

# SSE Tarbert Next Generation Power Station

Environmental Impact Assessment Report (EIAR)  
Volume I  
Chapter 18 Waste Management

SSE Generation Ireland Limited

November 2023

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Appendix 18A: Resource and Waste Management Plan

# 18. Waste Management

## 18.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) details the findings of an appraisal of the effects of the Proposed Development on waste management.

This chapter sets out the relevant aspects of the current state of the environment and the future receiving environment and goes on to consider the impact of the Proposed Development on waste management.

For the purpose of this EIAR, waste is defined as per the European Waste Framework Directive (Directive 2008/98/EC) as “any substance or object which the holder discards or intends or is required to discard”.<sup>1</sup>

Full details on the background and Site history are provided in EIAR Volume I Chapter 4 (Existing Site and Conditions), and details of the Proposed Development are provided in Chapter 5 (Description of the Proposed Development) and the Planning Statement submitted with the planning application for the project.

## 18.2 Legislation, Policy, and Guidance

The following legislation, policy and guidance is relevant to this chapter and was adhered to during the assessment presented within it.

### 18.2.1 Legislation and National Planning Policy

#### 18.2.1.1 European Communities (Waste Directive) Regulations, 2011

The European Communities (Waste Directive) Regulations S.I. No. 126 of 2011<sup>2</sup> (as amended) transpose the requirements of the European Waste Framework Directive (Directive 2008/98/EC),<sup>1</sup> as amended by Directive (EU) 2018/851,<sup>3</sup> into Irish legislation. The Regulations require that waste prevention programmes and waste management plans are established and that the waste hierarchy is applied. The waste hierarchy prioritises waste prevention, followed by preparing for reuse, recycling, other recovery (including energy recovery) and finally disposal.

For construction and demolition (C&D) waste, the Regulations<sup>2</sup> also require measures to be taken to achieve the following target:

- By 2020, the preparing for reuse, recycling, and other material recovery, including backfilling operations using waste to substitute other materials, of non-hazardous C&D waste excluding naturally occurring material defined in category 17 05 04 in the list of waste shall be increased to a minimum of 70% by weight.

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<sup>1</sup> European Parliament and The Council of the European Union (2008). *Directive 2008/98/EC*.

<sup>2</sup> GOI (2011). *S.I. No. 126 of 2011 - European Communities (Waste Directive) Regulations 2011*.

<sup>3</sup> EU (2018). *Directive (EU) 2018/851*.

To support the implementation of the waste hierarchy, the Regulations<sup>2</sup> also:

- Article 27: give provision for an operator to determine that a material is a by-product and not a waste, where certain conditions are met and if approved by the Environmental Protection Agency (EPA).
- Article 28: give provision for determining end-of-waste status, when a waste may cease to be a waste when it has undergone a recovery operation.

The assessment of waste within this chapter has taken account of the waste hierarchy in the management of waste, including the provisions under Article 27 and Article 28, and of the targets for recovery of non-hazardous C&D waste.

### 18.2.1.2 European Green Deal

The European Green Deal<sup>4</sup> aims to transform the EU into a modern, resource-efficient, and competitive economy, ensuring:

- No net emissions of greenhouse gases by 2050;
- Economic growth decoupled from resource use; and
- No person and no place left behind.

The European Green Deal aims to improve the well-being and health of citizens and future generations by providing longer lasting products that can be repaired, recycled, and reused.

### 18.2.1.3 Circular Economy Action Plan

The European Commission's Circular Economy Action Plan (CEAP)<sup>5</sup> provides a future-oriented agenda for achieving a cleaner and more competitive Europe by presenting a set of interrelated initiatives needed for accelerating the transformational change required by the European Green Deal.<sup>4</sup> Section 4 of the CEAP highlights the importance of addressing waste exports from the EU and details the European Commission's aims to:

- Ensure that the EU does not export its waste challenges to third countries.
- Restrict exports of waste that have harmful environmental and health impacts in third countries; and
- Strengthen controls of shipments of waste and improve sustainable management of waste in these countries.

The CEAP also highlights the importance of monitoring and reporting progress and aims to transform waste management practices in construction, minimise waste generation and maximise resource efficiency.

### 18.2.1.4 Circular Economy and Miscellaneous Provisions Act 2022

The Circular Economy and Miscellaneous Provisions Act 2022<sup>6</sup> provides for the following:

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<sup>4</sup> EC (2022). *A European Green Deal*.

<sup>5</sup> EC (2020). *Circular Economy Action Plan*.

<sup>6</sup> House of the Oireachtas (2022). *Circular Economy and Miscellaneous Provisions Act 2022*.

- The making by the Minister for the Environment, Climate and Communications of a circular economy strategy.
- The establishment of the Circular Economy Fund; to make provision in relation to the Environment Fund.
- The establishment by the EPA of a circular economy programme.
- For the use by local authorities of closed-circuit television and mobile recording devices in certain circumstances and for that purpose to amend the Waste Management Act 1996 and the Litter Pollution Act 1997.
- Inclusion of targets in respect of reused and repaired products and materials in waste management plans.
- The operation of the national waste collection permit office.
- Waste recovery levy.
- Making by the Minister for the Environment, Climate and Communications of regulations to regulate end-of-waste and by-product notifications to the EPA.
- Giving further effect to Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008.
- To amend the Waste Management Act 1996.
- Prohibition on certain licences relating to coal, lignite and oil shale and for that purpose to amend the Minerals Development Act 1940 and the Minerals Development Act 2017.
- Applications to the EPA for licences, reviews of licences or revised licences in circumstances where an order under section 181(2)(a) of the Planning and Development Act 2000 has been made, or is proposed to be made, by a Minister of the Government for development comprising or for the purposes of the activity to which the application relates and for that purpose to amend the EPA Act 1992; to give further effect to Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 and for that purpose to amend the Electricity Regulation Act 1999; and to provide for related matters.

#### **18.2.1.5 A Waste Action Plan for a Circular Economy**

A Waste Action Plan for a Circular Economy, Ireland's National Waste Policy 2020-2025<sup>7</sup> ('the WAP') sets out Ireland's approach to transitioning to a circular economy.

For C&D waste, the WAP supports the provisions and targets of the European Communities (Waste Directive) Regulations<sup>2</sup> by undertaking to streamline the decision-making processes for by-product notifications and end-of-waste and updating best practice guidance in line with the waste hierarchy.

This document has been considered within the assessment as it sets out the priority approaches for the construction sector to support delivery of the national C&D waste recovery target.

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<sup>7</sup> GOI (2020a). *Waste Action Plan for a Circular Economy, Ireland's National Waste Policy 2020-2025*.

The WAP calls for the replacement of the existing Regional Waste Management Plans with a single National Waste Management Plan containing targets for reuse, repair, resource consumption and a reduction in contamination. The single plan will aim to build on the progress from 2015, strengthen national capacity and delivery while retaining a regional focus for implementation. Development of this National Waste Management Plan is currently ongoing with the draft closing for public consultation on 5 July 2023.

#### **18.2.1.6 Draft National Waste Management Plan for a Circular Economy (the 'Draft Plan')**

The Draft Plan<sup>8</sup> sets out a framework for the prevention and management of waste in the Republic of Ireland ("Ireland") for the period 2023 to 2029. Its primary aims are to encourage sustainable consumption, prevent the generation of waste, improve the capture of materials to optimise circularity, and enable compliance to policy and legislation.

All three Regional Waste Management Planning Offices are currently engaged in the publication process with submissions and observations from the public consultation to be taken into consideration for its development.

#### **18.2.1.7 Climate Action Plan 2023**

Following on from Climate Action Plan 2021, Climate Action Plan 2023<sup>9</sup> includes a suite of measures at different stages of implementation to help reduce waste and support the transition towards a circular economy. These include:

- Strengthening the regulatory and enforcement frameworks for the waste collection and management system, to maximise circular economy principles;
- Enactment of the Circular Economy and Miscellaneous Provisions Act 2021;
- Publication of the Whole-of-Government Circular Economy Strategy 2022-2023, including focus on awareness raising, Green Public Procurement, and international partnerships;
- Develop a Bioeconomy Action Plan;
- Develop new and expanded environmental levies to encourage reduced resource consumption and incentivise higher levels of reuse and recycling;
- Establish a Circular Economy Innovation Scheme; and
- Publication of the National Food Waste Prevention Roadmap 2023-2025.

### **18.2.2 Regional and Local Planning Policy**

#### **18.2.2.1 Southern Region Waste Management Plan 2015-2021**

For the purposes of waste management planning, Ireland is divided into three Regional Waste Management Planning Offices: Southern, Eastern Midlands, and Connacht Ulster. Waste Management Plans for the three regions were published in May 2015. The Proposed Development is located within

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<sup>8</sup> mywaste (2023). *National Waste Management Plan for a Circular Economy*.

<sup>9</sup> DECC (2022). *Climate Action Plan 2023*.

the Southern region. The Southern Region Waste Management Plan 2015-2021<sup>10</sup> provides the framework for the prevention and management of wastes in a safe and sustainable manner.

The Proposed Development is likely to be subject to the framework of the National Waste Management Plan for a Circular Economy<sup>11</sup> once it is published by the Regional Waste Planning Offices.

### 18.2.2.2 Kerry County Development Plan 2022-2028

Kerry County Development Plan (CDP) 2022-2028<sup>12</sup> sets out the overall planning and sustainable development strategy for the county. The Kerry CDP:

- Replaces the Kerry CDP 2015-2021;
- Incorporates existing Town Development Plans (as extended and varied); and
- Requests the review of Local Area Plans (LAPs) for Tralee, Killarney and Listowel Municipal Districts within 12 months of the adoption of the CDP.

County Kerry's transition to a circular economy is cited as being one of the key areas for informing the CDP's Core Strategy, recognising that all resources are scarce and the importance of reuse, renewal and repair principles to minimise waste generation. In support of circular economy principles, this means that waste should be managed using the following waste hierarchy approach (in order) before disposal as the outcome:

1. Prevention;
2. Preparation for reuse;
3. Recycling; and
4. Recovery.

Additionally, the CDP includes the following relevant Waste Management Policy Objectives (POs):

- **KCDP 13-27:** Implement the Regional Waste Management Plan, focusing on waste reduction, reuse, recycling, and sustainable disposal of residual waste.
- **KCDP 13-28:** Facilitate the implementation of the current Regional Waste Management Plan, including any replacement or amending plans. Emphasise the adoption of the waste hierarchy and maximise waste diversion from landfills

There are no specific POs within the CDP for the management of C&D waste, however, there is a section on C&D waste that emphasises the need to apply the waste hierarchy approach and in alignment with the 70% target for reuse, recycling and recovery of man-made C&D waste in Ireland by 2020 set out by the European Communities (Waste Directive) Regulations 2011.

### 18.2.3 Circular Economy Checklists for Construction

This series of Circular Economy Checklists<sup>13</sup> have been developed by the Southern Waste Region. The aim of the checklists is to raise awareness of the Circular Economy with key actors within the

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<sup>10</sup> Southern Waste Region (2015). *Waste Management Plan 2015-2021*.

<sup>11</sup> EPA (2021a). *What's being done Waste: Waste policy and planning*.

<sup>12</sup> Kerry Co. Co. (2022). *Kerry County Development Plan 2022-2028*.

<sup>13</sup> Southern Waste Region (2021). *Circular Economy Checklists for Construction*.



construction sector who all have a role to play in making the sector more circular and provide some early considerations to contemplate.

## 18.2.4 Guidance

In the absence of specific guidance or requirements for waste Environmental Impact Assessment (EIA) in Ireland, professional judgement is used to determine the magnitude and significance of effect, considering the following EIA guidance.

### 18.2.4.1 EPA Guidelines on the Information to be Contained in Environmental Impacts Assessment Reports

The EPA Guidelines<sup>14</sup> have been drafted with the primary objective of improving the quality of EIARs with a view to facilitating compliance (with the EIA Directive<sup>15</sup>). By doing so they contribute to a high level of protection for the environment through better informed decision-making processes. They are written with a focus on the obligations of developers (the ‘Applicant’) who are preparing EIARs. There are seven generalised degrees of effect significance that are commonly used in EIA:

- Imperceptible;
- Not Significant;
- Slight;
- Moderate;
- Significant;
- Very Significant; or
- Profound.

When more specific definitions exist within a specialised factor or topic, these should be used in preference to these generalised definitions.

### 18.2.4.2 IEMA Guide to Materials and Waste in Environmental Impact Assessment. Guidance for a Proportionate Approach

The Institute of Environmental Management and Assessment (IEMA) “*Guide to Materials and Waste in Environmental Impact Assessment. Guidance for a proportionate approach*”<sup>16</sup> (IEMA Guidance) provides guidance on the key terms, concepts, and considerations for assessing the environmental impacts and effects of materials and waste, as part of the EIA process. The guide is focused on the UK regulatory framework, although the principles are broadly applicable to EU jurisdictions, and have been used to inform the assessment methodology. However, it is not possible to use part of methodology which compares project waste arisings against national landfill capacity since remaining landfill capacity data for Ireland is not available - therefore, waste arisings are compared against national waste arisings. The approach to applying sensitivity has not been applied since waste arisings are not compared to landfill capacity. Magnitude of impact has been aligned with significance of effects thresholds in the IEMA Guidance as show in Table 18.1. It is not possible to fully align these significance effects

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<sup>14</sup> EPA (2022a). *Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EIAR)*.

<sup>15</sup> European Parliament and The Council of the European Union (2014). *2011/92/EU as amended by Directive 2014/52/EU*.

<sup>16</sup> IEMA (2020). *IEMA Guide to Materials and Waste in Environmental Impact Assessment*.

thresholds with the EPA generalised definitions since the EPA Guidelines have seven generalised definitions and the IEMA Guidance has five thresholds.

The following guidelines have been adhered to in the preparation of the Construction Environmental Management Plan (CEMP) and Resource and Waste Management Plan (RWMP) (refer to EIAR Volume II Appendix 5A and Appendix 18A, respectively).

#### **18.2.4.3 Best Practice Guidelines on the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects**

The EPA Best Practice Guidelines on the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects<sup>17</sup> provide a practical approach which is informed by best practice in the prevention and management of C&D wastes and resources from design through to construction and deconstruction. The guidelines provide clients, developers, designers, practitioners, contractors, sub-contractors, and competent authorities with a common approach to preparing RWMPs.

The guidelines address the best practice approach both prior to construction, including the stages of design, planning and procurement in advance of works on-site, and during construction, relating to the effective management of resources and wastes during construction or demolition operations.

## **18.3 Methodology**

### **18.3.1 Study Area**

The study areas for the assessment of impacts related to waste management have been defined in line with the IEMA Guidance. Two types of study area are defined in the IEMA Guidance:

- a 'Project Study Area' - relevant to waste generation; and
- an 'Expansive Study Area' - relevant to management of waste.

#### **18.3.1.1 Project Study Area**

The study area for waste arising from the construction of the Proposed Development comprises the area defined by the Site.

#### **18.3.1.2 Expansive Study Area**

The study area for assessing impacts of non-hazardous waste on waste arisings and inferred waste management capacity comprises Ireland due to the need to consider all available waste management infrastructure capacity. Waste management capacity is inferred from national waste arisings since data for national waste management capacity is not readily available.

The study area for assessing impacts of hazardous waste on waste arisings and on inferred waste management capacity also comprises Ireland, although it is noted that a proportion of hazardous waste arising in Ireland is managed outside of the country, refer to Table 18.6.

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<sup>17</sup> EPA (2021b). *Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects*.

### 18.3.2 Methodology for Determining Construction Effects

The potential impacts of the Proposed Development with regards to waste management are the effects that waste arisings generated on-site will have on the capacity of waste management infrastructure in the study area and on meeting national targets for waste recovery.

The main construction phase impacts will be associated with the management of waste from:

- Demolition works (including removal of existing buildings, other structures and foundations).
- Site preparation and earthworks (including for new foundations and imported materials).
- Surplus or damaged construction materials.
- Packaging.
- Maintenance of plant and equipment used for construction; and
- Construction workforce activities.

In the absence of specific guidance or requirements for Ireland, professional judgement and available guidance, as noted in 18.2.4, used to determine magnitude and significance of effect by the following approach:

- Establishing the baseline waste arisings (and inferred infrastructure capacity) for the expansive study area.
- Estimating the likely types and quantities of waste that will be generated by the Proposed Development and the likely extent to which these will be recycled or recovered or require disposal.
- For each category of waste, comparing the likely waste arisings from the Proposed Development to the baseline waste arisings and confirming whether sufficient management capacity is expected to be available.
- Assessing whether the Proposed Development conforms to relevant Ireland and European waste policies and strategies, specifically regarding targets for the recovery of non-hazardous C&D waste (excluding naturally occurring soil and stones (waste code 17 05 04)).

The criteria used for assessing the magnitude of impacts and significance of effects are shown in Table 18.1 and combine the guidance provided in the EPA Guidelines on the Information to be contained in Environmental Impacts Assessment Reports on generalised degrees of effect significance that are commonly used in EIA and the guidance on magnitude and significance in the IEMA Guidance.

**Table 18.1: Magnitude of Impact and Significance of Effect Criteria<sup>16</sup>**

Magnitude of Impact IEMA Guidance / EPA Guidelines	Effect IEMA Guidance	Significance of Effect IEMA Guidance / EPA Guidelines	Criteria
No change / Imperceptible	Neutral	Neutral / Not significant	<ul style="list-style-type: none"> <li>• Project achieves 100% overall material recovery / recycling (by weight) of non-hazardous C&amp;D waste excluding naturally occurring material defined in category 17 05 04 in the List of Wastes.</li> <li>• Zero waste generation from the development.</li> </ul>

Magnitude of Impact IEMA Guidance / EPA Guidelines	Effect IEMA Guidance	Significance of Effect IEMA Guidance / EPA Guidelines	Criteria
Negligible / Not Significant	Neutral or slight	Neutral or slight / Not Significant	<ul style="list-style-type: none"> <li>Project achieves 90-99% overall material recovery / recycling (by weight) of non-hazardous C&amp;D waste excluding naturally occurring material defined in category 17 05 04 in the List of Wastes.</li> <li>Project waste arisings are ≤1% of national waste arisings (for the relevant categories of waste).</li> </ul>
Minor / Slight	Slight	Slight / Not significant	<ul style="list-style-type: none"> <li>Project achieves 60-89% overall material recovery / recycling (by weight) of non-hazardous C&amp;D waste excluding naturally occurring material defined in category 17 05 04 in the List of Wastes.</li> <li>Project waste arisings are 1-5% of national waste arisings (for the relevant categories of waste).</li> </ul>
Moderate / Moderate	Moderate	Moderate / Significant	<ul style="list-style-type: none"> <li>Project achieves 30-59% overall material recovery / recycling (by weight) of non-hazardous C&amp;D waste excluding naturally occurring material defined in category 17 05 04 in the List of Wastes.</li> <li>Project waste arisings are 6-10% of national waste arisings (for the relevant categories of waste).</li> </ul>
Major / Significant	Moderate or large	Moderate or large / Significant	<ul style="list-style-type: none"> <li>Project achieves &lt;30% overall material recovery / recycling (by weight) of non-hazardous C&amp;D waste excluding naturally occurring material defined in category 17 05 04 in the List of Wastes.</li> <li>Project waste arisings are &gt;10% of national waste arisings (for the relevant categories of waste).</li> </ul>

The EPA Guidelines have two additional generalised definitions (very significant and significant) however these are not included since there are no equivalent criteria in the IEMA Guidance.

### 18.3.3 Methodology for Determining Operational Effects

The operational phase of the Proposed Development is expected to generate the following waste:

- Small quantities of oils and chemicals (including lubrication oils, propane, ammonia, compressor cleaning detergent, general oils, and greases for rotating machinery); and
- Bottles and canisters from gases stored on site.

General commercial waste arising from these maintenance activities are expected to include:

- Office waste;
- Worker waste (including food waste); and
- Packaging.

All operational wastes are expected to be **Negligible** in the context of national waste arisings and significantly less than those arising from the construction of the Proposed Development.

### 18.3.4 Methodology for Determining Decommissioning Effects

The Proposed Development has a design life of approximately 25 years' operation and as such, it is not possible to identify at this stage either the waste management routes or specific facilities that will be used, as these are liable to change over such a timescale.

Where decommissioning takes place, all above-ground components associated with the Proposed Development will be disassembled and removed from the Site, the waste types generated from this are likely to be similar or of a lesser magnitude than the construction effects. However, prior to removal of plant, all residues and operating chemicals will be cleaned out from the plant and disposed of at a suitably licenced facility.

All management of waste will be in accordance with the relevant regulations and waste will be transported by licenced waste hauliers to waste management sites which hold the necessary regulatory authorisation and/or permits for those wastes consigned to them. Therefore, decommissioning waste impacts have not been assessed.

### 18.3.5 Limitations and Assumptions

This assessment has been developed based on the following limitations and assumptions:

- Estimation of waste arisings from demolition, excavation and construction works are limited to those resulting from the buildings, structures and activities detailed in Section 5.2 of Chapter 5 (Description of the Proposed Development).
- Asbestos has been noted in at least one of the buildings proposed to be demolished. Therefore, a full Refurbishment Demolition Asbestos Survey (RDAS) and report will be carried out to confirm its extent, prior to any demolition works being carried out. An Asbestos Management Plan will be put in place, and any asbestos-containing materials will be disposed of in accordance with the Health and Safety Authority (HSA) Guidelines on Management and Abatement of Asbestos-Containing Materials<sup>18</sup> prior to any demolition works commencing in the affected areas.
- Some site clearance will be required including soil, vegetation and hardstanding. The quantities of waste are anticipated to be small compared to the overall construction waste arisings. Waste arising from site clearance has been scoped out of this assessment as it is assumed that this waste will have a high recovery rate and is likely be recovered on-site rather than sent to landfill.
- There is no collated published information on the potential changes to the national waste arisings and inferred waste management capacity for the period within which the Proposed Development is expected to be constructed. Accordingly, the current baseline is assumed to apply.
- Other environmental impacts associated with the management of waste from the Proposed Development (e.g., on water resources, air quality, noise or traffic resulting from the generation, handling, on-site temporary storage, or off-site transport of materials and waste) are addressed separately in other relevant chapters.

## 18.4 Baseline Environment

The current state of the environment comprises baseline information on waste arisings and waste management in Ireland. The baseline information has been sourced from the most recent data collated and published by the EPA<sup>19</sup> as shown in Table 18.2 to Table 18.6.

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<sup>18</sup> HSA (2013). *Guidelines on Management and Abatement of Asbestos-Containing Materials*.

<sup>19</sup> EPA (2022b). *Construction & Demolition Waste Statistics for Ireland*.

## 18.4.1 Construction and Demolition Waste Arisings

Table 18.2 summarises the types and quantities of C&D waste collected by authorised waste collectors in Ireland in 2021. It shows that 9,043,749 tonnes of C&D waste was collected, with the majority comprising soil, stones and dredging spoil (85.1%).

**Table 18.2: C&D Waste Collected in Ireland in 2021**

C&D Waste Type	Quantity Collected (tonnes)	Proportion of Total (%)
Bituminous mixtures	87,343	1.0%
Concrete, brick, tile and gypsum	608,235	6.7%
Metal	257,558	2.8%
Mixed C&D waste	362,380	4.0%
Segregated wood, glass and plastic	31,946	0.4%
Soils, stones and dredging spoil *	7,696,287	85.1%
<b>Total</b>	<b>9,043,749</b>	<b>100%</b>

\* Hazardous contaminated soil generated in Ireland in 2021 amounted to 32,951 tonnes. 32,624 tonnes were treated at facilities in Ireland, whilst 327 tonnes were exported for treatment.<sup>20</sup>

## 18.4.2 C&D Waste Management

Table 18.3 and Table 18.4 set out the treatment methods used for managing C&D waste in Ireland in 2021, as reported by the EPA.<sup>19</sup> Waste treatment by backfilling was the most utilised treatment method, managing 85.3% of C&D waste, mainly comprising soils, stones and dredging spoil waste type.

**Table 18.3: C&D Waste Treatment (tonnes) in Ireland in 2021**

C&D Waste Type	Treatment Type				Total (tonnes)
	Recycling (tonnes)	Energy Recovery (tonnes)	Backfilling (tonnes)	Disposal (tonnes)	
Bituminous mixtures	41,150	1,505	33,449	8,527	84,631
Concrete, brick, tile and gypsum*	262,685	1,244	299,725	16,568	580,223
Metal waste	272,734				272,734
Mixed C&D waste	398	73	88,747	34,356	123,573
Segregated wood, glass and plastic	50,348	13,918	743	407	65,417
Soils, stones and dredging spoil		34	7,251,952	450,267	7,702,253
Waste treatment residues	51,892	9,323	39,122	114,580	214,917
<b>Total</b>	<b>679,208</b>	<b>26,098</b>	<b>7,713,738</b>	<b>624,705</b>	<b>9,043,749</b>

\*No gypsum was backfilled or landfilled.

**Table 18.4: C&D Waste Treatment (%) in Ireland in 2021**

C&D Waste Type	Treatment Type			
	Recycling (%)	Energy Recovery (%)	Backfilling (%)	Disposal (%)
Bituminous mixtures	48.6%	1.8%	39.5%	10.1%
Concrete, brick, tile and gypsum**	45.3%	0.2%	51.7%	2.9%

<sup>20</sup> EPA (2023). *Hazardous waste statistics for Ireland*.

C&D Waste Type	Treatment Type			
	Recycling (%)	Energy Recovery (%)	Backfilling (%)	Disposal (%)
Metal waste	100.0%	-	-	-
Mixed C&D waste	0.3%	<0.1%	71.8%	27.8%
Segregated wood, glass and plastic	77.0%	21.3%	1.1%	0.6%
Soils, stones and dredging spoil	<0.1%	<0.1%	94.2%	5.8%
Waste treatment residues	24.1%	4.3%	18.2%	53.3%
Total	7.5%	0.3%	85.3%	6.9%

The EPA reported that in 2021, 96% of C&D waste underwent final treatment within Ireland, with 4% exported for final treatment.<sup>19</sup>

The reported quantities of C&D waste collected (Table 18.2) and treated (Table 18.3) in Ireland differ. The EPA identifies that the differences are due to the data being collated from different datasets. Waste collectors record waste as it enters the waste treatment network, whereas the final treatment data indicates what happens to waste at the end of its journey through the waste treatment network. This can lead to differences in waste classifications and quantities.

The EPA's Progress to EU Targets<sup>21</sup> reports Ireland's performance against targets set out in European Directives. In terms of the Waste Framework Directive (2008/98/EC)<sup>1</sup> target of 'Preparing for reuse, recycling and other material recovery (incl. beneficial backfilling operations using waste as a substitute) of 70% by weight of non-hazardous construction and demolition waste (excluding natural soils & stone), by 2020', a performance of 78% was reported for 2020, exceeding the 70% target.

### 18.4.3 Waste Management Facilities

The waste management facilities to be utilised by the Proposed Development are not yet known and suitability will be determined by the appointed Contractor. Waste disposal and recovery activities in Ireland require authorisation in accordance with the Waste Management Act 1996 as amended. A waste recovery or disposal activity at a facility is either:

- an exempted activity (no authorisation required), or
- requires a Waste (or IPC) licence, or
- requires a Waste Facility Permit, or
- requires a Waste Certificate of Registration / Registration Certificate.

The EPA is the competent authority for granting and enforcing Industrial Emissions (IE) and Industrial Pollution Control (IPC) licences for specified industrial and agriculture activities including waste management.

### 18.4.4 Article 27: By-Product Notifications

Article 27 of the European Communities (Waste Directive) Regulations, 2011<sup>2</sup> allows an operator to decide, under certain circumstances, that a material is a by-product and not a waste. This provision is

<sup>21</sup> EPA (2022c). *Progress to EU Waste Targets*.



often invoked in connection with C&D material, and particularly soil and stone. It allows materials to be used elsewhere in construction projects as a by-product and not discarded as a waste. Decisions made by economic operators under Article 27 must be notified to the EPA. The EPA may determine to agree with the economic operator’s decision, as notified; alternatively, after consultation with the notifier and the relevant local authority, the EPA may determine that the notified material is waste *Error! Bookmark not defined.*

Table 18.5 summarises the soil and stone by-product notifications submitted to the EPA in 2021. The EPA received by-product notifications for 12,526,137 tonnes of soil and stone material. Notifications for 155,200 tonnes were withdrawn. The EPA determined that 459,836 tonnes of the soil and stone notified were by-product and that 600 tonnes were waste. The estimated quantity of soil and stone material notified in 2021 for which no determination was made to date, amounted to 11,913,301 tonnes.<sup>19</sup>

By-product notifications do not necessarily mean that any or all of the material was generated or indeed moved. Notifiers of by-product may not have proceeded with the activities related to the by-product notifications. However, if they did proceed, the materials would not have entered the waste management network or be included in the EPA’s 2021 C&D waste statistics data. Only material notified as by-product, determined to be waste, generated and moved as waste in 2021 is covered by the EPA’s C&D waste statistics data.

**Table 18.5: Soil and Stone By-Product Notifications Submitted, 2021<sup>19</sup>**

<b>Soil and Stone By-Product Notifications</b>	<b>Quantity (tonnes)</b>
Notifications withdrawn	152,400
By-product as notified	459,836
Determined as waste	600
No determination made	11,913,301
<b>Total</b>	<b>12,526,137</b>

### 18.4.5 Hazardous Waste Arisings and Management

The EPA reported that 466,941 tonnes of hazardous waste was generated in Ireland in 2021<sup>20</sup> and managed via the management routes shown in Table 18.6. The construction sector produced 22.8% of Ireland’s hazardous waste in 2021.<sup>20</sup> The quantity of hazardous waste generated by construction and demolition depends on the amount of construction activity to redevelop brownfield sites and on dredging works. C&D waste also includes smaller quantities of asbestos-containing material, asphalt, as well as contaminated wood, concrete, bricks, metals, and tiles.

**Table 18.6: Hazardous Waste Generation and Management in 2021<sup>20</sup>**

<b>Waste type and Management Route</b>	<b>Quantity (tonnes)</b>
Hazardous waste - treated at Irish hazardous waste treatment facilities	95,130
Hazardous waste - treated at EPA licenced facilities	115,951
Hazardous waste (excluding soils) – exported for treatment	222,909
Contaminated soil - treated in Ireland	32,624
Contaminated soil - exported for treatment	327



Waste type and Management Route	Quantity (tonnes)
Total	466,941

## 18.4.6 Future Receiving Environment

There is no collated published information on the potential changes to the national waste arisings for the period within which the Proposed Development is expected to be constructed. The Construction & Demolition Waste: Soil and Stone Recovery / Disposal Capacity - Update Report 2020<sup>22</sup> presents a forecast of potential C&D waste arisings to the year 2029 that takes account of the sharp reduction in arisings due to the impact of the Covid-19 pandemic. These forecasts indicate that C&D waste arisings may return to pre-pandemic levels by 2025 / 2026. Accordingly, the current baseline is assumed to apply between the planned commencement of construction of the Proposed Development through to its opening year.

## 18.5 Potential Impacts

### 18.5.1 Assessment of Effects and Significance

Table 18.7 summarises the main types of materials that will be used and the wastes that are likely to arise during the construction phase of the Proposed Development.

**Table 18.7: Estimated Types of Material Use and Waste Arising from the Construction of the Proposed Development**

Activity	Material Use	Waste Arising
Site remediation, preparation, and earthworks, including excavation.	<ul style="list-style-type: none"> <li>• Fill material for construction purposes.</li> <li>• Primary / secondary / recycled aggregates for ground stabilisation.</li> </ul>	<ul style="list-style-type: none"> <li>• Surplus excavated materials (limited excavation anticipated)</li> <li>• Surplus subsoil.</li> <li>• Unsuitable and contaminated soils and excavated materials.</li> <li>• Vegetation from site clearance (minor).</li> <li>• Clearance of redundant operational infrastructure.</li> <li>• Clearance of hardstanding.</li> </ul>
Demolition	<ul style="list-style-type: none"> <li>• Installation of temporary supports and careful isolation of building structures from any adjacent structures</li> </ul>	<ul style="list-style-type: none"> <li>• Hard inert waste such as concrete and brick.</li> <li>• Non-inert waste such as wood, plasterboard and plastics.</li> <li>• Hazardous waste such as asbestos.</li> </ul>
Construction	Main construction materials including: <ul style="list-style-type: none"> <li>• Aggregates (including well graded materials, granular fill, backfill, pipe bedding and drainage media)</li> <li>• Asphalt and bituminous materials</li> <li>• In-situ cast concrete</li> <li>• Steel reinforcing bar (for reinforced concrete)</li> <li>• Precast concrete products (components, kerbs, drainage pipes, chambers and channels)</li> </ul>	<ul style="list-style-type: none"> <li>• Excess, offcuts, and broken / damaged construction materials.</li> <li>• Packaging from materials delivered to site.</li> <li>• Construction worker wastes from offices and rest areas / canteens.</li> <li>• Waste oils from construction plant.</li> </ul>

<sup>22</sup> GOI (2020b). *Construction & Demolition Waste: Soil and Stone Recovery / Disposal Capacity – Update Report*.

## 18.5.2 Estimated Waste Arisings

C&D waste estimates are based on material quantities/volumes included in a bill of quantities providing an overview of demolition, excavation and construction requirements and material quantities for the Proposed Development. Waste & Resources Action Programme (WRAP) construction, demolition and excavation waste volume to mass conversion factors<sup>23</sup> and National Highways material density factors<sup>24</sup> have been used to convert the material quantities/volumes provided to tonnes so that they can be assessed against C&D Waste Collected in Ireland in 2021 (Table 18.2).

The precise composition and volume of this waste is dependent on several factors and will be further informed by the appointed Principal Contractor, based on their experience of similar demolition works. All materials will be segregated, classified and disposed of off-site in line with the existing Industrial Emissions (IE) Licence for the station.

## 18.5.3 Do Nothing Scenario

In a 'Do Nothing' scenario, there would be zero waste generation and disposal from the Proposed Development and no significant effects.

## 18.5.4 Demolition Works

Table 18.8 summarises the types and quantities of estimated C&D waste that are anticipated to be generated during the demolition works of the Proposed Development. The demolition works is estimated to generate 37,161 tonnes of C&D waste (excluding soils, stones and dredging spoil), which would account for 2.8% of annual national C&D waste collected in Ireland.

**Table 18.8: Estimated Waste Generated in Demolition Works**

C&D Waste Type	Estimated Quantity (tonnes)	Proportion of national waste arisings (%)
Bituminous mixtures <sup>1</sup>	193	0.2%
Concrete, brick, tile and gypsum <sup>1</sup>	11,914	2.0%
Metal <sup>2</sup>	4,137	1.6%
Mixed C&D waste <sup>2</sup>	21,111	5.8%
Soils, stones and dredging spoil <sup>1</sup>	793	<0.1%
Total (excluding Soils, stones and dredging spoil)	37,161	2.8%

1. Converted to tonnes using National Highways material density factors<sup>24</sup>

2. Converted to tonnes using WRAP Construction, demolition and excavation waste volume to mass conversion factors<sup>23</sup>

The 793 tonnes of soil and stones estimated to be generated from demolition includes 193 tonnes of waste soil and aggregate generated due to earthwork material requirements to backfill excavated foundation areas of demolished buildings/structures. This estimate has been calculated by applying the WRAP<sup>25</sup> good waste rates for the materials.

<sup>23</sup> WRAP (2014). *Construction, demolition and excavation waste volume to mass conversion factors and List of Waste codes used in WRAP's tools.*

<sup>24</sup> National Highways (2021). *Carbon emissions calculator tool.*

<sup>25</sup> WRAP (2010). *Designing out Waste Tool for Civil Engineering workbook*

### 18.5.5 Excavation Works

Table 18.9 summarises the types and quantities of estimated C&D waste that are anticipated to be generated during excavation works in preparation for construction of the Proposed Development. Applying National Highways Material Density Factors,<sup>24</sup> the excavation works is estimated to generate 55,794 tonnes of soil, stones and dredging spoil waste, which would account for 0.7% of annual national C&D waste collected in Ireland.

**Table 18.9: Estimated Waste Generated in Excavation Phase**

C&D Waste Type	Estimated Quantity (tonnes)	Proportion of national waste arisings (%)
Soils, stones and dredging spoil	55,794	0.7%

### 18.5.6 Construction Phase

Table 18.10 summarises the types and quantities of estimated C&D waste that are anticipated to be generated during the construction phase of the Proposed Development. Applying National Highways Material Density Factors,<sup>24</sup> the construction phase is estimated to generate 891 tonnes of C&D waste (excluding soils, stones and dredging spoil), which would account for <0.1% of annual national C&D waste collected in Ireland.

**Table 18.10: Estimated Waste Generated from Construction Materials**

C&D Waste Type	Estimated Quantity (tonnes)	Proportion of national waste arisings (%)
Bituminous mixtures	112	0.1%
Concrete, brick, tile and gypsum	779	0.1%
Metal	1	<0.1%
Soils, stones and dredging spoil	599	<0.1%
Total (excluding soils, stones and dredging spoil)	891	<0.1%

### 18.5.7 Hazardous Waste

Hazardous waste arisings are expected to comprise small quantities of oils, chemicals and similar materials typically used as part of construction activities. Procedures for the storage and management of these wastes are set out in the RWMP, which will be implemented by the appointed Contractor and that Contractor will update the RWMP, where necessary, to comply with planning conditions and in agreement with Kerry County Council (KCC). Asbestos-containing material has been noted in at least one of the buildings listed for demolition however, a full RDAS and report will be carried out to confirm its extent and undertake a comparison against national waste arisings.

### 18.5.8 Total Waste Arisings

Total quantities of C&D waste requiring off-site management (excluding soils, stones and dredging spoil) are estimated to be 38,053 tonnes (37,161 for demolition and 891 for construction). This would account for 2.8% of annual national C&D waste collected, which is <5% of national waste arisings and this magnitude of impact is considered to be **Minor / Slight** as per the IEMA Guidance (Table 18.1).

Total quantities of C&D waste classified as soils, stones and dredging spoil across demolition, excavation and construction activities are estimated to be 57,186 tonnes. This would account for 0.7%

of annual national C&D waste collected, which is  $\leq 1\%$  of national waste arisings and this magnitude of impact is considered to be **Negligible / Not Significant** as per the IEMA Guidance (Table 18.1).

Based on the IEMA Guidance (Table 18.1), the magnitudes of impact identified result in a **Slight / Not Significant** effect and sufficient management capacity is expected to be available.

### 18.5.9 Anticipated Recovery Rates by Material

The waste management facilities to be utilised during demolition and construction are not yet known and suitability will be determined by the appointed Contractor. Since it is not possible to estimate the exact composition of construction waste at this time, a total recovery rate in line with the national performance of 78% (reported for 2020), is anticipated and likely to be achievable for non-hazardous construction waste (excluding naturally occurring soil and stones (Waste Code 17 05 04)). The Proposed Development is therefore likely to achieve 60-89% or 90-99% overall material recovery / recycling (by weight) of non-hazardous C&D waste excluding naturally occurring material defined in category 17 05 04 in the List of Wastes, indicating a magnitude of impact is considered to be **Minor / Slight**, this is assessed to result in a **Slight (Not Significant)** effect.

Standard, good and best practice recovery rates by material are provided by WRAP.<sup>26</sup> Recovery rates for key construction materials and other construction wastes relevant to the Proposed Development are provided in Table 18.11.

**Table 18.11: Standard, Good and Best Practice Recovery Rates by Material**

Material	Standard Practice Recovery (%)	Good Practice Recovery (%)	Best Practice Recovery (%)
Metals	95	100	100
Packaging	60	85	95
Concrete	75	95	100
Inert	75	95	100
Plastics	60	80	95
Miscellaneous	12	50	75
Electrical equipment	<i>Limited information</i>	70	95
Cement	<i>Limited information</i>	75	95
Liquids and oils	100	100	100
Hazardous	50	<i>Limited information, cannot be 100% since some hazardous waste e.g., asbestos must be landfilled.</i>	

### 18.5.10 Summary

Total waste arising from the construction of the Proposed Development would account for <5% of national waste arisings (for the relevant categories of waste), this is assessed to result in a **Slight / Not Significant** effect and sufficient management capacity is expected to be available.

A total recovery rate of 78% is likely to be achieved for non-hazardous C&D waste (excluding naturally occurring soil and stones (Waste Code 17 05 04)) managed off-site. The majority of the good and best practice recovery rates for the main construction materials provided by WRAP are in excess of 90%.

<sup>26</sup> WRAP (2007). *Waste Recovery Quick Wins - Improving recovery rates without increasing costs.*

The Proposed Development is therefore likely to achieve 60-89% or 90-99% overall material recovery / recycling (by weight) of non-hazardous CDW excluding naturally occurring material defined in category 17 05 04 in the List of Wastes. This is assessed to result in a **Slight (Not Significant)** effect.

## 18.6 Mitigation Measures

### 18.6.1 Environmental Design and Management

A RWMP has been prepared for the Proposed Development, refer to Appendix 18A, EIAR Volume II.

A CEMP has been prepared for the Proposed Development to identify the minimum standards of environmental controls together with monitoring, inspection and reporting mechanisms to be adopted for all construction works, refer to Appendix 5A, EIAR Volume II. The Contractor will be required to develop a detailed CEMP in advance of the works commencing. The development of the detailed CEMP shall be in conjunction with the CEMP included in the planning application submission.

The RWMP and CEMP include design and construction measures that apply the waste hierarchy principles and minimise effects on waste. These include:

- Planning for the temporary on-site storage of soils, excavated materials and other materials to facilitate reuse.
- Reusing excavated materials within the construction of the Proposed Development, where possible, to minimise the need to import and export material.
- Considering the importation to site of recycled aggregate material, as an alternative to primary aggregate, and establishing procedures to ensure it is uncontaminated; and
- Establishing Key Performance Indicators (KPIs) for monitoring and reporting data on waste arising and diversion from landfill.

The RWMP which sets out measures relating to waste management that will be implemented during construction of the Proposed Development. Contractors will implement RWMP in accordance with the EPA Best Practice Guidelines on the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects.<sup>17</sup>

The Contractor will regularly review and update where required the assumptions on waste arisings and management and record and implement procedures for assessing, managing, and recording waste arising on-site. Opportunities for on-site and off-site reuse, recycling and recovery of excavated material and waste will be identified where feasible. Where required, an Article 27 by-product notification will be prepared and submitted for the necessary approvals prior to the commencement of construction works.

### 18.6.2 Mitigation and Monitoring

As no significant waste effects have been identified, no further or additional mitigation or monitoring of significant effects is proposed.

The RWMP sets out monitoring to be undertaken during the construction phase to ensure that the mitigation measures embedded in the Proposed Development, and those considered essential to mitigate the effects of construction activities, are appropriately implemented.

## 18.7 Residual Impacts

There are no residual effects resulting from the Proposed Development.

## 18.8 Cumulative Impacts

Since the quantity of waste generated by the Proposed Development will be minimal, resulting in no likely significant effects, there are not expected to be any cumulative waste management impacts resulting from the Proposed Development together with the identified cumulative developments in the surrounding area. Therefore, cumulative effects are not considered further.

## 18.9 Summary

As no significant waste effects have been identified, no further or additional mitigation or monitoring of significant effects is proposed. There are **no residual** effects resulting from the Proposed Development.

## 18.10 References

- Construction Resources and Waste Platform (2010). *Benchmarks and Baselines 2009*. (No longer available online).
- Department of the Environment, Climate and Communications (DECC) (2022). *Climate Action Plan 2023*. Available at: <https://www.gov.ie/en/publication/7bd8c-climate-action-plan-2023/>
- Environmental Protection Agency (EPA) (2021a). *What's being done Waste: Waste policy and planning*. Available at: <https://www.epa.ie/our-services/monitoring--assessment/assessment/irelands-environment/waste/whats-being-done-waste/>
- EPA (2021b). *Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects*. Available at: <https://www.epa.ie/publications/circular-economy/resources/CDWasteGuidelines.pdf>
- EPA (2022a). *Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EIAR)*. Available at: <https://www.epa.ie/publications/monitoring--assessment/assessment/guidelines-on-the-information-to-be-contained-in-environmental-impact-assessment.php>
- EPA (2022b). *Construction & Demolition Waste Statistics for Ireland*. Available at: <https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/construction--demolition/>
- EPA (2022c). *Progress to EU Waste Targets*. 1 December 2021. Available at: <https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/progress-to-eu-targets/>
- EPA (2023). *Hazardous Waste Statistics for Ireland*. Available at: <https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/hazardous/>
- European Commission (EC) (2020). *Circular Economy Action Plan*. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1583933814386&uri=COM:2020:98:FIN>
- EC (2022). *A European Green Deal*. Available at: [https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal\\_en](https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en)
- European Parliament and The Council of the European Union (2008). *Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives*. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02008L0098-20180705>
- European Parliament and The Council of the European Union (2014). *2011/92/EU as amended by Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014*. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014L0052>
- European Union (EU) (2018). *Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste*. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32018L0851>
- Government of Ireland (GOI) (2011). *S.I. No. 126 of 2011 - European Communities (Waste Directive) Regulations 2011*. Available at: <https://www.irishstatutebook.ie/eli/2011/si/126/made/en/print>
- GOI (2020a). *Waste Action Plan for a Circular Economy, Ireland's National Waste Policy 2020-2025*. Available at: <https://www.gov.ie/en/publication/4221c-waste-action-plan-for-a-circular-economy/>
- GOI (2020b). *Construction & Demolition Waste - Soil and Stone Recovery / Disposal Capacity - Update Report 2020*. Available at: <https://www.southernwasteregion.ie/sites/default/files/National%20C%20%20D%20Report%20Dec%202020%20for%20Publication.pdf>
- House of the Oireachtas (2022). *Circular Economy and Miscellaneous Provisions Act 2022*. Available at: <https://www.oireachtas.ie/en/bills/bill/2022/35/>.
- Institute of Environmental Management and Assessment (IEMA) (2020). *IEMA Guide to Materials and Waste in Environmental Impact Assessment*. Available at: <https://www.iema.net/resources/reading-room/2020/03/30/materials-and-waste-in-environmental-impact-assessment>



Kerry County Council (Kerry. Co. Co.) (2022). *Kerry County Development Plan 2022-2028*. Available at: <https://cdp.kerrycoco.ie/>

mywaste (2023). *National Waste Management Plan for a Circular Economy (no longer available online)*.

National Highways (2021). *Carbon emissions calculator tool*. Available at: <https://nationalhighways.co.uk/suppliers/design-standards-and-specifications/carbon-emissions-calculation-tool/>

Southern Waste Region (2015). *Waste Management Plan 2015-2021 & Associated Reports*. Available at: <http://www.southernwasteregion.ie/publications>

Southern Waste Region (2021). *Circular Economy Checklists for Construction*. Available at: <https://www.southernwasteregion.ie/content/circular-economy-checklists-construction>

Waste & Resources Action Programme (WRAP) (2007). *Waste Recovery Quick Wins. Improving Recovery Rates without Increasing Costs*. (No longer available online).

WRAP (2010). *Designing out Waste Tool for Civil Engineering workbook*. (Tool no longer available online).

WRAP (2014). *Construction, demolition and excavation waste volume to mass conversion factors and List of Waste codes used in WRAP's tools*. (Tool no longer available online).

WRAP, undated. *Net Waste Tool, Demolition Quantities Estimator*. (Tool no longer available online).

WRAP, undated. *SmartWaste Data and Reporting*. (Excel file no longer available online, projects completed to the end of November 2012).



