Title: Food waste measurement and reporting for food businesses in England **Lead department or agency:** Department for Environment, Food and Rural Affairs (Defra) **Other departments or agencies:** Environment Agency (EA)	Impact Assessment (IA) **Date:** 11/05/2022 **Stage:** Consultation **Source of intervention:** Domestic **Type of measure:** Secondary legislation **Contact for enquiries:** Louisa Fenocchi, Daniel Edwards or Elizabeth Doherty

Summary: Intervention and Options

RPC Opinion: Not Applicable

Cost of Preferred (or more likely) Option (in 2019 prices, 2020 present value)

Total Net Present Social Value	Business Net Present Value	Net cost to business per year	Business Impact Target Status Qualifying provision
-£63.8m	**-£62.7m**	**£6.3m**	

What is the problem under consideration? Why is government intervention necessary?

The UK currently produces 9.5 million tonnes of food waste every year post-farmgate, 70% of which could have been eaten. This annual waste has an approximate cost of £19 billion and has associated emissions of 36 million tonnes of carbon dioxide equivalent[1]. Businesses produce over 2.9 million tonnes of this waste. Government intervention is required to ensure food businesses in England consistently and publicly measure and report their food waste. This will enable businesses in England to take greater responsibility for their food waste (i.e. the polluter pays principle) and incentivise food waste reduction to tackle negative environmental externalities and increase resource efficiency.

What are the policy objectives and the intended effects?

To reduce food waste by increasing data transparency and accountability of food businesses in England. Reducing food waste will generate significant greenhouse gas (GHG) emissions savings, mitigating the impact of food production on the environment as a whole. Whilst the powers being sought target industry reporting action, we also hope to encourage positive change in business practices, highlight food waste as a priority issue, and demonstrate the Government's commitment to achieve the UK's ambition to work towards zero food waste to landfill by 2030 and Sustainable Development Goal 12.3 (50% reduction in food waste at retail and consumer levels by 2030).

What policy options have been considered, including any alternatives to regulation?

Do-Nothing Option: No requirement to report means many businesses will not measure and report their food waste. For those that do, some may use their own measurement methodologies which cannot be easily compared. A voluntary reporting framework developed by WRAP already exists, but has not widely been adopted, making it less effective than regulation.

Option 1: Enhanced voluntary agreement. This option looks at enhancing the current FWRR voluntary agreement by extending the Field Force (a team of sector specialists hired to accelerate the take-up of the voluntary agreement) and enhancing WRAP's business to business communications work.

Option 2: Improved food waste measurement and reporting for large businesses. Requiring all large businesses will report their food waste data to drive a reduction in food waste – resulting in financial benefits to business and significant environmental benefits. A single, legislated approach will ensure comparability of data and benchmarking across businesses.

Option 3 (not taken forward for consultation): Improved food waste measurement and reporting for large and medium-sized businesses. This option is less cost effective than Option 2. Advice from WRAP is that reporting is less suited to small and medium-sized businesses.

Several other options have been explored but rejected due to their limited effectiveness to meet the policy objectives – more details can be found in the main body of the report.

[1] WRAP pathway 2030

Will the policy be reviewed? It will be reviewed. **If applicable, set review date:** 5 years post-implementation (2029)

Does implementation go beyond minimum EU requirements?		Yes		
Is this measure likely to impact on trade and investment?		No		
Are any of these organisations in scope?	**Micro** No	**Small** No	**Medium** No	**Large** Yes
What is the CO_2 equivalent change in greenhouse gas emissions? (Million tonnes CO_2 equivalent)		**Traded:** N/A		**Non-traded:** N/A

I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible SELECT SIGNATORY: ..... Date: .....

Summary: Analysis & Evidence

Policy Option 1

Description: Enhanced voluntary agreement

FULL ECONOMIC ASSESSMENT

Price Base Year 2019	PV Base Year 2020	Time Period Years 12	Net Benefit (Present Value (PV)) (£m)		
			Low: -13.1	**High:** -10.3	**Best Estimate:** -11.7

COSTS (£m)	Total Transition (Constant Price) Years		Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	0.5	8	1.0	**10.3**
High	0.9		1.3	**13.1**
Best Estimate	0.7		1.2	**11.7**

Description and scale of key monetised costs by 'main affected groups'

Included are the costs to extend Field Force for £0.9m/year from 24/25 and the costs to enhance WRAP's business to business communications work (£0.3m/year) from 24/25. These costs would be managed by WRAP and funded by the government. The food businesses that sign up to the voluntary agreement face familiarisation and set-up costs including staff time to alter working systems and IT costs in their first year of measuring and reporting. Businesses signing up also face annual reporting and quality assurance costs.

Other key non-monetised costs by 'main affected groups'

There are some indirect costs that have been identified but not monetised. These are the costs associated with businesses acting and investing in food waste reduction in response to food waste measurement and reporting.

BENEFITS (£m)	Total Transition (Constant Price) Years		Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	Not monetised	NA	Not monetised	**Not monetised**
High	Not monetised		Not monetised	**Not monetised**
Best Estimate	Not monetised		Not monetised	**Not monetised**

Description and scale of key monetised benefits by 'main affected groups'

There are no direct benefits from food waste reporting that have been monetised for this option.

Other key non-monetised benefits by 'main affected groups'

Non-monetised benefits identified include financial and environmental benefits from food waste reduction as a result of action taken by the additional companies that sign-up to the enhanced voluntary agreement above the baseline (Do-Nothing Option). Given these benefits arise from action to tackle food waste, rather than measurement directly, they are not covered in this IA. These benefits will be relatively minor compared to options 2 and 3 as WRAP predict only 50 additional businesses will sign-up to the voluntary agreement.

Key assumptions/sensitivities/risks **Discount rate (%)** 3.5

Key assumptions are on the costs of extending the 'Field Force', the costs of enhancing the business-to-business communications work and the number of additional businesses that would sign up to the enhanced voluntary agreement above the baseline (Do-Nothing Option). Other assumptions are on business costs, including the time taken to familiarise with the reporting requirements and the time spent to report food waste data. Set up costs including IT systems costs are also key assumptions. These have been derived from discussions with businesses in the sector, but we will seek further views in the consultation published alongside this document.

BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:			Score for Business Impact Target (qualifying provisions only) £m: 1.6
Costs: 0.3	**Benefits: 0.0**	**Net: 0.3**	

Summary: Analysis & Evidence

Policy Option 2

Description: Improved food surplus and food waste measurement and reporting for large businesses

FULL ECONOMIC ASSESSMENT

Price Base Year 2019	PV Base Year 2020	Time Period Years 12	Net Benefit (Present Value (PV)) (£m)		
			Low: -93.0	**High:** -36.9	**Best Estimate: -**63.8

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	3.6	3	3.4	**36.9**
High	7.0		9.0	**93.0**
Best Estimate	5.3		6.1	**63.8**

Description and scale of key monetised costs by 'main affected groups'

Large food businesses face familiarisation and set up costs including staff time to alter working systems as well as IT costs in the first year of policy implementation. These business costs constitute most of the total transition costs in the first year (£4.8m undiscounted and based on 2021 prices). We estimate the total average annual reporting costs to business to be £5.3m. Businesses will also incur costs for third-party quality assurance checks for the food waste data and to cover ongoing operational costs of the regulator. It is estimated these operational costs will be around £348k per year. There will also be set-up costs to the regulator estimated to be £200k and incurred in 23/24 and 24/25. There will also be IT set-up costs to the regulator of £720k incurred in 22/23 and regulation enforcement costs of £100k in 24/25.

Other key non-monetised costs by 'main affected groups'

There are some indirect costs that have been identified but not monetised. These are the costs associated with businesses acting and investing in food waste reduction in response to food waste measurement and reporting.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	Not monetised	NA	Not monetised	**Not monetised**
High	Not monetised		Not monetised	**Not monetised**
Best Estimate	Not monetised		Not monetised	**Not monetised**

Description and scale of key monetised benefits by 'main affected groups'

There are no direct benefits from food waste reporting that have been monetised for this option.

Other key non-monetised benefits by 'main affected groups'

Non-monetised and indirect benefits identified in this impact assessment include financial and environmental benefits from food waste reduction as a result of action taken by firms post-measurement. These benefits arise from action to tackle food waste, rather than measurement directly, and so are not covered in this IA. Moreover the scale of food waste reduction solely from monitoring food waste is not known. Increased transparency may nudge businesses to take action and lead to further financial and environmental benefits, however, this cannot be monetised due to uncertainty. This would result in financial and environmental benefits to businesses from prevention and reduction of food waste (including reduced GHG emissions). Further indirect benefits arise from a reduction in associated packaging waste.

Key assumptions/sensitivities/risks **Discount rate (%)** 3.5

Key assumptions are made for business costs, time taken by business to familiarise with the reporting requirements and time spent on reporting food waste data. Assumptions are also made for IT and set up costs. These have been derived from discussions with businesses in the sector, but we will seek further views in the consultation published alongside this document. The number of businesses that will report food waste data in the absence of these regulations is also uncertain. As such we have a high, central and low baseline scenarios.

BUSINESS ASSESSMENT (Option 2)

Direct impact on business (Equivalent Annual) £m:			Score for Business Impact Target (qualifying provisions only) £m: 31.4
Costs: 6.3	**Benefits: 0.0**	**Net: 6.3**	

Summary: Analysis & Evidence

Policy Option 3

Description: Improved food surplus and food waste measurement and reporting for large and medium-sized businesses

FULL ECONOMIC ASSESSMENT

Price Base Year 2019	PV Base Year 2020	Time Period Years 12	Net Benefit (Present Value (PV)) (£m)		
			Low: -201.5	High: -84.5	Best Estimate: -142.1

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	6.6	3	8.1	**84.5**
High	16.0		19.3	**201.5**
Best Estimate	11.3		13.6	**142.1**

Description and scale of key monetised costs by 'main affected groups'

Large and medium-sized food businesses face familiarisation and set-up costs including staff time to alter working systems and IT costs in the first year of the policy implementation. These business costs constitute the majority of total transition costs (£11.6m). Based on ongoing reporting activity at a business premises and headquarter level, we estimate the total average annual reporting costs to business to be £9.8m. Businesses also face annual costs for third party quality assurance of food waste data and to cover ongoing operational costs of the regulator through a charging scheme. There will also be set-up costs to the regulator estimated to be £200k and incurred in 23/24 and business support costs of £200k in 24/25. There will also be IT set-up costs to the regulator of £720k incurred in 22/23 and regulation enforcement costs of £100k in 24/25.

Other key non-monetised costs by 'main affected groups'

There are some indirect costs that have been identified but not monetised. These are the costs associated with businesses acting and investing in food waste reduction in response to food waste measurement and reporting.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	Not monetised	NA	Not monetised	**Not monetised**
High	Not monetised		Not monetised	**Not monetised**
Best Estimate	Not monetised		Not monetised	**Not monetised)**

Description and scale of key monetised benefits by 'main affected groups'

There are no direct benefits to food waste reporting as a result of this option.

Other key non-monetised benefits by 'main affected groups'

Non-monetised and indirect benefits identified in this impact assessment include financial and environmental benefits from food waste reduction as a result of action taken by firms post-measurement. These benefits arise from action to tackle food waste, rather than measurement directly, and so are not covered in this IA. Moreover, the scale of food waste reduction solely from monitoring food waste is not known. Increased transparency may nudge businesses to take action and lead to further financial and environmental benefits, however, this cannot be monetised due to uncertainty. This would result in financial and environmental benefits to businesses from prevention and reduction of food waste (including reduced GHG emissions). Further indirect benefits arise from a reduction in associated packaging waste.

Key assumptions/sensitivities/risks **Discount rate (%)** 3.5

Key assumptions are made for business costs, time taken by business to familiarise with the reporting requirements and time spent on reporting food waste data. Assumptions are also made for IT and set up costs. These have been derived from discussions with businesses in the sector, but we will seek further views in the consultation published alongside this document. The number of businesses that will report food waste data in the absence of these regulations is also uncertain. As such we have a high, central and low baseline scenarios.

BUSINESS ASSESSMENT (Option 3)

Direct impact on business (Equivalent Annual) £m:			Score for Business Impact Target (qualifying provisions only) £m: 70.5
Costs: 14.1	Benefits: 0.0	Net: 14.1	

Evidence Base

Problem under consideration

Food waste is a costly issue, both financially and environmentally. In 2018, the UK produced an estimated 9.5 million tonnes (mt) of food waste, post farm gate.[2] Of this waste, almost 70% has been identified as 'edible'[3] and an estimated 165,000 tonnes as suitable for redistribution[4] indicating a large quantity of food is discarded unnecessarily.[5] Food waste from business accounts for over 2.9 million tonnes of the UK total[6]. In 2018, food wasted in the UK was valued at £19 billion per year. The government funds the Waste and Resources Action Programme (which operates as WRAP) to make periodic estimates of UK food waste volumes, the next estimate will take place in Autumn 2022.

Unnecessary food waste is inefficient, pushing up the price of food for consumers and businesses, whilst undermining our national self-sufficiency. Reducing food waste can help food businesses cut costs, which can be passed onto customers, and identify food that could be redistributed to the most vulnerable. Evidence suggests that a £1 investment by businesses in action to reduce food waste yields a £14 return.[7] Under the current voluntary approach to food waste reporting, businesses measuring and reporting data year-on-year collectively saved 251,000 tonnes of food from going to waste, worth £365 million.[8]

As well as financial impacts, the detrimental impacts of food waste on the environment are significant. Food waste that is sent to landfill generates methane emissions. There are also embodied emissions in food waste that arise throughout the supply chain, including those from the production and transportation of food that is wasted. A recent Intergovernmental Panel on Climate Change (IPCC) report stated that food waste contributed to 8-10% of total man-made greenhouse gas emissions during 2010-2016[9]. WRAP estimated the environmental impact of UK food waste to be 36 million tonnes of carbon dioxide equivalent (CO_2e) in 2019.[10]

The UK has committed to meet the UN Sustainable Development Goal (SDG) 12.3 target of a 50% reduction in per capita food waste at the retail and consumer levels by 2030. This has been integrated into a national target as part of the Courtauld Commitment with an aim to halve per capita food and drink waste in manufacturing, retail, hospitality and food service and households in the UK by 2030 against a 2007 baseline.

Waste is a devolved matter. This consultation is being undertaken by the UK Government in England. This document and descriptions of existing law therefore relate to England.

The remainder of this IA is structured as follows:

- Rationale for intervention
- Policy objective
- Scope and definitions

[2] Post-farm gate includes all food waste from processors, manufacturers, retailers, hospitality and food service and from households. These figures are taken from the UK progress against Courtauld 2025 targets and Sustainable Development Goal 12.3, WRAP, 2020.
[3] UK progress against Courtauld 2025 targets and Sustainable Development Goal 12.3, WRAP, 2020
[4] Food redistribution is the process of providing food, which is not sold and would otherwise be discarded as waste or used as animal feed, to organisations and charities who make this food available for human consumption (WRAP, Surplus food redistribution in the UK 2015 to 2020, 2021).
[5] WRAP, Surplus food redistribution in the UK 2015 to 2020, 2021
[6] UK progress against Courtauld 2025 targets and Sustainable Development Goal 12.3, WRAP, 2020
[7] https://champions123.org/publication/business-case-reducing-food-loss-and-waste
[8] https://wrap.org.uk/resources/report/food-waste-reduction-roadmap-progress-report-2021
[9] Climate Change and Land, IPCC 2019
[10] WRAP, Pathway 2030 – 'Delivering a 50% reduction in the GHG footprint of UK food and drink' summary report

- Key assumptions
- Description of options considered, including
    - a list of disregarded options with an explanation
    - a summary of the following options:
        - Do-Nothing Option: maintain current measures only
        - Option 1: Enhanced voluntary agreement
        - Option 2: Improved food waste measurement and reporting for large food businesses
        - Option 3: Improved food waste measurement and reporting for large and medium-sized food businesses.
- Tipping point analysis
- Value for money calculation of the three options
- A summary of the options
- Small and micro business assessment
- Evidence sought in the consultation.

Rationale for intervention

Historically, the approach to tackling business food waste in the UK has been voluntary, with action being taken through agreements such as the Courtauld Commitment 1 which launched in 2005. The most recent iteration, the Courtauld Commitment 2030, was launched in 2021.

On a per capita basis, the reduction of post farm gate total food waste between 2007 and 2018 is estimated to have been 21% (and 27% if we only include edible parts). This was likely to be the result of large-scale interventions aimed at reducing food waste across supply chains and households.[11] Estimates suggest modest reductions in food waste at business level between 2015 and 2018 (2.95 mt to 2.88 mt), but only across parts of the supply chain.

Evidence shows that food waste generated by a business reduces when measurement and reporting of that waste is implemented[12]. This is because the business becomes aware of the volume of food waste generated in their operations, but also allows for a better identification of where waste arises and its impacts, which overcomes an information failure and enables targeted plans to reduce it. Public reporting also enables public scrutiny of business performance, further incentivising action to tackle food waste.

Businesses are not measuring and reporting food waste already due to barriers including a lack of awareness around food waste, a lack of incentive and a lack of confidence in their capabilities to measure food waste robustly. These barriers are discussed in more detail under Option 1.

Building on the Courtauld Commitment, Defra, WRAP and the Institute of Grocery Distribution (IGD) published the Food Waste Reduction Roadmap (FWRR[13]). This is a voluntary initiative where businesses can commit to the Roadmap, set a target in line with Courtauld 2030, and use specialist guidance to encourage and facilitate large food businesses (and medium where appropriate) in implementing measurement and reporting of food surplus and waste. It also encourages businesses to act on their food waste to reduce it. This process is called Target, Measure, Act.

Voluntary approaches are a good policy mechanism and indeed they have been gaining more traction. The most recent 2021 progress report of the FWRR shows that there are 267 UK food business signatories of which, in England, 197 provided evidence to WRAP of implementing

[11] UK progress against Courtauld 2025 targets and Sustainable Development Goal 12.3, WRAP, 2020
[12] Evidence provided by Wrap, described in Option 2
[13] Food Waste Reduction Roadmap, WRAP 2018

measurement of their food waste. It also demonstrated that 140 businesses with comparative year-on-year data achieved a 17% reduction in overall food waste worth £365m.[14] WRAP are aiming for 238 food businesses to be measuring their food waste by 2026[15]. There are an estimated 509 large food businesses currently estimated to be in scope in England[16].
Public reporting of food waste is identified as best practice under the FWRR, but this is voluntary. Businesses can choose to publicly report and/or privately send data to WRAP or their trade body who may publish aggregated data.

Whilst this is a world-leading voluntary initiative, the number of businesses engaged and publicly measuring their food waste is too low to enable the large-scale food waste reduction needed to meet national and international targets. This suggests that there is a role for government to intervene to ensure the continued reduction of food waste.

This impact assessment assesses different options to increase the number of businesses reporting on their food waste, including regulatory options as well as more extensive work to increase voluntary uptake.

Policy objective

The objective of this policy is to increase data on business food waste volumes in England and to encourage positive change in business practices by incentivising reductions in food waste and adherence to the Food and Drink Surplus and Waste Hierarchy.[17]

The Waste (Circular Economy) (Amendment) Regulations 2020[18] requires the government to set out in its Waste Prevention Programme for England (WPP) measures to prevent the generation of waste, including measures that reduce the generation of food waste and encourage food donation and other redistribution[19]. Defra have consulted on the proposed WPP[20] which includes a chapter on food waste. Requiring food businesses to measure and report their food waste, as considered in this IA, is included in the proposed WPP and considered to be a suitable way to enable the government to monitor and assess the implementation of the government's existing food waste prevention measures, any such measures that the government may take in the future and to monitor progress towards our targets. The increased availability of data will also improve the accuracy of WRAP's periodic estimates of UK food waste.

The measurement and reporting of food waste is also a suitable measure towards the objective of preventing the generation of waste as referred to in the Waste (England and Wales) Regulations 2011, as the process of measuring and transparently reporting food waste brings indirect benefits through supporting the delivery of food waste reductions in businesses. Reductions in food waste have the potential to generate significant greenhouse gas (GHG) savings.

This policy will also contribute to the UK's commitment in the Resources and Waste Strategy to work towards zero food waste to landfill by 2030 and the SDG 12.3 target. It will also improve our

[14] Food Waste Reduction Roadmap Progress Report, WRAP, 2021

[15] 238 businesses is WRAP's central prediction.

[16] England level evidence provided by WRAP. UK level evidence from Food Waste Reduction Roadmap Progress Report, WRAP 2020

[17] The food and drink waste hierarchy, Defra

[18] The Waste (Circular Economy) (Amendment) Regulations 2020

[19] Paragraph 16(g) and (h) of Part 5 of Schedule 1 to The Waste (England and Wales) Regulations 2011: (g) Reduce the generation of food waste in primary production, in processing and manufacturing, in retail and other distribution of food, in restaurants and food services as well as in households; (h) Encourage food donation and other redistribution for human consumption, prioritising human use over animal feed and the reprocessing into non-food products;

[20] Consultation on the Waste Prevention Programme for England: Towards a Resource-Efficient Economy, 2021

waste management and resource efficiency and help deliver the commitment in the 25 Year Environment Plan to leave the environment in a better state than we inherited it.[21]

Scope

This IA focuses on the costs and benefits of three options to increase food waste reporting for food businesses in England only.

In Option 1 we assess the costs and benefits of enhancing the voluntary agreement. This would be achieved by extending funding for the Field Force[22] already in place to support the implementation of the voluntary agreement, and by enhancing the business communications work led by WRAP.

In Option 2 we assess improved measurement and reporting for large food businesses only as they produce the most food waste. In addition, large food businesses are more likely to have experience in waste measurement, albeit not in the format suggested in this IA.

In Option 3, we assess improved measurement and reporting for both large and medium-size food businesses to show the potential impacts of a broader and more expansive policy option. However, we assess this option not to be suitable, on the basis of the cost burdon on medium sized businesses.

The option to include small and micro sized businesses was not considered in any of our options because it is recognised that measurement and reporting on this issue can be disproportionally costly to smaller-sized enterprises. Food waste which occurs pre-farm gate has not been included in this IA as the options considered do not include agricultural primary production businesses.

Definition of large businesses and medium-sized businesses

Businesses will be considered large if at least two of the following criteria are satisfied:

- Turnover of £36m or more
- Balance sheet of £18m or more
- 250 employees or more

A business will be considered medium if at least two of the following criteria are satisfied:

- between 50 and 249 employees
- Annual turnover between £10.2 million and £35.9 million
- Annual balance sheet total between £5.1 million and £17.9 million

We would expect, subject to consultation, the following types of businesses would be required to measure and report food waste under Option 2, where they also meet the criteria for a large business:

- Food packing business
- Food manufacturers
- Food wholesalers
- Food retailers
- Caterers
- Hospitality and food service (restaurants, pubs, quick service restaurants, takeaways) (HaFS)

[21] 25 Year Environment Plan, 2018

[22] The Field Force is a team of sector specialists hired to accelerate the take-up of the voluntary agreement recruited by WRAP.

- Internet-based organisations that manage, distribute or produce food (for example, an internet-based organisation who manages food in a warehouse or arranges the distribution of food)
- Commercial food redistribution organisations

We are consulting on which other businesses would be required to report under Option 2 including not-for-profit businesses, co-operatives and community benefit societies registered under the Co-Operative and Community Benefit Societies Act 2014. We are also consulting on whether independent food haulage, delivery and agricultural primary production businesses would be required to report under Option 2.

A list of Standard Industrial Classification (SIC) codes included in this report can be found at Annex 2.

Definition of food waste

We propose that 'waste' be defined as any substance or object which the holder discards or intends or is required to discard. This definition is used in section 75(2) of the Environmental Protection Act 1990, as well as in various other waste related legislation.

Food waste is defined in the Waste (England and Wales) Regulations 2011.[23] The definition of 'food waste' in those regulations is all food that has become waste.

'Food' is defined in legislation[24] as any substance or product, whether processed, partially processed or unprocessed, intended to be, or reasonably expected to be ingested by humans and includes drink, chewing gum and any substance, including water, intentionally incorporated into the food during its manufacture, preparation or treatment. For the purpose of these regulations, 'food' also includes associated inedible parts which are components of food but not intended for consumption such as shells, bones, pits or stones.

Food surplus is considered to be food which cannot be used or is no longer required for its original purpose which is prevented from becoming waste. Whilst there is a legal definition for waste (see above), there is no legal definition for food surplus, but it is often considered to be associated with the following destinations:

- Redistribution for human consumption
- Animal feed
- Bio-based materials/biochemical processing (e.g., feedstock for other industrial products)

Key assumptions

Number of businesses

To calculate the number of large food businesses in England, UK-wide Fame[25] data was used. This dataset is considered to be robust for large businesses as duplicates can clearly be detected and removed. The number of medium-sized food businesses was calculated using UK-wide ONS data that provides estimates on the number of enterprises by Standard Industrial Classification (SIC) class and by employment size bands. Both datasets are UK-wide, hence, to calculate the

[23] By virtue of regulation 3(2) of those regulations, see https://www.legislation.gov.uk/uksi/2011/988/regulation/3/made

[24] Regulation (EC) Regulation (EC) No 178/2002 laying down the general principles and requirements of food law, as amended by S.I. 2019/641. See Article 2.

[25] Fame is a definitive source of company information in the UK and Ireland

number of large and medium-sized businesses operating in England within scope of the options considered, regional adjustment factors have been calculated, shown in

Table ***1***. The regional adjustment factors are based on ONS data that provides the number of enterprises by SIC class and region.

Table 1: Regional adjustment factors that have been applied to the number of UK businesses (based on ONS data)

	England	**Scotland**	**Wales**	**NI**
HaFS	0.84	0.09	0.05	0.03
Retail	0.84	0.08	0.04	0.03
Manufacturing	0.81	0.10	0.05	0.04
Wholesale	0.87	0.07	0.03	0.04

Source: Defra calculation based on ONS data on the number of enterprises by SIC class and region, 2021

The number of large and medium-sized food businesses per sector in the UK and England are shown in d.

Table 2. The UK figures have been regionally adjusted to estimate the total number of large and medium-sized food businesses in the food sector (post-farmgate) operating in England.

Table 2: Estimated total number of large and medium-sized food businesses across the post-farm gate food supply chain

	Total number of large businesses in the food sector		Total number of medium-sized businesses in the food sector	
	UK*	**England*****	**UK****	**England*****
HaFS	179	150	2,935	2,451
Retail	52	44	305	257
Manufacturing	288	232	690	557
Wholesale	96	83	530	460
Total	**615**	**509**	**4,460**	**3,725**

Source: *FAME data for UK figures applying the above definition and removing duplicates. **ONS data on the number of enterprises by SIC class and employment size bands 2021. ***UK figures regionally adjusted using factors in Table 1.

Caveat: figures may not sum to total due to rounding. Our calculations used full, unrounded regional adjustment factors.

We assume that the total number of large and medium-sized businesses operating in England, i.e., 509 and 3,725 respectively, remains unchanged throughout the 12-year appraisal period as we do not have any evidence to show demand changes in the sectors covered.

Number of local premises in scope

In each option, costs are incurred both at a business level and for each individual premises for all food businesses within scope. The proposed regulations will not require businesses to measure food waste at each premises. Measurement will instead have to align with the Food Loss and Waste Accounting and Reporting Standard[26]. This standard proposes that businesses can scale up data from a representative group of sites. However, per premises food waste measurement would be best practice as the most accurate form of quantification and so we have costed for this in this IA. This also ensures we take a conservative approach to quantifying cost to business.

To calculate the costs incurred per business, cost assumptions at the business level are multiplied by the number of large and medium-sized businesses. To calculate business costs at the local premise level, cost assumptions are multiplied by the number of premises. This latter calculation requires us to estimate the number of premises that will be affected by the proposed policies.

Data on the number of premises operated by large and medium-sized food businesses is not available. Some large businesses have several thousand premises, for example large restaurant chains, while others may only have a handful. Similarly for medium-sized businesses, some may only have one local premises while others may have multiple. The aim of this analysis is to estimate, using available data, the number of premises that are operated by large food businesses and similarly the number operated by medium-sized businesses.

ONS data is used to calculate the total number of food business premises per sector in the UK, by SIC code, as shown in

[26] Food Loss and Waste Protocol

Table ***3***. SIC codes for food businesses were selected by experts at WRAP and include all business categories that typically sell, process or manufacture food.

Table 3: Number of local premises per sector in the UK

Category	Number of premises (large, medium and small businesses, UK)
HaFS[27]	204,880
Retail[28]	79,350
Manufacturing[29]	12,445
Wholesale[30]	21,375
Total	318,050

Source: UK businesses: activity, size and location: 2021 (ONS, 2021[31])

Food businesses across the UK operate 318,050 premises according to ONS data. As we do not know how many of those premises are from large or medium-sized food businesses, we used a separate ONS dataset to estimate how many will be captured by the reporting requirements. We estimate a range given data uncertainties.

To estimate this range, we use ONS data on the number of enterprises per SIC class and employment size bands (2nd row in Table 4), estimates on the average number of premises per employment size band (3rd row in Table 4) and ONS data on the number of premises operated by all food businesses (about 318,050). The results are shown in Table 4.

Table 4: Number of premises per employment size band

Employment size band	**0-4**	**5-9**	**10-19**	**20-49**	**50-99**	**100-249**
No. of businesses*	139,300	55,430	29,035	14,170	2,920	1,495
Avg. no. of premises per business**	1	1	1	1.5	2.5	4
No. of premises***	139,300	55,430	29,035	21,255	7,300	5,980

* ONS data on the number of enterprises per SIC class and employment size bands, 2021
** Defra estimate, we welcome evidence on the validity of these assumptions in the consultation.
***No. of businesses multiplied by average number of premises per business.

The analysis in Table 4 suggests[32] that 194,730 premises belong to micro businesses, 50,290 premises belong to small businesses and 13,280 premises belong to medium-sized businesses. We assume the remaining 59,750 premises, out of the total 318,050 food business premises, belong to large food businesses. Therefore, as a best estimate, approximately 20% of all food business premises belong to large businesses and approximately 5% belong to medium-sized businesses.

We appreciate that this analysis is inexact and is based on assumptions with limited evidence. Therefore we account for this uncertainty by using the range ±50% of the best estimate. That is,

[27] SIC codes 55.1 + 56
[28] SIC codes 47.11 + 47.2 (excluding 47.25 & 47.26) + 47.81
[29] SIC codes 10 (excluding 10.91 & 10.92) + 11
[30] SIC codes 46.17 + 46.21 + 46.23 + 46.3 (excluding 46.35)
[31] UK business: activity, size and location, ONS

[32] Micro businesses have an employment sizeband of 0-9, small businesses have an employment sizeband of 10-49, medium sized businesses have an employment sizeband of 50-249, and large businesses have an employment sizeband of 250+. Our estimates are calculated by summing the number of premises for each of the previously mentioned business sizes. For the number of large premises we subtracted the number of micro, small and medium premises from the total number of premises.

between 10% and 30% for large businesses and between 2.5% and 7.5% for medium-sized businesses. We welcome further evidence in the consultation on the number of premises that would be affected by the regulations proposed in this IA.

Applying the 20% factor (±50% for the low and high-cost scenarios) for large businesses and 5% factor (±50% for the low and high-cost scenarios) to the figures in

Table ***3***, we estimate the total number of business premises in scope of the reporting requirements. We then regionally adjust these figures to reflect the local business premises operating in England only, shown in **Error! Reference source not found.**.

Table 5: Total local business premises in scope of the reporting requirements (England)

	High cost scenario	**Central cost scenario**	**Low cost scenario**
Large businesses*			
HaFS[33]	51,338	34,225	17,113
Retail	20,081	13,387	6,694
Manufacturing	3,014	2,009	1,005
Wholesale	5,562	3,708	1,854
Total	79,995	53,330	26,665
Medium businesses**			
HaFS	12,835	8,556	4,278
Retail	5,020	3,347	1,673
Manufacturing	753	502	251
Wholesale	1,391	927	464
Total	19,999	13,332	6,666

Source: Defra assumptions based on ONS data 2021

*Calculated by combining the figures in Table 3 with 30%, 20% or 10% for our high, central and low scenarios, with our regional adjustment factors show in

Table ***1***.

** Calculated by combining the figures in Table 3 with 7.5%, 5% or 2.5% for our high, central and low scenarios, with our regional adjustment factors show in

Table ***1***.

Food waste from large and medium-sized businesses

Table 6 illustrates the scale of food waste by providing estimates of total food waste from businesses in England, shown in the second column. Food waste arising from large and medium-sized businesses, shown in columns three and four respectively (corresponding percentages are shown in the last two columns), are estimated based on the total food waste for the sectors covered and their share of sector turnover. Please note that these estimates are not used in any of the costs or benefits calculations within this IA, however, they are used in the value for money calculations.

[33] Hospitality and food service (HaFS)

Table 6: Estimated food waste from large and medium-sized businesses in England

Food supply chain sector	Total food waste (million tonnes)	Arising from large businesses (million tonnes)	Arising from medium-sized businesses (million tonnes)	% food waste from large businesses	% food waste from medium-sized businesses
HaFS	917,046	426,206	123,329	47%	13%
Retail	233,662	220,536	5,842	95%	3%
Production/Manufacture	1,214,729	933,340	198,524	77%	16%
Total	**2,365,437**	**1,580,082**	**327,695**	**67%**	**14%**

Source: ONS data on the number of businesses in the private sector and their associated employment and turnover (employers only), by number of employees and industry group. Food waste in England is estimated using the regional adjustment factors from

Table ***1***. Figures for food waste arising from large food businesses have been provided by WRAP.

Number of large businesses voluntarily reporting (Baseline)

WRAP has set up a series of voluntary initiatives to encourage food waste measurement, reporting and reduction. These have delivered some results however, the majority of the sector does not currently measure or report on food waste.

Figures from WRAP indicate that as of September 2021, 207 businesses in the UK (197 of which operate in England) have evidenced implementation of 'Target, Measure, Act' (TMA) under the FWRR and are therefore measuring and reporting their food waste. Currently no medium or small sized businesses are measuring and reporting their food waste under the FWRR voluntary agreement. The projections, shown in

Table 6, indicate expected figures for implementing measurement and reporting of food waste, but not publicly reporting as this policy would require.

Measurement costs for these businesses are assumed to occur under the Do-Nothing Option and costs associated with these large businesses are therefore excluded from our calculations in all three options. This is because these businesses will be measuring their food waste as per the Food Waste Reduction Roadmap standards irrespective of the regulation suggested in Option 2 and Option 3.

It is uncertain how many businesses will implement TMA under the voluntary approach and therefore three projection scenarios have been developed, shown in

Table 6. Given the number is already 197 in September 2020 for England, it is expected that between 214 and 261 businesses operating in England will be reached by 2026, which is a milestone date in the FWRR. After this date, we assume no change in business numbers, based on advice provided by WRAP. The growth rates shown in

Table 6 have been modelled by experts at WRAP and are based their experience of managing a series of voluntary agreements over the last 15 years. They have considered the current voluntary agreement sign-up rates and their extensive liaison with businesses on the FWRR over the last 18 months to understand the number of businesses expected to implement TMA over the coming years. WRAP have identified several barriers to adoption of the voluntary agreements and are expecting a maximum of 261 businesses in England to implement TMA by 2026, these barriers are described under Option 1.

This IA covers an 12-year period, hence we project business numbers up to 33/34 with the financial year 22/23 assumed to be the first year of the appraisal period.

Table 6: Number of businesses expected to implement TMA under the voluntary FWRR, in England

Year	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
Low uptake	204	208	211	213	214	214	214	214	214	214	214	214
Central (mid-point)	210	219	227	234	238	238	238	238	238	238	238	238
High uptake	221	234	246	256	261	261	261	261	261	261	261	261

Source: WRAP projections

Staff time costs

When calculating staff time costs, the estimates for wages in Table 7 were used. All estimates in the table below are uplifted by 22% when calculating costs to account for non-wage related costs such as employer National Insurance and pension contributions.[34]

Table 7: Staff costs by food industry sector

Food industry sector	Median gross hourly wage	SIC category and code
HaFS	£9.50	Food and beverage service activities (code 56)
Food retail	£11.91	Retail trade, except of motor vehicles and motorcycles (code 47)
Food manufacturing	£12.00	Manufacture of food products (code 10)
Food wholesale	£12.43	Wholesale of food, beverages and tobacco (code 463)

Source: ONS data on the median hourly pay for employee jobs per SIC class, 2021

The median wage has been used because a typical worker is more likely to earn the median wage rather than the mean average, since extreme values do not affect the median as strongly as they do the mean.

One-off set-up costs

[34] Earnings and hours worked, industry by four-digit SIC: ASHE Table 16, ONS

These are the one-off costs to businesses to set-up the systems in place to monitor and report food waste, essentially the costs associated with implementation. Set-up costs are comprised of staff time and investment in IT systems to set up the reporting infrastructure. They include staff training, IT set-up, communications (internal and external) and possibly some consultant's time. We do not have robust evidence of these as companies who have started to report do not readily share this information. Estimates are on a per business basis.

For large businesses, we have some information from our engagement through the Courtauld 2030 voluntary commitments[35] that several large businesses invested £10,000-£20,000 in one-off set up costs. This includes IT systems to monitor food waste and any necessary training. However, from the insights we have received from businesses, there are a range of estimates for set-up costs with a few businesses that invested little or nothing upfront to implement measurement and reporting due to their systems already being in place. We assume a low estimate of £10,000, central estimate of £15,000 and high estimate of £20,000 for one-off set up costs. This is based on limited data from very large businesses and therefore we are seeking any additional information on these estimates in the consultation.

Medium-sized food businesses are less likely to invest in complex and expensive IT systems to acquire and assimilate waste date, due to the amount of food they waste and their revenue. Assuming a relatively simple approach will be taken by most medium-sized businesses to gather and assimilate data, less training will be required. Based on advice provided by WRAP who have liaised with businesses that have signed up to the voluntary agreements, we estimate that one-off set-up costs to medium-sized businesses would be in the range of £700 and £2,500 for IT equipment and staff training. Evidence on the costs to medium-sized businesses is very limited and we welcome additional information in the consultation on the set-up costs that medium-sized businesses might incur if required to measure and report their food waste.

One-off familiarisation costs

These are costs associated with the familiarisation of the policy for each business and premises. We use the same cost estimates per business and per premises for both large and medium-sized businesses. Familiarisation costs are different to set-up costs as these costs are associated with the time it takes staff to understand a regulation and what changes need to be made, while set-up costs cover implementation. There are two components to familiarisation costs that are estimated:

- Estimated amount of time spent by staff per business, understanding the reporting requirements - assumed at 2 FTE days per business of IT specialists' time.
- Estimated amount of time spent by staff per local premises, understanding the requirements and what processes need to be undertaken – assumed to be 1 hour of employees time per premises.

These estimates are based on discussions with businesses engaged in the Courtauld 2030 voluntary commitments. Given data uncertainties we have not been able to provide low and high estimates of staff time required. This is because we currently have significantly different estimates from different businesses. Many of those estimates were for actions that go above and beyond or do not match the requirements being assessed in this impact assessment. Defra has decided to use WRAP expert opinion based on the insights received from businesses and welcome evidence on our assumptions and calculations in the consultation.

Ongoing reporting costs to businesses

Ongoing reporting costs are the annual costs associated with the time required by staff employed in the business HQ or central functions as well as those at local premises to measure and report food waste. These costs have been estimated based on discussions with several businesses,

[35] The Courtauld Commitment 2030, WRAP

however, we welcome evidence in the consultation on the expected staff time required to report and measure food waste.

Evidence provided by businesses through previous discussions of the staff time required in the business HQ or central functions for food waste measurement and reporting is different per sector. Based on this evidence it is estimated that it takes between 2.5 days and 12.5 days per business. We also estimate that it takes an additional 0.25 hours of an employee's time per week at the local premises. This is for the physical measurement and reporting of food waste (e.g. staff working in kitchens and warehouses weighing and recording food waste).

The median wage for each sector has been used to calculate staff costs on a per business and per premises basis, it is then inflated by 22% to account for non-wage related costs such as employer National Insurance and pension contributions.

Table 8: Estimate of staff time required for food waste measurement and reporting

Sector	**Days per year, per business**
HaFS	2.5
Retail	5
Manufacturing	12.5
Wholesale	5
	Hours per week, per premises
All sectors	0.25

Source: Based on discussions with businesses in the sector

Similar to familiarisation and set up costs, the evidence that we have received on reporting costs gives a large range of costs to businesses. In many instances where costs were significantly higher than the central estimate, these costs were the result of businesses taking action far beyond that which would be required in legislated reporting. Because of these large ranges we have not monetised a low and high reporting cost unit per business and per premises, with the exception of one-off set-up costs to businesses.

For familiarisation costs and reporting costs, we use central cost unit estimates in this IA, based on the cost information from Courtauld 2030 signatories whose actions closely match the requirements of this policy. We plan to include low, central and high costs for all of our cost assumptions in the post-consultation IA, gathering further evidence through the consultation and conversations with stakeholders.

Furthermore, our cost unit estimates do not take into account the impact of the UK government's commitment to implement consistency of collections. This will require municipal businesses to separate out food waste for collections, making measurement of food waste easier which therefore may reduce unit costs of undertaking this activity.

Annual third-party quality assurance costs to business

Under Option 2 and Option 3, it has been proposed that businesses will be required to commission an independent consultant to provide an annual quality assurance check. This third-party quality assurance check could include an assessment of food waste measurement, material that was

included and excluded from scope, checking the accuracy of data and discussing any anomalies. Based on WRAP's discussions with stakeholders, it is assumed that the cost of this will be between £500 and £2,000 (£1,250 as a best estimate) for medium-sized businesses and between £5,000 and £7,000 (£6,000 as a best estimate) for large businesses.

Environment Agency costs
Under Options 2 and 3, there will be operational costs both to the regulator and to businesses. The Environment Agency has provided Defra with estimates of these costs.

Costs to the public sector
To set up the scheme, the regulator requires investment in a new IT system, which is estimated to cost £500,000 in 22/23. There are also additional staff costs required to manage the acquisition of the new IT system and set-up in 22/23 amounting to £220,000.

Additionally, the regulator will incur annual operational costs, as described below. This cost is estimated to be £200,000 in 23/24. The regulator will incur costs of £200,000 in 24/25 for providing additional support to businesses in the first year of measuring and reporting food waste. The regulator will also incur costs from enforcement of regulation of £100,000 in 24/25.

Operational costs
Aligning with the polluter pays principle, we propose that under Options 2 and 3 the Environment Agency implement a charging scheme which would require businesses in scope to pay an annual fee when registering their permit exemption. This fee would cover the operational costs of the regulator to ensure that the responsibility for costs is designated to the businesses which produce food waste rather than using public funds. The charging scheme will be in place for the 24/25 measurement and reporting period.

Option 2, improved measurement and reporting for large businesses has an estimated annual operational cost of £348,000, this option is the most cost-effective of the regulatory options considered. For Option 3, improved measurement and reporting for large and medium sized businesses, the estimated annual operational costs are £594,000 in total.

Under Option 2, this annual fee would be approximately £684 per business[36]. Under Option 3, this annual fee would be approximately £140 per business[37]. If indicated to be preferred at consultation, the regulator would consult on the detail of such a charging scheme at a later date. This estimate is used as an indicator of potential costs but is subject to change based on the outcomes of both this and the charging scheme consultations.

Description of options considered (including the 'Do-Nothing Option')

The options considered in this analysis are informed by WRAP's evidence and experience of reducing food waste in businesses, particularly through results of their Courtauld Commitments and the FWRR voluntary agreement. Based on an analysis of the costs and benefits, the following options are considered:

- Do-Nothing Option: maintain current measures;
- Option 1: Enhanced voluntary agreement;
- Option 2: Improved food waste measurement and reporting for large food businesses; and
- Option 3: Improved food waste measurement and reporting for large and medium-sized food businesses.

[36] The annual operational cost divided by the number of large businesses (509 large businesses)

[37] The annual operational cost divided by the total number of large and medium businesses (509 large businesses + 3725 medium businesses).

We also provide a list of disregarded options at the end of this section.

A description of the options alongside the results from a tipping point analysis and value for money calculation are presented in Table 26**Error! Reference source not found.**. The tipping point analysis assesses the point at which the financial benefits to businesses from reducing food waste and the estimated reduction in GHG emissions, equals the total cost of each option. Further details are provided in the 'Tipping Point Analysis' section presented towards the end of this report.

It is important to note that the total cost only includes the costs associated with each option as benefits have not been quantified. The value for money calculation takes the total cost of each option and divides it by the estimated total food waste from the additional businesses that would be measuring and reporting their food waste under that option. More details of this analysis can be found in the 'Value for Money' section presented towards the end of this report.

Option 2 has several benefits highlighted in advice from WRAP and the value for money assessment. Under Option 1, WRAP expect a limited number of additional businesses to sign up to the enhanced voluntary agreement due to a number of barriers, which are described in Option 1. The value for money calculation reveals that this option is more expensive than the other two options with significantly less food waste being targeted. Although Option 3 targets more food waste, the value for money calculation reveals that this option is nearly twice as expensive as Option 2, while only targeting approximately 45% more food waste. This is because although many more businesses will be required to measure and report on their food waste under Option 3, the volume of food waste per business is much less for medium-sized businesses. Additionally, WRAP states that improved measurement and reporting to engage businesses is less suited to medium-sized businesses because this requirement can be disproportionally costly to smaller sized enterprises. This is described further in the following sections.

Description of the scenarios

In each option, we have modelled three scenarios. This is to account for the uncertainties related to the cost assumptions and the number of businesses and their premises, subject to the new policy requirement. The central cost scenario represents our best estimates and includes all central cost assumptions, central premises numbers and the central voluntary agreement take-up projections. Our low-cost scenario is based on low-cost assumptions, low number of premises combined with the high voluntary agreement up-take projections. Similarly, our high-cost scenario includes all high-cost assumptions, high number of premises, with the low voluntary agreement up-take projections.

Disregarded options

We have explored several other policy options but disregarded a number of them due to their limited effectiveness in meeting the policy objectives. The following options were considered but most were rejected as they would not encourage a reduction in food waste at the same speed and scale as the options proposed in the consultation.

Information and education is already in place and Defra have been funding WRAP to conduct this work. WRAP have been working with the UK's major retailers and a proportion of the largest food manufacturers and HaFS businesses on food waste since 2012. Over this time, WRAP have published a wide range of guidance documents, tools and case studies aimed at helping businesses to take action on and reduce food waste from their businesses. WRAP have also engaged with a wide range of companies through conferences, workshops and on a one-to-one basis. WRAPs guidance documents and case studies are developed in conjunction with international and national experts, and relevant industry experts. These highlight to business why making change is important to them as well as the UK as a whole, and what changes are needed and how these can be brought about. To date, using various voluntary approaches, WRAP

estimates that around 50% of large food businesses have engaged with or made use of these materials to varying degrees, but other mechanisms are needed to achieve a greater level of engagement and action.

Earned recognition could work to some extent by reducing regulatory burdens on food businesses that have shown good practice by reducing their food waste. However, to show good practice, businesses must measure and report their food waste in a consistent way using the same approach to ensure a level playing field. Therefore, improved food waste measurement and reporting is the prerequisite of earned recognition and should be implemented to ensure a standard procedure for food waste measurement before earned recognition can be explored.

A taxation or charge policy. Although this would likely be effective in reducing food waste if large businesses were charged for the food waste they produce, taxing food waste has already been explored and it was found that it would be difficult to tax something that is unavoidable (around 35% of all business food waste consists of 'inedible parts' of food).

In addition, it is important to note that improved food waste measurement and reporting for large food businesses is not the only Government intervention in addressing the financial and environmental impacts of food waste. This measure should be viewed as part of a wider package of reforms that uses different policy instruments from the Resources and Waste Strategy as well as work that WRAP has been promoting on food waste reduction since 2005.

Do-Nothing Option: Maintain current measures

In the Do-Nothing Option, we use the baseline figures, which are the number of businesses expected to sign up to the FWRR voluntary agreements in England. We assume that these will all be large businesses. This assumption is based on the current situation where no medium-sized food businesses have signed up to the voluntary agreement and are not expected to do so going forward.

Figures from WRAP indicate 207 food businesses in the UK (197 in England) have given evidence of implementing 'Target, Measure, Act' (TMA) and are therefore measuring their food waste. Table 9 shows how much revenue from the sector are captured under the FWRR for businesses operating in England.

Table 9: Total sector size of large businesses (business number and revenue) and FWRR signatories implementing TMA

	Total revenue in each food sector (£bn)	Revenue of FWRR signatories implementing TMA (£bn)**	% sector revenue of FWRR signatories implementing TMA
HaFS*	101	13	13%
Retail	194	171	88%
Manufacturing	105	50	48%

*includes HaFS wholesale

**includes all signatories in UK, however, we have been informed that only two do not operate in England

Source: FAME, ONS and WRAP data

Table 9 shows that, while the FWRR has captured a large portion of the sector revenue, there are still many large businesses left to sign-up to and implement it. WRAP expects the number of business signatories operating in England to reach a maximum of 261 by 26/27, used in our high uptake scenario. This voluntary approach, while ambitious, is not projected to capture all large food businesses. As a best estimate, 238 businesses operating in England will be captured through this approach by 33/34. This is out of the 509 large businesses operating in England.

Although the FWRR signatories represent a significant proportion of the total sector revenue (i.e., 56%), Table 10 shows that they target just under one-third of total business food waste. We use current revenue shares to apportion the total food waste to FWRR signatories.

Table 10: Food waste from large businesses implementing TMA

	FWRR signatories % of the sector revenue	Total food waste from large food businesses (t, England)	Estimated food waste from FWRR signatories (t)
HaFS*	13%	426,206	54,858
Retail	88%	220,536	194,390
Manufacturing	48%	933,340	444,447
Total	NA	1,580,082	693,696

*includes HaFS wholesale
Source: Data from WRAP
Caveat: Calculations using the rounded percentages may not yield the same results as those in the tables.

There is not a robust estimate of food waste from the UK wholesale sector. WRAP's estimate of food waste from the HaFS sector includes foodservice wholesale (and therefore the turnover used within this IA also includes this part of the wholesale sector), whereas the retail food waste estimate excludes grocery wholesale and Cash & Carry businesses (and therefore the turnover used for this sector is restricted to grocery retail only).

In this IA we have estimated the total costs of the Do-Nothing Option over the same appraisal period as the policy options. This is to provide perspective on the marginal additional costs of each policy option. Note that each option provides a cost analysis of all additional costs above the Do-Nothing Option, so all costs in the options are associated with costs to the businesses that would be enforced to measure and report their food waste plus the cost of enforcement, with the Do-Nothing Option business costs removed. The total discounted cost of doing nothing is £25.1m over the 12-year appraisal period. Option 1 would incur additional total costs of £11.7m, Option 2 £63.8m and Option 3 £142.1m over the same appraisal period (all discounted).

Option 1: Enhanced voluntary agreement

The proposed Option 1 is to enhance the FWRR voluntary agreement by re-introducing the Field Force and enhancing WRAP's business to business communications work.

Monetised and non-monetised costs and benefits of Option 1

In this option, we include the costs of enhancing the FWRR voluntary agreement as well as the benefits associated with the additional number of businesses projected to sign up to the programme.

Costs

We have monetised the following costs under Option 1:

- Additional costs from 24/25 associated with the Field Force – managed by WRAP and funded by Defra
- Enhancing business communications campaigns – managed by WRAP and funded by Defra
- Costs to additional businesses signing up including set up, familiarisation and reporting costs

Re-introducing the Field Force

WRAP previously received funding from Defra to accelerate the take-up of the voluntary agreement by developing a Field Force team. This team is made up of sector specialists with expert knowledge and a strong network of contacts to engage with influential individuals in the food industry. There were seven sector specialists recruited who worked as part of a team with WRAP's staff. This Field Force continued to encourage businesses to take-up TMA until March 2021. In an enhanced voluntary agreement, we propose to extend the funding for this Field Force from 24/25 up to 33/34. These additional costs are provided in

Table ***11***.

Enhancing business communications campaigns

This is complementary to the Field Force and would help to get more businesses into a position to prioritise their engagement on this issue. Currently WRAP have a campaign, 'Guardians of Grub'[38], aimed at empowering professionals from across the hospitality and food service sector to measure and reduce the amount of food that is thrown away in their establishments. The intention here would be to enhance this campaign as well as encourage other campaigns to develop to address other areas of the food supply chain such as retail, manufacturing and wholesale. Through advice by WRAP, we estimate that enhancing this business-to-business communications work would cost £300,000 per year from 24/25.

Costs to large businesses signing up to the voluntary agreement

Costs to businesses include set-up costs, familiarisation costs, and measuring and reporting costs. In this option, assumptions associated with large businesses are used. These costs are described in more detail in the Key Assumptions section of this report. These are the direct costs that additional businesses signing up to the voluntary agreement would incur. We have assumed that those additional businesses will continue to sign up to the voluntary agreement over the 12-year period. Hence set-up costs and familiarisation costs are dispersed over the 12-year appraisal period.

Similarly, reporting costs increase over the period as the number of additional businesses that sign up to the voluntary agreement above the Do-Nothing Option increases. Costs to business are shown in

[38] Guardians of Grub, WRAP

Table ***11*** along with the costs of maintaining the Field Force and enhancing communications activities. The high and low-cost scenarios represent the uncertainty in the cost assumptions and premises numbers, as shown in the Key Assumptions section.

WRAP estimate that a maximum of 50 further businesses in England would be measuring their food waste, additional to the baseline figures included in the Do-Nothing Option. This would mean that in total, as a best estimate, 288 businesses will sign-up to the FWRR voluntary agreement. The results in

Table ***11*****Error! Reference source not found.** show how these numbers are expected to increase over the 12-year appraisal period.

Table 11: Costs under Option 1 (undiscounted and presented in 2021 prices)

Year	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
Number of additional businesses signing up to the FWRR voluntary agreements (cumulative)	0	0	0	10	20	30	35	40	45	50	50	50
Number of additional businesses signing up to the FWRR voluntary agreements (per year)	0	0	0	10	10	10	5	5	5	5	0	0
Costs to government												
Maintain Field Force (£m)	0.0	0.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Enhance B2B communications (£m)	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
One-off set-up costs*												
High-cost scenario (£m)	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0
Central cost scenario (£m)	0.0	0.0	0.0	0.15	0.15	0.15	0.08	0.08	0.08	0.08	0.0	0.0
Low-cost scenario (£m)	0.0	0.0	0.0	0.1	0.1	0.1	0.05	0.05	0.05	0.05	0.0	0.0
One-off familiarisation costs*												
High-cost scenario (£m)	0.0	0.0	0.0	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.0	0.0
Central cost scenario (£m)	0.0	0.0	0.0	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.0	0.0
Low-cost scenario (£m)	0.0	0.0	0.0	0.01	0.01	0.01	0.0	0.0	0.0	0.0	0.0	0.0
Reporting costs**												
High-cost scenario (£m)	0.0	0.0	0.0	0.17	0.35	0.52	0.61	0.70	0.79	0.87	0.87	0.87
Central cost scenario (£m)	0.0	0.0	0.0	0.12	0.24	0.36	0.42	0.48	0.54	0.60	0.60	0.60
Low-cost scenario (£m)	0.0	0.0	0.0	0.07	0.13	0.20	0.23	0.26	0.30	0.33	0.33	0.33
Total cost to business (set-up, familiarisation and reporting costs)												
High-cost scenario (£m)	0.0	0.0	0.0	0.39	0.56	0.74	0.72	0.81	0.89	0.98	0.87	0.87
Central cost scenario (£m)	0.0	0.0	0.0	0.28	0.40	0.52	0.50	0.56	0.62	0.68	0.60	0.60
Low-cost scenario (£m)	0.0	0.0	0.0	0.17	0.24	0.30	0.28	0.32	0.35	0.38	0.33	0.33
Total costs (costs to government and costs to business)												
High-cost scenario (£m)	0.0	0.0	1.20	1.59	1.76	1.94	1.92	2.01	2.09	2.18	2.07	2.07
Central cost scenario (£m)	0.0	0.0	1.20	1.48	1.60	1.72	1.70	1.76	1.82	1.88	1.80	1.80
Low-cost scenario (£m)	0.0	0.0	1.20	1.37	1.44	1.50	1.48	1.52	1.55	1.58	1.53	1.53

*These costs are incurred in the first year and are therefore staggered throughout the period as additional businesses sign up to the enhanced voluntary agreement. The costs are calculated by combining the number of additional businesses signing up (per year) and the set-up costs or familiarisation costs presented in the key assumptions section.

**These costs are incurred per year once a business has signed up to the enhanced voluntary agreement. The costs are calculated by combining the number of additional businesses signing up to the voluntary agreements (cumulative) and the reporting costs presented in the key assumptions section.

Benefits

In this impact assessment, we focus on the costs and benefits of reporting food waste data. In this option, we have not identified any direct benefits arising from enhancing the voluntary agreement. This is because the benefits arise from the action taken to tackle food waste rather than direct measurement of it. The benefits that we have identified are indirect and include the food waste reduced through the actions taken by those additional businesses signing up to the voluntary agreement and measuring and reporting their food waste.

We have not been able to quantify the amount of food waste reduction that would be driven by the enhanced voluntary agreement. While there are many case studies concerning the benefits

delivered through food waste measurement, these are due to further action taken after the measurement has already been adopted. The cost of that action, which in itself is indirect, would need to be taken into account to include these indirect benefits.

Non-monetised benefits

The direct effect of enhancing the voluntary agreement would be that more businesses would sign up to the FWRR voluntary agreement. However, we have not identified any direct benefits related to reducing food waste under this option. This is because the benefits arise from the action taken to tackle food waste as a result of public reporting, which is an indirect benefit.

Business engagement

WRAP has been engaging businesses around measuring and reporting their food surplus and waste since 2005. The Courtauld Commitments are a series of voluntary agreements that have improved resource efficiency and reduced the carbon and wider environmental impact of the UK food sector[39]. In the Courtauld 1 (2005-2009) and Courtauld 2 (2010-2012) commitments, food businesses were asked to sign up to send combined food surplus, food waste and packaging data to WRAP. By 2012, 68 businesses had committed to Courtauld 2 of which most were retailers and manufacturers. Not all were separately measuring and reporting their food surplus and waste, but they were willing to act on their commitments. Courtauld 3 (2013-2015) saw a further increase in the number of businesses committed to measuring and reporting on their food surplus and waste.

This led to the development of Courtauld 2025 (2015-2021). This was a commitment to identify priorities, develop solutions and implement changes to cut the carbon, water and waste associated with food and drink by at least one-fifth in ten years. As part of this, a number of businesses have committed to measuring and reporting their food waste with the 2020 progress report[40] highlighting that 171 businesses are showing evidence of implementing this. The Field Force , was established to encourage and engage more businesses to sign up to the FWRR voluntary agreement and ran between 2018 and 2021.

The new phase of commitments, Courtauld 2030, launched in 2021 and includes an updated target of a 50% per capita reduction in food waste in manufacturing, retail, hospitality and food service and households by 2030 against the UK's 2007 baseline. This ensures domestic join up with the SDG 12.3 global target.

Given that there has been so much work already to engage businesses to measure and report their food waste since 2005, WRAP does not expect many additional businesses to voluntarily sign up to measure their food waste, beyond the assumptions in the Do-Nothing Option. This is due to several barriers that experts at WRAP have highlighted to the government, based on their experience of managing the voluntary agreements. These barriers include:

1. **Reaching non-engaged businesses.** As part of the 'Step up to the Plate' campaign, both Defra and WRAP have intensively tried to engage more businesses. Whilst there has been some success, most businesses committed to these initiatives are those that have shown interest from the beginning when WRAP started to engage businesses in 2005. A few new businesses have been reached through a combination of ministerial, retailer CEO and Champions 12.3 letters, trade body organised workshops and one-to-one engagement. The Field Force were recruited based on their industry experience and networks to connect with new businesses. Overall, the experience has shown that businesses have to want to engage and have internal senior-level support in order for such approaches to have an impact.

[39] History of the Courtauld Commitment, WRAP
[40] Food Waste Reduction Roadmap, WRAP

2. **Lack of awareness.** For many businesses, there is a lack of awareness that they are producing a significant amount of food waste, or that food waste is something that can be addressed. WRAP have engaged with many businesses from across the supply chain that consider themselves to be highly efficient and not to have significant waste, but following investigations discover the opposite. These include major brands, manufacturers and HaFS businesses. Similarly, businesses that consider they have done all they can to reduce waste can find ways to reduce it further, with support. This lack of awareness of the scale of the opportunity presents a major barrier to engage more businesses to commit to the voluntary agreement.

3. **Lack of incentive**. For HaFS businesses where much of their food waste is derived from customer's plates and has therefore already been paid for, the commercial case for action can be lacking, and often reducing portion size (and thus minimising waste) can be seen as a negative impact on marketing.

4. **Perceived lack of resources.** Food businesses operate in an intensely competitive market, competing with businesses in the UK and overseas. Margins are tight and many have slimmed down their 'non-core' workforce, which includes those responsible for areas like Corporate Social Responsibility. This means that many businesses do not have the resources or 'bandwidth' to engage with issues such as food waste, even though there is a strong business case to act on it to improve efficiency and competitiveness.

5. **Competing priorities.** There are a multitude of competing calls for business to take action on environmental protection. It can be difficult to get sufficient attention on the issue of food waste as this is less well understood by many consumers.

6. **Perceived competence.** Many businesses do not have confidence in their capabilities to measure food waste robustly, or in the data that is generated. This is particularly the case for those operating in the HaFS sector. In this sector, it can be challenging due to the high percentages of plate waste. Business models may also make it challenging due to the large numbers of semi-autonomous franchised sites. Such businesses often do not engage on the issue and as such, choose to focus on other areas of sustainability.

7. **Reputational and commercial risk**. Many businesses are concerned about publicly reporting their data, even if they do undertake measurement. Comparisons with other food businesses may not show them in a positive light.

Option 2: Improved food waste measurement and reporting for large businesses

The proposed Option 2 is to make reporting of food waste mandatory for large businesses only in England.

Monetised and non-monetised costs and benefits of Option 2

Costs

We have been able to monetise the following direct costs under Option 2:

- One-off familiarisation costs to businesses

- One-off set-up costs to businesses, such as IT systems
- Ongoing annual reporting costs to businesses (i.e., staff costs)
- Ongoing annual third-party food waste data quality assurance costs to businesses.
- Operational set up costs to the regulator
- Ongoing annual operational costs to businesses
- One-off IT set up costs to the regulator
- Business support costs to the regulator
- One-off enforcement of regulation costs to the regulator

These costs are calculated based on assumptions within the Key Assumptions section in these IA. Indirect costs are described towards the end of this Costs section.

Monetised Costs

Set up costs to businesses

As mentioned in the key assumptions section, we assume a low estimate of £10,000, central estimate of £15,000 and high estimate of £20,000 for one-off set up costs to business. We estimate that in the first year of implementation 298, 282, and 263 businesses (total businesses minus baseline high, medium and low-cost scenarios) will be affected by the proposed policy in this option, i.e., additional to the baseline.

Table 12: Year 1 additional set-up costs for large food businesses (undiscounted and presented in 2021 prices)

	High	**Central**	**Low**
Total set-up costs for all businesses (£)*	5,967,366	4,235,525	2,633,683

*Set-up costs have been calculated by combining the assumptions in the key assumptions section with the number of businesses that would be required to report Table 2, additional to the baseline Table 7.

These are one-off costs, incurred during the first year of policy implementation and are adjusted for the Do-Nothing Option.

Familiarisation costs to businesses

Familiarisation costs have been calculated using the estimates on the time required by staff employed in the business HQ or central functions as well as those at the local premises. These are the costs associated with the familiarisation of the policy for each business and premises. The median wage for the relevant sector has been used to calculate the cost of an IT professionals and retail assistant's time (shown in Key Assumptions section) to undertake these activities, with a 22% uplift to account for non-wage related costs such as employer National Insurance and pension contributions.

Table 13: Familiarisation costs to large food businesses (undiscounted and presented in 2021 prices)

	High	**Central**	**Low**
Total familiarisation cost for all businesses (£)*	60,722	57,302	53,280
Total familiarisation cost for all premises (£)**	746,969	485,517	235,297
Total familiarisation costs (£)	807,691	542,819	288,577

*These costs have been calculated by combining the time required by staff employed by the business HQ or central functions (2 FTE days per business of IT specialists' time), the median hourly wage for each sector, a 22% uplift and the number of businesses additional to the baseline in the year 24/25.
**These costs have been calculated by combining the time spent at the local premises (1hr of retail assistants' time), the median hourly wage for each sector, a 22% uplift and the number of premises minus the baseline in the year 24/25.

These are one-off costs, incurred during the first year of the policy implementation. They have been adjusted to take account of FWRR uptake under the Do-Nothing Option.

Ongoing reporting costs to businesses

Ongoing reporting costs have been calculated using the estimates in Table 8 of the time required by staff employed in the business HQ or central functions as well as those at the local premises. These costs will be incurred yearly and are comprised of data acquisition and assurance per business premises and per business unit.

The estimated average annual cost for all premises and all businesses have been added together to estimate the total average annual reporting costs to business. There may also be some costs related to internal/external communications and possibly costs related to external support (e.g. consultants). We do not have evidence on the make-up of these costs, and we seek to improve our evidence base through the consultation.

Table 14: Average annual reporting costs by large food businesses (undiscounted and current prices)

	High	**Central**	**Low**
Average annual reporting cost for all businesses (£)*	150,496	128,437	108,505
Average annual reporting cost for all premises (£)**	8,058,591	5,173,944	2,463,941
Total (£)	8,209,087	5,302,381	2,572,446

*These costs have been calculated by combining the time required by staff employed by the business HQ or central functions shown in Table 8, the median hourly wage for each sector, a 22% uplift and the number of businesses additional to the baseline in each year. These are the average annual costs over the 12-year appraisal period.
**These costs have been calculated by combining the time spent at the local premises shown in Table 8, the median hourly wage for each sector, a 22% uplift and the number of premises minus the baseline in each year. These are the average annual costs over the 12-year apprasial period.

Annual third-party quality assurance costs to businesses

Businesses could be required to commission an independent consultant to provide quality assurance checks annually. This role of this independent consultant would be to assess food waste measurement by businesses and check the accuracy of data. As a conservative estimate, at this stage, we assume 100% businesses will be required to provide this check. Based on expert advice provided by WRAP, we assume the costs of this for large businesses will be between £5,000 and £7,000 (£6,000 as a best estimate).

Table 15: Average annual third-party quality assurance costs for large businesses in England (undiscounted and current prices)

	High	Central	Low
Total costs for all businesses (£)*	1,723,857	1,363,467	1,042,368

*These costs have been calculated by combining the cost of the annual quality assurance with the number of businesses additional to the baseline in each year. These are the average annual costs over the 12-year apprasial period.

Operational costs

These costs will involve managing the scheme and checking that businesses are reporting the data and complying with the regulations. It includes the cost of checking the data submitted and independent food waste quality assurance checks provided by large food businesses. We have been provided with cost estimates from the Environment Agency who are responsible for enforcing laws that protect the environment. It is proposed businesses will cover these operational costs via a charging scheme from the start of the policy in 24/25. Under option 2, improved measurement and reporting for large businesses, there is an estimated annual operational cost of £348,000.

Set up costs

To set up the scheme, the regulator require investment in a new IT system, which is estimated to cost £500,000 in 22/23. There are also additional staff costs required to manage the acquisition of the new IT system and set-up in 22/23 and 23/24. These staff costs amount to £220,000 and £200,000 respectively. These are costs to the public sector.

Other costs to the regulator

The regulator will also incur business support costs of £200,000 as well as £100,000 of enforcement of regulation costs in 24/25.

Total costs to business and the public sector

Table 16: Total costs (£m) to business and the public sector over the 12-year appraisal period under Option 2 (undiscounted and 2021 prices)

Year	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	Total
High	0.7	0.2	19.4	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	130.7
Central	0.7	0.2	13.6	8.4	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	89.5
Low	0.7	0.2	8.1	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	51.0

These projections have been calculated by combining operational costs, IT set-up costs, business support costs, enforcement of regulation costs, FTE costs, discovery costs, set-up costs, familiarisation costs, reporting costs and third-party quality assurance costs. The total costs are decreasing over the period because we remove costs associated with businesses expected to sign-up to the FWRR voluntary agreement. The number of businesses expected to sign-up to the voluntary agreement is increasing over time, shown in

Table 6.

Non-monetised costs

This option focuses solely on the costs and benefits of reporting food waste data. There may be some indirect effects associated with the actions that businesses take to reduce food waste. For example, there will be indirect costs associated with efforts to reduce food waste from the supply

chain, including investing in redistribution activities. On the other hand, businesses that invest in reducing food waste will experience reduced costs related to waste management, i.e. from less food being wasted. Businesses may also benefit financially from the procurement of less food through reducing food waste, through better food management systems in place. This dynamic is described in the benefits section below. These impacts have not been quantified because it is very difficult to predict what actions businesses will take. Evidence shows that the cost savings of preventing food waste will typically outweigh the costs associated with any investment to reduce food waste[41]. This is described with examples in the following benefits section.

We welcome evidence in the consultation around additional costs (monetised and non-monetised) that we may have missed.

Benefits

We have not identified any direct benefits arising from improved food waste measurement and reporting. This is because the benefits arise from the action taken to tackle food waste rather than direct measurement of it.[42] The benefits that we have identified are indirect and are as follows:

- Food waste reduction financial benefit to businesses
- Food waste reduction environmental benefits
- Reduction associated with packaging waste

We have not been able to quantify the amount of food waste reduction that would be driven by food waste measurement alone. While there are many case studies concerning the benefits delivered through food waste measurement, these are due to further action taken after the measurement has already been adopted. The cost of that action, which in itself is indirect, would need to be taken into account if to include these indirect benefits. However, to demonstrate the scale of potential indirect benefits, we have used some case studies below.

Food waste reduction financial benefit to businesses

Food businesses that report and measure their food waste benefit from improved data availability. This allows them to identify opportunities to reduce food waste and measure their progress accordingly. Food waste that could have been avoided is costly to businesses due to lost revenue, higher operational costs and additional costs associated with its disposal.

If businesses participate in successful action to reduce food waste, it can reduce their overall costs. These savings could arise from reduced quantity of food purchased and lower operational costs such as: energy, labour, water, transportation, administration that would have been needlessly consumed in the production of food destined to be wasted. This would in turn lead to lower waste management costs, reduced quantities of raw materials required and extra sales from using food that would have been thrown away during preparation in other meals.

Several studies have been undertaken by Champions 12.3[43] and WRAP. They show that businesses that invested in food waste reduction consistently received a positive return on their investment[44]. Analysis undertaken by Champions 12.3 found that 99% of companies had a positive return on their investment with half of the sites experiencing a return of £14 for every £1 invested in food waste reduction activity.[45] Sector specific analysis (undertaken by WRAP and WRI on behalf of Champions 12.3) found that hotels saved approximately £7 for every £1 invested in food waste reduction. They also found that 90% of analysed hotels were able to keep their investment below $20,000 and recoup 70% of their investment within the first year of

[41] The Business Case for Reducing Food Loss and Waste, WRAP 2017
[42] Indirect impacts refer to those social, economic and environmental impacts that are not a direct result of the regulation
[43] Champions 12.3
[44] The Business Case for Reducing Food Loss and Waste, 2017, The Business Case for Reducing Food Loss and Waste: Catering, Champions 12.3 2018
[45] The Business Case for Reducing Food Loss and Waste, 2017

implementing food waste measures.[46] This suggests that there is a strong business case to reduce food waste in terms of achievable financial savings.

Experience of a small HaFS business provides another example. This business was able to reduce their costs by £3,000 through 'simple or no cost measures' over a 6-month period when they took part in WRAP's 'Your Business is Food' project. They estimate these measures, alongside their investment in stock control systems, is now saving their business around £15,000 per year.[47] Similarly, a WRAP report that investigated the true costs of food waste in the HaFS sector found that potential annual savings from food waste reduction action could equate to nearly £10,000 per outlet.[48] Furthermore, the FoodSave project, in which 76 SMEs in the HaFS sector took part in a 4-week food waste audit, led to an average annual waste weight reduction of 1.64 tonnes and estimated annual saving of £6,063 per business.[49]

Reductions in cost of food waste may also be derived from estimated costs per tonne of food waste, these differ significantly for each sector and estimates of these are included in

Table **17** below:

Table 17: Cost per tonne of UK food waste by sector

Sector	**£/t**
Retail[50]	3,099
Manufacturing[51]	1,189
HaFS[52]	2,775

Source: WRAP (we do not have this data for the wholesale sector)

Data available from large businesses that have been reporting publicly as part of their work on implementing 'Target, Measure, Act' and are signatories of the FWRR show significant reduction in their food waste as indicated below:

- Co-op: 29% reduction across all stores 2018 vs 2015[53]
- Tesco: 8% reduction across all stores 2018/19 vs 2013/2014[54]
- Nestlé: 8% reduction across UK operations 2018 vs 2016[55]
- Kerry Foods: 50% reduction at one site 2018 vs 2017[56]
- Morrisons: 13% reduction across all stores 2016 vs 2017[57]

There is limited evidence available on cost savings of food waste reduction for businesses. Therefore, we welcome more information on the cost of food waste to businesses as well as any potential savings that can be made as a result of action to reduce food waste in this consultation.

Food waste reduction environmental benefits

Food waste in the UK is associated with 36 million tonnes of CO_2 equivalent emissions every year.[58] The environmental damage of the unnecessary production of food that is subsequently wasted is extensive. From the land and raw materials used in production to its unnecessary

[46] The Business Case for Reducing Food Loss and Waste, WRAP 2017
[47] Your Business is Food case study - Dragon Hotel, WRAP 2021
[48] The true cost of waste in hospitality and food service, WRAP 2013
[49] https://ec.europa.eu/environment/europeangreencapital/londons-foodsave-scheme/
[50] Quantification of food surplus, waste and related materials in the supply chain, WRAP
[51] Quantification of food surplus, waste and related materials in the supply chain, WRAP
[52] Quantification of food surplus, waste and related materials in the supply chain, WRAP
[53] Quantification of food surplus, waste and related materials in the supply chain, WRAP
[54] Quantification of food surplus, waste and related materials in the supply chain, WRAP
[55] Quantification of food surplus, waste and related materials in the supply chain, WRAP, Kerry Foods War on Waste, 2019

[57] Reducing food waste, Morrisons
[58] UK Food System GHG Emissions, WRAP 2021.

transportation, water footprint and the associated packaging waste involved in preparing food for consumption. Increased intensity of farming encouraged by inefficient use of resources also presents a threat to our natural ecosystems and habitats, through greater demand for land to be cultivated for farming and the use of pesticides and fertilisers on this land.

In addition to this, once disposed of, food waste can cause further environmental damage in the form of GHG emissions. These are produced for each of the potential waste management routes for food waste, the extent of which is detailed below.

Table 18: GHG Emissions associated with disposal routes

	Production Emissions	**Energy Recovery (combustion)**	**Energy Recovery (AD)**	**Composting**	**Landfill**
Food & Drink Waste Emissions (Kg CO2 eq emissions per tonne)	4,060	-249	-249	-39	627

Source: BEIS GHG conversion factors.

When food waste is present in landfill it decomposes anaerobically over long periods of time, due to a lack of oxygen in tightly packed piles of waste. This process produces methane, a potent GHG gas that has a Global Warming Potential 34 times that of CO_2[59] and therefore a significant global warming effect on the atmosphere. In addition to the production of methane, anaerobic decomposition produces leachate, a toxic substance that, if not managed correctly, can find its way into rivers. This reduces water and soil quality, posing a threat to aquatic and terrestrial wildlife.

Reduction in associated packaging waste

In some sectors of the food industry, a reduction in food waste may also result in a reduction in associated packaging waste that would usually have been disposed of alongside the food. This impact was present in the retail sector in particular. Reduced packaging waste could present cost savings for businesses through greater resource efficiency and lower waste management costs.

Other impacts

Consumer response to business action or lack of action on food waste

By reporting food waste publicly, businesses will be held accountable for their action to reduce food waste. As this information will be reported publicly this ensures that consumers and other stakeholders are able to make more informed choices. As a result of this new transparent and accessible information businesses that show poor progress on reducing food waste may find their sales revenue from environmentally conscious customers reduced. Meanwhile businesses that report significant food waste reduction in their figures may benefit from improved brand reputation and image with the potential for this to impact on their sales. This impact may affect businesses in the different sectors in different ways.

[59] over 100 years, IPCC AR5 Synthesis Report

Option 3: Improved food waste measurement and reporting for large and medium-sized businesses

The proposed Option 3 is to make reporting of food waste mandatory for large and medium-sized business in England, this option is less cost effective than Option 2.

Monetised and non-monetised costs and benefits of Option 3

Costs

We have been able to monetise the following costs under Option 3:

- One-off familiarisation costs to businesses
- One-off set-up costs to businesses, such as IT systems
- Ongoing annual reporting costs to businesses (i.e. staff costs)
- Ongoing annual third-party food waste data quality assurance costs to businesses
- Operational set up costs to the regulator
- Ongoing annual operational costs to businesses
- One-off IT set up costs to the regulator
- Business support costs to the regulator
- One-off enforcement of regulation costs to the regulator

These costs are calculated based on assumptions within the Key Assumptions section in this IA. Indirect costs are described towards the end of the costs section.

Monetised Costs

Set up costs to businesses

Table 19 shows the set-up costs for large and medium-sized food businesses. To calculate these estimates, we have used the range of £10,000 to £20,000 (£15,000 represents our central estimate) for large businesses and the range of £700 to £2,500 (£1,600 represents our central estimate) for medium-sized businesses, as described in the Key Assumptions section. We estimate that in the first year of implementation 301, 290, and 275 large businesses (total businesses minus baseline high, medium and low-cost estimate) and 3,725 medium-sized businesses will be affected by the proposed policy in this option, additional to the baseline.

Table 19: Year 1 additional set-up costs by food supply chain sector for large and medium-sized food businesses, (undiscounted and presented in 2021 prices)

	High	**Central**	**Low**
Total (£)*	15,280,995	10,196,247	5,241,499

*Set-up costs have been calculated by combining the assumptions in the key assumptions section with the number of businesses that would be required to report, shown in Table 2, additional to the baseline, shown in Table 7.

These are one-off costs, incurred during the first year of policy implementation and are adjusted for the Do-Nothing Option.

Familiarisation costs to businesses

Familiarisation costs have been calculated using the estimates for the time required by staff employed in the business HQ or central functions as well as those at the local premises. These are the costs associated with the familiarisation of the policy for each business and premises. The

median wage for the relevant sector has been used to calculate the cost of an IT professionals and retail assistant's time (shown in Key Assumptions section) to undertake familiarisation activities, with a 22% uplift to account for non-wage related costs such as employer National Insurance and pension contributions. The wages are considered the same for large and medium-sized businesses.

Table 20: Year 1 additional familiarisation costs to large and medium-sized food businesses (undiscounted and presented in 2021 prices)

	High	Central	Low
Total familiarisation cost for all businesses (£)*	769,870	766,450	762,428
Total familiarisation cost for all premises (£)**	1,000,783	654,726	319,901
Total familiarisation costs (£)	1,770,653	1,421,176	1,082,329

*These costs have been calculated by combining the time required by staff employed by the business HQ or central functions (2 FTE days per business of IT specialists' time), the median hourly wage for each sector, a 22% uplift and the number of businesses additional to the baseline in the year 24/25.
**These costs have been calculated by combining the time spent at the local premises (1hr of retail assistants' time), the median hourly wage for each sector, a 22% uplift and the number of premises minus the baseline in the year 24/25.

These are one-off costs, incurred during the first year of the policy implementation. They have been adjusted to take account of FWRR up-take under the Do-Nothing Option.

Ongoing reporting costs to businesses

Ongoing reporting costs have been calculated using the estimates in Table 8 of the time required by staff employed in the business HQ or central functions as well as those at the local premises. These costs will be incurred yearly and are comprised of data acquisition and assurance per business premises and per business HQ. The assumptions are the same for large and medium-sized businesses, only the number of businesses and premises are different.

The estimated average annual cost per premises and per business have been added together to estimate the total average annual reporting costs to business. There may also be some costs related to internal/external communications and possibly costs related to external support (e.g. consultants). We do not have evidence on the make-up of these costs and invite responses in the consultation to improve our evidence base.

Table 21: Average annual reporting costs for large and medium-sized food businesses (undiscounted and 2021 prices)

	High	Central	Low
Average annual reporting cost for all businesses (£)*	2,832,324	2,810,265	2,790,334
Average annual reporting cost for all premises (£)**	10,808,240	7,007,043	3,380,491
Total (£)	13,640,565	9,817,309	6,170,824

*These costs have been calculated by combining the time required by staff employed by the business HQ or central functions shown in Table 8, the median hourly wage for each sector, a 22% uplift and the number of businesses additional to the baseline in each year. These are the average annual costs over the 12-year appraisal period.
**These costs have been calculated by combining the time spent at the local premises shown in Table 8, the median hourly wage for each sector, a 22% uplift and the number of premises minus the baseline in each year. These are the average annual costs over the 12-year appraisal period.

Annual third-party quality assurance costs to businesses

Businesses could be required to commission a third-party consultant to provide quality assurance checks annually. This consultant will assess food waste measurement by businesses and check the accuracy of data. As a conservative estimate, at this stage, we assume 100% of businesses will be required to provide this. Based on expert advice provided by WRAP, we assume the costs of this will be between £5,000 and £7,000 (£6,000 as a best estimate) for large businesses and between £500 and £2,000 (£1,250 as a best estimate) for medium-sized businesses, shown in the Key Assumptions section.

Table 22: Average annual quality assurance costs for large and medium-sized businesses in England (undiscounted and current prices)

	High	**Central**	**Low**
Average annual quality assurance costs for all businesses (£)*	7,932,943	5,244,145	2,594,639

*These costs have been calculated by combining the cost of the annual quality assurance with the number of businesses additional to the baseline in each year. These are the average annual costs over the 12-year appraisal period.

Operational costs

These costs will involve managing the scheme and checking that businesses are reporting the data and complying with the regulations. It includes the cost of checking the data submitted and independent food waste quality assurance checks provided by food businesses. We have been provided with cost estimates from the Environment Agency who are responsible for enforcing laws that protect the environment. It is proposed businesses will cover these operational costs via a charging scheme from the start of the policy in 24/25. Under Option 3, requiringmeasurement and reporting for large and medium businesses, there is an estimated annual operational cost of £594,000.

Set up costs

To set up the scheme, the regulator requires investment in a new IT system, which is estimated to cost £500,000 in 22/23. There are also additional staff costs required to manage the acquisition of the new IT system and set-up in 22/23 and 23/24. These staff costs amount to £220,000 and £200,000 respectively. These are costs to the public sector.

Other costs to the regulator

The regulator will also incur business support costs of £200,000 in 24/25, as well as £100,000 of enforcement of regulation costs in 24/25.

Total costs

Table 23: Total costs (£m) to businesses and the public sector over the 12-year appraisal period under Option 3 (undiscounted and 2021 prices)

	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	Total
High	0.7	0.2	43.9	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	283.1
Central	0.7	0.2	30.8	18.7	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	199.5
Low	0.7	0.2	17.9	11.2	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	118.7

These projections have been calculated by combining operational costs, IT set up costs, business support costs, enforcement of regulation costs, FTE and discovery costs, set-up costs, familiarisation costs, reporting costs and quality assurance costs. The total costs are decreasing over the period because we remove costs associated with businesses expected to sign-up to the voluntary agreements. The number of large businesses expected to sign-up to the voluntary agreements is increasing over time, shown in

Table 6.

Non-monetised costs

This option focuses solely on the costs and benefits of reporting food waste data. There may be some indirect effects associated with the actions that businesses take to reduce food waste. For example, there will be indirect costs associated with efforts to reduce food waste from the supply chain, including investing in redistribution activities.

On the other hand, businesses that invest in reducing food waste will experience reduced costs related to waste management, i.e., from less food being wasted. Businesses may also benefit financially from the procurement of less food through reducing waste and better food management systems being in place.

This dynamic is described in the benefits section under Option 2. These impacts have not been quantified because it is very difficult to predict what actions businesses will take. Evidence shows that the cost savings of preventing food waste typically outweigh the costs associated with any investment to reduce food waste[60].

We welcome evidence in the consultation around additional costs (monetised and non-monetised) that we may have missed.

Benefits

The types of benefits are similar to those under Option 2, where we assess improved reporting for large businesses only. No direct benefits have been identified and indirect benefits are difficult to quantify due to the reasons discussed in Option 2. Including medium-sized businesses would target additional food waste and therefore the indirect benefits identified in Option 2 would be extended to medium-sized businesses in this option. These indirect benefits from food waste reduction include: a financial benefit to large and medium-sized businesses, broader environmental benefits and a reduction in packaging waste. These are all described with examples under Option 2.

[60] The Business Case for Reducing Food Loss and Waste, WRAP 2017

Evidence from WRAP suggests that improved reporting to engage businesses is less suited to small and medium-sized businesses. This is for the following reasons:

1. Medium-sized businesses have a smaller workforce and are therefore much less likely to have resources dedicated to waste and sustainability issues. Option 3 would mean medium-sized businesses would need to understand what is required for formal reporting. Gathering the data and completing the documentation would be more of a burden and take a disproportionate amount of time.
2. Margins are tight for most food businesses and for medium-sized businesses having to take time away from the core business activities to acquire the necessary knowledge, gather data and report would be a commercial risk.
3. Not all medium-sized businesses will have access to existing data that could be used to help complete food waste reporting (i.e. waste collection receipts). Whereas larger businesses are likely to have the systems in place for monitoring waste in general.
4. Not all medium-sized businesses will be members of organisations that could inform and support them in reporting, such as trade bodies.

There are several ways in which small and medium-sized businesses are currently being engaged and supported, which provides an alternative to improved food waste measurement and reporting. These initiatives include:

- National communications to raise awareness of the benefits for all businesses in measuring and tackling food waste in their operations. This is via PR from WRAP and other organisations / governments, through trade and national media. Examples include PR around the progress report for the Roadmap and Guardians of Grub: Becoming a Champion courses.
- More targeted communications from retailers, larger HaFS businesses and brands. The Roadmap encourages the larger businesses that have committed to engage with their suppliers, to make them aware of the benefits of focusing on food waste and taking action. WRAP have also supported a number of Whole Chain Projects which focus on a single product and aim to reduce its wastage across the supply chain. This will reach both large and smaller businesses. Most retailers have supplier networks / events and WRAP has presented at many of these, providing material for use in the networks.
- 47 trade bodies and other organisations that interact with food businesses have signed up to the Roadmap. They have committed to work with large business members / business customers to gain their commitment to sign-up and also to raise awareness of the need to act and the benefits of doing so. These also include organisations such as CIEH (Chartered Institute of Environmental Health) whose members interact with a wide range of businesses on the ground, on a daily basis.
- All of the above help to direct businesses to a range of free to use resources, including those specifically designed for small and medium-sized businesses. These sources include:
    - Your Business is Food, Don't Waste It[61]
    - Guardians of Grub[62].

Tipping point analysis

Since the IA has only identified the direct costs to business and the public sector (i.e. no direct benefits have been identified as a result of enhanced voluntary agreement or improved food waste reporting), a tipping point analysis has been performed. This analysis assesses the point at which the benefits linked to reducing a certain amount of food waste equals the total costs for each option.

[61] Your Business is Food Starter Guide - Hospitality and Food Service, WRAP 2021
[62] Guardians of Grub

This involved combining the economic benefits of reducing food waste to businesses (£/t, shown in

Table **17**), with the economic benefits associated with reducing GHG emissions (.

Table 18: GHG Emissions associated with disposal routes

	Production Emissions	**Energy Recovery (combustion)**	**Energy Recovery (AD)**	**Composting**	**Landfill**
Food & Drink Waste Emissions (Kg CO2 eq emissions per tonne)	4,060	-249	-249	-39	627

Source: BEIS GHG conversion factors.

When food waste is present in landfill it decomposes anaerobically over long periods of time, due to a lack of oxygen in tightly packed piles of waste. This process produces methane, a potent GHG gas that has a Global Warming Potential 34 times that of CO_2 and therefore a significant global warming effect on the atmosphere. In addition to the production of methane, anaerobic decomposition produces leachate, a toxic substance that, if not managed correctly, can find its way into rivers. This reduces water and soil quality, posing a threat to aquatic and terrestrial wildlife.

Reduction in associated packaging waste

In some sectors of the food industry, a reduction in food waste may also result in a reduction in associated packaging waste that would usually have been disposed of alongside the food. This impact was present in the retail sector in particular. Reduced packaging waste could present cost savings for businesses through greater resource efficiency and lower waste management costs.

Other impacts

Consumer response to business action or lack of action on food waste

By reporting food waste publicly, businesses will be held accountable for their action to reduce food waste. As this information will be reported publicly this ensures that consumers and other stakeholders are able to make more informed choices. As a result of this new transparent and accessible information businesses that show poor progress on reducing food waste may find their sales revenue from environmentally conscious customers reduced. Meanwhile businesses that report significant food waste reduction in their figures may benefit from improved brand reputation and image with the potential for this to impact on their sales. This impact may affect businesses in the different sectors in different ways.

). For the latter, we calculated the economic benefits associated with reducing GHG emissions by using modelling by BEIS of carbon price projections for traded and non-traded emissions[63]. Traded emissions are those associated with food production, and energy recovery through anaerobic digestion. Non-traded emissions are those associated with energy recovery through combustion and landfill. The results are shown in Table 24 below:

Table 24: Tipping point – tonnes of food waste that must be reduced over the 10-year period following policy implementation (24/25 - 33/34) to counterbalance the total costs of the option.

	Share of recuperated costs from GHG emissions	Share of recuperated costs from reduced food waste costs to business	Total costs* (£m)	Tipping point (tonnes of food waste)
Option 1	36.67%	63.33%	£16.77m	741
Option 2	36.67%	63.33%	£89.47m	3,954
Option 3	36.67%	63.33%	£199.51m	8,818

*undiscounted costs

The results show that under Option 2, 3,954 tonnes of food must be reduced over a 10-year period to counterbalance the total cost of the regulation. This seems achievable and extremely small compared to the approximate 1,580,082 tonnes of food being wasted by large food businesses in the England each year. It would equate to 0.25% of this food waste. Note that the costs of food waste prevention activities by companies, or any other benefits that might occur beyond GHG emissions savings and food waste cost savings, have not been included in this analysis.

Value for money assessment

Looking at the costs of each option does not reveal the complete picture because each option is targeting a different amount of food waste. By enhancing the voluntary agreement, only 50 businesses are expected to sign up over the 12-year appraisal period in addition to the Do-Nothing Option. As such, in this option only food waste from these businesses is being targeted.

Under Option 2, 509 large businesses are in scope of the proposed regulation. Our central estimate is that 238 businesses in England will sign up to the FWRR voluntary agreement and implement measurement and reporting in our Do-Nothing Option. This means that the regulation proposed in this option targets the food waste from the remaining 271 large businesses.

Likewise, in Option 3, food waste from those 271 large businesses is being targeted along with food waste from all 3,725 medium-sized businesses within scope of the proposed regulation.

Taking the total food waste of the businesses being targeted in England under each option, we have been able to estimate the share of food waste that those businesses would generate and compare with the total costs in each option. These results are shown in Table 25. Note that central estimates were taken to complete this analysis.

Table 25: Value for money of each option

	Total food waste being targeted over the 12-year period* (tonnes)	Total costs (£m)	Value for money (£/tonnes of food waste being targeted)**

[63] For further details on carbon valuation, see Carbon Valuation, BEIS 2021

Option 1	862,553	£16.77m	£19.44
Option 2	7,127,649	£89.47m	£12.55
Option 3	10,404,597	£199.51m	£19.18

* This assumes that food waste from those additional businesses would not decrease over the 12-year appraisal period if they do not implement measurement and reporting of their food surplus and waste.

**Based on undiscounted costs

The total food waste being targeted over the 12-year appraisal period is the total food waste from those businesses which will be reporting their food above those assumed in the baseline. Only a share of this food waste is avoidable and therefore these estimates are to provide the magnitude of the cost of the option compared with the food waste from businesses being targeted, rather than the actual cost of the food waste avoided. The costs of food waste prevention activities by companies have not been included in this analysis.

A summary of the options

Table 26: Description of the options

	Description	**Food waste being targeted over the 12-year appraisal period* (tonnes)**	**Total undiscounted costs over the 12-year appraisal period (£m)**	**Tipping point analysis**	**Value for money****
Option 1	This option looks at enhancing the current voluntary agreement by extending the Field Force recruited by WRAP and enhancing WRAP's business to business communications works.	862,553	£16.77m	741 tonnes of food avoided through this option would counterbalance the total cost.	£19.44 per tonne of food waste being targeted by the enhanced voluntary agreement
Option 2	This option looks at implementing regulation that mandates large (250+ employees) food businesses to measure and publicly report their food food waste.	7,127,649	£89.47m	3,954 tonnes of food avoided through this option would counterbalance the total cost.	£12.55 per tonne of food waste being targeted by regulating large food businesses
Option 3	This option looks at implementing regulation that mandates large (250+ employees) and medium-sized (50-249 employees) food businesses to measure and publicly report their food food waste.	10,404,597	£199.51m	8,818 tonnes of food avoided through this option would counterbalance the total cost.	£19.18 per tonne of food waste being targeted by regulating large food businesses

*This assumes that food waste from those additional businesses would not change over the 12-year appraisal period if they do not implement measurement and reporting of their food surplus and waste.

Small and micro business assessment (SaMBA)

A SaMBA test has not been undertaken for this IA because small and micro businesses (SMBs) are exempted from the requirements of the regulatory measures in all three options considered. The amount of food wasted by large and medium-sized businesses makes up a large proportion of business food waste. Based on ONS data, WRAP estimate that the amount of food waste generated by large and medium-sized food businesses makes up 67% and 14%, respectively, of all business food waste in England.

Hence, food wasted by SMBs is estimated to be 19% of all business food waste. Therefore, it is possible to achieve a large part of the intended benefits with SMBs exempted. Furthermore, imposing the requirements under Option 2 and Option 3 would provide a disproportionate burden on SMBs. Systems would need to be implemented with limited staff and resources. The fixed costs associated with these systems are likely to be a larger proportion of their overall costs and this could lead to a strain on SMBs.

Monitoring and evaluation

Details of monitoring and evaluation will be included in the post-consultation Impact Assessment for improved food waste measurement and reporting.

Annex 1: Evidence sought in the consultation

We are seeking additional evidence to help us improve this impact assessment. We welcome evidence on our analysis and assumptions to refine the impact assessment and ensure it reflects the policy as robustly as possible. The consultation document associated with this IA has specific questions below relating to the analysis. However, we welcome evidence on all analysis/assumptions used and whether we have missed out any monetised or non-monetised costs and/or benefits. Questions in the consultation document are:

Q35. Do you consider there to be any additional costs or burdens associated with measuring and reporting redistributed food surplus in addition to those identified for food waste sent to other destinations?

Q46. Do you agree with the types of cost Government has identified?

Q47. Do you agree with the assumptions, calculations and magnitude of the costs identified?

Q48. Are there any other types of cost you can identify and, if available, please can you provide evidence of their magnitude per business or per premise/local outlet? Please provide quantitative evidence to support your answer if available.

Q49. What, if any, barriers would your business have to overcome in order to measure and report food waste?

Q50. What were the first-year set up costs (e.g. staff time and investment in IT systems) for measuring food waste for your business?

Q51. In the first year of measuring food waste, how many staff hours did it take per premise and per business (.e. head office level) to familiarise with reporting requirements?

Q52. Since your first year of measuring food waste, what are the ongoing annual costs of measuring food waste?

Q53. How many hours a week on average does it take to measure food waste data per business premise? (Pleaser answer based only on time taken to measure food waste, excluding any time taken to familiarise with or set up the process)

Q54. What are the average staff costs per hour for food waste measuring and reporting per business premise?

Q55. How many days per year does it take in your head office to compile food waste data? If your business is UK wide, please respond in relation to your operations in England if possible. (Please answer based only on time taken to measure food waste, excluding any time taken to familiarise with or set up the process)

Q56. What are the average staff costs per day in your head office to compile food waste data for food measuring and reporting?

Q57. Do you agree with the types of indirect benefits government has identified?

Q58. Please can you provide evidence of whether and how the policy options presented in this document, can directly and indirectly affect the benefits described above in a qualitative and/or quantitative way.

Q59. Are there any other benefits from food waste measurement and reporting that should be identified? Can you provide any evidence to support this? (300 words max)

Annex 2: Food businesses SIC codes

1011 : Processing and preserving of meat

1012 : Processing and preserving of poultry meat

1013 : Production of meat and poultry meat products

1020 : Processing and preserving of fish; crustaceans and molluscs

1031 : Processing and preserving of potatoes

1032 : Manufacture of fruit and vegetable juice

1039 : Other processing and preserving of fruit and vegetables

1041 : Manufacture of oils and fats

1042 : Manufacture of margarine and similar edible fats

1051 : Operation of dairies and cheese making

1052 : Manufacture of ice cream

1061 : Manufacture of grain mill products

1062 : Manufacture of starches and starch products

1071 : Manufacture of bread; manufacture of fresh pastry goods and cakes

1072 : Manufacture of rusks and biscuits; manufacture of preserved pastry goods and cakes

1073 : Manufacture of macaroni; noodles; couscous and similar farinaceous products

1081 : Manufacture of sugar

1082 : Manufacture of cocoa; chocolate and sugar confectionery

1083 : Processing of tea and coffee

1084 : Manufacture of condiments and seasonings

1085 : Manufacture of prepared meals and dishes

1086 : Manufacture of homogenised food preparations and dietetic food

1089 : Manufacture of other food products n.e.c.

1101 : Distilling; rectifying and blending of spirits

1102 : Manufacture of wine from grape

1103 : Manufacture of cider and other fruit wines

1104 : Manufacture of other non-distilled fermented beverages

1105 : Manufacture of beer

1106 : Manufacture of malt

1107 : Manufacture of soft drinks; production of mineral waters and other bottled waters

4621 : Wholesale of grain; unmanufactured tobacco; seeds and animal feeds

4623 : Wholesale of live animals

4617 : Agents involved in the sale of food; beverages and tobacco

4631 : Wholesale of fruit and vegetables

4632 : Wholesale of meat and meat products

4633 : Wholesale of dairy products; eggs and edible oils and fats

4634 : Wholesale of beverages

4636 : Wholesale of sugar and chocolate and sugar confectionery

4637 : Wholesale of coffee; tea; cocoa and spices

4638 : Wholesale of other food; including fish; crustaceans and molluscs

4639 : Non-specialised wholesale of food; beverages and tobacco

4711 : Retail sale in non-specialised stores with food; beverages or tobacco predominating

4721 : Retail sale of fruit and vegetables in specialised stores

4722 : Retail sale of meat and meat products in specialised stores

4723 : Retail sale of fish; crustaceans and molluscs in specialised stores

4724 : Retail sale of bread; cakes; flour confectionery and sugar confectionery in specialised stores

4725 : Retail sale of beverages in specialised stores

4729 : Other retail sale of food in specialised stores

4781 : Retail sale via stalls and markets of food; beverages and tobacco products

5510 : Hotels and similar accommodation

5610 : Restaurants and mobile food service activities

5621 : Event catering activities

5629 : Other food service activities

5630 : Beverage serving activities