

**2022 Waste Data Quality Report**

March 2024

**Waste From All Sources**

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# Introduction

This report describes the methodologies to produce the Waste From All Sources (WFAS) statistical waste data for Scotland for the 2022 calendar year. The report should be used alongside the 2022 WFAS waste data tables and statistical commentary. The WFAS dataset covers waste generated from households, construction and demolition, or waste from commerce and industry and total waste managed. The 2022 data are presented as follows:

* The WFAS data tables are presented in a summary and commentary document. This narrative describes the major trends and provides an interpretation of the data and can be downloaded from the [waste data section on SEPA’s website](http://www.sepa.org.uk/environment/waste/waste-data/waste-data-reporting/waste-data-for-scotland/).
* Scotland’s Environment Waste Discover Data tool presents the WFAS in an interactive and visual format and is found on [Scotland’s Environment web](http://www.environment.scotland.gov.uk/get-interactive/data/waste-from-all-sources/)
* The WFAS data tables may be downloaded in Excel format from the [waste data section on SEPA’s website](http://www.sepa.org.uk/environment/waste/waste-data/waste-data-reporting/waste-data-for-scotland/)

The WFAS data tables that accompany this report are structured according to the waste management options set out in the Scottish Government’s Guidance on [applying the waste hierarchy](https://www.gov.scot/publications/guidance-applying-waste-hierarchy/), which is, from more desirable to less desirable:

* Prevention

If you can’t prevent, then …

* Prepare for reuse

if you can’t reuse, then …

* Recycle

if you can’t recycle, then …

* Recover other value

if you can’t recover value, then …

* Disposal

Landfill if alternative not available.

This document is structured in the same way as the data tables, except for household waste, which is presented in a stand-alone section. Household data is taken from a discrete dataset ([WasteDataFlow](http://www.sepa.org.uk/environment/waste/waste-data/guidance-and-forms-for-operators/local-authorities/)) and therefore it is more concise to report the methodology in a single section.

## Reporting datasets

#### Data sources

Data sources referred to at various parts of the document, and the agency that carries out the analysis on that dataset are listed below

* Scottish licensed/permitted site returns (SEPA)
* Survey of licensed/permitted Scottish waste sites for information about the industry sector of waste reported in site returns (SEPA)
* Household wastes managed by Scottish local authorities (SEPA)
* Wastes managed by exempt activities in Scotland (SEPA)
* Scottish accredited packaging waste reprocessors (SEPA)
* UK packaging waste generated (Defra)
* Hazardous waste data interrogator (Environment Agency)
* Survey of aggregate producers listed in Zero Waste Scotland (ZWS) Aggregates Quality Protocol Supplier Directory (SEPA)
* Transfrontier Shipment of Waste Regulations returns (SEPA)
* English Environment Agency waste returns (English Environment Agency)
* SEPA annual PPC permit reports (SEPA)
* Agricultural modelling (SEPA)

#### Data sources and dataset components

A summary of which datasets used to prepare component data of the WFAS is shown in below.

Waste management licence or permit:

* waste generated
* non-organic recycling
* organic recycling by composting or AD
* incineration
* landfill

Waste management exemption:

* waste generated
* non-organic recycling
* organic recycling by composting or ad

C&I sector survey:

* waste generated

WasteDataFlow:

* waste generated

Aggregate surveys (simple exempt sites):

* waste generated
* non-organic recycling

Producer responsibility:

* non-organic recycling

Transfrontier waste shipment:

* incineration

English Environment Agency waste returns:

* waste generated

SEPA annual PPC permit reports:

* incineration

Agricultural modelling:

* waste generated

#### Limitations

Several data sources, used for varying purposes are combined to generate the data used in the WFAS dataset. The reporting components listed above which rely on one source of data could be considered more robust than those that rely on multiple sources of data. We are aware that there are gaps within these datasets and SEPA in partnership with ZWS and the Scottish Government is currently reviewing Scotland’s waste data strategy. Part of this review is to identify and address gaps in the reporting dataset.

In 2022, the total amount of Scottish waste managed was 9.89 million tonnes which was 271,000 tonnes (2.7%) less than the amount of waste generated (10.16 million tonnes). In historical publications before 2011, the gap between waste managed and waste generated was larger, with the waste generated typically between 15% - 30% greater than waste managed. SEPA produced a revised methodology for estimating *commercial and industrial* (C&I) waste data generated (introduced with the 2011 publication) and for *construction and demolition* (C&D) waste aggregates recycled (introduced with 2016 publication and applied to historical data). With these new methodologies this gap is not as large, ranging from 9.4% more waste generated than managed in 2011 to 7.5% less in 2016.

For the WFAS data tables, no attempt has been made to reconcile the tonnages of waste generated and waste managed. There will be double counting of some data: for example, incinerator tonnages are gross input tonnages to incinerators. No attempts have been made to exclude from the landfill tonnages any incinerator outputs of ash sent to landfill.

It should be noted that this approach differs from the household data tables, in which waste generated and waste managed is balanced, apart from waste sent to interim storage. Using the incineration example: in the household tool, 'incineration' reports net inputs to incinerators to avoid double-counting of incinerator outputs.

In some cases, the quantities of household waste and WFAS are counterintuitive. For example, there may be more household waste than WFAS for a given reporting category. This is a product of using different datasets and corresponding methodologies which are not comparable. If such an inconsistency exists, attempts have been made in this document to outline possible reasons for the inconsistency and steps that are planned to address the shortcomings.

##  List of appendices

Appendix 1 provides a fuller description of the datasets listed above, including any links to return forms and guidance.

Appendix 2 lists three separate conversions of data that were used in the Commercial and Industrial (C&I) generated methodology (also see Section 3.2).

Appendix 3 and Appendix 4 list the waste categories used in the household waste methodology (also see Section 9).

Appendix 5 provides a list of codes that comprise Municipal waste, and the biodegradability factors assigned to these codes for calculation biodegradable municipal waste landfilled.

Appendix 6 provides a summary of the coding of waste using European Waste Catalogue (EWC) and European Waste Catalogue for Statistics (EWC-STAT), which are used throughout this document.

Appendix 7 provides a glossary of terms.

Appendix 8 provides a list of acronyms.

## Waste data strategy

Scotland has a [waste data strategy](https://www.environment.gov.scot/data/waste-data-strategy/), with an associated action plan, the delivery of which is governed by a [waste data strategy board](https://www.environment.gov.scot/data/waste-data-strategy/). The strategy includes an action to develop an electronic waste tracking system to track waste across the UK. [Mandatory digital waste tracking](https://www.gov.uk/government/publications/digital-waste-tracking-service/mandatory-digital-waste-tracking) (DWT) will be introduced from April 2025. A successful transition to DWT will lead to one waste dataset used to estimate all waste generated and managed, which would replace licenced and permitted site returns, WDF, and the other data sources listed above. This will increase data robustness for waste reporting in Scotland and, as there will be no requirement to survey licenced sites or use historical business surveys to allocate an industry sector to waste produced, improve the quality of C&I data.

## Revisions Policy

Revisions may occur for various reasons, including when data from third parties is unavailable or provisional at the time of publishing or if there are subsequent methodological improvements or refinements.

The figures are accurate at the time of publication. However, the data may be updated if further revisions are necessary. Normally these revisions will be published concurrent with the next release.

Where there have been changes in methodology for the waste data tables, the complete dataset will be revised for all years to ensure that comparisons between years are valid.

There were no methodological changes since the 2021 publication. Minor revisions since the 2021 publication account for revised data returns by waste operators, and the re-categorisation of an additional Scottish municipal waste incinerators to the R1 incineration efficiency standard.

# Progress against Targets

## Introduction

The Scottish Government’s [Making Things Last – A Circular Economy Strategy for Scotland](http://www.gov.scot/Publications/2016/02/1761) sets out the Scottish Government's vision for a zero waste society. This vision describes a Scotland where allwaste is seen as a resource, where waste is minimised, where valuable resources are not disposed of in landfills, and where most waste is sorted, leaving only limited amounts to be treated.

This circular economy strategy sets measurable targets for tracking progress against the objectives specified in the plan. Some of these targets are derived from EU directives such as the Waste Framework Directive. Below is a summary of these targets from the Scottish Governments [circular economy strategy](https://www.gov.scot/publications/making-things-last-circular-economy-strategy-scotland/pages/17/):

* By 2017, reduce waste generated in Scotland to 93% of 2011 baseline (Scottish Government target)
* By 2020, The preparing for re-use and the recycling of 50% by weight of waste materials such as paper, metal, plastic and glass from household waste and similar (EU target)
* By 2020, 60% recycling/composting and preparing for re-use of household waste (Scottish Government target)
* By 2020, no more than 1.26 million tonnes of biodegradable municipal waste to be sent to landfill (EU target)
* By 2020, 70% recycling and preparing for re-use of construction and demolition waste (EU target)
* By 2025, no more than 5% of all waste to go to landfill (Scottish Government target)
* By 2025, 70% recycling/composting and preparing for re-use of all waste by 2025 (Scottish Government target)
* By 2025, reduce waste generated in Scotland to 85% of 2011 baseline (Scottish Government target)

Scotland’s strategic plan to deliver Scotland’s zero waste and circular economy ambitions are under review, with [a public consultation on Scotland’s circular economy](https://consult.gov.scot/zero-waste-delivery/draft-circular-economy-and-waste-route-map/) and waste route map to 2030 recently completed, which includes a new range of proposed measures and targets for moving further towards a circular economy.

## Recycling of non-hazardous construction and demolition waste

[Target](https://www.gov.scot/publications/making-things-last-circular-economy-strategy-scotland/pages/17/): By 2020, no more than 1.26 million tonnes of biodegradable municipal waste to be sent to landfill (EU target)

The EU recycling target for 70% recycling and preparing for re-use of non-hazardous C&D waste covers the following materials, from chapter 17 of the [European Waste Catalogue](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32000D0532):

* Glass wastes
* Metallic wastes, ferrous
* Metallic wastes, mixed ferrous and non-ferrous
* Metallic wastes, non-ferrous
* Mineral waste from construction and demolition
* Plastic wastes

The method used to construct the C&D recycling rate is as follows:

$$C\&D waste disposed (tonnes)=EWC Chapter 17 wastes landfilled or incinerated+Estimated EWC Chaper 19 wastes landfilled or incinerated$$

$$C\&D waste disposed \left(tonnes\right)=C\&D waste generated-C\&D waste disposed$$

$$C\&D recycling rate= \frac{C\&D waste recycled}{C\&D waste generated}$$

It is assumed that C&D waste that was not landfilled or incinerated was eventually recycled. The C&D waste landfilled and C&D waste incinerated were determined from the amount of EWC Chapter 17 waste landfilled and Chapter 19 waste landfilled. The amount of EWC Chapter 19 waste generated from treatment on site attributable to C&D sources was estimated from the ratio of Chapter 17 waste inputs to site for treatment.

## Biodegradable municipal waste to be sent to landfill

[Target](https://www.gov.scot/publications/making-things-last-circular-economy-strategy-scotland/pages/17/): By 2020, no more than 1.26 million tonnes of biodegradable municipal waste to be sent to landfill (EU target)

Biodegradable Municipal Waste (BMW) is the fraction of municipal waste that will degrade within a landfill, giving rise to landfill gas emissions, primarily methane. It includes, amongst other materials, food waste, green waste, paper and cardboard.

The BMW component of waste sent to landfill is calculated based on the EWC code of the waste. A percentage biodegradability has been determined for all waste sent to landfill (see Appendix 5), ranging from 100% for materials such as paper and food, 50% for materials such as textiles and furniture, and 0% for inert materials like tyres and metals.

For all waste landfilled, we applied the percentage biodegradability factor to the tonnes of waste for each EWC code. This gives the total biodegradable waste landfilled by waste type. This was then split down further to provide data on municipal and non-municipal biodegradable waste. Municipal waste was identified as all waste coded under EWC Chapter 20, selected codes under EWC Chapter 15, and EWC Chapter 19 where the source prior to treatment is deemed to be municipal. Conversely, non-municipal waste is determined to be the waste not coded according to these criteria. Please refer to Appendix 5 for the full list of municipal waste codes and associated biodegradability factors.

## Percentage of WFAS landfilled

[Target](https://www.gov.scot/publications/making-things-last-circular-economy-strategy-scotland/pages/17/): By 2025, no more than 5% of all waste to go to landfill (Scottish Government target)

As indicated in section 1, the WFAS generated and WFAS managed does not balance, and can vary by up to 10%. The methodology therefore takes the waste landfilled as a proportion of total waste managed; that is prepared for reuse, recycled, composted, incinerated and landfilled.

Total waste managed (tonnes):

$$Total waste managed= Total waste reused+waste recycled+waste composted+waste incinerated+waste landfilled+other management (tonnes)$$

$$Percentage waste landfilled= \frac{Waste landfilled (tonnes)}{Total waste managed (tonnes)} ×100$$

## Percentage of WFAS recycled

[Target](https://www.gov.scot/publications/making-things-last-circular-economy-strategy-scotland/pages/17/): By 2025, 70% recycling/composting and preparing for re-use of all waste by 2025 (Scottish Government target)

To determine the WFAS recycling rate, an approach like that used to derive the percentage of WFAS landfilled was used. The methodology takes the waste recycled as a proportion of all waste managed.

$$Total waste managed \left(tonnes\right)=Total waste resued+waste recycled+waste composted+waste incinerated+waste landfilled+other waste management (tonnes) $$

$$Percentage waste recycled= \frac{Waste recycled (tonnes)}{Total waste managed (tonnes)} ×100$$

## Percentage of WFAS generated compared to 2011 baseline

[Target](https://www.gov.scot/publications/making-things-last-circular-economy-strategy-scotland/pages/17/): By 2025, reduce waste generated in Scotland to 85% of 2011 baseline (Scottish Government target)

A simple division of waste generated in the current year to that generated in 2011 has been used for the metric of waste generated compared to a 2011 baseline.

$$Percentage waste compared to 2011 baseline= \frac{Waste generated in 2011 (tonnes)}{Waste generated in 2022 (tonnes)} ×100$$

Further information about differences between the national recycling measures of the four UK countries may be found in the [Recycling Explainer](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/966604/Recycling_Explainer_FINAL_3_accessible.pdf) published by Defra in consultation with the environmental agencies of the four UK countries.

# Prevention

## Introduction

Waste prevention is a term that relates to waste materials and is defined in European Law as measures taken before a substance, material or product has become waste that reduce:

* the quantity of waste, including through the re-use of products or the extension of the lifespan of products;
* the adverse impacts of the generated waste on the environment or human health;
* the content of harmful substances in materials and products.

For the purposes of reporting, we use both total waste generated, and waste generated per unit of *Gross Value Added* (GVA) as indicators of waste prevention. Further details for the GVA method are provided in Section 3.6. The methodologies detailed in the following section focus on how much waste is generated rather than on how and where the waste is generated.

The following section is split into five distinct methods:

* Commercial and industrial waste generated
* Construction and demolition waste generated
* Special (hazardous) waste generated
* Packaging waste generated
* Waste generated per unit of gross value added.

The methodology for household waste generated is detailed in Section 9.

## Commercial and industrial waste generated

### Introduction

The method used to estimate Scottish C&I waste generated for 2022 is based on the use of SEPA regulatory data. It uses data from licensed/permitted site returns and complex exempt activities to provide estimates of waste generated by business sector.

This is the same method used in 2011 through 2021 but, prior to this, data on the wastes produced by businesses was collected by SEPA using business waste surveys.

### Overview

To produce estimates of C&I waste generated, an analysis was carried out of all waste inputs to licensed/permitted and complex exempt sites in Scotland. The sector producing the waste, as defined by [Standard Industry Classification](https://www.ons.gov.uk/methodology/classificationsandstandards/ukstandardindustrialclassificationofeconomicactivities/uksic2007) (SIC) codes, was determined using different approaches depending on the size of the operator, or the type of site.

Once sectors had been assigned to all waste inputs then waste arising from specific sectors was excluded to produce the final dataset. The sectors excluded were construction, waste management and households.

### Methodology

Inputs to waste management sites from licensed/permitted site returns (Table B – Waste inputs to site) were used as the primary source of data for this study, together with returns from complex exempt activities. The principle was to count waste when it first entered the waste management system, at which point the producer can be determined.

All operational sites in 2022 were considered relevant to this study and comprised 704 waste management sites and 534 complex exempt activities (excluding nil returns). The total waste input to these sites was 22.2 million tonnes of which 20.0 million tonnes was from licensed site returns. This compares with 20.8 million tonnes total inputs in 2021, with 18.9 million tonnes from licensed sites.

Three approaches were used to obtain information on the producer of waste, based on the following groups:

* large waste operators that handled more than 50,000 tonnes of waste;
* small waste operators that handled less than 50,000 tonnes of waste in total and complex exempt activities;
* local authorities.

The approach taken for each of these groups is explained in more detail below.

### Large waste operators

Operators that handled more than 50,000 tonnes of waste in total in 2022 were identified from their licensed/permitted site returns by adding together the inputs of their sites. These operators excluded those that did not need to be contacted because the origin of waste was clear or were local authority sites. In 2022 there were 54 sites that were contacted.

Operators were sent a document which summarised their licensed/permitted site returns data and were asked to indicate the origin of waste by broad SIC group for each EWC code. Thirty-eight operators provided a return, providing a return rate of 70.3%, compared to 47.5% return rate in 2021.

For operators that did not respond to the SIC data request the following approach used:

* Where a survey had been was available for previous years, the SIC group for each EWC code was allocated according to the SIC group split for that EWC code in previous survey(s)
* Where a survey had not been completed in a previous year, the approach for small operators and complex exemptions was followed.

### Small waste operators and Complex exemptions

For those in this group, where the origin of the waste was clear, we assigned SIC codes based on either:

* type of operator (see Table 9 of Appendix 2);
* type of waste using the standard assumptions (see Table 11 of Appendix 2).

The origin of waste (SIC group) for returns from operators that handled less than 50,000 tonnes of waste was estimated using the standard assumptions in Appendix 2. These estimates were based on the EWC code (where it indicated the waste came from a specific sector, e.g. waste from the food industry) or information from SEPA’s business waste data 2010.

For some EWC codes, the sectors were assigned using data taken from a 2010 business waste survey undertaken by SEPA. These EWC codes included packaging waste (EWC Chapter 15), end of life vehicles (EWC Chapter 16), chemicals (EWC Chapter 16), solvents (EWC Chapter 14), and municipal wastes (EWC Chapter 20, from non-local authority sources). The list of EWC codes that were assigned using this method are detailed in Table 11 of Appendix 2. In 2022 the business waste survey was twelve years old and may not reflect the current mix of businesses that produce waste in Scotland. The roll-out of mandatory [digital waste tracking](https://www.gov.uk/government/publications/digital-waste-tracking-service/mandatory-digital-waste-tracking) from 2025 is expected to provide more robust data about the commercial sector that produces waste.

### Local authorities

Individual authorities were not contacted during the study as detailed information on sites handling local authority collected waste was readily available from WasteDataFlow.

For sites operated by a local authority, the overall percentage split of household/commercial waste for each authority reported in WasteDataFlow was used to assign waste inputs to either the household or commerce SIC group depending on the type of waste allowed by the site licence. If a site was only licensed to accept household waste, then the waste was assigned to the household SIC group. If the site was licensed to accept both household and commercial waste, then the waste was assigned to the household and commerce SIC groups in accordance with the split.

Waste handled by local authority sites accounted for 11.8% (2.4 million tonnes) of the licence site return data in 2022. This was slightly below the 2.5 million tonnes inputs to local authority sites in 2021.

### Inclusions and exclusions in the dataset

Once the main analysis was complete and SIC codes assigned to all waste tonnages, the inclusion, exclusion, or recalculation of specific wastes was necessary to produce the final dataset. The actions carried out are explained below.

### Wastes produced by the waste management industry

There are two issues associated with waste produced by the waste management industry.

First, to avoid double-counting of waste, inputs to any site that arrived from another waste management site (mostly waste coded under EWC Chapter 19) were assumed to have been counted earlier in the chain and were removed from the dataset.

Second, it is difficult to identify waste produced by the waste management sector itself (e.g. from the company’s offices or workshops) because these wastes are often combined with wastes from the commercial side of their business and are not measured separately. For this study a small amount of waste was estimated using Table 11 of Appendix 2. It is acknowledged that this estimate requires improvement as it does not include all wastes that could potentially be produced by the industry.

### Wastes produced by households

Waste identified as arising from households was excluded from the final dataset.

### Wastes from the construction sector

Waste identified as arising from the construction industry (coded under EWC Chapter 17) was excluded from the final dataset, unless specifically indicated in the survey that it is not from the Construction sector. In 2022 there were 300 tonnes of EWC Chapter 17 wastes in the final dataset that surveys indicated were not from the Construction, Waste management or Household sector.

### Wet and dry weights

Under the European Waste Statistics Regulation and [UK statistics on waste](https://www.gov.uk/government/statistics/uk-waste-data/uk-statistics-on-waste), the data is reported as wet weight, except for common sludges, industrial effluent sludges and dredging spoils. To provide consistency with European and national reporting, these wastes were converted to dry weights in the final using standard UK conversion factors. These factors are set out in Appendix 2.

### Addition of missing data

For data that is under-reported because it does not pass through a licensed/permitted or complex exempt site in Scotland, the missing data was estimated and added to the final dataset:

* Agriculture - Chemical wastes - sheep dip and pesticides that may be disposed on farm were estimated using Agricultural Waste Estimates Model developed by Marcus Hodges Environment and BDB Associates on the behalf of the Environment Agency
* Agricultural plastic, which are often handled by simple exempt activities with no data reporting requirement were also estimated using the Agricultural Waste Estimates Model
* Solvents from chemical manufacture, which may be transported directly to the rest of the UK for processing without moving through a Scottish waste management site, were identified using the Environment Agency Hazardous Waste Interrogator
* Tyres from commerce which may be transported directly to the rest of the UK for processing or for use overseas were estimated from ZWS market research

It should also be noted that waste produced by a business in Scotland that is exported directly and does not pass through a Scottish waste management site will not be captured in the dataset. The scale of this missing data is not currently known.

### Final dataset

Following assignment of industry sector to all the waste, the waste generated from households, the construction sector and waste handled by the waste management sector were removed from the total. The resulting dataset provided the commercial and industrial waste generated data for 2022 and amounted to 3.21 million tonnes.

## Construction and demolition waste generated

### Introduction

The methodology for 2022 uses data from three sources: licensed/permitted site returns, complex exempt activity returns, and aggregate survey data – all of which are managed by SEPA.

In 2022, none of the C&D data sources contained estimated data for non-submitted returns. The aggregates data supplied by ZWS was introduced for the first time in 2012 and the 2012 data was retrospectively applied to the 2011 dataset and to the 2013 dataset to ensure consistency of methodology between years. From 2014 and onwards the aggregate data is provided by SEPA survey. Further details are contained in the section on ‘aggregates dataset’ and in Appendix 1.

### Methodology

#### Licensed/permitted sites dataset

Data returns from 295 licensed/permitted sites operating in 2022 that handled chapter 17 wastes were used to calculate C&D waste generated. This is slightly more than the 282 sites for 2021. Waste with an origin outside Scotland was excluded from the analyses.

As a consignment of waste may be managed at more than one licensed/permitted site, we use the following calculation to avoid double-counting and produce our best estimate of C&D waste generated:

$$C\&D waste generated \left(tonnes\right)=EWC Chapter 17 waste inputs-EWC Chapter 17 waste outputs$$

The C&D waste generated was calculated at the site level. This can be waste that has been:

* treated onsite so that it changes from waste to a final (non-waste) product;
* treated onsite and recoded to a non-Chapter 17 waste type;
* stored onsite for the reporting period before being moved offsite.

#### Metal recycling

The exception to the above calculation is metal waste which has a high economic value and ends up at a small number of recycling sites before being exported from Scotland for recycling. To estimate the amount of metal waste generated, we use the quantity of EWC Chapter 17 waste metals exported from selected recycling sites. In 2022, this totalled 101,000 tonnes, compared with 175,000 tonnes in 2021.

#### Recoding of wastes to Chapter 19

Some of the EWC Chapter 17 codes may be recoded to EWC Chapter 19 (wastes from waste management facilities etc.) following onsite treatment, e.g. physical sorting/shredding. For example, a mixed skip of C&D waste (17 09 04) may be sorted onsite and reported as separated fractions of ferrous metal (19 12 12), non-ferrous metal (19 12 03), glass (19 12 05) and other wastes (19 12 12). This is not an issue for the calculation of waste generation as the input minus outputs approach described above captures the tonnages of EWC Chapter 17 wastes at the input stage.

#### Waste storage

Sites with Chapter 17 outputs but no inputs (e.g. those storing waste from a previous reporting period) were removed from the analysis, as their waste will be captured in the previous year.

#### Complex exemption dataset

Further details of the methodology for the complex exemptions dataset can be found in Appendix 1. This section provides more specific details on the use of the dataset for reporting C&D waste generated.

Exempt activities are commonly used where waste is recycled into new products or reused. Consequently, the tonnages of waste reported in the complex exempt activity data returns will be a direct estimate of waste generated. In some cases, waste may travel to exempt sites via a licensed/permitted site, but the input minus outputs approach used with the licensed/permitted site dataset minimises the risk of double counting.

Data returns from complex exempt activities with expiry dates between 1 July 2023 and 30 June 2024 were used to report on C&D waste (EWC Chapter 17) generated in Scotland. In this period, there were 155 complex exempt activities that recorded inputs of EWC Chapter 17 wastes. This is higher than the 90 exemptions for 2021 and is returning towards the pre COVID-19 numbers of 178 exemptions in 2018 and 232 exemptions in 2017. In 2022, of the 155 exemptions in the analysis, 117 were registered under Paragraph 19, 23 under Paragraph 9, with remainder under Paragraphs 7 and 45, and 7.

No estimated data were included in the 2022 complex exemptions dataset. All tonnages are self-reported by sites using [SEPA’s exemptions return form](https://www.sepa.org.uk/environment/waste/waste-data/guidance-and-forms-for-operators/exempt-activities/). Further details are given in Section Appendix 1. The total amount of Scottish C&D waste managed by exempt activities in this period was 1.06 million tonnes, which is higher than that reported in 2021 (837,000 tonnes). .

#### Aggregates dataset

The quantity of C&D waste processed to produce aggregate at sites operating under a simple waste exemption in 2022 was based on a survey of sites carried out by SEPA. The sites surveyed were taken from the Aggregates Quality Protocol Supplier Directory, a list maintained by ZWS.

To avoid double counting with waste arising from the licensed site and complex exemption datasets, only waste processed under a simple exemption from the aggregates datasets was included in the C&D waste generation data. For 2022, this was 62,000 tonnes, which is lower than the amount arising from simple exemptions in 2021 (77,000 tonnes). Historically, the data from simple exempt sites was larger (e.g. 430,000 tonnes in 2017).

Further details of the Aggregates Quality Protocol Supplier Directory and the aggregates dataset can be found in Appendix 1.

## Special (hazardous) waste generated

The 2022 data for special (hazardous) waste generated is not taken from an independent data set. The data originates from the individual analyses for household, commercial and industrial, and construction and demolition wastes generated as described elsewhere. The wastes classified as hazardous in each waste generated methodology are combined to produce an overall figure.

## Packaging waste generated

Estimates of packaging waste generated for the UK are produced by Defra. Scottish packaging waste generated is assumed to represent 10% of the UK waste generated, based on the Scottish population being 10% of the UK as a whole.

## Waste generated per unit of Gross Value Added

According to the Office of National Statistics (ONS), gross value added (GVA) measures the contribution to the economy of each individual producer, industry or sector in the United Kingdom. GVA is published by ONS at the regional (NUTS1) level, meaning that data is available specifically for Scotland. An information paper on the quality and methodology for regional GVA data is also available on the [ONS website](https://www.ons.gov.uk/economy/regionalaccounts/grossdisposablehouseholdincome/methodologies/regionalaccounts).

GVA is one of the measures chosen by the Scottish Government for waste prevention. In Scotland’s waste prevention plan ‘[Safeguarding Scotland’s Resources](http://www.scotland.gov.uk/Publications/2013/10/6262)’ waste prevention is measured by the following:

* The total amount of waste produced by sectors - household; commerce and industry; and construction and demolition.
* The amount of waste produced by sectors per unit of GVA.
* The carbon impact of waste - the whole-life impacts of waste including the benefits of prevention and recycling.

Total GVA represents the overall size or value of the economy in pounds. Dividing total waste generated by total GVA gives a measure of waste generated per pound of GVA. This has been expressed as tonnes waste generated per £1,000 GVA in the data tables.

# Recycled

## Introduction

This section describes how we report on the recycling of Scottish wastes within Scotland and outside Scotland. The methodology is split into the following sections:

* composting of waste at licensed/permitted and exempt sites in Scotland
* glass, plastic and wood recycled in Scotland
* batteries, discarded equipment, End of Life Vehicles (ELV), glass, metal, paper and card, plastic, and wood recycled outside Scotland
* recycling by exempt activities in Scotland
* aggregates recycled in Scotland

The data is for WFAS. We do not report separate household, commercial and industrial (C&I), and construction and demolition (C&D) waste using this methodology. There are distinct methodologies for household waste recycling, reuse and composting in Section 9.

## Organics recycled in Scotland

This section describes how we report on the recycling of organic waste by composting or anaerobic digestion within Scotland. We assume all waste composted or digested at Scottish sites is Scottish in origin. Organic recycling data are taken from two data sources managed by SEPA: licensed/permitted site returns and complex exemptions. Site returns contributed 98.9% and exemptions 1.1% of the organic waste recycled by composting or anaerobic digestion in Scotland in 2022. Of the total organic waste composted or digested in Scotland in 2022, 89.4% tonnes were composted or digested at PAS 100 or PAS 110 certified sites.

### Organic recycling at licensed/permitted sites

The 2022 methodology captures composting of waste using windrow composting, in-vessel composting (IVC), and anaerobic digestion (AD) of organic wastes at licensed/permitted sites (excluding mobile plant licences). Data is taken from Table C (waste treatment on site) for the following two management methods:

* Composting (CP) of all suitable waste types
* Biological treatment (BT) of all suitable waste types at specific AD and IVC sites

#### Composting (CP)

For CP of all suitable waste types, EWC codes with a management method ‘CP’ (composted on site) were assessed as suitable or unsuitable for composting. A total of 283,000 tonnes was reported, of which 180 tonnes was judged not suitable for composting. This is reduced from the 317,000 tonnes recorded in 2021. The 2022 total comprised of 255,000 tonnes from sites with BSI PAS 100 certification (for producing quality compost) and/or PAS 110 certification (for producing anaerobic digestate) processes, the remaining 27,000 tonnes from sites without these certified processes.

The five largest tonnages for each category from sites with PAS 100 or PAS 110 certification are provided in Table 1 below, and similarly the largest tonnages from sites without these certifications are provided in Table 2 below.

Table 1. The five largest waste types from Table C reported with management method ‘composting’ from sites with PAS 100 or PAS 110 certification

| **EWC code** | **EWC Description** | **Tonnes** |
| --- | --- | --- |
| 20 01 08 | biodegradable kitchen and canteen waste | 157,000 |
| 20 02 01 | biodegradable waste | 87,000 |
| 02 02 03 | materials unsuitable for consumption or processing | 5,800 |
| 02 02 01 | sludges from washing and cleaning | 2,600 |
| 02 03 04 | materials unsuitable for consumption or processing | 1,100 |

The five largest tonnages for each category from sites with PAS 100 or PAS 110 certification are provided in Table 1 above, and similarly the largest tonnages from sites without these certifications are provided in Table 2 below.

Table 2. The five largest waste types from Table C reported with management method ‘composting’ from sites without PAS 100 or PAS 110 certification

| **EWC code** | **EWC Description** | **Tonnes** |
| --- | --- | --- |
| 20 03 01 | mixed municipal waste | 16,000 |
| 20 02 01 | biodegradable waste | 4,100 |
| 19 08 01 | screenings | 3,000 |
| 19 06 04 | digestate from anaerobic treatment of municipal waste | 1,400 |
| 20 02 02 | soil and stones | 1,030 |

#### Biological treatment (BT)

The BT of 20 01 08 (kitchen and canteen waste) by specific AD and IVC sites was included in final organics recycling reporting. The use of specific AD and IVC sites ensures other forms of biological treatment (e.g. types of sewage sludge treatment) are excluded from reporting.

A total of 285,000 tonnes was reported for BT in 2022, from seven sites all with PAS 110 certified processes. Wastes from municipal waste collection, from agriculture, and from food and drink processing and manufacture dominate the tonnages reported. The 285,000 tonnes reported for BT in 2022 is greater than the 216,000 tonnes reported for BT in 2021.

Table 3. The five largest waste types from Table C reported with a management method ‘biological treatment’ for specific AD and IVC sites with PAS 100 or 110 certification

| **EWC Code** | **EWC Description** | **Tonnes** |
| --- | --- | --- |
| 20 01 08 | biodegradable kitchen and canteen waste | 108,000 |
| 02 01 06 | animal faeces, urine and manure (including spoiled straw), effluent, collected separately and treated off-site | 37,000 |
| 20 02 01 | biodegradable waste | 33,000 |
| 02 02 04 | sludges from on-site effluent treatment | 27,000 |
| 02 07 02 | wastes from spirits distillation | 18,000 |

### Exempt composting activity

Some of the composting activity in Scotland is exempt from licensing and is carried out under exemption.

In 2022, Paragraph 12[[1]](#footnote-2) composting represented 3,200 tonnes of waste, of which none were from PAS 100 certified sites. This is higher than the 2,000 tonnes recorded in 2021. The Paragraph 12 data tends to represent smaller tonnage sites and comprised 0.6% of the organics composted or digested in 2022.

For a more general description of the exemptions dataset, including Paragraphs 12 and 51, please see section 4.6.

### Scottish organic waste exported for recycling

This methodology describes how we report on the recycling of organic waste outwith Scotland with an intended treatment method of ‘Biological Treatment’ or ‘Composting’.

SEPA site returns data was used for this method. Data was taken from Table D (waste sent off site) in the Licensed Site Return, where the geographic destination was recorded as Outwith Scotland for the following two management methods:

* Composting (CP) of all suitable waste types
* Biological treatment (BT) of all suitable waste types at specific AD and IVC sites.

In 2022 a total of 2,100 tonnes was reported, an increase from the 900 tonnes recorded in 2021, most (80%) of which were 20 01 08 (Biodegradable kitchen and canteen waste) and 20 07 04 (distillery wastes).

As in previous years, information about PAS certification of composting sites outwith Scotland in 2022 was not available, it was assumed that receiving sites were BSI PAS 100 compliant.

## Glass, plastic and wood recycled in Scotland

Data was taken from the 2022 accredited reprocessor (AR) dataset, the 2022 site returns dataset, or annual reports provided by operators of SEPA Pollution Prevention and Control (PPC) permits, all of which are managed by SEPA.

UK packaging waste recycled by Scottish reprocessors (so called ‘scheme data’) is reported quarterly and audited annually by SEPA. In addition to scheme data, at the time of registration for a forthcoming year reprocessors also provide details of any non-packaging waste and non-UK sourced packaging waste recycled (so called ‘non-scheme’ data). Non-scheme data is not audited by SEPA, and quality is therefore uncertain. Furthermore, since 2014, non-scheme data is either absent for many sites or has not been updated in subsequent years. The non-packaging waste from AR records are therefore not considered reliable, and where possible licensed site sites or PPC annual reports were used to obtain this data.

The 2022 AR dataset consisted of twenty reprocessors: six glass, ten plastic and four wood. Two of the identified AR reprocessors were licensed waste management sites with readily available quarterly site returns which were used in place of the producer compliance returns. Not only did this ensure that packaging and non-packaging waste were both captured for these sites, but it also allowed the identification of the waste origin for these wastes. The waste recycled at these sites was identified by waste treated on site with a management method indicated recycling. The quantity of UK packaging waste recycled under the scheme was 254,000 tonnes, which is a reduction from a revised 356,000 tonnes in 2021. Two licenced sites were identified in the AR reprocessor list. To capture non-packaging waste for these, we used their data returns instead of the AR returns. Further details of the accredited reprocessor dataset can be found in Appendix 1.

For glass recycling, the Table B inputs of a limited number of sites act as "feeder" sites to glass recycling facilities in Scotland. The inputs to the feeder sites were used to determine the percentage of glass waste originating in or outwith Scotland.

Where data was taken from SEPA site returns, the waste that was Scottish in origin was taken from the geographical waste origin specified in the return. For all other sites, it was assumed that the waste was Scottish in origin.

## Batteries, discarded equipment, end of life vehicles, glass, metal, paper and card, plastic and wood recycled outside Scotland

Using the 2022 licensed/permitted site returns dataset we selected the eight most common waste types, recorded as recycled outwith Scotland. For all eight waste types we used Table D (Waste sent off site) tonnages for specific European Waste Catalogue (EWC)/European Waste Catalogue – STAT (EWC-STAT) codes reported as leaving Scotland as separated wastes.

We assume that wastes reported as leaving Scotland as separate fractions will eventually be recycled. Any relevant codes reported as disposed (landfill/incineration) at the next site were excluded from the analysis.

The individual analyses above are heavily skewed to a relatively small number of large sites which send recyclable materials to the rest of the UK or further afield. In 2022, 89 sites were included in the final analysis for metal wastes, comprising 634,000 tonnes. Of these, the seven largest sites contributed 495,000 tonnes, or 78% of the total. In comparison, in 2021 there were 76 sites in the analysis, comprising 646,000 tonnes.

## Paper sent to site operating under simple exemptions

One historical data gap in the recycling dataset is the amount of Paper and cardboard waste sent to sites that operate under a simple waste management exemption, and then export the waste directly out of Scotland for recycling without moving the waste through an intermediate Scottish licensed waste management site.

SEPA site returns include a field for operators to record a description of the waste destination. Outputs from licensed waste management sites were analysed for names and exemption numbers for several key simple exempt sites in which Paper and card waste is known to be sent. The amount of Paper and cardboard waste in 2022 estimated to enter sites operating under a simple exemption prior to export was 142,000 tonnes. The equivalent figure in 2021 was 83,000 tonnes.

It should be noted that this methodology does not capture Paper and cardboard waste sent direct to a simple exempt site without first moving through a SEPA licensed site.

## Recycling by complex exempt activities in Scotland

Waste management exemptions are split into ‘simple’ and ‘complex’ activities. Some simple exempt activities also carry out recycling but are not required to report to SEPA. This section describes the methodology for reporting recycling by complex exemptions.

In 2022 there were 880 exempt activities registered under [Paragraphs](https://www.sepa.org.uk/regulations/waste/activities-exempt-from-waste-management-licensing/) 7, 8(2), 9, 10, 12, 19, 42, 45, 46, 47, 50 and 51 having expiry dates between 1 July 2022 and 30 June 2023. This is an increase from the 653 exemption activities reported in 2021.

Missing returns (i.e. those registered who had not reported) were chased throughout the reporting period and were prioritised according to tonnage that the applicant forecast they will receive in their exemption application form. In 2022, SEPA received data returns from 79% of the total number of returns expected, greater than the 73% return rate in 2021. The amount of waste recycled at an exempt site varies considerably, ranging from one to two tonnes, through to hundreds of thousands of tonnes. In 2022, accounting for tonnages that the applicant forecast they would recycle in the application form, the returns received covered 89.1% of the total tonnages applied for. It should be noted that the forecast tonnages were not readily available for all sites, with 77 sites missing forecast tonnages in the 2022 analyses.

Quality assurance of data returns was carried out to check for duplicates and incorrect EWC codes. Reported tonnages were also compared to tonnages at the time of application to check for inconsistencies.

No attempt was made to estimate data in the waste data tables for sites that had not submitted returns. Prior to the publication of the current data series in 2011, attempts had been made to do so based on the tonnages that operators applied for in the original application form. However, historical data indicates that doing so overestimates by a significant margin the actual tonnages processed, as sites typically process less than 15% of the tonnages forecast in the original application form. Additionally, sites which do not submit a return are more likely to be those that have not operated during the year.

The waste managed in the 2022 complex exemption dataset was 287,000 tonnes (15%) greater than 2021. Further information about the exemptions dataset is contained in Appendix 1.

## Aggregates recycled in Scotland

There are three sources of data for waste recycled to produce aggregate – the complex exemption dataset (explained in section 4.6 above), the licensed site returns dataset and the aggregates (simple exemptions) dataset.

### Aggregates recycled at licensed waste management sites

Waste recycled to aggregate at licensed waste management sites was estimated from the mixed C&D waste inputs of site returns (Table B) and waste outputs (Table D).

Mixed waste inputs considered included EWC sub-chapters 17 01, 17 03, 17 05, 17 08, and EWC 17 09 04. These wastes include concrete, bricks, bitumen, soil, plasterboard and general mixed C&D waste. It excludes waste types that would not be expected to contribute to aggregate / soil recycling (e.g. metal wastes, plastic wastes, glass wastes). Inputs designated as brought onto site for landfilling were excluded from the analysis.

For each licensed site taking in mixed C&D waste, non-aggregate waste outputs were subtracted from the inputs, leaving the remainder as aggregate or soil waste either sent off-site for recycling or treated on site to a final product.

1. $EWC Chapter 19 coded waste creased from mixed EWC Chapter 17 waste inputs=EWC Chaper 19 12 XX waste inputs \left(Table B\right)-EWC Chaper 19 12 XX was outputs \left(Table D\right)\left(excluding 19 12 09 coded waste\right)+EWC Chapter 19 12 XX coded waste landfilled on site after treatment (Table C4)$
2. $Tonnes of aggregates and soil recycled=Mixed C\&D was inputs \left(Table B, excluding inputs to landfill\right)-EWC Chapter 17 mixed waste outputs \left(Tables D and C4\right)-EWC Chapter 19 waste created from mixed EWC Chapter 17 waste inputs (see step 1 above)$

To estimate the EWC Chapter 19 code waste created from mixed EWC Chapter 17 waste inputs, we used the percentage of mixed EWC Chapter 17 waste inputs as a proportion of all waste inputs. For example if there was 50% of all inputs to the site were mixed C&D waste inputs, then it is assumed that 50% of the 19 12 XX code waste outputs are derived from the mixed EWC Chapter 17 waste inputs. After this output and that of EWC Chapter 17 wastes are deducted from the mixed C&D inputs have been deducted, a total recycling figure was derived by aggregating the tonnage of aggregate / soil recycled from each site. In 2022, there were 2.1 million tonnes of waste recycled to produce aggregate at sites under a waste management licence. This was an increase of 211,000 tonnes from the 1.84 million tonnes recorded as recycled in 2021, and an increase of 860,000 tonnes from the 1.19 million tonnes recorded as recycled in 2016 (the most recent value recovered following the cyber-attack). The increase is due to a trend to move the processing of waste to aggregate from sites operating under a simple exemption, to larger, licensed C&D recycling plants using methods such as “Soil Washing”[[2]](#footnote-3).

#### Waste recycled inside / outside Scotland:

Waste recycled outside Scotland was taken as the tonnages of 19 12 09 coded waste recorded as sent offsite in the site return (Table D) with a geographical destination outside Scotland. In 2022, as for 2021 there were no C&D wastes recycled outwith Scotland.

#### Waste of non-Scottish origin:

Waste originating outwith Scotland was taken from the waste origin of the mixed C&D waste in Table B. In 2022, 300 tonnes (<0.1%) originated outwith Scotland.

#### Assumptions:

The method assumes that Chapter 19 outputs are created equally for each waste category input i.e. a site with 10% of mixed C&D waste inputs will produce 10% Chapter 19 outputs from this C&D waste. This is unlikely to be a reality for individual sites, but probably would likely average out over all sites.

It is also assumed that waste on-site that ceases to be a waste following on-site treatment is an aggregate waste. This is because there is a standard for production of aggregate, which does not exist for metal, glass, or plastic. It is possible that there are other materials such as metals, glass, or plastic that are not considered a waste by site operators. If so, the total materials recycled will not change, rather the make-up of the material type being recycled.

### Aggregates recycled under simple exemptions

Sites operating under simple exemptions are not required to submit a data return to SEPA. To obtain data from these sites, a survey of sites listed in the ZWS’s Aggregates Quality Protocol Supplier Directory was undertaken. Further details of the Aggregates Quality Protocol Supplier Directory and the dataset provided can be found in Appendix 1.

Data received from seven returns amounted to 62,000 tonnes in 2022, compared to 77,000 tonnes in 2021. However, this is an order of magnitude decrease from data returns from 2013 – 2017. This is thought to be a consequence of a Scotland wide trend to move the processing of these wastes to larger, licensed C&D recycling plants.

# Recovered

## Introduction

This section describes how we report the recovery of waste via incineration. The methodology covers WFAS; we do not report separate C&I and C&D wastes. There is a separate methodology for household waste recovered by incineration in Section 9. Waste disposed by incineration is considered in a separate section (section 6.3), but the methodologies for calculating both waste recovered and waste disposed by incineration are the same and are described in the following section.

In the waste data tables “Recovered by incineration” means that waste has been incinerated at a facility that has been accredited as meeting the energy efficiency standard of a recovery facility (R1 facility) as defined in annex II of the EU [Waste Framework Directive](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02008L0098-20180705&from=EN). “Recovered by co-incineration” means waste incinerated at a facility that normally generates energy from incineration of non-waste sources such as coal or gas. This may include, for example, a cement kiln that normally uses natural gas as an energy source. “Disposed by incineration” means waste incinerated at an incineration facility that is not accredited as meeting the energy efficiency standard of a recovery facility, and therefore falls under annex I disposal operations of the EU [Waste Framework Directive](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02008L0098-20180705&from=EN) (D10 facility). It should be noted that a facility classified as D10 does not imply that energy recovery is not undertaken at the facility. It may be that energy recovery occurs but not to the efficiency standard specified in the Directive, or the facility meets the efficiency standard of the Directive, but the operator has not applied for the accreditation. There are seven municipal waste incineration facilities in Scotland that are classified as R1.

The following methodology is split into two sections:

* recovery by incineration and co-incineration within Scotland;
* recovery by incineration outside Scotland.

Waste type descriptions are separated into non-hazardous/hazardous using EWC codes.

## Recovery by incineration and co-incineration within Scotland

A list of Scottish incinerators is maintained and checked with SEPA regulatory staff annually, prior to starting the analysis. For co-incinerators, we exclude any non-waste fuels from our analysis. There were 16 operational sites used in the final 2022 analysis. Ten sites reported quarterly using the licensed/permitted site return form; a further 6 sites reported annually via PPC monitoring reports supplied to SEPA.

In 2022 there were three Scottish municipal waste facilities accredited by SEPA as a recovery incinerator (R1) under the definition of the Waste Framework Directive. This is one more than recorded in 2021. As the incineration process, and therefore recovery efficiency, has not changed in the lifetime of these incinerators, data for all three incinerators were revised and recorded as incineration by recovery for the entire time series.

Where waste data are supplied as EWC codes, data are aggregated into final reporting categories. Where EWC codes were missing on PPC monitoring reports, we consulted SEPA colleagues to check permitted waste type(s) and assigned tonnage to the most appropriate EWC code based on the information available.

The origin of waste incinerated (i.e. Scottish/non-Scottish) is only reported for sites using the licensed/permitted site returns, which covered 11 sites and covered 89% of the incineration tonnages reported. For the remaining sites, origin of waste is not a reporting requirement. SEPA regulatory staff provided estimates (% splits) based on their knowledge of the site.

## Recovery by incineration outside Scotland

Wastes recovered by incineration outside Scotland were taken from Table D (Waste sent off site) of the site returns, with a management method of ‘incineration’ at the next site. In 2022 there were 24 operators that sent waste for incineration outside Scotland.

The following assumptions were made for type of incinerator the waste was sent to:

* Where possible attempts were made to determine the facility and the type of incinerator for waste sent to Wales and England. Where the facility was a recognised R1 facility accredited by Environment Agency, the incineration of waste was allocated to the Recovery category. Otherwise, all incinerators in the UK were assumed to be disposal.
* All incinerators in Europe outside the UK are recovery.

## Export of refuse derived fuel (RDF)

Data for Scottish RDF exports collected under the Transfrontier Shipment of Waste (TFS) regulations was allocated to the Sorting Residues waste category for wastes incinerated for export. In 2022 there were 53,000 tonnes of waste exported from Scotland outwith the UK with a description of RDF or Solid recovered fuel (SRF), which was less than the 79,000 tonnes recorded in 2021. These tonnages are relatively low compared to historic exports.

# Disposed

## Introduction

This section describes how we report the disposal of wastes via landfill and incineration. The data are for total WFAS managed; we do not report separate commercial and industrial (C&I) and construction and demolition (C&D) waste. There are separate methodologies for household wastes disposed via landfill and incineration, which are described in Section 42.

The following methodology is split into two sections:

* waste disposed via landfill;
* waste disposed via incineration.

Waste type descriptions are separated into non-hazardous/hazardous using European Waste Catalogue (EWC) codes.

## Waste disposed via landfill

The data for waste landfilled in Scotland was taken from Tables B (Waste inputs to site) and C4 (Waste landfilled on-site after treatment – landfill sites only) in the licensed/permitted site returns, with the management method ‘landfill’. Along with the standard data checks detailed in Appendix 1, we also checked the correct use of ‘landfill’ as a management method in Tables B and C4. There were 40 Scottish landfill sites included in the analysis for 2022. Information from Table B on the origin of waste was used to split data into Scottish and non-Scottish waste landfilled in Scotland.

The data for Scottish waste landfilled outside Scotland was taken from Table D (Waste sent off site) for all wastes sent outside Scotland with a management method of ‘landfill’ at the next site. There were 13 operators that sent waste for landfilling outside Scotland in 2022. Scottish waste that does not pass through a Scottish waste management site before being landfilled elsewhere will not be captured using this method.

## Waste disposed via incineration

The methodologies for *recovery by incineration* and *disposed by incineration* (for *in Scotland* or *elsewhere*) are the same. Please see section 5 (Recovered) for further details.

# Hazardous (Special) waste

For all the other analyses described in this document (recycled, recovered, disposed) waste tonnages are categorised as hazardous or non-hazardous. The special (hazardous) waste data presented in the data tables is the summed hazardous component of all these separate analyses.

# Imports and exports

The 2022 data for waste imported to Scotland and exported from Scotland was derived from licensed/permitted site returns. Imports were compiled from waste inputs to all sites where the origin of the waste was reported as a location outwith Scotland in Table B of the site returns. Exports were compiled from waste outputs from all sites where the destination was reported as a location outwith Scotland in Table D of the site returns.

Origin and destination were reported by three geographical locations:

* rest of the UK
* Europe
* outwith Europe

Waste imported or exported directly to and from Scotland that does not pass through a Scottish waste management site will not be captured using this methodology.

# Household waste

## Introduction

This section describes how we report on household waste generated in Scotland; and Scottish household waste managed in Scotland or elsewhere. Data is taken from all 32 Scottish local authority returns using the web-based reporting tool [WasteDataFlow](https://www.wastedataflow.org/) (WDF). Further details of the WDF dataset can be found in Appendix 1. Throughout this section reference is made to question numbers on WDF.

In 2022 local authorities submitted returns annually. Returns were checked and verified by SEPA staff for data entry errors and consistency with previous returns.

All waste collected is reported in WDF in the same return period in which it is sent to management. This allows balancing of the waste generated and waste managed for a period. The waste generated figures may include treated waste stockpiled prior to final management. The waste managed figures exclude treated waste held in stockpile at the end of the reporting year.

## Methodology

### WasteDataFlow Question 100

Local authorities report waste managed in WDF using [Question 100](https://www.wastedataflow.org/documents/guidancenotes/Scotland/GeneralGuidance/Scotland%20WDF_User_Guidance_Nov_2019.pdf) (Q100). Data entry is via building a graphical ‘tree’ that depicts the movement of waste in a chain. Each ‘branch’ of the tree is associated with a waste facility and tonnage inputs to and outputs from each facility are reported.

Question 100 covers the following waste management categories:

* Wastes sent direct to landfill, incineration and composting facilities, and waste sent to the same facilities following the sorting/treatment of mixed wastes e.g. at a materials recovery facility (MRF) or mechanical biological treatment (MBT) plant
* Segregated recyclates sent direct to reprocessors and reuse facilities, and waste sent to the same facilities following the sorting/treatment of mixed wastes (e.g. treatment at MRFs, MBT).

A “primary facility” in Q100 is a facility where the authority records waste as sent direct from collection. Input tonnages to the facility at this level are broken down into three waste sources by local authorities: Household, Commercial, Industrial. The household tonnages are directly obtained from the data for these facilities. Where the facility is not a primary facility (e.g. the waste sent to landfill is recorded as an output from another facility such as a materials recycling facility), the household waste tonnage is not specifically recorded. In this instance the household waste was calculated by applying the percentage household waste at the primary level in the tree to the total tonnage of waste sent to the facility. For example, if waste inputs to a MRF facility are 80% household wastes, the output rejects from the MRF sent to landfill will be designated as 80% household in origin.

### Waste categories

Lists of SEPA reporting categories and corresponding WDF waste types are provided in Appendix 3 and Appendix 4. The mapping of these categories follows the approach taken by UK reporting to Europe for waste statistics regulation reporting.

### Household waste generated

The quantities and types of household waste generated was taken from the household waste tonnage inputs to primary level facilities in Question 100.

### Household waste managed

In the WFAS report, the management of wastes is not separated into the Household, C&I and C&D categories. This is mainly because the primary sources for waste managed, namely licensed and permitted site returns and waste exemptions, do not provide for a split into these categories. For further information about household waste managed, please refer to the household waste official statistics and accompanying quality reports.[[3]](#footnote-4)

# Further information

Contacting Us

If you have any queries on the contents of this document or the accompanying waste data tables, please contact the Data Unit by email, phone or in writing.

By Email

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# Appendix 1

### Datasets used in the 2022 methodology

#### Scottish licensed/permitted site returns

In 2022 755 individual licences were expected to submit quarterly returns to SEPA via email or post. A [copy of the template return form](http://www.sepa.org.uk/environment/waste/waste-data/guidance-and-forms-for-operators/licensed-and-permitted-sites/) is available. The site returns dataset is managed and checked by SEPA. The return form consists of Table B (Waste inputs to site), Table C (Waste treated on site), Table C4 (Waste landfilled or incinerated on-site after treatment on-site – landfill and incinerator sites only) and Table D (Waste sent off site).

In 2022 an 89.1% return rate was achieved. This was less than the 99.2% achieved in 2021.

Table 4. Number of returns received for licensed sites 2017 - 2022

| **Year** | **Total sites expected** | **Total return rate** | **Incinerator return rate** | **Landfill return rate** | **Total waste inputs (million tonnes)** |
| --- | --- | --- | --- | --- | --- |
| **2017** |  788 | 97.2% | 100% | 100% | 17.27 |
| **2018** |  806 | 96.9% | 100% | 100% | 18.03 |
| **2019** | Data not available due to cyber attack | 100% | 100% | Data not available due to cyber attack |
| **2020** | Data not available due to cyber attack | 100% | 100% | Data not available due to cyber attack |
| **2021** | 696 | 99.2% | 100% | 100% | 18.90 |
| **2022** | 740 | 89.4% | 100% | 100% | 19.97 |

Note: Return population excludes sites listed as non-operational for 2022. For a list of operational and non-operational sites refer to the [waste capacity report](https://www.sepa.org.uk/data-visualisation/waste-sites-and-capacity-tool).

SEPA carried out quality assurance of the dataset that included comparing individual site data with previous quarters/years, consistency of EWC codes with the description of waste provided by the operator and missing data. Additionally, checks for the dataset were undertaken which compared amount of waste for a category or management method by quarter-on-quarter and year-on-year. Submissions were collected, uploaded and checked by SEPA staff with the assistance of various automation and visual tools throughout the process.

#### Household wastes managed by Scottish local authorities ([WasteDataFlow](https://www.wastedataflow.org))

In 2022, all 32 Scottish local authorities reported on a quarterly or annual basis using an electronic return system called WasteDataFlow (WDF). WDF is a UK wide system administered by Defra. Local authorities are responsible for entering data, which cannot be modified by SEPA. Data entry is via a [series of numbered questions](https://www.wastedataflow.org/documents/guidancenotes/Scotland/GeneralGuidance/Scotland%20WDF_User_Guidance_Nov_2019.pdf).

In 2022 there was a 100% response rate. SEPA reviewed the annual data using a verification tool and informed local authorities where possible of inconsistencies that required checking. Data checking included the consistency of reported tonnages collected and managed for residual waste, segregated recycling, and organic wastes.

Further details are provided in section 9 on page 42.

#### Wastes managed by complex exempt activities in Scotland

Some waste management activities are exempt from licensing if they meet the requirements detailed in Regulation 17 of the Waste Management Licensing (Scotland) Regulations 2011. Exemptions are split into ‘simple’ and ‘complex’ activities. Simple exempt activities are not required to report to SEPA. Operators of complex exempt activities register with SEPA annually and some are required to submit annual data returns containing the types and quantities of waste managed. The various categories of waste exemptions that submit a data return are listed in Table 5 below. Further information on exempt activities is available on [SEPA’s website](https://www.sepa.org.uk/regulations/waste/activities-exempt-from-waste-management-licensing/). Further information about the methodology for producing data summaries for complex exemptions can be found in section 4.6 on page 30.

Unlike licensed sites, complex exemptions expire after a period of 12 months, after which a return is submitted covering the 12-month duration of the exemption. For 2022, the exemption population was taken from exemptions that expired between 1 July 2022 – 30 June 2023. As depicted in Table 7 below, in 2022 there were fewer operating exemptions (880 activities) compared with 2018 (1047 activities), a likely consequence of COVID-19.

Table 5. Categories of Waste Exemptions

| **Paragraph** | **Description** | **Reporting threshold** |
| --- | --- | --- |
| 7 | Land treatment for benefit to agriculture or ecological improvement | All |
| 8(2) | Treatment of non-agricultural land with sludge | All |
| 9 | Reclamation or improvement of land | 2,500 cubic metres |
| 10 | Treatment of waste and storage at a water treatment works and recovery operations and storage at a sewage treatment works | All |
| 12 | Composting | >10 tonnes per year |
| 19 | Waste for construction and other ‘relevant works’ | 2,500 cubic metres |
| 42 | Disposal of waste pesticide or washings in a lined biobed where the waste was produced |  |
| 45 | Storage and recovery of scrap metal and/or dismantling of depolluted vehicles |  |
| 46 | The burning of wood or plant tissue at a dock | All |
| 47 | Repair and/or refurbishment of WEEE at a secure place |  |
| 49 | Treatment of waste organophosphate sheet dip |  |
| 50 | Land treatment with pig or poultry carcass ash for benefit to agriculture or ecological improvement | All |
| 51 | Anaerobic digestion |  |

Table 6. Recycling by complex exempt activities in Scotland in 2022, by exemption paragraph

| **Paragraph** | **Tonnes** |
| --- | --- |
| 7 |  587,447  |
| 9 |  425,025  |
| 10 |  247,835  |
| 12 |  3,188  |
| 19 |  815,603  |
| 45 |  70,216  |
| 47 | 14,930 |
| 51 | 56,658 |

Table 7. Number of data returns received for complex exemptions 2017 - 2022

| **Year** | **Number of complex exempt activities** | **Returns received** | **Total return rate** | **Total waste inputs (million tonnes)** |
| --- | --- | --- | --- | --- |
| 2017 | **1075** | 687 | 64% | 2.99  |
| 2018 | **1048** | 652 | 62% | 3.15 |
| 2019 | **1052** | 582 | 55% | 2.02  |
| 2020 | **961** | 329 | 34% | 1.17 |
| 2021 | **650** | 472 | 73% | 1.96 |
| 2022 | **861** | 681 | 79% | 2.34 |

#### Scottish accredited packaging waste reprocessors

Scottish reprocessors of packaging waste can register with SEPA to become an [accredited reprocessor](http://www.sepa.org.uk/regulations/waste/packaging-waste/). Accredited businesses can issue and sell evidence of recycling and recovery to directly registered obligated producers and packaging compliance schemes.

The number of reprocessors applying for accreditation in Scotland in any given year varies by a relatively small amount. There is a significant financial incentive to register larger businesses. For smaller businesses the extra administration costs under the accreditation scheme means they may choose not to register on the scheme if tonnage and/or prices become too low.

UK packaging waste recycled by Scottish reprocessors (so called ‘scheme data’) is reported quarterly and audited annually by SEPA. In addition to scheme data, at the time of registration for a forthcoming year reprocessors also provide details of any non-packaging waste and non-UK packaging waste recycled (so called ‘non-scheme’ data). Non-scheme data is not audited by SEPA and quality is therefore uncertain. Only audited data has been used for recycling data.

An accredited reprocessor is credited with recycling UK-sourced packaging waste; they are not required to provide a country-specific breakdown of the origin of waste in their returns.

#### ZWS Aggregates Quality Protocol Supplier Directory

ZWS, working in liaison with SEPA, has created a free [online Directory of Recycled Aggregate Producers in Scotland](http://zwsaggsuppliers.org.uk/) who are working to the WRAP Aggregates Quality Protocol. In 2022 the directory identified about 35 sites that can recycle waste into aggregates which meet the terms of the aggregates protocol and have ceased to be waste.

SEPA surveyed sites taken from the Aggregates Quality Protocol Supplier Directory and asked them to provide the quantity of aggregate precursor waste that came onto their site(s) in 2022, the quantity of waste that was rejected (disposed) after treatment, and the quantity of aggregate product manufactured at their site, classified using industry standards, and to (optionally) tell us how much product was sold. Operators were asked to indicate the regulatory regime for the section of the site that the waste was processed - a simple waste exemption, a complex waste exemption, or a waste management licence. Operators that had indicated in previous surveys that they no longer processed waste, or processed all waste at a licence site were excluded from the survey. There was a 37% response rate to the survey (7 responses from 19 operators surveyed). The low return rate and tonnages in 2022 is a continuation of the low return rate of 2021, in which there were only 5 returns received. It is thought this is a Scotland wide trend to move the processing of these wastes to larger, licensed C&D recycling plants.

The top categories of waste recorded by operators in aggregate returns is listed in Table 8 below.

Only waste processed under a simple exemption from the aggregates datasets were included in the waste data tables to avoid double counting with waste from the licensed site and complex exemption datasets. A separate method is used to estimate aggregate produced at sites operating under a waste management licence (see section 4.7 on page 31).

Table 8. Top 5 waste categories of waste aggregate production at sites operating under a simple exemption in 2022

| **Waste Category** | **Simple Exemptions (tonnes)** |
| --- | --- |
| Mineral waste from construction and demolition | 22,000 |
| Soils | 21,000 |
| Glass wastes | 16,000 |
| Household and similar wastes | 3,000 |
| Mineral wastes from waste treatment and stabilised wastes | 2,000 |

#### Transfrontier Shipment of Waste (TFS) Database

Waste that is imported to or exported from the UK is subject to regulatory controls. There are two types of controls:

* Notifiable wastes (NW): These are typically wastes with hazardous properties, and which can only be exported subject to pre-notification to the regulator and payment of a fee;
* Annex III wastes (commonly known as "Green list wastes" or GLW). These are non-hazardous wastes which do not require pre-notification or a fee to be exported.

RDF, as a NW is subject to pre-approval with data on shipments provided to SEPA. The data used for 2011 – 2018 was obtained from relevant SEPA [foi disclosure logs](http://apps.sepa.org.uk/disclosurelog/). The 2022 data was obtained internally from SEPA’s TFS team.

# Appendix 2

Table 9. Conversions from operator type to [SIC group](http://www.ons.gov.uk/ons/guide-method/classifications/current-standard-classifications/standard-industrial-classification/index.html) used in the C&I waste generated methodology

| **Type of operator** | **SIC group** |
| --- | --- |
| Oil industry | Mining and quarrying |

Table 10. Wet and dry conversion factors used in the C&I waste generated methodology

| **Waste type** | **Factor (**multiply wet weight by) |
| --- | --- |
| Industrial effluent sludges | 0.27 |
| Sludges and liquid wastes from waste treatment | 0.27 |
| Common sludges | 0.20 |
| Dredging spoils | 1.91 |

Source: Defra

Table 11. Lookup table used to assign C&I waste sector from EWC chapter or code and waste origin for smaller tonnage, non-surveyed and exempt sites

| **EWC chapter or code** | **Material or activity** | **Origin of waste** | **Sector assumption** |
| --- | --- | --- | --- |
| 01 | Minerals | All | Mining and quarrying |
| 02 01 | Agriculture | All | Agriculture |
| 02 02 - 02 07 | Food | All | Food and drink |
| 03 01 - 03 02 | Wood | All | Wood products |
| 03 03  | Paper | All | Other manufacturing |
| 04 | Textiles | All | Other manufacturing |
| 05 | Oil and gas industry | All | Mining  |
| 06 | Chemicals | All | Chemical industry |
| 07 | Chemicals | All | Chemical industry |
| 08 | Chemicals | All | Chemical industry |
| 09 | Photographic | All | Other manufacturing |
| 10 01 | Power stations | All | Power industry |
| 10 02 to 10 14 | Manufacturing | All | Other manufacturing |
| 11 | Manufacturing | All | Other manufacturing |
| 12 | Manufacturing | All | Other manufacturing |
| 13 | Oils | For non-local authority waste | Apply percentage B6 |
| 13 | Oils | Local authority waste or site1 | Household |
| 13 | Oils | Local authority waste or site2 | Apply local authority household/commercial split5 |
| 14 | Solvents | All | Apply percentage A6 |
| 15 01 | Packaging | For non-local authority waste3 | Commerce |
| 15 01 | Packaging | For non-local authority waste4 | 51% industry (SIC A-E) 49% commerce6 |
| 15 01 | Packaging | Local authority waste or site1 | Household |
| 15 01 | Packaging | Local authority waste or site2 | Apply local authority household/commercial split5 |
| 15 02 | Cloths etc. | All | Commerce |
| 15 02 | Cloths etc. | All | 51% industry (SIC A-E) 49% commerce6 |
| 16 01 | ELVs | For non-local authority waste | Apply percentage D |
| 16 01 | ELVs | Local authority waste or site1 | Household |
| 16 01 | ELVs | Local authority waste or site2 | Apply local authority household/commercial split5 |
| 16 02 | WEEE | For non-local authority waste | Apply percentage C6 |
| 16 02 | WEEE | Local authority waste or site | Apply local authority household/commercial split5 |
| 16 03 | Off-spec products | All | 51% industry (SIC A-E) 49% commerce6 |
| 16 05 | Gas bottles, chemicals | For non-local authority waste | Apply percentage F |
| 16 05 | Gas bottles, chemicals | Local authority waste or site | Apply local authority household/commercial split5 |
| 16 06 | Batteries | For non-local authority waste | Apply percentage E6 |
| 16 06 | Batteries | Local authority waste or site | Apply local authority household/commercial split5 |
| 16 07 | Tanks | All | Apply percentage B6 |
| 16 08 | Catalysts | All | Chemical industry |
| 16 09 | Oxidisers | All | Chemical industry |
| 16 10 | Aqueous liquid | All | Apply percentage G6 |
| 16 11 | Linings | All | Other manufacturing |
| 17 | Construction | All | Construction |
| 18 | Healthcare  | All | Commerce |
| 19 01 - 19 07 | Waste management | All | Waste management |
| 19 08 | Untreated sewage sludge | Direct from sewer | Not applicable  |
| 19 08 | Treated sewage sludge | STW or WWTW | Water industry |
| 19 09 | Water sludges | All | Water industry |
| 19 10 - 19 13 | Waste management | All | Waste management |
| 20 01 | Separate fractions | For non-local authority waste3 | Commerce |
| 20 01  | Separate fractions | For non-local authority waste4 | 51% industry (SIC A-E) 49% commerce6 |
| 20 01 | Separate fractions | Local authority waste or site1 | Household |
| 20 01 | Separate fractions | Local authority waste or site2 | Apply local authority household/commercial split5 |
| 20 02 | Biodegradable | For non-local authority waste | Commerce |
| 20 02 | Biodegradable | Local authority waste or site1 | Household |
| 20 02 | Biodegradable | Local authority waste or site2 | Apply local authority household/commercial split5 |
| 20 03 01 | Mixed waste | For non-local authority waste3 | Commerce |
| 20 03 01 | Mixed waste | For non-local authority waste4 | 51% industry (SIC A-E) 49% commerce6 |
| 20 03 01 | Mixed waste | Local authority waste or site1 | Household |
| 20 03 01 | Mixed waste | Local authority waste or site2 | Apply local authority household/commercial split |
| 20 03 02 | Markets | All | Commerce |
| 20 03 03 | Street cleaning | All | Commerce |
| 20 03 04 | Septic tank sludge | All | Not applicable |
| 20 03 06 | Sewage cleaning | All | Water industry |
| 20 03 07 | Bulky | For non-local authority waste3 | Commerce |
| 20 03 07 | Bulky | For non-local authority waste4 | 51% industry (SIC A-E) 49% commerce6 |
| 20 03 07 | Bulky | Local authority waste or site1 | Household |
| 20 03 07 | Bulky | Local authority waste or site2 | Apply local authority household/commercial split5 |
| 20 03 99 | Other MSW | For non-local authority waste3 | Commerce |
| 20 03 99 | Other MSW | For non-local authority waste4 | 51% industry (SIC A-E) 49% commerce6 |
| 20 03 99 | Other MSW | Local authority waste or site1 | Household |
| 20 03 99 | Other MSW | Local authority waste or site2 | Apply local authority household/commercial split5 |
| 20 codes | Local authority waste | Local authority waste sent to non-local authority site | Apply Scotland household/commercial split5 |

1 If site only accepts household waste

2 If site accepts household and commercial or industrial waste

3 If site only accepts commercial waste

4 If site only accepts commercial and industrial waste

5 Local authority household/commercial split is the relative proportion of household and commercial waste collected by the individual local authority.

6 Refer to Table 12 below.

Table 12. Assignment of waste types to industry sector

| **Waste type** | **Agricultureforestry fishing** | **Mining &quarrying (inc oil & gas extraction)** | **Food & drink mfr** | **Mfr of wood products** | **Chemical mfr** | **Other mfr** | **Power industry** | **Water industry** | **Waste mgt** | **Construction** | **Commerce** | **Households** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Spent solvents (A)** | 0.0% | 0.0% | 0.0% | 0.0% | 99.3% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% |
| **Used oils (B)** | 9.5% | 18.2% | 0.1% | 0.1% | 2.9% | 7.5% | 1.1% | 0.0% | 0.4% | 0.0% | 59.1% | 1.1% |
| **Discarded equipment (C)** | 0.0% | 0.8% | 0.3% | 0.0% | 0.6% | 0.4% | 0.0% | 0.0% | 20.9% | 0.0% | 33.2% | 43.9% |
| **Discarded vehicles (D)** | 3.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.4% | 0.0% | 47.7% | 43.7% |
| **Batteries & accumulators wastes (D)** | 7.2% | 3.3% | 0.0% | 0.1% | 0.5% | 5.5% | 1.5% | 0.0% | 1.1% | 0.0% | 73.1% | 7.6% |
| **Gas Bottles (F)** | 0.0% | 29.3% | 0.0% | 32.4% | 0.0% | 16.7% | 3.5% | 0.0% | 0.0% | 0.0% | 18.1% | 0.0% |
| **Aqueous Wastes (G)** | 0.0% | 28.1% | 0.0% | 29.1% | 0.0% | 21.7% | 2.4% | 0.0% | 0.0% | 0.0% | 18.7% | 0.0% |
| **51% industry (SIC A - E) 49% commerce**  | 5.7% | 5.7% | 5.7% | 5.7% | 5.7% | 5.7% | 5.7% | 5.7% | 5.7% | 0.0% | 49.0% | 0.0% |

Notes

1. Percentages for waste types A-G refer to the percentage split of the waste across the sectors from the SEPA business waste survey data 2010. For certain generic wastes that are produced by most economic sectors such as oils, batteries, gas bottles the 2010 percentage split was used to apportion these wastes across the sectors for 2022. For example, Percentage B was applied for used oils. This means that the total quantity of oil waste generated in 2022 was apportioned across the industry (economic) sectors in accordance with the percentage split from the 2010 data.
2. 51% industry (SIC A-E) 49% commerce refers to the average overall industrial/commercial split of waste from three recent C&I waste generation studies. These were the [England C&I survey 2009](http://archive.defra.gov.uk/evidence/statistics/environment/waste/documents/stats-release101216.pdf), the [Wales C&I survey 2009](http://wales.gov.uk/statistics-and-research/industrial-commercial-waste-survey/?lang=en) and the [Scotland C&I data 2011](http://www.sepa.org.uk/environment/waste/waste-data/waste-data-reporting/business-waste-data/). SIC A-E refers to all industrial sectors excluding construction.

# Appendix 3

Table 13. Lookup table used to convert segregated WasteDataFlow waste category to statistical reporting category

| **SEPA reporting** | **WasteDataFlow** | **Hazardous (H) /Non-hazardous (NH)** |
| --- | --- | --- |
| Animal and mixed food waste | Waste food only | NH |
| Animal and mixed food waste | 25% of Mixed garden and food waste | NH |
| Animal and mixed food waste | Vegetable oil | NH |
| Batteries and accumulators wastes | Automotive batteries | H |
| Batteries and accumulators wastes | Post-consumer, non-automotive batteries | NH |
| Combustion wastes | Incinerator bottom ash | NH |
| Construction and demolition waste | Rubble | NH |
| Construction and demolition waste | Plasterboard | NH |
| Discarded electrical and electronic equipment | WEEE - Large domestic apps | H |
| Discarded electrical and electronic equipment | WEEE - Small domestic apps | H |
| Discarded electrical and electronic equipment | WEEE - Cathode ray tubes | H |
| Discarded electrical and electronic equipment | WEEE - Fridges and freezers | H |
| Discarded machines and equipment components | WEEE - Fluorescent tubes and other light bulbs | H |
| Discarded vehicles | Bicycles | NH |
| Glass wastes | Green glass | NH |
| Glass wastes | Brown glass | NH |
| Glass wastes | Clear glass | NH |
| Glass wastes | Mixed glass | NH |
| Health care and biological wastes | Adsorbent Hygiene Products (AHP) | NH |
| Household and similar wastes | Furniture | NH |
| Household and similar wastes | Bric-a-brac | NH |
| Household and similar wastes | Mattresses | NH |
| Metal wastes, ferrous | Steel cans | NH |
| Metal wastes, mixed ferrous and non-ferrous | Mixed cans | NH |
| Metal wastes, mixed ferrous and non-ferrous | Other scrap metal | NH |
| Metal wastes, non-ferrous | Aluminium cans | NH |
| Metal wastes, non-ferrous | Aluminium foil | NH |
| Mixed and undifferentiated materials | Cardboard beverage packaging | NH |
| Mixed and undifferentiated materials | Co-mingled materials | NH |
| Mixed and undifferentiated materials | Other materials | NH |
| Off-specification chemical wastes | Aerosols | NH |
| Off-specification chemical wastes | Fire extinguishers | H |
| Off-specification chemical wastes | Gas Bottles | H |
| Off-specification chemical wastes | Ink and toner cartridges | NH |
| Off-specification chemical wastes | Paint | NH |
| Paper and cardboard wastes | Paper | NH |
| Paper and cardboard wastes | Card | NH |
| Paper and cardboard wastes | Books | NH |
| Paper and cardboard wastes | Mixed paper and card | NH |
| Paper and cardboard wastes | Yellow pages | NH |
| Plastic wastes | Mixed plastics | NH |
| Plastic wastes | Mixed plastic bottles | NH |
| Plastic wastes | PET | NH |
| Plastic wastes | HDPE | NH |
| Plastic wastes | PVC | NH |
| Plastic wastes | LDPE | NH |
| Plastic wastes | PP | NH |
| Plastic wastes | PS | NH |
| Plastic wastes | Other plastics | NH |
| Plastic wastes | Video tapes, DVDs and CDs | NH |
| Rubber wastes | Car tyres | NH |
| Rubber wastes | Van tyres | NH |
| Rubber wastes | Large vehicle tyres | NH |
| Rubber wastes | Mixed tyres | NH |
| Soils | Soil | NH |
| Textile wastes | Textiles only |  |
| Textile wastes | Footwear only |  |
| Textile wastes | Textiles and footwear | NH |
| Textile wastes | Carpets | NH |
| Used oils | Mineral oil | H |
| Vegetal wastes | Green garden waste only | NH |
| Vegetal wastes | Other compostable waste | NH |
| Vegetal wastes | 75% of Mixed garden and food waste | NH |
| Wood wastes | Wood for composting | NH |
| Wood wastes | Wood | NH |
| Wood wastes | Chipboard and MDF | NH |
| Wood wastes | Composite wood materials | NH |

# Appendix 4

Table 14. Mixed household waste categories for SEPA reporting and WasteDataFlow

| **SEPA reporting** | **WasteDataFlow** | **Hazardous (H) /Non-hazardous (NH)** |
| --- | --- | --- |
| Household and similar wastes | Collected household waste: Regular Collection | NH |
| Household and similar wastes | Collected household waste: Bulky Waste | NH |
| Household and similar wastes | Collected household waste: other | NH |
| Household and similar wastes | Civic amenity sites waste: Household | NH |
| Other mineral wastes | Asbestos Waste separately collected | H |

# Appendix 5

Table 15. EWC codes which comprise Municipal Waste and biodegradability factors

| **EWC code** | **Biodegradability factor** | **EWC code** | **Biodegradability factor** |
| --- | --- | --- | --- |
| 20 01 01 | 1 | 20 03 99 | 0.63 |
| 20 01 02 | 0 | 19 01 02 | 0 |
| 20 01 08 | 1 | 19 01 11\* | 0 |
| 20 01 10 | 0.5 | 19 01 12 | 0 |
| 20 01 11 | 0.5 | 19 01 13\* | 0 |
| 20 01 13\* | 0 | 19 01 14 | 0 |
| 20 01 14\* | 0 | 19 01 15\* | 0 |
| 20 01 15\* | 0 | 19 01 16 | 0 |
| 20 01 17\* | 0 | 19 01 17\* | 0 |
| 20 01 19\* | 0 | 19 01 18 | 0 |
| 20 01 21\* | 0 | 19 01 99 | 0 |
| 20 01 23\* | 0 | 19 04 01 | 0 |
| 20 01 25 | 1 | 19 04 02\* | 0 |
| 20 01 26\* | 1 | 19 04 03\* | 0 |
| 20 01 27\* | 0 | 19 04 04 | 0 |
| 20 01 28 | 0 | 19 05 01 | 0.63 |
| 20 01 29\* | 0 | 19 05 03 | 0.63 |
| 20 01 30 | 0 | 19 06 03 | 0 |
| 20 01 31\* | 0 | 19 06 04 | 0.2 |
| 20 01 32 | 0 | 19 06 05 | 0 |
| 20 01 33\* | 0 | 19 06 06 | 0.2 |
| 20 01 34 | 0 | 19 12 01 | 1 |
| 20 01 35\* | 0 | 19 12 02 | 0 |
| 20 01 36 | 0 | 19 12 03 | 0 |
| 20 01 37\* | 1 | 19 12 04 | 0 |
| 20 01 38 | 1 | 19 12 05 | 0 |
| 20 01 39 | 0 | 19 12 06\* | 1 |
| 20 01 40 | 0 | 19 12 07 | 1 |
| 20 01 41 | 0 | 19 12 08 | 0.5 |
| 20 01 99 | 0.63 | 19 12 09 | 0 |
| 20 02 01 | 1 | 19 12 10 | 0.5 |
| 20 02 02 | 0 | 19 12 11\* | 0.5 |
| 20 02 03 | 0 | 19 12 12 | 0.63 |
| 20 03 01 | 0.63 | 15 01 01 | 1 |
| 20 03 02 | 0.63 | 15 01 02 | 0 |
| 20 03 03 | 0.51 | 15 01 05 | 0.74 |
| 20 03 04 | 0.2 | 15 01 06 | 0.63 |
| 20 03 06 | 0.1 | 15 01 07 | 0 |
| 20 03 07 | 0.5 | 15 01 09 | 0.5 |

# Appendix 6

### European Waste Catalogue

Throughout this document reference is made to both the European Waste Catalogue (EWC) list of wastes and European Waste Catalogue for Statistics (EWC-STAT). A brief explanation of each is given below, along with links to further information.

### European Waste Catalogue List of Waste (EWC 2000)

The EWC 2000 is a harmonised, non-exhaustive list of waste types established by the European Commission (2000/532/EC). The list is used to categorise waste based on a combination of what they are, and the process or activity that produces them.

The full EWC 2000 list and further information is available [in the directive](https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2000D0532:20020101:EN:PDF).

The list is divided into 20 chapters, most of which are industry-based, although some are based on materials and processes. Each chapter is represented by a two-digit code between 01 and 20 and comprises one or more subchapters. Individual waste types are detailed in the subchapters and are assigned a six-digit code that comprises two digits for the chapter, two for the subchapter and two specific to the waste type.

Hazardous wastes are signified by entries where the EWC code is marked by an asterisk (\*).

The use of EWC codes to describe waste on waste transfer notes in Scotland has been statutory since April 2004. The majority of statutory waste data returns received by SEPA, including licensed/permitted site returns, exempt activity returns and special waste consignment notes require waste to be classified according to the EWC 2000.

### European Waste Catalogue for Statistics (EWC-STAT)

The EWC-Stat is a (mainly) substance-oriented statistical classification of waste established by the European Commission (2004/574/EC). The EWC-STAT contains 13 categories, each represented by a two-digit code between 01 and 13. These are subdivided into individual waste types.

A table of equivalence allows wastes coded in the EWC 2000 to be converted into the EWC-Stat. However, because of the way the coding system operates, it is not possible to do the reverse conversion. The table of equivalence and further information is available in the [regulation](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:253:0002:0041:EN:PDF).

# Appendix 7

### Glossary

Anaerobic digestion**:** A process commonly used to break down biodegradable wastes (e.g. food and green wastes) in the absence of oxygen

In-vessel composting**:** A group of methods which confine the composting of organic waste materials within a building, container, or vessel

Mechanical biological treatment: A type of waste processing plant that combines sorting and biological treatment

Materials recovery facility: A waste management plant which separates recyclable materials from mixed wastes

Municipal solid wastes: A collective term commonly used to describe household and similar commercial, industrial and institutional wastes

Standard industrial classification: For business establishments and other statistical units by the type of economic activity in which they are engaged

WasteDataFlow: A web-based reporting tool used by Scottish local authorities to report the wastes they manage

# Appendix 8

### Acronyms

AD Anaerobic Digestion

C&D Construction and Demolition

C&I Commercial and Industrial

Defra Department of the Environment Food and Rural Affairs

GVA Gross Value Added

EA Environment Agency

EWC European Waste Catalogue

EWC-STAT European Waste Catalogue for Statistics

IVC In-Vessel Composting

MRF Materials Recovery Facility

MBT Mechanical Biological Treatment

NUTS Nomenclature of Units for Territorial Statistics

ONS Office of National Statistics

RDF Refuse Derived Fuel

SEPA Scottish Environment Protection Agency

SIC Standard Industry Classification

SRF Solid Recovered Fuel

TFS Transfrontier shipment of waste

WFAS Waste from All Sources

WDF WasteDataFlow

WEEE Waste Electrical and Electronic Equipment

ZWS Zero Waste Scotland

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1. For further details on tonnage thresholds and process types covered under complex waste exemptions see the exemptions regulation section of [SEPA’s web site](http://www.sepa.org.uk/regulations/waste/activities-exempt-from-waste-management-licensing/) [↑](#footnote-ref-2)
2. Soil washing involves the recovery of a range of materials from soils, often extracted from excavation waste sites. [↑](#footnote-ref-3)
3. <https://www.sepa.org.uk/environment/waste/waste-data/> [↑](#footnote-ref-4)