

Guidelines for measuring and reporting construction, demolition and excavation waste

This document provides guidance on how to measure and report waste arisings and waste to landfill from construction, demolition and excavation activities on projects in the United Kingdom

Introduction

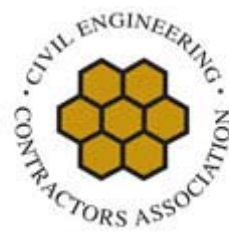
UK Governments each have policy agendas that focus on reducing waste to landfill. The Strategy for Sustainable Construction (2008)¹ in England has a specific target for the construction sector, defined as:

“By 2012, a 50% reduction in construction, demolition and excavation waste to landfill compared to 2008”.

As the delivery body for UK waste strategies, WRAP (Waste & Resources Action Programme²) developed the Construction Commitments: Halving Waste to Landfill³; a voluntary agreement for the UK construction industry to achieve this target.

In conjunction with the United Kingdom Contractors Group (UKCG) and Civil Engineering Contractors Association (CECA), WRAP have established the following Key Performance Indicators (KPIs) in order to benchmark the performance of the UK construction industry against waste to landfill targets:

- Waste arisings: tonnes of waste generated per £100k of construction output (t/£100k)
- Waste to landfill: tonnes of waste disposed of to landfill per £100k of construction output (t/£100k)
- Waste diversion rate: percentage of waste diverted from landfill (%)



This document sets out the principles and a clear method for the collection and reporting of construction, demolition and excavation (CD&E) waste data, and covers:

- 1.0 Scope of waste measurement and reporting
- 2.0 Waste destinations and default waste diversion rates
- 3.0 Units of measurement
- 4.0 The Waste to Landfill Reporting Portal

Any words or phrases **highlighted as indicated** are explained in more detail in the glossary at the end of the document.

¹ <http://www.bis.gov.uk/files/file52843.pdf>

² <http://www.wrap.org.uk/construction>

³ <http://www.wrap.org.uk/halvingwastetolandfill>

1.0 Scope of waste measurement and reporting

The following points outline the scope of **waste** measurement and the reporting requirements. These are mandated for signatories to the "Construction Commitments: Halving Waste to Landfill", and all UKCG members, and have been endorsed by CECA. It is recommended that all UK construction clients and contractors adopt these principles in order to improve consistency and transparency across the industry.

1. **Only materials taken off site as a waste are to be recorded as a waste.** Different **diversion (from landfill) rates** are then applied to calculate the amount of waste sent to landfill, depending on the type and condition of the material, and the destination to which it is sent (see Section 2.0 for further detail).
2. Organisations should report (as a minimum):
 - i) Total tonnes (or bulk m³) of waste arisings for all⁴ **construction works** undertaken
 - ii) Total tonnes (or bulk m³) of waste sent to landfill for all construction works undertaken
 - iii) Total **construction cost** of all construction works undertaken

UKCG members will need to identify waste from construction, demolition and excavation activities separately for parts 2.i) and 2.ii).

3. Organisations should report on an annual basis as a minimum (where practicable).

UKCG members will need to report at least quarterly, within 8 weeks of quarter end.

4. It is also optional to record data for materials that are reused on site. Again, these data should not be to be reported in the waste arisings figures.
5. It is optional to record data for materials that are recovered on site and leave the site as a product, whether these are either; **reused** in their original form, or **remediated**, processed or **recycled** on site, and then sent off site for reuse. These data should not be reported in the waste arisings figures.
6. Trade effluent (disposed of via tankers, foul sewers, surface and water drains, water courses, etc.) is not permitted to be disposed of to landfill, and therefore should not be included in the gross waste calculations.
7. All subcontractor wastes (including demolition waste) that are part of the main contract of works should be reported. Companies should also include wastes from site preliminaries within skips managed by the site waste management contractor/carrier (i.e. waste resulting from the site office and temporary site infrastructure). Company waste that does not result from a construction site (e.g. Central Office waste) should not be reported.
8. For the purpose of reporting construction waste from joint venture (JV) projects; waste and proportionate construction value of projects should be allocated to each main contractor relative to the percentage equity invested within the JV vehicle.
 - i) The responsibility for monitoring waste data from a JV project should be allocated at the start of the JV. Waste data should be collated quarterly and proportioned to each contractor.

Organisations can choose the level of detail in which they report; further explanation is provided in Section 4.0 Waste to Landfill Reporting Portal.

⁴ Data should be available for all **projects** with a value of £300k or more (excluding VAT) as this aligns with the threshold for the legal requirement for a site waste management plan in England. If data are available for projects of a lower value this should also be reported.

2.0 Waste destinations and default waste diversion rates

Waste materials may be sent to a number of off site destinations. For the purposes of reporting, one of the destination types in Table 1 below should be selected.

Where reliable data (that can be verified using EA/SEPA/EA Wales/NIEA Waste Return Forms) are available on the actual diversion rate achieved for waste sent to a specific destination, the default diversion rates shown below can be overwritten. An individual contractor may wish to audit transfer stations and waste management companies used in order to validate data received.

Organisations should specify that this information is required when procuring waste management services. If this information is not available, the quantity of waste being sent to landfill via each destination should be calculated using the default diversion rates shown below.

Table 1 Waste destinations and default diversion from landfill rates for waste sent off site

Destination	Diversion rate
Mixed waste sent off site for recycling or recovery Waste deposited in mixed containers on site and sent to a dedicated Recycling Centre, Materials Recovery Facility or Waste Transfer Station for segregation and recycling off site, or for incineration at an energy recovery facility.	50%
Segregated waste sent off site for recycling or recovery Recyclable wastes that are placed into segregated containers on site and sent to a dedicated permitted Recycling Centre, Materials Recovery Facility or Waste Transfer Station for recycling off site, or for incineration at an energy recovery facility ⁵ .	80%
Landfill (inert materials for beneficial reuse) A proportion of inert soil and stones (17 05 04) and brick, concrete, tiles and ceramics (17 01 01, 17 01 02, 17 01 03, and 17 01 07) sent to landfill will go to beneficial reuse (e.g. landfill engineering and restoration) ⁶ .	50%
Environmental Permitting Standard Permits and Exemptions/WML Exemptions Segregated C,D&E sent to a site operating under an Environmental Permitting standard permit or exemption, or a Waste Management Licence exemption, for reuse or recycling. This includes: <ul style="list-style-type: none"> Waste consisting of soil & stones (17 05 04) and brick, concrete, tiles and ceramics (17 01 01, 17 01 02, 17 01 03, and 17 01 07), going for use in construction or for the improvement of land under a Standard Permit or Exemption U1 or Waste Management Licensing Regulation Exemptions 9 & 19 is classified as beneficial reuse. Other segregated waste, consisting of items such as Timber (17 02 01), Gypsum (17 08 02), Paper (20 01 01), and Packaging (15 01 01, 15 01 02, 15 01 06), going for recycling under an Environmental Permitting Exemption or Waste Management Licensing Regulation Exemption. 	100%
Landfill Waste sent to landfill other than those in 'Landfill (inert materials for beneficial reuse)'.	0%
EA Cluster Project Waste sent for treatment at an authorised Hub as part of an EA cluster project .	80%

All off site destinations for waste should be covered by the above.

⁵ This figure comes from the CLG Survey of Arisings and Use of Alternatives to Primary Aggregates in England (2005), and will be updated when new data become available.

⁶ This figure comes from WRAP project report CON900-001 CDEW arisings use and disposal for England 2008 which shows that 57% of inert CDEW entering landfills was beneficially reused and therefore exempt from landfill tax.

There is also the option to record:

- The quantity of material that as a result of onsite treatment, in accordance with EA guidelines, is no longer considered to be a waste; becoming a material/product which is then used either on or off site.
- The quantity of material, which was originally designated for landfill, but that has now been possible to incorporate into the works without any further treatment, for example by adjusting cut and fill levels.

Recording these figures will not affect the waste KPIs as the material is not recorded as a waste, but recording them will allow you to identify where projects are taking steps to reduce these waste arisings.

3.0 Units of measurement

Waste should be reported in tonnes wherever possible. However, if this not possible the volume of different types of waste produced can be converted into a mass using *standardised volume to mass conversion factors*. These conversion factors take into account the density of the material and, to allow for void space, the bulking factor. The conversion factors used originate from the Environment Agency / Environment Agency Wales⁷ and further information is available on the WRAP website⁸.

Data entered into the Waste to Landfill Reporting Portal as a volume is converted to a mass using these conversion factors. However, only bulk volumes should be entered into the Waste to Landfill Reporting Portal. The volume/mass figures produced by a number of site waste management planning tools, e.g. SMARTWaste, should not be used. The figures may have already been adjusted using a compaction factor. If this is found to be the case, the original bulk volume data should be used.

Conversion factors exist for different levels of detail (e.g. activity type > waste stream > LoW code). The basic conversion factors used at the highest level (to convert 1m³ to 1 tonne) are:

- **Construction waste** (mixed) – 0.87
- **Demolition waste** (mixed) – 0.87
- **Excavation waste** – 1.25

4.0 Waste to Landfill Reporting Portal

The Waste to Landfill Reporting Portal (the Portal) is the tool developed for signatories to the Halving Waste to Landfill Commitments; to enable organisations to set baselines and targets, record waste data and benchmark performance. It can be accessed at www.wrap.org.uk/reportingportal. The guidance in this document applies to both the Client and Contractor account types.

All data reported to the Portal are stored securely and kept anonymous. The reported data will populate an aggregated dataset, against which each organisation is able to benchmark their own performance. Data can be reported in a variety of ways, as shown in the diagrams below. The main benefit of reporting at the more detailed levels or reporting data specific to certain activities or project types is that it is then possible to benchmark your own performance in greater detail.

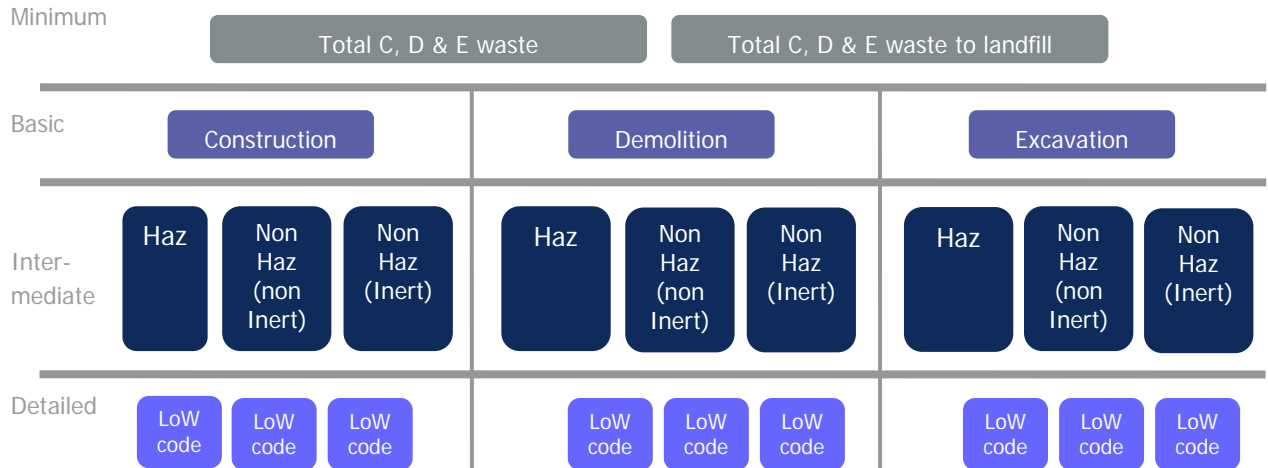
Reporting data in detail can be time-consuming, so rather than entering all data manually, users of the WRAP SWMP Template (or a compatible Excel-based SWMP) can report automatically via the SWMP Tracker⁹, and SMARTWaste users can also report directly to the Portal from their SMARTWaste account.

Organisations can choose the level of detail at which they wish to report their data, as illustrated in the diagram below. The four levels are: Minimum, Basic (the minimum for UKCG members), Intermediate, and Detailed.

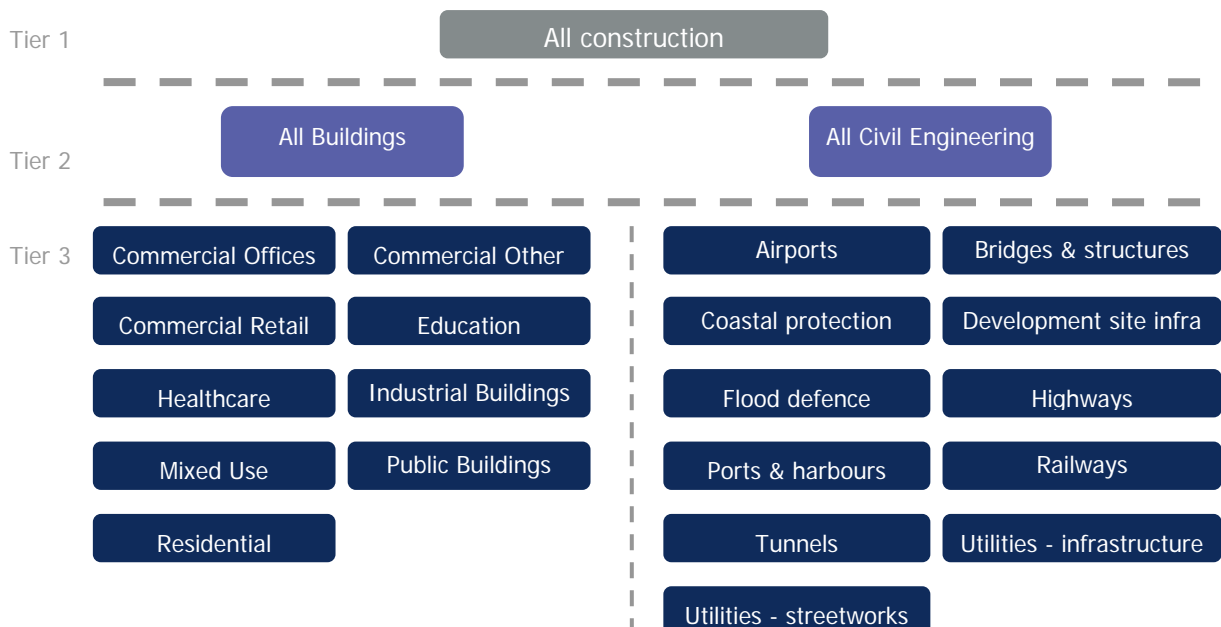
⁷ <http://publications.environment-agency.gov.uk/pdf/GEWA0308BNRR-e-e.pdf?lang=e>

⁸ Data report: <http://www.wrap.org.uk/document.rm?id=6932>, spreadsheet: <http://www.wrap.org.uk/document.rm?id=6914>

⁹ <http://swmptracker.wrap.org.uk>



Data entries can also be tagged by project type. These project types are consistent with both WRAP's Site Waste Management Plan Template and BRE's SMARTWaste.



Finally, organisations may wish to specify whether the data being reported relates to:

i) New Construction, ii) Refurbishment / Maintenance, or iii) All construction activity.

The Portal allows for flexibility in how data are reported, e.g. organisations can report on a continuous basis or on an end of project basis, and may wish to devolve data entry to different regional offices or business units. Organisations reporting data in more detail (including specifying project type and activity type) will be able to generate more detailed and accurate benchmark data to compare performance against industry averages.

Glossary

Construction, Demolition and Excavation (CD&E) Waste

- **Demolition waste** – Unwanted material arising from the demolition or strip out of an existing structure.
- **Excavation waste** – Unwanted material resulting from excavation activities such as a reduced level dig and site preparation and levelling, and the excavation of foundations, basements, tunnels, and service trenches, typically consisting of soil and stones.
- **Construction waste** – Any other unwanted material produced at the construction site, which is not classified as Demolition or Excavation waste.

Construction cost

Cost in the context of a construction project is the price in the accepted tender or, if there is no tender, the cost of labour, plant and materials, overheads and profit.

Construction works

For the purpose of reporting construction waste data, the definition of a construction project is taken from the Site Waste Management Plans Regulations (2008)¹⁰.

Diversion (from landfill) rates

These are the percentages of any waste arising that is not sent to landfill (with the exception of material going to landfill for beneficial re-use as described in Section 2). In the Waste to Landfill Reporting Portal the terminology used is "recovery rates". Diversion of waste from landfill can be achieved through:

- **Re-use** – the beneficial re-use of materials in their current form (either on-site or off-site) and for the same purpose for which it was conceived;
- **Recycling** – the reprocessing of wastes, either into the same material (closed-loop) or a different material (open-loop), for the original or another purpose. This does not include reprocessing for fuel or backfilling;
- **Remediation** – the removal of pollution or contaminants from environmental media such that the material can be put to beneficial re-use; and
- **Energy recovery** – the process of recovering the embodied energy of a material through incineration.

EA Cluster project

A cluster can be defined as *"a group of sites that are categorised as land affected by contamination, which include shared decontamination capacity located at one site (which is recognised by the EA), the main aim of which being to produce recovered materials that are reused by itself and by the other sites in the group"*.

Project

"Project" means a project that includes or is intended to include construction work, and includes all planning, design, management or other work involved in a project until the end of the construction phase.

Waste

Any substance or object the holder discards, intends to discard or is required to discard is waste under the Waste Framework Directive (European Directive 2006/12/EC)¹¹ (which repeals the European Directive 75/442/EC as amended).

¹⁰ http://www.opsi.gov.uk/si/si2008/uksi_20080314_en_1

¹¹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:114:0009:0009:EN:PDF>

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