

18 Resource and Waste Management

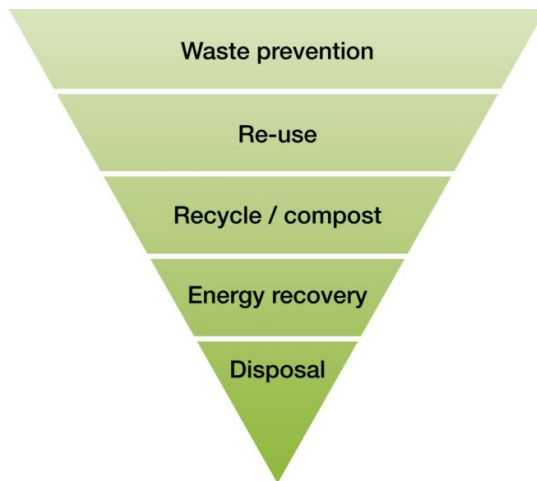
18.1 Introduction

The principal objective of sustainable resource and waste management is to use material resources more efficiently, to reuse, recycle and recover material and reduce the amount of waste requiring final disposal. However, where residual waste is generated, it should be dealt with in a way that follows the waste hierarchy (see Image 18.1) and actively contributes to the economic, social and environmental goals of sustainable development.

This chapter consists of an assessment of the impact of the proposed scheme under the heading of resource and waste management. It sets out the methodology to be used in the assessment (Section 18.2), the existing environment (Section 18.3), scheme description (Section 18.4), the predicated impacts on resource and waste management (Section 18.5), recommended mitigation measures (Section 18.6) and residual impacts (Section 18.7) associated with the scheme.

This waste management assessment is based on the proposed scheme as described in Chapter 4 – *Description of the Proposed Scheme*. The geotechnical characterisation of the project is addressed in Chapter 15 - *Soils and Geology*.

Image 18.1: Waste Hierarchy



18.2 Methodology

18.2.1 Legislation, Policy and Best Practice Guidance

Resource and waste management takes place in a legislative and policy framework. A review of applicable legislation, policy and best practice guidance was undertaken to inform the impact assessment and recommended mitigation. This included the Kildare County Waste Management Plan 2005-2010 (a national review of waste management plans is currently underway. Until this review is completed the Kildare County Waste Management Plan 2005-2010 will remain in place).

EU, national and local policy, legislation and guidance relevant to the M7 Osberstown Interchange and R407 Sallins Bypass is described in **Appendix A18.1, V4** and is summarised as follows:

- Prevention and minimisation of waste is the preferred management option.
- Where construction waste is generated it should be source separated to facilitate recycling and maximise diversion of waste from landfill.
- Where commercial waste is generated it should be source separated to facilitate recycling and maximise diversion of waste, including biodegradable waste, from landfill.
- Where waste generation may not be prevented or recycled it should be transported and disposed of in accordance with applicable legislation and without causing environmental pollution.
- Waste may only be transferred by a waste collection permit holder and delivered to an authorised waste facility.

18.2.2 Establishing Baseline Environment and Scheme Description

A desk study including the following tasks was undertaken:

- A review of available publications was undertaken to establish and describe the baseline environment for resource and waste management in County Kildare.
- Waste will be generated during the demolition, excavation, construction and operational phases of the proposed scheme. A review of the proposed scheme design was undertaken in consultation with the project design team to estimate waste generation during these phases.

18.2.3 Impact Assessment Criteria

The rating of the potential impact of the M7 Osberstown Interchange and R407 Sallins Bypass Scheme on the waste management environment has been undertaken in accordance with the general requirements of the EPA publication “Guidelines on the information to be contained in Environmental Impact Statements” (EPA, 2002) and more specifically the criteria as set out in “NRA Environmental Impact Assessment – A Practical Guide” (NRA, 2008).

The primary characteristics of an impact which should be defined are the quality of the impact, its significance and its duration as set out below.

Quality of Impact:

- Positive impact: A change which improves the quality of the environment.
- Neutral impact: A change which does not affect the quality of the environment.
- Negative impact: A change which reduces the quality of the environment.

Significance of impact:

- Imperceptible impact: An impact capable of measurement but without noticeable consequences.
- Slight impact: An impact which causes noticeable changes in the character of the environment without affecting its sensitivities.
- Moderate impact: An impact that alters the character of the environment that is consistent with existing and emerging trends.
- Significant impact: An impact which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
- Profound impact: An impact which obliterates sensitive characteristics.

Duration of Impacts:

- Short-term impact: Impact lasting one to seven years.
- Medium-term impact: Impact lasting seven to fifteen years.
- Long-term impact: Impact lasting fifteen to sixty years.
- Permanent impact: Impact lasting over sixty years.
- Temporary impact: Impact lasting for one year or less.

18.2.4 Mitigation Measures

Following the assessment of impacts, the proposed road development was systematically reviewed in order to identify specific mitigation measures to avoid, reduce and, if possible, remedy any negative impacts on the environment as a result of the proposed road development. These are described in Section 18.6 below.

A hierarchy exists within resource and waste management with the preferred management option being waste prevention and minimisation. Recommended mitigation measures will move waste management up the waste hierarchy and promote sustainable waste practices.

Residual impacts which are the final or designed impacts which result after mitigation measures have been fully established are described in Section 18.7 below.

18.3 Existing Environment

Construction and demolition waste will be generated from the proposed road development. Approximately 3,003,691 tonnes of construction and demolition (C&D) waste was collected in Ireland in 2011 (EPA, 2013).

Of this 2,358,714 tonnes was recovered and 35,404 tonnes (2% approximately) was disposed of at EPA licensed landfills.

C&D waste is comprised largely of soil and stones. In 2011, 1,975,884 tonnes of soil and stones was collected with the remaining 1,027,847 tonnes consisting of other construction and demolition materials such as rubble, metals, timber, plastic, glass, wood and mixed construction and demolition waste. Table 18.1 presents the collection and management of soil and stones fraction of C&D waste in Ireland in 2011.

Table 18.1: Collection and Management of Soil and Stones Fraction of Construction and Demolition Waste in 2011 (EPA, 2013)

Management	Recovery (t)	Disposal (t)	Total (t)
EPA- Licensed landfills	225,873	23,400	249,273
EPA Licensed waste treatment facilities	135,341	-	135,341
Local authority permitted sites	1,032,164	-	1,032,164
Treatment of contaminated soil (ROI)	7,094		7,094
Treatment of contaminated soil (abroad)		10,203	10,203
In storage at end 2011			11,957
Estimates for non-submission of waste facility permit Annual Environmental Reports			92,870
Total			1,538,902

In addition, almost 1,027,847 tonnes of ‘other’ C&D Waste was generated, and comprised metal, wood, glass etc. Table 18.2 show details of C&D Waste Management in Ireland in 2011 excluding soil and stones.

It is noteworthy that in the sections above there are discrepancies between the ‘collected’ and ‘managed’ quantities reported to the EPA for all categories of construction and demolition waste. This is partly as a result of poor record keeping and reporting to the EPA and local authorities and partly as a result of the non-inclusion of materials recovered at facilities authorised by a Certificate of Registration.

Table 18.2: Collection and Management Construction and Demolition Waste Excluding Soil and Stones in 2011 (EPA, 2013)

Management	Recovery (t)	Disposal (t)	Total (t)
Metal	334,350		334,350
Wood	31,678		31,678
Glass		27	27
Gypsum based waste	487		487
Rubble	158,835	17	158,852
Mixed or other C&D Waste	409,491	25,158	434,649
In storage at end 2011			45,968
Total			1,005,741

An estimated 17,297 tonnes of contaminated soil was generated in Ireland and moved off site for management in 2011. Of this 41% was recovered in Ireland with the balance exported for disposal (EPA, 2013).

The receiving environment for the M7Osberstown Interchange and R407 Sallins Bypass is located in the Kildare local authority region, where commercial construction and demolition waste management collection services are provided by private waste contractors holding the appropriate waste collection permit.

18.4 Scheme Description

18.4.1 General

A description of the proposed road development is included in Chapter 4 - *Description of the Proposed Development*. Wastes will arise during the demolition, excavation, construction and operation of the proposed road development. These are described in the sections below.

The main contractor will prepare the Construction and Demolition Waste Management plan for the proposed road development as part of their contractual responsibilities.

18.4.2 Excavation

The largest potential source of waste arising from the proposed scheme will be from the cut generated along the proposed road development. The 76,000m³ material to be excavated will comprise approximately 40,000m³ general excavation and 36,000m³ topsoil strip removal. From a preliminary site investigation approximately 60% of the material arising from excavation may be suitable for use as engineering fill within the proposed road development. This will be subject to appropriate testing to ensure material is suitable for its proposed end use.

The remaining 40% of material arising from excavation or 16,000 m³ is likely to be unsuitable for use as engineering fill within the scheme. In addition it is estimated that there will be some surplus topsoil and imported soil and stones wastage.

An estimated 36,000 m³ soil and stones will be exported from the site during proposed construction work.

During the construction phase, soil and stone wastage will be minimised, authorised sites will be sought where excess material generated by the proposed scheme can be reused. Wastes shall be removed from site by a valid waste collection permit holder and delivered to authorised facilities for recovery or disposal.

18.4.3 Construction and Demolition Wastes

In addition to excavation material small quantities of other waste types will be generated during construction of the proposed road development. Six structures will be demolished to facilitate the proposed road development. These comprise one shed located on the Grand Canal towpath, three sheds located on the Osberstown Road, one dwelling on the Canal Road and an existing accommodation bridge along the M7 Motorway.

The typical categories of C&D waste that are generated from road construction projects are topsoil, subsoil, peat, rock, trees, hedges and other plant matter, bricks, and blocks, concrete, timber, bituminous materials including bituminous macadam and asphalt, paving slabs, used shuttering, plastics, timber, metals, dredging materials, asbestos and asbestos cement, scrap parts and fluids generated from equipment maintenance and some hazardous wastes such as oils, paints adhesives, cleaning agents etc.

A description of these wastes including their respective European Waste Catalogue (EWC) Codes (EPA, 2002b), are outlined in Table 18.3.

Table 18.3: Typical Construction Waste EWC Codes and Corresponding Waste Descriptions (EPA, 2002b)

EWC Code	Waste Categories
17 01†	Concrete, bricks, tiles and ceramics
17 02†	Wood, Glass and Plastic
17 03†	Bituminous mixtures, coal tar and tarred products
17 04†	Metals
17 05†	Soil (incl. excavated soil from contaminated sites) , stones and dredging spoil
17 06†	Insulation materials and asbestos containing construction materials
17 08†	Gypsum-based construction materials
17 09†	Other Construction and Demolition Waste
16 02†	WEEE
16 06†	Batteries
03 02†	Wood Preservatives
17 05 03*	Contaminated Soils
13 07†	Liquid Fuels

† Some wastes within these categories may be hazardous

* Wastes marked with an asterisk are hazardous in the European Waste Catalogue

18.4.4 Operation

It is expected that there will be negligible waste generation on completion of the proposed road development. Wastes generated from maintenance of the proposed road development will be removed and managed by local authority staff and any contractors undertaking the work.

18.5 Predicted Impacts on Resource and Waste Management

18.5.1 Do nothing scenario

Should the construction of the M7 Osberstown Interchange and R407 Sallins Bypass Scheme not occur, there will be no changes to the waste management at the lands of the proposed scheme. The predicted impact of the do nothing scenario is therefore neutral.

18.5.2 Do Something Scenario

The resulting predicted impact of excavation waste will be moderate, negative and short term.

The resulting predicted impact of construction and demolition waste will be slight, negative and short term.

Based on the scheme description the predicted impact of operational waste will be neutral.

18.6 Mitigation Measures

Mitigation measures are set out in the sections below to minimise the effect of the M7 Osberstown Interchange and R407 Sallins Bypass Scheme on the environment, reduce the quantity of waste sent for final disposal and to promote sustainable waste management practices.

Waste from M7 Osberstown Interchange and R407 Sallins Bypass Scheme will be managed in accordance with the principles of the waste hierarchy i.e. prevention, re-use, recycling, energy recovery and disposal.

The contractor will minimise waste disposal so far as is reasonably practicable.

18.6.1 Proposed Mitigation Measures – Excavation, Construction and Demolition Phases

Proposed mitigation measures for the excavation, construction and demolition phases of the Scheme are as follows:

- **Construction and Demolition Waste Management Plan:** Preparation of a Construction and Demolition Waste Management Plan which meets the requirements of the DoEHLG Best Practice Guidelines on the Preparation of Waste Management Plans for Construction & Demolition Projects (DoEHLG, 2006a) is recommended.

Where waste generation cannot be avoided this will maximise the quantity and quality of waste delivered for recycling and facilitate its movement up the waste hierarchy away from landfill disposal and reduce its environmental impact. Please refer to **Appendix A18.2, V4** for detail on the typical information to be included in a C&D Waste Management Plan.

- **ICE Demolition Protocol:** In addition to the general measures outlined above a demolition audit in accordance with the ICE Demolition Protocol 2008 or similar guidance will be considered at detailed design stage for those structures which will be demolished as part of the proposed development. A summary of the ICE Demolition Protocol Methodology is included as **Appendix A18.3, V4**.
- Possibilities for re-use of clean non-hazardous excavation material as fill on the site or in landscaping works will be considered following appropriate testing to ensure material is suitable for its proposed end use. Where excavation material may not be re-used within the proposed works the Contractor will endeavour to send material for recovery or recycling so far as is reasonably practicable. The contractor will ensure that any off-site interim storage facilities for excavated material have the appropriate waste licences or waste facility permits in place.
- **Source Segregation:** Waste produced will be segregated. Where possible metal, timber, glass and other recyclable material will be segregated during demolition works and removed off site to a permitted/licensed facility for recycling. Waste stream colour coding and photographs will be used to facilitate segregation.
- **Material Management:** ‘Just-in-time’ delivery will be used so far as is reasonably practicable to minimise material wastage.
- **Supply Chain Partners:** The Contractor will engage with the supply chain to supply products and materials that use minimal packaging, and segregate packaging for reuse.
- **Waste Auditing:** The Contractor will record the quantity in tonnes and types of waste and materials leaving the development site during the construction phase. The name, address and authorisation details of all facilities and locations to which waste and materials from the construction phase are delivered will be recorded along with the quantity of waste in tonnes delivered to each facility. Records will show material which is recovered and disposed of.

18.6.2 Proposed Mitigation Measures – Operational Phase

There are no impacts envisaged during the operational phase of the proposed scheme. Therefore no operational mitigation measures are required.

18.7 Residual Impacts

The resulting residual impact of excavation waste will be slight, negative and short term.

The resulting residual impact of construction and demolition waste will be slight, negative and short term.

Based on the scheme description the residual impact of operational waste will be neutral.

There is likely to be significant available capacity within existing Irish waste management infrastructure to manage the excavation, construction and operational waste from the M7 Osberstown Interchange and R407 Sallins Bypass Scheme.

18.8 References

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