



GREENHILLS RENEWABLE ENERGY PARK PLANNING AND ENVIRONMENTAL REPORT

Appendix U – Resource And Waste Management Plan (RWMP)

CONTENTS

1	INTRODUCTION	1
2	CONSTRUCTION & DEMOLITION MANAGEMENT IN IRELAND	2
2.1	National Level.....	2
2.1.1	Construction Phase	2
2.2	Regional Level.....	4
2.2.1	Construction Phase	4
2.3	Local Authority Level	5
2.4	Legislative Requirement.....	5
3	PROJECT DESCRIPTION	7
3.1	Site Location and Plan	7
3.2	Description of the Development	7
4	CONSTRUCTION AND DEMOLITION PHASES	10
4.1	Construction and Demolition Phase	10
4.1.1	Details of the Non-Hazardous Wastes to be Produced.....	11
4.1.2	Details of imported Materials for construction	11
4.1.3	Details of the Hazardous Wastes to be Produced	12
4.2	Site Clearance and Earthworks	14
5	WASTE MANAGEMENT	15
5.1	Construction Phase	15
5.1.1	Waste Management	15
5.1.2	Tracking and Documentation for Off-Site Waste.....	16
5.1.3	Roles / Training for Waste Management and Site Crew	17
5.1.4	Record keeping	18
5.1.5	Outline of Waste Audit Procedure	18
5.1.6	Consultation with Relevant Bodies.....	19
5.1.7	Recycling/Salvage Companies.....	19
5.1.8	Waste from Site Preparation	19
5.1.9	Waste Management Conclusions.....	19
5.2	Operational Phase.....	20
5.2.1	Waste Management	20
5.2.2	Waste Collection.....	21
6	CONCLUSIONS	23
6.1	Construction Phase	23
6.1.1	Conclusions from the Construction Phase	23

TABLES

Table 4-1:	Estimate of Imported Material quantities	11
Table 4-2:	Typical waste types generated and EWCs.....	13
Table 5-1:	Waste Container Dimensions	21

FIGURES

Figure 3.1:	Proposed Development Area Location.....	7
Figure 3.2:	Greenhills Renewable Energy Park Layout.....	9
Figure 5.1:	Typical Waste Receptacles	22

1 INTRODUCTION

RSK Ireland (Ltd) has prepared the Resource and Waste Management Plan (RWMP) to accompany the application for the Greenhills Renewable Energy Park to Cork County Council. The RWMP provides an assessment of the impacts arising from the generation of waste materials during the construction and demolition phases of the proposed development. This document is to accompany the planning application for the development located on a site located at Greenhills Renewable Energy Park (the Proposed Development) in County Cork. This document is to be read in conjunction with the Construction and Environmental Management Plan (CEMP) which is submitted as **Appendix F to the Planning and Environmental Report**.

Please note that this document is a draft for planning submission purposes which is intended to set a clear path and philosophy for the future nominated Contractor in drawing up their own final strategy for a Resource Waste Management Plan (RWMP).

The RWMP aims to outline the measures taken during the design phase and to establish the RWMP plan for the construction phase, ensuring that the early consideration of resources is prioritized in the development of a construction project.

This RWMP has been developed in line with the Environmental Protection Agency's Best Practice Guidelines for Creating Resource and Waste Management Plans for Construction and Demolition Projects (EPA Best Practice Guidelines RWMP, 2021), and both the design and construction phases will be carried out in full compliance with the guidelines outlined by the EPA.

The RWMP is intended to form the basis of providing information on the waste management required for the construction of the wind farm and grid connection during the construction phase of the Project.

- The RWMP should be considered a **live document** and is to be updated by the Contractor on a quarterly basis, or as more frequently as the need arises to ensure that it is current and has the most up to date information and contact details.

A copy of the RWMP and any updates shall be maintained on site as part of the Contractor's waste Management File.

An electronic copy of the RWMP and any updates shall be provided to the following:

- Greenhills Renewable Energy Park Project office
- Environmental Clerk of Works
- Cork County Council Planning Department
- All sub-contractors working on the project.

The Contractor shall maintain a record of all versions of the RWMP issued and to whom on the Resource and Waste Management file to be maintained on site.

2 CONSTRUCTION & DEMOLITION MANAGEMENT IN IRELAND

2.1 National Level

2.1.1 Construction Phase

It is only in recent years that comprehensive reports regarding the quantities of commercial and residential waste produced in Ireland have been compiled. The EPA (Environmental Protection Agency) have produced reports that provide estimates for waste generation and the level of recycling, recovery and disposal of waste material. Key Trends in the EPA waste data release of 10 August 2023 (Latest reference year 2022)¹.

- The quantity of Construction and Demolition (C&D) waste generated and collected in Ireland in 2021 decreased to 8.3 million tonnes from 9 million tonnes in 2021 a decrease of 8%.
- The overall composition of C&D waste changed little between 2021 and 2022. At 81.4%, soil, stone and dredging spoil waste remained dominant, followed by waste concrete, brick, tile and gypsum (7%), metals (3.8%) and waste treatment residues (3.8%). Mixed C&D waste comprised 1.7% with bituminous waste at 1.2% . The proportion of segregated (wood, paper, glass, plastic) C&D waste collected remained small at just under 0.7%.
- The vast majority (96 %) of C&D waste underwent final treatment in Ireland in 2021; only 4% was exported abroad for final treatment.
- Most C&D waste was recovered by backfilling (81%), with only 10% recycled and 7% sent for disposal, respectively. The dominance of backfilling as a treatment operation reflects the large proportion of soil and stones in C&D waste.
- Recycling was the main treatment operation for metals (almost 100%), for segregated wood, paper, glass and plastic (57% with a further 27.5% going for energy recovery).
- In 2022 over 2.6 million tonnes of soil and stone was determined as by-product and never became waste.

Waste management in Ireland is subject to EU, national and regional waste legislation and control, which defines how waste materials must be managed, transported and treated. The overarching EU legislation is the Waste Framework Directive (2008/98/EC) and as amended which is transposed into national legislation in Ireland. The cornerstone of Irish waste legislation is the Waste Management Act 1996 (as amended). European and national waste management policy is based on the concept of the 'waste hierarchy', which sets out an order of preference for managing waste (prevention > preparing for reuse > recycling > recovery > disposal).

EU and Irish National waste policy also aims to contribute to the circular economy by extracting high-quality resources from waste as much as possible. The Circular Economy (CE) is a sustainable alternative to the traditional linear (take-make-dispose) economic

¹ Circular economy and waste Statistics Report , 2022, EPA: https://www.epa.ie/publications/monitoring--assessment/waste/national-waste-statistics/EPA_CEWS_Highlights_Report_2022_Print.pdf

model, reducing waste to a minimum by reusing, repairing, refurbishing, and recycling existing materials and products.

The Irish government issues policy documents which outline measures to improve waste management practices in Ireland and help the country achieve EU targets in respect of recycling and disposal of waste. The most recent policy document, National Waste Management Plan -for a Circular economy 2024-2030², was published in February 2024 and shifts focus away from waste disposal (the traditional linear 'take-make-use-dispose' model) towards a more sustainable 'circular economy' regenerative growth model whereby the generation of waste is reduced as much as possible through reuse and recycling. This is been done not only to reduce pressure on Ireland's and the EU's natural resources but also for climate target support, sustainable development, growth and employment. The plan recognises Climate Change as a key driver. It focuses on creating a circular economy, where less waste is created and there is more reuse of resources. It also aims to prevent waste and use of landfills, prioritising reuse, recycling and recovery of materials. The document highlights focus areas for the transition into the circular economy, namely reducing C&D waste and waste infrastructure regulation on new and existing facilities

The Plans ambition is 0% total waste growth per person over its lifetime with an emphasis on non-household wastes including waste from commercial activities and the construction and demolition sector.

The National Waste Management Plan indicates that Ireland has achieved the EU WFD recycling target of 70% by weight of C&D non-hazardous waste (excluding natural soils & stone) for construction waste for 2020 in recent years (Ireland reported 78% in 2020). However, it warns that although no revision of the target is pending, the Commission has signalled its intent to introduce material recovery targets for total construction and demolition waste and for individual material-specific fractions. These will be set out in EU legislation and any such targets imposed in the lifetime of this Plan may be adopted, implemented and monitored in the annual work plans.

The National Climate Action Plan 2024 also contributed to the concept of the circular economy, where framework was integrated to minimize the overconsumption of resources. The circular economy allows for resources to be reused rather than being single use. In 2024 the deposit return scheme was launched, creating an incentive for returning plastic bottles and aluminium cans. Bins were assigned a colour based on what was being placed within (green for recycling and brown for organic, black for waste). A target of 2% annual reduction was set for construction waste.

The strategy for the management of waste from the construction phase is in line with the National Waste Management Plan and the requirements of the EPA's 'Best Practice Guidelines for the Preparation of Resource Waste Management Plans for Construction & Demolition Projects' (2021)³. This sets out good practice approaches to prevent waste, reuse materials, reduce waste and better manage C&D wastes that cannot be prevented on development projects. Project developers are to implement these practices and document these activities into a project Resource and Waste Management Plan (RWMP) which will develop as the project progresses from design though to construction.

² [National Waste Management Plan for a Circular Economy 2024-2030 - My Waste](#)

³ <https://www.epa.ie/publications/circular-economy/resources/best-practice-guidelines-for-the-preparation-of-resource--waste-management-plans-for-construction--demolition-projects.php>

2.2 Regional Level

2.2.1 Construction Phase

The Regional Plan sets out the strategic targets for waste management in the region and sets a specific target for C&D waste of “70% preparing for reuse, recycling and other recovery of construction and demolition waste” (excluding natural soils and stones and hazardous wastes) to be achieved by 2020.

The Circular Economy and Waste Statistics Report published by the EPA in 2022 identifies that Ireland’s current progress against this C&D waste target is that C&D waste was recovered by backfilling (81%), with only 10% recycled and 7% sent for disposal, respectively. Further recycling was the main treatment operation for metals (almost 100%), for segregated wood, paper, glass and plastic (57% with a further 27.5% going for energy recovery). The current targets are been met but specific targets are likely to be set based on new EU legislation. The following objectives continue to guide waste management for C& D waste:

- Promote waste prevention in the first instance.
- Follow best available techniques.
- Expand the range and use of recycled products.
- Create a market demand for recycled products and segregating more material on-site to allow for recycling.
- Meet the target (from The Regional Plan) of preparing for reuse, recycling and other material recovery (incl. beneficial backfilling operations using waste as a substitute) of 70% by weight of C&D non-hazardous waste (excluding natural soils & stone).

Regional waste management plans were superseded by Ireland’s National Waste Management Plan (2024 – 2030) which replaced individual plans with a singular national strategy. The document follows the theme of changing our linear strategy for waste (take-make-dispose) to a more circular strategy, where resources are reused in an effort to reduce waste and therefore environmental pressure.

The plan aims to achieve

- Shift from linear to circular economy where resources are used as much as possible.
- Waste generation is reduced across all areas from food waste to hazardous waste.
- Achieving EU targets for recycling
 - Recycling 70% of packaging waste by 2030.
 - Recycling 55% plastic packaging waste by 2030.
 - Recycling 65% of municipal waste by 2035.
- Limit amount of municipal waste landfilled to 10% by 2035.
- Reduce food waste by 50% in line with UN Sustainable Development Goals Target 12.3.
- Reduce single use plastic consumption.
- Improve management of hazardous waste and reduce generation.

2.3 Local Authority Level

The Cork County Council Development Plan (CCC) (2022-2028) illustrates that waste management plan is a vital requirement in the advocating for sustainable development, enhancing good public health and for the protection of the environment. The CCC is strongly committed to both national and EU waste management goals and legislation.

The Development Plan has identified key policies applicable to supporting the Waste Action Plan for a Circular Economy and the Southern Region Waste Management Plan in objective BE 15-14: Waste Prevention and Management

2.4 Legislative Requirement

The primary legislative instruments that govern waste management (both hazardous and non-hazardous) in Ireland and applicable to the project are:

- Waste Management Act 1996 (Act No. 10 of 1996) as amended 2001 (Act No. 36 of 2001), 2003 (Act No. 27 of 2003) and 2011 (S.I. No 20 of 2011). Subordinate and associated legislation includes:
 - European Communities (Waste Directive) Regulations 2011 (SI 126 of 2011) as amended 2011 (S.I. No. 323 of 2011) and 2016 (S.I 315 of 2016)
 - European Communities (Waste Directive) Regulations 2011 (SI 126 of 2011) as amended 2011 (S.I. No. 323 of 2011) and 2016 (S.I 315 of 2016)
 - Waste Management (Facility Permit and Registration) Regulations, (S.I. No. 821 of 2007) as amended 2008 (S.I. No. 86 of 2008), 2014 (S.I. No. 320 and No. 546 of 2014) and 2015 (S.I. No. 198 of 2015)
 - Waste Management (Licensing) Regulations 2004 (S.I. No. 395 of 2004) as amended 2010 (S.I. No. 350 of 2010)
 - European Union (Packaging) Regulations 2014 (S.I. 282 of 2014) as amended 2015 (SI No. 542 of 2015).
 - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997)
 - Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015)
 - European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
 - European Union (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended 2014 (S.I. No. 349 of 2014) and 2015 (S.I. No. 347 of 2015)
 - Waste Management (Food Waste) Regulations 2009 (S.I. 508 of 2009) as amended 2015 (S.I. 190 of 2015) and European Union (Household Food Waste and Bio-waste) Regulations 2015 (S.I. No. 191 of 2015)
 - Waste Management (Hazardous Waste) Regulations, 1998 (S.I. No. 163 of 1998) as amended 2000 (S.I. No. 73 of 2000)
 - Waste Management (Shipments of Waste) Regulations 2007 (S.I. No. 419 of 2007) as amended by European Communities (Shipments of Hazardous Waste exclusively within Ireland) Regulations 2011 (S.I. No. 324 of 2011)

- European Communities (Transfrontier Shipment of Waste) Regulations 1994 (S.I. No. 121 of 1994)
- European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015)
- Planning and Development Act 2000 as amended 2010 (Act No. 30 of 2010) and 2015 (S.I. No. 264 of 2015, S.I. 310 of 2015).
- Protection of Environment Act 1992 as amended (Act. No. 27 and S.I. 413 of 2003) as amended by the Planning and Development Act 2000 (Act No. 30 of 2000).
- Litter Pollution Act 1997 (Act No. 12 of 1997) as amended by the Litter Pollution Regulations 1999 (S.I. No. 359 of 1999) and Protection of the Environment Act 2003.

These Acts and subordinate Regulations enable the transposition of relevant European Union Policy and Directives into Irish law.

One of the guiding principles of European waste legislation, which has in turn been incorporated into the Waste Management (amended) Act 2001 and subsequent Irish legislation, is the principle of “Duty of Care”. This implies that the waste producer is responsible for waste from the time it is generated through until its legal disposal (including its method of disposal.) As it is not practical in most cases for the waste producer to physically transfer all waste from where it is produced to the final disposal area, waste contractors will be employed to physically transport waste to the final waste disposal site.

It is therefore imperative that occupants undertake on-site management of waste in accordance with all legal requirements and employ suitably permitted/licensed contractors to undertake off-site management of their waste in accordance with all legal requirements. This includes the requirement that a waste contractor handle, transport, and reuse/recover/recycle/dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of these activities.

A collection permit to transport waste must be held by each waste contractor which is issued by the National Waste Collection Permit Office (NWCPO). Waste receiving facilities must also be appropriately permitted or licensed. Operators of such facilities cannot receive any waste, unless in possession of a Certificate of Registration (COR) or waste permit granted by the relevant Local Authority under the Waste Management (Facility Permit & Registration) Regulations 2007 as amended or a waste or IED (Industrial Emissions Directive) licence granted by the EPA. The COR/permit/licence held will specify the type and quantity of waste able to be received, stored, sorted, recycled, recovered and/or disposed of at the specified site.

3 PROJECT DESCRIPTION

3.1 Site Location and Plan

The Proposed Development (Greenhills Renewable Energy Park) comprises a solar farm, battery energy storage system, 220kV AIS substation and loop-in grid connection in the townlands of Knocknagappagh, Barnaviddane, Ballyneague, Ballydaniel, Youghalpark, Ballydaheen and Cornaveigh in County Cork, see Figure 3.1 below.

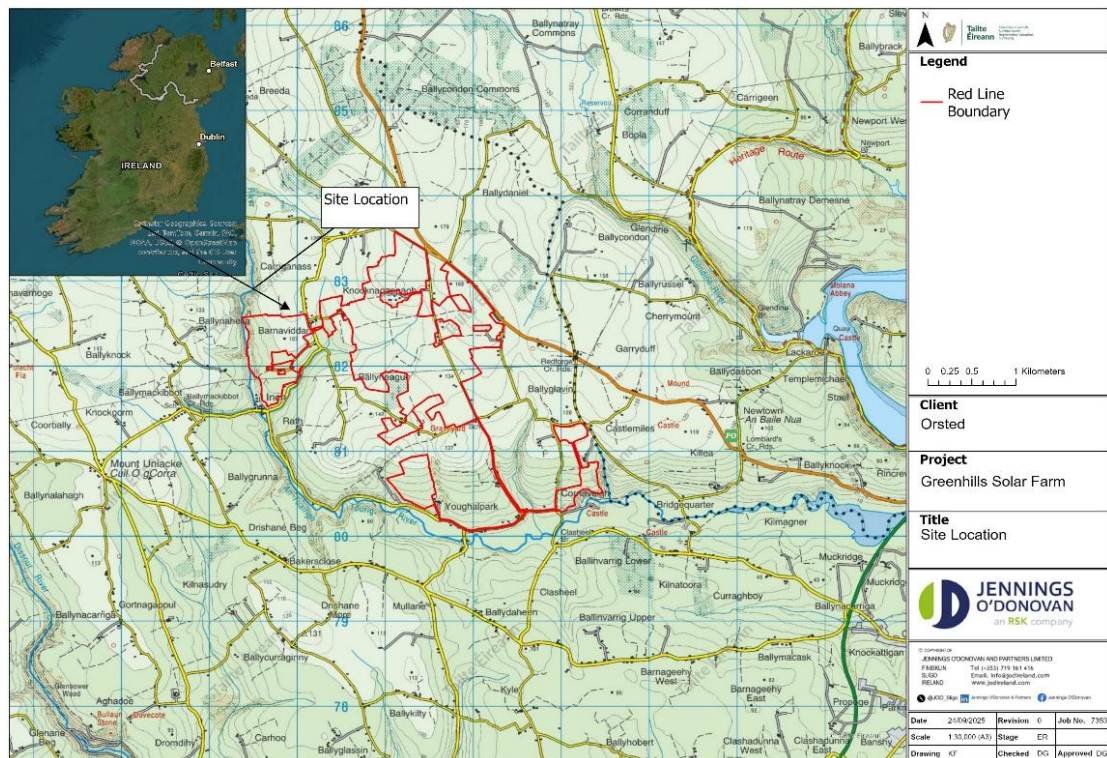


Figure 3.1: Proposed Development Area Location

The Proposed Development is adjacent to the R364 road approximately 7km north-west of the settlement of Youghal and 6.5km north-east of Killeagh, Co. Cork.

The site area is relatively flat and comprises agricultural lands in a rural setting with low population density. The high level of solar irradiance in the southern region of the country makes it ideal for the development of renewable solar photovoltaic projects.

3.2 Description of the Development

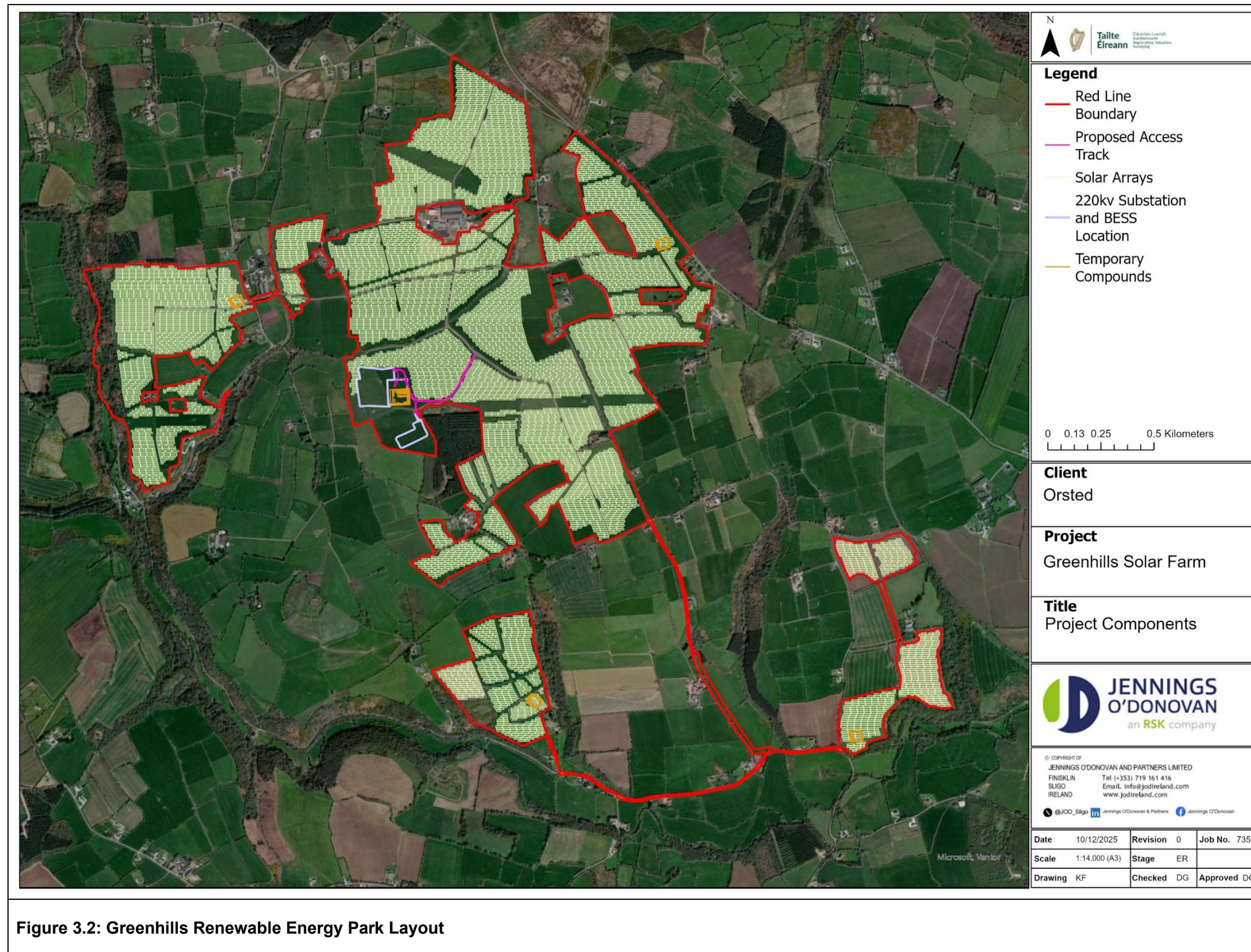
A detailed description is included in the Planning and Environmental Report **Chapter 4 Description of the Proposed Development**. In summary, the Proposed Development area is circa 323ha and will comprise the following elements:

- Solar array
- Inverter/transformer stations

- Interconnector underground cabling (including sections in the southern part of the site along public roads)
- New (2) and upgraded (9) site entrances and access tracks
- All ancillary development such as drainage infrastructure, security fencing, CCTV, weather stations and storage containers for spare parts.
- Temporary construction compound(s)
- Landscaping
- Biodiversity enhancement
- Battery energy storage system (BESS)
- 220kV AIS substation
- 220kV Overhead Line (OHL) Loop in grid connection to the existing Knockraha-Cullenagh 220kV OHL

A 10-year planning permission and 40-year operational life from the date of commissioning of the entire Proposed Development is being sought. This reflects the lifespan of modern-day renewable energy developments.

Electricity from the solar array areas will be ducted to an on-site new 220kV AIS substation, which will be connected to the national grid via a loop-in grid connection to the existing Knockraha-Cullenagh 220kV overhead line, which runs through the middle of the site. The proposed 220kV AIS substation, loop-in grid connection and BESS compound are located in the townland of Ballyneague,, circa 6.5 kilometres north of Killeagh, County Cork.



4 CONSTRUCTION AND DEMOLITION PHASES

4.1 Construction and Demolition Phase

A high-level overview of the construction activities, with the potential to generate excess material involved is provided below. This list is not exhaustive and is provided to give an overview of the likely type of activities. Note also that the precise order in which these activities will take place is not known at this stage.

- Site compound, Site Offices / Staff Welfare Units and Storage Compound.
- Temporary staff parking.
- Vegetation removal, topsoil stripping and excavation.
- Subsoil excavation.
- Storage of topsoil and subsoil for future reuse.
- Removal of surplus material / spoil if required.
- Construction of the drainage network, drainage and silt control measures including stilling ponds.
- Importation of fill.
- Importation of steel.
- Importation of concrete.
- Construction of new units - foundation trenching, establishment of foundations, installation of utilities, SuDS, importation of building materials by HGV, storage of building materials, erection of units, erection of scaffolding, roofing, internal fit out and painting.
- Construction and upgrading of access routes and parking areas - site levelling, earthworks, soil compaction, installation of access track granular materials.
- Removal of hedgerows, enhancing existing hedgerows, establishment of new hedgerows and native woodland areas.
- Construction of site tracks and upgrade of water course crossing as required.
- Construction of Solar Inverter hardstanding's.
- Piling of solar frame supports and assembly of frames and solar panels
- Installation of non intrusive solar frame supports
- Internal site cabling installation.
- External site cabling including construction of cable joints along the L-3808 and the L-7829.
- Construction of Control building and substation including:
 - Installation of switchgear/metering.
 - Installation of transformer and externals.
 - Fencing
- Construction of the BESS Compound and ancillary works
- Construction of the grid connection including:
 - Two Loop-in steel lattice towers and removal of .
 - Interface with the existing 220 kV Knockraha to Cullenagh Overhead Line
 - Off-site remedial works associated.

- Landscaping and Signage.

4.1.1 Details of the Non-Hazardous Wastes to be Produced

No demolition is required at the site. Any non-hazardous waste generated will be reused where possible.

Any vegetation clearance required will generate significant quantities of green waste. This waste will be reused where possible. Examples include the creation of habitats for wildlife and the chipping of any vegetation to create mulch. Such examples of reuse may require the registration of an appropriate waste exemption. If reuse is not possible, then any green waste should be handled and transported from site by an appropriately registered contractor.

There will be soil and subsoil excavated to facilitate the construction of the substation, BESS, and access track on the site. It is currently estimated that the volume of excavated material, (including bulking factor) due to construction of new access track, cut and fill at the substation and BESS will be circa 13,600m³ of topsoil and 39,690m³ of subsoil.

Stripping and removal of the topsoil layer will be coordinated with the proposed staging for the Proposed Development. The extent of topsoil strip (and consequent exposure of subsoil) will be limited to the immediate vicinity of active work area(s) and will be programmed to minimise soil handling / double soil movements. No excavated material is anticipated to be removed from site. The bulk of the excavated material will be reused in the cut and fill operations with any excess used for embankment and landscaping purposes. No excavation will occur at the main and ancillary temporary construction compounds which will be developed using hardcore on geogrid material.

Disturbed subsoil layers will be stabilised as soon as practicable and reused in cut and fill, new access track construction for gradient purposes and in construction of embankments.

All suitable non-hazardous excavated material will be reused on site where possible. Any excavated material that cannot be reused shall be handled and transported to exported to a licensed waste facility. A wide variety of non-hazardous waste will be generated during the construction phase. Typical waste types are listed within **Table 4-2** below.

4.1.2 Details of imported Materials for construction

Stone fill will be required for the new access track, upgrading of existing access tracks, inverter hardstands, inverter pads, substation compound, BESS infrastructure, and cable bedding, which will be imported from local licensed quarries. Concrete will also be imported for concrete plinths at the BESS, foundations at the Substation and for the inverter/transformer plinths and fencing foundations. A summary table of imported granular is provided in **Table 4-1** below.

Table 4-1: Estimate of Imported Material quantities

Proposed Development Element	Estimated Quantity Fill m ³
Site Entrances	1,100
New Access Roads	6,456
Upgraded Access Roads	4,665

Proposed Development Element	Estimated Quantity Fill m ³
Temporary construction compounds	2,400
Main construction compound	2,080
Inverter hardstandings	2,754
Inverter Pads	1,944
BESS - Infrastructure	4,490
Substation Compound	8,343
Cable in Public road - Excavation	2,268
33kV Cables within site and offroad - Bedding	1,242
LV Cables and Ducting - bedding and surround	3,000
Concrete	2,850

4.1.3 Details of the Hazardous Wastes to be Produced

4.1.3.1 Contaminated Soil

Environmental soil analysis will be carried out prior to construction on a number of soil samples in accordance with the requirements for acceptance of waste at landfills (Council Decision 2003/33/EC Waste Acceptance Criteria). This legislation sets limit values on landfills for acceptance of waste material based on properties of the waste including potential pollutant concentrations and leachability.

4.1.3.2 Fuel/Oil

Any on-site storage of fuel/oil, all storage tanks and all draw-off points will be bunded (or stored in double-skinned tanks) and located in a dedicated, secure area of the site. Provided that these requirements are adhered to and site crew are trained in the appropriate refuelling techniques, it is not expected that there will be any fuel/oil wastage at the site.

4.1.3.3 Invasive Species

Invasive non-native species (Japanese Knotweed) have been identified at the Proposed Development and an Invasive Species Report has been prepared for the site. Prior to any required vegetation removal, a biosecurity expert will be engaged to implement the management plan. This management plan will include how the removal of any identified invasive non-native plants will be undertaken in accordance with the latest guidance to prevent further growth or spread both within and beyond the site.

Should the further presence of any invasive non-native plants be identified prior to any required vegetation removal, then a biosecurity expert will be engaged to develop an appropriate management plan. This management plan should include how the removal of any identified invasive non-native plants will be undertaken in accordance with the latest guidance to prevent further growth or spread both within and beyond the site.

4.1.3.4 Other known Hazardous Substances

Paints, glues, adhesives and other known hazardous substances will be stored in designated areas in the Contractors temporary construction compound. They will

generally be present in small volumes only and associated waste volumes generated will be kept to a minimum.

4.1.3.5 Main C&D Waste Categories

The main non-hazardous and hazardous waste streams that could be generated by the construction activities at a typical site are shown in **Table 4-2** below. The List of Waste (LoW) code (also referred to as the European Waste Code or EWC) for each waste stream is also shown.

This section is also reflective of any repairs and maintenance works during the operational phase of the development.

Table 4-2: Typical waste types generated and EWCs.

Waste Material	EWC Code
Concrete, bricks, tiles, ceramic	17 01 01, 17 01 02, 17 01 03, 17 01 06* & 17 01 07
Wood, glass, and plastic	17 02 01-04
Bituminous mixtures, coal tar and tarred products	17 03 01-03
Metals (including their alloys)	17 04 01-07 & 09-10
Soil and stones	17 05 03-04
Gypsum-based construction material	17 08 02
Mixed C&D waste	17 09 04
Electrical and electronic components	20 01 35-36
Batteries and accumulators	20 01 33-34
Liquid fuels	13 07 01-03
Paints	08 01 12
Chemicals (solvents, pesticides, paints, adhesives, detergents etc.)	20 01 13, 19, 27-30
Insulation materials	17 06 04
* Indicates a hazardous substance	

4.2 Site Clearance and Earthworks

Demolition works at the site can be classed as minimal, as the site is currently undeveloped and in agricultural use. It is anticipated that some vegetation clearance, vegetation maintenance, earthworks and ground preparation from cut and fill works will be required as part of the development at the Substation and BESS locations and for site entrance upgrading and new construction.

In line with the EPA Construction and Demolition Waste Management the following was undertaken at design stage:

Cut and fill on site for substation, BESS and access track were balanced at design stage to minimise the import and export of materials (topsoil) for site works and facilitate the use of excavated materials on site.

Excavated materials on site have been reused.

It is currently estimated that the quantity of excavated material, when bulked up, due to site clearance and preparation of access tracks, BESS and substation will be approximately 13,600m³ of topsoil and approximately 39,690m³ of subsoil. This will be entirely reused for cut and fill to achieve the level areas for construction of the substation and BESS for the proposed new access track and for landscaping these areas.

There is the potential for contaminants in any enabling works. In the event that there are any contaminated materials found in the area of hardstanding, these will be removed and disposed of, at an approved facility, in an environmentally sustainable and responsible manner.

Removal of the existing topsoil layer (approx. 300mm thick) will occur at the substation and BESS locations, new access track, site entrances, drainage and inverter hardstand areas. Stripping and removal of the topsoil layer will be coordinated with the proposed staging for the development. The extent of topsoil strip (and consequent exposure of subsoil) will be limited to the immediate vicinity of active work area(s) and will be programmed to minimise soil handling / double soil movements. Stripped topsoil will be temporarily stockpiled and reused on site for substation and BESS landscaping.

All suitable non-hazardous excavated material will be reused on site where possible. Any excavated material that cannot be reused shall be handled and transported to designated stockpile areas on site.

5 WASTE MANAGEMENT

5.1 Construction Phase

5.1.1 Waste Management

Waste is to be segregated on site where practical. Where the on-site segregation of certain waste types is not practical, off-site segregation will be carried out. The site waste storage area will have skips and recycling receptacles for all recyclable wastes. Collections for these will be as usage required. The appointed waste contractor will collect and transfer the wastes as receptacles are filled. There are numerous waste contractors in the Cork Region that provide this service.

All waste arising's will be handled by an approved waste contractor holding a current waste collection permit. All waste arising's requiring disposal off-site will be reused, recycled, recovered or disposed of at a facility holding the appropriate registration, permit or licence, as required. Written records will be maintained by the contractor(s) detailing the waste arising throughout the construction phase, the classification of each waste type, waste collection permits for all waste contractors who collect waste from the site and COR/permit or licence for the receiving waste facility for all waste removed and disposed off-site.

The above information will be retained for a minimum of 3 years and will be made available for review by the regulating authorities should they request it.

Dedicated bunded storage containers will be provided for hazardous wastes which may arise such as batteries, paints, oils, chemicals etc., if required.

Soil:

The Waste Management Hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling/recovery, energy recovery (i.e. incineration) and, least favoured of all, disposal. The excavations are required to facilitate construction works so the preferred option of prevention and minimisation is not an option. Therefore, excavated soil will be reused where possible.

All of this material will be reused on site for fill construction purposes and used for landscaping purposes.

If testing of the material indicates that the material is deemed to be a waste, soil disposal will be carried out by contractors licensed under the Waste Management Act 1996, the Waste Management (Permit) Regulations of 1998 and the Waste Management (Collection Permit) Regulations of 2001. All soil will be classified in accordance with Council Decision 2003/33/EC and disposed of in accordance with its hazard category in fully EPA/local authority licensed disposal facilities.

Concrete Block, Bricks, Tiles, Hard Plastic, Glass, Plasterboard and Ceramics:

If undamaged and in a suitable condition for reuse, these materials will be cleaned and segregated for recycling and stored in suitably covered skips for collection by licensed contractor. Damaged/unsuitable materials may be further processed offsite for use as a recycled aggregate at a permitted/licensed site.

Metal:

Metals will be segregated into mixed ferrous, aluminium cladding, high grade stainless steel, low grade stainless steel etc., where practical and stored in skips. Metal is highly recyclable and there are numerous companies that will accept these materials.

Timber:

Any uncontaminated timber, i.e. free from paints, preservatives, glues etc., will be segregated for recycling and stored in suitable covered skip for collection by licensed contractor. Contaminated wood will be stored in a separate skip.

Waste Electrical and Electronic Equipment (WEEE):

Any WEEE will be stored in dedicated covered cages/receptacles/pallets pending collection for recycling.

Other Recyclables:

Other recyclables including, but not limited to, soft plastics, cardboard, and packaging will be segregated for recycling and stored in suitably covered skips for collection by licensed contractor.

Non-Recyclables:

Construction waste which is not suitable for reuse or recovery, such as polystyrene, some plastics and some cardboards, will be placed in separate skips or other receptacles. At regular intervals and prior to removal from site, the non-recyclable waste skip/receptacle will be examined by a member of the site staff to ensure that there are no recyclable wastes.

Hazardous Waste:

On-site storage of any hazardous wastes produced (i.e. contaminated soil if encountered and/or waste fuels) will be kept to a minimum, with removal off-site organised on a regular basis. Storage of all hazardous wastes on-site will be undertaken so as to minimise exposure to on-site personnel and the public and to also minimise potential for environmental impacts. Hazardous wastes will be recovered, wherever possible, and failing this, disposed of appropriately.

It should be noted that until a construction contractor is appointed it is not possible to provide information on the specific destinations of each waste stream. Prior to commencement of development and removal of any waste offsite, details of the proposed destination of each waste stream will be provided to CCC by the project team.

5.1.2 Tracking and Documentation for Off-Site Waste

All waste will be weighed (on-site or at receiving facility) and documented prior to leaving site. Records will be kept at the site and at the relevant waste facility. Movement of waste will be in accordance with relevant guidelines.

Construction municipal waste will be separated and stored wherever possible and monitored / inspected by the site foreperson at regular intervals and prior to removal to ensure that site protocol for recycling is being adhered to.

5.1.3 Roles / Training for Waste Management and Site Crew

5.1.3.1 Contractor

The Principal Contractor procured by the Client to undertake the construction operations will be responsible for the following:

- Preparing, implementing and reviewing the RWMP through construction (including the management of all suppliers and sub-contractors) as per the requirements of these guidelines.
- Identifying a designated and suitably qualified Resource Manager (RM) who will be responsible for implementing the RWMP.
- Identifying all hauliers to be engaged to transport each of the resources / wastes off-site. Note that any resource that is legally a 'waste' must only be transported by a haulier with a valid Waste
- Collection Permit (refer to **CEMP Appendix F to the Planning and Environmental Report** for a resource to find a suitably authorised local haulier). Please note that the movement of hazardous waste material off-site falls under the European
- Communities (Shipments of Hazardous Waste exclusively within Ireland) Regulations 2011. Each shipment of hazardous waste material off-site is to be legally accompanied by a Waste Transfer Form (see details in **CEMP Appendix F to the Planning and Environmental Report**). Hazardous waste such as asbestos should be only be handled by competent persons with appropriate training and expertise. More information on handling of asbestos-containing material is available from the Health and Safety Authority.⁵
- Identifying all destinations for resources taken off-site. As above, any resource that is legally a 'waste' must only be transported to an authorised waste facility (**CEMP Appendix F to the Planning and Environmental Report** for a resource to find a suitably authorised facility).
- End-of-waste and by-product notifications addressed with EPA where required;
- Clarification of any other statutory waste management obligations, which could include on-site processing;
- Full records of all resources (both wastes and other resources) should be maintained for the duration of the project; and
- Preparing a RWMP Implementation Review Report at project handover.

5.1.3.2 Resource and Waste Manager

A dedicated waste manager will be appointed to ensure commitment efficiency and site protocols upheld during construction phase. The role of the waste manager will be to record, oversee and manage everyday handling of waste on the site.

Their training will be in setup and maintaining record keeping systems and how to produce an audit to ensure waste management targets are being met. They shall also be

trained in the best methods for segregation and storage of recyclables. They will also be familiar with the suitability of material reuse and know how to implement the RWMP.

5.1.3.3 Site Crew

This will be the responsibility of the competent waste manager/representative and a training programme will be organised, incorporated into typical onsite inductions to give an awareness of waste segregation on the site. This will outline how best to manage waste produced on site to ensure it is being handled in compliance with the RWMP, relevant legislation and in manner that prevents any impact to human health or the environment.

Toolbox talks with site staff and contractors that remind staff of their waste responsibilities should be regular. This may be incorporated with other site training needs such as general site induction, health and safety awareness and manual handling.

5.1.4 Record keeping

Records will be kept for all waste material which leaves the site, either for reuse on another site, recycling or disposal. A recording system will be put in place to record the construction waste arising's on site. A copy of the Waste Collection Permits, CORs, Waste Facility Permits and Waste Licences will be maintained on site at all times.

The waste manager or delegate will record the following;

- Waste taken for reuse off-site.
- Waste taken for recycling.
- Waste taken for disposal.
- Reclaimed waste materials brought on-site for reuse.

For any movement of waste, a docket and chain of custody shall be signed and recorded by waste manager, detailing type and weight of material and source or destination. This will be readily comparable with all delivery records to site, so a waste generation percentage for each material can be determined.

5.1.5 Outline of Waste Audit Procedure

It is recommended that the appointed Waste Manager should be responsible for conducting waste audits of the site during the construction / demolition phase.

The audit should consist of a review of all records for waste generation on site and the transportation of waste on and off site.

All waste movements should be recorded, and the details of these transfers should be compared with the established recovery / reuse / recycling targets for the site.

In the event of waste that is unaccounted for and / or targets for the site are not being met, the Waste Manager shall undertake a detailed review of how waste is managed on site to identify the cause. The Waste Manager will then be responsible for implementing any required appropriate actions to resolve any identified issues.

Upon completion of the construction phase of the works, a final report will be prepared which details how waste was managed over the course of the project and that summarises the overall performance of the site against the established targets.

5.1.6 Consultation with Relevant Bodies

5.1.6.1 Local Authority

Once a construction contractor has been appointed and prior to removal of any waste materials offsite, details of the proposed destination of each waste stream will be provided to Cork County Council upon request.

Cork County City Council will also be consulted, as required, throughout the excavation and construction phases in order to ensure that all available waste reduction, reuse and recycling opportunities are identified and utilised and that compliant waste management practices are carried out.

5.1.7 Recycling/Salvage Companies

Companies that specialise in construction waste management will be contacted to determine their suitability for engagement. Where a waste contractor is engaged, each company will be audited in order to ensure that relevant and up-to-date waste collection permits and facility COR/permits/licences are held.

In addition, information regarding individual construction materials will be obtained, including the feasibility of recycling each material, the costs of recycling/reclamation and the means by which the wastes will be collected and transported off-site, and the recycling/reclamation process each material will undergo off site.

5.1.8 Waste from Site Preparation

A significant quantity of the potential waste generated on site can be reduced by specifying the reuse of certain materials generated during excavation works.

All suitable non-hazardous excavated/cut material will be reused on site where possible, i.e. to level out ground in specified areas and/or for landscaping. Any excavated waste that cannot be reused shall be handled and transported from site by an appropriately registered contractor.

Where excavated waste may not be immediately suitable for reuse, any treatment to make this waste suitable for reuse will be undertaken through an appropriately permitted/licensed mobile plant waste processing facility that complies with the relevant legislation.

5.1.9 Waste Management Conclusions

Waste generated on site will be managed in an appropriate manner and in a sustainable way. The principles of the waste hierarchy will be complied with to ensure the environmental risks are minimised and the policies of Cork County Council are adhered to.

This Resource Waste Management Plan is an outline strategy only at this stage of the development. As each phase of the development progresses, more detailed Site Waste Management Plans and Material Management Plans will be developed.

This strategy has taken into account the need to lessen the overall impact of waste generation through minimisation, reuse and recycling of materials from both the construction phase.

5.2 Operational Phase

5.2.1 Waste Management

Traditionally, local authorities have rolled out blanket schemes for recycling and food waste collection. This means that a single type of scheme is unlikely to provide the most effective recycling solution for this development. The developer will therefore provide the most appropriate facilities for waste and recycling management based on the needs of each block.

RSK recommends the following regarding this development;

- Waste storage issues should be considered at the initial design stage to ensure access for all (including people with disabilities) in a brightly lit (a minimum Lux rating of 220 is recommended), safe and well-designed area, spacious enough for easy manoeuvrability, good ventilation and ready access if required for the control of potential vermin.
- Where storage is provided in a basement area, sufficient access and egress must be provided to enable receptacles to be moved easily from the storage area to an appropriate collection point on the public street nearby. i.e. Passageways and doors to be wide enough, no steps between waste storage area and collection point and as small an incline as possible to allow easy movement of containers. As short a distance as possible between storage area and collection point.
- Suitable wastewater drainage points should be installed in the receptacle storage area for cleaning and disinfecting purposes. There should be a floor sloped to a central foul drain and a hot and cold-water supply to facilitate cleaning and disinfection of bins. This is standard practice and should be included.

In addition, the following will be considered:

- A weekly collection of waste will be undertaken. The maximum length of time between any two collections will be 7 days.
- Special consideration around the waste storage facilities may be required for any expected ageing staff or for those with limited mobility.
- Floors within waste storage areas will be fitted with a non-slip floor surface;
- There will be suitable access and egress to waste storage areas to enable bins to be moved easily to/from collection point with no steps and minimal incline ramp (the gradient should not be steeper than 1:12).
- Bins will comply with IS EN 840 1997. The bin dimensions outlined within the table 10.2.1 below will be considered when planning waste storage areas. In addition to the bins listed, further consideration will be required for the storage of the additional containers and bags for other recyclables.
- All surfaces that containers need to move over shall be of a smooth continuous finish and free from steps or other obstacles. Steps shall incorporate a drop-kerb.
- Any waste area should ideally be located clear of any road, pavement and cycleway.
- Bin store doors must be lockable with access only available to authorised people. Bin store doors should be wide enough to allow bins to be removed for emptying and with doors that can be secured in the open position to allow safe movement

of bins. Arrangements will need to be agreed with the council/waste contractors with regards to collection.

- Provision will be provided for the collection of glass within the development. 660 litre containers have been suggested. Should a bottle bank be required then considerations for the total footprint of each bank required will need to be considered. The guidance suggests the footprint to be 4 metres by 2 metres wide and they must be located externally with sufficient access and clearance for servicing using a crane.

5.2.2 Waste Collection

Only companies who are approved and hold a waste collection permit from Cork County Council will be considered for the collection of the waste stored in the Waste Storage Area (WSA). This will ensure that wastes are collected and disposed of at an approved facility.

Non-recyclable waste, dry recyclable waste and organic waste will all be collected weekly, with a period no greater than 7 days between each collection. All waste storage bins will be presented for collection in a manner that will not create a hazard to traffic. Records of the waste collections will be maintained by the facilities management company for the development.

The size, design and bin type may vary depending on the waste storage receptacles provided by the appointed waste contractor(s). However, typical dimensions of waste receptacles used in the WSAs are shown in **Table 5-1** below.

Table 5-1: Waste Container Dimensions

Container Type	Size (litres)	Dimensions (height x width x depth in mm)
1100 litre 'Euro' bin (4-wheel bin)	1,100	1380 x 1270 x 1000
660 litre bin	660	1340 x 1200 x 700
240 litre standard bin	240	1075 x 580 x 715



Figure 5.1: Typical Waste Receptacles

Each bin/container will be clearly labelled and/or colour coded to avoid cross contamination of the different waste streams. Signage will be posted above and/or on the bins to show exactly which waste types can be placed in each bin. Dry Recyclable, non-recyclable, organic and glass waste bins will be required to be collected/emptied twice a week.

Access for vehicles will be designed in accordance with the requirements laid out by BS 5906:2005 Waste management in buildings — Code of practice. This will be dealt with at the detailed design stage.

Access to the waste storage area should be restricted to tenants and facilities management only. The areas will be suitably screened from public view and restricted to access by authorised personnel only. Access by the appointed waste contractor will need to be arranged.

6 CONCLUSIONS

6.1 Construction Phase

6.1.1 Conclusions from the Construction Phase

It is recommended that the main construction contractor with responsibility for the overall scheme register with the “Considerate Contractors Scheme”.

A more detailed Resources and Waste Management Plan will be produced prior to development taking place that provides further details around how waste will be managed on site. RWMP demonstrate appropriate waste management controls during the different construction phases of the Project.

Good practice measures in relation to on-site storage and security of raw materials and waste should be implemented, specifically for the segregation of waste to aid recycling, and for waste and materials to be safely and securely stored on site.

Opportunities to further reduce waste arisings and increase recycling rates from the Project have been identified to ensure it contributes to an improved waste management performance.

Appropriate targets should be set in relation to the minimisation and recycling of any construction waste materials to be agreed between the developer and main construction contractor with agreed methodologies for waste quantification and monitoring.