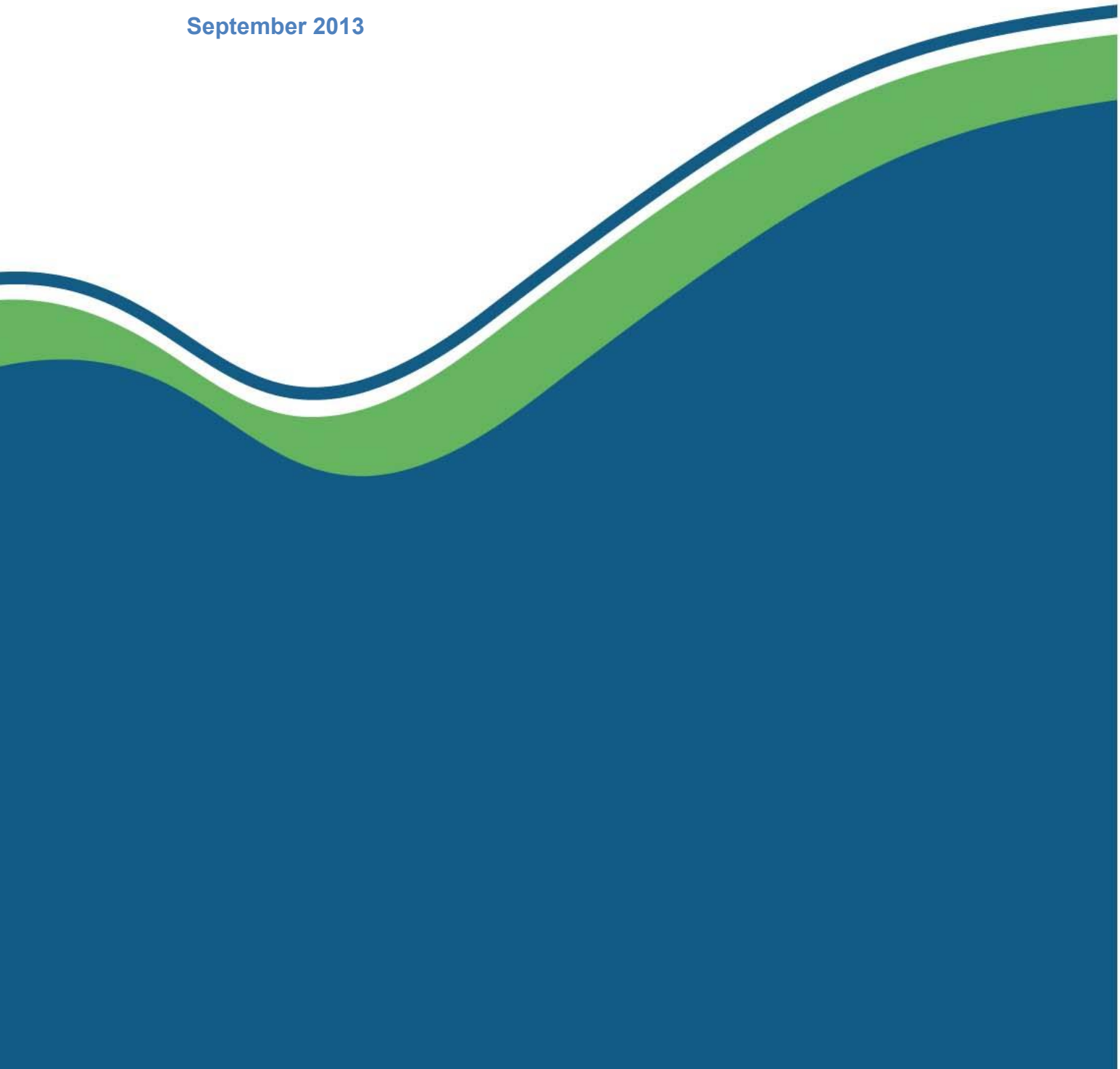
2011 Waste Data Quality Report

September 2013



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1 Introduction

This report describes the methodologies to produce summary waste data for Scotland for the 2011 calendar year. The report should be used alongside the 2011 waste data tables, which can be found on SEPA's website at: www.sepa.org.uk/waste/waste_data/waste_data_digest.aspx

The 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[1]:

- Prevention
- Prepare for reuse
- Recycle
- Recover other value
- Disposal

This document is structured in the same way as the data tables, the exception is household waste. In the data tables household waste is presented across the waste hierarchy category tabs (prevention, recycled etc). In this document we use a stand-alone section for household waste. This is because household data is taken from a discrete data set (WasteDataFlow) and it is more concise to report the methodology in a single section.

In some cases the quantities of household waste and waste from all sources are counter-intuitive. For example, there is more household waste than waste from all sources for a given reporting category. This is a product of using different datasets and corresponding methodologies, which are not comparable.

Each methodology in this document highlights any important limitations with each dataset. We explain any important assumptions we have made about the data during our analysis. We also highlight areas where SEPA, local authorities and Zero Waste Scotland are working to improve data quality in the future. This will be co-ordinated by the Waste Data Strategy for Scotland[2] which is due for review in 2014. A technical advisory group has also been established to support the aims of the strategy.

The six data sources referred to at various parts of the document are listed below. The agency that carried out the analysis of the dataset is provided in brackets. A fuller description for five of the data sets is provided in Appendix 1, including any links to return forms and guidance.

- Scottish licensed/permitted 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 arisings (Defra)
- Hazardous waste interrogator (Environment Agency)

[1] www.scotland.gov.uk/Resource/0042/00420711.pdf
[2] www.sepa.org.uk/waste/waste_data.aspx

Appendix 2 lists three separate conversions of data that were used in the Commercial and Industrial (C&I) arisings methodology (also see Section 2.2). Appendix 3 and Appendix 4 list the waste categories used in the household waste methodology (also see Section 8). Appendix 5 provides a brief 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. Appendices 6 and 7 provide a glossary of terms and lists of acronyms respectively.

2 Prevention

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 arisings and waste arisings per unit of gross value added (GVA) as indicators of waste prevention. Further details on these approaches are given in Section 2.6. The term 'arisings' means the amount of waste generated by Scottish households and businesses. The methodologies below do not focus on how and where the waste is subsequently managed.

2.1 Household waste arisings

Data for household waste arisings is taken from WasteDataFlow (WDF). Separately collected recycling arisings were taken from Questions 10, 16a, 17a and 18a. All waste collected for disposal was taken from Question 23 and allocated to the category 'household and similar wastes'. Collection tonnages were reported in the quarter in which they are managed.

2.2 Commercial and industrial waste arisings

2.2.1 Introduction

Commercial and industrial (C&I) waste referred to in this section relates to waste produced by businesses and excludes construction and demolition (C&D) waste.

The method used to estimate Scottish commercial and industrial waste arisings for 2011 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 arisings by business sector.

Prior to 2011, data on the wastes produced by businesses was collected by SEPA using business waste surveys[3]. Sample surveys were carried out for the years 2004 and 2006 to provide estimates of the types and quantities of waste produced by all businesses in Scotland. The data was subsequently extrapolated to produce estimates for 2005, 2007, 2008, 2009 and 2010.

2.2.2 Overview

In order to produce estimates of C&I waste arisings an analysis was carried out of all waste inputs to licensed/permitted and complex exempt sites in Scotland. The sector

[3] www.sepa.org.uk/waste/waste_data/commercial__industrial_waste/business_waste_surveys.aspx

producing this waste, as defined by Standard Industry Classification[4] (SIC) code, was determined using four different approaches depending on the size of the operator or the type of site.

Once SIC code 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.

2.2.3 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 2011 were considered relevant to this study and comprised 754 waste management sites and 417 complex exempt activities. The total waste input to these sites was 17.3 million tonnes.

Four 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 in total;
- small waste operators that handled less than 50,000 tonnes of waste in total;
- local authorities;
- complex exempt activities.

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 2011 were identified from their licensed/permitted site returns by adding together the inputs to all of their sites (84 operators). These operators were then split into two sub-groups:

- those that needed to be contacted to obtain information on the origin of waste;
- those that did not need to be contacted because the origin of waste was clear.

Operators in the group that needed to supply information were sent a workbook 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. A return rate of 84% was received to this request and resulted in operators assigning SIC codes to 30% of the 17.3 million tonnes of waste handled by all types of site.

For the six large operators that did not respond to the SIC data request the approach used for small operators was followed.

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

- type of operator (Appendix 2);

[4] www.ons.gov.uk/ons/guide-method/classifications/current-standard-classifications/standard-industrial-classification/index.html

- type of waste using the standard assumptions (Appendix 2).

This accounted for a further 18% of the total waste handled by all types of site.

Small waste operators

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 assumptions 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 the SEPA business waste data 2010. Data from WasteDataFlow was also used to identify household waste sent to non-local authority sites.

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 all of the waste was assigned to the household SIC group. If the site was licensed to accept both household and commercial waste then waste was assigned to the household and commerce SIC groups in accordance with the split. The exception to this rule were two landfill sites operated by Glasgow City Council and Fife Council which accepted large quantities of waste from private construction companies. These authorities were contacted separately to confirm the quantities of construction waste accepted at their sites and the construction sector SIC was assigned to these wastes.

Waste handled by local authority sites accounted for 18% of the total waste handled.

Complex exempt activities

Returns from complex exempt activities that operated in 2011 were also used to estimate arisings. The origin of waste (SIC group) for wastes handled by these sites was estimated using the standard assumptions detailed in Appendix 2.

Inclusions and exclusions in the dataset

Once the main analysis was complete and SIC codes assigned to all 17.3 million tonnes of waste the inclusion, exclusion or recalculation of specific wastes was necessary in order to produce the final dataset. The actions carried out are explained below.

Waste handled by sewage treatment and wastewater treatment works

Waste waters are excluded from the scope of the Waste Framework Directive as they are covered by other European legislation and therefore inputs of sewage and septic tank sludge to sewage and wastewater treatment plant were removed from the dataset. Other wastes handled by these treatment works were included.

Wet and dry weights

Under the European Waste Statistics Regulation, the majority of data is required to be reported as wet weight, except for common sludges, industrial effluent sludges and dredging spoils. To provide consistency with European reporting these wastes were converted to dry weights in the final dataset by the use of standard UK conversion factors. These factors are set out in Appendix 2.

Wastes produced by the waste management industry

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

Firstly, in order 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.

Secondly, 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 the standard assumptions in Appendix 2. It is acknowledged that this estimate is in need of improvement as it does not include all wastes that could potentially be produced by the industry.

Wastes produce 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 European Waste Catalogue Chapter 17) was excluded from the final dataset.

Removal of non-Scottish waste

Waste with an origin outside Scotland was excluded from the final dataset.

Addition of missing data

Once the actions described above had been carried out, and the near final dataset produced, the latter was compared with the outputs from the 2010 business waste data as part of the quality assurance process. The purpose was to identify any large differences between SIC sectors and/or waste types between the two datasets and

investigate these further. As a result nine specific issues were checked and followed up. For all but four of these issues the 2011 data was deemed to be more accurate than the 2010 data so no further action was required.

In four instances, however, it was identified that data was under reported in 2011 because the wastes (legitimately) did not pass through a licensed/permitted or complex exempt site in Scotland. This missing data was therefore estimated and added to the final dataset, ensuring no waste was double-counted. The issues and solutions are described in Table 1 below.

Table 1 - Waste types not captured under the licensed/permitted or complex exempt datasets and the alternative approach used

Sector/waste type	Waste type	Issue	Solution
Agriculture	Chemical wastes	Sheep dip and pesticides may be disposed on farm	Estimated using Agricultural Waste Estimates Model[5]
Agriculture	Plastics	Often handled by simple exempt activities with no data reporting requirement	Estimated using Agricultural Waste Estimates Model[4]
Chemical manufacture	Solvents	May be transported directly to the rest of the UK for processing	Scottish solvents identified using Environment Agency Hazardous Waste Interrogator
Commerce	Tyres	May be transported directly to the rest of the UK for processing or for use overseas	Estimated tyre exports from Zero Waste Scotland 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

Once SIC codes had been assigned to the 17.3 million tonnes of waste handled by all types of site, and the inclusions/exclusions applied, the arisings 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 arisings data for 2011 and amounted to 4.54 million tonnes.

Accuracy of SIC codes

Overall, SIC codes were assigned to 66% of the total waste handled by all types of site based on operator responses, the type of site, or if the site was operated by a

[5] Agricultural Waste Estimates Model developed by Marcus Hodges Environment and BDB Associates on the behalf of the Environment Agency

local authority (Table 2 below). Standard assumptions were used to assign SIC codes for the remaining 34% of the total waste analysed.

Table 2 - Summary of how much SIC code data was produced (as a % of total waste analysed) using one of four methods

Origin of SIC code	Percentage of total waste analysed
Operator responses	30%
Type of site	18%
Local authorities	18%
Standard assumptions	34%

2.3 Construction and demolition waste arisings

2.3.1 Introduction

This section describes how we estimate the quantities of construction and demolition waste (C&D) arisings in Scotland in 2011. Waste with an origin outside Scotland is removed from the dataset.

The methodology will capture all waste from the C&D industry, such as soil and stone, wood and metals. Our methodology only considers waste coded as European Waste Catalogue (EWC) Chapter 17 (C&D wastes including excavated soil from contaminated sites). We use data from two sources: licensed/permitted site returns and complex exempt activity returns, both of which are managed by SEPA. Scottish commercial and industrial waste arisings for 2011 was 6.05 million tonnes.

2.3.2 Methodology

Licensed/permitted sites dataset

Data returns from 252 licensed/permitted sites operating in 2011 were used to estimate C&D waste arisings. A consignment of waste may be managed at more than one licensed/permitted site. To produce our best estimate of C&D waste arisings, we try to avoid double-counting. To do this the methodology uses the following calculation to estimate waste arisings from the overall licensed/permitted site dataset:

Chapter 17 waste inputs – Chapter 17 waste outputs = Chapter 17 waste arisings

This is calculated at the Scotland level, not at the site level. The difference in inputs minus outputs is the ‘arisings’ of waste. This can be waste that has been:

- treated such 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, because of its high economic value, we know ends up at a small number of recycling sites before being exported from Scotland for recycling. For these high value metal waste arisings, we do not use the inputs minus outputs calculation but instead use the quantity of EWC Chapter 17 waste metals exported from the recycling sites.

Mixed wastes

The sorting of mixed waste can cause problems when calculating inputs minus outputs. In 2011, there was more outputs than inputs for glass and plastic. The 'extra' tonnage of glass and plastic is assumed to have come from the sorting of mixed waste (non-hazardous mineral waste category). In 2011, there was 10,522 tonnes of this 'extra' glass and plastic included in the arisings figure. We remove an equivalent tonnage from the non-hazardous mineral waste category.

Recoding of wastes to Chapter 19

Some of the EWC Chapter 17 codes (construction and demolition wastes) may be recoded to EWC Chapter 19 (wastes from waste management facilities etc) as a result of 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 arisings 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) are removed from the analysis, as their waste will be captured in the previous year. There were 49 such sites in 2011.

Complex exemption dataset

Further details on the calculation of waste tonnages managed under exemption are given in Section 3.5. Actual data returns from 164 complex exempt activities operating in 2011 were used to estimate C&D waste arisings. Data from 237 complex exempt activities thought to have been operating in 2011, but which did not submit any returns, are estimated. Table 3 summarises the tonnages associated with these actual and estimated returns.

Table 3 - Exempt activity waste returns – actual and estimated

Exempt activity waste returns	Number	Tonnes
Actual	164	1,816,886
Estimated	237	921,577
Total	**401**	**2,738,463**

Exempt activities are commonly activities where waste is recycled into new products or reused. The tonnages of waste reported in the exempt activity returns will be a direct estimate of waste arisings. 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.

2.4 Special waste arisings

The data for special waste arisings 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 arisings described elsewhere in Section 2. Waste classified as hazardous in each arisings methodology are combined to produce an overall figure.

2.5 Packaging waste arisings

Estimates of packaging waste arisings for the UK are produced by Defra. Scottish packaging waste arisings are assumed to represent 10% of the UK arisings.

2.6 Calculation of waste arisings per unit of Gross Value Added

According to the Office of National Statistics (ONS) definition, 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[6] 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[7].

GVA is one of the measures chosen by the Scottish Government for waste prevention. In Scotland's draft waste prevention plan 'Safeguarding Scotland's Resources' (due for publication on 2 October) 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 prevention the benefits of prevention and recycling.

The original consultation for safeguarding Scotland's resources can be viewed here: http://www.scotland.gov.uk/Publications/2012/06/4215

GVA per capita represents total income per head of population in pounds. Dividing total waste arisings by GVA gives a measure of waste arisings per pound of GVA. This has been expressed as arisings per £1,000 GVA in the data tables.

Further information on the use of GVA in the context of waste produced is available from the Scottish Government.

[6] http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-265236

[7] http://www.ons.gov.uk/ons/guide-method/method-quality/quality/quality-information/economy/quality-and-methodology-information-for-regional-gross-value-added--gva-.pdf

3 Recycled

3.1 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.

The data is for waste from all sources. 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 8.

3.2 Composting in Scotland

This section describes how we report on the composting of waste within Scotland. We do not report on the composting of Scottish wastes outside Scotland and we assume all waste composted at Scottish sites is Scottish in origin. Composting data are taken from two data sources managed by SEPA; licensed/permitted sites returns and complex exemptions. In total there was 479,813 tonnes of waste composted in Scotland in 2011. Site returns made up 443,340 tonnes and exemptions 36,473 tonnes.

3.2.1 Composting at licensed/permitted sites

The methodology captures composting of waste using windrow, in-vessel composting (IVC) and anaerobic digestion (AD) at licensed/permitted sites. Data are taken from Table C (Waste treatment on site) and split into i) composting of all waste types, and ii) biological treatment of EWC 20 01 08 (biodegradable kitchen and canteen waste).

For composting of waste from all sources, EWC codes with a management method ‘CP’ (composted on site) were assessed as suitable or unsuitable for composting. A total of 443,182 tonnes was reported, of which 441,373 tonnes was judged suitable and 1,809 tonnes unsuitable. Unsuitable waste categories were excluded from final figures. The five largest tonnages for each category are given in Table 4.

Composting of 20 03 01 (mixed municipal waste) was reported by seven sites (35,563 tonnes). For 2011 we have included 20 03 01 tonnage composted, but the coding of this waste will be further scrutinised in the future. In addition to waste reported under management method ‘composting’, we also include 1,967 tonnes of 20 01 08 (biodegradable kitchen and canteen waste) treated using ‘BT’ (biological treatment). Only four sites reported in this way and they are all AD/IVC facilities.

Table 4 - The five largest waste types judged suitable/unsuitable for composting from Table C data (management method 'composting')

EWC code	Suitable?	Tonnes
20 02 01	Yes	283,810
20 01 08	Yes	53,359
20 03 01	Yes	35,563
20 03 03	Yes	25,023
02 02 03	Yes	7,596

EWC code	Suitable?	Tonnes
15 02 03	No	570
17 08 02	No	499
03 01 04*	No	167
19 12 12	No	145
19 09 04	No	140

* Hazardous wastes

3.2.2 Exempt composting activity

Some of the composting activity in Scotland is exempt from licensing and is carried out under exemption. Paragraph 12[8] composting is the only data considered for 2011. More recently anaerobic digestion of agricultural and distillery wastes may have taken place under Paragraph 51, but this was not in place during 2011.

Of the 40,517 tonnes of waste composted under Paragraph 12, we excluded 3,519 tonnes of mineral waste from construction and demolition and 525 tonnes of sorting residues. This gave a final estimate of 36,473 tonnes. The Paragraph 12 data tends to represent smaller tonnage sites. For a more detailed description of the exemptions methodology, including Paragraph 12 composting, please see Section 3.5.

3.3 Glass, plastic and wood recycled in Scotland

Data are taken from the 2011 accredited packaging waste reprocessor dataset managed by SEPA. For 2011 the dataset consisted of 14 Scottish reprocessors; eight glass, three plastic and three wood. Data from the single energy from waste site was excluded from this methodology. The quantity of UK packaging waste recycled under the scheme increased from 291,000 tonnes in 2010 to 331,000 tonnes in 2011.

Packaging waste recycled under the scheme ('scheme data') is audited annually by SEPA. We also use data on *non-packaging waste* and *non-UK packaging waste* recycled by reprocessors 'non-scheme' data). Non-scheme data are not audited by SEPA and it's quality is therefore unknown. The contributions of scheme and non-scheme data are given below in Table 5.

Table 5 - The relative contributions of UK packaging waste ('scheme data'); and non-packaging waste and non-UK packaging waste ('non-scheme data')

Scheme data (tonnes)	Non-scheme data (tonnes)	Total recycled (tonnes)	Non-scheme data (as % of total)
331,623	150,319	481,943	31%

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. For the 2011 data, waste recycled by Scottish accredited reprocessors is reported as 100% Scottish in origin.

[8] For further details on tonnage thresholds and process types covered under Paragraph 12 see www.sepa.org.uk/waste/waste_regulation/application_forms/exempt_activities/paragraph_12.aspx

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

Data is taken from the 2011 licensed/permitted site returns dataset. The methodology focuses on eight common waste types – it is not an exhaustive list of every possible waste produced within Scotland which is subsequently recycled elsewhere. 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. For a summary of the EWC/EWC-STAT codes used in each analysis, see Table 6 below. More detail of the EWC/EWC-STAT list of wastes can be found in Appendix 5.

Table 6 - Summary of the EWC or EWC-STAT codes used for eight waste types reported as recycled outside Scotland

Waste type	EWC or EWC-STAT codes
Batteries	16 06 01*, 16 06 02*, 16 06 04, 16 06 05, 16 06 06*, 20 01 33* and 20 01 34
Discarded equipment	16 02 09*, 16 02 11*, 16 02 13*, 16 02 14, 16 02 15*, 16 02 16, 20 01 21*, 20 01 23*, 20 01 35* and 20 01 36
End of life vehicles (ELV)	16 01 06 only (whole de-polluted vehicles)
Glass	15 01 07, 16 01 20, 17 02 02, 17 02 04, 19 12 05 and 20 01 02
Metals (excl whole ELV's)	EWC-STAT 6.1-6.3
Paper and card	EWC-STAT 7.2
Plastic	EWC-STAT 7.4
Wood	EWC-STAT 7.5

* Hazardous wastes

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. For example, 49 sites were included in the final analysis for metal wastes, comprising 546,690 tonnes. The seven largest sites contributed 514,736 tonnes, or 94% of the total.

During the analysis, Table B (Waste inputs to site) was used to determine the quantities of waste originating from outside Scotland that were eventually used in the final analysis of Table D. In all but two of the waste types less than 1% of site inputs were from outside Scotland, in this case all waste was reported as Scottish in origin.

For batteries and discarded equipment, it was not feasible to calculate the contribution of non-Scottish inputs to the waste subsequently exported. This was due to the large number of sites used in the final analysis and the reporting of waste origin "United Kingdom (UK)" by some sites. Therefore, in the final 2011 dataset all batteries and discarded equipment sent outside Scotland for recycling has been reported as Scottish in origin.

3.5 Recycling by exempt activities in Scotland

This section describes the methodology used to report the recycling of wastes using complex waste management exemptions. Further details on waste management exemptions can be found in Appendix 1. Exemptions are split into 'simple' and 'complex' activities. Some simple exempt activities also carry out recycling, but are not required to report to SEPA and are not included in our analysis. In the following section all reference to exemptions is for complex activities only.

In 2011, 897 exempt activities were registered under Paragraphs 7, 8(2), 9, 10, 12, 19, 42, 45, 47 and 50 between 1 November 2010 and 31 October 2011. There were no Paragraph 46 exemptions registered in 2011. The methodology for 2011 uses data from both actual returns and estimates.

In 2011 SEPA received data returns from 474 activities (53%) of the total number of returns expected. Quality assurance (e.g. duplicates, incorrect EWC codes) was carried out and reported tonnages were compared to tonnages at the time of application to check for inconsistencies.

A further 423 activities (47% of the total number thought to be operating in 2011) did not submit returns. Data was estimated for missing returns for exemption Paragraphs 7, 8(2), 9, 10, 12, 19, 45 and 47. Estimated tonnages were calculated as follows:

Tonnage estimated = application tonnage/average lifespan

Table 7 shows the average lifespans calculated from actual data returns and lifespans recorded in 2003, 2004, 2005 and 2006

Table 7 - Calculated average lifespans of selected exemption paragraphs

Paragraph	Average lifespan (years)
7	1.52
8(2)	1.14
9	1.38
10	2.40
12	1.39
19	1.20
45	Application tonnage used
47	Application tonnage used

The tonnages associated with reported and estimated returns are summarised in Table 8. SEPA will not be estimating data for complex exempt activities from 2012 onwards and will be working to improve return rates.

Table 8 - The contribution of actual and estimated data for recycling at exempt activities in 2011

Actual/estimated	Number	Tonnes	% of total
Actual	474	2,534,706	67%
Estimated	423	1,247,118	33%
Total	**897**	**3,781,824**	**100%**

4 Recovered

4.1 Introduction

This section describes how we report the recovery of waste via incineration. This methodology covers waste from all sources; we do not report separate commercial and industrial (C&I) and construction and demolition (C&D) waste. There is a separate methodology for household waste recovered by incineration in Section 8.2.4. We use a separate section (see 5.3) for waste disposed by incineration, but the methodologies are the same as that described in the following section.

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 European Waste Catalogue (EWC) codes.

4.2 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 19 sites used in the final 2011 analysis. Nine sites reported quarterly using the licensed/permitted site return form; a further 10 sites reported annually via monitoring returns supplied to SEPA.

For waste incinerated in Scotland, the only Scottish facilities currently classed as recovery are co-incinerators. All remaining facilities are classed as disposal. Process type definitions follow the Waste Framework Directive.

In the majority of cases waste data are supplied as EWC codes, which are aggregated into final reporting categories. For two sites, where EWC codes were missing, 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. For the remaining 10 sites, origin of waste is not a reporting requirement. SEPA regulatory staff provided estimates (% splits) based on their knowledge of the site. Data on the origin of waste for 2011 and previous years is not comparable, due to changes in the methodology. For example, between 2010 and 2011 there was a large increase (approximately 40,000 tonnes) in the quantity of non-Scottish waste reported as incinerated in Scotland.

4.3 Recovery by incineration outside Scotland

This methodology captures Scottish hazardous wastes sent outside Scotland for incineration. For 2011, the methodology does not capture non-hazardous waste sent outside of Scotland for incineration, such as waste:

- originating from the treatment of residual or comingled wastes at materials recovery facilities, mechanical and biological treatment and refuse derived fuel plants;
- sewage pellets or waste wood.

The data was extracted from the Environment Agency (EA) Hazardous waste interrogator database in November 2012. Further details of the dataset can be found in Appendix 1. A total of 9,826 tonnes of Scottish hazardous wastes was incinerated outside Scotland in 2011. The data are dominated by waste solvents, oils and chemical wastes.

The hazardous waste interrogator uses two incinerator types – 'incineration with energy recovery' and 'incineration without energy recovery'; which are reported in the final tables as 'recovered by incineration' and 'disposed by incineration' respectively. The site type 'co-incineration' is not reported in the hazardous waste interrogator dataset.

5 Disposed

5.1 Introduction

This section describes how we report the disposal of wastes via landfill and incineration. The data are for waste from all sources; 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 Sections 8.2.3 and 8.2.4.

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.

5.2 Waste disposed via landfill

Data on waste disposed by landfill in Scotland and elsewhere was taken from the licensed/permitted site returns dataset.

The data for landfilled in Scotland was taken from Tables B (Waste inputs to site) and C4 (Waste landfilled on-site after treatment – landfill sites only) of the licensed/permitted site returns, for 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 71 Scottish landfill sites included in the analysis. 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 12 operators that sent waste for landfilling outside Scotland in 2011. Scottish landfilled waste that does not pass through a Scottish waste management site will not be captured using this method. This may include local authority collected waste taken directly from the kerbside.

5.3 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 4 (Recovered) for further details.

6 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 waste data presented in the data tables is the summed hazardous component of all these separate analysis.

7 Imports and exports

Data on waste imported to 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 site returns Table B. Exports were compiled from waste outputs from all sites where the destination was reported as a location outwith Scotland in site returns Table D.

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.

8 Household waste

8.1 Introduction

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

The 2011 household data includes wastes from the following sources:

- household kerbside residual waste and segregated recycling and composting;
- household residual waste, recycling and composting from civic amenity sites;
- waste deposited for recycling at bring sites;
- bulky household waste collections and other irregular collections.

As part of the Scottish Government's Zero Waste Plan, three significant changes were made to the calculation of household waste recycling rates during 2011:

- compost like output from mechanical and biological treatment (MBT) of household wastes previously counted as recycled was re-classified as 'Other recovery';
- metals and ash from incineration previously counted as recycled was re-classified as 'Other recovery';
- street sweeping, gully waste, healthcare waste, beach cleansing waste were re-classified from household to commercial waste.

The above changes were introduced for reporting in the April-June 2011 quarter. The January-March 2011 data for all 32 local authorities was re-analysed to be consistent with the other three quarters for the year.

8.2 Methodology

8.2.1 Waste types

A list 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 in 2010. Question 18 in WDF does not allow for reporting by material type. All tonnages in Question 18 were allocated to the category 'mixed and undifferentiated materials'.

Under Scotland's Zero Waste Plan the compost like output (CLO) from MBT of household waste and recycled metal and ash from incineration of household waste do not count towards household recycling targets. Both waste types are excluded from reporting tables for recycling.

8.2.2 Household waste arisings

Separately collected recycling arisings were taken from Questions 10, 16a, 17a and 18a. All waste collected for disposal was taken from Question 23 and allocated to the category 'household and similar wastes'. Collection tonnages were reported in the quarter in which they are managed.

8.2.3 Household waste landfilled

Questions 51-53 capture the quantities of *total* waste landfilled directly. Landfilled rejects from waste treatment (e.g. MBT, Material recovery facilities (MRFs) are not captured in these questions. Questions 51-53 also include details of the landfill site, which enables reporting by 'in Scotland/outside Scotland'. Question 53a provides the household tonnages landfilled, but not site details. To report household waste landfilled by 'in Scotland/outside Scotland', we applied the same % split (in Scotland/outside Scotland) from Questions 51-53 to the household tonnage landfilled directly. We assume that the geographical pattern of landfilling for total waste (Questions 51-53) is the same as that for household waste (Q53a).

In 2011 landfill site details (i.e. Scotland/outside Scotland) were not captured for the landfilled rejects from the treatment of residual or co-mingled wastes. To estimate geographical location of waste treatment rejects landfilled, the ratio from Questions 51-53 was applied to reject tonnages. We assume that the geographical pattern of landfilling for rejects from waste treatment is the same as waste sent direct to landfill. This will be problematic for waste streams such as co-mingled wastes sent for sorting at MRFs outside Scotland. The geographical location of landfilled rejects from waste treatment is therefore considered our best estimate for 2011. In 2011, 10% of the total landfill figure comprised rejects from waste treatment processes such as MRFs. From July 2012 onwards, local authorities have the ability to report the geographical destination of residual/comingled waste rejects on WDF.

8.2.4 Household waste incinerated

Questions 54, 55 and 57a capture the quantities of household waste sent direct to an incinerator. For waste sent direct to an incinerator individual sites were designated as disposal, recovery or co-incineration using Waste Framework Directive criteria. Geographical location (Scotland/outside Scotland) was also reported.

Incinerator site details (i.e. type and geographical location) were not captured for the rejects sent for incineration following the treatment of residual or co-mingled wastes. To estimate geographical location (Scotland/outside Scotland) and incineration method (disposal, recovery or co-incineration), data from direct incineration was used. If data on direct incineration was missing, the method was assumed to be 'disposal' and geographical location 'Scotland'. In 2011 just over 10% of the incineration figure comprised rejects from waste treatment processes, such as MRFs. Of this figure, approximately half (5.8%) was assumed to be incineration by disposal. From July 2012 onwards, local authorities have the ability to report the site details for waste treatment rejects sent for incineration.

In the current incineration data, the quantity of household waste incinerated is the gross tonnage input to the incinerator, rather than net incineration[9] reported in the official statistics publication[10].

[9] Net incineration is the gross inputs, less outputs such as bottom ash and metals disposed/recycled.

8.2.5 Household waste recycled

Total household waste recycled/reused is the sum of segregated recyclate from the collection questions, plus recyclates separated from the treatment of residual and comingled wastes. For some residual treatment processes separate household tonnage inputs were reported. However, for recyclates separated at residual and clean MRFs, household waste inputs to the site were not separately reported in 2011 (i.e. only total inputs were reported). To estimate household-sourced recyclates separated from these waste streams, the following methods were used:

- *Recyclate from residual waste MRFs*

The household component of recyclate outputs from residual waste MRFs was calculated by taking the recyclate outputs from residual waste MRFs reported in Question 70, and multiplying by the household proportion of waste inputs to residual waste MRFs. The household proportion was estimated as the difference between the household waste sent to all other residual waste management processes (landfill, incineration, MBT, Other treatment) and the total household residual waste arisings.

- *Recyclate from comingled waste at clean MRFs*

As material outputs from clean MRFs are not recorded in WDF, the recyclate outputs were first estimated. These were derived from the difference between all waste materials reported and recycled in Q19, and sum of recycled materials from collection questions and recyclate outputs from all other management questions. The household component of these recyclate outputs was estimated by multiplying the recyclate outputs by the household proportion of waste inputs to clean MRFs. This household proportion was taken from the proportion of household co-mingled waste in the household collection questions.

From July 2012 changes to the way local authorities report waste in WDF will reduce the need to estimate in this way in future.

8.2.6 Household waste prepared for reuse

All household waste prepared for reuse was taken from Question 35 on WDF. The household component was estimated from the ratio of household waste collected for recycling or reuse for the material from the WDF collection questions.

8.2.7 Household waste composted

All materials sent to composting were calculated as per the household materials recycled above.

8.2.8 Final destination reporting

In 2011 the quantities of waste reused, composted or recycled in Scotland or outside Scotland were determined from WDF Question 19 (recycled) and Question 35 (reused). This methodology relies on the accurate reporting of the final destination of recycled materials. For example, a final destination for glass bottles would be the site where the bottles are reprocessed into new materials.

[10] www.sepa.org.uk/about_us/official_statistics.aspx

For the 2011 dataset, local authorities commonly report an intermediary site, rather than the final destination. For example, the great majority of metal tonnage is recorded as recycled in Scotland, despite there being little Scottish reprocessing infrastructure. As a result, the split between recycled in Scotland and outwith Scotland in the 2011 dataset should be considered our best estimate with available data. The waste management industry, Scottish local authorities, SEPA and Zero Waste Scotland are all working to improve final destination reporting during 2012-2013.

9 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 (via our SEPA mailback form)

www.sepa.org.uk/about_us/contacting_sepa/by_email.aspx

By Phone

Telephone 01786 457700 (Our normal office hours are Mon-Fri 9am- 5pm).

By Post

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Appendix 1

Datasets used in the 2011 methodology

Scottish licensed/permitted site returns

Approximately 900 individual licences submit quarterly returns to SEPA via email or post. A copy of the return form can be downloaded from the SEPA website[11]. The data 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 on-site after treatment on-site – landfill sites only) and Table D (Waste sent off site).

In 2011 a 94% return rate was achieved for those sites where we expected returns. We estimated data (Table B only) for 111 individual quarterly returns. Estimated data totalled 127,000 tonnes, or 0.7% of a total 18.6 million tonnes of inputs to all licences during 2011.

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. Submissions were manually collected, uploaded and checked. During 2014 SEPA will be phasing in the development of an on-line reporting system for licensed/permitted sites which will improve processing and quality assurance of waste returns.

Household wastes managed by Scottish local authorities (WasteDataFlow[12])

In 2011, all 32 Scottish local authorities reported on a quarterly basis. Local authorities are responsible for entering data, which cannot be modified by SEPA. Data entry is via a series of numbered questions[13].

In 2011 there was a 100% response rate. SEPA reviewed the data on a quarterly basis using a verification tool and informed local authorities where possible inconsistencies required checking. Data checking included the consistency of tonnages collected and managed for residual waste, segregated recycling and organic wastes.

From July 2012, SEPA introduced some significant changes to way Scottish local authorities report on WasteDataFlow. This should eventually result in much better information on the flows of waste through treatment processes, including the final destination of waste materials.

Wastes managed by 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. Operators of complex exempt activities register with SEPA annually and

[11] www.sepa.org.uk/waste/waste_data/statutory_data_returns/licensed-permitted_returns.aspx
[12] www.WasteDataFlow.org/
[13] www.wastedataflow.org/documents/guidancenotes/Scotland/GeneralGuidance/Scotland_WDF_User_Guidance_Rev_Oct_12.PDF

are required to submit annual data returns containing the types and quantities of waste managed. Further information on exempt activities is available on SEPA's website[14].

Scottish accredited packaging waste reprocessors

Scottish reprocessors of packaging waste can register with SEPA to become an accredited reprocessor[15]. Accredited businesses can issue and sell evidence of recycling and recovery to directly registered obligated producers and packaging compliance schemes. Packaging waste recycled by accredited Scottish reprocessors is audited annually by SEPA. Companies may also choose to report non-packaging waste and non-UK packaging waste recycled. This latter data is not a reporting requirement and is not audited by SEPA.
The quantity of UK packaging waste recycled in Scotland under the scheme has increased from 291,000 tonnes in 2010 to 331,000 tonnes, while the number of accredited reprocessors has decreased from 16 in 2010 to 15 in 2011. There is a significant financial incentive to register larger businesses. Smaller businesses are suggested to balance the extra administration costs under the accreditation scheme with the value of credits in a given year. If tonnage and/or prices become too low, they may choose not to register in the following year.

Hazardous waste interrogator

The 2011 data was extracted from the Environment Agency (EA) hazardous waste interrogator database in November 2012, following registration using the following weblink:
www.geostore.com/environment-agency/WebStore?xml=environment-agency

The data is for waste arising in Scotland and managed in the rest of the UK (UK is defined by region descriptions). Data was by EWC code and data is split by management methods *Incineration with energy recovery* and *Incineration without energy recovery*. In the reporting tables *Incineration with energy recovery* is classified as recovered and *Incineration without energy recovery* as disposed.

[14] www.sepa.org.uk/waste/waste_regulation/application_forms/exempt_activities.aspx
[15] www.sepa.org.uk/waste/waste_regulation/producer_responsibility/packaging_waste_overview/national_packaging_waste_datab.aspx

Appendix 2

Conversions from operator type to SIC group used in the C&I arisings methodology[16]

Type of operator	SIC group
Water company	Water industry
Power company	Power industry
Oil industry	Mining and quarrying

Wet and dry conversion factors used in the C&I arisings methodology

Waste Type	Factor
Industrial effluent sludges	multiply wet weight by 0.27
Sludges and liquid wastes from waste treatment	multiply wet weight by 0.27
Common sludges	multiply wet weight by 0.20
Dredging spoils	divide wet weight by 1.91

Source: Defra

Standard assumptions used to assign SIC codes to waste types in the C&I arisings methodology

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 B
13	Oils	Local authority waste or site[1]	Household
13	Oils	Local authority waste or site[2]	Apply local authority household/commercial split
14	Solvents	All	Apply percentage A

[16] www.ons.gov.uk/ons/guide-method/classifications/current-standard-classifications/standard-industrial-classification/index.html

EWC chapter or code	Material or activity	Origin of waste	Sector assumption
15 01	Packaging	For non-local authority waste[3]	Commerce
15 01	Packaging	For non-local authority waste[4]	30% industry (SIC A-E) 70% commerce
15 01	Packaging	Local authority waste or site[1]	Household
15 01	Packaging	Local authority waste or site[2]	Apply local authority household/commercial split
15 02	Cloths etc	All	Commerce
15 02	Cloths etc	All	30% industry (SIC A-E) 70% commerce
16 01	ELVs	For non-local authority waste	Apply percentage D
16 01	ELVs	Local authority waste or site[1]	Household
16 01	ELVs	Local authority waste or site[2]	Apply local authority household/commercial split
16 02	WEEE	For non-local authority waste	Apply percentage C
16 02	WEEE	Local authority waste or site	Apply local authority household/commercial split
16 03	Off-spec products	All	30% industry (SIC A-E) 70% commerce
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 split
16 06	Batteries	For non-local authority waste	Apply percentage E
16 06	Batteries	Local authority waste or site	Apply local authority household/commercial split
16 07	Tanks	All	Apply percentage B
16 08	Catalysts	All	Chemical industry
16 09	Oxidisers	All	Chemical industry
16 10	Aqueous liquid	All	Apply percentage G
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	Sewage sludge	All	Not applicable
19 09	Water sludges	All	Water industry
19 10 - 19 13	Waste management	All	Waste management
20 01	Separate fractions	For non-local authority waste[3]	Commerce
20 01	Separate fractions	For non-local authority waste[4]	30% industry (SIC A-E) 70% commerce

EWC chapter or code	Material or activity	Origin of waste	Sector assumption
20 01	Separate fractions	Local authority waste or site[1]	Household
20 01	Separate fractions	Local authority waste or site[2]	Apply local authority household/commercial split
20 02	Biodegradable	For non-local authority waste	Commerce
20 02	Biodegradable	Local authority waste or site[1]	Household
20 02	Biodegradable	Local authority waste or site[2]	Apply local authority household/commercial split
20 03 01	Mixed waste	For non-local authority waste[3]	Commerce
20 03 01	Mixed waste	For non-local authority waste[4]	30% industry (SIC A-E) 70% commerce
20 03 01	Mixed waste	Local authority waste or site[1]	Household
20 03 01	Mixed waste	Local authority waste or site[2]	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 waste[3]	Commerce
20 03 07	Bulky	For non-local authority waste[4]	30% industry (SIC A-E) 70% commerce
20 03 07	Bulky	Local authority waste or site[1]	Household
20 03 07	Bulky	Local authority waste or site[2]	Apply local authority household/commercial split
20 03 99	Other MSW	For non-local authority waste[3]	Commerce
20 03 99	Other MSW	For non-local authority waste[4]	30% industry (SIC A-E) 70% commerce
20 03 99	Other MSW	Local authority waste or site[1]	Household
20 03 99	Other MSW	Local authority waste or site[2]	Apply local authority household/commercial split
20 codes	Local authority waste	Local authority waste sent to non-local authority site	Apply Scotland household/commercial split

[1] If site only accepts household waste
[2] If site accepts household and commercial waste
[3] If site only accepts commercial waste
[4] If site accepts commercial and industrial waste

Notes

1. Percentages 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 2011. For example, Percentage B was applied for used oils. This means that the total quantity of oil arisings in 2011 was apportioned across the economic sectors (1-12 in this example) in accordance with the percentage split from the 2010 data as indicated in the table below:

Economic sector											
1	2	3	4	5	6	7	8	9	10	11	12
(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
9.47	18.25	0.09	2.93	0.06	7.49	1.08	0.02	0.00	0.41	59.11	1.07

2. 30% industry (SIC A-E) 70% commerce refers to the overall industrial/commercial split of waste from the SEPA business waste survey data 2010. SIC A-E refers to all industrial sectors excluding construction.
3. Local authority household/commercial split is the relative proportion of household and commercial waste collected by the individual local authority.
4. Scotland household/commercial split is the relative proportion of household and commercial waste collected by all local authorities. For 2011 this was 85% household and 15% commercial

Appendix 3

Segregated Household waste categories for SEPA reporting and WasteDataFlow

SEPA reporting	WasteDataFlow	Hazardous (H)/ non-hazardous (NH)
Animal and mixed food waste	Waste food only	NH
Animal and mixed food waste	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
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
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	Other materials	NH
Off-specification chemical wastes	Aerosols	NH
Off-specification chemical wastes	Fire extinguishers	H
Off-specification chemical wastes	Gas Bottles	H

SEPA reporting	WasteDataFlow	Hazardous (H)/ non-hazardous (NH)
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 and footwear	NH
Used oils	Mineral oil	H
Vegetal wastes	Green garden waste only	NH
Vegetal wastes	Other compostable 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

Mixed household waste categories for SEPA reporting and WasteDataFlow

SEPA reporting	WasteDataFlow	Hazardous (H) / non-hazardous (NH)
Household and similar wastes	Co-mingled materials	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	H

Appendix 5

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 2007)

The EWC 2002 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 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 2002 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 2002.

The full EWC 2002 list and further information is available here:
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2000D0532:20020101:EN:PDF

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 2002 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 here:
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:253:0002:0041:EN:PDF

Appendix 6

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 (SIC)	For business establishments and other statistical units by the type of economic activity in which they are engaged
Waste arisings	The amount of waste generated in a given locality over a given period of time
WasteDataFlow	A web-based reporting tool used by Scottish local authorities to report the wastes they manage

Appendix 7

Acronyms

AD	Anaerobic Digestion
C&D	Construction and Demolition
C&I	Commercial and Industrial
CLO	Compost Like Output
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
MBT	Mechanical Biological Treatment
NUTS	Nomenclature of Units for Territorial Statistics
ONS	Office of National Statistics
SEPA	Scottish Environment Protection Agency
SIC	Standard Industry Classification
WDF	WasteDataFlow
WEEE	Waste Electrical and Electronic Equipment