Construction and Demolition Waste management in Ireland
V2 – September 2015
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1. **Summary**

**Construction and Demolition Waste (CDW) management national performance**

<table>
<thead>
<tr>
<th>Waste category</th>
<th>Quantity collected in 2011 (million tons)</th>
<th>Quantity managed in 2011 (million tons)</th>
<th>Discrepancy in 2011 (million tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>1.98</td>
<td>1.54</td>
<td>0.44</td>
</tr>
<tr>
<td>Other CDW¹</td>
<td>1.02</td>
<td>0.96</td>
<td>0.06</td>
</tr>
<tr>
<td><strong>Total CDW</strong></td>
<td><strong>3</strong></td>
<td><strong>2.5</strong></td>
<td><strong>0.5</strong></td>
</tr>
</tbody>
</table>

Just over 3 million tonnes of CDW was reported as collected in 2011, 66% of which is soil and stones and 34% consists of other non-soil and stones fraction of CDW (rubble, metals, timber, plastic, glass, wood and mixed CDW). This is a 71% decrease in the figure reported in 2008 and a decrease of 13% since 2010.

In 2011, a high rate of recovery estimated to be 98% was reported for soil & stones. This does not include CDW in storage at the end of 2011 (11 957 tonnes) and an estimate of 92 870 tonnes of CDW treated at non reporting waste permitted facilities.

A 97% recovery rate was reported in 2011 for Other CDW. This does not include CDW in storage at the end of 2011 (45 968 tonnes).

These recovery figures do not take into consideration the discrepancies in quantities reported as collected and quantities managed², which resulted in a 22% gap for soil and stones and 7% gap for the other C&D waste fraction, resulting in an overall gap of 0.5 million tonnes (compared to a discrepancy of 0.9 million tonnes in 2010)³. Taking this gap into consideration, the recovery rate for soil and stones drops and for the other CDW fraction may be lower.

Hazardous CDW (contaminated soil, asbestos and other C & D Waste materials) accounted for 1.1% of CDW managed in 2011. In 2011 the overall tonnage of contaminated soil (17 297 tonnes) reported managed was still significantly lower than pre 2008 data when there was 493 107 tonnes.

Prior to 2012, **CDW collection data** (not generation) and CDW treatment data were collected annually by the EPA. From 2012, CDW generation and treatment data will be collected on a biennial basis, to satisfy the requirements of the Waste Statistics Regulation.

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¹ Other C&D waste materials such as rubble, metals, timber, plastic, glass, wood and mixed C&D waste.

² Managed comprises the recovery and disposal of waste in a legal manner.

³ The EPA have outlined that the main reasons for the discrepancy is due to the following:
   - The fact that data was not surveyed in the 2011 National Waste Report for facilities licensed by the EPA under Certificate of Authorisation. In addition, material used for backfilling at IPPC licensed mines and quarries was not reported.
   - Estimates are provided instead of weighed data for the soil and stones fraction (as there are no weighbridge records).
   - The unreported net storage of C&D waste at facilities.
   - The soil and stone fraction is recorded as a waste at landfills instead of a material for reuse as engineering fill, etc.
CDW management practices

The past decade has seen significant changes in the management of CDW in Ireland, moving from an over reliance on landfill towards a more sustainable system of waste management, resulting in higher levels of recycling and recovery. The majority of CDW arising in Ireland is now segregated at the site of generation or pre-treated to segregate it into the various fractions, which are then either recovered or disposed.

CDW is also primarily collected by private authorised collectors and delivered to local authority permitted facilities for restoration of land and waste treatment facilities authorised by the local authorities or the EPA who regulate larger capacity.

Of the total managed in 2011, recovery of soil and stone (including backfilling) was the principal activity with 56% of the CDW stream treated in this manner, followed by mixed or other CDW recovery 16%, metal recovery 13%, rubble recovery 6% and wood recovery 1%. CDW disposal activities represented 2% of CDW managed.

With the exception of hazardous CDW treatment, there is currently there is sufficient available treatment capacity to treat the CDW generated in the State.

Nationally there is an estimated 5.1 million tonnes of authorised, and for the most part, active backfilling capacity, for the recovery of soil and stone materials, with the latest available data showing that approx. 1.1 million tonnes of this being utilised or 22%. The latest available data also indicates that over 4.25 million tonnes of pending backfilling capacity has been authorised but is not readily available at present.

For non-soil and stone construction materials, it is more difficult to provide comparable data between CDW generated and treated. This fraction of the CDW stream is often treated at pre-treatment facilities and in many instances these are mixed with similar streams from municipal and non-municipal sources. At present there is an estimated 10 million tonnes of pre-treatment capacity which is authorised. Based on the quantities of non-soil and stone CDW generated, there is no shortfall in available pre-treatment capacity.

In 2011, 100 of the asbestos, 100% of the other hazardous CDW and 46% of contaminated soil were exported for treatment.

It must be noted that the large-scale illegal CDW dumping and significant illegal movement of CDW to Northern Ireland occurred during the period 1997 to 2004, but is no longer taking place. The improvement of the regulatory framework and the implementation of enforcement initiatives (incl. increased enforcement effort on both sides of the Border) have made illegal activities more difficult.

Remaining concerns relating to CDW illegal activities relate to the illegal dumping of C&D fines (IWMA, 2015) (DECLG⁴, 2015b) and the sales of CDW materials (such as concrete and stones) (DECLG, 2014). To improve management of these streams of waste, the DECLG has introduced legislation providing for an exemption from the landfill levy for CDW fines (and has clarified the legal requirements regarding waste authorisation and management requirements for CDW. The ongoing discrepancies in data also give the perception that illegal activities may still be occurring.

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⁴ DECLG stands for Department of the Environment, Community and Local Government.
Main obstacles to sustainable CDW management

The main obstacles to continued sustainable CDW management in Ireland include:

- Following initial industry support, interest in the National Construction and Demolition Waste Council (NCDWC) declined in line with the economic collapse in the construction industry. The attitudes of different industry stakeholders towards waste and their perception of their responsibilities are largely influenced by project or contractual requirements and financial implications. There is an acknowledgement that waste is an issue but it is seen as a lower priority below cost, time, quality, and health and safety.
- The input of designers and architects (which have a significant influence on the environmental impacts of projects) in the CDW management plan is limited.
- The lack of uptake of green public procurement for construction projects.
- There are no specific activities in place at present in the C&D industry which focuses on improving on the higher steps of the waste management hierarchy (waste prevention and reuse).
- Data anomalies, inconsistencies in the classification of C&D waste and lack of published up-to-date data on CDW generation and management.
- The emerging issue of hazardous substances & persistent organic pollutants (POPs) in CDW articles.

Main drivers to sustainable CDW management

The main drivers to sustainable CDW management in Ireland include:

- The adoption in 1998 of ambitious construction sector recycling targets of 50% by 2003 and 85% by 2013 in national policy.
- Regional non-hazardous waste management planning with some of the plans including specific policies and targets for CDW management since 1998. The establishment in 2002 of the National Construction & Demolition Waste Council (NCDWC) which was setup as an industry led, voluntary initiative to assist in achieving compliance with the 85% policy target set by ‘Changing Our Ways’.
- The implementation of a landfill levy on CDW which started at 15€/tonne in 2002 and increased to €75/tonne in 2013.
- Planning requirements for construction projects above a certain threshold to develop a site specific CDW management plan since 2006.

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5 Exclude estimate of 92 870 tonnes of CDW treated at non reporting waste permitted facilities
6 E.g. landscaping material or other landfill engineering purposes
7 Mainly backfilling
8 Asbestos, contaminated soil and other CDW materials
The production of a number of very useful guidance documents on C & D Waste management best practice, all of which are available on the National Construction and Demolition Waste Council website www.ncdwc.ie

Since these drivers have been in place there has been limited focus on CDW management in Ireland. Potential future drivers include:

- The transposition of the revised EU Waste Framework Directive into Irish law has moved the focus further up the waste hierarchy, with an increased emphasis on prevention. This, in turn, has highlighted the need for all construction stakeholders to contribute to the prevention, reduction and management of CDW. The transposition of the revised EU Waste Framework Directive also clarified the concept of by-products and End-of-waste.
- The use of Green Public Procurement to drive sustainable CDW management is still untapped and offers significant opportunities.
- The Use of Building Regulations to include provisions to improve the recyclability of buildings.
- Research on secondary raw materials to determine their suitability as a replacement to virgin material in specific engineering applications.
- The revision of construction standards which allows for more secondary materials to be used in specifications. The preference for larger backfilling sites in favour of smaller facilities will hopefully encourage contractors to fully explore the potential to reuse soil and stone material on-site or on other projects.
- The role of Building Information Modelling (BIM) combined with Environmental Product Declarations (EPDs) as a tool for sustainability in construction.
- Further regulation of the waste stream may need to be considered if key industry stakeholders fail to make progress in adopting better resource efficiency techniques on-site and at treatment destinations.
2. Definitions concerning construction and demolition waste (CDW) and management

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

2.1. Definition of waste

In Ireland, waste is legally defined as “any substance or object which the holder discards or intends or is required to discard”. This definition is given by Article 4 of the European Communities (Waste Directive) Regulations 2011 (S.I. No 126 of 2011)9.

The European Communities (Waste Directive) Regulations 2011 (S.I. No 126 of 2011) amended the definitions section of the Waste Management Act 1996-2011 Act 10. This definition complies completely with the definition of the Waste Framework Directive 2008/98/EC (WFD) and deletes the presumption in the 1996 Act Section 4 that waste is anything which is discarded or otherwise dealt with as if it were waste until the contrary is proven.

However, under Article 27(2) (b) of the Waste Directive Regulations, in circumstances where an economic operator considers a material to be a by-product and not a waste but fails to notify the Environmental Protection Agency of this decision and the justification for this decision, it shall be presumed to be waste until the contrary is proven if the substance or object is discarded or otherwise dealt with as if it were waste.

2.2. Definition of construction and demolition waste (CDW)

CDW is not clearly defined in Irish legislation, however a number of official documents provide a definition for CDW:

- The Department of the Environment, Community and Local Government in 2006 defined CDW as waste which arises from construction, renovation and demolition activities, together with all waste categories mentioned in chapter 17 of the European Waste Catalogue (EWC). Also included within the definition are surplus and damaged products and materials arising in the course of construction work or used temporarily during the course of on-site activities.11
- More recently, the EPA adopted a broad definition of CDW (in line with the opening part of the definition of CDW as set out in Article 1(4) of Commission Decision 2011/753/EU12) as all waste that arises from construction and demolition activities (including excavated soil from contaminated sites). These wastes are listed in Chapter 17 of the European Waste Catalogue (EWC).13

It should be noted that the definitions of hazardous, non-hazardous and inert waste in Article of 4 of the European Communities (Waste Directive) Regulations 2011 (S.I. No 126 of 2011) follow the official European definitions (Annex III of Directive 2008/98/EC).

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12 Article 1(4) of Commission Decision 2011/753/EU defines “construction and demolition waste” means waste corresponding to the waste codes in Chapter 17 to the Annex to Commission Decision 2000/532/EC, excluding hazardous waste and naturally occurring material as defined in Category 17 05 04.
The definitions in Ireland for CDW do not provide any clear distinction between waste originating from construction or demolition.

The CDW classification used in Ireland corresponds to the European List of Waste (LoW) (2000/532/EC). Ireland does not exclude any Chapter 17 codes from the definition of C&D waste. However in line with the requirements of Article 11(2) (b) of Waste Framework Directive 2008/98/EC, naturally occurring materials excavated in the course of construction activities and other uncontaminated soils are excluded from the definition of CDW for the purposes of measurement of target achievement.\(^1\)

The inclusion of non CDW generated by construction operations is a subjective area where there is limited guidance. If part of a mixture, non-CDW generated by construction operations can be included in the definition (e.g. packaging waste, municipal-like waste, WEEE, etc.), however if these waste are collected separately, they will not be included in the definition under code 17 09 04.

### 2.3. End of Waste (EoW) status

With regard to End of Waste (EoW) status in Ireland, in cases where EoW criteria have not been set at Community level as referred to in paragraphs 1 and 2 of Article 6 of the WFD, the EPA may decide case by case whether certain waste has ceased to be waste in accordance with the criteria set out in Article 28 of S.I. No 126 of 2011 (transposing article 6 of the WFD 2008/98/EC)\(^1\) taking into account the applicable case law.

To date no EoW criteria have been established in Ireland under this national regulation. However, there has been one application under article 28 of the WFD Regulations in 2012. No decision has been made to date by the EPA on this application. In this case, the material for which end-of-waste status is sought is crushed rubble, also described as builders fill, which is said to be suitable as general fill and the construction of unbound haul roads, for example on farms.

A number of organisations, both industry umbrella organisations as well as individual operators, have also indicated their intention to apply or are considering applying for EoW criteria for crushed rubble.

In terms of CDW generation reporting, CDW material is counted as waste upon generation or arrival at a processing facility. If processed to EoW, it is no longer counted as waste but counted as “recycled in Ireland”. Any residues from the treatment process that do not achieve EoW are considered to remain as waste as they move on elsewhere from the processing facility.

### 2.4. Definitions of waste treatment operations

The Irish official legal definitions of re-use, recycling and recovery comply with the WFD definitions. Article 4 of the European Communities (Waste Directive) Regulations 2011 (S.I. No 126 of 2011) defines these operations as follows:

- **Reuse** is defined as “any operation by which products or components that are not waste are used again for the same purpose for which they were conceived.”
- **Recycling** is defined “as 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.”\(^1\)
• Recovery is defined as “(a) 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, and (b) without prejudice to the generality of paragraph (a), includes the recovery operations listed in the Fourth Schedule.”

The above definitions do not mention the recovery operations categorisation of WFD Annex II. However the definition of recovery included in Irish legislation achieves equivalent effect by referring to operations, listed in the Fourth Schedule of S.I. No 126 of 2011, which correspond to the Annex II list.

When reporting data on waste treatment operations the EPA follows the guidelines by Eurostat on reporting data on waste treatment. Similarly when reporting on recovery operations, the official statistics in Ireland follow the Eurostat guidance on backfilling. Irish CDW statistics include backfilling.

There is no national definition for backfilling operations in Ireland. Ireland follows the definition provided in the European Commission Decision of 18 November 2011 and Eurostat guidance on backfilling.

• Backfilling was defined by the European Commission Decision of 18 November 2011 as: “a recovery operation where suitable waste is used for reclamation purposes in excavated areas or for engineering purposes in landscaping and where the waste is a substitute for non-waste materials”. This definition applies in Ireland but there has been no official translation into Irish law.

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

3.1. Legislation concerning CDW in Ireland

The Irish legislative framework concerning CDW management is provided by the general waste legislative framework supported by:

- Policy documents issued by the Department of Environment, Community and Local Government (DECLG)\(^{20}\)
- Regional non-hazardous Waste Management Plans prepared by local authorities / local authority groupings. \(^{21}\)
- National Hazardous Waste Management Plans published by the EPA. \(^{22}\)
- Planning guidelines for future developments published by the DECLG. \(^{23}\)
- Best practice guidance\(^{24}\) and industry support documentation\(^{25}\).

The following section details existing legislation concerning CDW in Ireland;

**Key pieces of legislation on waste**

- The **Waste Management Act 1996** gave effect to the Council directives 75/439/EEC, 75/442/EEC and 91/156/EEC as well as other directives including those concerning waste water treatment, packaging waste, hazardous waste. The 1996 Act covered both hazardous and non-hazardous waste. The Irish definition therefore went further than that in the directives by expressly providing that anything discarded or otherwise dealt with as a waste has to be presumed to be a waste unless the contrary is proved'. The 1996 Act provided for the organisation of public authority functions in relation to waste management, involving new or redefined roles for the Minister, the EPA and local authorities.

- The **European Communities (Waste Directive) Regulations 2011 (S.I. No 126 of 2011)** amended the definitions section of the Waste Management Act 1996-2011 Act. This definition deletes the presumption in the 1996 Act Section 4 that waste is anything which is discarded or otherwise dealt with as if it were waste until the contrary is proven. However, under Article 27(2) (b) of the Waste Directive Regulations, in circumstances where an economic operator considers a material to be a by-product and not a waste but fails to notify the Environmental Protection Agency of this decision and the justification for this decision, it shall be presumed to be waste until the contrary is proven if the substance or object is discarded or otherwise dealt with as if it were waste.

21 For the purposes of waste management planning, Ireland is now divided into three regions: Southern, Eastern-Midlands and Connacht-Ulster. Waste management plans for the three regions were published in May 2015 and can be accessed via the links below.
   - [http://southernwasteregion.ie/](http://southernwasteregion.ie/)
   - [http://emwr.ie/](http://emwr.ie/)
   - [http://www.curwmo.ie/](http://www.curwmo.ie/)
25 CDW Management, A handbook for contractors and site managers, FAS and CIF
26 Waste Management Act 1996, Section 4(1)(a))
Waste Framework Directive transposition


Waste producer’s responsibility

- The European Communities (Waste Directive) Regulations 2011 (S.I. No 126 of 2011) amends the Act of 1996 and clarifies responsibilities for waste producers and holders in accordance with the requirements of the Waste Framework Directive by stipulating:
  - Article 14: It shall be the duty of waste producers and holders to ensure that waste undergoes authorised recovery operations.
  - Article 15: In accordance with the polluter pays principle, the costs of waste management shall be borne by the original waste producer or by the current or previous waste holders.
  - Article 16: It shall be the responsibility of the original waste producer or other waste holder to carry out the treatment of waste himself or herself or have the treatment handled by a dealer or an establishment or undertaking which carries out waste treatment operations or arranged by a private or public waste collector.
  - Article 16: When the waste is transferred from the original waste producer or waste holder to an appropriate person for preliminary treatment, the responsibility for carrying out a complete recovery or disposal operation shall not be discharged as a general rule.
  - Article 18: It shall be the duty of waste producers and holders to ensure that, where recovery is not undertaken, waste undergoes safe disposal operations which meet the requirements of the protection of human health and the environment.

Other Irish legislation on waste that impact CDW management

- Movement of Waste: Subject to minor exceptions the, Section 34 of the Waste Management Act requires all bodies involved in the collection of waste to have this activity authorised by a waste collection permit. Beside the legal obligation to be in possession of a permit, the holder has to abide by its conditions. For example, these may limit collection activities to certain types of waste or require the permit holders to use specified tiers of the Waste Hierarchy. The details of the waste collection permit system are set down in the Waste Management (Collection Permit) Regulations S.I. No. 820 of 2007, S.I. No. 87 of 2008 and S.I. No. 197 of 2015. Offaly County Council has been appointed as the National Waste Collection Permit Office (NWCPO) and has been in operation from the 1st February 2012. The NWCPO role is to accept and process all new and review Waste Collection Permit applications and carry out additions and amendments to existing Waste Collection Permits. The NWCPO also collate on-line annual returns from waste collectors, with verification of the data undertaken by the individual local authorities. The NWCPO replaced the ten individual local authorities that had been nominated to act on behalf of local authorities within the ten respective waste management planning regions in this role.

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30 http://www.nwcpo.ie/
Authorisation of Waste Facilities: The Waste Management Acts contains a hierarchy of control systems, with the most stringent of these being licensed by the EPA. Local authorities are generally required for the regulation of non-disposal waste sites below specified thresholds (small scale and with a low degree of environmental significance). Because local authorities operate their own infrastructure, the EPA is mandated to oversee such activities. The following type of authorisations apply to waste management facilities in Ireland:

- **Industrial emissions licences:** Directive 2010/75/EC of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) was transposed in Ireland by the European Union (Industrial Emissions) Regulations 2013, S.I. 138 of 2013 and Environmental Protection Agency (Industrial Emissions) (Licensing) Regulations 2013, S.I. 137 of 2013. These regulations place a number of additional waste activities under the EPA licensing regime for the first time such as biological or thermal treatment facilities above a certain threshold. These regulations have limited impact on CDW treatment.

- **Waste licences:** The waste licensing system operated by the EPA was introduced in 1997 and, since then is the main waste authorisation issued for major facilities in Ireland. This system provides for high environmental standards to apply for the development, operation, closure and aftercare of such sites. The Waste Management Act and the Waste Management (Licensing) Regulations 2004 govern the process under which the licences are applied for and maintained. CDW facilities that are managed by this regime include:
  - Landfills.
  - Materials reclamation facilities that handle more than 50 000 tonnes of non-hazardous waste.

- **Waste facility permits and certificates of registration** are issued by local authorities under the Waste Management (Facility Permit and Registration) Regulations, S.I. No. 821 of 2007 (as amended)\(^{31}\). CDW facilities falling under the permit regime include places where concrete and brick crushers are being operated to recover up-to 50 000 tonnes per year of inert CDW and materials reclamation facilities (e.g. processing pre-treatment activity or backfilling activity) that handle less than 50 000 tonnes of non-hazardous waste. Certificate of registration are used for small scale CDW recovery activities processing less than 10 000 tonnes and generating less than 15% of residual waste. Prior to the enactment of S.I. No. 821 of 2007, CDW recovery was largely regulated by the means of waste permits issued by local authorities based on regulations dating from 1998. S.I. No. 821 of 2007 introduced much tighter classification of waste facilities and activities subject to waste permitting and registration and defined the volumes of waste that can be accepted under the waste permit regime. The revised facility permit and certificate of registration regulations introduced clear classes of activity, for the pre-treatment and backfilling of CDW, enabling operators to apply for and appropriate waste authorisation with more certainty. The previous regulations did not specify the type of and scale of recovery activities requiring a permit and were open to interpretation, particularly for CDW recovery activities. This uncertainty has been addressed with more CDW activities receiving a facility permit or certificate of registration, rather than a waste license. In this regard, Article 11 of S.I. No. 821 of 2007 introduced a process whereby the Environmental Protection Agency is designated as the responsible body for determining whether a particular activity requires a waste licence, a waste facility permit, a Certificate of Registration or none of these. Such determinations may be made by the Environmental Protection Agency-

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Following a request made by a prospective applicant for a waste authorisation for a decision on the type of waste authorisation that applies to the proposed facility/activity;

Following a request made by a local authority to whom an application for a waste facility permit or a Certificate of Registration has been made; and

On its own initiative in relation to an existing facility.

Hazardous waste legislation impacting CDW management

In Ireland Hazardous waste management is mainly provided for by the Landfill Directive, the Waste Management Act and waste management regulations. Health and Safety Legislation also provides for management of hazardous waste.

- **Hazardous Waste Regulations:** The Waste Management (Hazardous Waste) Regulations, 1998 (S.I. No. 163 of 1998) update and replace a number of previous Regulations, and implement provisions of several EU directives relating to asbestos waste, batteries and accumulators, polychlorinated biphenyls (PCBs), waste oils and hazardous wastes generally. The Waste Management (Hazardous Waste) (Amendment) Regulations, 2000 (S.I. No. 73 of 2000) give effect to the provisions of Commission Directive 98/101/EC of 22 December 1998, which prohibits the marketing of all batteries and accumulators containing more than 0.0005% of mercury by weight.


- **POPs:** The Persistent Organic Pollutants (POPs) Regulations of 2010 (S.I. 235 of 2010) support the implementation of the (amended) EU Regulation 850/2004 of 29 April 2004 on Persistent Organic Pollutants and Amending Directive 79/117/EEC. The purpose therefore of the POPs Regulations is to ensure that materials containing POPs are disposed of correctly. Potential POPs containing items that may be in C&D waste are flame retardants, paint, plastics, wood treatments, contaminated soil etc.

- **Solvents:** The European Union (Installation and Activities using Organic Solvents) Regulations 2012 (S.I. No. 565 of 2012) and the European Union (Paints, Varnishes, Vehicle Refinishing Products and Activities) Regulations 2012 (S.I. No. 564 of 2012) govern installations and activities using organic solvents, such as vehicle refinishers and dry cleaners, for the purpose of preventing or limiting emissions of volatile organic compounds.

- **Asbestos:** The legislation is mainly with regard to Health and Safety and items to market. However there is one piece of legislation which gives regard to disposal.
  - The Safety, Health and Welfare at Work (Construction) Regulations, 2006 (S.I. No. 504 of 2006), are also of relevance with respect to the renovation, repair and demolition of older buildings where asbestos or ACM's may have been used.
  - Council Decision 2003/33/EC establishes criteria and procedures for the acceptance of granular waste at landfills pursuant to Article 16 and Annex II of the Directive 1999/31/EC on the landfill of waste.35

- **Lead:** Lead containing items are managed by the Safety, Health and Welfare at Work (Construction) Regulations 2013.

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33 http://www.epa.ie/pubs/advice/air/ods/irishodsregulations.html
35 http://www.epa.ie/pubs/advice/licensee/guidancenoteonlandfillingofasbestos.html
Mercury: European Communities (Metallic Mercury Waste) Regulations (S.I. No. 72 of 2013) - bring into force specific criteria for the storage of metallic mercury considered as waste.

National legislation on CDW management

Landfill levy: A levy of 15 euro per tonne on the landfill of waste was introduced on 1 June 2002 under the Waste Management (Landfill Levy) Regulations 2002\(^{36}\). The landfill levy was increased to €20 /tonne in 2008, €25 /tonne in 2009, €30 /tonne in 2010, €50/ tonne in 2011. Further landfill levy increases took place in 2012 (to €65 per tonne) and 2013 (to €75 per tonne)\(^{37}\).

The landfill levy applies to CDW deposited at authorised and unauthorised landfill facilities excluding\(^ {38}\):
- non-hazardous waste from construction and demolition activity, comprising concrete, bricks, tiles, road planings or other such similar materials, with a particle size of 150mm or less, which is used for landfill site engineering, restoration or remediation purposes.
- excavation spoil comprising clay, sand, gravel or stone, which is used for landfill site engineering, restoration or remediation purposes;

The Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015) - effective from 1 June 2015 introduced exemptions form the levy for CDW fines (subject to certain conditions e.g. size and gypsum content and respiration activity) regardless if it is used for engineering or not. This change is being made on the basis of concerns regarding current and future outlet for this material and illegal disposal of this material by non-licensed, poorly regulated waste collectors. With increasing activity rates in the construction industry there is a risk that these instances could continue and, indeed, increase. Disposal of the material at landfill currently attracts a €75/tonne landfill levy. The risk is that this will drive the material out of regulated waste management facilities towards illegal dumping, undermining the competitive position of compliant operators. Exempting the materials from the levy will remove the incentive for illegal dumping and encourage compliance.

As a penalty for those who illegally deposit waste, the Waste Management (Landfill Levy)(Amendment) Regulations 2006\(^ {39}\) introduced a levy of 20 euro per tonne for each tonne of waste disposed of at unauthorised facilities on and from 28 July 2006. The levy was increased to €75 per tonne by S.I. No. 189 of 2015. This means that persons responsible for the illegal deposition must pay the levy and remove the waste, as required by Section 60 Policy Direction\(^ {40}\), and remediate the land, apart from any other penalties that may be imposed through the courts.

End of Waste legislation

As stated in paragraph 2.3, the EoW status was defined by Article 28 of S.I. No 126 of 2011 (transposing article 6 of the WFD 2008/98/EC)\(^ {41}\) based on the WFD definition and the Environmental Protection Agency has been assigned the responsibility to decide the terms according to which the EoW criteria are adopted as well as the procedure applicable to the EoW.

At Irish national level there is no material for which EoW criteria have been defined. There has been one application under Article 28 of the WFD in 2012, but no decision has been made to date by the EPA. The material for which end-of-waste status is sought is crushed rubble, also described as builders fill, which is said to be suitable as general fill and the construction of unbound haul roads, for example on farms.

\(^{41}\) [http://www.epa.ie/waste/wastereg/art28/](http://www.epa.ie/waste/wastereg/art28/)
Planning Regulations

Planning authorities are empowered, when considered appropriate under Section 34(4) (I) of the Planning and Development Act 2000\(^42\) to attach conditions relating to CDW management to developments which require planning approvals. The relevant national and regional waste management plans policies have to be considered as part of any planning decision by a local authority.

Besides these obligations, planning authorities are also required by the Waste Management Acts\(^43\) to have regard to the waste management plan for the area and ensure that necessary measures are taken to cause waste to be recycled or otherwise managed correctly. This can include obligating developers to prepare a plan for waste handling.

As noted in Section 3.1, the Department of the Environment, Community and Local Government published Guidelines on the preparation of Waste Management Plans for Construction and Demolition Projects in 2006. In 2007, the voluntary status of the Best Practice Guidelines – Preparation of Waste Management Plans for Construction and Demolition Projects changed and they were given a statutory footing. This is consequential to the publication of Planning Guidelines 13 – Development Management – Guidelines for Local Authorities (DoEHLG, 2007), which were issued under Section 28 of the Planning and Development Acts. This guidance requires planning authorities to have regard to the Guidelines on Waste Management Plans to ensure the proper management of construction and demolition wastes. This obligation not only covers the detailed guidance on the contents of a construction and demolition waste management plan, but extends to include record keeping, tracking waste flows, waste audits and the submission of summary audit reports to the relevant local authority. The Guidelines also require that a coherent Demolition Plan should be included as an integral part of the Project C&D Waste Management Plan with special attention to be paid to the sorting/segregation arrangements employed to separate the demolished structure into individual material fractions.\(^4\)

Legislation or regulatory measures that are work in progress

- This area has not received any attention during the economic recession, currently most of the focus of late has been on household waste and residual waste exports
- Directive 2014/24/UE of 26 February 2014 on procurement by entities operating in the water, energy, transport and postal services sectors could have an impact on the importance given to recycled materials in public procurement. The bill related to the transposition of this directive was the subject of a consultation procedure in December 2015.

3.2. Waste management plans (WMP) and Strategies

National level

- **Hazardous waste management planning** has been in place at National level in Ireland since 1996 and is in its third iteration. The Environmental Protection Agency has prepared a National Hazardous Waste Management Plan (EPA, 2014f)\(^44\) covering a six-year period from the date of publication (2014-2020) and sets out the priorities to be pursued over the next six years and beyond to improve the management of hazardous waste, taking into account the progress made since the previous plan and the waste policy and legislative changes that have occurred since the previous plan was published. The objectives of the revised Plan are:
  - To prevent and reduce the generation of hazardous waste by industry and society generally;
  - To maximise the collection of hazardous waste with a view to reducing the environmental and health impacts of any unregulated waste;

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\(^43\) See Section 22(10D) of the Waste Management Acts (as amended by the Protection of the Environment Act 2003, Section 6)

To strive for increased self-sufficiency in the management of hazardous waste and to minimise hazardous waste export;
To minimise the environmental, health, social and economic impacts of hazardous waste generation and management.

The revised Plan makes 27 recommendations relating to Prevention, Collection, Self-sufficiency, Regulation, Legacy issues, North-south cooperation, Guidance and awareness. Each of the 27 recommendations in the revised Plan has a responsible body or bodies identified. The principal implementing bodies are the Department of the Environment, Community and Local Government, the Environmental Protection Agency, and the local authorities, along with facility operators and holders of hazardous waste.

While not making direct reference to CDW, the following recommendations are relevant:

- The potential for producer responsibility obligations for a number of hazardous waste streams should be given priority consideration by the DELCG.
- Consolidation of waste legislation and cooperation in enforcement is recommended. A review of waste licensing/permitting legislation is recommended in order to establish a proportionate regulatory mechanism, including relief, to facilitate collection, transport and temporary storage of certain hazardous wastes from small sources pending proper treatment.
- Old waste disposal sites, especially those that to a significant extent may have involved the disposal of hazardous waste, should continue to be managed (i.e. identified, risk assessed and regularised) in accordance with the Code of Practice drawn up by the EPA’s Office of Environmental Enforcement and relevant legislation, where required.
- The revised Plan recommends that any proposals for hazardous waste recovery/disposal infrastructure should take all-island considerations into account for capacity planning purposes. Cooperation between appropriate authorities on both sides of the border concerning hazardous waste management issues should be explored.

Resource Efficiency and Waste Prevention Programme: In 2004, Ireland was the first EU Member State to adopt a waste prevention programme. Of unlimited duration, this included a 4-year work plan and required annual progress reports. The latest published strategy Towards a Resource Efficient Ireland covers the period 2014–2020. The Programme is led by the EPA in association with the Department of Environment, Community and Local Government. Oversight and direction for the programme comes through the National Waste Prevention Committee (NWPC). The NWPC includes a broad stakeholder group (but no representative of the construction industry). The Committee meets periodically to provide strategic direction to the Environmental Protection Agency in implementing the waste prevention programme. The general objectives of the programme are set to break the link between economic growth and environmental impacts:

- Reduce wasteful consumption of material, water and energy resources by changing behaviours in businesses, households and the public sector;
- Enhance competitiveness and reduce business costs by delivering programmes that stimulate resource efficiency and the circular economy;
- Support sustainable growth and employment in the green economy - including re-use enterprises;
- Minimise generation of hazardous wastes through efficient practices and use of safer alternatives;
- Manage hazardous substances in products through efficient regulation;
- Inform and influence evidence-based decision-making by compiling and publishing high quality data on waste.

http://www.epa.ie/waste/nwpp/
The National Construction and Demolition Waste Council (NCDWC)\(^{47}\) did run successful waste prevention programmes when it was in operation. This included the setting up of C&D Waste Management Taskforces to recommend improvements to C&D waste management through planning, prevention and reclamation, development of awareness and training programmes, the publication of a handbook for site managers on C&D waste management (Fas & Construction Industry Federation, 2002) and best practice guidelines for the preparation of waste management plans for C&D projects (Department of the Environment, Heritage & Local Government, 2006). However, no such programmes specific to C&D waste are known to be running at present. The National Waste Prevention Programme promotes resource efficiency and the sustainable use of natural resources, but there are no specific activities in place at present which focus on the C&D industry. The EPA is looking at new opportunities and is considering construction waste in this regard.

Regional level

- **Non-hazardous waste management planning** has been in place in Ireland since 1998. Local authorities are required to make non-hazardous waste management plans in respect of their functional areas\(^{48}\). The third generation of the WMPs were published in May 2015\(^{49}\) and cover a six year period until 2021. For the purposes of non-hazardous waste management planning, Ireland has three regions (reduced from 10 previously). These regions are the Southern, Eastern-Midlands and Connacht-Ulster. The strategic vision of the regional waste plans is to rethink the approach to managing waste by viewing waste streams as valuable material resources, leading to healthier environment and sustainable commercial opportunities for the economy. The plans cover 8 strategic areas including policy and legislation; prevention; resource efficiency; coordination; infrastructure planning; enforcement and regulation; protection and other wastes. Corresponding policies and actions are set out in the plan under these headings. The current status of CDW in each region is described in each of the regional waste plans. Specific policies on backfilling infrastructure and pre-treatment infrastructure, which handle CDW, are defined in the plans. The plans also address the authorisation of waste facilities by local authorities, including many CDW activities, and the need for more consistent regulation and enforcement of these sites. The plans include a target to prepare specific siting guidelines, which will include C&D backfilling operations, in 2015 (Policy Action G.3.1). Environmental protection criteria are included in the plan which focus on protecting the environment and provide guidance to developers of waste facilities in terms of siting of such facilities.

**Strategic Plans and Policies for CDW waste**

In 1998, the national policy document on ‘Waste Management - Changing Our Ways’ published by the Department of Environment, Heritage & Local Government set a target of 85% recycling of CDW over a 15 year period, which finished in 2013.\(^{50}\) The national targets were generally reflected in the subsequent Regional WMPs.\(^{51}\)

Task Force B4 of the Forum for Construction Industry was established in 1999 in response to the challenge posed by the national policy. The terms of reference were to co-ordinate the development and implementation of a voluntary construction industry programme to meet the Government’s objectives for the recovery of construction and demolition waste as set out in the Policy Statement on Waste Management

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\(^{47}\) [www.ncdwc.ie](http://www.ncdwc.ie)

\(^{48}\) Part II of the 1996 Waste Management Act 1996

\(^{49}\) The Draft Regional WMPs can be accessed at can be accessed via the links below.

- [http://southernwasteregion.ie/](http://southernwasteregion.ie/)
- [http://emwr.ie/](http://emwr.ie/)
- [http://www.curwmo.ie/](http://www.curwmo.ie/)


“Changing Our Ways” and to present this programme with an implementation timetable to the Minister for the Environment and Local Government. In 2001, Task Force B4 published ‘Recycling of Construction and Demolition Waste’ which incorporated 66 recommendations which were designed to contribute to the achievement of the Government targets for the recycling of CDW. In 2002, the National Construction & Demolition Waste Council (NCDWC) was set up as an industry led, voluntary initiative to assist in achieving compliance with the 85% policy target set by ‘Changing Our Ways’. The Council was also given the task of implementing 66 recommendations set out in ‘Recycling of Construction and Demolition Waste’ prepared by the ‘Forum for the Construction Industry’ in 2001. In 2006, the NCDWC contributed to the preparation of ‘Best Practice Guidelines on Preparation of Waste Management Plans for Construction and Demolition Projects’. These guidelines, which promote waste prevention, re-use and recycling across the sector, provide guidance on the preparation of Project Construction and Demolition Waste Management Plans for certain classes of project, which exceed specified threshold limits.

Initially the Best Practice Guidelines were introduced on a voluntary basis, however planning authorities and An Bord Pleanála could at their discretion include conditions on construction and demolition waste management in planning permissions. However, since June 2007, Planning Guidelines (Guidelines 13 – Development Management – Guidelines for Local Authorities (DEHLG, 2007)), were issued under Section 28 of the Planning and Development Acts. These Guidelines require planning authorities to have regard to the Best Practice Guidelines to ensure the proper management of construction and demolition wastes. These planning guidelines also require waste audits be undertaken and that summary audit reports be submitted to the relevant local authority.

Around the time of the publication of the Best Practice Guidelines, support and interest in the NCDWC, which was a voluntary initiative, declined, mainly due to funding issues and the huge decline in the industry due to the unfavourable economic conditions. The possibility of implementing an EPR scheme for CDW was examined as part of the Review of Producer Responsibility Initiatives in Ireland published in 2014. The report concluded that establishing an EPR scheme may be complex and it was preferable to implement, enforce and enhance existing building and planning regulations which incorporate obligations regarding CDW management.

Government Policy on Architecture 2009-2015 Towards a Sustainable Future – Delivering Quality within the Built Environment. Policy Action 21 requires that development plans and local area plans developed by local authorities demonstrate compliance with key design sustainable criteria as set out in a number of referenced documents that have been published by the DECL. The document also requires that “in setting local policy on the most efficient and sustainable use of existing resources, public authorities should follow the Department of the Environment, Heritage and Local Government’s Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects” in addition to the documents referenced in Action 21.”

The Green Public Procurement (GPP) Action Plan, Green Tenders (DECLG, 2012b) has recommended that design teams should include both a qualitative and a quantitative assessment, including a demonstration of environmental design experience and/or qualifications as part of the construction procurement process, and that all construction materials should be assessed for environmental impact, including embodied energy and carbon dioxide, resource use, responsible sourcing, construction waste, durability, recyclability and disposal. This is further supported by the publication Green Procurement: Guidance for the Public Sector (EPA, 2014a), which sets out core GPP criteria for construction focusing on demonstrating technical and professional capability including the following waste reduction initiatives:

The contractor should prepare an outline construction environmental plan, which will include a CDW management plan; An environmental management training plan must be developed to cover waste minimisation, management and selective waste collection strategies; and Secondary aggregate and recycled materials should be specified in place of virgin materials.

The Forfás National Strategy for the Construction Sector to 2015 outlined the opportunities, challenges and actions needed to realise the potential of the sector, to retain expertise in Ireland and to continue to develop capabilities over coming years. The strategy framed a suite of actions that will support the sector in returning to sustainable growth so that it can once again fulfil its dual role in Ireland’s economy effectively. In particular, the strategy points out that it is critical that the construction sector is positioned to embrace opportunities presented by the on-going evolution of the sector on a global level. Climate change and the green agenda challenge, but the focus is mostly on buildings and products to meet energy performance and efficiency rather than sustainable CDW management.

The Government’s ‘Construction 2020 – a Strategy for a Renewed Construction Sector’ provides the basis for rebuilding a sustainable (in the economic sense) construction sector that has the capacity to build the houses and infrastructure we need as a society, and making its full contribution to economic recovery. The document does not mention the sustainable management of CDW.

3.3. Legal framework for sustainable management of CDW

This section aims at identifying specific legislation that would create good conditions for a sustainable management of CDW as a preliminary overview for task 3.

<table>
<thead>
<tr>
<th>Description</th>
<th>Level of occurrence (Yes/No) Key Scope/Exemptions</th>
<th>Year established and policy reference</th>
<th>Further detail, information source, related web-site</th>
</tr>
</thead>
</table>
| National/regional obligation for selective demolition? | NO

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54 [http://www.forfas.ie/media/19072013-Irelands_Construction_Sector-Publication.pdf](http://www.forfas.ie/media/19072013-Irelands_Construction_Sector-Publication.pdf)
### 3.4. Targets

**National/Regional Targets**

There were national and regional targets concerning the re-use, recycling and recovery of CDW (besides the WFD target) until 2013. Since then Article 31 of the European Communities (Waste Directive) Regulations 2011 (S.I. No 126 of 2011)\(^\text{56}\) replaced these targets by transposing the WFD target.

The Government’s policy statement on waste management – Changing Our Ways (October 1998)\(^\text{57}\) specifically addressed the management of C&D waste. This statement set out an initial 50% recycling target by the end of 2003 with a progressive increase to 85% by 2013.

It must be noted that the definition of recycling has evolved during the lifetime of these targets from meaning “the subjection of waste to any process or treatment to make it re-usable in whole or in part” in Section 5 of Waste Management Act (No. 10 of 1996) to “as any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the

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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” in Article 4 of the European Communities (Waste Directive) Regulations 2011 (S.I. No 126 of 2011).

It was somehow unclear if the national recycling targets published in 1998 included backfilling as backfilling was not clearly defined in Ireland or by the European Commission.

It must also be noted that the policy statement “Waste Management – Taking Stock and Moving Forward” (DEHLG, 2004) made reference to the 85% recovery (rather than recycling and therefore including backfilling) objective set for 2013. This seems to indicate that the 1998 “recycling” targets had to be taken in the broad meaning of recovery. In addition, the EPA has always used “recovery” as being the main indicator for compliance with 1998 “recycling” targets.

The recycling of C&D waste has been also recommended in all of the Regional Waste Management Plans, which the local authorities are implementing since 1998, with many setting specific recycling and recovery targets of c. 80% recycling of C&D waste by 2006.59 While the intention to include backfilling of soil and stone as part of the recycling targets was somehow unclear when the Plans were published the monitoring of the targets show that they included the recovery of soil and stones as an indicator of meeting these targets.60 There are no national/regional targets concerning recycling of selected materials from CDW (e.g. concrete, plastic, metals, etc.) Similarly, there is no national/regional/sectoral/other target concerning CDW (e.g. prevention target).

Calculation of CDW target in WFD used in Ireland

Ireland is following Article 1161 specifications for calculation of the national management performance on CDW for the WFD target and does not include excavated soils in the CDW waste stream.

From 2012 onwards, the EPA will be following the Commission Decision requirements which are specific about the EWC codes and specify that hazardous waste 17 codes be left out, as well as soil and stone codes (17 05 04). (Non-waste greenfield/virgin soils are also not included).

There is no mention of backfilling practices but as noted in Section 2.4, Ireland follows the definition of backfilling as set out in the Commission Decision 2011/753/EU of 18 November 2011 on calculation methodologies, as well as Eurostat Guidance on backfilling.

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.

61 The waste status of uncontaminated excavated soils and other naturally occurring material which are used on sites other than the one from which they were excavated should be considered in accordance with the definition of waste and the provisions on by-products or on the end of waste status under this Directive.
## Key waste management and sustainable building non-legislative instruments

<table>
<thead>
<tr>
<th>Description</th>
<th>Level of occurrence (Yes/No)</th>
<th>Key Scope/Exemptions</th>
<th>Year established and policy reference</th>
<th>Further detail, information source, related web-site</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Economic instrument</strong></td>
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<tr>
<td><strong>Landfill levy</strong></td>
<td>YES</td>
<td>The levy was designed to encourage the diversion of waste away from landfill and to use the short/medium-term revenues generated that can be applied in support of waste minimisation and recycling initiatives. Not applicable for:</td>
<td>2002</td>
<td><a href="http://www.environ.ie/en/Environment/Waste/LandfillLevy/">http://www.environ.ie/en/Environment/Waste/LandfillLevy/</a></td>
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<tr>
<td></td>
<td></td>
<td>- non-hazardous waste from CD activity, which is used for landfill site engineering, restoration or remediation purposes.</td>
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<tr>
<td></td>
<td></td>
<td>- excavation spoil comprising clay, sand, gravel or stone, which is used for landfill site engineering, restoration or remediation purposes;</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Guidebook</strong></td>
<td>YES</td>
<td>The purpose of these Guidelines is to promote an integrated approach to construction and demolition (C&amp;D) waste management, throughout the duration of a project. Where a building or structure requires demolition, a demolition plan must be prepared as an integral part of the Waste Management Plan which sets out and documenting the sequence of operations to be followed, thereby ensuring that an appropriately selective dismantling/demolition methodology is employed Initially the Best Practice Guidelines were introduced on a voluntary basis, however planning authorities and An Bord Pleanála could at their discretion include conditions on construction and demolition waste management in planning permissions. However, since June 2007, Planning Guidelines (Guidelines 13 – Development Management – Guidelines for Local Authorities (DEHLG, 2007)), were issued under Section 28 of the Planning and Development Acts. These Guidelines requires planning authorities to have regard to the Best Practice Guidelines to ensure the proper management of construction and demolition wastes. These planning guidelines also require waste audits</td>
<td>2006</td>
<td><a href="http://www.environ.ie/en/Publications(Environment/Waste/WasteManagement/FileDownload,1481,en.pdf)">http://www.environ.ie/en/Publications(Environment/Waste/WasteManagement/FileDownload,1481,en.pdf)</a></td>
</tr>
<tr>
<td>Resource Efficient Use of Mixed Wastes</td>
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<td>be undertaken and that summary audit reports be submitted to the relevant local authority.</td>
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<table>
<thead>
<tr>
<th>Guidebook</th>
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<tbody>
<tr>
<td>YES</td>
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<tr>
<td>This guide aims to explain in simple terms the current Waste Legislation and the various Waste Regulations relevant to contractors and site managers and explain the impact that these regulatory controls have on the Construction Industry.</td>
</tr>
<tr>
<td>2003</td>
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<table>
<thead>
<tr>
<th>Guidebook</th>
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<tbody>
<tr>
<td><strong>Construction and Demolition Waste Management, A handbook for contractors and site managers</strong></td>
</tr>
<tr>
<td>YES</td>
</tr>
<tr>
<td>This handbook was aimed at construction site operatives and contractors explaining all aspects of CDW from policy and legislation to site management plans, recycling techniques, equipment and materials.</td>
</tr>
<tr>
<td>2002</td>
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<table>
<thead>
<tr>
<th>Training Course</th>
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<tbody>
<tr>
<td><strong>Introduction to Site Waste Management and Environmental Awareness</strong></td>
</tr>
<tr>
<td>The course has been developed to help construction companies and contractors to better manage their environmental waste but only ran for a limited period.</td>
</tr>
<tr>
<td>2002</td>
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<tr>
<th>Training Course</th>
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<tbody>
<tr>
<td><strong>Construction and Demolition Waste for Local Authorities</strong></td>
</tr>
<tr>
<td>There is training provided on Construction and Demolition Waste for local authorities through the Environmental Services Training Group when there is sufficient demand.</td>
</tr>
<tr>
<td><a href="http://environment.lasntg.ie/index.asp">http://environment.lasntg.ie/index.asp</a></td>
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</table>

<table>
<thead>
<tr>
<th>Building certification standards that cover CDW</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
</tr>
<tr>
<td>But the uptake is still limited with 27 projects for LEED and 14 for BREEAM.</td>
</tr>
<tr>
<td>1990 - BREEAM</td>
</tr>
<tr>
<td>1998 - LEED</td>
</tr>
<tr>
<td><a href="http://www.greenbooklive.com/search/buildingsearch.jsp?id=202&amp;sectionid=0&amp;partid=10023&amp;projectType=&amp;certNo=&amp;productName=&amp;developer=&amp;buildingRating=&amp;certBody=&amp;assessor/Auditor=&amp;addressPostcode=&amp;countryId=4&amp;postcode=&amp;scale=100.0">http://www.greenbooklive.com/search/buildingsearch.jsp?id=202&amp;sectionid=0&amp;partid=10023&amp;projectType=&amp;certNo=&amp;productName=&amp;developer=&amp;buildingRating=&amp;certBody=&amp;assessor/Auditor=&amp;addressPostcode=&amp;countryId=4&amp;postcode=&amp;scale=100.0</a></td>
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<table>
<thead>
<tr>
<th>Industry Sustainability standard that cover CDW</th>
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<tbody>
<tr>
<td>NO</td>
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<tr>
<td>NA</td>
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<tr>
<td>NA</td>
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</tbody>
</table>
| **The Management of Waste from National Road Construction Projects** | YES | - Set out good practice guidelines to ensure that effective waste management remains a priority throughout the design and construction stages of these projects.  
- Provide information to facilitate an effective dialogue between road contractors, relevant statutory bodies and third parties on how waste should be properly handled in a road-building context. |  | |
| **Extended producer responsibility scheme in operation?** | NO | There are EPR schemes in operation in Ireland but no construction related materials are concerned. The possibility of implementing an EPR scheme for CDW was examined as part of the Review of Producer Responsibility Initiative in Ireland published in 2014. The report concluded that instead of establishing an EPR scheme which may be complex, it was preferable to implement, enforce and enhance existing building and planning regulations which incorporate obligations regarding CDW management. | NA | NA |

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## Key CDW management requirements and standards

<table>
<thead>
<tr>
<th>Description</th>
<th>Occurrence (Yes/No) Mandatory (Yes/No)</th>
<th>Scope &amp; exemptions</th>
<th>Year established</th>
<th>National or regional (specify if regional)</th>
<th>Details of Public sector and Industry enforcement/ involvement/collaboration</th>
<th>Levels of performance e.g. tons recycled,% coverage</th>
<th>Further information/ website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirement for pre-demolition audits</td>
<td>yes but limited scope Article 12 of the Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations (S.I. No. 386 of 2006 and S.I. No. 589 of 2010) requires employers to take all necessary steps to identify presumed asbestos-containing materials at a premises or place of work before commencing demolition, removal or maintenance work at that premises or place of work. Article 15 of the Regulations 2006 further requires that in circumstances where asbestos and asbestos-containing materials are required to be removed, demolition work on a building does not commence until such time as a suitable plan of work in accordance with prescribed requirements is drawn up and submitted to both the environmental and health &amp; safety authorities. The Regulations also require that the plan be implemented. In addition, the Safety, Health and Welfare at Work</td>
<td>2006</td>
<td>National</td>
<td>Enforced by the Health and Safety Authority</td>
<td>Unknown</td>
<td><a href="http://www.hsa.ie/eng/Legislation/Acts/Safety_Health_and_Welfare_at_Work/Exposure_to_Asbestos_-_SI_589_-_2010/">http://www.hsa.ie/eng/Legislation/Acts/Safety_Health_and_Welfare_at_Work/Exposure_to_Asbestos_-_SI_589_-_2010/</a></td>
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</tr>
</tbody>
</table>
(Construction) Regulations 2013 (S.I. No. 291 of 2013) require that asbestos must be identified as a particular risk (Schedule 1 of those regulations) in the preliminary health and safety plan which is developed by the Project Supervisor for Design Process.

| Industry certification standard on CDW | NO | NA | NA | NA | NA |
| Demolition certification | NO | NA | NA | NA | NA |

YES for projects in excess of any of the following thresholds -
(1) New residential development of 10 houses or more;
(2) New developments other than (1) above, including institutional, educational, health and other public facilities, with an aggregate floor area in excess of 1,250 m²;
(3) Demolition/renovation/refurbishment projects generating in excess of
100m³ in volume, of C&D waste; (4) Civil Engineering projects producing in excess of 500m³ of waste, excluding waste materials used for development works

### Key CDW management other guidance and tools

<table>
<thead>
<tr>
<th>Description of guidance/tool</th>
<th>Scope</th>
<th>Year established/produced</th>
<th>National or regional (specify if regional)</th>
<th>Public sector and/or Industry lead organisation</th>
<th>Levels of use (high/medium/low) or specify</th>
<th>Further information/web-site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource Efficient Use of Mixed Wastes</td>
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<tr>
<td><strong>Construction and Demolition Waste Management, A handbook for contractors and site managers</strong></td>
<td>This handbook was aimed at construction site operatives and contractors explaining all aspects of CDW from policy and legislation to site management plans, recycling techniques, equipment and materials.</td>
<td>2002</td>
<td>National</td>
<td>Both</td>
<td>Low</td>
<td><a href="http://www.ncdwc.ie/html/documents/FAS_CI">http://www.ncdwc.ie/html/documents/FAS_CI</a> FHandbookonConstructionandDemolitionWasteManagement.pdf</td>
</tr>
<tr>
<td><strong>e-Guide to Effective Construction Waste Management</strong></td>
<td>Document no longer available</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Design out Waste A design team guide to waste reduction in construction and demolition projects</strong></td>
<td>The factsheets have been prepared to inform design teams of the waste reduction opportunities that exist during the design phases:</td>
<td>2015</td>
<td>National</td>
<td>Public</td>
<td>NA</td>
<td><a href="http://www.epa.ie/pubs/reports/research/waste/DesignOutWasteFactsheets.pdf">http://www.epa.ie/pubs/reports/research/waste/DesignOutWasteFactsheets.pdf</a></td>
</tr>
<tr>
<td><strong>EPA Viewpoint on the use of EWC Chapter 17 and Chapter 19 12 codes</strong></td>
<td>Provide guidance on these codes</td>
<td>2014</td>
<td>National</td>
<td>Public</td>
<td>High</td>
<td><a href="http://www.epa.ie/pubs/consultation/Consultation%20on%20EPA%20viewpoint%20on%20EWC%20Chapter%2017%20on%20EPA%2012%20codes%20June%202014.pdf">http://www.epa.ie/pubs/consultation/Consultation%20on%20EPA%20viewpoint%20on%20EWC%20Chapter%2017%20on%20EPA%2012%20codes%20June%202014.pdf</a></td>
</tr>
</tbody>
</table>
### Key technical guidelines/standards/ Codes of Practice for use of CDW in construction application

<table>
<thead>
<tr>
<th>Description of guidance/ tool</th>
<th>Scope</th>
<th>Year established/ produced</th>
<th>National or regional (specify if regional)</th>
<th>Public sector and/or Industry lead organisation</th>
<th>Levels of use (high/medium/low) or specify</th>
<th>Further information/ web-site</th>
</tr>
</thead>
</table>

The above list may not cover all CDW management initiatives.
Waste prevention Policies and Tools for CDW

There are limited dedicated effective waste prevention policies and tools for CDW in Ireland and currently there is no modelling of specific CDW prevention/management interventions.

It is further noted that there are limited private sector initiatives in place in Ireland.

In 2002, the National Construction & Demolition Waste Council (NCDWC) was set up as an industry led, voluntary initiative to assist in achieving compliance with the 85% policy target set by ‘Changing Our Ways’. The Council was also given the task of implementing 66 recommendations set out in ‘Recycling of Construction and Demolition Waste’ prepared by the ‘Forum for the Construction Industry’ in 2001. In 2006, the NCDWC contributed to the preparation of ‘Best Practice Guidelines on Preparation of Waste Management Plans for Construction and Demolition Projects’. These guidelines, which promote waste prevention, re-use and recycling across the sector, provide guidance on the preparation of Project Construction and Demolition Waste Management Plans for certain classes of project, which exceed specified threshold limits. The NCDWC is no longer active.

In 2015, the EPA have published Fact Sheets entitled Design Out Waste – A design team guide to waste reduction in construction and demolition projects as part of a Strive Research Project. Regarding by-products circulation, decisions made by economic operators under article 27 are to be notified to the EPA. There have been a number of by-products notifications relating to construction and demolition materials.

http://www.epa.ie/waste/wastereg/byprod/
### Initiatives in Ireland for the efficient use of CDW

<table>
<thead>
<tr>
<th>Description of initiative</th>
<th>Scope</th>
<th>Year established</th>
<th>National, regional, local (specify which local area/region)</th>
<th>Public sector and/or Industry lead organisation</th>
<th>Levels of performance e.g. tonnes recycled</th>
<th>Further information/ website</th>
</tr>
</thead>
<tbody>
<tr>
<td>FreeTrade Ireland</td>
<td>Online platforms for the public operating on the basis where resources are exchanged freely</td>
<td>2006, 2010</td>
<td>Regional, National</td>
<td>Public Sector</td>
<td>N/A</td>
<td><a href="http://www.freetradeireland.ie">www.freetradeireland.ie</a></td>
</tr>
<tr>
<td>SMILE Resource Exchange</td>
<td>Online platforms for the Businesses operating on the basis where resources are exchanged freely</td>
<td>2010</td>
<td>National</td>
<td>Public Sector</td>
<td>N/A</td>
<td><a href="http://www.smileexchange.ie">www.smileexchange.ie</a></td>
</tr>
</tbody>
</table>

The above initiatives which are funded by the EPA National Waste Prevention Programme do not target CDW specifically but have assisted organisations generating CDW or in the construction sector.
5. CDW management performance – CDW data

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

Summary - CDW official statistics

<table>
<thead>
<tr>
<th>Year</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collected CDW (tonnes)</td>
<td>13 500 000</td>
<td>5 093 666</td>
<td>3 464 683</td>
<td>3 003 691</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Recovered CDW (tonnes)</td>
<td>10 218 913</td>
<td>5 099 310</td>
<td>2 533 454</td>
<td>2 358 714</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Landfilled CDW (tonnes)</td>
<td>230 228</td>
<td>55 926</td>
<td>44 621</td>
<td>35 404</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

The above table was filled using National Waste Statistics - Reports and Bulletins (EPA, 2013).

Methodological precisions

- In Ireland, prior to 2012, CDW collection data (not generation) and CDW treatment data (CDW managed) were collected annually.
- From 2012, CDW generation and treatment data will be collected on a biennial basis, to satisfy the requirements of the Waste Statistics Regulation.
- There is an ongoing discrepancy between the reported quantity of C&D waste collected and the reported quantity of C&D waste treated.
- The recovery rates were calculated by dividing quantities recovered by quantities collected until 2008. From 2009 the published recovery rates were calculated by dividing quantities recovered by (quantities recovered and quantities disposed). This led to a significant increase in recovery rate.

5.1. CDW generation data

From 2012 CDW generation data are collected on a biennial basis, to satisfy the requirements of the Waste Statistics Regulation. This applies from 2012 onwards, and prior to that, generation data is not available. The data was collected for 2012, and the reporting of this to Eurostat by Ireland is pending, and is currently being finalised. The collection of data for 2014 is underway. CDW generation data was not collected for 2013 calendar year.

The generation data is collected by means of surveys. To capture C&D waste generation in full, there are three main sources for these surveys:

1. Authorised waste facilities and local authorities. These surveys are managed by the EPA and are also used to provide data for the EPA’s annual publication of the National Waste Report.
2. Industrial facilities – facilities authorised by the EPA which may generate C&D waste that may not be captured by surveys under 1. above e.g. if C&D waste arising on site is re-used on the site itself. These are the PRTR (Pollutant Release and Transfer Register) surveys which are primarily used for PRTR reporting to Europe and are carried out by the EPA.

3. Surveys of business enterprises by the CSO (Central Statistics Office). Not all enterprises on the CSO’s register are surveyed; a sample is surveyed and the final figures involve statistical scale-up to represent the whole population. The figures derived are therefore an estimate.

Prior to 2012, only CDW collected (instead of generated) and managed was included within the statistics on CDW.

From 2012, all sectors of the economy are captured within the statistics on CDW generation, and the data (unreported as yet for 2012) are broken down by economic activity. Households are included separately, but only with respect to CDW that is recorded as accepted at Civic Amenity sites. Household CDW collected at source by waste service providers, is not broken out in the data.

In Ireland, prior to 2012, only CDW collection data (not generation) was available. Data on CDW collected were derived from annual returns submitted by waste permit collection holders. This data is published in the National Waste Statistics - Reports and Bulletins (EPA, 2013)\(^\text{65}\).\(^\text{66}\)

<table>
<thead>
<tr>
<th>Official CDW collected data</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009(^*)</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil and stones (t)</td>
<td>13 882 961</td>
<td>13 559 525</td>
<td>10 500 000</td>
<td>3 770 549</td>
<td>2 517 194</td>
<td>1 975 844</td>
</tr>
<tr>
<td>Other C&amp;D waste materials (t)(^65)</td>
<td>2 936 943</td>
<td>4 232 220</td>
<td>3 000 000</td>
<td>1 323 117</td>
<td>947 489</td>
<td>1 027 847</td>
</tr>
<tr>
<td>Total (t)</td>
<td>16 819 904</td>
<td>17 791 745</td>
<td>13 500 000</td>
<td>5 093 666</td>
<td>3 464 683</td>
<td>3 003 691</td>
</tr>
</tbody>
</table>

The above table was filled using National Waste Statistics - Reports and Bulletins (EPA, 2013)\(^\text{67}\).

The NWCPG (National Waste Collection Permit Office) is not mentioned above. NWCPG collects data on all C&D waste collected by registered and permitted waste collectors. This data provides information on the quantities of C&D waste collected nationally, which is a sub-set of the quantity of CDW generated.

It is not possible currently to cross-check the amounts of CDW generated against the fate or treatment of the waste i.e. amounts of CDW treated - recovered or disposed. However, it is worth noting that there is an ongoing discrepancy between the reported quantity of C&D waste collected and the reported quantity of C&D waste treated.

In 2011, this discrepancy was 21% for the soil and stones fraction and 7% for the non-soil and stones fraction. This gap is partly attributable to a less than 100% reporting rate for authorised waste treatment facilities. A general lack of attention to record keeping within the sector, together with the absence of weighbridges in some cases meaning estimates are used, would also contribute.

Contaminated soil remains the largest single hazardous waste type generated in Ireland each year.

Information relating to the exact quantities of contaminated soil generated in Ireland on an annual basis is unavailable, as much of this waste stream is treated in-situ at point of generation.

However, for contaminated soil that is removed offsite, data can be compiled from the TFS and Hazardous Waste Facilities Datasets.

\(^{65}\) http://www.epa.ie/pubs/reports/waste/stats/ireland-progress-towardseuwastetargets.html
\(^{66}\) Other C&D waste materials such as rubble, metals, timber, plastic, glass, wood and mixed C&D waste
\(^{67}\) http://www.epa.ie/pubs/reports/waste/stats/ireland-progress-towardseuwastetargets.html
5.2. CDW treatment data

In Ireland, prior to 2012, only CDW treatment data was collected on a yearly basis. It was collected by the EPA using authorised waste facilities and local authorities’ surveys. This data is published in the National Waste Statistics - Reports and Bulletins (EPA, 2013).

<table>
<thead>
<tr>
<th>Official CDW Treated data</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009*</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil and stones (t)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recovery at EPA-licensed landfills and landfill engineering purposes</td>
<td>2 210 586</td>
<td>1 286 320</td>
<td>736 226</td>
<td>205 079</td>
<td>225 873</td>
<td></td>
</tr>
<tr>
<td>Recovery at EPA licensed facilities (other than landfill)</td>
<td>11 197</td>
<td>16 892</td>
<td>90 160</td>
<td>135 341</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recovery at local authority-permitted sites</td>
<td>8 702 747</td>
<td>7 068 543</td>
<td>3 618 714</td>
<td>1 390 419</td>
<td>1 032 164</td>
<td></td>
</tr>
<tr>
<td>Treatment of contaminated soil</td>
<td>17 297</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disposal at EPA-licensed landfills</td>
<td>790 062</td>
<td>227 533</td>
<td>39 092</td>
<td>34 811</td>
<td>23 400</td>
<td></td>
</tr>
<tr>
<td>Disposal at local authority-permitted sites</td>
<td>152 738</td>
<td>1 480</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>...in storage at the end of 2011</td>
<td>11 957</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>....estimations for non-submission of waste facility permit AERs</td>
<td>92 870</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grand total soil &amp; stones managed (t)</td>
<td>11 856 133</td>
<td>8 595 073</td>
<td>4 410 925</td>
<td>1 720 469</td>
<td>1 538 903</td>
<td></td>
</tr>
<tr>
<td>Recovery Rate as published</td>
<td>80.5%*</td>
<td>79%*</td>
<td>99%**</td>
<td>98%**</td>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other CDW materials (t)</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Metal Recovery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wood Recovery</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wood Disposal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plastic Recovery</td>
<td>1 861 441</td>
<td>727 477</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gypsum-based waste Recovery</td>
<td>6 033</td>
<td>487</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rubble Recovery</td>
<td>425 746</td>
<td>180 375</td>
<td>158 852</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mixed or other C&amp;D waste Recovery</td>
<td>859 598</td>
<td>307 195</td>
<td>409 491</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glass Disposal</td>
<td>32 134</td>
<td>16,833</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plastic Disposal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rubble Disposal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mixed or other CDW Disposal</td>
<td>308</td>
<td>9 491</td>
<td>25 158</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>...remaining in storage at the end of 2011</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>45 968</td>
<td></td>
</tr>
<tr>
<td>Grand total managed (t)</td>
<td>1 893 575</td>
<td>1 853 068</td>
<td>744 310</td>
<td>857 796</td>
<td>960 043</td>
<td></td>
</tr>
<tr>
<td>Recovery Rate as published</td>
<td>44%*</td>
<td>62%*</td>
<td>98%**</td>
<td>99%**</td>
<td>97%**</td>
<td></td>
</tr>
</tbody>
</table>

* Based on quantities recovered divided by quantities collected
** Based on quantities recovered divided by quantities managed (quantities recovered + quantities disposed)

The above table was filled using National Waste Statistics - Reports and Bulletins (EPA, 2013).

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68 http://www.epa.ie/pubs/reports/waste/stats/ireland-progress-towards-ewaste-targets.html
From 2012, CDW treatment data is collected on a biennial basis, in line with the Waste Statistics Regulation. This applies from 2012 onwards i.e. CDW treatment data was not collated for 2013, and it is currently being collected for 2014. Some treatment data is available for each of the years prior to 2012 going back to 2006. As for the CDW generation data, the reporting of the treatment data for 2012 to Eurostat is not complete; Eurostat have received a partial dataset to date.

The treatment data is collected by means of surveys. To capture C&D waste treatment in full, the following surveys are carried out:

1. Authorised waste treatment facilities handling C&D waste (among others) - surveyed by the EPA.
2. Local Authorities are surveyed to capture any authorised treatment facilities that are not captured under 1. Above. These local authority surveys are carried out by the EPA.
3. Landfill facilities. These surveys are carried out by the EPA.
4. Industrial facilities - facilities authorised by the EPA which may generate C&D waste that is also re-used or recovered on the site itself and therefore would not be captured by surveys under 1 or 2 above. These are the PRTR (Pollutant Release and Transfer Register) surveys which are primarily used for PRTR reporting to Europe and are carried out by the EPA.

The majority of CDW arising in Ireland is pre-treated to segregate it into the various fractions, which are then either recovered or disposed. In practice, this pre-treatment will often result in the retention of the EWC chapter 17 code following treatment e.g. incoming 17 09 04 could be segregated to generate a number of outgoing 17 codes such as 17 01 01, 17 01 02, 17 02 01. This would have the advantage of retaining the source information, but is at odds with the EWC since the outgoing wastes should carry a 19 12 code to reflect the fact that they have arisen from the mechanical treatment of waste. In many cases the 19 12 code is assigned which means the source information is lost at that point and the ability to trace the downstream waste is hampered, particularly so the further from source it travels. This is a weakness in the current version of the EWC for some chapters.

The EPA was concerned that certain EWC (European Waste Catalogue1) codes were being inappropriately applied at waste recovery and disposal facilities. In particular issues have arisen about the use of certain EWC codes relating to construction and demolition wastes (Chapter 17 of EWC) and waste from the mechanical treatment of waste at waste management facilities (Chapter 19 12 of EWC). In 2014, the EPA published a draft guidance document to assist waste operators in the classification of CDW. The guidance recommends not applying a 19 code post processing if the processing has been simple and has not changed the nature of the material.

Temporary storage of C&D wastes occurs in Ireland, by necessity, as a routine part of the management of waste. Figures are not readily available, but it is understood that it does not happen to any significant scale and would be unlikely to have a notable impact on the quality of the data reported.

Hazardous CDW Management

Hazardous CDW can be managed in on-site, off-site in Ireland or off-site abroad. In Ireland:

- ‘On-site at industry’ refers to hazardous waste treated on-site at the IPPC licensed facility where it was generated.

70 [https://www.epa.ie/pubs/consultation/Consultation%20on%20EPA%20viewpoint%20on%20EWC%20Chapter%2017%20%26%2019%202%20codes%20June%202014.pdf](https://www.epa.ie/pubs/consultation/Consultation%20on%20EPA%20viewpoint%20on%20EWC%20Chapter%2017%20%26%2019%202%20codes%20June%202014.pdf)
‘Off-site in Ireland’ refers to waste sent to EPA licensed and local authority permitted commercial hazardous waste treatment facilities\(^71\) in Ireland for treatment.

‘Off-site abroad’ refers to waste that is exported for treatment.

Although Ireland has a number of licensed and permitted facilities authorised to treat hazardous waste, the treatment of hazardous CDW (with the exception of contaminated soil) happens ‘Off-site abroad’.

Enva Ireland Limited’s Portlaoise facility (W0184-01) is the only facility in Ireland licensed to treat contaminated soil (licensed to accept 40,000 tonnes per annum), and in 2012 54% of the total reported contaminated soil was treated at this facility. Of the total managed, 46% was exported to Germany and the Netherlands. There has been a significant drop in the tonnage of contaminated soil reported as managed off-site in recent years, which is a direct result of the downturn in the construction industry.

Ireland currently has no dedicated hazardous waste landfill disposal facility. KTK Landfill Limited previously accepted asbestos waste for disposal but such acceptance has ceased at this facility since 2008. East Galway Residual Landfill (W0178-02) is licensed to accept certain types of asbestos waste for disposal but has not accepted any such waste to date.

<table>
<thead>
<tr>
<th>Hazardous CDW Treatment</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009*</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>On-site</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asbestos (Mt)</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Off-site in Ireland</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asbestos (Mt)</td>
<td>2,524</td>
<td>5,326</td>
<td>7,462</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contaminated soil (Mt)</td>
<td>36,872</td>
<td>44,221</td>
<td>43,533</td>
<td>12,428</td>
<td>6,260</td>
<td>7,094</td>
<td>4,246</td>
</tr>
<tr>
<td>Other C&amp;D waste materials (Mt)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Off-site abroad</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asbestos (Mt)</td>
<td>5,294</td>
<td>6,168</td>
<td>7,007</td>
<td>14,068</td>
<td>9,512</td>
<td>7,001</td>
<td>4,255</td>
</tr>
<tr>
<td>Contaminated soil (Mt)</td>
<td>370,032</td>
<td>143,906</td>
<td>449,574</td>
<td>476</td>
<td>2,590</td>
<td>10,203</td>
<td>3,610</td>
</tr>
<tr>
<td>Other C&amp;D waste materials (Mt)</td>
<td>40</td>
<td>82</td>
<td>137</td>
<td>12,892</td>
<td>9,137</td>
<td>3,236</td>
<td>252</td>
</tr>
<tr>
<td><strong>Total (Mt)</strong></td>
<td>414,773</td>
<td>199,703</td>
<td>507,713</td>
<td>39,870</td>
<td>27,499</td>
<td>27,534</td>
<td>12,363</td>
</tr>
</tbody>
</table>

This above data is published in the National Waste Statistics - Reports and Bulletins (EPA, 2013)\(^72\).

The main CDW streams exported for treatment are asbestos, contaminated soil and other C&D waste materials.

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\(^71\) Local authorities only permit commercial hazardous waste treatment facilities for WEEE.

\(^72\) [http://www.epa.ie/pubs/reports/waste/stats/ireland-progress-towards-ewaste-targets.html](http://www.epa.ie/pubs/reports/waste/stats/ireland-progress-towards-ewaste-targets.html)

Resource Efficient Use of Mixed Wastes
The downward trend in the quantity of hazardous construction and demolition waste exported since 2009 is predominantly due to a reduction in the amount of railway sleepers exported (11 930 tonnes exported in 2009, 7 856 tonnes in 2010, 2 779 tonnes in 2011 and none in 2012).

The National Waste Statistics - Reports and Bulletins (EPA, 2013) provide information on the methods of treatments (recovery and disposal) of hazardous waste in Ireland, but there is no separate information about the methods of treatments of hazardous CDW.

The National Hazardous Waste Management Plan (EPA, 2014f) indicates that all asbestos waste is exported for disposal in landfill and the majority of other hazardous CDW are exported for organic and inorganic material recovery.

5.3. CDW exports/imports data

Accompanying Table IEs1 has been populated, where possible, with import and export tonnages for all CDW i.e. all EWC chapter 17 codes notified. This includes chapter 17 wastes that are classified as hazardous as well as non-hazardous.

The National TFS Office (NTFSO) was established in July 2007 and the records for the first 6 months of 2007 remained with the original 34 Local Authorities who had responsibility for waste exports. Therefore this data is not included in Table IEs1. Annual registers were subsequently maintained (note that there were no imports of any amber waste recorded for 2009). The Green List Waste Export Register was established by NTFSO in 2009 and Import Waste Register in 2011. The Registers record tonnage exported/imported.

It should be noted that EWC chapter 19 12 codes are likely to contain CDW that have been co-mingled with wastes from other sources during pre-treatment. As mentioned in Section 5.2 above, the source information is lost once the code changes to 19 12 and it is not possible to readily extract this fraction of CDW from the imported and exported tonnages. Therefore, the tonnages contained in Table IEs1 are likely to underrepresent the situation.

An additional weakness in the data is that the shipments can be entered with multiple EWC codes in one entry/tonnage. Whilst the individual EWC codes are listed, the individual tonnage pertaining to each is not provided. It’s not possible therefore to extract the target code/tonnage, which means that in some cases data may be missing from the collated tonnages, and in others, non-chapter 17 codes may be included. Overall, the usability of the data is compromised.

5.4. CDW treatment facilities data

The information contained in Section 5.4 was obtained from the current generation of Waste Management Plans in Ireland and the EPA National Waste Reports. The Waste Management Plans were published in draft in November 2014 and were officially launched as Regional Waste Management plans in May 2015.

There are currently eight landfills in Ireland authorised to accept non-hazardous or inert CDW for disposal. Their combined total remaining consented capacity (not just for CDW) is estimated at 14 829 000 tonnes and the remaining constructed capacity is 2 043 760 tonnes. All eight landfills are regulated by means of an

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73 http://www.epa.ie/pubs/reports/waste/stats/ireland-progresstowardseuwastetargets.html
75 The Regional WMPs can be accessed at via the links below.
  - http://southernwasteregion.ie/
  - http://emwr.ie/
  - http://www.curwmo.ie/
Resource Efficient Use of Mixed Wastes

EPA licence with multiple conditions attached. The individual compliance record of each landfill has not been examined, but it can be reported that the conditions of each licence are enforced by the EPA’s Office of Environmental Enforcement, and all eight landfills are generally compliant.

Landfill capacity in Ireland is expected to decrease. While no new landfills are currently planned, there are proposals to extend/increase tonnage intake (Knockharley) and to reopen (East Galway). A number of landfills have closed prematurely in recent years owing to financially unviable market conditions. These would collectively have a significant remaining consented capacity, which is unlikely to ever be used.

CDW is used routinely as a recovery material on landfills e.g. rubble for temporary haul roads, inert fines as daily cover, woodchip as daily cover or as bedding for temporary haul roads. Data on quantities of same is not readily available. In 2012, 629 554 tonnes of CDW was reported accepted for recovery at 18 landfills, an increase of 76 855 tonnes from 552 699 tonnes accepted at 14 landfills in 2011 (EPA, 2013).

The current generation of Waste Management Plans in Ireland (draft regional plans published in November 2014 and final plans published in May 2015) examined the existing treatment capacity for various waste streams, however, it did not look specifically at CDW treatment capacity although “land reclamation” (i.e. backfilling) capacities were estimated. Consequently there is no readily available reportable data in relation to CDW treatment capacity. Furthermore, there is currently no data available on mobile versus fix treatment units.

With the exception of hazardous CDW, there is currently available treatment capacity to treat the CDW generated in the State.

Nationally there is an estimated 5.1 million tonnes of authorised, and for the most part, active backfilling capacity, for the recovery of soil and stone materials, with the latest available data showing that approx. 1.1 million tonnes of this being utilised or 22%. The latest available data also indicates that over 4.25 million tonnes of pending backfilling capacity which has been authorised but is not readily available at present. The capacity for the recovery of soil and stone materials is concentrated in the Connaught Ulster and Eastern Midlands Regions, leaving the Southern Region with more limited capacity.

For non-soil and stone construction materials, it is more difficult to assess data on CDW treated. This fraction of the CDW stream is often treated at pre-treatment facilities and in many instances fractions are mixed with similar streams from municipal and non-municipal sources. At present there is an estimated 10 million tonnes of pre-treatment capacity which is authorised. The availability of this capacity is not certain and requires facility level data of operational capacity (which is not available). However based on the quantities of non-soil and stone CDW generated in the State currently, there is no shortfall in available pre-treatment capacity.

Currently, there is a lack of treatment capacity in Ireland to manage contaminated soil which leads to a continued need to export significant quantities of soil.

According to the EPA, given the apparent lack of sophistication in treatment methods used for contaminated soil, there would appear to be no obvious technical barriers to providing more facilities for the commercial treatment of contaminated soil in Ireland. The barriers are more likely to be logistical and economic, including:

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77 http://www.epa.ie/pubs/reports/waste/stats/ireland-progresstowardseuwastetargets.html
78 The Draft Regional WMPs can be accessed via the links below.
- http://southernwasteregion.ie/
- http://emwr.ie/
- http://www.curwmo.ie/
• Contaminated soil is often generated in large quantities from the redevelopment of city docklands (Dublin in particular to date). It can be cost-effective to load the soil from such locations directly onto ships for bulk export, avoiding extensive and relatively expensive road transport;
• Low gate fees for large consignments in established facilities abroad make it difficult for new domestic facilities to compete;
• Uncertainty in future arisings makes business planning difficult. There is a perception that there is a limited number of contaminated sites in Ireland and this discourages investment in contaminated soil treatment facilities.

The continued absence of a legislative requirement for a published register of contaminated sites also makes it difficult to plan ahead for contaminated soil treatment.

5.5. Future projections of CDW generation and treatment

No satisfactory information could be retrieved on future projections of CDW generation and treatment. This is mainly due to the fact that it is difficult to link CDW generation data with accurate construction sector characteristics.

There are no forecasts available for CDW in Ireland. The generation of this waste stream is linked directly to the building and development sectors which have been operating at low levels since the economic recession commenced in 2008. Economic data for 2014 shows that activity in this sector is increasing albeit from very low levels. Steady and consistent economic growth is anticipated to 2020, at a forecast rate of 3%. It is anticipated that CDW will grow similarly in line with economic growth predictions.

An EPA study on the Technical and Economic Aspects of developing a National Difficult Waste Facility (EPA, 2010) projected growth tonnages for hazardous waste arisings (including hazardous CDW) potentially suitable for landfill in Ireland and Northern Ireland. The projected average tonnages for hazardous CDW (including hazardous contaminated soils) for Ireland and Northern Ireland for the period 2008-2013 were 157,376 tonnes per annum and to increase to 197,609 tonnes per annum for the period 2014-2019.

5.6. Methodology for CDW statistics

In Ireland, the methodology used for gathering data on CDW generation and treatment follows Eurostat guidelines. This is the case for 2012 data onwards and Ireland intends to continue to use this methodology.

6. C&D waste management in practice

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

6.1. CDW management initiatives

The initiatives listed below were identified through literature review and stakeholders interviews. There are currently limited CDW management initiatives in Ireland. Most of them are research projects which are funded by the EPA Strive programme. A list of published research reports is provided in the table below.

<table>
<thead>
<tr>
<th>Description of initiative</th>
<th>Scope</th>
<th>Year established</th>
<th>National, regional, local (specify which local area/region)</th>
<th>Public sector and/or Industry lead organisation</th>
<th>Levels of performance e.g. tons recycled</th>
<th>Further information/web-site</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPA Strive programme 2007-2013 'Development of an Audit Methodology to Generate Construction Waste Production Indicators for the Irish Construction Industry' was prepared (Kelly et al., 2009).</td>
<td>Reliable waste data is essential to benchmark the performance of the C&amp;D industry in meeting policy targets. Recommendations from this report included the integration of an audit tool into construction and demolition waste management plans, which would provide a basic methodology to measure waste performance on-site and the submission to the local authorities of audit reports during the construction phase in fulfilment of the planning requirement. The use of such tools should be considered in the development of C&amp;D waste management plans.</td>
<td>2009</td>
<td>N/A</td>
<td>Public</td>
<td>NA</td>
<td><a href="http://www.epa.ie/pubs/reports/research/waste/strivereport26.html">http://www.epa.ie/pubs/reports/research/waste/strivereport26.html</a></td>
</tr>
<tr>
<td>EPA Strive programme 2007-2013 Research Report 146 A Review of Design and Construction Waste Management Practices in Selected Case Studies – Lessons Learned (Kelly et Dowd, 2015)</td>
<td>The research investigated the implementation of waste reduction strategies during the design and construction phases of two selected case studies. The result of the work describes the design and construction reviews that produced a set of simple and transferable lessons learned for the construction sector.</td>
<td>2008-2015</td>
<td>N/A</td>
<td>Public / private</td>
<td>NA</td>
<td>Currently in draft, but to be available shortly.</td>
</tr>
<tr>
<td>DEMCON 20/20</td>
<td>DEMCON 20/20 project at Kinsale Road Landfill in Cork where CDW delivered to the landfill is stockpiled,</td>
<td>1998</td>
<td>Cork City</td>
<td>Public</td>
<td>650 000 tonnes</td>
<td><a href="http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuse">http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuse</a></td>
</tr>
<tr>
<td>Resource Efficient Use of Mixed Wastes</td>
<td>processed and stored for re-use as engineering material at the landfill.</td>
<td></td>
<td></td>
<td>action=search.dspPage&amp;n_proj_id=772&amp;docType=pdf</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>---</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ballymun Regeneration</strong></td>
<td>Ballymun Regeneration where a minimum of 50% of the material arising from the demolition of the tower blocks will be used in the construction of new residential units.</td>
<td>2001</td>
<td>Dublin City Council</td>
<td>Public</td>
<td>300 000 tonnes</td>
<td><a href="http://www.enviro-solutions.com/dailynews/050808-brl-c-d-waste.htm">http://www.enviro-solutions.com/dailynews/050808-brl-c-d-waste.htm</a></td>
</tr>
<tr>
<td><strong>Wiser Project</strong></td>
<td>The Wiser Project is converting the old boiler house building in Ballymun into a prototype &quot;3D textbook&quot; to promote positive behavioral change with regard to resource management and efficiency. The new building reuse materials for the existing building and by incorporating where possible, prevention, reuse and recycling as part of the development stage. This is a life funded project which is currently ongoing.</td>
<td>2015</td>
<td>Dublin City Council</td>
<td>Public</td>
<td>NA</td>
<td><a href="http://www.rediscoverycentre.ie/WISER_Life.aspx">http://www.rediscoverycentre.ie/WISER_Life.aspx</a></td>
</tr>
<tr>
<td><strong>Mullingar Civic Amenity Centre</strong></td>
<td>Construction projects to using a high proportion of recycled C&amp;D waste material in its construction. Recycled crushed concrete was used in the sub base layers with recycled asphalt planings used in the binder course.</td>
<td>2003</td>
<td>Westmeath County Council</td>
<td>Public</td>
<td>4 200 m³ of crushed concrete 24 m³ of recycled asphalt</td>
<td><a href="http://www.envirocentre.ie/includes/documents/Westmeath_County_Council.pdf">http://www.envirocentre.ie/includes/documents/Westmeath_County_Council.pdf</a></td>
</tr>
</tbody>
</table>
6.2. Stakeholders’ engagement

This subsection is addressed to all contacted parties during the stakeholder consultation of the screening phase in order to incorporate their views, insights and hands-on experience on CDW management initiatives already in place in Ireland. The table below aims to gather information on the existing initiatives – identified above – or other initiatives identified by the stakeholders themselves, together with a preliminary assessment of the enabling factors/obstacles, advantages/drawbacks, and other relevant comments.
<table>
<thead>
<tr>
<th>Description of initiative</th>
<th>Scope, year established, actors involved</th>
<th>Advantages/ Enabling factors</th>
<th>Disadvantages/ Obstacles</th>
<th>Further information/ website</th>
</tr>
</thead>
<tbody>
<tr>
<td>National policy target set by ‘Changing Our Ways’.</td>
<td>Ambitious construction sector recycling targets of 50% by 2003 and 85% by 2013 in national policy (1998).</td>
<td>Clear intermediary and final target with enough lead-times for implementation.</td>
<td>Most of the target was achieved by low hanging fruit (e.g. backfilling)</td>
<td><a href="http://www.environ.ie/en/Environment/Waste/PublicationsDocuments/FileDownload,1468,en.pdf">http://www.environ.ie/en/Environment/Waste/PublicationsDocuments/FileDownload,1468,en.pdf</a></td>
</tr>
<tr>
<td>Regional non-hazardous waste management planning</td>
<td>Specific policies and targets for CDW management since 1998. The recently published regional WMPs include specific policies in relation to backfilling.</td>
<td>Consistency with National policy.</td>
<td>Not all of the Regional Plans</td>
<td><a href="http://www.dublincity.ie/sites/default/files/content/WaterWasteEnvironment/Waste/Documents/Easter">http://www.dublincity.ie/sites/default/files/content/WaterWasteEnvironment/Waste/Documents/Easter</a> n_Midland_Region_WMP.pdf</td>
</tr>
<tr>
<td>National Construction &amp; Demolition Waste Council (NCDWC)</td>
<td>In 2002, the NCDWC was set up as an industry led, voluntary initiative to assist in achieving compliance with the 85% policy target set by ‘Changing Our Ways’. The Council was also given the task of implementing 66 recommendations set out in ‘Recycling of Construction and Demolition Waste’ prepared by the ‘Forum for the Construction Industry’ in 2001.</td>
<td>Government engaged with industry early in order to implement the targets set in national policy.</td>
<td>In 2006, support and interest in the NCDWC declined, mainly due to funding issues and the fact that there was no penalty for those who did not want to partake in the voluntary initiative.</td>
<td><a href="http://www.ncdwc.ie">www.ncdwc.ie</a></td>
</tr>
<tr>
<td>Description of initiative</td>
<td>Scope, year established, actors involved</td>
<td>Advantages/ Enabling factors</td>
<td>Disadvantages/ Obstacles</td>
<td>Further information/ website</td>
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<td>--------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Enforcement</td>
<td>Depending on the authorisation required, waste disposal and recovery activities are controlled either by the Environmental Protection Agency or by local authorities within their own areas.</td>
<td>All waste operators are monitored. Proportional enforcement based on perception of environmental risk.</td>
<td>Consistency - Difference in level of enforcement for local authority permitted sites. Limited information on CDW management practices to allow</td>
<td>Limited information publicly available.</td>
</tr>
<tr>
<td>Description of initiative</td>
<td>Scope, year established, actors involved</td>
<td>Advantages/ Enabling factors</td>
<td>Disadvantages/ Obstacles</td>
<td>Further information/ website</td>
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<td>-----------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
<td>------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Non-exempted local authority</td>
<td>Non-exempted local authority managed waste facility activities are regulated by the EPA</td>
<td></td>
<td>risk prioritisation.</td>
<td></td>
</tr>
<tr>
<td>Green Public Procurement Contractual</td>
<td>The Green Public Procurement (GPP) Action Plan, Green Tenders (DECLG, 2012b) has a number of recommendations relating to CDW. This document is further supported by the publication Green Procurement: Guidance for the Public Sector (EPA, 2014a), which sets out core GPP criteria focusing on demonstrating technical and professional capability including waste management and reduction initiatives.</td>
<td>The contractor should prepare an outline construction environmental plan, which will include a CDW management plan; An environmental management training plan must be developed to cover waste minimisation, management and selective waste collection strategies; and Secondary aggregate and recycled materials should be specified in place of virgin materials</td>
<td>Currently there is not a widespread use of this criteria The current templates for government construction tenders limit the scope of including the full suite of GPP criteria</td>
<td><a href="http://www.environ.ie/en/Environment/SustainableDevelopment/GreenPublicProcurement/Publications/Documents/FileDownload,29208,en.pdf">http://www.environ.ie/en/Environment/SustainableDevelopment/GreenPublicProcurement/Publications/Documents/FileDownload,29208,en.pdf</a> <a href="http://www.epa.ie/pubs/reports/other/greenprocurementguidanceforpublicsector-web.pdf">http://www.epa.ie/pubs/reports/other/greenprocurementguidanceforpublicsector-web.pdf</a></td>
</tr>
<tr>
<td>Research Projects</td>
<td>A number of research projects on CDW management have been funded by the EPA since 2000</td>
<td>Use of findings to inform waste policy and improve waste management practices</td>
<td>Limited number of projects focusing on CDW.</td>
<td><a href="http://www.epa.ie/pubs/reports/research/">http://www.epa.ie/pubs/reports/research/</a></td>
</tr>
<tr>
<td>End-of-Waste</td>
<td>A number of organisations have applied or are considering applying for EoW criteria for crushed rubble in 2014 and 2015.</td>
<td>Potential to improve the quality of outputs from CDW management facilities.</td>
<td>Still limited use.</td>
<td><a href="http://www.epa.ie/waste/wastereg/art28/">http://www.epa.ie/waste/wastereg/art28/</a></td>
</tr>
<tr>
<td>By-products</td>
<td>One application has been made</td>
<td>Divert materials to non-waste</td>
<td></td>
<td><a href="http://web.epa.ie/Article27Registe">http://web.epa.ie/Article27Registe</a></td>
</tr>
<tr>
<td>Description of initiative</td>
<td>Scope, year established, actors involved</td>
<td>Advantages/ Enabling factors</td>
<td>Disadvantages/ Obstacles</td>
<td>Further information/ website</td>
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<td>-----------------------------------------------------------------------------------------</td>
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<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>by industry seeking end-of-waste status for crushed rubble and a number of organisations have also indicated their intention to apply for by-products notification for Soil &amp; stones road planings since 2011</td>
<td>steps of the waste hierarchy.</td>
<td></td>
<td></td>
<td>r/</td>
</tr>
<tr>
<td>Building Regulations</td>
<td>The Building Regulations 1990 - 2014 are a set of legal requirements for the design and construction of new buildings, extensions and material alterations to, and certain changes of, existing buildings.</td>
<td>The Building Regulations only provide for health and safety, conservation of fuel and energy, and access for people with disabilities.</td>
<td></td>
<td><a href="http://www.environ.ie/en/DevelopmentHousing/BuildingStandards/">http://www.environ.ie/en/DevelopmentHousing/BuildingStandards/</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><a href="http://www.environ.ie/en/TGD/">http://www.environ.ie/en/TGD/</a></td>
</tr>
<tr>
<td>LEED / BREEAM</td>
<td>LEED / BREEAM Building certification standards have been in use in Ireland since the late 1990s.</td>
<td>Small weighting (&lt;3%) given to waste/ resource management in BREEAM.</td>
<td></td>
<td>Link</td>
</tr>
</tbody>
</table>
6.3. Waste legislation enforcement

Responsibilities and sanctions

Waste disposal and recovery activities in Ireland are required to hold an authorisation in accordance with the Waste Management Acts. A three tier system of authorisation has been established for the regulation of such activities. A waste recovery or disposal activity at a facility requires one of the following:

- Waste Licence, e.g. landfill disposal, waste incineration
- Waste Facility Permit, e.g. small recycling/ recovery waste transfer stations, scrap metal facilities
- Waste Certificate of Registration, e.g. small soil recovery infill sites

Depending on the authorisation required, waste disposal and recovery activities are controlled either by the Environmental Protection Agency or by local authorities within their own areas. Non-exempted local authority managed waste facility activities are regulated by the EPA.

In parallel with regulating smaller scale waste activities, that do not require a licence from the EPA, local authorities are also responsible for controlling the collection and movement of waste in their functional areas. Waste collection permits are issued by a central body, the National Waste Collection Permit Office (NWCPPO), to operators wishing to collecting wastes, including CDW. The local authorities along with the national regulating body prepare the permit conditions to regulate the collection activities of the permit holder. The movement of hazardous waste nationally is regulated by NTFSO.

Enforcement authorities use a combination of measures to ensure compliance at facilities with authorisations including inspections, audits and monitoring activities. Where non-compliances are detected, an escalating series of enforcement actions, from ongoing communication to warning letters, legal notices and ultimately administrative sanctions or criminal sanctions by the courts are utilised. A standardised risk-based assessment of sites was implemented in 2007.

In combination with site inspections and audits, meetings and interaction with stakeholders form an important and growing aspect of the work undertaken. Communication and meetings with sectoral representative bodies including local authorities and the Irish Business and Employers Confederation (IBEC) have formed an important part of enforcement. On a more local level, meetings with residents’ groups, complainants, public representatives and local councillors have been very effective in improving communication, securing evidence and in increasing the effectiveness of enforcement actions taken. Compliance meetings with licensees to secure senior management commitment to corrective actions and improved environmental performance have proven to be effective with resultant improvement in compliance.

EPA resources are managed and directed on an ongoing basis to focus the enforcement effort to where the risks or potential risks are highest and a combination of enforcement tools is used to bring about changes in environmental performance.

Across all their responsibilities, 42,249 planned routine waste inspections and 14,050 non-routine waste inspections were completed in 2010 by the 120 local authority waste enforcement staff (an average of 406 inspections per person) (DECLG, 2012a). These activities led to 10,581 enforcement actions initiated (7,193 closed) and 1,186 prosecutions initiated (918 closed). The table below shows Local authority waste inspections 2008-2012.

Unfortunately, there is no specific information on the proportion of these inspections targeting CDW management facilities or collection permit holders.

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81 Non-routine waste inspections include enforcement of general waste legislation, producer responsibility inspections and litter patrols/inspections.
82 http://www.epa.ie/pubs/reports/enforcement/focus/#d.en.46083
83 http://www.epa.ie/pubs/reports/enforcement/OEEFoEE2014_8th%20FINAL%20PROOF.pdf

48 Resource Efficient Use of Mixed Wastes
The Irish Waste Management Association is concerned that the enforcement of CDW management facilities by the local authorities is receiving little attention. Especially according to the IWMA, there is little or no enforcement of the management of CDW including soil arising from works on brownfield and contaminated land (IWMA, 2015). The IWMA views are not shared by the local authorities. There has been considerable effort to address this issue in some local authority areas.  

It should be noted that there is limited information on court cases and infringement procedures pending (or past) regarding CDW management in Ireland.

**Local Authority Waste Inspections**

<table>
<thead>
<tr>
<th>Source</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local authority inspections of waste permitted facilities *</td>
<td>2,894</td>
<td>2,079</td>
<td>1,872</td>
<td>1,648</td>
<td>1,347</td>
<td>1,043</td>
</tr>
<tr>
<td>Local authority inspections of waste collection permits holders*</td>
<td>557</td>
<td>935</td>
<td>480</td>
<td>834</td>
<td>1,077</td>
<td>645</td>
</tr>
<tr>
<td>Local authority inspections of certificate of registration sites *</td>
<td>472</td>
<td>1,502</td>
<td>1,862</td>
<td>4,588</td>
<td>3,585</td>
<td>3,142</td>
</tr>
<tr>
<td>Pre-shipment inspections of TFS loads*</td>
<td>282</td>
<td>99</td>
<td>766</td>
<td>805</td>
<td>809</td>
<td>41</td>
</tr>
<tr>
<td>C&amp;D handling at development sites (e.g. Waste Mgt. Plans)</td>
<td>521</td>
<td>354</td>
<td>184</td>
<td>116</td>
<td>60</td>
<td>99</td>
</tr>
</tbody>
</table>

* Not specific to CDW.

**Transboundary movements of waste**

Under the Regulation 4(1) of the Waste Management (Shipments of Waste) Regulations 2007 (S.I. No. 419 of 2007), the National TFS Office (under Dublin City Council) is designated as the Competent Authority of Dispatch in respect of the export of waste from the State, the Competent Authority of Destination in respect of the import of waste into the State, and the Competent Authority of Transit in respect of the passage of waste in transit through the State.

**Illegal CDW Activities**

A review of the nature and extent of unauthorised waste activity in Ireland carried out by the EPA in 2005. The review found that large-scale illegal dumping occurred during the period 1997 to 2002 and there was also evidence of significant illegal movement of waste to Northern Ireland, mainly during the period 2002 to 2004. Illegally disposed waste came predominantly from the construction and demolition sector.

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84 For examples, all development of brownfield and/or contaminated sites in Dublin City Council’s jurisdiction are developed in accordance with EPA’s Guidance documents, and a waste management plan is submitted for review prior to commencement of any such development. Inspections and audits of construction sites are an integral part of DCC’s Annual RMCEI Plans and records are submitted to EPA on an annual basis by each Local Authority.


86 [http://www.epa.ie/pubs/reports/waste/unauthorisedwaste/epa_unauthorised_waste_activities.pdf](http://www.epa.ie/pubs/reports/waste/unauthorisedwaste/epa_unauthorised_waste_activities.pdf)
In addition to the sites identified in the ECJ judgement case C-494/01, the EPA identified 15 unauthorised landfills which accepted CDW among other wastes. The EPA also reported that in 2001, an estimated 500 thousand tonnes of soil was accepted at unauthorised facilities (compared to 3.1 million tonnes managed at authorised facilities). CDW was a major component of the larger illegal landfills discovered since the introduction of the Waste Management Act in 1996, particularly those discovered in the greater Dublin area.

Enforcement issues reported by the EPA for CDW at the time included:

- a lack of reliable information due to poor record keeping,
- a general lack of understanding within the sector that some C&D type materials handled are ‘wastes’ leading to:
  - the operation of C&D waste and/or soil and stone recovery sites without proper authorisation;
  - the acceptance of builders rubble at sites permitted for the acceptance of topsoil only for land restoration;
  - C&D waste quantities accepted at facilities in excess of permitted quantities allowed by their waste permit;
  - the use of soil and stone for land reclamation adjacent to wetlands and foreshores without proper authorisation.

A significant level of illegal dumping was also identified in a survey of local authorities in the past (Duran, Lenihan and O'Regan, 2006).

The review of the nature and extent of unauthorised waste activity in Ireland recommended several actions many of whom have been implemented. In 2008, local authorities and the EPA were directed by the DECLG to prepare an Enforcement Policy in respect of Unauthorised Waste Activities to encourage and promote systematic and consistent enforcement actions against illegal waste operators across Ireland. The EPA published its enforcement policy and, in addition, a Code of Practice for the Development of an Enforcement Policy for Unauthorised Waste Activities for use by local authorities. All local authorities have now developed documented enforcement policies that set out how instances of illegal waste activities in their functional area will be handled.

It must be noted that the large-scale illegal dumping and significant illegal movement of waste to Northern Ireland of the type that occurred during the period 1997 to 2004 is no longer taking place. The improvement of the regulatory framework and the implementation of enforcement initiatives (incl. increased enforcement effort on both sides of the Border) have made illegal activities more difficult.

Remaining concerns relating to CDW illegal activities relate to the illegal dumping of C&D fines (IWMA, 2015) (DECLG, 2015b) and the sales of CDW materials (such as concrete and stones) (DECLG, 2014). The ongoing discrepancies in data also give the perception that illegal activities may still be occurring.

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### 6.4. Drivers / barriers to increase CDW recycling

<table>
<thead>
<tr>
<th>Factor / characteristic / element in CDW recycling chain</th>
<th>Drivers</th>
<th>Barriers</th>
</tr>
</thead>
</table>
• Implementation of regional and national targets for CDW Recovery prior to the WFD Directive targets.  
• Implementation of landfill levy on CDW.  
• Obligation to prepare CD Waste Management Plans for projects above a certain thresholds. | • The use of recycled materials from CDW is not sufficiently supported through public procurement.  
• Certification of construction projects using construction materials from recycling. |
| Resources allocated to CDW legislation enforcement        |         | • Resources are not allocated specifically to tackle CDW;  
• Each year the local authorities with consultation from the government define the priority action areas for the year which are ultimately reflected in an enforcement plan prepared by each authority. This approach means that in recent years, in view of the very low level of activity within the construction sector, enforcement of CDW waste has been low level by comparison to more priority areas such as ELVs. |
| Treatment facilities territorial network                  | • Activity in the market is the main driver for the provision of facilities. The market has been depressed for a number of years reflecting the low levels of activity in the construction sector  
• Relatively straightforward to obtain an authorisation for CDW backfilling activities | • Future regulation of backfilling sites will be strengthened following the publication of the regional waste plans which will require operators to demonstrate sites are suitable and future activities will not impact on the receiving environmental receptors. |
| Market conditions                                         | • Landfill levy is a powerful recovery/recycling improvement tool. | • Costs of CDW sorting, recovery and recycling.  
• Costs of developing solutions using recycled materials. |
| Definitions and statistical data                          | • To ensure compliance with national and European reporting requirements  
• The new regional waste plans will require annual data, including CDW, as part of an yearly report on progress | • Data anomalies and limited up-to-date information available on CDW generation and treatment. |
| Works contracts                                          | • Development of a GPP Guidance for the public sector which includes criteria related to waste management. | • Waste management being only one element amongst others in works contracts, it is often neglected.  
• Upstream studies on waste management planning and pre-audits on demolition sites are rarely performed.  
• Lack of traceability and control of the recycling rate on which the winner of the call for tender committed himself. |
| Recycling process and techniques                          | • Systematizing buildings eco-conception would be a major driver to easing end-of-life deconstruction and recycling  
• A number of innovative companies and R&D programmes  
• Building Information Modelling | • Lack of space on building sites  
• Most often demolished buildings were not conceived as to be easily deconstructed and recycled.  
• There are a limited number of mechanical processing facilities for CDW in the State. Many operators who pre-treat CDW do so as part of an integrated suite of processing |
An example of the former is the on-going issue of REACH substances (phthalates) found in waste (PVC) plastics and the recently added POP 'hexabromocyclododecane' or 'HBCDD' found as a flame retardant additive in expanded/extruded polystyrene insulation products used in the construction sector. Identification/screening of these materials for the purposes of their separation from other C & D waste streams for specialised treatment is problematic & costly and is an issue both Ireland and other MS will have to address in the coming decades.

Emerging issue of hazardous substances & persistent organic pollutants (POPs) in waste (C & D) articles.

activities on site with different lines handling and sorting various waste streams such as CDW, residual wastes (primarily) municipal, bulky wastes, recyclables etc.

Emerging issue of hazardous substances & persistent organic pollutants (POPs) in waste (C & D) articles.

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88 An example of the former is the on-going issue of REACH substances (phthalates) found in waste (PVC) plastics and the recently added POP 'hexabromocyclododecane' or 'HBCDD' found as a flame retardant additive in expanded/extruded polystyrene insulation products used in the construction sector. Identification/screening of these materials for the purposes of their separation from other C & D waste streams for specialised treatment is problematic & costly and is an issue both Ireland and other MS will have to address in the coming decades.
7. CDW sector characterisation

In this section some specific characteristics of the CDW management sector in Ireland 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.

The ‘greening’ of construction is proceeding at a rapid pace in Ireland but the focus is on energy efficient buildings (having a positive effect on the use phase of the lifecycle) rather than material resource efficiency buildings (which has an effect only on the production phase or end-of-life phase).

7.1. Sector characteristics

Actors in CDW Management

Figure 1 outlines those responsible for waste generation in the C&D sector along with examples of factors that can influence the generation of waste. In addition the enforcement of waste collection, recovery and disposal activities is outlined.

Figure 2 outlines those responsible for waste management in the C&D sector. Building contractors are responsible for managing the waste they produce on site and to ensure they or any sub-contractors engaged on waste management have the relevant waste permit or licence to recover or dispose of the waste.

A contractor transporting waste to and from a site or transporting waste for disposal or recovery is required to hold a waste collection permit issued by the NWCPO. This includes transporting surplus rubble/fill/spoil from a construction or building projects if the material is going for disposal or recovery at a licensed facility.

If a contractor does not hold a waste collection permit then an authorised waste collector must be employed to remove any waste from a site. Hazardous wastes are governed by separate regulations although the movement of such material requires a collection permit also.

The roles of actors are generally clearly articulated in national/regional legislation with one exception: designers. The role of the designers is not clearly outlined when compared with other areas of legislation e.g. Health and Safety. This results in missed opportunities to develop improved waste management solutions at design stage.

The main sectoral organisations which represent the actors in CDW management include:

- The Association of Consulting Engineers in Ireland
- The Building Materials Federation
- The Construction Industry Federation
- Engineers Ireland
- The Royal Institute of the Architects of Ireland
- The Society of Chartered Surveyors Ireland
- The Irish Waste Management Association

CDW Management and the WFD Target

Ireland is currently achieving the WFD target, however, CDW generation has been limited by the economic downturn, if CDW generation returns to the pre-2008 level, there could be challenges in meeting the target as the capacity of some of the outlets (e.g. landfills) to accept CDW for recycling are decreasing and alternative markets are not developed at a significant pace. New outlets will need to be found to maintain

\[\text{\textsuperscript{89} There were approximately 222 active waste collection permit holders authorised to collect C&D waste in 2011. (Source: EPA National Waste Report 2011).}\]
performance which will require further involvement from existing actors (public sector and designers to specify the use of CDW recycled materials, waste operators to increase the quality of recycled CDW to meet the specifications).

Capacity of the CDW Treatment Network
There is an adequate network of treatment facilities in Ireland except for contaminated soils. See previous comments in Section 5.4 on the current capacity situation with respect of backfilling and pre-treatment activities.

Obstacles to CDW facility development
The setting up of new CDW collection, treatment and/or recycling facilities is clearly defined in legislation and is less difficult than the setting up of municipal waste collection and treatment facilities. Although they may happen on a case by case basis (e.g. difficulties in securing prime sites, particularly in urban areas, close to the source of C & D Waste), access to land, impact of urban planning regulation, NIMBY effects, role or influence of national or local environment NGOs are generally not a significant problem for CDW treatment facilities.

Future Prospects in CDW Management
The prospective future development and innovation potential in the CDW management sector in Ireland is limited.

Employment in CDW
There were 6 126 persons employed in waste management in Ireland in 2011 but no specific information was available on employment in CDW.
### Developer/Owner

"Waste Generation influenced by specific client requirements. Examples:
1. Scale of building
2. Demolition rather than restoration
3. Underground development to save on space"

### Designers

"Waste Generation influenced by design decisions. Examples:
1. Use of virgin material instead of recycled materials.
2. Specify non-standard ceiling heights, which require off cuts of materials.
3. Over designing and over specifying materials
4. Specifying materials (without containing any recycled content)"

### Contractor (& sub-contractors)

"Waste Generation influenced by management of site. Examples:
1. Poor storage of materials on site, which result in materials being damaged.
2. Over ordering of materials, resulting in excess materials.
3. Use of virgin materials instead of recycled materials.
4. Poor workmanship requiring work to be completed again with wastage of materials"

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**Figure 1: Responsibility for waste generation in the C&D sector**

Local Authorities / An Bord Pleanála request for CDW management plans.

Standards & Specifications, Costs may restrict use of certain recycled materials.

LA Audits of C&D Plans
Figure 2: Responsibility for waste Management in the C&D sector
7.2. Exports / imports of CDW

In general Ireland treats the majority of CDW generated in the State. The exception would be the metal fraction of CDW and contaminated soil.

The metal fraction is pre-treated and sorted in Ireland and exported abroad for further treatment. There are no metal smelting processors in Ireland and the economies of scale don’t exist to make such facilities viable.

The quantities of metals, from construction sources, exported is not substantial (in 2011 the quantities amount to approximately 330,000 tonnes), There has never been an issue to date in identifying and sending metals to end markets for final treatment. The UK, which has a number of larger metal reprocessing facilities, is the primary destination for this material.

For further information regarding the current capacity situation with respect of contaminated soils, backfilling and pre-treatment activities see previous comments in Section 5.4.

7.3. CDW as landfill cover

CDW is used routinely as a recovery material on landfills, for example, rubble is used for temporary haul roads, inert fines are used as daily cover, and woodchip is used both as daily cover and/or as bedding for temporary haul roads. In 2012, 629,554 tonnes of CDW was reported accepted for recovery at 18 landfills, an increase of 76,855 tonnes from 552,699 tonnes accepted at 14 landfills in 2011 (EPA, 2013). The use of CDW as landfill cover is permitted, as long as it meets certain specified criteria. The EPA issued a guidance document in this respect in 2014. Daily and intermediate cover at landfill has been and continues to be, a key focus for the EPA’s Office of Environmental Enforcement. The use of C&D material for cover or other recovery purposes such as temporary haul roads is exempt from the landfill levy (Waste Management [Landfill Levy] Regulations 2011). The appropriate classification of CDW in this respect is also a key focus for the EPA.

CDW used for recovery purposes, within the body of the waste, is classified as waste and is assigned the appropriate LoW code. Construction materials i.e. soil and stone from the development of green field sites, used within the final capping layers and therefore outside the body of the waste, are typically handled as a resource rather than a waste. Formal characterisation of this material as ‘by-product’ or ‘end-of-waste’ is gaining momentum, following the transposition of the Waste Framework Directive through the introduction of the European Communities (Waste Directive) Regulations 2011, but has not been in widespread use to date.

7.4. Market conditions / costs and benefits

The main financial incentives to recycle CDW are the avoidance of landfill levy.

In 2011, the Irish Government raised the possibility of introducing an aggregate levy. Unlike the UK, this was not intended as an environmental tax but as a fund for remediation works to those homes affected by pyritic heave (Levy to fund remediation scheme for pyrite homes will provide certainty for homeowners, 2012), however this was not pursued.

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90 http://www.epa.ie/pubs/reports/waste/stats/ireland-progress-towardseuwastetargets.html
91 Guidance Note on Daily and Intermediate Cover at Landfills, EPA 2014.
There are no reports available on the perceived benefits/costs (environmental, economic, and social) from construction based on resource efficiency/circular economy. Similarly, in writing this report, the project team did not come across any particular issues relating to resource scarcity in terms of construction products/materials.

There is an acknowledgement that waste is an issue but it is seen as a lower priority below cost, time, quality, and health and safety. (Kelly & Dowd, 2015).

In 2002\textsuperscript{92}, the lack of segregation was identified by the Construction Industry Federation as a major obstacle to the successful implementation of recycling schemes and related to a number of the following factors:

- Source segregation is often constrained by economic factors and availability of space on site
- Demolition normally involves removal of an unwanted structures at short notice and under time constraints
- Demolition contractors constrained by competitive pricing
- Heavy plant and bulk handling techniques often employed, which are not conducive to segregation
- Little labour or effort employed on materials which are regarded as waste
- Materials suitable for recycling often mixed with unwanted materials of low or no value

In terms of supply, the following issues may arise:

- Growing cost of hauling and processing waste
- Competition from virgin raw material prices and availability
- Over-capacity of primary aggregate production
- Contamination of C&DW supply
- A lack of volumes collected
- Risk (limited economies of scale)

In terms of demand, the following issues may arise:

- Poor perception/awareness of recycled products and “fit-for-purpose” standards
- Limited perceived applicability and experience
- Exclusion from product quality standards
- Market instability/price volatility
- Standard and Specifications

### 7.5. Recycled materials from CDW

The market for CDW materials is already well developed for the main materials, concrete, bricks and blocks, metals, plastics and glass but the applications remain low grade (downcycling) with specific challenges for each stream. For example, CDW plastics are generally bulky in nature and this makes them less attractive to transport, shred and recycle, also they may be relatively contaminated from being mixed in the skips.

The uptake for recycled aggregate in construction has been reasonably poor to date in Ireland, with the predominant use being backfill following demolition and some use in cement manufacturing\textsuperscript{93}. This may be due to a number of reasons not least the lack of confidence in the use of recycled aggregate in construction projects and the abundant availability of good quality, low-cost primary aggregate, for which demand has fallen considerably in the past few years (Byrne and O’Regan, 2012).

A number of infrastructure projects have taken place in Ireland where recycled aggregates were used in their construction, as outlined below:


\textsuperscript{93} For example Quinn Cement has a target of 40% recycled/secondary aggregate use as a proportion of total aggregate use. http://www.quinn-buildingproducts.com/downloads/ASR_QueenCement_2012.pdf
A section of the M50 was constructed using recycled aggregates (this is the busiest motorway in Ireland).

The Aviva Stadium.

Civic Amenity Site at Kyletalesha Landfill: crushed concrete was used in the sub base layers

Edenderry Civic Amenity Site: crushed aggregated used in the road base.

Mullingar Civic Amenity Site: crushed concrete used in the sub-base layers and recycled asphalt was used in pavement layers.

The monetary cost of recycled aggregate is in the region of in €1/T compared to virgin aggregate which is 3.50 EUR/tonne.

**Quality Criteria for products recycled from CDW**

Since 2000 the main technical and environmental quality criteria for recycled products are provided by the NRA (2013) for national roads and by the Department of Transport, Tourism and Sport (DTTAS) for rural regional and local roads (2013) for the use of:

- Recycled aggregate resulting from the processing of material used in a construction process to be used as fill materials if they comply with NRA SRW Series 600.
- Recycled coarse aggregate or recycled concrete aggregate to produce Cement Bound Granular Material (CBGM) to be used in road pavements if they comply with NRA SRW Series 800.
- Recycled road planing and asphalt to construct pavement overlays if they comply with NRA Specification for Road Works (SRW) Series 900.

Since 2004 the NRA DMRB permits recycled concrete to be used for certain road base and subbase materials. Clause 308 ‘Granular Material Type A’ allows the use of recycled crushed mixed concrete aggregates as defined in Annex A of IS EN 13285.

This allows for the inclusion of masonry as a component of the mix. Crushed masonry may include crushed concrete brick or block, or cut natural stone or rubble. Recycled materials will need to demonstrate ongoing conformity to factory production controls per the relevant European Standard, in this case IS EN 13285.

Due to concerns following recent pyrite controversy and to avoid the risk of possible contamination, the update of I.S. EN 13242 prohibited the use of recycled aggregate from use as hardcore under concrete floors and footpaths in Ireland (NSAI, 2014). These concerns are also likely to have led to the withdrawal in road constructions of the use of secondary and recycled materials in pavement (NRA, 2014) and the use of recycled aggregates in structural concrete (NRA, 2015).

The specification, performance, production and conformity of concrete are governed by European standard I.S. EN 206-1:2002 and by the Irish National Annex which provides additional information and guidance. Under Clause 5.1.3 of I.S. EN 206, aggregates for use in concrete production are required to conform to the European standard I.S. EN 12620.

As no specific provision is currently made for the use of recycled aggregate in concrete produced in Ireland, the National Annex allows for its use provided that it is ‘by agreement of the parties involved on a project by project basis’ (NSAI, 2010). This can be interpreted to mean that the specifier, that is, the person or body responsible for establishing the specification for the fresh and hardened concrete, must agree to its use or the producer cannot utilise the material. In the absence of suitable guidance being available in Irish standards, specifiers generally apply requirements as set out in UK standards and guidance documents.

BS 8500-2:2006, the complementary British standard to BS EN 206-1:2000, distinguishes between two different types of recycled aggregate:

- Recycled Concrete Aggregate (RCA), the product of crushed concrete, resulting in a material that consists of the original primary aggregate used in the parent concrete and the hardened cement paste (mortar) that has adhered to it.
- Recycled Aggregate (RA), produced from demolition waste which includes concrete, masonry and asphalt.

**EoW Criteria for products recycled from CDW**

There has been one application under article 28 of the WFD in 2012, but no decision has been made to date by the EPA. The material for which end-of-waste status is sought is crushed rubble, also described as builders fill, which is said to be suitable as general fill and the construction of unbound haul roads, for example on farms.
Marketing of recycled CDW

Although the need for higher environmental standards has been identified in construction market publications, there is limited marketing of the use of recycled CDW as construction materials.

The key to the marketing of recycled CDW as construction materials is to demonstrate that the production of these materials result in a finished product which is clean and capable of performing as required in an engineering specification.

Roadstone94 for example offers a product produced from the recycling of C&D waste which is 6F2 Crushed concrete and can be used in as a sub base in road construction and as underlay for roads through forestry and agricultural lands. The production is managed under ISO 9001 Quality Management scheme with all locations having attestation of conformity as appropriate.

Environmental Product Declarations (EPDs)

There is still limited use of EPDs for construction products in Ireland but they are expected to grow significantly. The demonstration of environmental performance is now an important consideration not only for companies that are seeking to build business overseas, but also those competing in the domestic context where there is increasing likelihood of competition from overseas and a more sophisticated client demanding higher environmental standards, increased efficiency and lower cost.

Access to Construction Materials

Any product, material or system incorporated into building construction works, should be fit for the use for which they are intended and for the conditions in which they are to be used. Works to which the Building Regulations\(^\text{95}\) apply, will be subject to the requirements of Part D Materials and Workmanship. Access to construction materials market for other construction works is subject to the specifications / regulations of the relevant authority e.g. the National Road Authority for construction of national roads.

Certification of an innovative product may include a European Technical Approval and Agreement Certificate or equivalent from a suitable 3\(^\text{rd}\) party and which would demonstrate that the product is fit for the purpose for which it is intended, the conditions in which it is to be used and meets the requirements of the Irish Building Regulations.

Certification of products is necessary to ensure quality assurance of products, consumer protection and compliance with Building Regulations. The cost of certification can be prohibitive, being of the order of EUR 25 000 to have an insulation material certified.

When incorporating a product, material or system into construction works that conforms to a harmonised European standard (hEN), it is essential that the declared performances are fit for the use in which the product, material or system is intended and for the conditions in which it is to be used. The National Standard Authority of Ireland has produced additional national guidance for some hENs and ENs in the form of National Annexes or Standard Recommendations (SRs) which provide guidance on the appropriate minimum performance levels for specific intended uses of the products, materials and systems in Ireland. Where a construction product is covered by such guidance, compliance with the National Annex/Standard Recommendation in so far as it relates to the product, material or system may be used to demonstrate that when incorporated into construction works the product material or system is fit for the use for which it is intended.

On and from 1 July 2013, under Regulation (EU) No. 305/2011 of the European Parliament and of the Council laying down harmonised conditions for the marketing of construction products and repealing Council

\(^{94}\) https://www.roadstone.ie/products/construction-demolition-waste/
\(^{95}\) http://www.environ.ie/en/TGD/
Directive 89/106/EEC (known as the Construction Products Regulation or the “CPR”), CE marking has been mandatory for all construction products placed on the market for which harmonised standards are in place.

In Ireland, the European Union (Construction Products) Regulations 2013 (S.I. No. of 2013)\(^96\) provided for the transposition of the CPR.

Green procurement in Ireland is still in its infancy and there is still limited market penetration of criteria for construction products and requirements regarding recycled contents and recyclability. The publication of the Green Procurement: Guidance for the Public Sector (EPA, 2014a) should increase the market penetration of construction products with recycled contents. The guidance sets out core GPP criteria including the specifications of secondary aggregate and recycled materials in place of virgin materials (where appropriate). rx3, an initiative funded by the DECLG, undertook a review of the market potential for cellulose insulation products in Ireland\(^97\) to increase the penetration of cellulose insulation products.

### 7.6. Construction sector make up

#### Value of Construction Sector

The value of construction output for housing, private non-residential, social infrastructure, public non-residential and civil engineering works was estimated to be EUR 12.5 billion in 2015 and is forecast to increase to EUR 15.3 billion in 2016 as shown below.

<table>
<thead>
<tr>
<th>Construction Type</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015E(^*)</th>
<th>2016F(^*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing New</td>
<td>1 453</td>
<td>1 530</td>
<td>2 145</td>
<td>2 624</td>
<td>3 866</td>
</tr>
<tr>
<td>Housing RM&amp;I</td>
<td>2 800</td>
<td>2 750</td>
<td>2 938</td>
<td>3 310</td>
<td>3 661</td>
</tr>
<tr>
<td>Total housing</td>
<td>4 253</td>
<td>4 280</td>
<td>5 083</td>
<td>5 934</td>
<td>7 527</td>
</tr>
<tr>
<td>Private non-residential New</td>
<td>880</td>
<td>1 189</td>
<td>1 310</td>
<td>1 539</td>
<td>2 062</td>
</tr>
<tr>
<td>Total private non-residential RM&amp;I</td>
<td>89</td>
<td>93</td>
<td>100</td>
<td>109</td>
<td>118</td>
</tr>
<tr>
<td>Total private non-residential</td>
<td>969</td>
<td>1 282</td>
<td>1 410</td>
<td>1 638</td>
<td>2 180</td>
</tr>
<tr>
<td>Social infrastructure New</td>
<td>837</td>
<td>934</td>
<td>1 069</td>
<td>1 220</td>
<td>1 461</td>
</tr>
<tr>
<td>Social infrastructure RM&amp;I</td>
<td>231</td>
<td>242</td>
<td>259</td>
<td>285</td>
<td>312</td>
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<tr>
<td>Total Social infrastructure</td>
<td>1 066</td>
<td>1 175</td>
<td>1 329</td>
<td>1 505</td>
<td>1 773</td>
</tr>
<tr>
<td>Building New</td>
<td>3 170</td>
<td>3 653</td>
<td>4 524</td>
<td>5 375</td>
<td>7 388</td>
</tr>
<tr>
<td>Building RM&amp;I</td>
<td>3 120</td>
<td>3 084</td>
<td>3 297</td>
<td>3 703</td>
<td>4 091</td>
</tr>
</tbody>
</table>

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\(^{98}\) [https://www.scsi.ie/documents/get_lob?id=538&field=file](https://www.scsi.ie/documents/get_lob?id=538&field=file)
Housing

There were a total of 7,717 new housing commencements in 2014 including public housing. This is a significant increase from the 4,708 figure in 2013. The majority of these new commencements are in the development of private flats or apartments followed by one-off houses with the minority of construction activity taking place in multi developments/housing estates.

With regard to Housing Repair, Maintenance and Improvement (RM&I) the combined figure for major and minor improvements by households in 2013 was approximately EUR 2.6 billion. Taking the projections for both private and public RM&I, the total volume of RM&I housing output is forecast to increase by 8.3 per cent in 2015 and 6.3 per cent in 2016.

Private Non-Residential

Figures from the CSO indicate that the volume of new private non-residential output is recovering from an all time low of EUR 505 million in 2010 to EUR1.31 billion in 2014. These figures suggest that the construction market has been underperforming and, even though the outlook is improving, there are still a number of challenges in the private non-residential sector. Some of the challenges and opportunities which Ireland is experiencing across this market pertain to;

- **Offices:** There is a supply shortage of prime office space which continues to drive rental prices upwards with rent prices in 2017 estimated at EUR 673 per square metre.

- **Retail:** Some of Ireland’s most successful shopping centres have been sold or are expected to be sold in 2015 which indicates a high demand for assets with strong rental income potential. However, given the extent of retail floorspace put in place during the economic boom times, the scope for new retail construction opportunities in the short to medium term is likely to be confined to extensions and refurbishment works.

- **Industrial/Manufacturing:** The Foreign Direct Investment Sector is generating significant opportunities for the construction industry. Amongst the investors wishing to expand in, or relocate to, Ireland are Jazz Pharmaceuticals, Apple, Regeneron, Calypso Technology, Bristol Myers Squib

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*E=Estimate, F=Forecast

<table>
<thead>
<tr>
<th>Total Building*</th>
<th>6,290</th>
<th>6,738</th>
<th>7,821</th>
<th>9,077</th>
<th>11,479</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil Engineering New</td>
<td>2,243</td>
<td>2,340</td>
<td>2,670</td>
<td>2,875</td>
<td>3,186</td>
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<tr>
<td>Civil Engineering RM&amp;I</td>
<td>574</td>
<td>461</td>
<td>500</td>
<td>563</td>
<td>613</td>
</tr>
<tr>
<td><strong>Total Civil Engineering</strong></td>
<td>2,817</td>
<td>2,801</td>
<td>3,169</td>
<td>3,439</td>
<td>3,799</td>
</tr>
<tr>
<td>Total Public Sector</td>
<td>4,410</td>
<td>4,356</td>
<td>4,903</td>
<td>5,523</td>
<td>6,279</td>
</tr>
<tr>
<td>Total Private Sector</td>
<td>4,698</td>
<td>5,180</td>
<td>6,087</td>
<td>6,991</td>
<td>9,000</td>
</tr>
<tr>
<td><strong>Total Construction Output</strong></td>
<td>9,107</td>
<td>9,538</td>
<td>10,990</td>
<td>12,515</td>
<td>15,279</td>
</tr>
<tr>
<td>Construction as % of GNP</td>
<td>6.4%</td>
<td>6.5%</td>
<td>6.9%</td>
<td>7.5%</td>
<td>8.7%</td>
</tr>
<tr>
<td><strong>Total Private Sector</strong></td>
<td>4,698</td>
<td>5,180</td>
<td>6,087</td>
<td>6,991</td>
<td>9,000</td>
</tr>
</tbody>
</table>

DECLG website: [www.environ.ie](http://www.environ.ie)

Central Statistics Office (CSO) [www.cso.ie](http://www.cso.ie)

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62 Resource Efficient Use of Mixed Wastes
and Zimmer. This high volume of industrial take-up has resulted in a growing demand for Greenfield industrial sites\textsuperscript{101}. The IDA has responded with the announcement of a EUR 150 million property scheme to upgrade existing business parks and develop new industrial units.

- **Hotels:** Due to a combination of oversupply, decreased tourism and a difficult domestic market, the hotel industry has been experiencing significant challenges since 2010. Given these difficulties, it is unlikely that there will be much construction in the hotel sector in the near future. Notwithstanding these challenges, there are still notable transactions around the country regarding changes in ownership of high profile hotels culminating in 63 hotels, with a total value of EUR 341 million, being sold in 2014\textsuperscript{102}.

It is evident that, whilst the private non-residential sector faces numerous challenges specifically with regard to hotel and retail oversupply, there are positive prospects for the construction sector in the Industrial and Commercial (office) areas. DKM Economic Consultants estimate the aggregate volume of construction activity in the private non-residential sector at approximately €3.5 billion (2014 constant prices) over 2015 and 2016 inclusively. The industry sector is expected to account for approximately 60 per cent of this investment while offices and retail may represent 30 percent of the total.

**Public Non-Residential Construction**

The 2015 Budget has allocated a total Exchequer capital investment of €6.53 billion for the period of 2015 for the public capital programme (PCP). This is a 6 per cent increase on the PCP provision for 2014 of €6.17 billion. It is estimated that approximately 65 to 70 per cent of the total likely to impact the construction sector. The allocations for PCP funding in 2015 are summarised below.

**PCP funding allocation for 2015**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Budget (million EUR)</th>
<th>Year on Year Difference* (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road Improvement and Maintenance</td>
<td>576</td>
<td>-11</td>
</tr>
<tr>
<td>Public Transport</td>
<td>343</td>
<td>-20</td>
</tr>
<tr>
<td>Transport Projects (Public Private Partnership Costs)</td>
<td>190</td>
<td>+245</td>
</tr>
<tr>
<td>Educational Infrastructure</td>
<td>667</td>
<td>+13</td>
</tr>
<tr>
<td>Hospital and Health Infrastructure</td>
<td>327</td>
<td>-4</td>
</tr>
<tr>
<td>Social Housing</td>
<td>361</td>
<td>+36</td>
</tr>
</tbody>
</table>

*Since 2014

**Employment in Construction Sector**

The highest rate of employment within the construction industry was recorded in the second quarter (Q2) of 2007 indicating that 386,700 people were working in this sector. This is equivalent to one in five of all persons employed in the country.

\textsuperscript{101} [http://www.cbre.ie/ie_en/research](http://www.cbre.ie/ie_en/research)
\textsuperscript{102} CBRE estimate
This rate dropped off significantly with employment in the construction industry reaching its lowest point of 97,400 persons in Q1 2013. Ireland has seen a gradual improvement since that period with the statistics for Q4 2014 indicating that 115,800 persons were employed in the construction sector. This corresponds to 8.4% of the population (162,100 persons) if indirect employment is considered.

The average weekly earnings for persons employed in the construction sector grew by 4.3% in 2014, a significant increase from 1.8% annual growth in 2013. The magnitude of this increase is amplified when considering the context of the average earnings as a whole across all sectors in the country which remained relatively unchanged in 2014 from the previous year (-0.1%).

**Value of Construction Products**

The CSO’s Wholesale Price Index and Capital Goods Price Index for Construction Materials indicates that there has been a modest increase in the overall wholesale prices of building and construction materials of just 1.3 per cent in 2013 and 1.4 per cent in 2014. Despite this, certain areas of the index display exceptional increases than the general prices. The materials recording significantly higher rates of increase than wholesale prices in 2014 include:

- sand and gravel (+35.3%);
- hardwood (+15.2%);
- stone (+6.8%); and
- glass (+5.1%).

The prices of certain materials have continued to increase into the first quarter of 2015. Among these were hardwood and plaster where prices increased by 3.8% and 1.7% respectively over the first two months of the year. Conversely, it is noticed that the prices of bituminous emulsions declined by 9.5% over the same period.

According to the most recent Ulster Bank Construction PMI for February 2015, the rate of input cost inflation was the fastest since July 2008. The suggested cause for this rapid increase is the weakness of the euro against the sterling and US dollar.

**Trends in Construction Industry**

A survey completed by the Society of Chartered Surveyors of Ireland indicates the main concerns within the residential construction sector to be;

- Skills shortages;
- Planning related issues;
- Availability of finance;
- Lack of suitable serviced sites.

Housing supply remains the single most important challenge in the residential property market. This issue has been highlighted in the private rented sector, the private property market and in the social housing sector. The issue is most pertinent in the Dublin region and Ireland’s urban areas.

Trends and forecasts for the annual percentage change in volume of construction output by sector are outlined in below.

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103 CSO [www.cso.ie](http://www.cso.ie)
### Annual percentage change in the volume of construction output by sector

<table>
<thead>
<tr>
<th>Construction Type</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015E*</th>
<th>2016F*</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Housing</td>
<td>-24.7%</td>
<td>2.3%</td>
<td>28.0%</td>
<td>13.3%</td>
<td>37.7%</td>
</tr>
<tr>
<td>Housing RM&amp;I</td>
<td>-10.8%</td>
<td>-2.8%</td>
<td>3.7%</td>
<td>8.3%</td>
<td>6.3%</td>
</tr>
<tr>
<td><strong>Total housing</strong></td>
<td>-16.4%</td>
<td>-0.9%</td>
<td>12.7%</td>
<td>10.4%</td>
<td>19.9%</td>
</tr>
<tr>
<td>Private non-residential New</td>
<td>10.5%</td>
<td>31.3%</td>
<td>4.9%</td>
<td>11.1%</td>
<td>28.4%</td>
</tr>
<tr>
<td>Total private non-residential RM&amp;I</td>
<td>-18.6%</td>
<td>2.4%</td>
<td>3.3%</td>
<td>5.6%</td>
<td>5.3%</td>
</tr>
<tr>
<td><strong>Total private non-residential</strong></td>
<td>7.1%</td>
<td>28.7%</td>
<td>4.8%</td>
<td>10.8%</td>
<td>26.9%</td>
</tr>
<tr>
<td>Social infrastructure New</td>
<td>-20.3%</td>
<td>8.3%</td>
<td>9.0%</td>
<td>8.7%</td>
<td>14.0%</td>
</tr>
<tr>
<td>Social infrastructure RM&amp;I</td>
<td>-0.7%</td>
<td>2.4%</td>
<td>3.3%</td>
<td>5.6%</td>
<td>5.3%</td>
</tr>
<tr>
<td><strong>Total Social infrastructure</strong></td>
<td>-16.6%</td>
<td>7.1%</td>
<td>7.9%</td>
<td>8.1%</td>
<td>12.3%</td>
</tr>
<tr>
<td>Building New</td>
<td>-16.2%</td>
<td>11.7%</td>
<td>15.8%</td>
<td>11.6%</td>
<td>29.6%</td>
</tr>
<tr>
<td>Building RM&amp;I</td>
<td>-10.3%</td>
<td>-2.2%</td>
<td>3.7%</td>
<td>8.0%</td>
<td>6.2%</td>
</tr>
<tr>
<td><strong>Total Building</strong></td>
<td>-13.5%</td>
<td>5.0%</td>
<td>10.4%</td>
<td>10.1%</td>
<td>19.9%</td>
</tr>
<tr>
<td>Civil Engineering New</td>
<td>-12.9%</td>
<td>1.7%</td>
<td>9.8%</td>
<td>3.3%</td>
<td>6.1%</td>
</tr>
<tr>
<td>Civil Engineering RM&amp;I</td>
<td>-27.4%</td>
<td>-21.3%</td>
<td>4.3%</td>
<td>7.9%</td>
<td>4.2%</td>
</tr>
<tr>
<td><strong>Total Civil Engineering</strong></td>
<td>-15.6%</td>
<td>-3.0%</td>
<td>8.9%</td>
<td>4.0%</td>
<td>5.8%</td>
</tr>
<tr>
<td><strong>Total Public Sector</strong></td>
<td>-18.1%</td>
<td>-3.6%</td>
<td>7.8%</td>
<td>7.6%</td>
<td>8.5%</td>
</tr>
<tr>
<td><strong>Total Private Sector</strong></td>
<td>-10.1%</td>
<td>8.0%</td>
<td>11.7%</td>
<td>8.9%</td>
<td>21.9%</td>
</tr>
<tr>
<td><strong>Total Construction Output</strong></td>
<td>-14.1%</td>
<td>2.5%</td>
<td>9.9%</td>
<td>8.3%</td>
<td>16.0%</td>
</tr>
</tbody>
</table>

*E=Estimate, F=Forecast

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DKM Economic Consultants Estimates, CSO

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Resource Efficient Use of Mixed Wastes
References

Interview sources
- Interview with Sarah Miller, Rediscovery Centre, 26th March 2015
- Interview with Mr. Fiona McCoole, Environmental Protection Agency, National Waste Statistics team, 30 March 2015 & 30/04/2015.
- Email from Vivienne Ahern, National TFS Office, Waste Regulation Unit, 02 April 2015.
- Interview with Mr. Brian Meaney, Environmental Protection Agency, 07 April 2015.
- Email from Tadgh Coakley, Clean Technology Centre, 30 April 2015.
- Interview with Jean Clarke, Inspector Department of the Environment, Community and Local Government, 06/05/2015
- Discussion with the National Waste Prevention Committee, 06/05/2015
- Interview with Conor Walsh, IWMA, 08th May 2015
- Interview with Jim Moriarty, EPA, Office of Environmental Enforcement, 08th May 2015
- Interview with Philippa King, South Western Waste Management Region Waste Co-ordinator, 25/05/2015
- Interview with Brendan O’Neill and Jean Clarke, Inspectors Department of the Environment, Community and Local Government, 27/05/2015
- Interview with Mr. Jonathan Derham, Environmental Protection Agency, Programme Manager, 05th June 2015.

Other consulted stakeholders
- Department of the Environment, Community and Local Government.
- South Western Waste Management Region
- National TFS Office

The following stakeholders have been contacted but didn’t participate
- Construction Industry Federation National Waste Collection Permit Office
- Connaught-Ulster Region Waste Management Office
- Irish Business Employer’s Confederation
- Engineers Ireland
- Construction Industry Council
- An Bord Pleanála
- Office of Public Works
- Irish Planning Institute
- Royal Town Planning Institute
- National Road Authority
- Roadstone

The Environmental Protection Agency notified the project team that due to summer leave and other EU priorities they were not in a position to respond to the request before the consultation submission deadline.

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