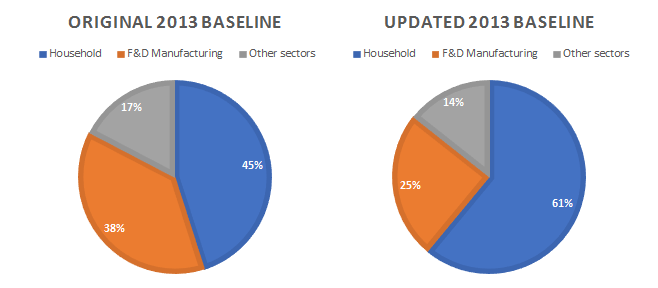
# Update to the Scottish baseline for the Food Waste Action Plan

In developing the ‘Food Waste Reduction Action Plan’ we revisited Scotland’s original baseline from 2013 to better determine the potential impact of food waste prevention considering new evidence since it was first announced in 2015. This is in line with the original commitment to review the baseline on a best available evidence basis in the immature but rapidly developing field of food waste measurement. As a result, some changes were made to the 2013 baseline, and these are detailed below:

## Overall updated food waste baseline breakdown

|  |  |  |
| --- | --- | --- |
| **Sector** | **Original 2013 baseline (tonnes)** | **Updated 2013 baseline (tonnes)** |
| Household & consumer | 608,221 | 598,946 |
| Food & Drink manufacturing | 506,806 | 248,230 |
| Other sectors | 234,931 | 140,714 |
| **Total** | **1,349,958** | **987,890** |

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## Household food waste baseline

The household baseline has reduced by 9,275 tonnes from 608,221 to 598,946 tonnes. This change reflects the removal of food that is “fed to animals” and aligns Scotland with international definitions that exclude food fed to animals from food waste accounting ([FLW Standard](https://www.flwprotocol.org/flw-standard/)). Although this revision is relatively small in terms of tonnage, as the overall food waste total has reduced quite considerably the household proportion has increased from 45% to 61%.

We have retained estimates for food waste disposal to sewer from households and for home composting within the baseline, despite the likely challenges in measuring these directly. Zero Waste Scotland expect that only monitoring of food waste disposed of via local authority collections (both dedicated food waste collection services and in the residual bin) will be measurable accurately and cost-effectively during the target period. We propose to use these measurements as the primary indicator of progress and amend the estimates for the other routes in line with changes seen, as we would not expect these waste levels to change independently in a household context. It is worth noting that the continued inclusion of sewer disposal here is at odds with the treatment of sewer disposal in other sectors (where it cannot be accurately estimated, and we would not assume it will change in line with solid food waste disposal volumes). The result of this is that the share of overall food waste assigned to households is probably somewhat higher than the true picture.

Our confidence in household food waste estimates is high.

## Non-household food waste baseline

### Food and drink manufacturing

In 2016, [UK research by WRAP](http://www.wrap.org.uk/content/quantification-food-surplus-waste-and-related-materials-supply-chain-report) suggested that previous estimates for UK food and drink manufacturing food waste included some significant overestimates, due to non-food content (particularly water, soil, and stones) making up part of some waste categories previously assumed to be wholly food. Following discussion with SEPA, and stakeholder feedback, we have applied the insight from the UK study to the Scottish waste data used in the 2013 baseline exercise (see Appendix 1 for detail). This reduces the Scottish Food and Drink Manufacturing baseline for 2013 quite considerably from 506,806 tonnes to 248,230 tonnes. Correspondingly its proportion of total food waste reduces from 38% to 25%.

We continue to exclude liquid disposal from Food and Drink Manufacturing from the baseline (in contrast to the approach for households). Research by Zero Waste Scotland (*add link when published*) shows significant quantities of food and ingredient waste are disposed of via this route, but consistent measurement is not yet possible, and the exact nature of all materials (and whether all material should be classed as “food”) is not clear in all cases. There are undoubtedly efficiency gains and bioeconomy opportunities to be realised from better management of these disposal routes but including them in the target would be likely to hinder our ability to see trends in conventional food waste streams by increasing overall uncertainty very significantly.

Our confidence in the Food and Drink Manufacturing estimate is medium. These estimates may be refined further by additional analysis within specific sub-sectors.

### Other sectors

Further analysis of the 2013 baseline suggests that food waste in other sectors may be over-estimated. Specifically, the proportion of mixed waste assumed to be food waste is likely to vary far more by sector than was initially calculated, with some sector estimates via the original method seeming far too high for the staff or customer numbers associated with the activity.

Where specific sub-sector compositional studies are available for Health and Social Care, Education, Motor, Wholesale and Retail Sectors ([Zero Waste Scotland, 2012](http://www.wrap.org.uk/sites/files/wrap/The%20compostion%20of%20waste%20from%20three%20sectors%20in%20Scotland.pdf)) and Hospitality ([WRAP, 2011](http://www.wrap.org.uk/sites/files/wrap/The_Composition_of_Waste_Disposed_of_by_the_UK_Hospitality_Industry_FINAL_JULY_2011_GP_EDIT.54efe0c9.11675.pdf)) these do not always provide estimates that align with other sources.

To create a meaningful forecast for the Action Plan, we have used the sub-sector studies mentioned above but excluded any unique estimates on food waste content in mixed waste previously made (which has the net effect of an overall reduction in the baseline). We believe this compromise gives an overall total that is likely to be closer to true food waste levels, and the likely reach of the measures proposed in the action plan. However, the sector breakdown is likely to change further as evidence improves.

Overall, the current estimates for food waste from other sectors is now 140,714 tonnes (previously 234,931 tonnes).

We continue to exclude liquid disposal from “other” sectors from the baseline (in contrast to the approach for households, but in common with food and drink manufacturing), as there is no cost-effective way to measure this. The Waste (Scotland) Regulations preclude maceration of food waste, so we do not believe diversion of food waste to the sewer will increase over time.

Estimates for overall food waste from other sectors are lower confidence. They are likely to be refined further as we work with specific sub-sectors and sites.

## Future development of the Scottish baseline

Given the remaining uncertainty across several sectors, together with the rapid development of food loss and food waste measuring and monitoring methods, we can expect there to be further iteration of the baseline in response to emerging information and best practice in Scotland and Europe. This remains a rapidly developing area, where countries continue to innovate in improving measurement. The measures laid out in the Food Waste Reduction Action Plan will contribute to this improved level of knowledge of sector specific waste volumes and allow more focused actions and interventions to be implemented in response. Zero Waste Scotland will continue to engage and share knowledge with our partners in the UK (WRAP) and across Europe (Food Waste Measurement Subgroup of the EU Platform on Food Losses and Food Waste) to ensure we remain abreast of the latest methodology developments.

Measurement of future food waste levels will always be on a consistent basis with this or future baseline changes, so methodological changes will not contribute towards target achievement.  Approaches to future measurement, and any further baseline improvements, will be discussed and agreed between Scottish Government, SEPA, and Zero Waste Scotland on Scotland’s Waste Data Strategy Board

# Appendix 1: New method for quantification of Scottish Food & Drink Manufacturing Food Waste

Waste data codes do not well align with food/non-food material, as they were not designed to do so. This is primarily a constraint on business waste estimates, where the original baseline method depended very heavily on existing waste codes in SEPA data. The ‘Quantification of food surplus, waste and related materials in the grocery supply chain’ ([WRAP, 2016](http://www.wrap.org.uk/content/quantification-food-surplus-waste-and-related-materials-supply-chain-report)), highlighted that some codes treated as 100% food waste in the Scottish baseline, are not. Comparison to other studies (which include site specific compositional studies and surveys) also suggests that some of the food content factors applied to mixed waste codes in the Scottish baseline may be too high. Zero Waste Scotland investigated this and concluded, in discussion with SEPA, Scottish Government and stakeholders, that a reduction in baseline estimates for solid waste from food and drink manufacturing, and for other business food waste, was justified, utilising the conversion factors developed under the UK study ([WRAP, 2016](http://www.wrap.org.uk/content/quantification-food-surplus-waste-and-related-materials-supply-chain-report)).

The table below provides a summary of the European Waste Codes (EWC) relevant to food waste in Scottish Food & Drink Manufacturing sector together with the total waste values, original conversion factor, original 2013 baseline value, the UK conversion factor and the revised 2013 baseline value for Scottish F&D manufacturing. The estimate total utilised in the original 2013 baseline is shown in yellow boxes in the table below with the updated estimates highlighted in green boxes.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **EWC CLASSIFICATIONS** | | **SEPA DATA** | **SCOTTISH BASELINE (original method)** | | | **UK METHOD FOR SCOTLAND F&D MANUFACTURING (new method)** | |
| **EWC Description** | **EWC code** | **Total** | **Conversion factor used** | **Scottish Overall 2013 Baseline** | **Scottish F&D Manufacturing Only (tonnes)** | **UK Conversion factor** | **Scottish F&D manufacturing data using UK factor (tonnes)** |
| wastes from the preparation and processing of meat, fish and other foods of animal origin - sludges from washing and cleaning | 02 02 01 | 34,663 | 1.00 | 34,663 | 34,374 | 0.30 | 10,312 |
| wastes from the preparation and processing of meat, fish and other foods of animal origin - animal-tissue waste | 02 02 02 | 3,277 | 1.00 | 3,277 | 3,184 | excluded | 0 |
| wastes from the preparation and processing of meat, fish and other foods of animal origin - materials unsuitable for consumption or processing | 02 02 03 | 23,146 | 1.00 | 23,146 | 19,886 | 1.00 | 21,253 |
| wastes from the preparation and processing of meat, fish and other foods of animal origin - sludges from on-site effluent treatment | 02 02 04 | 5,059 | 1.00 | 5,059 | 5,024 | 0.30 | 1,352 |
| wastes from the preparation and processing of meat, fish and other foods of animal origin - wastes not otherwise specified | 02 02 99 | 3,429 | 1.00 | 3,429 | 3,023 | excluded | 0 |
| wastes from fruit, vegetables, cereals, edible oils, cocoa, coffee, tea and tobacco preparation and processing; conserve production; yeast and yeast extract production, molasses preparation and fermentation - sludges from washing, cleaning, peeling, centrifuging and separation | 02 03 01 | 3,030 | 1.00 | 3,030 | 2,362 | 0.60 | 1,427 |
| wastes from fruit, vegetables, cereals, edible oils, cocoa, coffee, tea and tobacco preparation and processing; conserve production; yeast and yeast extract production, molasses preparation and fermentation - materials unsuitable for consumption or processing | 02 03 04 | 25,623 | 1.00 | 25,623 | 24,493 | 1.00 | 24,493 |
| wastes from fruit, vegetables, cereals, edible oils, cocoa, coffee, tea and tobacco preparation and processing; conserve production; yeast and yeast extract production, molasses preparation and fermentation - wastes not otherwise specified | 02 03 99 | 2,513 | 1.00 | 2,513 | 2,513 | excluded | 0 |
| wastes from the dairy products industry - materials unsuitable for consumption or processing | 02 05 01 | 14,652 | 1.00 | 14,652 | 14,652 | 1.00 | 14,624 |
| wastes from the baking and confectionary industry - materials unsuitable for consumption or processing | 02 06 01 | 3,410 | 1.00 | 3,410 | 2,663 | 1.00 | 2,240 |
| wastes from the baking and confectionery industry - sludges from on-site effluent treatment | 02 06 03 | 816 | 1.00 | 816 | 798 | 0.10 | 80 |
| wastes from the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa) - wastes from washing, cleaning and mechanical reduction of raw materials | 02 07 01 | 1,061 | 1.00 | 1,061 | 404 | 0.40 | 162 |
| wastes from the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa) - wastes from spirits distillation | 02 07 02 | 215,597 | 1.00 | 215,597 | 215,400 | 0.40 | 86,120 |
| wastes from the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa) - materials unsuitable for consumption or processing | 02 07 04 | 131,931 | 1.00 | 131,931 | 131,776 | 0.40 | 52,711 |
| wastes from the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa) - sludges from on-site effluent treatment | 02 07 05 | 150 | 1.00 | 150 | 93 | 0.40 | 37 |
| wastes from the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa) - wastes not otherwise specified | 02 07 99 | 15,863 | 1.00 | 15,863 | 15,833 | excluded | 0 |
| Municipal wastes (Household waste and similar commercial, industrial and institutional wastes separately collected fractions - biodegradable kitchen and canteen waste | 20 01 08 | 55,409 | 1.00 | 55,409 | 28,420 | 1.00 | 33,419 |
| Municipal wastes (Household waste and similar commercial, industrial and institutional wastes separately collected fractions - edible oil and fat | 20 01 25 | 568 | 1.00 | 568 | 2 | excluded | 0 |
| Other municipal wastes - mixed municipal waste | 20 03 01 | 739,551 | 0.24 | 177,492 | 1,906 | excluded | 0 |
|  |  |  |  | **TOTAL (old)** | **506,806** | **TOTAL (revised)** | **248,230** |