



**BALDONNELL 110KV SUBSTATION
ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR)
VOLUME III – APPENDIX 3-3
Construction & Demolition Waste Management Plan**



Baldonnell 110KV Substation

CONSTRUCTION & DEMOLITION WASTE MANAGEMENT PLAN

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Galway Office Fairgreen House, Fairgreen Road, Galway, H91 AXK8, Ireland. Tel: +353 (0)91 565 211	Dublin Office Block 10-4, Blanchardstown Corporate Park, Dublin 15, D15 X98N, Ireland. Tel: +353 (0)1 803 0406	Castlebar Office Market Square, Castlebar, Mayo, F23 Y427, Ireland. Tel: +353 (0)94 902 1401
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- Methods proposed for prevention, reuse and recycling of wastes;
- Material handling procedures; and
- Proposals for training and auditing.

This CDWMP has been prepared in accordance with the *Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects*¹, published by the EPA in November 2021. These guidelines replace the 2006 guidelines previously published by the former Department of the Environment, Heritage and Local Government (DOEHLG) and the National Construction and Demolition Waste Council (NCDWC).

The main objective of these guidelines is to provide a practical and informed approach informed by best practice in the prevention and management of C&D wastes and resources from design to construction of a project (including consideration of deconstruction). The guidelines provide those involved in a project, including clients, developers, designers, practitioners, contractors, sub-contractors and competent authorities, with a common approach when preparing Resource and Waste Management Plans (RWMPs) for C&D projects.

The updated document sets out practical guidelines informed by best practice approaches in the management and prevention of C&D waste from initial design stages onwards, including:

- “*Prior to Construction – including the stages of design, planning and procurement in advance of works on site (in the 2006 guidelines this was referred to as an outline or preliminary plan)*”; and
- “*During Construction – relating to the effective management of resources and wastes during construction or demolition operations (in the 2006 guidelines this was referred to as the detailed plan)*”.

The proposed development is located in the administrative area of South Dublin County Council (SDCC).

1.1 Waste Management Context

The primary legislative instrument that governs waste management in Ireland is the *Waste Management Act (WMA) 1996*, as amended. The WMA is a key instrument which, among other legislation, implements the EU *Waste Framework Directive (2008/98/EC)* in Ireland. The WMA provides for a general duty on everyone not to hold, transport, recover or dispose of waste in a manner that causes or is likely to cause environmental pollution. The WMA also sets out the provisions for the collection of waste and for its recovery/disposal.

Any person or contractor engaged in the collection of waste on a commercial basis is required to hold a Waste Collection Permit in accordance with the requirements of the *Waste Management (Collection Permit) Regulations 2007*, as amended. A Waste Collection Permit is issued to appropriate contractors by the National Waste Collection Permit Office (NWCPO).

Waste materials collected by a suitably permitted waste contractor must only be transported to appropriately permitted or licensed waste facilities. Authorisation for receiving waste materials are provided in accordance with the *Waste Management (Facility Permit & Registration) Regulations 2007*, as amended, for waste permits and certificates of registration

¹ EPA *Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects* (November 2021) - <https://www.epa.ie/publications/circular-economy/resources/CDWasteGuidelines.pdf> (12 April 2023)

(COR) granted by the relevant Local Authority. Waste management authorisations granted by the Environmental Protection Agency (EPA) are issued in accordance with the *Waste Management (Licensing) Regulations 2004*, as amended, and the *Environmental Protection Agency (Industrial Emissions) (Licensing) Regulations 2013*, as amended.

1.2 Relevant Policy

1.2.1 EU Policy

The EU *Waste Framework Directive (2008/98/EC)* lays down the basic principles and concepts related to waste management. It requires that waste be managed

- *Without endangering human health and harming the environment;*
- *Without risk to water, air, soil, plants or animals;*
- *Without causing a nuisance through noise or odours; and*
- *Without adversely affecting the countryside or places of special interest².*

The Directive also sets out key definitions including for waste, recycling and recovery, while also defining when waste ceases to be waste and becomes a secondary raw material (end-of-waste criteria) and how to distinguish between waste and by-product. The Directive also introduces the "*polluter pays principle*" and the "*extended producer responsibility*".

The basis of EU waste management is the 5-step "*waste hierarchy*", established in the Directive. It confirms the order of preference for managing and disposing of waste and requires EU Member States to carry out the following:

- *Apply the waste hierarchy in their waste management legislation and policy;*
- *Take measures to promote the reuse of products and preparing-for reuse activities;*
- *Establish waste management plans;*
- *Encourage high-quality recycling of waste materials as part of the aim to make the EU a 'recycling society'; and*
- *Ensure that the preparation for reuse, recycling and other material recovery of non-hazardous C&D waste (excluding naturally occurring material defined in List of Waste category 17 05 04) is a minimum of 70% by weight by 2020. The Directive states that this target should be achieved by preparing for reuse, recycling and other material recovery, such as backfilling operations making use of waste to substitute other material.*

In Ireland, the Directive is legislated under the *European Union (Waste Directive) Regulations 2020* (S.I. No. 323 of 2020)³.

The EU are currently working on a targeted revision of the Waste Framework Directive (expected during 2023)⁴. Despite current legislation, there has been an increase in municipal waste generation over the last decade, partly due to inefficient waste-collection systems, low recycling rates, lower quality recyclates, and lack of proper implementation of the "*polluter pays principle*". Revision of the Directive aims to improve the overall environmental outcome of

² EU, *Waste Framework Directive* - https://environment.ec.europa.eu/topics/waste-and-recycling/waste-framework-directive_en (accessed 12 April 2023)

³ Amends the *Waste Management Act 1996* and the *EU Waste Directive Regulations 2011* (S.I. No. 126 of 2011) <https://www.irishstatutebook.ie/eli/2020/si/323/made/en/print> (accessed 12 April 2023)

⁴ *Waste Framework Directive - 2023 WFD revision* https://environment.ec.europa.eu/topics/waste-and-recycling/waste-framework-directive_en#ref-2023-wfd-revision (accessed 12 April 2023)

waste management in line with the waste hierarchy, and will focus on the policy areas of prevention, separate collection, waste oils and textiles.

In March 2020, as part of the European Green Deal, the EU adopted the new Circular Economy Action Plan (CEAP). The new action plan includes initiatives along the entire life cycle of products. It targets how products are designed, promotes circular economy processes, encourages sustainable consumption, and aims to ensure that waste is prevented, and the resources used are kept in the EU economy for as long as possible. It introduces legislative and non-legislative measures.⁵ Measures under the plan are aimed at ensuring less waste while making circularity work for people, regions and cities and puts focus on sectors that use most resources and where there is a high potential for circularity such as; packaging, plastics, food, textiles, construction and buildings, batteries and vehicles, electronics and ICT, and water and nutrients.

1.2.2 National Policy

Ireland's waste management policy is based on the EU waste hierarchy and establishes a priority order for waste handling and treatment as set out in Figure 1-2.

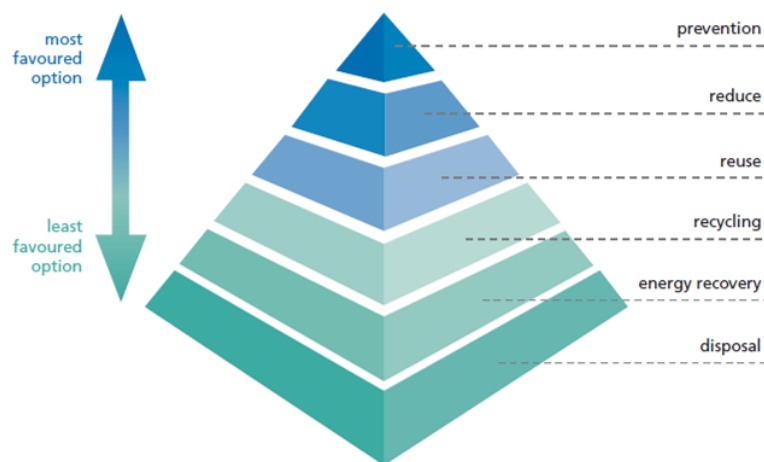


Figure 1-2 – Waste management hierarchy (Source: EPA)

The current government policy document on waste, which covers the period from 2020 – 2025, is entitled *A Waste Action Plan for a Circular Economy* (WAPCE) and was published in June 2020⁶ and updated in September 2021. This document is Ireland's roadmap for waste planning and management and aims to embed climate action in all strands of public policy. The Plan shifts focus away from waste disposal and looks instead to how the country can preserve resources by creating a circular economy.

The Plan outlines the contribution of the sector to the achievement of a number of other national plans and policies including the Climate Action Plan (CAP) (currently CAP23). It also matches the level of ambition being shown across the European Union through the European Green Deal which encompasses a range of actions supporting circularity and sustainability.

The key targets under the WAPCE in relation to C&D waste are:

- *Streamlining by-product notification and end-of-waste decision making process;*

⁵ EU, Circular Economy Action Plan (2020) - https://environment.ec.europa.eu/strategy/circular-economy-action-plan_en (accessed 12 April 2023)

⁶ DECC, *A Waste Action Plan for a Circular Economy: Ireland's National Waste Policy 2020-2025* (September 2021) (accessed 12 April 2023)

- *Revision of the 2006 best practice guidelines for C&D waste; and*
- *Working group to develop national end-of-waste applications for priority streams.*

Most notably in respect of the proposed development works, the new WAPCE states that:

- *C&D waste management plan guidelines will be updated, and we will ensure that there is a consistent application of planning requirements;*
- *We will develop reuse and recovery targets for plastic from the construction and demolition sector; and*
- *We will examine methods to encourage source segregation of waste materials on site which could include moving away from the use of mixed skips or incentivised pricing or other financial instruments to support segregation.*

In 2021 the Department of the Environment, Climate and Communications (DECC) launched the “*Whole of Government Circular Economy Strategy*”⁷, Ireland’s first national circular economy strategy. The Strategy was a specific commitment in the WAPCE and is a key addition to Government’s drive to achieve a 51% reduction in overall greenhouse gas emissions by 2030 and to get on a path to reach net-zero emissions by no later than 2050, as per commitments in the Programme for Government and the Climate Act 2021.

In July 2022, as part of the Strategy, the *Circular Economy Act (2022)*⁸ was signed into law, and for the first time defines the Circular Economy in Irish Law. In terms of C&D waste, the Act ensures that a fit-for-purpose regulatory system will be in place to allow hundreds of thousands of tonnes of material be safely and sustainably re-used as secondary raw materials. The Act will help streamline the process for decision making by the EPA on end-of waste and by-product applications. This is particularly important in the construction sector, where there is considerable potential to reduce the need for aggregate extraction (e.g. crushed rock, sand and gravel used in concrete) by reusing material that may otherwise be treated as demolition waste. The end-of-waste process allows for safeguards so that this reuse can be done in a way that is safe in terms of the environment and human health.

1.2.3 Regional Waste Management Plans

For the purposes of waste planning, Ireland has been divided into three waste regions, namely the Eastern-Midlands Waste Region, the Southern Waste Region and the Connacht-Ulster Waste Region. The project is situated within the Eastern-Midlands Waste Region (EMWR), which comprises 12 no. local authority areas which are:

Eastern-Midlands Waste Region	
Dublin City Council	Laois County Council
Dún Laoghaire-Rathdown County Council	Longford County Council
Fingal County Council	Meath County Council
South Dublin County Council	Offaly County Council
Kildare County Council	Westmeath County Council
Louth County Council	Wicklow County Council

Each of the three waste management regions has developed a Regional Waste Management Plan to provide a framework for the prevention and management of wastes in a safe and

⁷ DECC, *Whole of Government Circular Economy Strategy 2022 – 2023 ‘Living More, Using Less’* (December, 2021) - <https://www.gov.ie/en/publication/b542d-whole-of-government-circular-economy-strategy-2022-2023-living-more-using-less/> (accessed 12 April 2023)

⁸ DECC, *Landmark Circular Economy Act signed into law (2022)* - <https://www.gov.ie/en/press-release/4546a-landmark-circular-economy-act-signed-into-law/> (accessed 12 April 2023)

sustainable manner. The current waste plan for the EMWR is the *Eastern-Midlands Region Waste Management Plan 2015 – 2021*.

The strategic vision of the regional waste plan is to rethink Ireland’s approach to managing wastes, by viewing waste streams as valuable material resources that can lead to a healthier environment and sustainable commercial opportunities for the economy.

Specifically, in relation to C&D waste, the regional plan identifies Ireland’s mandatory target under the Waste Framework Directive to achieve 70% reuse, recycling and materials recovery of non-soil and stone construction and demolition waste to be achieved by 2020. The latest available EPA data on Ireland’s Progress to EU Waste Targets (updated October 2022)⁹ identify that Ireland’s current rate achieved is 78%. The regional plan also states that “*there is significant potential for recycling of the C&D waste stream given the nature of its characteristics*”.

The WAPCE states that the three existing regional waste management plans will be replaced by a new single *National Waste Management Plan for a Circular Economy* (NWMP), which will contain targets for reuse, repair, resource consumption, and reducing contamination levels.

The process of developing the new NWMP is underway and is subject to a Strategic Environmental Assessment and an Appropriate Assessment; the pre-draft consultation has been undertaken¹⁰ and a draft of the NWMP is expected to be published for consultation in early 2023¹¹. The NWMP will be in respect of the Local Authority administrative areas, with the lead authority for the Eastern-Midlands Region being Dublin City Council.

1.2.4 County Development Plan

The current development plan applicable to the proposed development is the *South Dublin County Development Plan 2022-2028 (SDCC, 2022)*¹² which sets out the local authority’s commitments to provide and deliver infrastructural services which will enhance the quality of the South County Dublin environment and facilitate sustainable economic development and housing. The development plan sets out a number of policies, objectives, standards and criteria with regard to waste management, with those specifically in relation to C&D waste outlined below.

Policy within Chapter 5 - *Quality Design and Healthy Placemaking* - sets out the following objective in terms of C&D waste:

- QDP11 Objective 3: “*To promote the reuse and recycling of materials to promote the circular economy and reduce construction and demolition waste*”

Chapter 11 - *Infrastructure and Environmental Services* - sets out the following objective in relation to waste management and C&D:

- IE7 Objective 2: “*To support the implementation of the Eastern Midlands Region Waste Management Plan 2015-2021 or as amended by adhering to overarching performance targets, policies and policy actions*”;

⁹ EPA, *Progress to EU Waste Targets* (October 2022) - <https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/progress-to-eu-targets/> (accessed 12 April 2023)

¹⁰ My Waste, *National Waste Management Plan for a Circular Economy* - pre-draft consultation process - <https://www.mywaste.ie/pre-draft-consultation/> (accessed 12 April 2023)

¹¹ EPA - *What’s Being Done Waste* - <https://www.epa.ie/our-services/monitoring--assessment/assessment/irelands-environment/waste/whats-being-done-waste/> (accessed 12 April 2023)

¹² SDCC, *South Dublin County Development Plan 2022-2028* - <https://www.sdcc.ie/en/devplan2022/> (accessed 12 April 2023)

- IE7 Objective 8: *“To adhere to the recommendations of the National Hazardous Waste Management Plan 2014-2020 and any subsequent plan, and to co-operate with other agencies including the EPA in the planning, organisation and supervision of the disposal of hazardous waste streams, including hazardous waste identified during construction and demolition projects”.*

Chapter 12 - *Implementation and Monitoring of the CDP*- sets out the development standards and criteria that arise out of the policies and objectives of the CDP, and includes the following in relation to C&D waste:

(iv) Construction and Demolition Waste

“Construction and Demolition Waste Management Plans should be submitted as part of development proposals for projects in excess of any of the following thresholds:

- *New residential development of 10 units or more;*
- *New developments other than above, including institutional, educational, health and other public facilities, with an aggregate floor area in excess of 1,000 square metres;*
- *Demolition / renovation / refurbishment projects generating in excess of 100 cubic metres in volume, of Construction and Demolition (C&D) waste;*
- *Civil engineering projects in excess of 500 cubic metres of waste materials used for development works on the site.*

The Construction and Demolition Waste Management Plan, as a minimum, should include provision for the management of all construction and demolition waste arising on site, and make provision for the reuse of said material and / or the recovery or disposal of this waste to authorised facilities by authorised collectors. Where appropriate, excavated material from development sites is to be reused on the subject site”.

1.2.5 South Dublin County Waste Bye-Laws

New Waste Bye-Laws¹³ for the functional area SDCC entered into force on 03 December 2018. These are referred to as the *South Dublin County Council Household & Commercial Waste Bye-Laws 2018*¹⁴. The provisions of the Waste Bye-Laws do not apply to C&D waste.

1.3 National Waste Statistics

The EPA reports on national waste generation statistics on a regular basis¹⁵. The latest reference year available in terms of C&D waste statistics is 2020¹⁶ released in October 2022. This data indicates the following key trends in the sector:

- The C&D sector in Ireland generated an estimated 8.2 million tonnes of waste in 2020 (based on data reported by authorised waste collectors and local authorities). This represents a decrease of nearly 0.6 million tonnes on the 8.8 million tonnes of C&D waste generated in 2019;

¹³ SDCC, *Environmental Bye-Laws* - <https://www.sdcc.ie/en/services/environment/environment-by-laws/> (accessed 12 April 2023)

¹⁴ SDCC, *South Dublin County Council Household & Commercial Waste Bye-Laws 2018* - <https://www.sdcc.ie/en/download-it/publications/waste-management-by-laws-2018-v-1.pdf> (accessed 12 April 2023)

¹⁵ EPA, *National Waste Statistics for Ireland* - <https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/> (accessed 12 April 2023)

¹⁶ Construction & Demolition Waste Statistics for Ireland - <https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/construction--demolition/> (accessed 12 April 2023)

- This decrease mirrors the trend in construction activity indicated by the CSO's construction index; and it was driven by a decrease in the generation of waste soil and stone, waste concrete, brick, tile and gypsum and waste bituminous mixtures;
- There was little change in the overall composition of C&D waste between 2019 and 2020. Soil and stone waste remained dominant at 84%, followed by waste concrete, brick, tile and gypsum at 6%, and mixed C&D waste at 5%. In 2020, segregated C&D waste (wood, paper, glass, plastic and metal) collected remained small at 3.1%, an increase from 2.5% in 2019;
- In 2020, 95% of C&D waste underwent final treatment in Ireland, with only 5% exported abroad for final treatment;
- 82% of C&D waste was backfilled, 8% was recycled, and with 10% sent for disposal. The high level of backfilling as a treatment operation shows the large proportion of soil and stones in C&D waste;
- Recycling was the main treatment operation for metals at 100%, segregated wood, paper, glass and plastic at 79%, and waste bituminous mixtures at 57%.

As mentioned, under the Waste Framework Directive (2008/98/EC), EU Member States must achieve a rate of 70% material recovery of non-hazardous, non-soil and stone C&D waste by 2020. Ireland achieved 78% material recovery of such waste in 2020 surpassing the 70% target.

The C&D sector in Ireland generated an estimated 8.2 million tonnes of waste in 2020 (based on data reported by authorised waste collectors and local authorities). This represents a decrease of nearly 0.6 million tonnes on the 8.8 million tonnes of C&D waste generated in 2019.

The annual quantity of C&D waste generated in Ireland increased considerably from 2014 to 2019, corresponding with a steady increase in the level of construction activity nationally. The reversal of this trend in 2020 is attributable to the Covid-19 restrictions on the building industry.

Greater levels of C&D waste prevention can be achieved by employing best practice circular construction activities. This includes designing out waste, application of Article 27 by-product regulation and maximising the use of resources in line with the EPA's revised Best Practice Guidelines for the Preparation of Resource Management Plans for Construction & Demolition Projects.

In terms of C&D waste statistics, the EPA states that *“Greater levels of C&D waste prevention can be achieved by employing best practice circular construction activities. This includes designing out waste, application of Article 27 by-product regulation and maximising the use of resources in line with the EPA's revised Best Practice Guidelines for the Preparation of Resource Management Plans for Construction & Demolition Projects”*.

As previously mentioned, development of this CDWMP has been informed by these guidelines, and prevention and management of C&D waste generated on-site will follow best practice.

The EPA provides a release calendar for their waste statistics, which currently states that the planned release for 2021 C&D data is the end of July 2023¹⁷.

¹⁷ EPA planned releases for 2022 (last updated July 2022) - <https://www.epa.ie/our-services/monitoring-assessment/waste/national-waste-statistics/release-calendar/> (accessed 12 April 2023)

2.0 WASTE MANAGEMENT OBJECTIVES

The following waste management objectives are identified for the proposed development:

- Maximise the on-site segregation of C&D wastes;
- Consideration of all reuse opportunities for material surpluses within the site;
- Avoid oversupply of incoming construction materials which have the potential to become waste; and
- Engage appropriately licensed waste contractors that can provide maximum off-site reuse, recovery and recycling of waste materials in preference of disposal.

The national target for preparing for reuse, recovery and recycling of C&D waste (excluding soil and stone) is 70% and the waste industry in Ireland is currently achieving 78% (2020). The target set for C&D waste management for the Baldonnell 110kV Substation project is to exceed the national target of preparing for reuse, recovery and recycling of 70% of C&D waste (excluding soil and stone).

The main contractor will be made aware of this project target and will be required to engage suitably permitted/licenced waste contractors that will be able to provide a commitment to achieving, or exceeding, this target.

3.0 PROJECT DESCRIPTION

The site of the proposed Baldonnell 110kV Substation is located in Profile Park, Dublin 22 which is situated c.1 km west of Clondalkin. Profile Park is a 100 acre (40.5 hectare (Ha)) fully enclosed, private business park. The immediate area is predominantly commercial / industrial in nature. No existing environmental (waste or industrial emissions) licence has been or is currently held for this site.

During recent ecological field surveys, habitats within the proposed development site were classified according to Fossitt (2000). The proposed development site has recently been disturbed by nearby construction works, which has resulted in the clearing of habitat and the stock piling of sediment and spoil. This has resulted in the site currently comprising of a mosaic of spoil and bare ground (ED2), in areas that have been cleared, and wet grassland (GS4) in areas which have not been disturbed. The proposed electric grid connection will be located within the small road located immediately north of the proposed development site. The road comprises tarmacadam and concrete verges (BL3). The proposed construction compound and laydown area currently comprises dry meadow grassland (GS2).

3.1 Summary of Key Project Elements

3.1.1 Substation

The proposed Baldonnell 110kV substation site measures approximately 87.75m long, 22.25m wide and will be bounded by a 2.6m high palisade fence.

The compound will house a 126m² EirGrid 110kV substation control building which will measure 14m long x 9m wide x 6.7m high and will be finished externally with scud render & float in sand, white cement plaster, nap finish. The roof of the building will consist of standard Selected Blue/Black slate finish.

Associated outdoor electrical equipment will include:

- 1 no. 110kV transformer.
- 110kV Switchgear.
- an associated internal 15kV underground cable.
- an internal access track.
- a diesel generator.
- Lightning masts* measuring 18m in height.
- Approximately 15 Light Poles** measuring 3.5m in height.
- 2 no. security cameras and poles will be installed.

The site has been designed to meet EirGrid's specifications.

Access to the substation compound will be provided via the adjacent gas fired power plant site, with 2 no. 4.9m wide access gates proposed along the eastern boundary of the proposed substation site.

*Lightning Mast Design will be subject to a lightning survey and confirmed during the detailed design stage of the project.

** Lamp Poles will be the subject of a light survey and the exact number to be provided will be confirmed during the detailed design stage of the project.

3.1.2 Grid Connection

The proposed grid connection will consist of underground cabling (UGC).

The underground cable route exits the proposed Baldonnell 110kV Substation from the northside fence and heads in a westerly direction. The route follows the private road (Falcon Avenue) west for approximately 250m until it reaches the entrance to Barnakyle 110kV Substation. The cable then turns south to enter the Barnakyle substation through existing ducts. This section of the route is almost entirely within the road except for the crossover into the substation.

The UGC works will consist of the installation of 6 No. ducts in an excavated trench to accommodate 3 No. power cables, 2 No. fibre communications cable to allow communications between the Baldonnell and ESB Barnakyle 110kV Substation and one earth continuity conductor (ECC).

3.1.3 Temporary Construction Compound

A temporary construction compound will be provided approximately 185m southeast of the proposed development site.

The compound will comprise of areas for temporary site offices (portacabins), staff welfare facilities, car parking, material and equipment storage and material laydown areas. Potable water, foul water and electrical connections will be provided to accommodate the above. The site will be fully reinstated upon completion of works.

4.0 WASTE ARISING

C&D waste statistics from 2020 published by the EPA¹⁸ identify the main waste types generated in the construction industry in Ireland as set out in Table 4-1, which provides a breakdown of the composition of the 8.2 million tonnes of C&D waste generated in 2020.

Table 4-1 – EPA C&D waste statistics – composition of C&D waste for 2020 reporting year

Waste Type	% of total (by weight)	List of Waste Codes*
Soil, stones and dredging spoil	84.4	17 05 03 to 17 05 08
Concrete, brick, tile and gypsum	6.4	17 01 01 to 17 01 07
Mixed C&D waste	4.6	17 09 03, 17 09 04
Metal	2.4	17 04 01 to 17 04 11
Bituminous Mixtures	1.6	17 01 03 to 17 03 03
Segregated wood, glass and plastic	0.6	17 02 01 to 17 02 03

* Waste types may be non-hazardous or hazardous

As above, soil and stones waste typically make up a significant proportion of C&D waste generated in Ireland.

As above, soil and stones waste typically make up a significant proportion of C&D waste generated in Ireland.

The existing site for the proposed Baldonnell 110kV Substation is a greenfield, that has had no previous or existing development. It is adjacent to lands on which related infrastructure projects have been developed. As such it will require pre-construction activity and ground excavations to enable the proposed works. Details of the pre-construction phase activities are outlined below.

Building structures will require excavations for foundations which will be determined as part of the detailed design phase. Excavations will also be required for underground utilities and surface water drainage infrastructure. Arisings from excavation works will be reused on site wherever possible for site profiling and landscaping works.

Any contaminated material identified will be excavated in a controlled environment and handled appropriately as hazardous waste.

Due the greenfield nature of the site, no asbestos containing materials (ACMs) are predicted to be present on-site. Therefore, no asbestos survey or specific handling procedures in terms of ACMs have been undertaken or will be required.

During construction works, waste material will be generated mainly from excavations, material off-cuts and packaging. Oversupply of materials can also lead to waste generation. The typical waste materials generated again will be concrete rubble, metals, wood and plastics.

Other waste types generated in smaller quantities on construction sites may include materials such as waste oils, resins, paints and adhesives, as well as waste generated from office and welfare facilities on site, such as paper, packaging, food and canteen waste, and wastewater and

¹⁸ EPA (2022) Construction & Demolition Waste Statistics for Ireland- <https://www.epa.ie/our-services/monitoring-assessment/waste/national-waste-statistics/construction--demolition/> (accessed 12 April 2023)

effluent. Some of these materials may be hazardous and will require specific handling procedures. It is expected that waste quantities of these materials will be small.

Pre-Construction Phase

The pre-construction phase of development includes preparatory works (i.e. post planning surveys and reporting) and consultation with statutory bodies and the public.

It will be required to carry out Preliminary site investigations along the cable route prior to construction in order to confirm design assumptions. The following items may be carried out for the grid connection cable route:

- Slit trenches at locations of service crossings (Full road/track width).
- Trial holes along the route to ascertain ground conditions and thermal resistivity of the soil.
- Boreholes at HDD locations to ascertain ground conditions.

Following this process, site clearance activities will commence. Typical activities will include preparation of the construction working area and topsoil stripping. Prior to the commencement of construction activities, the area for development will be fenced off.

The site will be levelled to 74.8 AOD. Soil management proposals include:

- The intended soil stripping depth;
- Options for separating and keeping different soils apart;
- Methods for handling soil;
- The location and height of soil storage mounds and how long they will be present; and
- Proposals for reinstating or disposing of soils.

Civil & Construction Works

Mobilisation will include the putting in place of staff, staff training, temporary facilities, plant and equipment, materials, and systems for construction.

Concrete pouring and filling will be fully controlled to ensure that cement bound materials do not present any pollution risk. All concrete pouring and filling will be supervised and monitored.

Trucks, mixers, and concrete pumps that have contained concrete will be washed out in a designated impermeable area to prevent pollution. Where possible, washout water will be stored and re-used.

4.1 Demolition Waste

No demolition works are proposed for this site. Presently, the site is greenfield with no previous or existing development present within the proposed facility boundary.

4.2 Excavation Waste

The site is currently greenfield, as such the key potential source of waste material during the construction of the development will be from the excavation of ground material to allow for the laying of foundations and construction of the building structures.

Construction of the proposed Baldonnell 110kV substation will require removal of topsoil and subsoil to a competent founding layer and upfilling with structural fill and/or concrete to the required finished ground level. Up to 2000m³ (c. 3000 tonnes) of excavated soils will be

generated as part of the cut and fill balance. Material from excavation works associated with construction of the proposed Baldonnell 110kV substation may require removal offsite for disposal, however, material where possible it will be reused on site, such as for site profiling and landscaping works.

In terms of the Grid Connection, as mentioned, the route follows the private road (Falcon Avenue) west for c.250m until it reaches the entrance to Barnakyle 110kV Substation, where the cable then turns south to Barnakyle substation through existing ducts. This section of the route is almost entirely within the road except for the crossover into the substation. Works will involve an excavated trench to accommodate the required cables between the Baldonnell and ESB Barnakyle 110kV Substation and the ECC. In a worst-case scenario, material from the excavation works for the cable trench will require removal offsite for disposal, however, wherever possible, it will be reinstated following the works or reused on site (within the project footprint), such as for site profiling and landscaping works.

Minimal excavation activity is predicted for the temporary construction compound. Where suitable, material from the excavation works associated with the compound will be reinstated or reused on site wherever possible, such as for site profiling and landscaping works.

A review of the EPA website for both existing and historic licensed and illegal waste activities was carried out to identify any potential contamination sources present in the area and to identify any potential contaminating activities near the proposed Baldonnell 110kV Substation. The desk study indicated that no waste facilities or illegal waste activities were recorded with a 2km radius of the site proposed facility.

SI works carried out during the detailed design stage of the project will include visual inspection and testing to confirm the environmental quality of the excavated ground materials.

4.3 Construction Waste

The proposed Baldonnell 110kV Substation will be characterised by pre-construction gradually phasing out to a number of main civil engineering works to provide the necessary infrastructure for completion.

The pre-construction phase will include preparatory works (i.e. post planning surveys and reporting) and consultation with statutory bodies and the public. Following this process, site clearance activities will commence.

The construction phase comprises civil and plant construction works, including:

- Construction of access and hardstands (temporary contractor's compound, temporary site offices, welfare facilities, car parking and equipment laydown areas);
- Topsoil stripping of the construction working area (and localised at certain locations along the grid connection cable route), the removal of ditches, trees, and other vegetation from the site;
- Processing of materials and reinstatement;
- Construction of infrastructure foundations (substation infrastructure foundations, parking, site entrance);
- Excavation for cable ducts / grid connection route, infrastructure foundations etc.;
- Management of excavated materials; and
- Construction of surface water drainage system along the new access to site.

The proposed Baldonnell 110kV Substation will be constructed using standard construction and building materials and methodologies. Materials will be required for construction of the

elements of the design including building structures, concrete floors, and metal decking. Therefore the majority of construction waste material will be streams including mixed C&D waste, metal, wood, plasterboard, glass and waste electronic and electrical equipment (WEEE) as would typically be generated from the building of a similar industrial style facility. Materials required for the construction works will be sourced locally, where feasible. Material importation to site will be required such as ready mixed concrete, road surface, etc.

Construction waste quantities have been estimated based on the gross area of new infrastructure proposed; estimated are provided both the substation control building only, and the substation control building and compound combined. The breakdown of anticipated waste types are based on a study on construction waste generation carried out by GMIT and the EPA in 2015¹⁹. Table 4-2 below presents the estimated construction waste quantities for the main waste types.

Table 4-2 – Estimated construction waste quantities for the Baldonnell 110kV Substation

Waste Type	Control Building Only	Control Building & Compound
	Tonnes	Tonnes
Mixed C&D waste	2.5	32
Timber	2.1	27
Plasterboard/Gypsum	0.7	10
Metals	0.6	8
Concrete	0.4	6
Other waste (cabling/wiring, ducting, insulation, packaging and plastics)	1.1	15
TOTAL	7	97

While the estimates above are based on construction of commercial developments and the aforementioned study, these can be applied as an indicative estimates for waste streams arising from the proposed development, which although differs from a commercial building type, will likely involve use of similar methods and materials. Waste type breakdown will vary depending on final selection of material types and the extent of on or off-site construction employed.

¹⁹ EPA and GMIT, *A Review of Design and Construction Waste Management Practices in Selected Case Studies – Lessons Learned (EPA Research Report 146)* (2015)

5.0 WASTE HANDLING

5.1 On-Site Waste Management

To ensure that waste management is given adequate consideration throughout the excavation and construction phases, the main contractor will appoint a Waste Manager who will have overall responsibility for implementing this CDWMP, ensuring that the project remains in compliance with waste legislation and striving to achieve, and exceed, the waste management targets as set out in Section 2 (Waste Management Objectives).

As a primary measure, waste generation will be avoided, where possible, by ensuring that an excess supply of building materials is not delivered to the site and that only the minimum materials required to meet the construction schedule are available on-site. This will reduce the potential for damage and re-ordering materials which will save on project costs. The 'Just-in-time' delivery concept will be applied, where possible, to minimise waste creation. Off-site construction of key equipment, machinery and other infrastructure will be explored, where possible, to minimise waste generation at the project site. Off-site manufacturing techniques are typically optimised to reduce wastage.

The Waste Manager will liaise with procurement teams to ensure that minimal and unnecessary packaging is not brought on-site or is removed from site by delivery vehicles. In particular, timber pallets will be returned with deliveries where possible.

Maximum segregation of waste materials on-site will be carried out to increase the off-site potential for reuse and recycling of materials. Skips of varying sizes will be provided strategically at the site to promote source segregation and avoid rubbish build-up and potential for off-site littering.

A waste compound will be set up such that skips are located close together which helps promote source segregation and aids collection of skips by the waste contractor. As required, skips/tipper skips will be temporarily positioned adjacent to works areas to help waste segregation and reduce handling of wastes.

All skips will be maintained in good condition and clearly labelled so that there is no confusion as to what materials are to be placed in which skip. The main contractor will appoint an employee(s) to keep the area around the skips clean and to ensure skips are not overflowing with waste.

Waste materials such as gypsum, WEEE, batteries or hazardous waste will be stored separately and may require covered skips or containers to prevent contaminated run-off in the event of getting wet. Dedicated bunded storage areas will be provided for storage of liquid wastes such as resins, oils, paints etc.

Appropriate handling, storage and reuse of excavated materials are important during the construction phase of the proposed Baldonnell 110kV Substation. Excavation and piling works will be monitored, and environmental sampling carried out to classify the material for off-site recovery or disposal, if required.

Clean uncontaminated material will be kept separate from contaminated (or potentially contaminated) materials so as to avoid cross contamination and reduce the quantity of contaminated material requiring off-site treatment. The closest surface water feature is the Baldonnell Stream, situated c.125m east of the proposed substation site. The potential for any

contaminated runoff or sediment reaching the watercourse is considered unlikely, however, stockpiles will be positioned away from the Baldonnell Stream.

Opportunities to reuse suitable excavated material within the site will be maximised where appropriate. Topsoil and subsoils will be stored separately and used for landscaping and in the reinstatement of the site areas. Topsoil/subsoil will be stockpiled no higher than 2.5m and follow the recommendations set out in the TII guidelines for *The Management of Waste from National Road Construction Projects (GE-ENV-01101)* (TII, 2017).

Excavated material will be reused as backfilling material where appropriate. This material will not be stored in the vicinity of any watercourses. It will be cast on the upgradient side of the trench, so if any runoff did occur, it would run into the downgradient trench.

Excess material will be transported off-site as waste to a local appropriately licensed/permited waste facility (see Section 5.2 Off-Site Waste Management).

5.2 Off-Site Waste Management

During construction, excess material will need to be transported offsite as waste for appropriate management. The main contractor will appoint a suitably permitted waste contractor(s) to collect waste from the site and transfer to appropriately permitted or licensed waste facilities. It is not possible at this stage to identify who the waste contractor(s) will be or to provide their waste collection permit number(s). However, these details will be retained on site following appointment as described in Section 6 (Record Keeping).

The appointed waste contractor(s) will typically determine the facilities where C&D waste will be taken to. Upon appointment of a waste contractor, details of the waste collection permit(s) and chosen waste facilities (including waste licence details) will be collated and retained on site. Written confirmation of the acceptance of the material at the chosen facilities can be obtained and provided to SDCC if required.

There are numerous waste transfer stations, treatment facilities, and recovery facilities in the Greater Dublin Region (including Dublin, Meath, Kildare, and Wicklow) that can accept C&D waste for reuse, recycling and recovery. Examples of these facilities include Roadstone Belgard Quarry, Roadstone Huntstown and Calary Quarries and Sorundon Ltd, Dublin 12.

Any excavated soil and stone material requiring removal off-site will be tested to provide a classification for recovery or disposal in accordance with the EPA requirements set out in the *Waste Classification* publication²⁰. Alternatively, the EPA approved *HazWasteOnline* application can be used to classify the excavated material as hazardous or non-hazardous. Waste facilities permitted for acceptance of waste materials for landfilling will also require the classification of waste in accordance with the Waste Acceptance Criteria (WAC) set out in *EC Council Decision 2003/33/EC*²¹, and in terms of soil recovery, in accordance with the EPA (2020) "*Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities*"²². It is anticipated that excavated soil and stone will be transferred off-site in rigid trucks and will be covered to prevent dust deposition off-site.

²⁰ EPA, *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* (2019)

²¹ EC Council Decision 2003/33/EC – establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.

²² EPA, *Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities* (2020) - <https://www.epa.ie/publications/compliance-enforcement/waste/Guidance-on-Waste-Acceptance-Criteria-at-Authorised-Soil-Recovery-Facilities.pdf> (accessed 12 April 2023)

Uncontaminated soil and stones that is not reused on-site can be recovered as engineering fill in landfill facilities or used for ground improvement in soil recovery facilities. As a last resort, excavated materials can be disposed of to landfill.

Where appropriate, some materials, such as uncontaminated soil and stones, may be classified as a by-product (and not as a waste) in accordance with Article 27 of the *European Communities (Waste Directive) Regulations 2011*, as amended subject to meeting specific requirements as set out in the Regulations and guidance issued by the EPA²³. A by-product classification on the excavated materials would permit the use of the material in non-waste licenced or permitted sites. Where contaminants are found (or where bitumen-based materials are present) the material will be classified as waste and will be removed from site to an appropriately licenced/permitted facility.

The main construction waste materials such as concrete rubble (including ceramics and bricks), metals, plastics, plasterboard, glass and wood are widely recyclable and will be segregated on site into separate skips insofar as is possible with the space available on-site. These materials will be transferred off-site using dedicated skip lorries to appropriate facilities.

Any WEEE generated will be stored separately (under cover if required) and transferred to suitable facilities for processing and onward recycling of components. Similarly, where possible, cardboard packaging will be segregated to maximise recycling potential off-site.

A mixed C&D waste skip will be required for non-recyclable wastes or where site constraints do not permit segregation into all of the above waste types. The appointed Waste Manager will monitor site segregation to ensure recyclable materials are placed in dedicated skips, where provided, and not placed in the mixed C&D waste skip. This material will be transferred off-site for processing and further removal of recoverable materials.

Off-site facilities for processing of C&D waste typically generate a 'fines' material which can be recovered as an engineering material in landfill facilities. The Waste Manager will liaise with the waste contractors to ensure maximum diversion of waste from disposal to landfill as per the targets set out in Section 2 (Waste Management Objectives).

Hazardous waste will only be removed from site by waste contractors permitted to handle hazardous waste. Waste oils, resins and paints may be suitable for off-site recovery, and this will be explored with waste contractors.

²³ EPA, *Guidance on classification and notification of soil and stone as a by-product* (2017)

6.0 RECORD KEEPING

Once a waste contractor(s) has been appointed, the Waste Manager will request copies of their waste collection permits which will be held on file at the site office. The waste collection permits must include an up-to-date list of approved vehicle registrations associated with the permit which can be spot checked by the Waste Manager.

The waste contractor will also be requested to identify where waste materials will be taken to, and copies of waste licences/permits for each facility will be requested to hold on file in the site office. The Waste Manager will confirm that the waste collection permits, and facility licences/permits are appropriate for the waste types proposed.

A waste log will be set up by the Waste Manager to record all outgoing waste movements from the site. The waste collection vehicle driver will be required to supply an individual signed waste docket (waster transfer form for hazardous waste) for each waste movement off-site which must specify the waste collection permit number, waste type, EWC code, waste treatment, source of the waste and waste destination. The docket provided by the driver may also include the weight of waste where the collection vehicle is equipped with a load cell, or the weight of waste is known. Alternatively, the weight of the waste may be determined from a weighbridge at the receiving facility and the weight of waste provided to the Waste Manager as soon as possible after receipt at the off-site facility. Regardless, the waste contractor must be able to provide an accurate measurement of the waste tonnage to the Waste Manager. The waste contractor will also be required to provide feedback on waste collected identifying the percentage of waste recovered and disposed of.

The waste log will be used to identify the main waste types being generated and can be linked to delivery records to identify the percentage of waste from incoming building materials. The Waste Manager will be able to analyse these records to improve efficiency and seek to reduce wastage. The Waste Manager can also use the information to determine the success of the project against the targets set out in Section 2 (Waste Management Objectives).

7.0 TRAINING, RESPONSIBILITIES & AUDITING

The main contractor will include the waste management objectives outlined in Section 2 of this CDWMP as part of the site induction for all new employees on the site. The importance of source segregation and maintaining a clean site will be highlighted and the locations of skips on the site will be provided.

The appointed Waste Manager will be trained in setting up the waste log and checking waste dockets as described in the previous section. The Waste Manager will also be given responsibility for providing toolbox talks on waste management, organising specific training where required and educating workers throughout the project. The Waste Manager will also liaise with SDCC to provide details on the waste facilities to be used and provide waste data as required. It is also beneficial for the Waste Manager to provide feedback on waste statistics to the project team on a regular basis to acknowledge good performance or identify areas for improvement.

The Waste Manager will be familiar with the content of this document and will ensure compliance with the measures set out herein for the duration of the project. Where appropriate, the Waste Manager may delegate responsibility to others for management of waste in particular areas of the site or may seek appointment of Waste Managers for specific sub-contracts.

The Waste Manager will also establish an audit checklist to inspect skips and waste containers across the site and identify contamination of skips or other waste related issues which may arise. A review of waste records held for each movement of waste off-site will also be carried out. The waste log will be cross-checked with hard copy dockets and any missing details filled in. Depending on the nature of the wastes generated, the Waste Manager may also carry out an audit of the receiving waste facilities to confirm that the waste sent from the site is being treated as described on the waste dockets.

The costs associated with waste management will also be reviewed during the project and highlighted to the Project/Site Manager as to where savings can be made, if any. Typically, maximum on-site segregation of waste and reuse of material where appropriate reduces the costs associated with mixed C&D waste collection which is required to be processed off-site.

8.0 INTERACTIONS WITH OTHER BODIES

The Waste Manager will ensure coordination with relevant bodies throughout the project. This will include compliance with any construction traffic management requirements identified by the project team or imposed by SDCC.

The Waste Manager will provide details to SDCC on the destinations of waste materials from the site and will provide waste records to SDCC as required. The Site Manager contact details will also be provided to SDCC.

www.tobin.ie



TOBIN Consulting Engineers



@tobinengineers

Galway

Fairgreen House,
Fairgreen Road,
Galway,
H91 AXK8,
Ireland.
Tel: +353 (0)91 565 211

Dublin

Block 10-4,
Blanchardstown Corporate Park,
Dublin 15,
D15 X98N,
Ireland.
Tel: +353 (0)1 803 0406

Castlebar

Market Square,
Castlebar,
Mayo,
F23 Y427,
Ireland.
Tel: +353 (0)94 902 1401