' own estimates of their levels of wasted food, which are known to be unreliable. More important is the apparent scale of these household costs.

[12] Arcadis, *National Food Waste Baseline: Final Assessment Report* (2019). This report did not specifically include the waste management sector as part of the Australian food system because the report focused on sectors that generated wasted food, however, it is not possible to address issues of wasted food and returning wasted food to the productive economy without considering the capacities of this vital sector.

[13] Ibid 7.

The role of large supermarket chains in causing wasted food in other sectors

However, this should not blind us to action in one sector causing the waste of food in other sectors. Although the food retail sector wastes a relatively small amount of food (between 3 and 7%), the actions of large supermarket chains results in large amounts of wasted food in primary production. International and Australian research collects these behaviours into four broad categories: poor demand forecasting; control over pricing and packaging; contractual arrangements; and cosmetic and quality specifications.[14] Of these, one of the most prominent is the imposition of cosmetic and quality specifications on farmers providing fresh fruit and vegetables. A 2011 study of banana production in North Queensland found that 10 to 30% of edible bananas were discarded on the farm, with 78% due to failure to meet supermarket specifications.[15] In North Queensland alone, this was the estimated to result in approximately 37 000 tonnes of bananas being discarded each season. A 2017 study of tomato production in South-East Queensland found that of the total amounts of wasted tomatoes on two farms, 86.7% of the waste during harvesting and 68.7% of the waste during packing was caused by failure to meet product specifications.[16] In short, these private rules mean much otherwise nutritious food never leaves the farm, most of which is then ploughed back into the soil or composted. This issue has only received attention in Victoria, and it has been ignored in NSW.

Households wasting the most food in NSW

Research in NSW has revealed those households wasting the largest amounts of food. In 2017, the groups who waste the most food by (estimated) volume were:

1. residents aged 18–34;

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[14] A 2021 meta-study of 21 papers on o the waste of fruit and vegetables across food systems, excluding the household sector, identifies 26 significant drivers of wasted food Vanessa SM Magalhães, Luís Miguel DF Ferreira and Cristóvão Silva, 'Using a Methodological Approach to Model Causes of Food Loss and Waste in Fruit and Vegetable Supply Chains' (2021) 283 *Journal of Cleaner Production* 124574 Of these drivers, 14 are the most significant in both developed and undeveloped countries, 124577-124580. **Four** of these 14 are retail related causes, being inadequate demand forecasting, overproduction and excessive stocking, pricing strategies and non-conformance with cosmetic and quality specifications, 124580. See also Ciara Beausang, Clare Hall and Luiza Toma, 'Food Waste and Losses in Primary Production: Qualitative Insights From Horticulture' (2017) 126 *Resources, Conservation and Recycling* 177; Carlos Mena, B Adenso-Diaz and Oznur Yurt, 'The Causes of Food Waste in the Supplier–Retailer Interface: Evidences from the UK and Spain' (2011) 55(6) *Resources, Conservation and Recycling* 648; Carlos Mena et al, 'Causes of Waste Across Multi-Tier Supply Networks: Cases in the UK Food Sector' (2014) 152 *International Journal of Production Economics* 144; Bree Devin and Carol Richards, 'Food Waste, Power, and Corporate Social Responsibility in the Australian Food Supply Chain' (2018) 150(1) *Journal of Business Ethics* 199.

15 Amy White, Danielle Gallegos and Tor Hundloe, 'The Impact of Fresh Produce Specifications on the Australian Food and Nutrition System: A Case Study of the North Queensland Banana Industry' (2011) 14(8) *Public Health Nutrition* 1489, 1492.

[16] Tara J McKenzie, Lila Singh-Peterson and Steven JR Underhill, 'Quantifying Postharvest Loss and the Implication of Market-Based Decisions: A Case Study of Two Commercial Domestic Tomato Supply Chains in Queensland, Australia' (2017) 3(3) *Horticulturae* 44, 52–53.

2. households with gross annual incomes above $100,000, especially those in the $150,000+ bracket;
3. families with children (although international research shows that larger households waste more food, irrespective of whether children are present). [17]

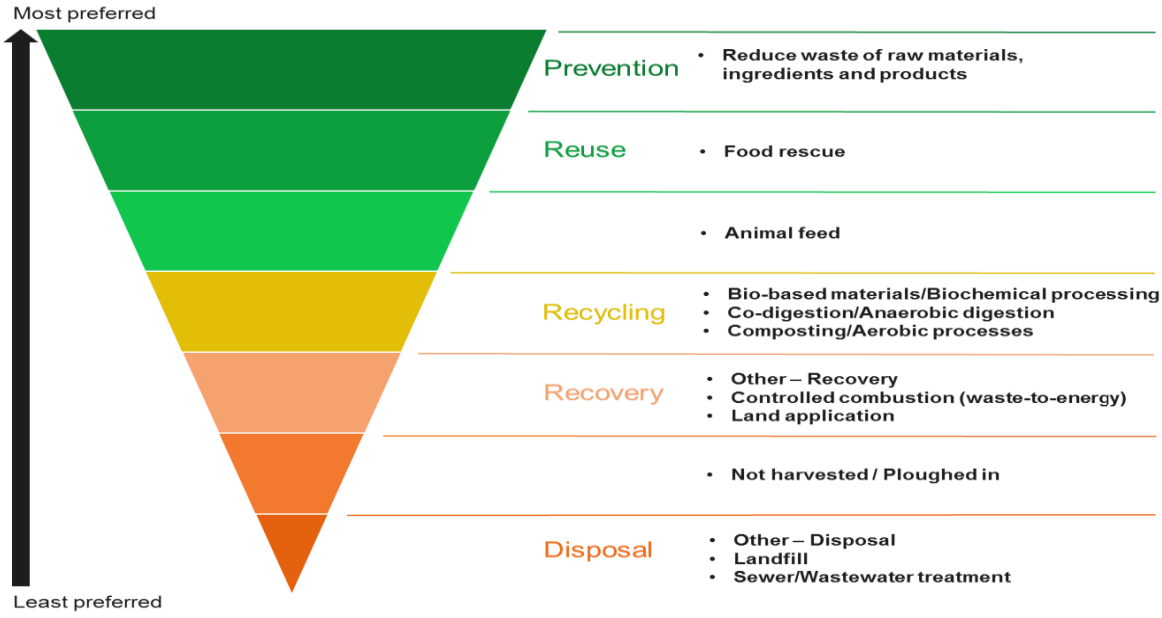
This means any solutions that do not effectively address causes in these sectors or sub-sectors means NSW will not successfully tackle the challenge of wasted food. In this respect, there is new Australian evidence of the benefit of teaching school children how to save food.[18]

Wasted food is really two problems: saving food, and better managing wasted food

A simple way to start addressing the complex and wicked problem of wasted food is to focus on meeting two related challenges: taking action to save more food; and at the same time better managing the food we cannot avoid wasting.

This is in keeping with the national food saving hierarchy, originally contained in the *National Food Waste Strategy*, with the highest priority given to saving more food, with the lowest priority given to landfill disposal of wasted food.

Figure 2 National Food Saving Hierarchy



Source: National Food Waste Baseline, Arcadis, 2019.

[17] Environment Protection Authority (NSW) (n 11) 4.

[18] M Boulet et al, 'Return to Sender: A Behavioural Approach to Reducing Food Waste in Schools' (2019) 26(4) *Australasian Journal of Environmental Management* 328.

Some food will always be wasted, partly because some food such as orange peels, eggshells or avocado seeds are not edible (sometimes referred to as inedible waste), but also because some wastage of food in each sector of the food system is inevitable. A recent estimate finds 70% of all wasted food is edible, with the remaining 30% falling into the inedible category.[19] This emphasises the need to treat these as two separate but related problems.

Why taking effective action now is smart, urgent and right

These problems offer the huge win-win-win opportunities. These can be cost savings for food businesses, households and governments, wins for the environment, and wins for the food insecure. International research across 700 businesses in 17 countries shows an average return on investment of 14:1.[20] **This means that for every $1 businesses spent on saving food, they saved $14 in operating costs**. Further, taking action to save food and divert wasted food away from landfill and back into the productive economy has many other strong benefits. **Not only will this reduce the emissions of greenhouse gases in NSW, it will also save the money, water, soil, energy, chemicals and labour used to make this food. This will consequently reduce pressure on our precious biodiversity by increasing the productivity of existing food businesses**. Finally, it is shameful that any Australian experiences food insecurity, and no Australian should go hungry. Although the real and long-term solutions to food insecurity in Australia can only met by increased and fair income and food support - shown by emerging evidence of the impact of the temporary increase in JobSeeker payments - **increasing support for food businesses to redirect food to food rescue charities will increase the amounts of food available for those Australians who are food insecure.**

The Australian and NSW targets for saving food and better managing wasted food

The national food saving target

In 2017 all Australian governments, including the NSW Government, adopted the national food saving target. **This calls for the halving the amount of food waste generated per person by 2030.**[21]

Noting Australians waste about 312 kg per person per year, this means Australia must reduce the amount of food it wastes to **156 kg per person per year by the end of 2030**. NSW must make its

[19] FIAL (n 3) 14.

[20] Craig Hanson and Peter Mitchell, *The Business Case for Reducing Food Loss and Food Waste* (Champions 12.3, 2017).

[21] The Australian target sensibly does not adopt the United Nation's distinction of "food loss" and "food waste", depending on whether food is wasted early or late in the food system. This is a distinction without a difference as food wasted in the early parts of the food system is not "lost" with the possibility of it being "found, rather, it is wasted.

proportional contribution to reaching this target. **On the current policy settings and for the reasons set out below, NSW will miss this target.**

The NSW waste reduction and waste management targets

NSW latest waste strategy, the *NSW Waste and Sustainable Materials Strategy 2041: Stage 1: 2021-2027*[22] and its associated infrastructure needs analysis[23] contains "new" 2030 targets, as follows:

1. **reducing the total amount of waste generated per person by 10%;**
2. **achieving an 80% average recovery rate across all waste streams; and**
3. **halving the amount of organic waste sent to landfill.**[24]

However, neither of these two documents make mention of the national food waste target and contain no measures aimed at saving more food. This is despite NSW committing to the national targets in the *National Food Waste Strategy* and the *National Waste Policy Action Plan 2019*.[25] These three targets are identical to Targets 2, 3 and 6 respectively in the *National Waste Policy Action Plan*, meaning NSW has adopted these national targets without proposing any interim targets.[26] Further, as it does not propose any action on saving food, its focus is exclusively on the second problem of wasted food, better managing food that is wasted. **The latter is to be achieved by requiring separate collection of food and garden organic (FOGO) waste from selected businesses like supermarkets by 2025 and then from all households by 2030.**[27] To support the associated transformation of local authorities' waste collection services the NSW Government commits to providing $65 million over five years (or a relatively small $13 million per year), starting in 2022-2023. The strategy notes the NSW Government already uses other regulatory tools aimed at saving food, such as the *Love Food, Hate Waste* education program for households and businesses[28] and grant programs, but there are no proposals to expand those programs and they are not expressly integrated into an overall plan to tackle waste in general or wasted food in particular.

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[22] Department of Planning, Industry and Environment (NSW) (n 1).

23 Department of Planning, Industry and Environment (NSW), *NSW Waste and Sustainable Materials Strategy - A Guide to Future Infrastructure Needs* (Department of Planning, Industry and Environment (NSW), June 2021).

24 Department of Planning, Industry and Environment (NSW) (n 1) 6.

[25] Ibid.

[26] There are other targets adopted in the strategy in relation to plastics and achieving net zero emissions from landfilled organic waste by 2030 but these are not relevant here ibid 7.

[27] Ibid 25.

[28] NSW Environment Protection Authority, 'Your Business Is Food | Love Food Hate Waste' (Web Page) <https://www.lovefoodhatewaste.nsw.gov.au/in-business/your-business-food>.

What these new targets mask is that NSW has abandoned its earlier 2022 recycling and landfill diversion targets, adopted in its 2014 waste strategy.[29] Adopting the 2030 targets buys NSW more time because it failed to meet those earlier targets, with the recent strategy frankly observing:

> In 2014, NSW set a target of diverting from landfill 75% of all waste by FY2021. However, as of FY2019 (the most current published statistics), we are falling short of the target, reaching only 65%.
>
> Construction and demolition recycling has performed the best at a rate close to 80%, followed by commercial and industrial recycling at 53%. **Municipal solid waste (mostly household waste) has plateaued at just over 40% for the last four years**.[30]

Early NSW action on saving food and wasted food

NSW was the first state in Australia to adopt the *Love Food, Hate Waste* education program in 2009, after it was developed by the United Kingdom's Waste and Recycling Action Programme (WRAP) in 2007. The *Love Food, Hate Waste* program aimed initially to teach households how to save more food, but has since been expanded by the NSW EPA to provide the same educational service to small food businesses. The *Love Food, Hate Waste* program has also since been adopted by Victoria, the ACT and Brisbane City Council, as well as in Canada and New Zealand.

The NSW EPA also operates its *Bin Trim* program, which provides free and low-cost expertise to small and medium-sized businesses on how to reduce the amount of waste they generate, including wasted food. It also subsidises the cost of installing new equipment to assist with this waste minimisation and diversion programs. Over several years, this program has reached more than 36,000 businesses across NSW, diverting about 115 kt of waste from landfill over the life of the program.

Current action in NSW – or why NSW will fail to meet its own targets

Despite leading action on waste in Australia for nearly a decade, it is now clear that NSW has fallen behind on lowering the amount of waste it generates and better managing the remaining waste. This is especially true in relation to dealing with the twin problems of wasted food. If the current policy and regulatory settings remain as is, **evidence shows NSW will not achieve its own targets. As a result, NSW will continue to scandalously waste its own food.**

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[29] The targets adopted in 2014 for the 2021-2022 financial year were a 75% landfill diversion rate across the total waste stream, and recycling 70% if municipal solid waste (which includes household wasted food), 70% if commercial and industrial waste and 80% of construction and demolition waste, Environment Protection Authority (NSW), *NSW Waste Avoidance and Resource Recovery Strategy 2014-21* (Environment Protection Authority (NSW), 2014) iii.

[30] Department of Planning, Industry and Environment (NSW) (n 1) 12.

The Love Food, Hate Waste education program

First, the main tool used in NSW to save food in households and businesses, the *Love Food, Hate Waste* educational program, has had a very low impact. Commendably, the NSW EPA has evaluated and published its own research on the impact of this program, conducting five surveys of household behaviour from 2009 to 2017.[31] Against a background of increasing general concern about environmental matters,[32] the 2017 survey reports the number of households adopting at least one food waste avoidance action remained constant between 2015 and 2017 at 97% and 96% respectively, with the number of households that reported taking five or more food waste avoidance actions decreasing from 68% in 2015 to 61% in 2017.[33] **Crucially, only 4% of those taking part in the 2017 survey recognized the *Love Food, Hate Waste* program**.[34] **In other words, despite more than 10 years of using this program in NSW - the largest of its kind in Australia – the vast majority of New South Wales households remain largely unaware of its existence.** There are, however, some more encouraging developments. First is the finding that of those who were aware of it, 54% were motivated to take one or more actions to reduce the amount of food they wasted.[35] Second, the recent *Waste Less, Recycle More* report card notes that the Facebook page for *Love Food, Hate Waste* has 53,000 followers.[36] **The primary reason for this low overall impact is simple: the lack of the significant funding needed to promote awareness and solutions to the public.**

In contrast with the low promotion of the *Love Food, Hate Waste* program in various Australian jurisdictions, the UK program was supported, at least initially, with considerably more resources. The wide-ranging nature of the campaigns and some of the associated face-to-face events that took place across the UK from 2007 to 2014 are have been given detailed consideration.[37] There, awareness campaigns conducted on a regional level aimed at

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[31] The reports of the [surveys] of approximately 1200 to 1400 households were conducted in 2009, 2011, 2012, 2015-16 and 2017 and are here: 'Research | Love [Food] Hate Waste' <https://www.lovefoodhatewaste.nsw.gov.au/about-us/research>.

[32] Environment Protection Authority (NSW) (n 11) 9.

[33] [Ibid] 1–2.

[34] Ibid 43.

[35] Ibid 43.

[36] NSW Environment Protection Authority, 'Waste Less Recycle More June 2021 Report Card' (NSW Environment Protection Authority, June 2021).

[37] H Yamakawa et al, 'Food Waste Prevention: Lessons from the *Love Food, Hate Waste* Campaign in the UK' (CISA Publishing, Italy, 2017) 1.

thousands or even hundreds of thousands of households were primarily promoted using radio, newspaper, magazine, transit and internet advertising, with less social media (although the use of social media was still in its infancy) and no paid television advertising.[38] Of these, the most effective were regional campaigns, using media promotion and local events like roadshows in combination with supermarkets providing information to thousands of customers, with bin-audits revealing a 15% reduction in household avoidable wasted food.[39] The researchers also note the programs assumed the effects of such campaigns **might decrease by 20% per year**,[40] **suggesting ongoing efforts are needed to maintain high levels of awareness and behavioural change**.

Despite the limitations on accurately evaluating the various aspects of the UK's *Love Food, Hate Waste* program, between its introduction in 2007 and 2012 UK households reduced the amount of food they wasted by 15% (from 8.3 Mt to 7 Mt).[41] From 2012 to 2015 progress stalled, with the levels of household wasted food increasing to 7.3 Mt,[42] but the trend has since continued down to 6.6 Mt in 2018.[43] A 2021 survey of 4,172 UK households reports 33% recalling the *Love Food, Hate Waste* logo - the highest on record – with 41% recalling a relevant *Love Food, Hate Waste* campaign or source of information.[44]

The Bin Trim expert and economic assistance program

Bin Trim continues to be a valuable tool. It combines educational – via expert waste auditor assistance - and economic interventions – via small grants to install new plant or equipment - to support small and medium-sized businesses in taking action to reduce business waste and save the associated waste disposal costs. Over many years, it has influenced some 36,000 businesses. Despite this, the levels of waste diversion away from landfill are modest (115 kt in total). Thus, whilst it addresses a difficult to reach sector of the food system – small and medium sized food retail businesses – its impact has been low. Such interventions also suffer from common problems in this area, which is the poor survival rate of these businesses, meaning the investment is lost, and high staff turnover, meaning the

[38] These large-scale campaigns cost approximately £0.30 per household, ibid 14 & 17.

[39] Ibid 13.

[40] Ibid 17.

[41] WRAP (UK), *Household Food and Drink Waste in the United Kingdom 2012* (WRAP (UK), November 2013) 4.

[42] WRAP (UK), Tom Quested and Andrew Parry, Household Food Waste in the UK, 2015 (Final Report, WRAP (UK), 2015) 2.

[43] WRAP (UK), *Food Surplus and Waste in the UK: Key Facts - Updated January 2020* (WRAP (UK), January 2020) 2.

[44] WRAP (UK), *Food Trends & KPI Survey 2021* (WRAP (UK), August 2021) 11, 9–10.

corporate knowledge and experience arising out of the training is also lost. Thus, whilst it should be supported as it is one of the few direct and (modestly) effective means of engaging with a difficult to reach sub-sector of the food system, it alone is not nearly enough to help NSW meet its targets.

The Waste Less, Recycle More program

The use of these two programs forms part of the much larger *Waste Less, Recycle More* policy in NSW, which allocated just over $800 million over nine years to transform that state's waste and recycling systems.[45] The NSW EPA and, to a lesser extent, the NSW Environmental Trust, administer the allocation of funding. This policy - representing the largest transformation of the waste management industry in Australian history - has been supported by both Labor and Coalition Governments in NSW. The $105.5 million Organics Infrastructure fund aims to increase the levels of FOGO recycling or support businesses in reducing their levels of wasted food (saving food). Of this, $57 million was available over nine years in the Stream 2 Business Organics Recycling fund[46] by way of contestable grants to provide up to 50% of the capital costs of infrastructure that would prevent or recycle wasted food, thus avoiding landfill. Overall, this program has been successful in supporting the creation of additional FOGO recycling infrastructure in NSW, thus diverting this waste, including wasted food, away from landfill. However, it is important to recall that the levels of recycling municipal solid waste, of which organic waste makes up the largest part, have stalled in recent years in NSW, so without this fund the results would have been even worse. More encouragingly, the recent (and unacceptably brief) *Waste Less, Recycle More* infographic "report card" suggests this policy has also been moderately effective with respect to increasing the amount of FOGO waste recycled in NSW, with 60 new or enhanced organics collections services – mainly operated by local councils - recycling 181,266 tonnes per year.[47]

NSW waste strategy proposals

It is shocking to note that NSW is yet to develop a comprehensive wasted food strategy. In adopting the 2030 national waste targets and not considering other relevant interim targets, it has

[45] NSW Environment Protection Authority, *Waste Less Recycle More: A Five-Year $465.7 Million Waste and Resource Recovery Initiative* (NSW Environment Protection Authority); and NSW Environment Protection Authority, *Waste Less Recycle More: A $337 Million Grants and Funding Initiative 2017-2021 Extension* (NSW Environment Protection Authority, 2016).

[46] NSW Environment Protection Authority, *Waste Less Recycle More: A Five-Year $465.7 Million Waste and Resource Recovery Initiative* (n 46) 6; NSW Environment Protection Authority, *Waste Less Recycle More: A $337 Million Grants and Funding Initiative 2017-2021 Extension* (n 46) 5.

[47] NSW Environment Protection Authority, 'Waste Less Recycle More June 2021 Report Card' (n 36).

abandoned its own 2022 recycling and landfill diversion targets adopted in its 2014 waste strategy.[48] Given these failures, the strategy's proposals for mandatory separate and collection of wasted food from selected businesses such as supermarkets by 2025 and from all households by 2030 **are apt but too slow**. These targets are also in conflict with Action 6.4 of the National Waste Policy Action Plan which called for the implementation of such systems by 2023. Long lead times are necessary for ensuring the additional infrastructure such as composting facilities or anaerobic digestion plants are constructed, and new facilities are said to be needed in the Sydney metropolitan area.[49] **However, allowing nine years before all households are required to have access to a separate FOGO collection service creates clear risks of last-minute failure**. A smarter approach would bring forward the household targets to allow for construction of the necessary infrastructure but also ensure any unforeseen difficulties could be addressed prior to the arrival of the 2030 targets. Further, those regions outside of the Sydney Metropolitan area that already have the sufficient infrastructure could be subject to tighter targets. In turn, this encourages the waste management sector to plan for more capacity beyond that needed to meet the waste flows from 2025 business target. It also allows for earlier testing of using tools in combination, such as expanding the promotion of household waste diversion equipment like worm farms and composting kits as well as promoting the *Love Food, Hate Waste* at a time when household awareness of the issue of wasted food has been heightened by the introduction of the new FOGO collection systems.

Land applying wasted food and biosolids in NSW

Sewage is the ultimate by-product of human food consumption, but this has been ignored by all wasted food strategies. This is surprising given 1.4 Mt of biosolids - essentially treated and partially de-watered solids from sewage treatment plants (STPs) - are applied to land, mostly agricultural land, across Australia.[50] This is done to increase the organic and moisture content of Australia's generally poor-quality soils, at a time when Australia is fast losing its topsoil to climate change, poor agricultural practices, salinity and natural disasters.[51]As NSW generates about 24% of all biosolids in Australia, this means approximately 340 kt of biosolids are land applied in NSW each year.

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[48] The targets adopted in 2014 for the 2021-2022 financial year were a 75% landfill diversion rate across the total waste stream, and recycling 70% if municipal solid waste (which includes household wasted food), 70% if commercial and industrial waste and 80% of construction and demolition waste, Environment Protection Authority (NSW), *NSW Waste Avoidance and Resource Recovery Strategy 2014-21* (Environment Protection Authority (NSW), 2014) iii.

[49] Department of Planning, Industry and Environment (NSW) (n 1) 20.

[50] Pickin et al (n 4) 40.

[51] Department of Agriculture, Water and the Environment (Cth), *National Soil Strategy* (Department of Agriculture, Water and the Environment (Cth), 2021) 16–17.

It is well understood that applying biosolids (or other organic material like wasted food) can create risks of land and food contamination and so must be regulated.[52] In NSW, the steps to encourage the safe reuse of wasted food or biosolids as soil amendments are part of the resource recovery framework.[53] Hence, for low risk wasted food or biosolids, these exemptions create a legal gateway to make it lawful for wasted food or biosolids to be reused on land rather than sending to landfill. **However, the biosolids resource recovery order and the biosolids resource recovery exemption both rely on the *Environmental Guidelines: Use and Disposal of Biosolids Products*, released in 1997, some 25 years ago. To ensure the proper protection of agricultural land and the safety of food grown in NSW, these guidelines must be updated.** This must be done in conjunction with an inquiry into the operational capacity of STPs across NSW to meet the new guideline requirements. This may require significant investment in those STPs to ensure they produce biosolids that are safe for reuse under the new guidelines.

None of the above is intended as criticism of NSW EPA staff, and I am keenly aware of that EPA staff have worked for more than a decade at helping NSW reduce the amount of waste it generates as well as diverting the remaining waste away from landfill.

Commonwealth action on saving food

If NSW is relying on Commonwealth action on saving food, this is false hope, and a plan for failure. Since the release of the *National Food Waste Strategy* in 2017, the steps taken by the Commonwealth Government can be neatly summarised:

1. creating the Fight Food Waste Co-operative Research Centre (CRC) in 2018;
2. creating Stop Food Waste Australia in 2020 (which has subsequently released two Sector Action Plans for the cold food chain industry and food rescue charities);
3. releasing the 2021 *National Food Waste Feasibility Study* on possible pathways to the 2030 national target but also containing an updated assessment of the levels of wasted food in Australia;

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[52] DL Pritchard et al, 'Land Application of Sewage Sludge (Biosolids) in Australia: Risks to the Environment and Food Crops' (2010) 62(1) *Water Science and Technology* 48; Abbas Mohajerani and Bojana Karabatak, 'Microplastics and Pollutants in Biosolids Have Contaminated Agricultural Soils: An Analytical Study and a Proposal to Cease the Use of Biosolids in Farmlands and Utilise Them in Sustainable Bricks' (2020) 107 *Waste Management* 252.

[53] The NSW EPA has issued four general resource recovery orders and four general resource recovery exemptions to simplify regulatory requirements and so encourage the reuse of wasted food or biosolids as a soil enhancement agent or in compost, being the Biosolids Order 2014, the Liquid Food Waste Order 2014, the Solid Food Waste Order 2014 and the Compost Order 2016. These impose obligations on producers of biosolids or material made from wasted food. The four general resource recovery exemptions, being the Biosolids Exemption 2014, the Liquid Food Waste Exemption 2014, the Solid Food Waste Exemption 2014 and the Compost Exemption 2016, impose obligations on the final users of these materials. These are all made under the *Protection of the Environment Operations (Waste) Regulation 2014* (NSW).

4. launching the voluntary Australian Food Pact in 2021, to be operated by Stop Food Waste Australia; and
5. announcing the $57 million Food Waste for Healthy Soils Fund to support infrastructure upgrades and developments to support the diversion of organic waste from landfill and the production of recycled organic products for use on agricultural soils.

Of these, the launch of the Australian Food Pact is the only regulatory intervention aimed at saving food across the Australian food system. This form of self-regulation is clearly modelled on the use of the similar Courtauld Commitments operated by the Waste Recycling Action Programme (WRAP) in the UK. There are several problems with this use of this tool. Self-regulation always suffers from a lack of participation. In other words, leading food businesses who are already taking action to save food will participate, but laggards continue to "free ride", and so the tool is, at best, partly effective. This has been borne out by the early Australian experience with only eight businesses initially signing up to the Pact,[54] although there have been two new recent signatories. Two of these businesses, Coles[55] and Woolworths,[56] have been acting on wasted food for many years, meaning further gains will be harder to realise. The failure of this form of self-regulation has been demonstrated by the UK experience with the Courtauld Commitments. WRAP estimates that after 15 years of operation it **now needs a further 500 manufacturing, retail and hospitality and food service businesses to implement the "target, measure, act" system of reducing wasted food to achieve the targets of Courtauld Commitment 2025**.[57] This is approximately ten times more than the initial number of participants in 2005 and nearly double the number of participants in 2020. In short, the Australian Food Pact will not be enough to ensure Australia, and NSW, meets its food saving targets.

The *National Food Waste Strategy Feasibility Study* of 2021 considered 47 possible interventions aimed at achieving the national food waste target by 2030.[58] **Inexplicably, this report entirely missed the current UK proposal to legislatively require medium and large food businesses to publicly report on their levels of wasted food, this being born out of the more extensive UK**

[54] Minister for the Environment (Cth) and Assistant Minister for Waste Reduction and Environmental Management (Cth), Major Food Businesses Sign Up to Halve Food Waste in Australia, (Media Release, 21 October 2021).

[55] Coles Group, *Together To Zero - Better Together: 2021 Sustainability Report - Winning Together* (Coles Group, 2021).

[56] Woolworths Group, *Committed to a Better Tomorrow: 2020 Sustainability Report* (Woolworths Group, 2020).

[57] WRAP (UK), *Courtauld Commitment 2025 Milestone Progress Report* (WRAP UK, 24 January 2020) 6.

[58] FIAL (n 3) 22–23.

experience on wasted food.[59] The study recommends 23 interventions, but the greatest reliance is placed on the success of the Australian Food Pact.[60] However, this particular recommendation may already be already failing to meet the targets set out in the Feasibility Study, which calls for 25 large food businesses to be signed up by 2022.[61] Further, there are no proposals for legislative intervention. **Hence, at time when there is less than nine years to the end of 2030, the early and critical milestones set out in the Feasibility Study are not being met.**

Finally, the Commonwealth announcement of its $67 million Food Waste for Healthy Soils fund is welcome, but it alone will not be enough to either sufficiently increase the recycling capacity of wasted food to allow NSW to meet its waste management targets, and does nothing to help NSW meet its food saving target.

In short, NSW cannot rely on Commonwealth action aimed at saving food across Australia to ensure NSW meets its own food saving and waste management targets.

Victorian action on saving food

In contrast, Victoria is now moving ahead of NSW in addressing the waste of food. Victoria's *The Path to Half* is the most comprehensive state-based wasted food strategy in Australia. It expressly adopts the national target of halving the waste of food by 2030[62] and, to this end, focusses exclusively on interventions aiming to save food, rather than on better managing wasted food. It contains an analysis of its food system's hotspots for wasted food, assessments of the associated climate change, water and financial impacts of that waste, consideration of the effectiveness of 25 different interventions, finally prioritising eight actions it considers will save 700,000 tonnes of food.[63] These eight steps aim to save a quarter of the food Victoria currently wastes, getting it halfway to the 2030 target. This strategy puts Victoria in a much stronger position than NSW with respect to saving more of that state's food.

Support for other submissions to the Committee

I have had the benefit of reading the draft submission from the Food Governance Node based at the University of Sydney's Charles Perkins Centre and support the comments and recommendations in

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[59] This is doubly surprising as this intervention is expressly mentioned in the Appendix 2 to the *National Food Waste Strategy Feasibility Study*, see FIAL, *Appendix 2: National Food Loss and Waste Reduction: Review of International Best Practice and Interventions* (3Keel, Oxford, 2021) 5.

[60] Ibid 27–28.

[61] Ibid 42.

[62] Sustainability Victoria, *The Path to Half: Solutions to Halve Victoria's Food Waste by 2030* (Sustainability Victoria, February 2021) 3.

[63] Ibid 50–51.

that submission. I have also read the submission of Associate Professor Cathy Sherry dated 13 December 2021 and commend it to the Committee.

Yours sincerely

Chris McElwain

21 February 2022

My background

I am a Teaching Fellow and PhD Candidate in the Faculty of Law and Justice at UNSW. I hold a Bachelor of Science and a Bachelor of Laws from UNSW and a Master of Laws (by research) from Osgoode Hall Law School at York University, Canada.

My research explores issues of sustainability and regulatory theory, focusing on waste prevention and resource recovery. My PhD is investigating the challenges of wasted food with a view to finding effective ways for Australia to save more food and better manage the food it cannot avoid wasting.

My approach is supported by more than 20 years' experience in designing and using environmental protection policy and laws. I was a lawyer for the NSW EPA, the main government environmental regulator for NSW, for more than 10 years and helped design NSW's main pollution prevention and waste control act, the *Protection of the Environment Operations Act 1997* (NSW). I was subsequently a senior manager in the EPA's waste and resource recovery team for more than 10 years. During my EPA career, I was directly involved in implementing the largest transformation of the waste and recycling industry in Australian history, the *Waste Less, Recycle More* program. I have used a wide range of innovative solutions and legal tools to protect the environment, including clean-up notices, statutory investigation notices, environmental audits, government waste and recycling contracts, grant schemes, financial assurances and environment protection licences. I also led more than 200 environmental criminal investigations, often resulting in prosecutions and civil enforcement action in local courts, the Land and Environment Court, as well as appellate matters in the NSW Court of Appeal or the NSW Court of Criminal Appeal. Further, I oversaw and issued a wide range of the EPA's general and specific resource recovery exemptions to allow for more material to be returned to the productive economy of NSW. Finally, I also am aware of the risks poorly managed recycling can create and commissioned the EPA's expert research into the operation of the Mixed Waste Organic Output (MWOO) Resource Recovery Exemption which ultimately led to that exemption's cancellation.