

Construction and Demolition Waste management in United Kingdom

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Screening factsheet

1. Summary

Construction and Demolition Waste (CDW) management national performance

Waste category	Quantity generated in 2012 (million tonnes)
Excavation waste	54.39
Non-hazardous construction & demolition waste	44.79
Hazardous construction & demolition waste	1.06
Total CDW	100.23

In 2012, 100.23 million tonnes of construction and demolition waste (CDW) was generated in the UK. This represents a 2% decrease compared to 2010 (102.23 million tonnes), but only a 0.8% decrease compared to 2008 (101 million tonnes).

The amount of non-hazardous CDW excluding excavation in 2012 was 44.8 million tonnes, of which 38.8 million tonnes was recovered. This represents a recovery rate of 86.5%. UK estimates for recovery rate from non-hazardous CDW have been calculated in accordance with the EC Waste Framework Directive.

Accurately quantifying CDW is challenging and whilst the absolute tonnage figures are subject to a relatively high level of uncertainty, sensitivity analysis suggests there is not a significant impact on the final recovery rate. In the UK, CDW data is collected on a yearly basis. This is collected through the environmental protection agencies using waste management data from licensed waste management facilities as well as other sources such as industry data related to recycled aggregates. This may also be supplemented by surveys. Whilst efforts were made to synchronise approaches across UK countries, methodologies are not identical. Methodologies are in the process of review across all UK countries. Within the UK, some CDW is transferred across borders for treatment, primarily into England. This effect may slightly inflate the England recovery rate.

CDW management practices

In the UK, Waste Management Plans (WMP) have been developed by each of the Government Bodies within England, Wales, Scotland and Northern Ireland, these are also responsible for any related waste management strategies and waste prevention plans. Each of these considers the role for CDW and some provide specific targets to be met for CDW.

The UK environmental protection bodies are responsible for enforcing waste regulations; there is one set up within each of the regions (England, Wales, Scotland and Northern Ireland). The roles and responsibilities of waste carriers, brokers and those that carry out treatment, recovery and disposal options are well defined in national legislation with registration required and the meeting of certain permit conditions for processing, treatment, recovery and disposal.

In the UK, local councils and the environmental regulatory bodies have responsibility in respect of illegally deposited waste. Local councils deal with most cases of fly tipping on public land, whilst the regulatory bodies investigate and enforce against the larger, more serious and organised illegal waste crimes. In England in 2013/14, 6% of fly tipping incidents were from construction, demolition and excavation waste. In Wales the proportion was 7% and in Scotland 4.6%. No figures were available for Northern Ireland. There are many initiatives in the UK to encourage resource efficiency for CDW. There are organisations such as UK Contractors Group, Construction Products Association, Constructing Excellence, Green Construction Board/ Strategic Forum for Construction Waste Subgroup. Other initiatives are specific to particular waste streams such as Carpet Recycling UK, DRIDS (Demolition and Refurbishment Information Datasheets) and Sector Resource Efficiency Action Plans (REAPs).

Main obstacles to sustainable CDW management

Environmental permitting and exemptions

- These can be restrictive to recycling CDW since the exemptions tend to apply to small tonnages.
- The environmental permitting process has been simplified in recent years but still acts as a deterrent for medium scale recycling, especially on-site.

Legacy issues/ difficult wastes

- The longevity of buildings means that there are commonly used products and materials that are within the current building stock that can be deemed hazardous waste over time, for example, blown insulation containing ozone depleting substances.
- There are difficulties in identifying such materials as hazardous (non-recyclable) or non-hazardous (recyclable). Therefore, there is a tendency for all to be dealt with as non-recyclable.
- There are also health and safety concerns relating to reuse (often requires a move away from mechanised demolition to hand based deconstruction) and some products that may have health and safety implications when reprocessed, such as the fibres in older mineral based ceiling tiles.

Infrastructure/markets/transport costs

- To a certain degree, transport costs avoid the excessive transportation of CDW which could increase environmental impacts beyond any benefits.
- For lightweight materials with limited geographical spread of appropriate recycling facilities, transport costs will prevent most recycling.
- There is still a lack of waste infrastructure in certain areas e.g. rural meaning options for recovery of waste can be limited in these locations.
- The volatility of certain markets can affect the viability of recycling certain materials e.g. plastics.

Site based constraints to segregate

- Most typically time and space constraints are cited as reasons why CDW is not separated on site.
- Effective segregation increases the amount of value of recycling of CDW.

Main drivers to sustainable CDW management

Government programmes and schemes

- Government programmes have been able to provide a wide variety of support to the construction industry to assist in reducing CDW to landfill as well as investing in the recycling sector
- Schemes such as BREEAM, have encouraged construction clients and contractors to meet targets for arising and diversion of CDW from landfill

Quality Protocol

- The quality protocol for inert wastes has enabled the greater use of recycled aggregates by providing a consistent and through methodology for establishing when it ceases to become a waste and therefore the various UK waste regulations, do not apply

Recycled content

- Government programmes have encouraged the setting of targets for recycled content for construction products, which in turn has led to a demand for high recycled content – some of this is derived from CDW. However it should be noted, that there has been some industry criticism on just focusing on one issue, as it should be considered as part of the overall environmental impact of the product.

Leadership and verification

- Many construction companies and clients have established zero waste to landfill targets for the CDW they are responsible for. However, these good intentions often need strong leadership and effective reporting to ensure they are implemented at a site level.
- Where there isn't commitment, levels of recycling are dependent upon the waste facility receiving waste since it will be mostly mixed waste.
- A number of construction product manufacturer trade bodies working with their supply chain have established actions and targets for improving resource efficiency. These have been most successful when they have been industry driven.

Landfill Tax

- The landfill tax in the UK has encouraged recycling and recovery and this is now, in many cases, cheaper than sending CDW to landfill.

Reliability of data

- Better CDW data at the site, company and national level has provided a focus for improvement.
- However, there is still a lack of good quality data especially at the national level providing granularity for CDW types.

2. Definitions concerning construction and demolition waste (CDW) and management

In this section the definitions of waste used in the UK are detailed.

2.1 Definition of Waste

The legal definition of waste in the UK is set out in a guidance document from the government Department for Environment, Food and Rural Affairs (Defra)¹ and covers England, Wales and Northern Ireland². It follows the definition of the Waste Framework Directive 2008/98/EC (WFD):

“...any substance or object which the holder discards or intends or is required to discard...”

Scotland does not have a similar document; however they do have a Duty of Care Code of Practice document³ which refers to the same definition of waste as set out in the WFD.

2.2 Definition of construction and demolition waste (CDW)

There are a number of definitions for CDW in the UK. Defra's Digest of Waste and Resources Statistics 2015 which brings together data for the UK⁴ states that:

Construction and Demolition waste is a waste stream that is primarily received from construction sites. Some examples of C&D waste include, but are not limited to, concrete, rebar, wood, panelling, linoleum, and carpet. For this Digest, Construction is NACE code F⁵

The Halving Waste to Landfill Methodology for England⁶ used relevant waste codes selected from Chapters 17, 21, 24 and 26 of the European Waste Catalogue. Annex 4 of the report states which European Waste Catalogue waste codes were used in the methodology.

The Waste and Resources Action Programme (WRAP)⁷ define construction, demolition and excavation waste as:

- *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.*

¹ Defra (August 2012), Guidance on the legal definition of waste and its application (page 6)

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69590/pb13813-waste-legal-def-guide.pdf.

Also https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69591/pb13813a-waste-business-guide.pdf

² The guidance in the document was prepared by the Department for Environment, Food and Rural Affairs (Defra) in conjunction with the Welsh Government (WG), the Department of the Environment in Northern Ireland, the Environment Agency and the Northern Ireland Environment Agency (NIEA) in 2012.

³ Scottish Government (October 2012) Duty of Care – A Code of Practice <http://www.gov.scot/resource/0040/00404095.pdf>

⁴ Defra (January 2015), Digest of Waste and Resource Statistics – 2015 Edition (page 82)

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/401400/Digest_of_waste_England_2015_-_final.pdf

⁵NACE: the 'General Industrial Classification of Economic Activities'.

http://ec.europa.eu/competition/mergers/cases/index/nace_all.html

⁶ Strategic Forum for Construction (March 2010) CD&E WASTE: Halving Construction, Demolition and Excavation Waste to Landfill by 2012 compared to 2008. Measuring CD&E waste to landfill in England - A METHODOLOGY

http://www.strategicforum.org.uk/pdf/waste_report_4_draft_22-3-10v4.pdf

⁷ WRAP (August 2010), Guidelines for measuring and reporting construction, demolition and excavation waste

http://www.wrap.org.uk/sites/files/wrap/WRAP%20Waste%20Reporting%20Guidance%20Update%20-%20FINAL_1.pdf

- *Construction waste – Any other unwanted material produced at the construction site, which is not classified as Demolition or Excavation waste.*

Wales have a Construction and Demolition (C&D) Sector Plan⁸ which covers all construction and demolition firms operating and working on construction and demolition activities in Wales. It covers waste materials which are directly generated by a C&D business conducting construction or demolition activities in Wales, no matter what the source of the waste is. It also covers wastes generated through the activities of renovation and maintenance of existing building structures. The plan defines C&D waste as:

Waste arising from activities carried out by construction companies, demolition companies, civil engineering companies and general builders. In the main, it relates to waste types listed in Chapter 17 of the List of Wastes (Wales) Regulations 2005, although it also includes other wastes generated by these organisations arising from their construction and demolition activities.

Scotland's Duty of Care Code of Practice document⁹ defines construction and demolition waste as:

Waste arising from works of construction or demolition, including preparatory works thereto.

In England, the List of Wastes (England) Regulations 2005¹⁰, transpose the European Waste Catalogue into English Legislation. The same codes are used. For Wales, there is a similar Regulation, the List of Wastes (Wales) Regulations 2005¹¹ and also for Northern Ireland¹². Scotland implemented the List of Wastes directive via the Special Waste Regulations 1996 (as amended).

From 1 June 2015 Regulation (EU) No 1357/2014¹³ will replace Annex III of the Waste Framework Directive (2008/98/EC¹⁴), which defines properties of waste rendering it hazardous. These changes reflect revised hazard classification criteria under Regulation (EC) No 1272/2008¹⁵ on the Classification, Labelling and Packaging of Substances and Mixtures Regulation (the "CLP"). The EU Decision 2014/955/EU¹⁶ will make changes to the EU List of Waste Decision 2000/532/EC.

As a result of these changes, the current List of Wastes Regulations are to be revoked and new regulations will be laid with a reference to the EU List of Waste Decision 2000/532/EC. The timescales will vary for each of the UK devolved administrations but is likely to take place around June 2015.

The Environment Agency (England) list waste codes which are for common CDW and further details are provided in Annex 1¹⁷. They also have a technical guidance document¹⁸ detailing how to apply these codes.

A number of older codes exist which are being phased out, some of these cover CDW. These are summarised in Annex 1 and have been used in England for reporting against the target of halving CD&E waste to landfill by 2012. Chapter 17 EWC codes are used to define CDW. Excavation waste is not

⁸ Welsh Government (November 2012) Construction and Demolition Sector Plan, Towards Zero Waste One Wales: One Planet <http://gov.wales/docs/desh/publications/130301construction-demolition-waste-plan-en.pdf>

⁹ Scottish Government (October 2012) Duty of Care – A Code of Practice <http://www.gov.scot/resource/0040/00404095.pdf>

¹⁰ http://www.legislation.gov.uk/ukxi/2005/895/pdfs/ukxi_20050895_en.pdf

¹¹ <http://www.legislation.gov.uk/wsi/2005/1820/contents/made>

¹² <http://www.legislation.gov.uk/nisr/2005/301/contents/made>

¹³ <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R1357&from=EN>

¹⁴ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0098>

¹⁵ <http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1420454128110&uri=CELEX:32008R1272>

¹⁶ <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014D0955&from=EN>

¹⁷ Environment Agency (Last updated: 22 December 2014), Classify different types of waste <https://www.gov.uk/how-to-classify-different-types-of-waste/construction-and-demolition-waste>

¹⁸ Currently WM2 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/369810/LIT_5426_WM2.pdf soon to be replaced by WM3

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/427077/LIT_10121.pdf, for further details see <https://www.gov.uk/government/publications/waste-classification-technical-guidance>

included in CDW figures. Non-CDW generated by construction operations such as packaging waste, municipal-like waste and WEEE are included within the definition of CDW). In England, Chapter 19 codes are also used. In Wales, CDW data has been taken from surveys - the vast majority of EWC codes are still Chapter 17 (approximately 96%) but there are smaller quantities of Chapter 15, 16 and 20 codes included as well since these were identified as attributable to C&D businesses in the survey.

2.3 End of Waste (EoW) Status

End of Waste criteria have been established within the UK since 2011. The waste producer has to check whether their waste derived product meets the requirements of any EU End of Waste Regulations. These exist at the EU level for iron, steel and aluminium scrap¹⁹, glass cullet²⁰ and copper scrap²¹ and will be found within the CDW stream. If no EU End of Waste Regulation is relevant to the waste derived product, then those concerned must undertake an end of waste test. It can be demonstrated that an end of waste test is met by either complying with a Quality Protocol, or alternatively carrying out an end of waste test assessment.

Quality Protocols are voluntary end of waste frameworks for specific wastes and end uses based on relevant end of waste case law. In order to demonstrate the end of waste, the processes undertaken must meet the requirements set out in the relevant Quality Protocol. An end of waste assessment allows producers to apply to the relevant authorities to seek advice on whether their product from waste meets the end of waste test. For England, Wales and Northern Ireland, Quality Protocols have been developed and those that are relevant for CDW are inert waste, flat glass, lubricating oils, waste plasterboard and non-packaging plastics. Further details can be seen in the table below. Other quality protocols have been developed for wastes which are not related to CDW²².

Table 1 Summary of published quality protocols relating to CDW

Waste material	Application	Link	Date Published/last update
Inert waste	Aggregate	https://www.gov.uk/government/publications/quality-protocol-production-of-aggregates-from-inert-waste	22/10/2013
Flat glass	Processed cullet	https://www.gov.uk/government/publications/quality-protocol-flat-glass	19/06/2014
Lubricating oils	Processed fuel oil (PFO)	https://www.gov.uk/government/publications/quality-protocol-processed-fuel-oil-pfo	01/02/2011
Waste plasterboard	Recycled gypsum	https://www.gov.uk/government/publications/quality-protocol-gypsum	17/03/2014
Non-packaging plastics	Secondary raw materials	https://www.gov.uk/government/publications/quality-protocol-non-packaging-plastics	19/06/2014

Natural Resources Wales (Wales Environmental Regulator) works with the Environment Agency (England's Environmental Regulator) on Quality Protocols.

Northern Ireland's regulator, the Northern Ireland Environment Agency, supports all the existing Quality Protocols as a voluntary standard. If producers do not comply with the Quality Protocol in full, the waste will still be regarded as waste and the onward transfer and use of the waste is subject to the

¹⁹ (EU Commission Regulation n°333/2011). Adopted in March 2011

²⁰ (EU Commission Regulation n°1179/2012)

²¹ (EU Commission Regulation n°715/2013)

²² Developed for: Aggregate from waste steel slag, Biodiesel, Anaerobic digestate, Compost, Poultry litter ash (PLA), Pulverised fuel ash (PFA) and furnace bottom ash (FBA), Tyre-derived rubber materials, Biomethane from waste. These can all be seen at <https://www.gov.uk/government/collections/quality-protocols-end-of-waste-frameworks-for-waste-derived-products>

requirements of the Waste Management Licensing Regulations (Northern Ireland) 2003 and Amendments.

Scotland's regulator, the Scottish Environment Protection Agency (SEPA), does not automatically recognise the validity of the Quality Protocols. Regulatory position statements are issued in some cases; for example the use of recycled gypsum from plasterboard is not regulated under waste legislation where it complies with SEPA Policy Statement: Gypsum from Waste Plasterboard, but the recycled gypsum is still classed as a waste. In others, the Quality Protocol applies; for example, the Quality Protocol for aggregates is applicable in Scotland, and those supplying to this standard are publicised on the Zero Waste Scotland 'Aggregate Quality Protocol Supplier Directory' website²³.

End of waste status will not affect overall estimates of waste arisings, unless the required processing and quality control takes place under a permit. Processing C&D waste on site and the use of resulting aggregates, still classified as waste, is covered by an exemption or a permit. Data on permits does provide tonnage figures in England (not exemptions). Scotland has Paragraph 19 data (exemptions) for use in construction. The Northern Ireland Government are recording the outputs from quality protocol operations producing tonnage figures per quarter (these are not counted within the waste data).

EQual²⁴ is a partnership programme part-funded by the EU's LIFE+ environment programme which is about **Ensuring Quality** of waste-derived products to achieve resource efficiency. EQual aims to support waste producers, waste management companies, recycled materials users and regulators, by providing online tools and techniques to help them determine whether their new products meet regulatory standards. The EQual programme began in September 2011 and finished in March 2015.

2.4 Definitions of waste treatment operations

There is general guidance on the definition of waste treatment operations on the UK Government website²⁵:

Stages	Include
Prevention:	Using less material in design and manufacture, keeping products for longer, re-use, using less hazardous materials
Preparing for re-use:	Checking, cleaning, repairing, refurbishing, whole items or spare parts
Recycling	Turning waste into a new substance or product, includes composting if it meets quality protocols
Other recovery	Includes anaerobic digestion, incineration with energy recovery, gasification and pyrolysis which produce energy (fuels, heat and power) and materials from waste, some backfilling
Disposal	Landfill and incineration without energy recovery

However the definition of treatment operations may alter at the regional level based on Regulations for that country.

For England and Wales, the definitions for recovery and disposal are covered in the Waste (England and Wales) Regulations 2011²⁶, for example:

- **Recovery:** means any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy (Annex II of the Waste Directive sets out a non-exhaustive list of recovery operations);

²³ <http://zwsaggsuppliers.org.uk/>

²⁴ <https://www.gov.uk/government/groups/equal-ensuring-quality-of-waste-derived-products-to-achieve-resource-efficiency>

²⁵ <https://www.gov.uk/waste-legislation-and-regulations>

²⁶ The Waste (England and Wales) Regulations 2011 (28th March 2011)
<http://www.legislation.gov.uk/uksi/2011/988/contents/made>

- **Disposal:** means any operation which is not recovery even where the operation has as a secondary consequence the reclamation of substances or energy (Annex I of the Waste Directive sets out a non-exhaustive list of disposal operations).

Terms which are used but not defined in these Regulations (such as reuse and recycling) and are used in the Waste Framework Directive have the same meaning as in that Directive.

In Scotland, waste management activities are classed as recovery (R) or disposal (D), as defined in the Waste Framework Directive (2006/12/EC). The Scottish Government's guidance on applying the waste hierarchy provides advice on how waste management activities in Scotland should be defined as recovery and disposal²⁷. The Waste Regulations (Northern Ireland) 2011²⁸ provide definitions for reuse, recycling, recovery and landfill which follow those set out in Annex II of the WFD.

In Northern Ireland the definitions for waste treatment operations are covered in the Waste Regulations (Northern Ireland) 2011²⁹. Definitions for recovery and disposal are the same as in the Waste (England and Wales) Regulations. However there are specific definitions also given for reuse and recycling:

- **Recycling:** means any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations;
- **Reuse:** means any operation by which products or components that are not waste are used again for the same purpose for which they were conceived.

Backfilling

The guidelines for reporting to Eurostat are followed and backfilling is included when determined as a recovery operation and is captured in the datasets. There is no definition for backfilling used within the UK Countries.

The Environment Agency (EA) guidance³⁰ sets out their approach to determining whether an activity is considered to be 'recovery' or 'disposal'. The EA's position is based on a legal test derived from the WFD and European case law and the guidance is designed to help applicants seeking a recovery permit for the permanent deposit of waste on land. The guidance states that the clearest indicator of waste recovery is when it can be shown that the waste used is a suitable replacement for non-waste materials that would otherwise have to be used to achieve the end benefit. This definition is based on the European court ruling that said 'the essential characteristic of a waste recovery option is that its principal objective is that the waste serve a useful purpose in replacing other materials which would have had to be used for that purpose, thereby conserving natural resources.'³¹ The EA state that "generally, backfilling a quarry is likely to be a disposal operation"³². There is an issue of such disposal being exempt of landfill tax when infilling is a requirement of planning for mineral extraction, for inert wastes³³.

Standard permits could cover 'backfilling', e.g. SR2010 No8 for construction and SR2010 No10 for land improvement where data would be collected. There is an exemption which could encompass some backfilling. Exemption U1: Use of Waste in Construction, allows the use of suitable wastes for small scale construction instead of using virgin raw materials. However there is no reported data on the quantities of waste managed under this exemption or the activities i.e. whether the activity is backfilling or not. In practice, decisions on whether the backfilling of a quarry is a recovery or disposal operation

²⁷ <http://www.gov.scot/Publications/2013/04/7548>

²⁸ http://www.legislation.gov.uk/nisr/2011/127/pdfs/nisr_201110127_en.pdf

²⁹ The Waste Regulations (Northern Ireland) 2011 (8th April 2011) <http://www.legislation.gov.uk/nisr/2011/127/introduction/made>

³⁰ EA (2010) Defining Waste Recovery: Permanent Deposit of Waste on Land (EPR 13)

³¹ Abfall Service AG (ASA) C-6/00

³² DEFRA (05 Aug 2014) Analysis of Potential Re-alignment and Harmonisation of Particular Waste Definitions in Europe and the Implications for UK Waste Data Reporting EV0804

file:///C:/Users/holta/Downloads/12263_AnalysisofWasteDefinitionsandImplicationsforUKWasteDataReporti.pdf

³³ <https://www.gov.uk/government/publications/excise-notice-lft1-a-general-guide-to-landfill-tax/excise-notice-lft1-a-general-guide-to-landfill-tax#filling-of-quarries>

should be based on the permit issued by the EA, which are determined on a case by case basis¹¹⁰. The statistics will include data for backfilling if it is a recovery under the standard permits, but not for exemptions.

3. Legal Framework – Waste Management Plans and Strategies

In this section the legal framework governing CDW management in the UK is explored.

3.1 Legislation concerning CDW in the UK

Waste legislation in the UK applies to all types of waste. There are no current specific pieces of legislation/regulation which relates to CDW alone. Here is a summary of the key regulations regarding management of waste.

Waste Framework Directive (2008/98/EC) transposition

In England and Wales:

- The requirements of the Waste Framework Directive are applied by the Waste (England and Wales) Regulations 2011³⁴ and subsequent amendments including in Wales the Waste (Wales) Measure 2010³⁵.
- These set out the requirements for waste management plans, waste prevention plans, implementing the waste hierarchy and carrying of waste/duty of care.
- The 2012 amendment³⁶ replaced regulation 13 and places a duty on organisations that collect waste paper, metal, plastic and glass that from 1 January 2015 this should be done by way of separate collection. These duties apply where separate collection is needed for waste to be recovered in line with the revised Waste Framework Directive and where it is technically, environmentally and economically practicable. These duties apply to waste from households and waste classified as commercial or industrial waste.
- The 2014 amendment³⁷ includes changes around the format/type of waste transfer note required; instead requiring a written description of waste.

In Northern Ireland:

- The Waste Regulations (Northern Ireland) 2011³⁸ and subsequent amendments³⁹ transpose the revised Waste Framework Directive in Northern Ireland.

In Scotland:

- The Waste (Scotland) Regulations 2011⁴⁰ and subsequent amendments⁴¹ apply the requirements of the revised Waste Framework Directive in Scotland.

³⁴ The Waste (England and Wales) Regulations 2011 (28th March 2011)

<http://www.legislation.gov.uk/ukxi/2011/988/contents/made>

³⁵ <http://www.legislation.gov.uk/mwa/2010/8/contents/enacted>

³⁶ The Waste (England and Wales) (Amendment) Regulations 2012 (1st October 2012)

<http://www.legislation.gov.uk/ukxi/2012/1889/contents/made>

³⁷ The Waste (England and Wales) (Amendment) Regulations 2014 (6th April 2014)

<http://www.legislation.gov.uk/ukxi/2014/656/contents/made>

³⁸ The Waste Regulations (Northern Ireland) 2011 (8th April 2011) <http://www.legislation.gov.uk/nisr/2011/127/introduction/made>

³⁹ The Waste (Amendment) Regulations (Northern Ireland) 2013 (30th November 2013)

<http://www.legislation.gov.uk/nisr/2013/241/contents/made>

⁴⁰ The Waste (Scotland) Regulations 2011 (27th March 2011) <http://www.legislation.gov.uk/ssi/2011/226/executive-note/contents>

⁴¹ The Waste (Scotland) Regulations 2012 (17th May 2012) <http://www.legislation.gov.uk/ssi/2012/148/introduction/made>

Hazardous Waste

- In England, the Hazardous Waste Regulations 2005⁴² and in Wales, the Hazardous Waste (Wales) Regulations 2005, make provisions for the controlled management of hazardous waste from the point of production to the final point of disposal or recovery. They implement the Hazardous Waste Directive 1991 (91/689/EEC) (as replaced by Council Directive 2008/98/EC). The Regulations apply tracking and movement controls to hazardous waste, which reflects the European List of Wastes (Decision 2000/532/EC).
- In Northern Ireland, the Hazardous Waste Regulations (Northern Ireland) 2005⁴³ provide an effective system of control for these wastes and make sure that they are soundly managed from their point of production to their final destination for disposal or recovery.
- In Scotland, the Special Waste (Scotland) Regulations 1996⁴⁴ and all subsequent amendments^{45,46} put in place measures for the controlled management of hazardous waste.

Landfill legislation

- In England & Wales, the Environmental Permitting (England and Wales) Regulations 2010⁴⁷ and subsequent amendments^{48,49} apply the on-going requirements of the Landfill Directive (1999/31/EC). They standardise environmental permitting and compliance for waste management operations in England and Wales to protect human health and the environment.
- In Northern Ireland, the Waste Management Licensing Regulations (NI) 2003⁵⁰ and subsequent amendments^{51,52} set out the requirements for the licencing of waste management operations.
- In Scotland, the Waste Management Licensing (Scotland) Regulations 2011⁵³ set out the requirements for the licensing of waste management operations. Waste management licences do not apply to operational Landfills. The Landfill (Scotland) Regulations 2003⁵⁴ (as amended) implement the Landfill Directive and set standards for the design and operation of landfills.

European List of Wastes (Decision 2000/532/EC)

- The List of Wastes Regulations in England^{55,56}, Wales⁵⁷ and Northern Ireland⁵⁸ and the in Scotland Special Waste Regulations 1996 (as amended) transpose the European List of Wastes into law. The List of Wastes helps to identify whether a material substance is a waste or hazardous waste and gives a unique 6 digit code to each waste type. This defines the six-digit code for each waste and the respective two-digit and four-digit chapter headings.

⁴² <http://www.legislation.gov.uk/ukxi/2005/894/contents/made>

⁴³ Hazardous Waste Regulations (Northern Ireland) 2005 (16th July 2005) <http://www.legislation.gov.uk/nisr/2005/300/made>

⁴⁴ The Special Waste (Scotland) Regulations 1997 (1st May 1997)

<http://www.legislation.gov.uk/ukxi/1997/257/regulation/1/sld/made>

⁴⁵ The Special Waste Amendment (Scotland) Regulations 2004 <http://www.legislation.gov.uk/ssi/2004/112/contents/made>

⁴⁶ The Special Waste Amendment (Scotland) Amendment Regulations 2004

<http://www.legislation.gov.uk/ssi/2004/204/contents/made>

⁴⁷ <http://www.legislation.gov.uk/ukxi/2010/675/contents/made>

⁴⁸ <http://www.legislation.gov.uk/ukxi/2010/676/contents/made>

⁴⁹ <http://www.legislation.gov.uk/ukxi/2010/2172/contents/made>

⁵⁰ Waste Management Licensing Regulations (NI) 2003 (19th December 2003)

<http://www.legislation.gov.uk/nisr/2003/493/contents/made>

⁵¹ Waste Management Licensing (Amendment No. 2) Regulations (Northern Ireland) 2014 (24th October 2014)

<http://www.legislation.gov.uk/nisr/2014/253/contents/made>

⁵² Waste Management Licensing (Amendment) Regulations (Northern Ireland) 2014 (12th June 2014)

<http://www.legislation.gov.uk/nisr/2014/137/contents/made>

⁵³ The Waste Management Licensing (Scotland) Regulations 2011 (27th March 2011)

<http://www.legislation.gov.uk/ssi/2011/228/introduction/made>

⁵⁴ <http://www.legislation.gov.uk/ssi/2003/235/contents/made>

⁵⁵ The List of Wastes (England) Regulations 2005 (16th July 2005) <http://www.legislation.gov.uk/ukxi/2005/895/contents/made>

⁵⁶ <http://www.legislation.gov.uk/ukxi/2005/1673/contents/made>

⁵⁷ The List of Wastes (Wales) Regulations 2005 (16th July 2005) <http://www.legislation.gov.uk/wsi/2005/1820/contents/made>

⁵⁸ List of Wastes (Northern Ireland) Regulations 2005 (16th July 2005)

<http://www.legislation.gov.uk/nisr/2005/301/contents/made>

- As noted in section 2.3 of this report, due to recent changes to European Decisions and Regulations, the List of Waste Regulations will be revoked and replaced with new regulations in each of the UK devolved administrations.

Waste producer's responsibility

- The Waste (England and Wales) Regulations 2011: Requires businesses to apply the waste management hierarchy, establishes waste prevention programmes and amends other legislation.
- Waste (Northern Ireland) Regulations 2011: Requires businesses to apply the waste management hierarchy, introduces a two-tier system for waste carrier, broker and dealer registration, establishes waste prevention programmes and amends other legislation.
- The Environmental Protection (Duty of Care) (Scotland) Regulations 2014: Requires a transfer note to be signed by the transferor and transferee of waste, specifies information to be included and requires copies to be kept for two years. Includes the use of SIC codes. Enables the use of electronic waste transfer notes. These regulations revoke the Environmental Protection (Duty of Care) Regulations 1991.
- Section 4 of this report details information about extended producer responsibility schemes which are in operation in the UK.

Specific legislation on CDW management

- The Site Waste Management Plan Regulations 2008⁵⁹ specific to CDW were in place in England from April 2008 to December 2013. This involved a mandatory requirement for projects over £300,000 in England and required the creation of a Site Waste Management Plan (SWMP) before construction work commenced on site, which should include statements regarding waste minimisation, and a forecast of the types and amounts of waste that would be generated on the project with details of how these would be managed. The SWMP was then implemented throughout a project and the amount and types of waste generated were recorded along with details of their waste management routes (reuse, recycling, recovery, disposal) and Duty of Care information for waste contractors carrying and dealing with the waste. It is unlikely that there will be further legislation in this area; however some companies (contractors and clients) as well as schemes such as BREEAM still require a SWMP or similar.
- Defra repealed the Regulations as they felt that the impact on reducing construction waste, diverting it from landfill and reducing fly-tipping was minimal. Repealing the Regulations will provide a cost saving to business, while giving the option of retaining SWMP as a tool that can be applied to any project to help identify savings⁶⁰.
- Wales have consulted on the possibility of introducing similar regulations, via the Waste (Wales) Measure 2010⁶¹ but are not looking at introducing them⁶². This was due to a combination of reasons including additional powers being worked on to help drive recycling, and a high recycling rate; the responses were mixed. Instead they feel that it will be better to adopt site waste management plans as a voluntary code of practice in Wales, to be accompanied by best practice guidance (to be developed).
- Northern Ireland and Scotland promote voluntary site waste management plan (SWMP) as being best practice for construction projects⁶³.

Landfill Tax

⁵⁹ <http://www.legislation.gov.uk/ukxi/2008/314/contents/made>

⁶⁰ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/237398/site-waste-manage-consult-sum-resp-20130830.pdf

⁶¹ <http://www.legislation.gov.uk/mwa/2010/8/contents/enacted>

⁶² <http://gov.wales/newsroom/environmentandcountryside/2014/9059203/?lang=en>

⁶³ http://netregs.org.uk/library_of_topics/waste/more_on_store.handletransport/site_waste_management_plans.aspx

- The UK Landfill Tax applies for the disposal of waste to landfill in England, Wales and Northern Ireland. The cost for this is currently £82.60/tonne standard rate and £2.60/tonne lower rate. The Government announced that legislation will be introduced in Finance Bill 2015 to increase the rates of Landfill Tax in line with the Retail Prices Index (RPI), rounded to the nearest 5 pence, for disposals of waste made, or treated as made, to landfill in England, Wales and Northern Ireland on or after 1 April 2016^{64,65}. The lower rate is paid on wastes such as rocks or soil – guidance has recently been issued due to abuse of the system⁶⁶. The Landfill Tax aims to encourage waste producers to produce less and recover more value from it. Since the introduction of the tax in 1996, it is viewed as being a key factor in the changing of attitudes and the diversion of waste from landfill. The UK Landfill Tax is collected by the Government department, HMRC.
- From 1st April 2015, the Scotland Act 2012 provides for the Landfill Tax to be devolved to Scotland, meaning that Revenue Scotland is responsible for collecting the Scottish Landfill Tax (SLFT)⁶⁷.
- The Wales Act 2014 provides for Landfill Tax to be devolved to Wales. This is expected to take effect in April 2018.
- From 1st April 2015, UK landfill operators must be able to justify applying the lower rate of landfill tax to qualifying fines disposed of at their landfill site. Prescribed tests must be conducted on qualifying fines received from each waste processor disposing fines at the landfill site and for each of their processes producing qualifying fines. The fines must meet the specified loss on ignition (LOI) threshold. For disposals made or treated as made on and between 1 April 2015 and 31 March 2016, the LOI threshold is 15%. For disposals made or treated as made from 1 April 2016, the LOI threshold is 10%. Further details of the requirements are available in Excise Notice LFT1: a general guide to Landfill Tax⁶⁸.

Restrictions/bans on landfilling of CDW waste

In England, Defra consulted in 2012 on restricting wood waste to landfill⁶⁹ and made the decision not to place a restriction on wood waste to landfill at present⁷⁰ due to the low tonnages of wood waste being landfilled. In Scotland, there are landfill bans associated with municipal waste.

In Wales, The Environment (Wales) Bill⁷¹ is being drafted and is due to receive Royal Assent in spring 2016. The overarching aims of the Bill are to put in place legislation that will enable Wales' resources to be managed in a more proactive, sustainable and joined-up way and to establish the legislative framework necessary to tackle climate change. The Bill is looking at introducing landfill bans and ensuring segregation by waste producers⁷².

Bans on landfilling of certain wastes may possibly form part of the EU circular economy package which is currently being considered.

Other waste legislation that may impact CDW management

Regulation (EC) No 850/2004 on persistent organic pollutants (the POPs Regulation) as amended is directly binding on all EU Member States. It has the following objective:

⁶⁴ The Finance Bill 2015 will increase the rate to £84.40 per tonne for disposals made to landfill in England, Wales and Northern Ireland on or after 1 April 2016

⁶⁵ http://www.entrust.org.uk/assets/uploads/documents/Landfill_Tax_Briefing_from_HMRC_24032015.pdf

⁶⁶ <https://www.gov.uk/government/publications/excise-notice-lft1-a-general-guide-to-landfill-tax/excise-notice-lft1-a-general-guide-to-landfill-tax#summary-of-the-landfill-tax-qualifying-material-order-2011>

⁶⁷ http://www.sepa.org.uk/waste/scottish_landfill_tax.aspx accessed 24/03/2015

⁶⁸ <https://www.gov.uk/government/publications/excise-notice-lft1-a-general-guide-to-landfill-tax/excise-notice-lft1-a-general-guide-to-landfill-tax>

⁶⁹ <https://www.gov.uk/government/consultations/wood-waste-landfill-restrictions-in-england-call-for-evidence>

⁷⁰ <https://www.gov.uk/government/policies/reducing-and-managing-waste>

⁷¹ <http://gov.wales/topics/environmentcountryside/consmanagement/natural-resources-management/environment-bill/?lang=en>

⁷² <http://gov.wales/docs/desh/publications/150512-waste-en.pdf>

‘...., to protect human health and the environment from persistent organic pollutants subject to the Stockholm Convention on Persistent Organic Pollutants.... by minimising, with a view to eliminating where feasible as soon as possible, releases of such substances, and by establishing provisions regarding waste consisting of, containing or contaminated by any of these substances.’

CDW may contain substances listed in this Regulation, notably fire retardant materials. Article 7 requires producers and holders of such waste to ‘undertake all reasonable efforts to avoid, where feasible, contamination of this waste with [these] substances’. That Article goes on to require waste consisting of, containing or contaminated by any such substance to be disposed of or recovered, without undue delay and in accordance with Annex V to the POPs Regulation in such a way as to ensure that the POP content is destroyed or irreversibly transformed so that the remaining waste and releases do not exhibit the characteristics of persistent organic pollutants. Disposal or recovery operations that may lead to recovery, recycling, reclamation or reuse of such substances are prohibited.

Whilst Article 7 contains some derogations where POP concentrations are below specified thresholds in the waste, the POPs Regulation may present a significant constraint in dealing with certain types or components of CDW.

Legislation or regulation under discussion

As indicated above, the POPs Regulation, first made in 2004, has several times been amended in order to take account of additional listings of chemicals in the Stockholm Convention. A further amendment, in respect of the flame retardant hexabromocyclododecane which is used in expanded or extruded polystyrene materials used in buildings, is currently under consideration and there will be more amendments in due course.

3.2 Waste management plans (WMP) and Strategies

Waste Management Plans

In the UK, Waste Management Plans (WMP) have been developed by each of the Government Bodies within England, Wales, Scotland and Northern Ireland – these are also responsible for any related waste management strategies. These plans are summarised in turn:

England - Waste Management Plan for England⁷³

- Author - Department for the Environment, Food, and Rural Affairs (Defra), 2013
- Contains a small section which specifically considers CDW. This highlights the targets listed below and the performance against these. It also states that a methodology has been produced by Defra and industry stakeholders to calculate the recovery rate of CDW to landfill. This methodology now forms the basis of Government monitoring of waste in this sector.
- Includes the EU target to be reached by 2020: At least 70% by weight of construction and demolition waste is subjected to material recovery.
- It is suggested that England and the UK are already achieving an estimated recovery rate of 93% at the time of publication. This will include backfilling if included as recovery

Scotland - Zero Waste Plan⁷⁴

- Author – The Scottish Government, 2010
- This document sets the strategic direction for waste policy in Scotland.

⁷³ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/265810/pb14100-waste-management-plan-20131213.pdf

⁷⁴ <http://www.zerowastescotland.org.uk/sites/files/zws/zero%20waste%20plan%2009062010%20document%2001.pdf>

- Although this plan considers CDW it does not have its own specific section.

Wales

Towards Zero Waste – One Wales: One Planet⁷⁵

- Author - Welsh Assembly Government, 2010
- This document considers both management and prevention of waste.
- It contains some information which specifically considers CDW.
- It suggests that Wales have met their reuse/recycling target for construction and demolition waste of at least 85% by 2010 (the reuse/recycling rate for 2005/06 was 85%).
- It sets the target for the preparing for reuse, recycling and other material recovery⁷⁶ of non-hazardous construction and demolition waste⁷⁷ shall be increased to a minimum of 90% by weight by 2019/20.
- It also has targets for reducing the landfilling of waste:
 - Landfill 50% of the amount of C&D waste produced in Wales that was landfilled in the 2007 baseline
 - 75% of the amount of C&D waste produced in Wales that was landfilled.
- It makes other comments about reducing, reusing and recycling specific waste streams related to construction and demolition such as packaging, biodegradable waste, hazardous waste, wood, plastic, metal, insulation and gypsum and points to the Construction and Demolition Sector Plan for further details of commitments.

Construction and Demolition Sector Plan (for Wales)⁷⁸

- Author - Welsh Assembly Government, 2012
- This document was designed to support the Overarching Waste Strategy by detailing outcomes, policies and delivery actions for organisations, companies and individuals involved within the construction and demolition sector in Wales.
- This document considers both the management and prevention of CDW.
- By 2050, waste arisings to be reduced by around 1.5 per cent (2007 baseline) each year across all sectors. annual waste prevention target of 1.4% (based in a 2006/07 baseline) for the construction and demolition waste managed off site
- By 2015 the amount of C&D waste disposed of to landfill will be reduced by 50%.
- By 2020 the amount of C&D waste being prepared for reuse and recycling will have increased to a minimum of 90%⁷⁹ by weight for all non-hazardous construction and demolition waste, excluding naturally occurring material defined in category 170504 in the List of Wastes.
- By 2025 there will be a significant reduction in the generation of C&D waste (23%) thereby reducing the impact of the ecological footprint of C&D waste.
- By 2050 Wales will have further reduced the ecological footprint of waste due to a further reduction in the amount of C&D waste generated (61%) and will be at One Wales: One Planet levels

Northern Ireland – ‘Delivering Resource Efficiency’⁸⁰

- Author – Department of the Environment (Northern Ireland), 2013
- The Strategy focuses both on waste management as well as prevention.

⁷⁵ <http://gov.wales/docs/desh/publications/100621wastetowardszeroen.pdf>

⁷⁶ Including backfilling operations using waste to substitute other materials.

⁷⁷ Excluding naturally occurring material defined in category 17 05 04 in the list of waste

⁷⁸ <http://gov.wales/docs/desh/publications/130301construction-demolition-waste-plan-en.pdf>

⁷⁹ Including backfilling operations using waste to substitute other materials.

⁸⁰ http://www.doeni.gov.uk/wms_2013.pdf

- This document does include a specific section for CDW which details the current performance of recycling.
- It states that in 2009/10 non-hazardous CD&E waste excluding uncontaminated stones and soil accounted for 1.2 million tonnes, of which 70% was diverted from landfill.
- It includes the target to achieve a recovery rate (including preparing for re-use, recycling and other material recovery) of 70% for all non-hazardous Construction and Demolition waste by 2020.

Waste Prevention Plans

The responsibility for these lies with the various Government Bodies in England, Wales, Northern Ireland and Scotland. These are summarised, in turn:

England - Prevention is better than cure⁸¹

- Author – Defra, 2013
- This explains the Government's view on how to reduce the amount of waste produced.
- The report signposts ways in which all business sectors can make efficiencies to prevent waste.
- It highlights the built environment (including construction and demolition and facilities management) as one of 8 priority material for waste prevention activities.
- It states that Government and industry are working collaboratively through the Green Construction Board (GCB) working group on waste to drive forward actions to reduce waste.
- The document states that it is important to measure the amount of waste produced per unit of economic activity to allow the efficiency within the economy to be assessed, and to provide an insight into the link between waste arisings and the environmental impacts associated with the generation of waste for a given level of economic activity. For construction and demolition waste this will be measured in waste arisings (million tonnes) per unit Gross Value Added⁸² (GVA) in constant price (volume) terms

Scotland - Safeguarding Scotland's Resources⁸³

- Author – The Scottish Government, 2013
- This document explains how Scotland plans to reduce waste and deliver economic and environmental benefits.
- Although the document puts in place action points which concern CDW, there is no specific section regarding CDW.
- The document states that construction and demolition waste represents around 44% of total waste produced in Scotland. It is estimated that the construction industry could save over £170 million a year through the consistent use of Site Waste Management Plans to reduce the waste created during projects.
- Resource Efficient Scotland will work with the construction industry to encourage prevention, reuse and recycling of construction wastes through:
 - seeking collective action on resource efficiency with the sector;
 - promoting good practice across the construction industry, including the use of Site Waste Management Plans;
 - building on evaluation of Site Waste Management Planning to develop and trial Resource Management Plans to encompass the design stage of construction and the wider benefits of resource efficiency.

Wales – Towards Zero Waste – One Wales: One Planet (see WMP section)

Northern Ireland - The Waste Prevention Programme for Northern Ireland⁸⁴

⁸¹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/265022/pb14091-waste-prevention-20131211.pdf

⁸² Gross Value Added (GVA) measures the contribution to the economy of each individual producer, industry or sector. In order to compare waste arisings in physical terms with GVA, the estimates will need to be converted into constant price (volume) terms using an appropriate deflator.

⁸³ <http://www.gov.scot/Resource/0043/00435308.pdf>

⁸⁴ http://www.doeni.gov.uk/waste_prevention_programme_for_ni_2014-2.pdf

- Author – Department of the Environment (Northern Ireland), 2014
- This programme was designed to build upon the points described in their Waste Management Strategy.
- This document contains a specific section for CDW.
- It outlines the current situation regarding construction waste in Northern Ireland, with arisings of 3.55 million tonnes in 2009/10 (including soils and hazardous waste), of which 15.8% was reused on site, 15.2% was recycled and 38.2% was recovered.
- It details ways in which waste can be designed out and information about the Sustainable Construction Group which provides guidance in relation to sustainable construction.
- The document contains the following actions related to construction and demolition:
 - The Department of the Environment will periodically review the effectiveness of voluntary environmental schemes within the construction sector in determining whether to consider statutory instruments in the future.
 - The Department of the Environment will work with partners and stakeholders to develop a follow-up voluntary agreement to Halving Waste to Landfill appropriate for Northern Ireland.

Other plans with reference to CDW

There are a number of other plans produced by the UK Government which also have objectives related to CDW. These include:

- The Construction 2025 Industrial Strategy was published in 2013⁸⁵, by the Department of Business, Skills and Innovation and has targets for lower costs, lower carbon emissions and faster delivery. The scope of this Strategy includes CDW. A Green Construction Board⁸⁶ was set up in 2011 to steer and provide advice; this includes a working group on CDW.
- The Strategy for Sustainable Construction⁸⁷ was published in 2008 by the English Government and the Strategic Forum for Construction (an industry body). This Strategy set objectives and targets in a number of areas including for CDW. The target for CDW was ‘by 2012, a 50% reduction in CD&E waste landfilled compared to 2008’ (excluding certain backfilling operations). There were also a number of actions proposed by industry bodies including setting a target for diverting demolition waste from landfill by the National Federation of Demolition Contractors (NFDC) and developing sector Resource Efficiency Action Plans (REAPs), led by the Construction Products Association. The Progress towards the CDW target was monitored by a subgroup of industry and Government experts (this became the Green Construction Board’s waste working group).

3.3 Legal framework for sustainable management of CDW

This section aims at identifying legislation that may create good conditions for sustainable management of CDW as preliminary overview for Task 3.

⁸⁵https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/210099/bis-13-955-construction-2025-industrial-strategy.pdf

⁸⁶ <http://www.greenconstructionboard.org/>

⁸⁷ <http://webarchive.nationalarchives.gov.uk/+http://www.bis.gov.uk/files/file46535.pdf>

Key waste management legislative instruments and public procurement

Description	Level of occurrence (Yes/No) Key Scope/ Exemptions	Year established and policy reference	Further detail, information source, related web-site
<i>National/regional obligation for selective demolition?</i>	No	n/a	n/a
<i>National/regional sorting obligation (on-site or in sorting facility)?</i>	Yes	The Waste (England and Wales) (Amendment) Regulations 2012 ⁸⁸	Introduced a duty on organisations that collect waste paper, metal, plastic and glass that from 1 January 2015 this should be done by way of separate collection where it is technically, environmentally and economically practicable (TEEP).
		The Environmental Permitting (England and Wales) Regulations 2010 ⁸⁹ The Waste Management Licensing Regulations (NI) 2003 ⁹⁰ Waste Management Licensing (Scotland) Regulations 2011 ⁹¹	These set out the regulations covering waste management licences, permits, exemptions and carriers.
		<u>Gypsum waste :</u> Position Statement : Landfilling of gypsum waste including plasterboard (England and Wales) ⁹² NIEA Technical Guidance Note The Management for Non-Hazardous Waste of Gypsum Wastes ⁹³ SEPA Technical Guidance Note : The Disposal in	These documents state that gypsum-based materials (e.g. plasterboard) must not be landfilled with biodegradable waste. Producers of gypsum waste should separate it for recovery and recycling wherever possible, either onsite or through a licenced waste facility. Where a load of gypsum is sent to landfill it must be deposited in a separate cell with waste that does not have a biodegradable content that exceeds specified limits.

⁸⁸ <http://www.legislation.gov.uk/ukxi/2012/1889/contents/made>

⁸⁹ <http://www.legislation.gov.uk/ukxi/2010/675/contents/made>

⁹⁰ <http://www.legislation.gov.uk/nisr/2003/493/contents/made>

⁹¹ <http://www.legislation.gov.uk/ssi/2011/228/introduction/made>

⁹² Issued November 2008 and amended January 2011

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/322313/lit_8488_31e384.pdf

⁹³ <http://www.doeni.gov.uk/niea/gypsum09.pdf>

		Landfills for Non-Hazardous Waste of Gypsum Wastes ⁹⁴	
<i>National/regional separate collection obligation for different materials (iron and steel, plastic, glass, etc.)?</i>	Yes	The Waste (England and Wales) (Amendment) Regulations 2012 ⁹⁵ The Waste Regulations (Northern Ireland) 2011 ⁹⁶ and subsequent amendments ⁹⁷ The Waste (Scotland) Regulations 2011 ⁹⁸ and subsequent amendments ⁹⁹	As above, requirements to separately collect waste paper, metal, plastic and glass where it is technically, environmentally and economically practicable (TEEP).
<i>Obligation for separate collection and management of hazardous waste from C&D operations?</i>	Yes	Hazardous Waste (England and Wales) Regulations 2005 ¹⁰⁰ Hazardous Waste (Wales) Regulations ¹⁰¹ Hazardous Waste Regulations (Northern Ireland) 2005 ¹⁰² In Scotland, the Special Waste (Scotland) Regulations 1997 ¹⁰³ and subsequent amendments ^{104,105}	Make provisions for the controlled management of hazardous waste from the point of production to the final point of disposal or recovery. These regulations relate to all hazardous waste, they are not specific to C&D operations

⁹⁴ September 2009 <http://www.sepa.org.uk/media/28998/technical-guidance-note-disposal-of-gypsum-in-landfills.pdf>

⁹⁵ <http://www.legislation.gov.uk/ukxi/2012/1889/contents/made>

⁹⁶ The Waste Regulations (Northern Ireland) 2011 (8th April 2011) <http://www.legislation.gov.uk/nisr/2011/127/introduction/made>

⁹⁷ The Waste (Amendment) Regulations (Northern Ireland) 2013 (30th November 2013)

<http://www.legislation.gov.uk/nisr/2013/241/contents/made>

⁹⁸ The Waste (Scotland) Regulations 2011 (27th March 2011) <http://www.legislation.gov.uk/ssi/2011/226/executive-note/contents>

⁹⁹ The Waste (Scotland) Regulations 2012 (17th May 2012) <http://www.legislation.gov.uk/ssi/2012/148/introduction/made>

¹⁰⁰ <http://www.legislation.gov.uk/ukxi/2005/894/contents/made>

¹⁰¹ <http://www.legislation.gov.uk/wsi/2005/1806/contents/made>

¹⁰² Hazardous Waste Regulations (Northern Ireland) 2005 (16th July 2005) <http://www.legislation.gov.uk/nisr/2005/300/made>

¹⁰³ The Special Waste (Scotland) Regulations 1997 (1st May 1997)

<http://www.legislation.gov.uk/ukxi/1997/257/regulation/1/sld/made>

¹⁰⁴ The Special Waste Amendment (Scotland) Regulations 2004 <http://www.legislation.gov.uk/ssi/2004/112/contents/made>

¹⁰⁵ The Special Waste Amendment (Scotland) Amendment Regulations 2004 <http://www.legislation.gov.uk/ssi/2004/204/contents/made>

<p><i>Related Green public procurement requirements</i></p>	<p>Yes</p>	<p>Greening Government Commitment targets ¹⁰⁶ (8 August 2014)</p> <p>Scottish Sustainable Procurement Action Plan¹⁰⁷ (28 October 2009)</p> <p>Wales procurement policy statement¹⁰⁸</p> <p>Northern Ireland Public Procurement Policy 2014¹⁰⁹</p>	<p>Setting out the targets that central government departments and their agencies must meet by 2015. This includes:</p> <ul style="list-style-type: none"> • reducing greenhouse gas emissions • reducing the amount of waste we generate • reducing water consumption and report on office water use • ensuring government buys more sustainable and efficient products and engages with its suppliers to understand and reduce the impacts of its supply chain <p>Contains 10 steps to sustainable procurement. Outlines an approach to successful sustainable procurement which means identifying more sustainable ways of meeting requirements and designing sustainable procurement specifications accordingly. The approach should address the social, economic and environmental implications of product and service choices. It should embrace whole life costing and address how aspects such as design, manufacturing materials, operating costs, energy consumption, waste and recycling options support a more sustainable approach.</p> <p>Contains 9 policy principles for the Welsh Public Sector. One of these relates to Economic, Social and Environmental Impact. This states that value for money should be considered as the optimum combination of whole-of-life costs in terms of generating efficiency savings, good quality outcomes for the organisation, and also benefits society and the economy, whilst minimising damage to the environment. This is currently under review.</p> <p>Outlines 12 guiding principles to govern the administration of public procurement in Northern Ireland which reflect the statutory obligations related to equality of opportunity and sustainable development.</p>
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¹⁰⁶ <https://www.gov.uk/government/publications/greening-government-commitments-targets>

¹⁰⁷ <http://www.gov.scot/Topics/Government/Procurement/policy/corporate-responsibility/CSR/SSPAP>

¹⁰⁸ <http://gov.wales/docs/det/report/140728-procurement-policy.pdf>

¹⁰⁹ http://www.dfpni.gov.uk/index/procurement-2/cpd/cpd-policy-and-legislation/ni-pp-policy/ni_public_procurement_policy_-_version_11_august_2014.pdf

3.4 Targets

The approach to CDW targets varies across the UK with different targets being adopted¹¹⁰:

- In England, Northern Ireland and Scotland: 70% recovery of CDW waste by 2020 (as per WFD);
- Wales: 90% prepared for reuse, recycled or recovered by 2019/20 and a proposed waste prevention target of 1.4% year on year reduction of waste arising for C&D waste to 2050.

In Northern Ireland, the Sustainable Development Strategy¹¹¹ has the target of 'Northern Ireland economy will achieve 85% resource efficiency by 2025'. Important steps include the progressive reduction of quantities of biodegradable waste going to landfill and reduction of waste in general across all sectors, encourage and incentivise the business case for resource efficiency and waste minimisation and promote materials recovery, re-use, and recycling through initiatives such as the Waste and Resources Action Programme (WRAP).

A joint industry/Government target was set to 'halve CD&E waste to landfill by 2012 based on a 2008 baseline' within the Strategy for Sustainable Construction (see Section 3.3). This was for England only and measured against construction output with a target of 66.5 tonnes/£million construction output. In 2012, 119 tonnes/£million construction output was landfilled. This was largely due to excavation waste; if the target was for CDW solely, a 29% reduction was achieved¹¹². The Waste Resources Action Programme (WRAP) developed the Halving Waste to Landfill Initiative (H2WL) to support this target with waste cut by 28% from 2008 to 2009¹¹³.

Other industry targets exist, with many construction companies setting their own for diverting CDW from landfill and some construction projects e.g. Olympics, Crossrail. Trade bodies such as the UK Contractors Group have set targets for their members:

- Divert at least 90% of construction and demolition (C&D) waste away from landfill; with the aspiration of achieving zero non-hazardous C&D waste to landfill by 2020¹⁴;
- Halve construction waste production by 2020 (based on a 2010 baseline of 10.6t/£100k).

The National Federation of Demolition Contractors have tasked members to ensure a reduction of materials sent to landfill with audited result of 94% achieved in 2014.

Schemes such as BREEAM also have targets to meet for credits for waste minimisation (measured by m³ or tonnes/100m² floor area and diversion of waste from landfill).

Regionally, London has a commitment through the London Plan to exceed recycling and reuse of CD&E Waste by 95% by 2020¹¹⁴.

Targets for certain materials include:

Plasterboard

- To engage with all stakeholders (via the PSP, interfacing with other voluntary agreements and activities) to reduce the amount of plasterboard waste to landfill and increase recovery of all plasterboard waste with a long term objective of zero plasterboard waste sent to landfill by 2025.

¹¹⁰ DEFRA (05 Aug 2014) Analysis of Potential Re-alignment and Harmonisation of Particular Waste Definitions in Europe and the Implications for UK Waste Data Reporting EV0804

file:///C:/Users/holta/Downloads/12263_AnalysisofWasteDefinitionsandImplicationsforUKWasteDataReporti.pdf

¹¹¹ <http://www.ofmdfmi.gov.uk/sustain-develop.pdf>

¹¹² <http://www.greenconstructionboard.org/images/resources/Report%2023%20Waste.pdf>

¹¹³ http://www.wrap.org.uk/sites/files/wrap/HW2L_Report_10555.pdf

¹¹⁴ <http://www.london.gov.uk/sites/default/files/London%20Plan%20March%202015%20%28FALP%29%20-%20Ch5%20London%27s%20Response%20to%20Climate%20Change.pdf>

- To increase the recycling of new construction plasterboard waste to the best environmentally beneficial applications as defined in the Quality Protocol to 50% by 2015

These are within the Ashdown 2 Agreement¹¹⁵ and are monitored by the Plasterboard Sustainability Partnership¹¹⁶ with annual reports published.

Concrete

- Increasing the proportion of recycled/ secondary aggregates (as a % of total aggregates) to 25% by 2012 (21% was achieved) (British Precast Federation¹¹⁷).

¹¹⁵<http://www.plasterboardpartnership.org/pdfs/Ashdown%202%20-%20manufacturers%20agreement%20-%20draft%20version%2011.pdf>

¹¹⁶ <http://www.plasterboardpartnership.org/index.htm>

¹¹⁷ <http://www.sustainableconcrete.org.uk/pdf/BP%20SUSTAIN%202013-update.pdf>

4. Non legislative instruments

In this section, any other instruments that may specify how the country is addressing the question of CDW management maybe highlighted, especially as a preliminary overview for task 3, as these instruments might be creating conditions for a sustainable management of CDW.

Key waste management and sustainable building non legislative instruments

Description	Level of occurrence (Yes/No) Key Scope/ Exemptions	Year established and policy reference	Further detail, information source, related web-site
<i>BREEAM</i>	Yes Widespread Mainly Voluntary Some public sector procurement requires it e.g. London Olympic venues	Last update 2014 Led and owned by BRE	BREEAM is the Building Research Establishment's Environmental Assessment Method, an environmental assessment method for buildings. It has specific issues related to CDW waste which include requirements to have a waste management plan, set waste reduction targets and divert waste from landfill. Evidence is required for waste measurement. And a pre-demolition audit must be undertaken on projects where demolition is taking place. For more information: www.breeam.org
<i>Code for Sustainable Homes</i>	Yes Widespread Mandatory for social housing Voluntary for other	Last update 2010 Government owned national standard (in process of Government withdrawal)	The Code for Sustainable Homes is an environmental assessment method for rating and certifying the performance of new homes. It has specific issues related to CDW waste which include requirements to have a waste management plan, set waste reduction targets and divert waste from landfill. Evidence is required for waste measurement. And a pre-demolition audit must be undertaken on projects where demolition is taking place. For more information: http://www.breeam.org/page.jsp?id=86

<i>Home Quality Mark (HQM)</i>	Not operational yet Voluntary replacement for Code for Sustainable Homes	2015 Led and owned by BRE	The Home Quality Mark is a rigorous and relevant standard for new homes from BRE, using a simple 5-star rating to provide impartial information from independent experts on a new home's design and construction quality and running costs. It clearly indicates to householders the overall expected costs, health and wellbeing benefits, and environmental footprint associated with living in the home. The HQM will encourage measures and practices that help improve efficiency which includes effectively managing and reusing waste materials. For more information: http://www.homequalitymark.com/index.html
<i>SKA rating</i>	Yes Voluntary	Led and owned by RICS (Royal Institution of Chartered Surveyors)	SKA rating is an environmental assessment method, benchmark and standard for commercial fit-outs which assesses fit-out projects against a set of sustainability good-practice measures. Waste is one of the 8 sustainability areas covered by SKA rating and includes measures such as reducing waste sent to landfill, designing out waste, increase recycling of construction & demolition waste, and preparing a Site Waste Management Plan. For more information: http://www.rics.org/uk/knowledge/ska-rating-/about-ska-rating/
<i>CEEQUAL</i>	Yes Voluntary	2004 Last update 2012 Led and owned by CEEQUAL Ltd ¹¹⁸	CEEQUAL is the international evidence-based sustainability assessment, rating and awards scheme for civil engineering, infrastructure, landscaping and works in public spaces CEEQUAL has a section on physical resources use and management which includes questions covering waste such as: minimising material use and waste; responsible sourcing of materials; using re-used and/or recycled materials; durability and maintenance; future de-construction or disassembly; design for waste minimisation; waste from site preparation; policies and targets for resource efficiency; and onsite waste management For more information: http://www.ceequal.com/about.html
BS 8895-1 Designing for material efficiency in building projects – Part 1: Code of Practice	Some early adopter uptake Voluntary	2013 Owned by BSI	This can help reduce waste in the early stages of building or refurbishment projects. It is part 1 of 3 documents that will enable designers, architectural teams, contractors and clients to make their building projects more materially efficient. The standard allows teams to consider the materials that they use, factoring in high recyclability,

¹¹⁸ CEEQUAL Ltd is owned by a group of 14 organisations who are actively involved in the operation of the Scheme and/or were involved in the project that developed the Scheme [http://www.ceequal.com/pdf/CEEQUAL%20Introduction%20\(A4\)%20booklet%20%20-%202015%20Low%20Res.pdf](http://www.ceequal.com/pdf/CEEQUAL%20Introduction%20(A4)%20booklet%20%20-%202015%20Low%20Res.pdf)

	In process of development of latter design stages		<p>designing out waste and implementing recycling strategies before any work is undertaken. It is linked to the RIBA Plan of Work parts A (appraisal) and B (design brief) which make up the preparative stages of a build.</p> <p>BS 8895 applies to all types and sizes of building projects and includes both new build and refurbishment projects; but excludes civil engineering projects, facilities management and RMI (repair, maintenance and improvement) activities.</p> <p>For more information : http://www.bsigroup.co.uk/en-GB/about-bsi/media-centre/press-releases/2013/august/New-guidance-on-helping-to-reduce-waste-in-building-projects/#.VS6NdtzF844</p>
Northern Ireland Government Construction Clients Sustainability Action Plan (2012 – 2015)	Yes	<p>2012</p> <p>Developed by Sustainable Construction Task Group</p>	<p>Has a number of themes related to CDW including designing out waste, where projects should report and measure their performance and set % waste to landfill reduction target for each year to achieve 75% (or better) recycling or re-use of construction, demolition & excavation waste by 2020 using a 1998 baseline</p> <p>For more information : http://www.dfpni.gov.uk/index/procurement-2/cpd/cpd-policy-and-legislation/policy-construction-landing-page/content_-_cpd_policy_framework_for_construction_procurement/content_-_cpd_achieving_sustainability_in_construction_procurement/sap-2012-15/sap-2012-15-26112012.pdf</p>

Material/ product type	Mandatory or Voluntary	Year established	National or regional (specify if regional)	Public sector and Industry lead organisation	Levels of performance e.g. tonnes recycled	Further information/ web-site
Packaging Waste	Mandatory	1998	National	Public sector	Since the Regulations started, the amount of packaging being recycled has more than doubled although the majority of that growth has come from exports.	Obligated packaging producers must register and meet their waste packaging recycling and recovery responsibilities. For more information : https://www.gov.uk/packaging-producer-responsibilities
Waste Electrical and Electronic Equipment (WEEE)	Mandatory	2007	National	Public sector	Waste Electrical and Electronic Equipment (WEEE) received at an Approved Authorised Treatment Facility from January to December 2014 is about 500 000 tonnes for household WEEE and 15 500 for non-household WEEE ¹¹⁹ .	Producers meet their obligations by registering with an approved Producer Compliance Scheme, who will then purchase evidence of recycling on behalf of the producers from an Approved Authorised Treatment Facility or Approved exporter. More information: http://www.legislation.gov.uk/uksi/2013/3113/pdfs/uksi_20133113_en.pdf
Recovinyl	Voluntary	2003	National	Industry lead	More than one million PVC-U post-consumer window	The organisation was created as part of the original European Vinyl 2010 Voluntary Commitment Its target is to stimulate and

¹¹⁹ <https://www.gov.uk/government/statistics/waste-electrical-and-electronic-equipment-in-the-uk-2013>

					frames are recycled every year. Latest audited figures show that end-of-life windows and profiles comprised 25,480 tonnes (52%) of the total; 48,544 tonnes of waste PVC recycled in 2011 ¹²⁰ .	certify the use of 700,000 tonnes of recycled PVC by 2020. Recovinyl is active in 18 European countries; in the UK Axion Recycling is the partner. For more information : http://www.recovinyl.com/
Recofloor	Voluntary	2009	National	Industry lead	500 tonnes of waste vinyl flooring sent back for recycling ¹²¹ .	Uplifted vinyl flooring and/or post-installation off-cuts) is recycled and diverted from landfill. The recycled flooring is either used to manufacture new flooring or to make traffic management products. For more information : http://www.recofloor.org/

Extended producer responsibility (EPR) for each voluntary or mandatory scheme operating in the UK

There are also a number of manufacturer lead take back schemes for plasterboard, insulation and ceiling tiles.

¹²⁰ <http://www.bpf.co.uk/article/recovinyl-recycles-more-than-one-million-pvc-u-windows-a-year-in-the-uk-593.aspx>

¹²¹ <http://www.recofloor.org/news.php?story=497852>

Key CDW management requirements and standards

Description	Occurrence (Yes/No) Mandatory (Yes/No) Scope & exemptions	Year established	National or regional (specify if regional)	Details of Public sector and Industry enforcement/ involvement/ collaboration	Levels of performance e.g. tonnes recycled, % coverage	Further information/ web-site
Requirement for pre-demolition audits	Yes Voluntary Tends to be linked to BREEAM/ Code for Sustainable Homes credits	Pre 2005	Site specific, across the UK	Public sector requirement for certain levels of BREEAM have driven the incidence of pre-demolition audits	Typical demolition reuse/recycling potential 95%+ Actual varies with each site. Data is not collated across sites in centralised database	BRE have standardised methodology and case studies https://www.smartwaste.co.uk/page.jsp?id=30
Standards for recycled CDW	Yes Widespread uptake Voluntary Linked to End of Waste Criteria	Pre 1995	National	First Quality Protocol for Aggregates – BRE & Industry project funded by Government. Subsequent QP were WRAP, EA and industry collaboration	Not known	See Quality Protocols in section 2.2.3

Selective demolition/ plan for large demolition sites/demolition standard	No uptake unless linked to SWMP and/or Actions from Pre-demolition audit					
Other CDW planning requirements	Yes Voluntary	Pre 1995	National	Requires industry, regulator and local authority involvement	Exemptions are usually capped e.g. 5000 tonnes/site Environmental permits will set upper limits	Exemptions from environmental permitting in terms of use of waste in construction applications may require planning permission Environmental permits to store, treat or use waste will require planning permission, as well as the environmental permit https://www.gov.uk/environmental-permit-check-if-you-need-one/overview

Note: Local authorities may have planning guidance related to CDW e.g. Brighton and Hove¹²²

¹²² http://www.brighton-hove.gov.uk/sites/brighton-hove.gov.uk/files/downloads/local_plan_2005/Waste_Construction_SPD_March_2006.pdf

CDW management other tools and guidance

Description of guidance/ tool	Scope	Year established/ produced	National or regional (specify if regional)	Public sector and/or Industry lead organisation	Levels of use (high/ medium/low) or specify	Further information/ web-site
SMARTWaste	An online reporting platform managed and owned by BRE	2008	National	Building Research Establishment (BRE)	High – around 180 companies	Web based tool which companies use to monitor and manage CDW as well as other environmental impacts. www.smartwaste.co.uk Report presenting BRE SMARTWaste Summary Data ¹²³ http://www.wrap.org.uk/smartwaste-summary-data
measuRE ¹²⁴	Built environment reporting tool allowing users to monitor resource efficiency	2014	National	Waste and Resource Action Programme (WRAP)	Low	measuRE covers resource use from construction activities and corporate operations. measuRE replaces the Waste to Landfill Reporting Portal. http://www.wrap.org.uk/content/measure

¹²³ <http://www.wrap.org.uk/smartwaste-summary-data> accessed 25/03/2015

¹²⁴ <http://measurebuiltenvironment.wrap.org.uk/> accessed 25/03/2015

NetWaste tool ¹²⁵	Calculates the potential waste arising on construction projects and how to improve recycled content and quantifies the overall Net Waste	2008	National	Waste and Resources Action Programme (WRAP)	Medium	http://www.wrap.org.uk/content/net-waste-tool-0
WRAP designing out waste guidance ^{126,127}	A range of guidance documents and tools providing information on improving resource efficiency in construction projects during the design stage	2011 onwards	National	Waste and Resources Action Programme (WRAP)	Medium	http://www.wrap.org.uk/node/21343
WRAP Site Waste Management Plan (SWMP) Tools	A suite of tools to help the industry undertake SWMPs	2008	National	Waste and Resources Action Programme (WRAP)	High	http://www.wrap.org.uk/content/site-waste-management-plan-template-lite
BREMAP	A searchable map to find the nearest CDW facility by postcode	2008	National	BRE	Low/Medium,	http://www.bremap.co.uk/

¹²⁵ <http://www.wrap.org.uk/content/net-waste-tool-0> accessed 25/03/2015

¹²⁶ <http://www.wrap.org.uk/node/21343> accessed 25/03/2015

¹²⁷ <http://www.wrap.org.uk/content/construction-designers-0> accessed 25/03/2015

Carbon Calculator	A calculator to establish the carbon from CDW	2013	National	UKCG and WRAP	Low	<i>Not available currently (downloaded spreadsheet)</i>
Environment Agency Carbon Calculator	A carbon calculator (excel spread sheet) for construction projects including material and waste management routes	2014	Regional (England)	Environment Agency	Low	https://www.gov.uk/government/organisations/environment-agency/about/procurement
Recycled and secondary aggregates suppliers	A map based system for aggregate producers who have complied with the Quality Protocol	2014	Regional (Scotland)	Zero Waste Scotland	Medium	http://zwsaggsuppliers.org.uk/
ICE Demolition Protocol	This ICE protocol has been developed to provide an overarching framework which enables the waste hierarchy to inform approaches for managing buildings and structures at the end of their lives.	2008	National	Institute for Civil Engineers (ICE)	Low	http://www.ice.org.uk/Information-resources/Document-Library/Demolition-Protocol-2008
IsItWaste tool and QP checker	Guidance tool to help businesses in England determine whether by-product or product status has been reached, and therefore whether the component/material can be reused in a new product QP checker can be used to check compliance with the aggregates quality protocol	2014	Available for England	Environment Agency	Low (recently released)	https://isitwaste.org/ http://qpchecker.info/

Strategic Forum for Construction/Green Construction Board Subgroup on CDW	Set up to measure and report progress towards the target of halving CD&E waste to landfill. Developed a methodology report, produced annual progress reports and an action plan	2008 - 2013	England	Government and industry	Medium	http://www.greenconstructionboard.org/index.php/working-groups/greening-the-industry/waste
CIBSE Guidance - resource efficiency for building services	Helps engineers and consultants to understand the principles and importance of resource efficiency	2014	National	Waste and Resources Action Programme (WRAP) & CIBSE	Low (recently released)	http://www.cibse.org/knowledge/cibse-tm/tm56-resource-efficiency-of-building-services-new
Guidance Note 2 : Targets for Recycling	The aim of this note is to focus on one of the most important primary targets for sustainable construction: a minimum of "10% of the materials value of the project should derive from recycled or re-used content".	2006	Regional (Northern Ireland)	Department of Finance and Personnel	Medium	http://www.dfpni.gov.uk/index/procurement-2/cpd/cpd-policy-and-legislation/policy-construction-landing-page/content_-_cpd_policy_framework_for_construction_procurement/content_-_cpd_achieving_sustainability_in_construction_procurement/cpd-scg-guidance-note-2/scg_guide_gn2_-_6.pdf
Guidance Note 3: Construction, Demolition and Excavation Materials	This note deals with the minimisation and proper disposal of construction, demolition and excavation waste in public procurement contracts. It aims to ensure legal compliance with waste related legislation and also to promote best practice in construction.	2010	Regional (Northern Ireland)	Department of Finance and Personnel	Medium	http://www.dfpni.gov.uk/index/procurement-2/cpd/cpd-policy-and-legislation/content_-_cpd_achieving_sustainability_in_construction_procurement/cpd-scg-guidance-note-3/sustainable_construction_group_gn3_construction_demolition_excavation_waste_-_v._december_2010.pdf

Guidance Note 4 : Bulk Inert Materials/Aggregates - Re-use and Recycling	This guide aims to promote the re-use and recycling of bulk inert materials in construction in order to reduce consumption of natural resources, energy, transport costs and waste going to landfill.	2006 (amended 2009)	Regional (Northern Ireland)	Department of Finance and Personnel	Medium	http://www.dfpni.gov.uk/index/procurement-2/cpd/cpd-policy-and-legislation/policy-construction-landing-page/content_-_cpd_policy_framework_for_construction_procurement/content_-_cpd_achieving_sustainability_in_construction_procurement/cpd-scg-guidance-note-4/scg_guide_gn4_.pdf
Guidance Note 6 : Demolition, Dismantling, Recovery and Re-use	This note deals with the demolition and dismantling of buildings and structures with the aim of minimising the quantity of waste being sent to landfill sites.	2007 (amended 2012)	Regional (Northern Ireland)	Department of Finance and Personnel	Medium	http://www.dfpni.gov.uk/index/procurement-2/cpd/cpd-policy-and-legislation/policy-construction-landing-page/content_-_cpd_policy_framework_for_construction_procurement/content_-_cpd_achieving_sustainability_in_construction_procurement/cpd-scg-guidance-note-6/scg_-_gn6_-_january_2012.pdf
Construction Waste Measurement Protocol	Guidance on how to measure and report waste arisings and reuse /recycling / recovery from construction, demolition and excavation activities on construction projects.	2013	European	Encord	Medium	http://www.encord.org/wp-content/uploads/2013/06/2013-05-ENCORD-Waste-Measurement-Protocol-Issue-V1-Low-Res.pdf
Site Waste – Its Criminal	A simple guide to Site Waste Management Plans including templates	2008	Northern Ireland & Scotland	NetRegs	Low	http://www.netregs.org.uk/pdf/SWMP_simple_guide.pdf
SEDA Design for Deconstruction	A guide for how to apply design for deconstruction	2005	National	SEDA (public)	Low	http://www.seda.uk.net/assets/files/guides/dfd.pdf
Waste and permitting guidance	A guide for the demolition industry on environmental permitting	2012	National	NFDC (industry)	Low	http://demolition-nfdc.com/download/wpg.html

CL:AIRE - Contaminated land: Applications in real environments	Established to stimulate the regeneration of contaminated land in the UK by raising awareness of, and confidence in, practical and sustainable remediation technologies.	1999	National	Independent non-profit organisation	Medium	http://www.claire.co.uk/
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Key technical guidelines/standards/Codes of Practice for use of CDW in construction applications

Description of guidance/ tool	Scope	Year established/ produced	National or regional (specify if regional)	Public sector and/or Industry lead organisation	Levels of use (high/ medium/low) or specify	Further information/ web-site
BRE Digest 433 on aggregates	Demonstrated on BRE's environmental building – first use of recycled aggregates in structural concrete	1998	National	Built upon many years of government funded research and development	Much of this has become standard practice now	http://products.ihs.com/cis/Doc.aspx?DocNum=202183
Quality protocols/ end of waste criteria for aggregates	See Section 2.3	BRE produced quality control document for recycled aggregates in 1997. Adapted into first QP for Aggregates in 2004	National (except Scotland)	EA & WRAP with industry	High	See section 2.3

BS/EN standards: BS EN 12620 BS EN 13242, BS E13043 BS EN 13108-8	Inert waste/ aggregates	2013 update	National	Government funded much R&D; BSI, BRE & industry	High	BS EN 12620 specifies the properties of aggregates and filler aggregates obtained by processing natural, manufactured or recycled materials and mixtures of these aggregates for use in concrete. Details of other standards available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/296499/LIT_8709_c60600.pdf
A specification for recycled aggregate for use in minor schemes	This specification provides a mechanism to enable material providers and users to incorporate inert materials as unbound aggregates in the sub-base and or capping materials of minor highway schemes.	2012	Regional (Wales)	Constructing Excellence in Wales (Public funded)	Medium	http://www.cewales.org.uk/cew/wp-content/uploads/Rams-Brochure.pdf
Specification for highway works	The Highways Agency's Specifications for Highway Works (SHW) sets out the standards required for materials used in constructing and maintaining its network.	2014 (amends)	National	Highways Agency (public)	High	http://www.wrap.org.uk/content/resource-efficiency-highways-specification-highway-works-shw-pavements

<p>HAUC Specification for the Reinstatement of Openings in highways – Appendix 9</p>	<p>This Specification is a Code of Practice outlining a national standard applicable to all undertakers when carrying out reinstatement as a part of executing street works. There is a strong focus on sustainability by encouraging the first time completion of permanent reinstatements, material recycling and the reuse of materials to minimise the carbon footprint of the reinstatement operation</p>	<p>1991</p>	<p>England</p>	<p>Department of Transport</p>	<p>High</p>	<p>https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/11042/sroh.pdf</p>
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Other CDW initiatives

Description of initiative	Scope	Year established	National, regional, local (specify which local area/ region)	Public sector and/or Industry lead organisation	Levels of performance e.g. tonnes recycled	Further information/ web-site
NISP – National Industrial Symbiosis Programme	A platform to help businesses to implement resource optimisation and efficiency practices, keeping materials and other resources in productive use for longer through 'industrial symbiosis.	2003	National	International Synergies Limited (was public now private)		http://www.nispnetwork.com/ Performance metrics: http://www.international-synergies.com/about-us/associates/2-uncategorised/222-written-evidence-submitted-by-international-synergies-limited-isl-the-creators-of-the-national-industrial-symbiosis-programme-nisp
Construction Resource and Waste Platform	Roadmap and action plan for reduction of construction waste as well as a number of evidence based studies on CDW	2008	National	BRE and AEA (public funded by Defra)	n/a	http://www.wrap.org.uk/content/crwp-publications
The Construction Commitments: Halving Waste to Landfill (HW2L)	Target and commitment to halve the amount of construction, demolition and excavation waste going to landfill by 2012	2008	National	WRAP (public)	Over 800 companies signed the commitment to reduce waste leading to: 5 million tonnes of	http://www.wrap.org.uk/content/what-halving-waste-landfill

					waste per year diverted from landfill £400 million cost savings per year realised by the companies involved ¹²⁸	
Built Environment Commitment	The Commitment involves a simple statement of intent by each signatory committing to take action that contributes to a more low carbon, resource efficient built environment	July 2014	National	BIS (previously WRAP supporting)	39 signatories	Developed in consultation with industry, the Built Environment Commitment is a strategic priority of Construction 2025 – the industrial strategy for construction ¹²⁹
Construction Material Exchange (Scotland)	Allows companies/projects to list materials they no longer need or are unwilling to send to landfill, and offer these materials to other businesses that may	2013	Regional (Scotland)	Zero Waste Scotland	n/a	http://cme.resourceefficientscotland.com/

¹²⁸ <http://www.wrap.org.uk/category/sector/construction> accessed 25/03/2015

¹²⁹ <http://www.wrap.org.uk/node/23839> accessed 25/03/2015

		have a re-use requirement for them.					
Sector Resource Efficiency Action Plans (REAPs)	Developed by a number of construction product sectors. These plans include the supply chain working together to produce actions for improvement with regards to resource efficiency and sustainability.	2010 - current	National	Various (public and private), initiated by the Construction Products Association	Various annual reports available	Plasterboard ¹³⁰ Windows ¹³¹ Joinery ¹³² Flooring ¹³³ Mineral Wool Ceiling Tiles ¹³⁴ Building Insulation Foam ¹³⁵ Clay Bricks & Clay Blocks ¹³⁶	

¹³⁰ Plasterboard Sustainability Partnership (PSP) (October 2010) Plasterboard Sustainability Action Plan

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69303/pb13439-plasterboard-101019.pdf

¹³¹ Windows Sustainability Partnership (WSP) (October 2010) Windows Sustainability Action Plan https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69302/pb13438-windows-101019.pdf

¹³² John Fletcher of the British Woodworking Federation, Jane Thornback of the Construction Products Association, and Stuart Blofeld of the Building Research Establishment (September 2010) JOINERY: A Resource Efficiency Action Plan http://www.bwf.org.uk/fileadmin/documents/bwf/wood_waste/reap_joinery_final.pdf

¹³³ Pete Thomas on behalf of the Contract Flooring Association and Stuart Blofeld of BRE (September 2010) FLOORING: A Resource Efficiency Action Plan http://www.wrap.org.uk/sites/files/wrap/Flooring_REAP.pdf

¹³⁴ Association of Interior Specialists (June 2012) MINERAL WOOL CEILING TILES: A Resource Efficiency Action Plan <http://members.aisfcdc.org/assets/Uploads/Mineral-Wool-Ceiling-Tiles-A-Resource-Efficiency-Action-Plan.pdf>

¹³⁵ Building Insulation Foam Resource Efficiency Partnership (BIFREP) (September 2013) A Resource Efficiency Action Plan <http://www.wrap.org.uk/sites/files/wrap/BIF%20REAP%20v2.pdf>

¹³⁶ Andrew Smith of Ceram (October 2013) Clay Bricks and Clay Blocks Resource Efficiency Action Plan <http://www.wrap.org.uk/sites/files/wrap/CBCB%20REAP%20October%202013.pdf>

						Precast Concrete ¹³⁷ Composite Materials ¹³⁸ Ready Mixed Concrete ¹³⁹
Salvo	Represent the reclamation industry in the UK and have a materials information exchange for low value materials	On-going	National	Salvo (private industry)	BigRec survey published (2007 ¹⁴⁰)	http://www.salvo.co.uk/ http://www.salvomie.co.uk/
Green Scheme	Compass Provides independent verification of the performance data reported by waste management organisations against PAS 402:2013.	2013	Regional (Wales)	Constructing Excellence in Wales (publically funded)	27 companies registered	http://www.greencompass.org.uk/en/

¹³⁷ Andrew Smith of Ceram (October 2013) Precast Concrete Resource Efficiency Action Plan <http://www.britishprecast.org/documents/PrecastREAPOctober2013.pdf>

¹³⁸ Mike Bains, URS, and Joe Carruthers, NetComposites on behalf of the UK composites industry stakeholder group (December 2013) Composite Materials Resource Efficiency Action Plan <http://compositesuk.co.uk/system/files/documents/Composites%20REAP%20021%20FINAL.pdf>

¹³⁹ Andres Dunster, BRE (February 2014) Ready-Mixed Concrete Resource Efficiency Action Plan http://www.brmca.org.uk/documents/Ready_Mixed_Concrete_REAP_028_WRAP_BRE_BRMCA_Feb_14.pdf

¹⁴⁰ http://www2.wrap.org.uk/downloads/BigREc_Survey_report.9e5f0b50.10251.pdf

Reuse schemes	There are a number of reuse and recycling schemes for CDW in the UK.	Various	Various	Various		http://www.cewales.org.uk/waste/reciprocity-cardiff/ http://www.recipro-uk.com/ http://www.communitywoodrecycling.org.uk/ https://www.warp-it.co.uk/ http://www.tradeleftovers.com/
Secure and Sustainable Buildings Act 2004	Requires the reporting for England and Wales building stock, the extent to which materials used in constructing, or carrying out works in relation to, such buildings are recycled or re-used materials	2004	England and Wales			http://www.legislation.gov.uk/ukpga/2004/22/section/6 5 th report available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/415633/5th_Biennial_Report_Final_Version_to_Use_for_Laying_and_Publication.pdf
Sustainability Supply Chain School	Provides free practical support in the form of e-learning modules, tailored self-assessment and action plans, sustainability training and networking opportunities.	2012	National	Action Sustainability (funded privately and publically)	On-going	http://www.supplychainschool.co.uk/

Considerate Constructors Scheme (CCS)	Construction sites, companies and suppliers voluntarily register with the Scheme and agree to abide by the Code of Considerate Practice, designed to encourage best practice beyond statutory requirements. The main areas of concern fall into three categories: the general public, the workforce and the environment including CDW management.	1997	National	Considerate Constructors Scheme	On-going	http://www.ccscheme.org.uk/
NVIR-O-CERT	The scheme provides a route for smaller construction companies to achieve environmental accreditation whilst helping larger companies to distinguish themselves as environmental leaders, covers CDW	n/a	Regional (Northern Ireland)	Construction Employers Federation (CEF)	On-going	https://www.cefni.co.uk/cms/ShowPageContent.aspx?CODE=ffff

5. CDW management performance – CDW data

In this section the performance of CDW management in the UK is explored. This section particularly seeks to gather all available data and information about CDW generation and treatment, exports/imports, and treatment facilities in the UK.

5.1 CDW generation data

In the UK, CDW data is collected on a yearly basis. This is collected through the environmental protection agencies using waste management data from licensed waste management facilities as well as other sources such as industry data related to recycled aggregates. This may also be supplemented by surveys – a survey on CDEW was carried out in Wales for 2012 which was used for the EC Waste Return¹⁴¹. In Wales, a 2005-06 survey was used for the EC Waste Stats 2006 return and was re-grossed for the 2008 return. In Northern Ireland, a survey was undertaken in 2011 for 2009/10 on CDW arising use and disposal¹⁴².

- Defra's Digest of Waste and Resource Statistics – 2015 Edition¹⁴³ states some basic information regarding the amount of waste arising by sector in the UK between 2004 and 2012 (Waste Prevention Metric). Within this document, construction is defined as NACE code F (which includes dredging). The next scheduled update of the document is in 2016. In the UK in 2012, 100 million tonnes was generated by construction (including excavation)
- CDW generation is shown as the gross value added (GVA) of the construction sector per tonne of construction waste in the UK. In 2014, this was £845/tonne¹⁴⁴. Households are not covered in this data

CDW generation for 2012 is summarised for England, Wales and Scotland and for Northern Ireland in 09/10 as shown in Table 2.

Table 2 CDW Generation for the UK

	CDW Generation (excluding soils) 000 tonnes
England	38,938
Scotland	1,875
Wales	1,889
Northern Ireland	1,212

Data from industry

There are a number of industry datasets for CDW; these include:

- BRE SMARTWaste benchmarks – derived from users of SMARTWaste, showing average waste arising by project type and waste type by volume and tonnes; benchmarked against floor area and project value. These are used as waste minimisation targets within BREEAM. There are also benchmarks for diversion of waste from landfill. A report detailing BRE SMARTWaste data was published on the WRAP website in 2012¹⁴⁵.
- UK Contractors Group – collects data from its members on the amount of waste generated and the amount diverted from landfill
- National Federation of Demolition Contractors (NFDC) – an annual survey of members on waste generation and management
- Constructing Excellence KPI's – waste arising benchmark based on survey data

¹⁴¹ <https://www.naturalresourceswales.gov.uk/our-evidence-and-reports/waste-reports/construction-demolition-waste-survey/?lang=en>

¹⁴² http://www.doeni.gov.uk/niea/cdew_arisings_use_and_disposal_in_ni_2009-10.pdf

¹⁴³ Defra (January 2015), Digest of Waste and Resource Statistics – 2015 Edition (page 17) https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/401400/Digest_of_waste_England_2015_-_final.pdf

¹⁴⁴ Defra (January 2015), Digest of Waste and Resource Statistics – 2015 Edition (page 17) https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/401400/Digest_of_waste_England_2015_-_final.pdf

¹⁴⁵ <http://www.wrap.org.uk/smartwaste-summary-data>

- Wastage rates – a number of data sources exist for wastage rates including BRE’s Green Guide to Specification¹⁴⁶ and WRAP data
- Reclamation data – the BigRec survey¹⁴⁷ was undertaken in 2007, providing information on how many materials are reused

5.2 CDW treatment data

There is also a document entitled UK Statistics on Waste – 2010 to 2012¹⁴⁸ which includes the following information:

- Recovery rate from non-hazardous CDW
 - In the UK in 2012 this was 86.5%
 - In England in 2012 this was 89.2%

In 2012, the UK generated 44.8 million tonnes of non-hazardous CDW (excluding excavation waste), of which 38.8 million tonnes was recovered. This represents a recovery rate of 86.5%. This is summarised in Table 3.

Table 3 Recovery rates for UK and England

	UK			England		
	Generation	Recovery	Recovery rate	Generation	Recovery	Recovery rate
	000 tonnes	000 tonnes	000 tonnes	000 tonnes	000 tonnes	%
2010	45,419	39,129	86.2%	39,832	35,480	89.1%
2011	47,067	40,622	86.3%	41,152	36,754	89.3%
2012	44,786	38,759	86.5%	38,938	34,714	89.2%

Note: Excludes excavation waste

UK estimates for recovery rate from non-hazardous CDW have been calculated in accordance with the WFD. Accurately quantifying CDW is challenging and whilst the absolute tonnage figures are subject to a relatively high level of uncertainty, sensitivity analysis suggests there is not a significant impact on the final recovery rate. Whilst efforts were made to synchronise approaches across UK countries, methodologies are not identical. The England methodology was originally devised in conjunction with industry, as part of the work with the Strategic Forum for Construction/Green Construction Board Subgroup on CDW. Estimates are dependent on several key assumptions relating to the role of permitted sites, simple registrations and the volume of aggregate production. Methodologies have recently been extensively reviewed across all UK countries. Within the UK, some CDW is transferred across borders for treatment, primarily into England. This effect may slightly inflate the England recovery rate.

- For Wales, there is no lack of completeness in the data, but owing to the nature of surveys and methodology in modelling, there are varying precision levels in the estimates that should be considered when using the data.
- No difference between the Waste Statistics Regulation years and other years is expected in England; there has been some difference for Wales.

This data is slightly different for WFD data from Eurostat. The 2012 generation figures presented above are the same as for generation in Eurostat (Gen1+Gen2). However, the recovery figures here are slightly higher here than from Eurostat (Trt, 35.1 million tonnes), but this Eurostat data is for mineral wastes only which may have an effect.

Treatment data collection

England is currently in a transitional phase in collecting treatment data and intends to make sufficient treatment estimates to calculate a CDW recovery rate on an annual basis. It is unlikely that a WStatR treatment template would be completed in non WStatR years. However the process behind that will be the same. England does not intend to produce or publish any CDW estimates other than those required by Eurostat.

In Wales, treatment data is collected as per the surveys referenced in the generation section. This data is used for national reporting and monitoring. However, in terms of reporting to EC, site return data is used since relating back to source is not required. Also, since surveys are not available annually, the CDW recovery rate for 2010, 2011 & 2012 was estimated based on permitted site return and industry data for Waste Framework Directive monitoring (as per generation). Wales are also in a transitional phase and intend to review the

¹⁴⁶ <http://www.bre.co.uk/page.jsp?id=499>

¹⁴⁷ http://www2.wrap.org.uk/downloads/BigREc_Survey_report_3c8e2490.10251.pdf

¹⁴⁸ <https://www.gov.uk/government/statistics/uk-waste-data>

calculation of such annual estimates going forward. CDW survey data has been published by Natural Resources Wales and its predecessor (Environment Agency Wales) but not as official statistics. Natural Resources Wales statistical releases are currently under review as to which should be published as official statistics in the future.

In Northern Ireland, data is based on the permitting regime, with data being provided every quarter.

In Scotland, data is collected via site returns based on their activities, this is not published. There is no specific CDW recovery data. This is determined through the amount of CDW that is generated as a proportion of overall waste and the recycling rate is apportioned to this amount.

Onsite recycling

For England, it is likely the aggregate from the CDW figure includes some 'internal recycling' and therefore should not have been reported for the WStatR. Defra are trying to establish from Eurostat whether the WFD follows exactly the same rules. It's difficult to get an accurate estimate for this, but preliminary information suggested that this could be in the region of 10Mt. For Wales, where CDW was treated on site as a 'waste' it was reported in the survey data. Scotland have had a voluntary requirement to collect data from aggregate producers in terms of waste inputted by EWC and output by product type – around 70-80% of the industry has provided this data. This is under review.

Pre-treatment

The majority of CDW waste in the UK is estimated to be turned into an End-of-Waste aggregate product under exemption. Therefore detailed information about the treatment process is not available but it's likely to require some sort of physical processing. Waste going through permitted sites is likely to undergo some sort of treatment. The data for CDW is at the point it is either received or removed from permitted sites. There is very limited information on where waste has come from, is going to and changes to EWC code due to treatment. This makes accurate estimation of CDW streams very challenging. In particular, it is impossible to identify with any certainty what element of Chapter 19 waste began life as Chapter 17 waste. This is significant as the tonnage of Chapter 19 wastes are tens of millions of tonnes.

Temporary storage

There is no estimate for the storage of CDW. There is an A10 permit which is for storage, but this doesn't appear in the data.

5.3 CDW exports/imports data

This is difficult to quantify in current data sets but not expected to be significant tonnages owing to the nature of CDW (note – may be able to get some more here).

5.4 CDW treatment facilities data

Treatment data is collected on a yearly basis. Defra collates summaries from the environment agencies of all four UK countries of facilities authorised by mandatory permit or license. The data excludes facilities that were formally closed throughout 2012 but does not identify permitted facilities which were non-operational in 2012. Facilities permitted only for treatment operations identified as intermediate (which includes most anaerobic digesters) are excluded from the table below. Capacity is based on the level authorised by permit or license with the exception of some small scale incinerators where the permit did not feature capacity. In these cases, operational capacity is used. 'Energy recovery' in that table below refers to facilities where the main purpose is generation of energy, or formal R1 accreditation has been awarded. No municipal waste incinerators had officially accredited R1 status in 2012. Therefore they are reported as 'Incineration' rather than 'Energy Recovery'¹⁴⁹. Table 4 summarises the number and capacities of treatment facilities.

Table 4 Number and Capacity of Final Treatment Facilities, UK regions (2012)

Facility type (EU definitions)	Measure	UK	England	Wales	Scotland	Northern Ireland
Energy recovery	Number of facilities	27	13	3	8	3

¹⁴⁹ The fact that an MSW EfW facility had not achieved R1 accreditation does not necessarily mean that it wasn't meeting the standard. Some of these facilities have been operating for a number of years and were exceeding R1 by virtue of their heat recovery (for example, the Sheffield CHP facility, the Lerwick heat-only facility). The application of a standard retrospectively does not necessarily mean that that standard was not being met prior to that time.

Facility type (EU definitions)	Measure	UK	England	Wales	Scotland	Northern Ireland
	<i>of which</i> dedicated to the processing of MSW	0	0			
	Capacity (thousand tonnes/year)	2,893	2,111			
Incineration	Number of facilities	87	65	1	15	6
	Capacity (thousand tonnes/year)	8,385	7,992			
Recovery other than energy recovery (includes backfilling)	Number of facilities	3,542	1,895			
Deposit onto or into land (landfill)	Number of facilities	594	478	25	71	20
	Rest (remaining) capacity (000 m3)	633,203	505,438			

'Energy recovery' in this table refers to facilities where the main purpose is generation of energy, or formal R1 accreditation has been awarded.

MSW = Municipal Solid Waste

Revised on 25 March 2015 to reflect more accurate classification of energy recovery facilities

Source: Waste Statistics Regulation return 2012, Eurostat data on number of facilities for 2012

The Welsh Government published a comparison of 2009 facility throughputs compared to total available capacity, which included CDW in the Collections, Infrastructure and Markets Sector Plan¹⁵⁰. In England, data has provided by the Environment Agency on the number of permits for mobile plants, at the time of writing this report, the total is 569. Some of these mobile plants will also be used for waste other than CDW. The Environment Agency have also provide information on the number of exemptions for 'U1 –use of waste in construction' – at the time of writing, this is 49,886 in England; there is a limit of tonnages of either 1,000 or 5,000 tonnes dependent upon the EWC type; this data is not collected via waste facilities and for England has been estimated through data provided from industry.

5.5 Future projections of CDW generation and treatment

No future projections have been found at a national level, though an unpublished study undertaken by WRAP has shown headline figures for CDW for 2020. The Welsh Government Construction & Demolition Sector Plan¹⁵¹ makes some references to development of C&D treatment capacities (i.e. allowing businesses to use household recycling centres etc.). Local planning authorities will undertake projections to assist with waste planning.

5.6 Methodology for CDW statistics

CDW recovery and WStatR have been completed using the same estimation process, however the figures sent to Eurostat cannot be reconciled without the workings because they ask for different things. The worksheets 'Table Gs1' to 'Table Ts3' will not be reconcilable to the submitted WStatR because the estimation process could not identify CDW down to EWC or even EWC-STAT level. Assumptions about the type of waste contained within total values were made in order to complete the WStatR templates.

Defra are aware of various limitations to the current methodology and are aiming to address these in conjunction with industry in time for the WStatR 2014 (to be submitted in June 2016). These include the correct assumptions regarding aggregate production and the ability to identify specific EWC-STAT codes in generation and treatment of CDW. The Welsh Government is also considering options for the June 2016 submission and will liaise with Defra in terms of addressing current methodology limitations. They will also consider alternatively reporting re-grossed 2012 survey figures for consistency with Eurostat reporting. Scotland is also looking at their methodology.

¹⁵⁰ http://gov.wales/topics/environmentcountryside/epg/waste_recycling/publication/cimsectorplan/?lang=en

¹⁵¹ (http://gov.wales/topics/environmentcountryside/epg/waste_recycling/publication/canddsectorplan/?lang=en)

6. C&D waste management in practice

In this section the CDW management “on ground” in UK is explored. Specific CDW obligations, initiatives, voluntary agreements and any other management practice are mentioned if available currently in the UK.

6.1 CDW management initiatives

The initiatives listed below were identified through literature review and dialogue with stakeholders.

Description of initiative	Scope	Year established	National, regional, local (specify which local area/region)	Public sector and/or Industry lead organisation	Levels of performance e.g. tonnes recycled	Further information/ web-site
Carpet Recycling UK	Several case studies: 4 Reuse case studies, 2 Recycler case studies, 5 Innovation case studies, 1 Supplier case study, 1 member case study and 2 others.	Date depending on the case study: between 2009 and 2015	National	Depends on the case study	Depends on the case study	http://carpetrecyclinguk.com/case_studies.php
Olympics – case studies for waste	Several case studies over construction and demolition waste management, designing out waste etc...	Mostly 2011	Regional (specific to the Olympic Park)	Public	Depends on the case study	http://learninglegacy.independent.gov.uk/themes/sustainability/case-studies.php Case studies: http://learninglegacy.independent.gov.uk/publications/demolition-waste-management-on-the-olympic-park.php http://learninglegacy.independent.gov.uk/publications/designing-out-waste-on-the-olympic-park.php http://learninglegacy.independent.gov.uk/publications/construction-waste-management-on-the-olympic-park.php

Industry case studies (Zero waste targets)	Several large construction clients and contractors have zero waste to landfill targets	Varies	Company level	Private	100% recycling/recovery (typically with recycled content offset for non-recyclable %)	Marks & Spencer Plan A: http://corporate.marksandspencer.com/plan-a/find-out-more/about-plan-a Wilmott Dixon targets: http://www.willmott-dixon.co.uk/how-we-do-it/managing-waste
Enabling Zero Waste	Monitor the success of four specially selected pilot schemes across Wales identifying solutions and innovations derived from live construction and demolition projects.	2013	Regional (Wales)	Constructing Excellence in Wales (publically funded)	On-going	http://www.cewales.org.uk/waste/enabling-zero-waste/
WRAP – case studies	Plenty of case study covering lots of waste-related subjects in the construction industry	Depends on the case study	Depends on the case study	Depends on the case study	Depends on the case study	http://www.wrap.org.uk/category/what-we-offer/case-studies?viewfacets=259%2C269 http://www.ukcg.org.uk/fileadmin/clients/UKCG/document/Members/Environmental/UKCG_Priority_Waste_Actions_dec_2013.xlsx
Constructing Excellence in Wales	Waste Minimisation – Church Village Bypass	2011	Local (one project on the A473 in South Wales)	Industry lead. Main contractor: Costain	Diverted over 90% of waste from landfill. Constructed of over 70% recycled aggregate, sourced from local suppliers.	http://www.cewales.org.uk/awards/2011-award-winners-case-studies-2/waste-minimisation-church-village-bypass/
BRE- Difficult Demolition Waste (guide)	Gives practical guidance on waste management routes and how to improve reuse, recycling and recovery of difficult demolition wastes	2013	National	BRE Trust founded	n/a	http://www.brebookshop.com/samples/327123.pdf
UK Contractors Group	Trade body for major contractor with a waste group providing guidance and requirements for its members. Annexe 1. Now is encouraging its	Ongoing	National	Industry	In 2012, diverted 91% of CDEW from landfill	http://www.ukcg.org.uk/business-improvement/environment/waste-task-group/ http://www.ukcg.org.uk/uploads/tx_news/UKCG_PAS_402_position_paper.pdf

	members to use PAS402:2013 certified waste management companies					
Envirowise	A program giving advice to SME's on waste minimisation	1994	National	Government funded	Saved £1 billion for businesses	http://webarchive.nationalarchives.gov.uk/20080609152647/http://envirowise.gov.uk/uk.html
DRIDS	Datasheets for how to manage demolition materials and information on waste management companies	2013	National	National Federation of Demolition Contractors (NFDC)	n/a	http://demolition-nfdc.com/page/drids.html
Green Construction Board/ Strategic Forum for Construction Waste Subgroup	A joint Government and Industry group focusing on how to divert CDEW from landfill	2008	England	Government and industry	National targets measured	http://www.greenconstructionboard.org/index.php/working-groups/greening-the-industry/waste

Within these initiatives/case studies, the following could be selected as interesting case studies for task 2:

- Olympics case studies for waste (above table)
- Client case study (e.g. M&S) (above table)
- UK Contractors Group -- a number of initiatives covering CDW (above table)
- Constructing Excellence in Wales - a number of initiatives covering CDW (various tables)
- Recofloor and Recovynyl (Section 4)
- Quality Protocols(Section 2.3)
- SMARTWaste (Section 4)
- WRAP Halving Waste to Landfill Commitment (Section 4)
- Resource Efficiency Action Plans (Section 4)
- DRIDS (above table)

6.2 Stakeholders' engagement

Details of this are covered in previous sections.

6.3 Waste legislation enforcement

Responsibilities and sanctions

The UK environmental protection bodies are responsible for enforcing waste regulations. In England, this is the Environment Agency (EA), in Wales, Natural Resources Wales (NRW), in Scotland, the Scottish Environment Protection Agency (SEPA) and in Northern Ireland, the Northern Ireland Environment Agency (NIEA). These bodies carry out a large number of inspections of waste sites, though due to budget constraints these are becoming less. There are various penalties in place for those who do not comply with waste

regulations. These include the issuing of penalty notices, fines and prison sentencing. The Sentencing Council has issued guidance for environmental offences for England and Wales¹⁵² with fines up to £3 million.

Court cases and infringements

There is an increasing trend to tackle waste crime. In England in 2012/13, the EA spent £17 million tackling waste crime, with around 7% on environment protection, and they have invested nearly £5 million in an illegal waste sites task force. They stopped illegal activity on 1,279 sites (31% had CDW as their main waste type) and had 820 'active' illegal sites; with 28% with CDW as their main waste type. In 12/13 there were 171 prosecutions resulting in £827,940 of fines with 5 custodial sentences¹⁵³.

There is an increasing issue of waste being miss-described as inert waste. The Environment Agency is working closely with HRMC to tackle the problem of waste being described as inert when in fact it is not. The main reason for this taking place seems to be avoidance of landfill tax.

Illegal dumping

- **England** – 852,000 flytipping incidents occurred in 2013/14, 6% were from CDEW, up by nearly 20% from 2012/13
- **Wales**¹⁵⁴ – 32,934 flytipping incidents were reported by local authorities in 2013/14, costing £1.9 to clear up. 2216 (7%) were CDEW related. This number has consistently fallen since a peak in 2007/08. 24,701 enforcement actions were taken; of those where local authorities carried out prosecutions, 75 per cent resulted in a fine. Wales has consulted on a fly-tipping strategy¹⁵⁵
- **Scotland**^{156, 157} – 61,000 flytipping incidents per year, costing over £8.9 million to clear up, of which 4.6% were related to construction and demolition waste. Scotland has a Litter Strategy¹⁵⁸.
- **Northern Ireland** – no information found.

In the UK, local councils and the environmental regulatory bodies have responsibility in respect of illegally deposited waste. Local councils deal with most cases of fly tipping on public land, whilst the regulatory bodies investigate and enforces against the larger, more serious and organised illegal waste crimes.

A recent consultation has been undertaken by Defra and the Welsh Government on proposals to enhance enforcement powers at regulated facilities; and call for evidence on other measures to tackle waste crime and entrenched poor performance in the waste management industry¹⁵⁹.

Transboundary movement of wastes

A UK Plan for Shipment of Wastes¹⁶⁰ was implemented in 2007 (updated in 2012) as a requirement of the Transfrontier of Shipment of Waste Regulations 2007¹⁶¹. The competent authorities are the environmental regulatory bodies in each of the UK countries.

¹⁵² https://www.sentencingcouncil.org.uk/wp-content/uploads/Final_Environmental_Offences_Definitive_Guideline_web1.pdf

¹⁵³ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/288604/LIT_8776_956402.pdf

¹⁵⁴ <http://gov.wales/statistics-and-research/local-authority-recorded-flytipping/?lang=en>

¹⁵⁵ <http://www.tacklingflytipping.com/Documents/NFTPG-Files/150226-fly-tipping-strategy-en.pdf>

¹⁵⁶ <http://www.zerowastescotland.org.uk/content/flytipping-1>

¹⁵⁷ http://www.zerowastescotland.org.uk/sites/files/zws/Scotland%27s%20Litter%20Problem%20-%20Full%20Final%20Report_0.pdf

¹⁵⁸ <http://www.zerowastescotland.org.uk/TowardsALitterFreeScotland>

¹⁵⁹ https://consult.defra.gov.uk/waste/enhanced_powers_to_tackle_waste_crime

¹⁶⁰ http://www.doeni.gov.uk/nea/uk_plan_for_shipments_of_waste-2.pdf

¹⁶¹ http://www.legislation.gov.uk/uksi/2007/1711/pdfs/uksi_20071711_en.pdf

6.4 Drivers / barriers to increase CDW recycling

Factor / characteristic / element in CDW recycling chain	Drivers	Barriers
Specification of BREEAM and similar schemes	Credits can be awarded to projects who meet targets to reduce CDW from landfill – this has increased recycling, with construction contractors demanding better performance from their waste management contractors.	
Government sponsored programmes	The Government sponsored the Waste Resources Action Programme which led to a variety of work undertaken to increase recycling for CDW. This included working with the construction sector to specify higher levels of recycled content, a major program of assisting companies to reduce CDW to landfill and assisting in financing recycling plants	
Landfill Tax	The rising Landfill Tax has been a key driver for the increasing recycling rate for CDW, making the option of landfilling certain types of waste the more costly option when compared to recycling, This has in turn, lead to more investment in the waste management industry	
Demonstration of technical performance	There has been a substantial increase in the amount of guidance available for companies to increase their recycled content within construction products, which may utilise CDW as well as drivers to set higher recycled content targets for projects. There has been industry criticism for focusing solely on recycled content.	The sector is reluctant to use products that have not got certification of tested performance. This effectively rules out the reuse of construction products and materials from structural applications and limits other applications significantly. This is not an issue for construction products with recycled content since these can be tested and certified against BS/EN standards.
Environmental permitting and exemptions		These can be restrictive to recycling CDW since the exemptions tend to apply to small tonnages. The environmental permitting process has been simplified in recent years but still acts as a deterrent for medium scale recycling, especially on-site.
Legacy issues/ difficult wastes		The longevity of buildings means that there are commonly used products and materials that are within the current building stock that can be deemed hazardous waste over time. An example of this is blown insulation containing ozone depleting substances. Whilst it is crucial that these materials are dealt with via the appropriate hazardous waste route, there are difficulties in identifying hazardous (non-recyclable) from non-

Factor / characteristic / element in CDW recycling chain	Drivers	Barriers
		hazardous (recyclable). Therefore, there is a tendency for all to be dealt with as non-recyclable. The demolition industry is upskilling to be able to better deal with these more problematic materials. This can be seen from the NFDC website dedicated to Demolition and Refurbishment Information Datasheets DRIDs
Health & safety concerns		In a similar vein to above there are also H&S concerns relating to reuse (often requires a move away from mechanised demolition to hand based deconstruction) and some products that may have H&S implications when reprocessed, such as the fibres in older mineral based ceiling tiles.
Transport costs		To a certain degree, transport costs avoid the excessive transportation of CDW which could increase environmental impacts beyond any benefits. For lightweight materials with limited geographical spread of appropriate recycling facilities, transport costs will prevent most recycling.
Site based constraints to segregate		Most typically time and space constraints are cited as reasons why CDW is not separated on site. Effective segregation increases the amount of value of recycling of CDW.
Leadership and verification	<p>Many construction companies and clients have established zero waste to landfill targets for the CDW they are responsible for. However, these good intentions often need strong leadership and effective reporting to ensure they are implemented at a site level.</p> <p>A number of construction product manufacturer trade bodies working with their supply chain have established actions and targets for improving resource efficiency. These have been most successful when they have been industry driven.</p>	Where there isn't commitment, levels of recycling are dependent upon the facility receiving waste since it will be mostly mixed waste.
Market conditions	The landfill tax in the UK has encouraged recycling and recovery and this is now, in many cases, cheaper than sending CDW to landfill	The volatility of certain markets can affect the viability of recycling certain materials e.g. plastics.
Waste infrastructure	There has been a significant investment in waste infrastructure which continues	There is still a lack of waste infrastructure in certain areas e.g. rural meaning options for recovery of

Factor / characteristic / element in CDW recycling chain	Drivers	Barriers
		waste can be limited
Reliability of data	Better CDW data at the site, company and national level has provided a focus for improvement	There is still a lack of good quality data especially at the national level providing granularity for CDW types.
Aggregates Levy		<p>It was assumed that the levy would increase the market price of construction aggregates by an amount in line with the levy thereby providing those producing recycled aggregates with an additional margin to cover the costs of processing quality aggregates from C&DW.</p> <p>However, those purchasing construction aggregates were aware that the aggregates levy was not applied to recycled aggregates and as such expected the price of recycled aggregates to be correspondingly lower than primary aggregates, putting downward pressure on recycled aggregate prices rather than encouraging price growth.</p> <p>The levy was applied to the producer at the point of production, not on the purchaser at point of sale. This enabled the quarry operator to consider the levy as an operational overhead with flexibility on how it was allocated across an aggregate product range. As a result of this the market price of aggregates products such as aggregates for concrete and asphalt, with lower levels of competition from recycled aggregates, rose at a higher rate than the levy. On the other hand, the market price of aggregates products such as fills and sub base with high levels of competition from recycled aggregates, rose at a lower level than the levy, if at all in some locations.</p>

7. CDW sector characterisation

In this section some specific characteristics of the CDW management sector in the UK are explored. Issues covered in this section concern the CDW sector characteristics including market conditions, enabling factors, import and exports of CDW and the characteristics of recycled CDW products.

7.1 Sector characteristics

CDW Management

The CDW Management sector is based on the following players:

- Waste carriers – these collect and transport the waste, they may also own waste transfer stations. These tend to be small, local companies
- Waste brokers – these can be used by construction companies, especially in the house building industry whereby they will manage all of the waste services on behalf of the waste producer
- Waste transfer stations/MRFs – most mixed CDW will be processed at a waste transfer station and sorted into various materials to be sent for reprocessing
- Reprocessors – some materials may be sent direct to reprocessors depending on the quality and quantity
- Recovery activities – there are a wide range of permits and exemptions available for recovering CDW. This includes U1 use of waste in construction and T7 - treatment of waste bricks, tiles and concrete by crushing, grinding or reducing in size. These tend to be used on the same site as where the CDW is produced.
- Energy from waste – some CDW may be sent for incineration such as insulation foams and plastics; as well RDF from waste transfer stations
- Landfill

The roles and responsibilities of waste carriers, brokers and those that carry out treatment, recovery and disposal options are well defined in national legislation with registration required and the meeting of certain permit conditions for processing, treatment, recovery and disposal. There are a number of organisations representing the waste industry in the UK, including the Chartered Institution of Wastes Management, Environmental Services Association and the Resource Association.

When setting up new CDW facilities, planning approval will be required from the local planning authority. Waste local plans are produced by the local planning authorities who assess potential sites and the requirements for additional infrastructure to meet waste needs in the locality. The Green Investment Bank believe that 4.0-7.7 million tonnes of merchant capacity (particularly from C&I sources) could be justified by 2020¹⁶². More CDW companies are innovating with investment in specialised sorting systems and collection systems. There has also been a focus in the UK on 'trommel fines' and whether these should be charged at the standard or lower rate of Landfill Tax. This has resulted in the requirements for lower rate materials becoming stricter and therefore will require better processing at the waste management facility to ensure these requirements can be met.

The Waste Management Industry

The waste sector in the UK accounts for 0.48% of the economy and was worth around £5 billion; with waste collection accounting for around half the value, waste treatment, disposal and materials recovery accounting for around a quarter each in 2013. The number of employees is around 135,000, with around 60,000 involved in waste collection, 35,000 in waste treatment and disposal and around 25,000 in materials recovery. Between 2009 and 2013 all sectors within the waste industry experienced increases in the number employed. The industry is composed of a number of large waste management companies (e.g. Veolia, Suez Environnement (was Sita) etc.) however for CDW, smaller companies are apparent, providing local services. A recent report suggests that the sector will invest almost £7 billion in waste treatment over the next 6 years¹⁶³.

¹⁶² <http://www.greeninvestmentbank.com/media/25376/gib-residual-waste-report-july-2014-final.pdf>

¹⁶³ http://www.lrsconsultancy.com/documents/LRSCatalyst_Waste_Resource_Management_MandA_Report_Jan_2013.pdf

7.2 Exports / imports of CDW

Certain waste materials have an import/export market. For metal scrap, the UK, in 2013 exported 13.2 million tonnes worth over £4.3 billion; importing is low at around 0.5 million tonnes. Some of this metal will be CDW. Estimates of wood waste export for use as biomass vary. The wood recycling association (WRA) estimate that over 600,000 tonnes were exported in 2014, primarily to Germany and growing demand from Sweden. Reports suggest that 1.6 million tonnes of wood waste will be available for export in 2015, i.e. shortfall in the domestic market for recovered wood¹⁶⁴. Some of this wood will be from CDW sources. 1.8 million tonnes of Refuse Derived Fuel (RDF) were exported from England and Wales in 2013, some of this may have been derived from CDW. Around 50% of packaging waste in 2011 was exported (a small proportion of this may originate from CDW)¹⁶⁵.

There is also some movement of hazardous waste such as asbestos and preservative treated wood.

7.3 CDW as landfill cover

Excavation waste is frequently used as for landfill cover and backfilling quarries as well as for low value applications such as fill and capping. The Environment Agency has produced guidance on using materials for landfill cover and looks at the suitability of various materials¹⁶⁶. There is little data available on how much CDW is used; however material used for certain applications are exempt from the UK landfill tax. As such in the Halving Waste to Methodology, the amount of waste that was exempt from landfill tax was used to determine the amount that is beneficially reused.

Landfill operators have to undertake a management plan and within this how they will reach the requirements of the Environmental Permit. This should detail the measures and procedures that will be used to ensure the site operates without causing pollution of the environment, harm to human health or serious detriment to the amenities of the locality. It must include measures that will be taken to satisfy the objectives of applying a cover. To demonstrate that a material will fulfil the relevant objectives, a source/pathway/receptor risk assessment should be undertaken. This should demonstrate that the risks associated with any particular cover material are minimal.

7.4 Market conditions / costs and benefits

Taxes and Levies

The Landfill tax has acted as an incentive to separate out inert waste (which attracts a lower rate) and recycle or recover all CDW. This was introduced in 1996 and the standard rate has increased each year. Rates for 2015/16 (UK wide):

- Lower rate £2.60 per tonne
- Standard rate £82.60 per tonne

Various exemptions apply, including inert waste used for filling quarries which is predominantly taken from CDW.

A proportion of landfill tax (5.1%) can be distributed to local community projects by landfill operators. This is called the Landfill Communities Fund and all projects have to comply with the eligibility criteria set by its regulating body, Entrust.

The Aggregates Levy places a tax on primary aggregates (when used in a construction application which is around 90% of aggregates) which enables recycled aggregates to be more competitively priced, thus stimulating the market for recycled and secondary aggregates (around 28% of all aggregates) which are mainly derived from CDW. The Levy enabled more investment in recycling infrastructure and allowed recyclers to have a higher unit production cost and still be competitive with primary aggregates. However, the market expectation for recycled aggregates to be cheaper because of the Levy has been an issue. This was introduced in 2002 and has had little increase since. Rate for 2014/15 (UK): £2 per tonne. Since 2002, around £180 million has been used to reduce the impact of extracting aggregates and their transportation via the Aggregates Levy

¹⁶⁴ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/82571/consult-wood-waste-researchreview-20120731.pdf

¹⁶⁵ http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Overall_packaging_waste_recycling_rate_and_share_of_export_for_recycling,_2011_new.JPG

¹⁶⁶

Sustainability Fund. This is now no longer in operation in England but is still active in Wales. It is applied to sand, gravel and rock that have either been:

- dug from the ground
- dredged from the sea in UK waters
- imported

There have been numerous legal challenges to the levy by affected industry bodies which could ultimately result in the removal of this tax.

Costs and benefits

A gate fees report is produced by WRAP annually. This provides average prices for different materials and waste management routes. These prices will vary depending on location and market conditions. These are summarised in Table 5 for 12/13¹⁶⁷:

Table 5 Waste Management Prices

Type	Average gate fee (£) UK (excludes haulage and Landfill Tax)	Range
Non-hazardous waste landfill	£21	£8 to £49
Hazardous waste landfill 17 05 03	£35	£22 to £50
Hazardous waste landfill 17 06 01	£65	£40 to £90
Hazardous waste landfill 17 06 05	£56	£30 to £68
EfW Post 2000 facilities	£90	£62 to £126
EfW Pre 2000 facilities	£58	£32 to £70
Wood waste: animal bedding	£-32	£-180 to £-6
Wood waste: panelboard	£-11	£-12 to £-9
Wood waste: biomass	£-23	£-30 to £-15

Table 6 summarises the perceived and actual costs and benefits of improved CDW management.

Table 6: Perceived costs and benefits of improved CDW

Costs	Benefits
Time needed to set up and operate alternative recovery routes	Reduced material and disposal costs
Time needed to train and change culture on sites to facilitate site segregation	Market differentiation – i.e. aligning with client CSR objectives; achieving own CSR targets
Training and costs of meeting requirements of quality protocols, environmental permitting and/or exemptions from permitting (especially for site based reprocessing and use of materials)	Reduced CO ₂ emissions
Time and other costs of developing and maintaining Site Waste Management Plans, other plans, pre-demolition audits	Meeting planning requirements
Time and other costs of measuring and monitoring waste arisings and management routes	Contribution towards overarching sustainability standard, such as certain level of BREEAM

¹⁶⁷

Costs	Benefits
	Meeting or pre-empting legal requirements, such as Site Waste Management Plans, considering the Waste hierarchy
	Improved site management, operative engagement and employee development

These costs and benefits can be quantified at site, company, regional and national level, but there are few reports that attempt to do this, and it tends to be in an ad-hoc way. Some reports and activities that have relevant information are summarised below:

1. An estimated reduction of 1.9 million tonnes of waste sent to landfill by using recycled quality protocol compliant aggregates in first 5 years of operation. A corresponding saving to industry in the region of £1 billion through the avoidance of disposal fees and landfill tax. Significant benefits for industry through increased sales revenue. The net benefit is estimated to exceed £3 billion by 2020.¹⁶⁸
2. A commonly quoted case study of the cost of construction waste compares the cost of waste disposal, cost of labour and cost of materials in a typical skip (waste container used on construction sites). Although this case study is around 10 years old, the ratio of costs is still relevant today: £85 cost of disposal (x1); £163 cost of labour to fill (x2); £1065 cost of materials (x12)¹⁶⁹. A typical site (£150m development) is later evaluated in this report, with savings of around £300K achievable though increasing levels of recycling to 90%+. This represents a possible 0.2% saving on cost of overall construction.
3. Later WRAP case studies have focussed on net savings through achieving good practice waste reduction. For example, a £13.5m construction of a Materials recycling facility had estimated savings of £300K (£250K material cost saving; £50K disposal cost saving), with cost of achieving saving being around £20K, this represents a net saving of 2.12% on overall construction costs¹⁷⁰. Carbon (eq) savings of 430 tonnes were also projected.
4. Defra have produced an extensive listing of emission factors for material consumption and waste, including those relevant to CDW¹⁷¹. These can be used to estimate carbon equivalent savings through reuse, recycling and recovery at site, company, regional and national scale. For example, BRE's True Cost of Waste Calculator¹⁷² combines this data with other cost and life cycle data to provide environmental and financial benefits of achieving waste reduction targets for key construction waste streams.
5. Scotland is adopting carbon metrics to help prioritise recycling across all their waste streams.

Resource scarcity & security

A report from BIS 2012¹⁷³ indicates aggregates as being deemed insecure or at risk in other recent studies. This is mainly due to planning obstacles to set up new quarries and impact of marine dredging. Other commonly used metals are also highlighted, including copper; along with rarer materials used in solar panel manufacture and timber. Timber is largely imported to the UK and efforts are being made to improve efficiencies and capacity of home grown timber production to reduce UK's dependency¹⁷⁴.

¹⁶⁸ The above figures are based on Financial Impact Assessment (FIA) conducted on the first Quality Protocol over a 5 year period UK wide. The FIA's are conducted in accordance with the Department for Business Innovation and Skills (BIS) and HM Treasury guidelines and are conservative.

¹⁶⁹ Achieving good practice in waste minimisation and management WRAP 2006 (references original case study from Envirowise but this is no longer available)

¹⁷⁰ Assessing costs and benefits of reducing waste in construction – Integrated waste management facility WRAP (no date).

¹⁷¹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69554/pb13773-ghg-conversion-factors-2012.pdf

¹⁷² <http://www.smartwaste.co.uk/page.jsp?id=105>

¹⁷³ Resource security action plan https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69511/pb13719-resource-security-action-plan.pdf

¹⁷⁴ Grown in Britain for Timber <http://www.growninbritain.org/>

7.5 Recycled materials from CDW

The main CDW product is recycled aggregates used for unbound aggregate applications in construction civil engineering for pipe bedding, sub base, capping layers and granular fills. The Aggregates Levy as mentioned in Section 7.4 has driven up the use of recycled aggregates. 28% of aggregates used in the UK are from recycled and secondary sources (55mt of 198mt)¹⁷⁵. Local authorities as part of their mineral planning will look at the sources of aggregates within their locality. Section 4 details the types of standards in place for the use of recycled aggregates and Section 2.3 on the use of a Quality Protocol for inert waste. Much work has been done in the UK, by WRAP to provide confidence in the use of recycled and secondary aggregates including case studies, tools, help with specifications and supplier directories. Recycled aggregates are largely used in unbound aggregate applications, with their largest impact in reducing the demand on primary aggregates from crushed rock.

Other markets exist for recycled materials from CDW, including:

- Wood waste – used in various end markets e.g. animal bedding, panel-board manufacture
- Plasterboard waste – used in new plasterboard
- PVC waste
- Glass waste – used mainly as aggregate
- Metal waste – largely recycled

In terms of procurement, WRAP encouraged companies to record their recycled content in their construction projects and set related targets. WRAP produced much guidance in this area, including the typical recycled content in a wide range of construction products (accessed via a database)¹⁷⁶. This data can also be found in BRE's Green Guide to Specification¹⁷⁷. WRAP also encouraged the construction sector to apply the 'zero net waste' principle and produced related guides and case studies¹⁷⁸.

Environmental Product Declarations (EPDs) are increasing being undertaken for construction products in the UK and BRE through its Environmental Profiles methodology has undertaken many construction product life cycle assessments, as well as other organisations. One key driver is BREEAM, as the lower the impact of a material specification, the higher the number of credits awarded. In BREEAM, credits can also be obtained by using certain percentages of recycled and secondary aggregates on a project. This is also within other standards such as Ceequal, Ska Rating etc.

7.6 Construction sector make up

New construction (public and private) was worth nearly £75 billion in 2013, refurbishment and maintenance £47 billion and demolition £4.23 billion. There were around 250,000 companies working in the construction sector employing 1.15 million people. In the new construction sector, housing accounted for £22 billion, infrastructure £15 billion and non-housing £37 billion¹⁷⁹. The construction sector in the UK accounts for around 7% of GDP and has been going through a period of contraction/slow growth.

A key growth area is infrastructure with a National Infrastructure Plan in place and a pipeline of work worth £383 billion. New housing remains an issue with around 117,000 units built in 2014 against a requirement of around 220,000 homes/year. Offsite construction represents around 6% of the construction market but is growing at 25% per year¹⁸⁰. The Government provides data in key construction products and materials¹⁸¹, this includes:

- Concrete - 58 million m² produced in 2014
- Bricks – 1.8 million produced in 2014
- Cement – 8 million tonnes in 2013
- Sand and gravel – 53 million tonnes in 2013.

¹⁷⁵ <http://www.mineralproducts.org/sustainability/sustainable-products-data.html>

¹⁷⁶ <http://www.wrap.org.uk/content/recycled-content-0>

¹⁷⁷ <http://www.bre.co.uk/page.jsp?id=499>

¹⁷⁸ <http://www.wrap.org.uk/content/net-waste-tool-0>

¹⁷⁹ <http://www.ons.gov.uk/ons/rel/construction/construction-statistics/no--15--2014-edition/art-construction-statistics-annual--2014.html>

Spread sheet: <http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcn%3A77-360369>

¹⁸⁰ http://www.buildoffsite.com/pdf/standard_buildoffsite_presentation.pdf

¹⁸¹ <https://www.gov.uk/government/statistics/building-materials-and-components-statistics-february-2015>

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- UK Contractors Group
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