

Appendix 2.3. Construction and Demolition Resource and Waste Management Plan (RWMP)

AtkinsRéalis



Outline Construction and Demolition Resource and Waste Management Plan

Uisce Éireann

June 2026

5161805

MORTARSTOWN WASTEWATER TREATMENT PLANT UPGRADE

Notice

This document and its contents have been prepared and are intended solely as information for Uisce Éireann and used in relation to Mortarstown Waste Water Treatment Upgrade.

AtkinsRéalis Ireland Limited assumes no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

This document has 55 pages including the cover.

Document history

Document title: Outline Construction and Demolition Resource and Waste Management Plan

Document reference: 5161805

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
Rev 0	Draft for Comment	JS/NV	NV	DE/JS	DE	24/02/2026
Rev 1	Draft for Comment	JS	SK	EO	DL	09/06/2026
Rev 2	Final	JS	SK	EO	DL	19/06/2026

Client signoff

Client	Uisce Éireann
Project	MORTARSTOWN WASTEWATER TREATMENT PLANT UPGRADE
Job number	5161805
Client signature/date	



Contents

1.	Introduction.....	6
1.1	Project Background.....	6
1.2	Aim of the Construction Resource Waste Management Plan.....	9
1.3	Methodology.....	9
1.4	Structure.....	9
1.5	Format of the RWMP	10
2.	Policies, Legislation and Guidance	11
2.1	Regulatory Classification for Waste Material	11
2.2	The National Waste Management Plan for the Circular Economy 2024-2030	12
2.3	Green Public Procurement Strategy and Action Plan 2024-2027	13
2.4	Circular Economy Strategy 2026-2028	14
2.5	Relevant Guidance.....	14
2.6	Circular Economy Programme	15
2.7	Carlow County Development Plan 2022-2028.....	16
2.8	Carlow – Graiguecullen Joint Urban Local Area Plan 2024-2030	16
2.9	Waste Legislation	17
2.10	Waste Soils Classification	19
3.	Project Description.....	20
3.1	Nature and Extent of the Proposed Development	20
3.2	Demolition Phase	23
3.3	Decommissioning Phase.....	23
3.4	Preliminary Construction Sequence.....	23
3.4.1	Microtunnel Gravity Sewer Construction.....	23
3.4.2	WwTP.....	24
3.4.3	Kilkenny Road Pumping Station Connection	24
3.4.4	Connection of New Infrastructure into Treatment Process	24
3.4.5	Commissioning.....	25
3.5	Construction Aspects	25
3.5.1	Site Compound/ Site Office.....	25
3.6	Demolition Works	25
3.7	Construction/Demolition Waste.....	28
3.7.1	Details of Non-Hazardous Wastes to be Produced	28
3.7.2	Details of Potentially Hazardous Waste to be Produced	28
4.	Project Roles and Responsibilities	31
4.1	The Client/Employer.....	32
4.2	Design Team.....	32



4.3	Contractor	32
4.4	Resource Manager	33
5.	Design Approach	34
5.1	Design for Reuse and Recycling	34
5.2	Design for Green Procurement	35
5.3	Design of Off-Site Construction	36
5.4	Design for Material Optimisation	36
5.5	Design for Flexibility and Deconstruction	37
6.	Key Material & Quantities	38
6.1	Type of Waste	38
6.2	Summary of Potential Waste Streams (LoW/EWC Codes)	40
6.3	Waste Generation	43
6.3.1	Demolition Waste	43
6.3.2	Construction Waste	43
6.3.3	Contaminated Soils	46
6.3.4	Native Non-Contaminated Soils	46
6.3.5	Total Waste Volume	46
6.4	Tracking and Documentation Procedures for Off-Site Waste	47
6.4.1	Uisce Éireann Waste Tracker	47
6.5	Construction Waste Management Costs	47
7.	Site Management	48
7.1	Site Compound Location	48
7.2	Training	48
7.2.1	Disposal/Recycling Proposals for Each Waste Stream	48
7.3	Record Keeping	49
7.4	Communications	49
7.5	Outline Waste Audit Procedures	50
8.	Consultation with Relevant Bodies	51
9.	References	52

Figures

Figure 1-1 - Figure 1-2 - Site Location	8
Figure 2-1 - Project Life Cycle of the RWMP (EPA, 2021)	15
Figure 3-1 - Proposed Site Layout (1 of 2)	21
Figure 3-2 - Proposed Outfall Location (2 of 2)	22
Figure 3-3 - The WwTP Site assessed in the Asbestos Survey (OHSS, 2018)	27



Figure 6-1 - New productive infrastructure construction composition by volume (m³) (EPA, 2009).	44
---	----

Tables

Table 4-1 - Roles and Responsibilities	31
Table 6-1 - Potential Recycling/Re-use Targets.....	38
Table 6-2 - Breakdown of Types of Waste	39
Table 6-3 - Summary list of LoW Codes, which may be relevant to the site (See Note 1)	40
Table 6-4 - Predicted Waste Amounts and Breakdown for each Waste Stream	45
Table 6-5 - Total Waste Volumes	46



1. Introduction

This Outline Construction Resource and Waste Management Plan (OCRWMP) has been prepared by AtkinsRéalis Ireland on behalf of the Uisce Éireann (the applicant) as part of the supporting documents for a planning application for a proposed upgrade to Mortarstown Wastewater Treatment Plant, Co. Carlow.

The Proposed Development involves an upgrade of the existing Mortarstown Wastewater Treatment Plant (WwTP) and construction of a new inlet pumpstation at the treatment plant site. The Proposed Development includes a new outfall pipe from the WwTP outfall chamber to the River Barrow, construction of a new microtunnel gravity sewer along Kilkenny Road between the existing Kilkenny Road Pumping Station and the new inlet pump station. The Proposed Development is 10.766 hectares (ha) in size. The Proposed Development location, along with the proposed site boundary (outlined in red) is presented in Figure 1-1.

1.1 Project Background

Uisce Éireann is responsible for providing water and wastewater services throughout Ireland. In January 2014, under the Water Services Act 2013, Uisce Éireann took ownership of the delivery of these services which was previously managed by the Local Authorities nationwide.

The current treatment plant at Mortarstown has a treatment capacity of 36,000 population equivalent (PE). In order to support the growth in Carlow town and to meet the projected future growth of Carlow Town and surrounding areas, an upgrade and increase in the treatment capacity of the plant to comply with European and National Legislation needs to be carried out. It is proposed to upgrade the WwTP capacity to 58,500 PE. The upgrades to the treatment plant will ensure continued compliance with the discharge licence for the site and the protection of the River Barrow which is a Special Area of Conservation (SAC) under the Habitats Regulations, 2011. Upon completion of the Proposed Development the following benefits will accrue:

- Enable future growth and development in the community and cater for an expected increase in population in the area.
- Enhance Carlow's amenity value by providing a cleaner environment and acting as a platform for social and economic development.
- Improve water quality in the River Barrow; benefitting the environment, ecology, sporting activities and tourism industry.
- Ensure that wastewater will be treated in accordance with European Union Urban Wastewater Treatment Directives and Environmental Protection Agency wastewater discharge licensing (D0028-01).

The Proposed Development is located in Mortarstown within the administrative area of Carlow County Council. The Site comprises approximately 10.766 hectares of predominantly developed land, currently used for the existing Mortarstown WwTP and associated infrastructure. The Proposed Development will include developing the vacant area to the west of the existing WwTP.

The existing Mortarstown WwTP is located on the southern side of Carlow town centre, located off Green Road, Mortarstown Upper, Co. Carlow, at approximate grid reference 52°49'09.2"N 6°56'19.1"W. The WwTP site is generally flat at ca.50m AOD. The WwTP is predominately bounded by agricultural land with a number of nearby sensitive receptors. The South East Technological University (SETU) is located to the north with Tyndall College to the South; a grazing field, two existing dwellings and the Kilkenny Road (R448) to the West; and agricultural land, established residential properties and residential development under construction to the East. A strip just Northeast of WwTP has some Construction and Demolition (C&D) waste and a strip Northwest has horses and trailers. A vacant cottage purchased by UE is also situated to the west of field with livestock. The existing site comprises infrastructure and equipment and a mixture of grassed, concreted, hardcore and paved areas throughout.



The existing Pumping Station site north of the existing WwTP is bounded on the southern side by the Kilkenny Road (R448) and vegetation/trees; vegetation/trees and the River Barrow to the West; partially cleared vegetation/trees and the River Barrow to the North; and Kilkenny Road (R448), Carlow Institute of Technology, SETU campus and associated student accommodation to the East. The existing Pumping Station is located on the southern side of Carlow town centre, adjacent to the River Barrow (approximate grid reference 52°49'37.2"N 6°56'16.0"W). The Kilkenny Road Pumping Station site is generally level at ca. 47m AOD.

The route of the proposed micro tunnel between the existing Kilkenny Road PS and existing Mortarstown WwTP is within Kilkenny Road. The existing outfall location is in close proximity to three residential houses, and the area is grassed with thick vegetation.

Figure 1-1 illustrates the site location map.



1.2 Aim of the Construction Resource Waste Management Plan

The purpose of this plan is to provide sufficient information to ensure that the management of resources and construction waste is undertaken in accordance with all relevant legislation and best practice standards (as set out in Section 2 of this document).

The principal aim of this plan is to ensure efficient use of material resources, reduce waste at source and reduce the quantity of waste that requires final off-site disposal to landfill in accordance with the waste hierarchy. A secondary aim is to facilitate the transition to a more circular economy thereby minimising the need for new inputs of virgin materials and energy, while reducing environmental pressures linked to resource extraction, emissions and waste management.

The principal objective of the Outline CRWMP is to provide a framework for the Proposed Development to facilitate the development of a project specific Detailed Construction RWMP by the Contractor.

1.3 Methodology

This document has been prepared in accordance with the relevant industry standard guidance document; *'Best Practice Guidelines for the preparation of resource & waste management plans for construction & demolition projects'* (EPA, 2021). This guidance supersedes the *'Best Practice Guidelines on the Preparation of Waste Management Plans for Construction & Demolition Projects'* (Department of Environment, Heritage and Local Government (DoEHLG), 2006). In addition, the following relevant best practice guidance documents have also been consulted:

- *'Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous'* (EPA, 2018);
- *'A review of Design and Construction Waste Management Practices on Selected Case Studies – Lessons Learned'* (EPA, 2015);
- *'Design out Waste: Preparation of Waste Reduction Factsheets for Design Teams'* (EPA, 2015);
- *'Development of an Audit Methodology to Generate Construction Waste Projection Indicators for the Irish Construction Industry'* (EPA, 2009);
- *Carlow County Development Plan 2022 -2028* (CCC, 2022); and,
- *Carlow - Graiguecullen Joint Urban Local Area Plan 2024-2030* (CCC & LCC, 2024).

1.4 Structure

Section 3.1 of the EPA, (2021) guidance states that *'it is recommended that planning authorities stipulate that a Resource and Waste Management Plan (RWMP) shall be submitted for all construction and demolition projects as best practice to inform the planning consent process. It is recommended that all planning permissions granted include compliance with the RWMP as a standard condition of planning.'*

This document applies only to the demolition and construction stages of the Proposed Development. It defines roles and responsibilities for waste management, including contractor obligations, and sets out procedures for documentation, tracking, and reporting of waste in accordance with statutory requirements. In addition, it includes monitoring and auditing measures to ensure compliance with the RWMP and to support continuous improvement throughout the construction phase.



Overall, the OCRWMP provides a framework to ensure that waste arising from the development is managed in line with applicable legislation, best practice guidance, and planning conditions.

1.5 Format of the RWMP

This is a live document that will be updated throughout the project lifecycle. This document provides a framework for waste management and will clearly identify the processes that will be implemented on site, whilst also seeking to ensure compliance with relevant waste legislation, government policy objectives and project specific waste objectives. The OCRWMP provides a mechanism for monitoring and auditing waste management performance and compliance for the duration of the project.

The evolution of a single plan through a project lifecycle is recommended to ensure that preventative, and resource efficiency initiatives are undertaken; data are captured, and; targets are set and measured throughout the project. This plan will evolve throughout the project from initial pre-construction phase followed by implementation at construction phase.

This OCRWMP will be updated by the contractor and needs to be regularly revisited throughout the project's lifecycle so that opportunities to maximise waste reduction/ efficiencies are exploited throughout, and that data is added on an ongoing basis so that it is as accurate as possible.



2. Policies, Legislation and Guidance

The implementation of the Waste Management Act in 1996 provided a legal basis for waste management practice and infrastructure in Ireland. In 2024, the National Waste Management Plan for the Circular Economy 2024-2030, replaced the Regional Waste Management Plans in Ireland. This plan focuses on transition to a circular economy, and the need to plan for C&D waste management at the earliest possible stage in a construction project. The national targets outlined in the plan include a 12% reduction in C&D waste by 2030. It is stated in Ireland's State of the Environment Report 2024 that only ca. 8% of Irish C&D waste is recycled and reused. The targeted policies and actions of this plan are listed in Section 2.2.

2.1 Regulatory Classification for Waste Material

Any surplus excavated material will be removed off-site either as a waste, or where appropriate, as a by-product. Where the material is to be used on another site as a by-product (and not as a waste), this will be done in compliance with Article 27 of the European Communities (Waste Directive) Regulations 2011.

If the material is deemed a waste, reuse/recycling/disposal of same will be carried out as per the requirements of the Waste Management Act 1996 as amended, the Waste Management (Collection Permit) Regulations 2007, as amended and the Waste Management (Facility Permit and Registration) Regulations 2007, as amended. The quantity of waste requiring recovery/disposal will dictate whether a Certificate of Registration, a permit or a licence is required by the receiving waste facility.

The classification and management of waste materials in Ireland are administered by the European Communities (Waste Directive) Regulations 2011. Article 27 (By-Product) and Article 28 (End-of-Waste) determine whether a material should be regulated as waste or can be excluded from waste legislation. These articles are essential for promoting sustainable resource use and progressing circular economy principles. They can be summarised as:

1. Article 27 – By Product Classification

Under Article 27 of the European Communities (Waste Directive) Regulations 2011 (as amended), a material may be classified as a by-product if it meets the following criteria:

- Further use of the material is guaranteed;
- The material can be used directly without any further processing apart from normal industrial practice;
- The material is produced as an essential component of a production process; and
- The use meets all relevant product, environmental, and health protection requirements and will not lead to negative environmental or human health impacts.

If these criteria are achieved, the material is not classified as waste. Producers must notify the EPA through the Article 27 notification process to confirm this status.

2. Article 28 – End of Waste Classification

Article 28 provides a mechanism for materials that were previously classified as waste to cease being considered waste if they meet specific criteria:

- The material is frequently used for specific purposes;
- There is strong evidence of a demand for the material;
- It meets technical requirements for the intended use; complying with existing legislation and standards; and
- Its use will not lead to adverse environmental or human health impacts.



To qualify, the material must be commonly used for specific purposes, have a market or demand, meet technical and legal standards, and its use must not pose risks to human health or the environment. A formal End-of-Waste application must be submitted to the EPA, including evidence that these conditions are met.

Green Public Procurement: Guidance for the Public Sector (EPA, 2024) sets out the responsibility of the Contractor with regard to waste management and disposal, as follows:

'The Contractor must apply appropriate measures in order to reduce and recover waste that is produced during the construction activity. The Contractor shall prepare and submit a waste management plan with its tender which shall form part of the Construction Management Plan to be agreed with the Contracting Authority in advance of the commencement of works. The waste management plan must be prepared in accordance with the Department of Environment, Community and Local Government Best practice guidelines on the preparation of waste management plans for construction and demolition projects.'

'Contractors are responsible for disposing of all waste generated under the contract in accordance with the Waste Management Act 1996 as amended. The Contractor must have full use of, or access to, waste disposal facilities with appropriate licenses and permits. The Contractor must provide copies of valid EPA Waste licences and Local Authority Waste Permits (including those relating to their subcontractors or brokers, where applicable) for collection and waste treatment/disposal/export facilities.'

According to the EPA (2024) *'Green Public Procurement: Guidance for the Public Sector'*:

'Ireland has committed to implementing green public procurement (GPP) in all tenders using public funds by 2023'.

2.2 The National Waste Management Plan for the Circular Economy 2024-2030

The Regional Waste Management Planning Offices (Eastern-Midlands, Southern Regional and Connacht-Ulster) published *'The National Waste Management Plan for the Circular Economy 2024-2030'*, in March 2024 replacing all Regional Waste Management Plans. The plan states:

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

The targeted policies regarding C&D waste are:

TP8.1: *Prioritise waste prevention and circularity in the construction and demolition sector to reduce the resources that need to be captured as waste*

TP8.2: *Identify and promote the growth of secondary material markets, including the elimination of barriers to the development of these markets, within the construction and demolition sector.*

TP8.3: *Incorporation of the EPA Best Practice Guidelines for the preparation of Resource & Waste Management Plans for Construction & Demolition Projects and NWPS Soil & Spoil Action Plan, and monitoring by local authorities of the application of these requirements.*

TP8.4: *Identify and promote materials with a low embodied carbon and high circular potential to maximise use in the construction sector.*

TP8.5: *Pursue and support a targeted levy on virgin materials to encourage the use of secondary raw materials.*



The priority actions (responsibilities) regarding C&D waste are:

PA8.1: *Implement Green Public Procurement criteria on all local authority construction and demolition projects and promote its wider use within the sector.*

PA8.2: *Pilot the preparation of Resource & Waste Management Plans for construction and demolition projects at selected local authority developments.*

PA8.3: *Develop and deliver training, with the EPA, to support national decisions on Regulation 27 by-products for site won asphalt (road plannings) and greenfield soil and stone; and support the implementation of a national decision on Regulation 28 end-of-waste for aggregates, which includes crushed concrete and prioritise the use of materials arising from national end-of-waste or by-product decisions.*

PA8.4: *Incorporate the requirement for Construction and Demolition Resource & Waste Management Plans in land use policy in County/City Development Plans.*

PA8.5: *Explore the potential to segregate waste streams in mixed waste skips to minimise contamination and maximise reuse, recycling and circularity on construction projects and provide guidance to the sector.*

PA8.6: *Allocate available resources, and identify any additional resources required, to consistently monitor construction and demolition projects to assess compliance with the project Resource & Waste Management Plan and apply appropriate enforcement measures to ensure compliance.*

2.3 Green Public Procurement Strategy and Action Plan 2024-2027

The Green Public Procurement Strategy and Action Plan 2024–2027 was published in April 2024. It is Ireland's national policy framework for embedding environmental, climate, and circular-economy principles into all public-sector purchasing. The plan states that:

The following principles shall be adhered to by all public bodies that are using public funds as part of their procurement processes:

GPP Principle 1: *Consider environmental sustainability when assessing need by:*

- Avoiding unnecessary purchases;
- Rethinking how demand can be met (e.g. resource sharing or reuse or repair options); and
- Build flexibility into contracts to allow regular review of needs and to help avoid unnecessary consumption of resources.

GPP Principle 2: *Insert GPP criteria in published tender documentation.*

GPP Principle 2a: *When inserting GPP Criteria, use National GPP criteria for goods, services or works, where available.*

GPP Principle 2b: *Use GPP criteria from other sources where no National GPP sectoral GPP criteria is available.*

GPP Principle 2c: *Use 'Minimum Sustainability/ Environmental Criteria' where no national, EU GPP criteria or other guidance for the goods, services or works being procured are available.*



GPP Principle 2d: Consideration should be given to using an innovative procurement procedure or the innovation partnership to find goods, services, or works to address a specific environmental need that cannot be otherwise met.

GPP Principle 3: Comply or Explain: If GPP criteria are not included in procurement where National GPP criteria are available, reasons for not including green criteria must be provided.

2.4 Circular Economy Strategy 2026-2028

In February 2026 the *Whole of Government Circular Economy Strategy 2026-2028: Accelerating Action* was published, replacing *A Waste Action for a Circular Economy – Ireland's National Waste Policy 2020-2025*. The aims of this new strategy are:

- Increase Ireland's Circular Material Use Rate (CMUR) by 2 % on an annual basis, reaching 12% by 2030;
- Support economic expansion, while improving resource productivity and minimising the use of virgin raw materials;
- Enhance Ireland's position as a centre for sustainable design, advanced manufacturing, and circular economy enterprises;
- Encourage people and communities to make, cost-effective, sustainable choices through schemes such as the introduction of a pilot National Repair Voucher Scheme;
- Assist local authorities in developing reuse, repair, and recycling hubs across the country; and
- Position digital technologies and data-driven innovation at the core of the circular transition.

2.5 Relevant Guidance

'Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects' (EPA, 2021) supersedes the 'Best Practice Guidelines on the Preparation of Waste Management Plans for Construction & Demolition Projects' (Department of Environment, Heritage and Local Government (DoEHLG), 2006).

Since the publication of DoEHLG (2006) guidelines, waste policy in Europe has shifted from the established linear economic model to a circular economic model.

Circular economy-inspired interventions focus not only on increasing recycling quantitatively but also on:

- Reducing the use of virgin resources;
- Keeping materials in the economy as long as possible;
- Maintaining their intrinsic value/quality as high as possible; and
- Reducing hazardous substances in products and waste'. (EPA, 2021).

The resource and waste management approaches presented in the EPA (2021) guidelines are based on international principles of optimising resources and reducing waste on construction projects through:

- Prevention;
- Reuse;
- Recycling;
- Green Procurement Principles;
- Off-Site Construction;
- Materials Optimisation; and,



- Flexibility and Deconstruction.

These principles are applied to the RWMP through both the pre-construction phase and the construction phase. The evolution of a single plan through a project lifecycle is recommended to ensure preventative and resource efficiency initiatives are undertaken, data is captured, and targets set and measured throughout the project. The evolution of the plan through the project from initial pre-construction phase (in green) followed by implementation at construction phase (in orange) is illustrated in Figure 2-1 below.

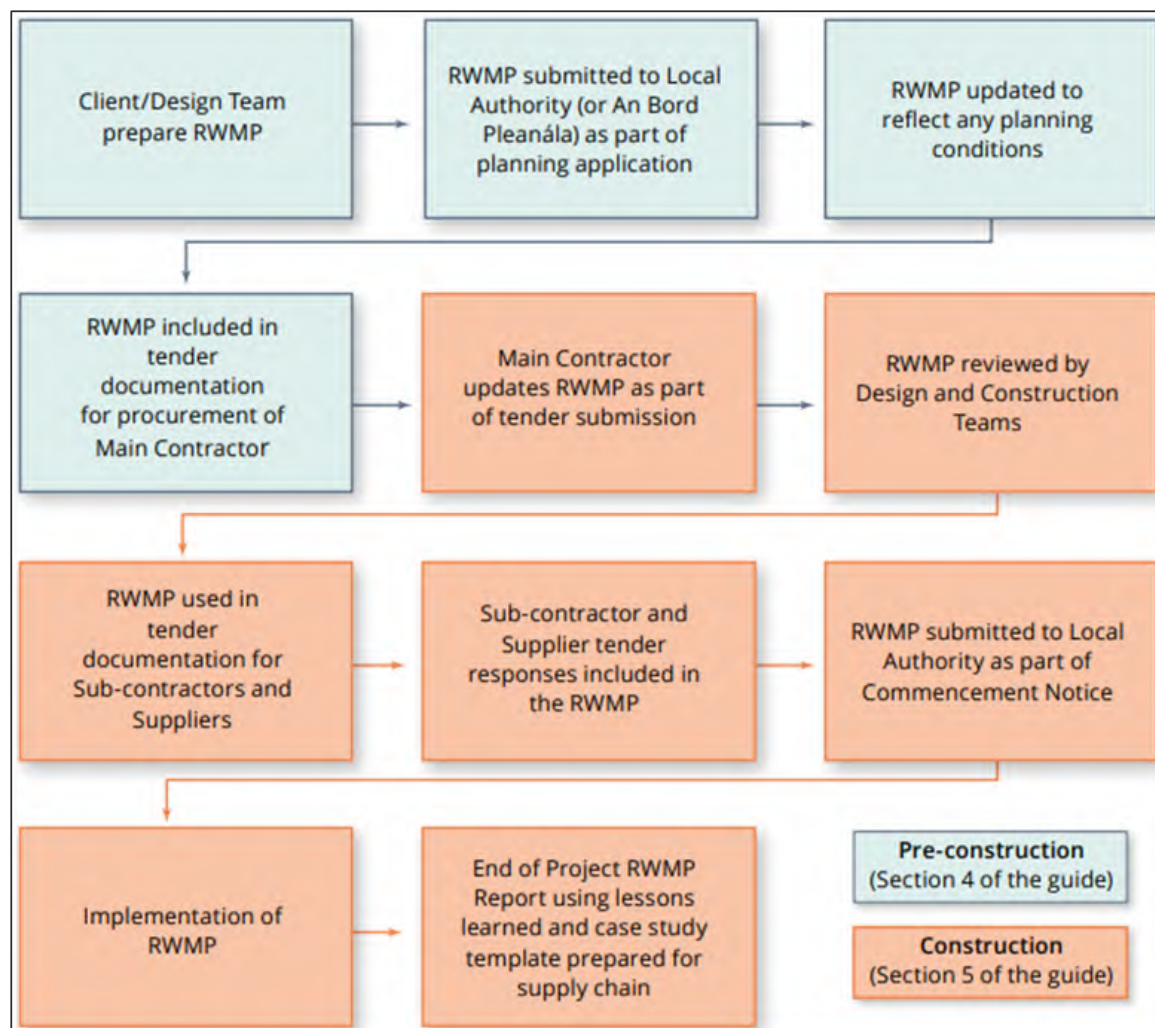


Figure 2-1 - Project Life Cycle of the RWMP (EPA, 2021)

2.6 Circular Economy Programme

The Circular Economy Programme 2021-2027 (EPA, 2021) incorporates and builds upon the previous National Waste Prevention Programme to:

‘Support national-level strategic programmes to prevent waste and drive the Circular Economy in Ireland’ and ‘respond to the commitment within the national policy document ‘The Waste Action Plan for a Circular Economy’ to reconfigure the National Waste Prevention Programme into Ireland’s Circular Economy Programme.’

Its objectives are to:

- Provide LEADERSHIP on the circular economy to improve coherence and alignment of national, regional and local circular economy activities and ensure maximum impact;

- Maintain a competitive programme of SUPPORTS to drive the circular economy through providing innovation grants and seed-funding to nationally relevant initiatives;
- Implement actions that build KNOWLEDGE and an evidence base to inform circular economy development in Ireland, and to report on progress towards greater circularity; and,
- Realise the enterprise OPPORTUNITY of a circular economy by supporting new business models; promoting resource efficiency; and retaining material value through enhanced use of secondary/ recycled materials, applying the appropriate regulatory framework.

2.7 Carlow County Development Plan 2022-2028

The Carlow County Development Plan 2022 - 2028 specifically sets out the following policy's phases and objectives with regards to waste management:

Phases

WM. P1: *Implement European Union, National and Regional waste related environmental policy, legislation, guidance and codes of practice to improve management of material resources and wastes.*

WM. P2: *Encourage the transition from a waste management economy to a green circular economy in accordance with A Waste Action Plan for a Circular Economy, Ireland's National Waste Policy 2020-2025', to enhance employment and increase the value recovery and recirculation of resources.*

WM. P3: *Support the circular economy, and to provide, promote and facilitate high quality sustainable waste recovery and disposal infrastructure and technology in keeping with the EU waste hierarchy subject to economic and technical feasibility and environmental assessments.*

WM. P5: *Require the appropriate provision for the sustainable management of waste within developments, including the provision of facilities for storage, separation and collection of waste.*

WM. P6: *Ensure that all waste that is disposed of by private waste companies is done so in compliance with the requirements of the Environmental Protection Agency and the Waste Management Legislation and in accordance with the Planning Code.*

Objectives

WM. O1: *Implement the provisions of the Southern Region Waste Management Plan 2015-2021, and any updates thereto during the life of this Plan, subject to compliance with the Habitats Directive and normal planning and environmental considerations.*

2.8 Carlow – Graiguecullen Joint Urban Local Area Plan 2024-2030

It is stated in Section 7 of the Carlow – Graiguecullen Joint Urban Local Area Plan 2024-2030 that '*It is the policy of Carlow County Council and Laois County Council to*':

WM.P2: *Safeguard the environment of the joint urban area by seeking to ensure that residual waste is disposed of appropriately.*



WM.P4: *Require the incorporation of sustainable waste management measures within developments, including the provision of adequately sized facilities for the storage, separation, and collection of waste and recyclable materials.*

It is the objective of Carlow County Council and Laois County Council to:

WM.O1: *Implement the provisions of the Southern Region Waste Management Plan 2015-2021 and the Eastern Midlands Region Waste Management Plan 2015-2021, and any subsequent or updated versions of these plans during the lifetime of this JULAP, as a means of promoting the circular economy approach and ensuring the prevention and management of waste in a safe and sustainable manner.*

WM.O3: *Eliminate unauthorised fly tipping in the joint urban area and to regulate and control the disposal of builder's spoil and rubble.*

2.9 Waste Legislation

It will be the Contractor's responsibility to ensure that they are familiar and comply with the requirements of all relevant waste legislation for the duration of the project. The following non-exhaustive list of legislative requirements typically applies to the construction stage of major developments:

- Waste Framework Directive 2008/98/EC of the European Parliament and Council on waste, as amended, European Union (Waste Directive) Regulations 2020 (S.I. No. 323 of 2020), 2025 (S.I. No. 1892 of 2025).
- European Communities¹ (Waste Directive) Regulations Directive 2008/98/EC 2011 (SI 126 of 2011), as amended.
- Waste Management Act of 1996 (Act No. 10/1996), as amended.
- Litter Pollution Act of 1997 (Act No. 12/1997); as amended in 2009.
- Litter Pollution Regulations 1999 (S.I. No. 359 of 1999).
- European Communities (Waste Electrical and Electronic Equipment) Regulations 2011 (S.I. 355 of 2011), as amended 2019 (S.I. No. 233 of 2019).
- Waste Management (Facility Permit and Registration) Regulations 2007 (S.I. No. 821 of 2007), as amended, 2008 (S.I. No. 86 of 2008), 2015 (S.I. No. 198 of 2015), 2019 (S.I. No. 250 of 2019), 2023 (S.I. No. 471 of 2023).
- Waste Management (Collection Permit) Regulations 2007 (S.I. No. 820 of 2007), as amended, 2015 (S.I. No. 197 of 2015), 2016 (S.I. No. 24 of 2016), 2023 (S.I. No. 63 of 2023 and S.I. No. 104 of 2023).
- Waste Management (Licensing) Regulations 2004 (S.I. No. 395 of 2004) as amended.
- Waste Management (Miscellaneous Provisions) Regulations, 1998 (S.I. No. 164 of 1998).
- Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015), as amended, 2019 (S.I. No. 182 of 2019), 2023 (S.I. No. 398 of 2023), 2024 (S.I. No. 442 of 2024).
- Waste Management (Hazardous Waste) Regulations, 1998 (S.I. No. 147 of 1998), as amended.
- Waste Management (Shipment of Waste) Regulations 2007 (S.I. No. 419 of 2007).
- Waste Management (Movement of Hazardous Waste) Regulations, 1998 (S.I. No. 147 of 1998).
- 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).
- Waste Management (Transfrontier Shipment of Waste) Regulations 1998, (S.I. No. 149 of 1998).

¹ 2009: European Communities becomes European Union.

- Waste Management (Tyres and Waste Tyres) Regulations 2017 (S.I. No. 400 of 2017), as amended 2018 (S.I. No. 96 of 2018).
- European Union (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014), as amended, 2014 (S.I. No. 349 of 2014), 2015 (S.I. No. 347 of 2015).
- Waste Management (Registration of Brokers and Dealers) Regulations 2008 (S.I. No. 113 of 2008).
- Waste Management (Prohibition of Material Disposal by Burning) Regulations 2009 (S.I. No. 286 of 2009), as amended 2013, 2015, 2017, 2020, 2022, 2023.
- European Waste Catalogue (EWC) and Hazardous Waste List 2002.
- Waste Management (Food Waste) Regulations 2009 (S.I. No 508 of 2009), as amended, 2015 (S.I. No. 430 of 2015), 2024 (S.I. No. 294 of 2024).
- European Union (Properties of Waste Which Render It Hazardous) Regulations 2015 (S.I. No. 233 of 2015), as amended 2018 (S.I. No. 383 of 2018).
- Air Pollution Act, 1987 (Emission Limit Values for use of Asbestos) Regulations, 1990 (S.I. No. 28 of 1990),
- Air Pollution Act 1987 (Emission Limit Values for Combustion Plant) 1996 (S.I. No. 264 of 1996).
- EC (Control of Emissions of Gaseous & Particulate Pollutants from Non-Road Mobile Machinery) Regulations 2007 (S.I. No.147 of 2007) as amended, 2011 (S.I. No. 263 of 2011), 2012 (S.I. No. 407 of 2012), 2013 (S.I. No. 417 of 2013).
- The EU Regulation 2037/2000 (CFC's, HCFC's, Halons) - Ozone Depleting Substances. Control of Substances that Deplete the Ozone Layer Regulations 2011 (S.I. No. 465 of 2011).
- European Union (Packaging) Regulations 2020 (S.I. No. 322 of 2020); as amended 2022 (S.I. No. 659 of 2022) and 2025 (S.I. No. 167 of 2025).
- Planning and Development Acts 2000 to 2015, as amended.
- Protection of Environment Act 1992 as amended 2003 and 2017.
- European Union (Ship Recycling) (Waste) Regulations 2019 (S.I. No. 13 of 2019).
- European Union (Environmental Impact Assessment) (Waste) Regulations 2013 (S.I. No. 505 of 2013);
- Industrial Emissions Directive 2010/75/EU; and,
- Landfill Directive 1999/31/EC.

One of the guiding principles of European waste legislation, which has in turn been incorporated into the Waste Management Acts 1996 – 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 reuse, recycling, recovery and/or disposal (including its method of reuse, recycling, recovery and/or 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 destination, waste contractors will be employed to physically transport waste to the final waste reuse, recycling, recovery and/or disposal site. Following on from this is the concept of “Polluter Pays” whereby the waste producer is liable to be prosecuted for pollution incidents, which may arise from the incorrect management of waste produced, including the actions of any contractors engaged (e.g. for transportation and disposal/recovery/recycling of waste).

It is therefore imperative that the appointed construction contractor(s) are legally compliant with respect to waste transportation, reuse, recycling, recovery and disposal. This includes the requirement that a contractor handle, transport and reuse/recycle/recover/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 Industrial Emissions 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. Waste transport/haulage records shall be maintained by the Contractor and be made available for inspection by Uisce Éireann or the Clients Representative. Details on the waste courier, their waste collection permit details, and permitted LoWs that they can carry shall be retained by the Site Manager or their representative.

2.10 Waste Soils Classification

According to EPA (2018) 'Waste Classification, List of Waste & Determining if Waste is Hazardous or Non-Hazardous' *'correct classification is the foundation for ensuring that the collection, transportation, storage and treatment of waste is carried out in a manner that provides protection for the environment and human health and in compliance with legal requirements.'*

The waste classification system within EPA (2018) applies across the EU and is the basis for all national and international waste reporting obligations.

Since 2015, waste classification is based on:

- Commission Decision of 18 December 2014, amending Decision 2000/532/EC on the list of waste pursuant to Directive 2008/98/EC of the European parliament and of the Council (2014/955/EEC) (referred to hereafter as 'The List of Waste (LoW)').
- Commission Regulation (EU) No 1357/2014 of 18 December 2014, replacing Annex III to Directive 2008/98/EC of the European Parliament and of the Council on waste and repealing certain Directives.

Soils requiring offsite disposal should be appropriately characterised, prior to transport and disposal, as follows:

- Representative soil samples are subject to a chemical analysis, and the results are input into a waste classification tool in accordance with the EPA waste classification guidance (EPA,2019) (to determine the relevant List of Waste (LoW) Code) and if the waste soils are hazardous or non-hazardous.
- Where required, Waste Acceptance Criteria (WAC) testing will be undertaken and the analytical results are then separately screened against the relevant screening values (as established under the European Communities Council Decision (EC) 2003/33/EC) 'COUNCIL DECISION of 19 December 2002 establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC).

All waste soils removed from site must be transported by appropriately permitted hauliers and must be disposed of to an appropriately authorised disposal / recovery facility (via. valid Certificate of Registration, Waste Facility Permit, or Waste Facility Licence.



3. Project Description

3.1 Nature and Extent of the Proposed Development

The Proposed Development will consist of the upgrade of the existing Mortarstown WwTP, construction of a new pump station at the treatment plant site, construction of a new microtunnel gravity sewer between the existing and the new pumping station along Kilkenny Road, landscaping, boundary treatments, and all ancillary site works. This includes the associated internal roads, lighting, security fencing and landscaping.

The current WwTP access from Green Road will be retained. A new internal access point is provided to facilitate entry to the rear of the Uisce Éireann-owned property situated to the west of the WwTP boundary. The current Kilkenny Road Pumping Station access will also be retained.

The proposed WwTP upgrade works will be developed to the west of the existing plant footprint, taking in areas of agricultural land and part of the adjoining Uisce Éireann property.

The proposal also includes the demolition of existing inlet works, a stormwater holding tank, the sludge cake transfer facility, and 2 no. small chambers as well as decommissioning of the Kilkenny Road WwPS, final clarifiers (2 no.) and 2 no. rising mains. In addition, the existing outfall pipe will be replaced with a new outfall pipeline. The existing WwTP site is ca. 3.79 hectares (ha) and after completion of the upgrade works the site will expand to ca. 5.53 ha. The Proposed Development site area is 10.766 ha in size. The layout of the Proposed Development is presented in Figure 3-1 and Figure 3-2.

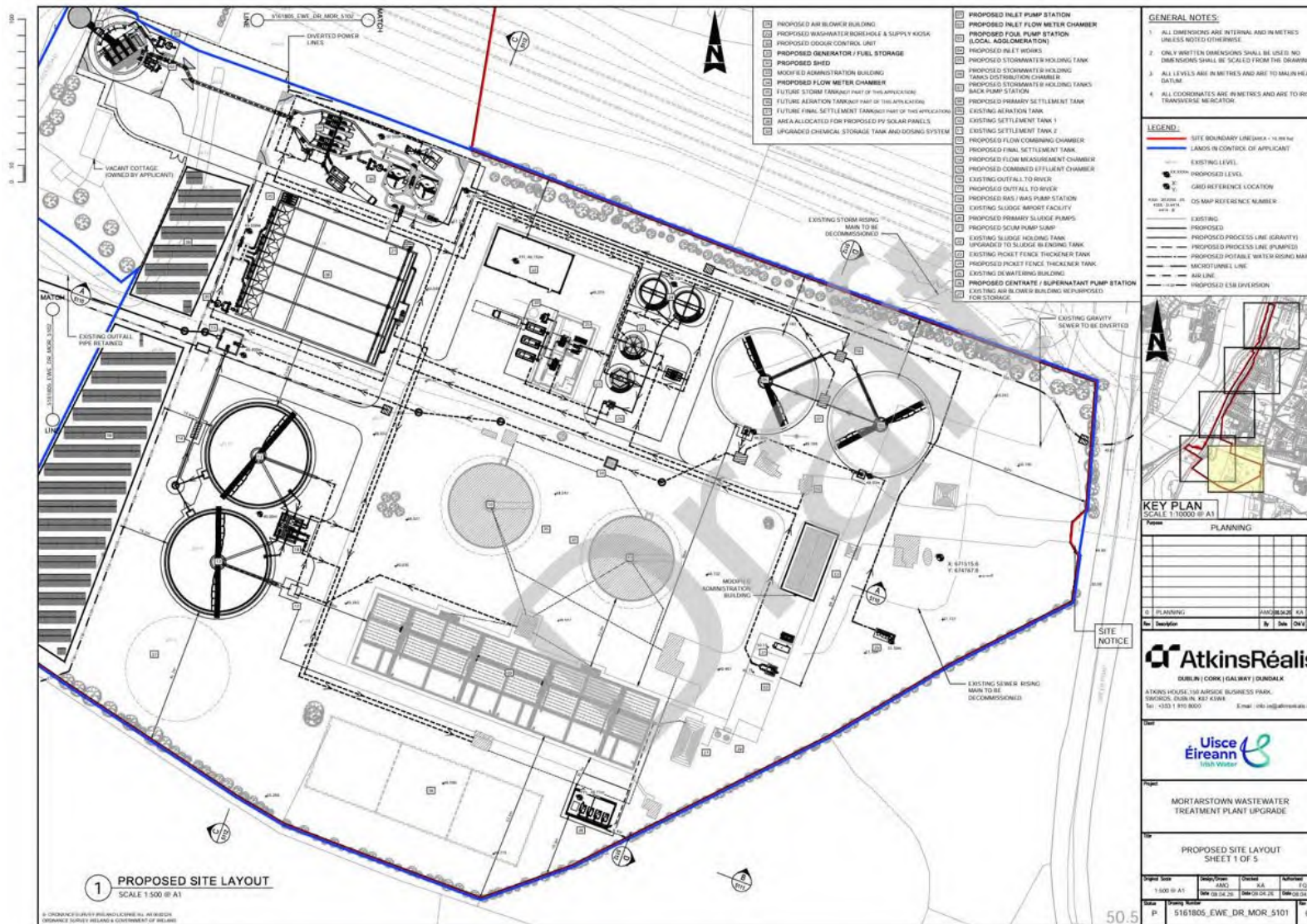


Figure 3-1 - Proposed Site Layout (1 of 2)



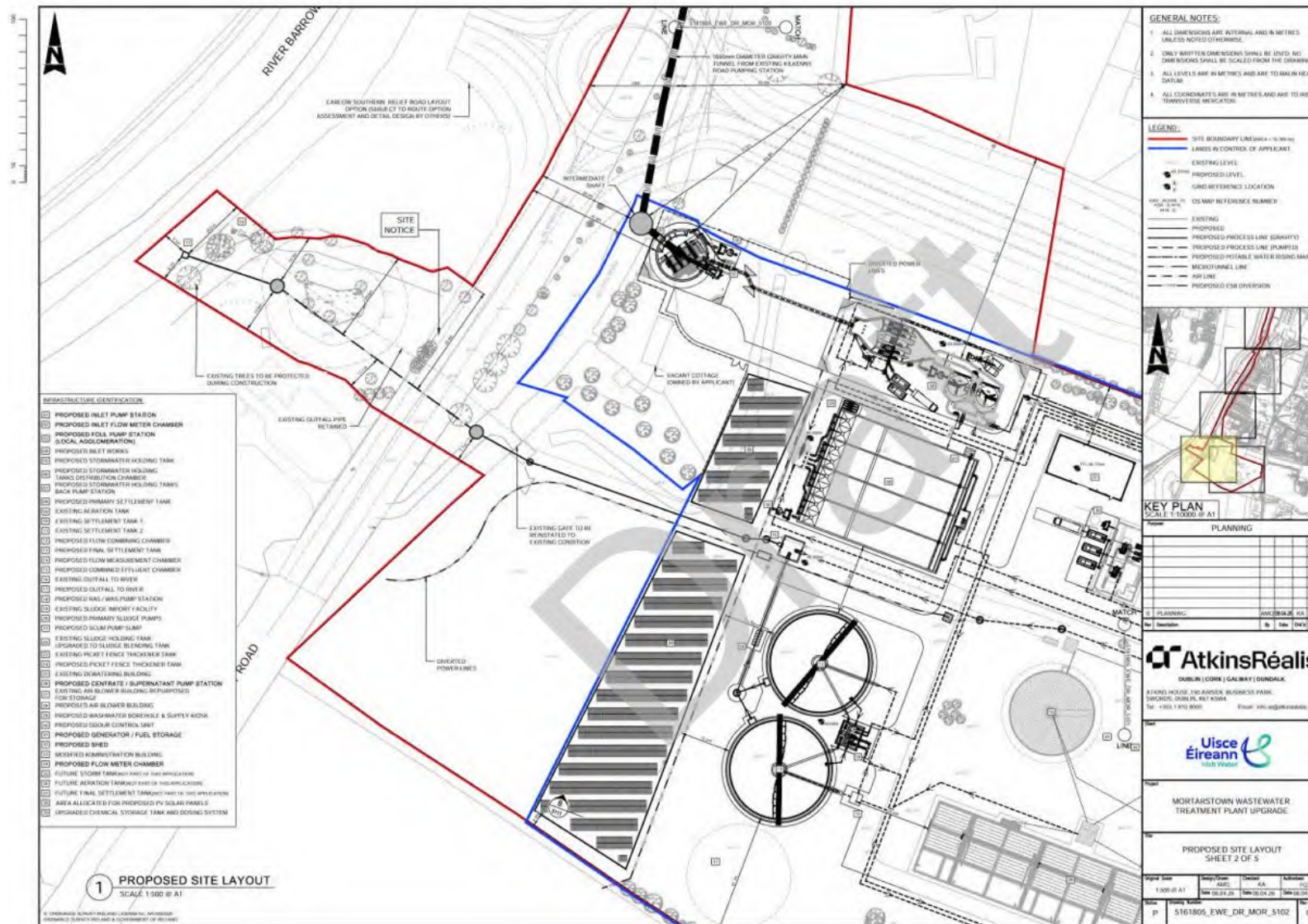


Figure 3-2 - Proposed Outfall Location (2 of 2)

3.2 Demolition Phase

Existing plant/items to be demolished as part of the Proposed Development is as follows:

- Storm tank;
- Inlet works;
- Various small chambers within the site; and,
- Existing sludge cake transfer facility.

Refer to Section 3.6 below for further details.

3.3 Decommissioning Phase

Existing plant/items to be decommissioned as part of the Proposed Development is as follows:

- Kilkenny Road pumping station;
- Existing rising main; and,
- Existing settlement tanks (2no.).

An Asbestos Refurbishment Survey Report (OHSS, 2018) was prepared which identified asbestos containing materials (ACM). This is discussed in more detail in Section 3.6.

3.4 Preliminary Construction Sequence

The construction activities for the Proposed Development are anticipated to run for 18-20 months between Quarter 4 2027 and Quarter 2 2029.

Dry weather flow will be calculated by the Contractor to determine the available downtime for linking new elements of the works to ensure the works are scheduled in a period of dry weather.

Sequence of the works are provided in the following sections and bullet items within these sections in order. It must be noted however, that this construction sequence is preliminary and may be subject to revision at a later stage of the development. A description of the construction phase at this preliminary juncture is presented below.

3.4.1 Microtunnel Gravity Sewer Construction

Pipe jacking for tunnel excavation and pipe installation, based on a combination of tunnelling Technology is proposed.

The construction of the tunnel will involve several stages including:

- Excavation of the launch chamber / New WWTP Wet Well.
- Tunnelling the new pipework from the launch chamber towards the Kilkenny Road pumping Station wet well.
- Excavating the reception chamber at the southern face the Kilkenny Road pumping Station wet well and complete tunnel connection into the new Shaft B. Note the connection between the new shaft A and the existing Kilkenny Road wet well is not to be completed at this point.
- Complete the construction of the new WWTP Wet Well and downstream pipework offline at new intake works and make connection to the tunnel



3.4.2 WwTP

The construction of the tunnel will involve several stages including:

- Construct the new screening and grit control inlet works offline.
- Construct the new Storm Tank 2 (tank at the east).
- Construct the new Primary Settlement Tanks, Final Settlement Tanks and associated pipework, chambers and pumping stations (RAS / WAS, etc.).
- Install sludge thickening tanks, sludge dewatering units, sludge import storage tanks and all associated chambers offline. Install and connect upstream and downstream pipework to these units offline.
- Install the temporary cofferdam on the River Barrow via a barge for driving the sheet piles.
- Construct the proposed outfall pipework, chambers and new outfall chamber and headwall.
- Install the new dewatering press, new sludge cake pumps and upstream and downstream pipework offline.
- Make necessary modifications to thickened sludge feed pumps arrangement and connect thickened sludge pipework upstream and cake pipe work downstream of the new dewatering unit to the existing pipework.
- Commission the new sludge dewatering facilities. This step should be performed outside of normal sludge dewatering operational hours.
- Install the new air blower building, 4no. new air blowers, associated equipment and pipework offline.
- Connect and commission the air blower pipework to the existing aeration tanks and decommission the existing air blowers and buildings. Commission the new sludge dewatering facilities.

3.4.3 Kilkenny Road Pumping Station Connection

3.4.3.1 Temporary Overpumping to Allow Modifications to Existing Wet Well

The manhole upstream of the pumping station is fed from 3 No. existing pipelines, namely a Ø750 mm dia, a Ø600 mm dia and a Ø225 mm dia. The Ø225 mm dia will be intercepted and diverted to reception shaft B. The remaining large pipes shall be overpumped to reception shaft B.

3.4.3.2 Kilkenny Road Pumping Station Connection to Tunnel

A connection will be made from the southern side of the wet well to the new shaft A. Flows will then be reinstated to the existing wet well and allowed to overflow to the reception shafts A and B and the new tunnel until testing and commissioning of the tunnel, the new pumping station and the new inlet works are complete. The existing pump station will serve as a back-up during this period.

3.4.3.3 Wet Well Modifications

Once testing and commissioning are complete, flows will be isolated upstream of the existing wet well and overpumped again to allow modifications to the existing wet well. The invert level of the wet well floor will be raised to provide at grade gravity flows to the outfall. Overflows to be maintained and modifications to be made as required.

Once works are complete, upstream flows can connect via the modified wet well to the new gravity tunnel. All existing infrastructure and equipment shall be decommissioned to ensure no hazards remain.

3.4.4 Connection of New Infrastructure into Treatment Process

It is proposed to complete 3 no. connections to allow for transfer the flows from the existing process to the new process. It will be required to complete these works during dry weather flow. Current estimates of available



attenuation indicate that flows to the WWTP can be isolated for a maximum of ca. 3 hours in the new tunnel to complete these works.

3.4.4.1 Stormwater Storage

Following the diversion of the flows to the new process stream, the existing storm tank can be demolished and the proposed storm tanks A and B, with associated pipework and chambers can be constructed. Note: this must be carried out during dry weather flows, contingency stormwater storage can be provided in the tunnel and potentially the existing final settlement tanks.

3.4.5 Commissioning

When the proposed infrastructure is constructed and connected into the process stream, a 3-month commissioning phase will commence. All existing infrastructure proposed for decommissioning will be retained for this period to act as a standby system, in the event of any commissioning issues, the existing infrastructure can be recommissioned into the process to enable rectification / remedial measure to be completed.

3.5 Construction Aspects

Construction works will take place between 8am and 6pm Mondays to Fridays inclusive, and between 8am and 1pm on Saturdays, with no works taking place on Sundays or Public Holidays (unless agreed via. written approval from Carlow County Council in exceptional circumstances).

3.5.1 Site Compound/ Site Office

The site compounds and the site office will be located in 3no. strategic locations across the site. For the main treatment works, the site compound is planned to be located at an available area to the south of the existing aeration tanks. The construction stage car park will be located at the left side of the site entrance. 18 no. parking lots are planned.

3.6 Demolition Works

Prior to any demolition being undertaken, the contractor is required to ensure that the requirements to remove material off site are understood and ensure that appropriate treatment/recovery/recycling is undertaken. Prior to demolition works the following shall be carried out:

- Completion of additional asbestos surveys and offsite removal and disposal of any identified asbestos by specialist contractors; and,
- Completion of any additional pre-demolition surveys (as may be required).

An asbestos survey, which will be included as part of the tender documentation was carried out by OHSS Safety Consultants (2018, OHSS) on the existing Mortarstown WwTP (see Figure 3-3). The following asbestos containing materials were identified within the WWTP:

- Asbestos containing floor tiles and bitumen located within the administration office and laboratory in the control building;
- Asbestos containing bitumen pads to underside of canteen sink unit in control building;
- Asbestos containing lining to penstock gates throughout the inlet works;
- Asbestos containing lining to penstock gates throughout the FDC Chambers #1 to # 4;

- Presumed asbestos containing lining to penstock gates throughout the outlet chamber area;
- Asbestos containing mastic to expansion joints in Aeration Tanks #1 to # 4;
- Presumed asbestos containing mastic to all older concrete tanks, chambers, vessels throughout the site;
- Presumed asbestos containing pipe work to the storm tank and outlet chamber area; and,
- Presumed asbestos cement pipes throughout underground areas of the site.

However, there were areas within the WwTP site that were inaccessible during the site survey. OHSS stated that there were areas of particular concern where asbestos containing materials are likely to be encountered including:

- Chambers where penstock gates are in use;
- Buried or hidden asbestos cement pipes; and
- Live services and equipment.

The Kilkenny Road Pumping Station was not included within the scope of the survey. OHSS recommends that the asbestos containing materials are removed in advance of any refurbishment or demolition works. Asbestos containing materials should only be removed by a competent contractor (OHSS, 2018).

As a number of areas within the WwTP and the existing Pumping Station were not surveyed, an additional asbestos survey shall be carried out prior to any demolition works taking place.

All identified asbestos must be removed by an asbestos removal contractor and disposed of as asbestos waste before the demolition works commence. Written confirmation must be obtained to ensure that all structures scheduled for demolition have been certified to be clear of asbestos material before demolition works occur.

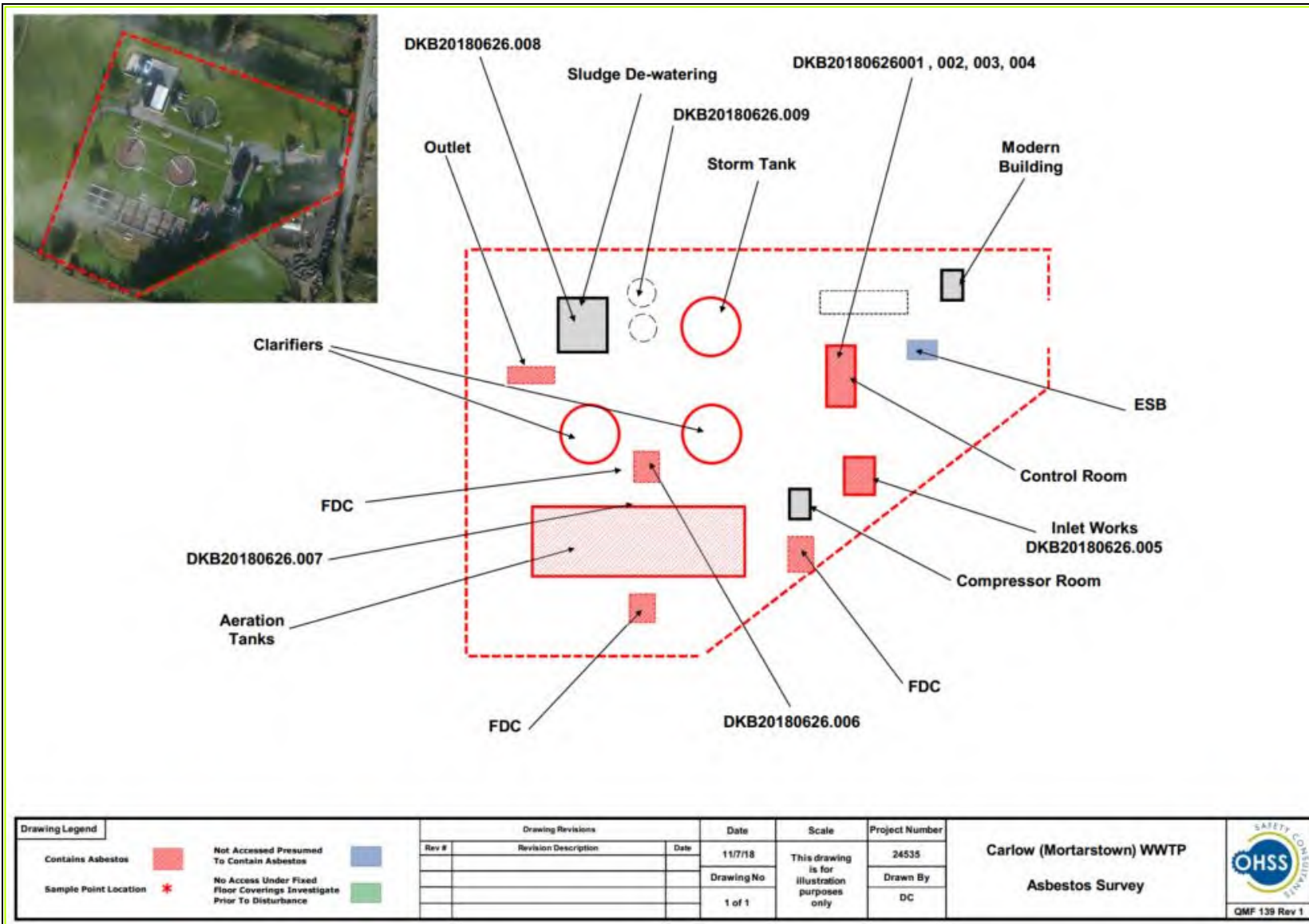


Figure 3-3 - The WwTP Site assessed in the Asbestos Survey (OHSS, 2018)

3.7 Construction/Demolition Waste

3.7.1 Details of Non-Hazardous Wastes to be Produced

The main waste types expected during the demolition phase will generally be steel, metal, concrete, timber and glass. The nominated contractor will need to separate and categorise waste streams as part of their method statement and work practices for this project.

Waste materials generated during the construction stage will primarily comprise of topsoil and excavated subsoil, along with construction materials such as concrete, steel, oil, timber and electrical cable. Additional waste will be generated during activities including the installation of structural foundations, rising main, dry/ wet wall, installation of pipeline, outfall chamber, small sludge pump sumps, and outfall pipe. Other sources of waste will include surplus general building materials, temporary settlement pond and waste generated by construction workers. Waste likely to be generated by construction workers includes organic/food waste, dry mixed recyclables (wastepaper, newspaper, plastic bottles, packaging, aluminium cans and tins), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided onsite during the construction phase. Waste printer/toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently from site offices.

Materials will be segregated and recycled where possible; all other materials will be disposed of offsite.

In accordance with good practice, excavated soils will be reused onsite where feasible, including for boundary treatment and landscaping purposes, if suitable. Details on Waste Soils Classification and transportation are outlined in Section 2.10.

3.7.2 Details of Potentially Hazardous Waste to be Produced

3.7.2.1 Asbestos Containing Material

An asbestos survey carried out by OHSS Safety Consultants (OHSS, 2018) identified a number of areas which contained asbestos (see Section 3.6). OHSS recommends that *'the asbestos containing materials are removed in advance of any refurbishment or demolition works. Asbestos containing materials should only be removed by a competent contractor'* (OHSS, 2018).

It is noted that the existing Kilkenny Road Pumping Station was not included within this survey and there were areas within the WwTP site that were inaccessible during the site survey. Therefore, an asbestos survey will be conducted on the existing buildings to be demolished as part of the Proposed Development during the pre-demolition works phase. Any hazardous asbestos containing material / waste (if present) will be removed prior to commencement of the demolition and construction phases, in strict accordance with the requirements outlined previously in Section 3.6.

3.7.2.2 Fuels, Oils and Chemicals

Hazardous materials (fuels, oils and chemicals) will be used at the site during the Construction Phase and Demolition Phase. As per industry standards any fuel and oils temporarily stored onsite will be stored in double skinned / appropriately bunded storage tanks, in a secure dedicated fuel storage location onsite. All other chemicals including paints, varnishes, glues, adhesives, degreasing agents and cleaning agents will be securely stored in a dedicated temporary bunded chemical store onsite. All machinery including any generators / pumps used onsite should be checked at the start of each work shift for evidence of any fuel or oil leaks (and removed offsite for any repairs as may be required).



Fuel, oil and chemical spill kits should be available at the designated storage areas, along with the relevant Safety Data Sheet (SDS). SDS documents contain information on the potential hazards (health, fire, reactivity and environmental) and how to work safely with the relevant chemical. All site operatives should receive training in appropriate refuelling methods and machinery checks, and chemical handling methods to be implemented onsite. On site staff including sub-contractors shall be made aware of the site Emergency Plan.

3.7.2.3 Contaminated Soils

Based on available information no potential sources of significant onsite ground contamination associated with current or historic land-use have been identified.

However, an Invasive Species Plant Species Biosecurity Plan released by INVAS (Jan 2026) revealed an abundant infestation of Japanese knotweed and Himalayan balsam. The successful implementation of this plan will prevent the spread of these invasive plant species throughout the Proposed Development site or beyond. The plan advises that the entire area west of Kilkenny Road should be considered infested.

The report states that:

All soil that is removed within the Japanese Knotweed infested zone will be stockpiled on a root barrier membrane for later removal off site. Soil outside the above Japanese Knotweed zones that is considered as contaminated with Himalayan balsam seed should be stockpiled separately on a root barrier to be removed off site, as disposal costs are 50% less than that of Japanese knotweed.

Stockpiles should be lined and covered by heavy duty 1000-gauge plastic), sampled and analysed for relevant parameters (e.g. Rilta Disposal Suite). Any contaminated soils must be characterised and disposed of as per the requirements listed in Section 2.10.

3.7.2.4 Other known hazardous substances

Other known hazardous substances will be stored in designated areas. This will generally be present in small amounts only and associated waste amounts generated will be kept to a minimum. Wastes will be stored in appropriate receptacles pending collection by an authorised waste contractor.

In addition, waste electrical and electronic equipment (WEEE) containing hazardous components, printer/toner cartridges and batteries (Lead, Ni-Cd or Mercury) may be generated from the temporary site offices during construction works. These wastes will be stored in appropriate receptacles pending collection by an authorised waste contractor.

3.7.2.5 Non-native Invasive Species

INVAS (2025) completed an invasive alien species management plan for the proposed site and concluded that the 'survey confirmed the presence of two Third Schedule S.I. 477/2011 invasive alien species, Japanese Knotweed and Himalayan Balsam. Both of these species were recorded from the banks of the River Barrow, within a Special Area of Conservation (River Barrow and River Nore SAC (Site code 002162))'.

INVAS Biosecurity carried out an herbicide treatment on 26th September 2025.

The invasive alien species management plan provides standardised practical methods for cleaning and disinfecting all equipment that comes into contact with Invasive Plant Species during construction.

The plan states that:

A designated route will be marked out from which vehicles will not deviate. Trucks will enter the site and be loaded directly from the dig site. The trucks will be loaded to a maximum level of 100 cm below the top sides of



truck. The load will be covered over by a tarpaulin before exiting the site. The trucks wheels and undercarriage will be inspected to ensure that they are fully biosecure.



4. Project Roles and Responsibilities

For the purposes of clarity, the roles and responsibilities of the project team for the Proposed Development should be determined at the very outset of the construction stage of this project. Key roles are typically performed by the Client, Engineer and Contractor as presented in Table 4-1 below. Specific details will be determined during the Detailed Design and Contract stage.

Table 4-1 - Roles and Responsibilities

Employer		Planning Agents	
The Client:	Uisce Éireann	The Planner:	TBC
Address:	Colvill House, 24-26 Talbot Street, Dublin 1	Tel:	TBC
Contact:	Connor Delaney	Contact:	TBC
Employers Representative		Civil, Structural and Environmental Team	
The Engineer:	TBC	Consultant:	TBC
Tel:	TBC	Tel:	TBC
Contact:	TBC	Contact:	TBC
Project Supervisor for the Design Process (PSDP)		Contractor	
The Engineer:	TBC	The Contractor:	TBC
Tel:	TBC	Tel:	TBC
Contact:	TBC	Contact:	TBC
Project Supervisor Construction Stage (PSCS)		Environmental Manager	
The Contractor:	TBC	The Contractor:	TBC
Tel:	TBC	Tel:	TBC
Contact:	TBC	Contact:	TBC

The EPA (2021) 'Best Practice Guidelines for the preparation of resources & waste management plans for construction & demolition projects' state that a number of responsibilities for the development of resources & waste management plans are identified for parties under Waste Framework Directive 2008/98/EC including the following:

- Original Waste Producer means anyone whose activities produce waste or anyone who carries out pre-processing, mixing or other operations resulting in a change in the nature or composition of this waste (in this case the Client).
- Waste Holder means the waste producer or the natural or legal person who is in possession of the waste (the Client).

The guidelines highlight the responsibilities of the following key personnel for implementing resources & waste management plans.



4.1 The Client/Employer

The responsibilities of the client are as follows:

- Require the preparation and submission of an RWMP as part of the design and planning submission;
- Require the preparation and submission of an updated RWMP as part of the construction tendering process;
- Ensure that the RWMP is agreed and submitted to the local authority / ACP prior to commencement of works on site; and,
- Request the end-of-project RWMP from the Contractor.

4.2 Design Team

The responsibilities of the design team are as follows:

- Drafting and maintaining the RWMP through the design, planning and procurement phases of the project;
- Appointing a Resource and Waste Manager (RM) to track and document the design process, inform the Design Team and prepare the RWMP;
- Include details and estimated quantities of all projected waste streams;
- Incorporate relevant conditions imposed in the planning permission into the RWMP;
- Handover of the RWMP to the Contractor at commencement of construction for the development of the RWMP in a similar fashion to how the safety file is handed over to the Contractor; and,
- Work with the Contractor as required to meet the performance targets for the project.

4.3 Contractor

The responsibilities of the contractors are as follows:

- Adding to, implementing and reviewing the RWMP through construction (including the management of all suppliers and sub-contractors) as per the requirements of these guidelines (EPA, 2021).
- Identifying a designated and suitably qualified Resource and Waste Manager (RM) who will be responsible for implementing the RWMP.
- Identifying all permitted hauliers to be engaged to transport each of the different kinds of resources / wastes off-site.
- Identify permitted/licenced waste management facilities that can accept the types of wastes that will be generated during construction.
- Establishing a recording and reporting procedure for waste management, emergency management and environmental monitoring.
- Establishing a procedure for dealing with non-compliances and corrective actions.
- Establishing a procedure for Article 27 compliance, if required.
- 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.
- Carry out training and site inductions; and
- Preparing a RWMP Implementation Review Report at project handover.



4.4 Resource Manager

The responsibilities of the Resource Manager (RM) are as follows:

- Responsible for the efficient operation of onsite waste management procedures;
- Responsible for ensuring all conditions of the planning permission are carried out;
- Responsible for ensuring that all waste removed offsite is appropriately characterised (under the correct LoW / EWC code), transported and disposed of in accordance with all relevant waste management legislation;
- Maintain all waste management and disposal / recovery records onsite throughout the project. These site records should be made available for viewing by the Client, Employers Representative and statutory consultees (CCC, EPA) as required.
- Record keeping in the correct documentary procedure, waste auditing and best practice methods in onsite waste minimisation and waste management toolbox talks with site operatives to highlight any specific waste management concerns will also be carried out should the need arise.



5. Design Approach

The client and the design team have integrated the EPA (2021) 'Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects' into the design workshops, to help review processes, identify and evaluate resource reduction measures and investigate the impact on cost, time, quality, buildability, second life and management post demolition and construction. Further details on these design principals can be found within the aforementioned guidance document.

The design team have undertaken the design process in line with the international best practice principles to firstly prevent waste, reuse where possible and thereafter sustainably reduce and recover materials.

The sections below have been the focal point of the design process and will continue to be analysed and investigated throughout the design process and when selecting material. The approaches are based on international principles of optimising resources and reducing waste on construction projects through methods highlighted in section 2.5.

These principles are applied to the RWMP through both the pre-construction phase and the construction phase. At the preparatory phase the following measures will aid the prevention of waste in the first instance:

- Select procurement routes to minimise unnecessary packaging – for example applying 'Just-in-Time' (JIT) delivery processes to minimise material spoilage;
- Use of 'consolidation centres' to support JIT delivery – these are strategically-located storage and distribution facilities where materials can be stored prior to JIT delivery to sites;
- Implement ordering procedures and supply chain systems that avoid waste, i.e. no over-ordering, use of take-back schemes for packaging, material surplus and offcuts;
- Select procurement routes that minimise unnecessary packaging; and,
- Plan the work sequence to reduce the potential for on-site residual resource generation.

5.1 Design for Reuse and Recycling

Undertaken at the outset and during project feasibility and evaluation:

- The established potential for any reusable site assets (buildings, structures, equipment, materials, soils, etc.);
- The consideration of the potential for refurbishment and refit of existing structures or buildings rather than demolition and new build; and
- The assessment of existing buildings on the site that can be refurbished either in part or wholly to meet the Client requirements.

These steps enabled the optimum recovery of assets on site.

The site preparation works will involve the demolition of the existing structures and buildings, excavation for the installation of pipelines, structural buildings, and utilities during the construction phase.

The total volume of topsoil to be excavated is ca 8,000m³ in accordance with good practice, 2,000 m³ of topsoil will be reused onsite where feasible, including for boundary treatment and landscaping purposes, if suitable. The soil will be characterised and transported in accordance with the guidelines provided in Section 2.10.



The steps outlined in Section 3.3 will be carried out before demolition works occurs. The pre-demolition survey will detail the resource recovery best practice, i.e. deconstruction and disassembly where feasible and practicable. The reuse and recycling of deconstructed components, elements and materials must be carried out in compliance with relevant requirements relating to by-product, end-of-waste and waste data reporting. It is recommended that demolition is informed by the European Commission (2018) 'Guidelines for the waste audits before demolition and renovation works of buildings.' This document provides best practice guidelines for the assessment of waste streams prior to demolition or renovation through pre-demolition audits. The document also provides a series of useful templates for preparing an inventory of materials prior to demolition. The aim of the guidance is to facilitate and maximise recovery of resources from demolition for beneficial reuse and recycling.

An application may be made to the EPA under Article 27 of the European Communities (Waste Directive) Regulations 2011 for the use of excess soil or materials as a by-product if a definite use and need for this material can be determined. Also an application may be made to the EPA under Article 28 which sets out the grounds by which a material, which is recovered or recycled from waste, can be deemed to be no longer a waste and complies with a set of end-of-waste criteria (substance/ object to be used for specific purposes, a market or demand exists, fulfils technical requirements and no overall adverse impact to human health or the environment).

During the construction, the contractor will review availability of recycled aggregates and other materials in the local area and decide on the most sustainable options, for example, the use of an on-site crusher for recycling of residual concrete to generate aggregates for use on site (subject to the appropriate waste consent, such as an Article 28 end of waste decision and once processing is industry standard practice, such as ensuring the aggregate outputs comply with the specifications of IS EN 12620).

The contractor will review 'new' materials to be used as part of the Proposed Development, which contain a recommended percentage of recycled content if they meet the functional, performance and regulatory requirements and are available locally at a reasonable cost.

5.2 Design for Green Procurement

As mentioned in in Section 2.3 'The Green Public Procurement Strategy and Action Plan 2024-2027' is Ireland's national policy framework for embedding environmental, climate, and circular-economy principles into all public-sector purchasing. The report states:

T1: Built Environment: From 2025, a minimum proportion of construction materials procured by public bodies under new contract arrangements comprise recycled materials. This target will be updated following further data analysis, and publication of the 2nd Whole of Government Circular Economy Strategy which will include sectoral targets in relation to the construction sector.

Waste prevention and minimisation pre-procurement have been discussed and will be further discussed in this section. The Design Team will discuss proposed design solutions, encourage innovation in tenders and incentivise competitions to recognise sustainable approaches. They should also discuss options for packaging reduction with the main Contractor and subcontractors/suppliers using measures such as 'Just-in-Time' delivery and use ordering procedures that avoid excessive waste. The Green procurement extends from the planning stage into the detailed design and tender stage and will be an ongoing part of the long-term design and selection process for this development.

When selecting suppliers, it is essential to assess the technical capabilities required for the products or services being procured. This is valuable from the buyer's point of view as suppliers that clearly cannot meet the requirements will be eliminated. In addition, it is also useful for the suppliers to get a clear understanding of how committed the Client is to protect sustainability and what will be essential for any submission to be successful.



Green procurement integrates environmental considerations that include a combination of cost and quality into the procurement process. In order to help achieve this, both operational and embodied carbon targets for this project will be set out early on in collaboration with the design team in order to ensure that green procurement can take place. Through comparative data on embodied carbon, low carbon materials options will be favoured where possible. A sustainable construction plan will be developed that addresses all aspects of construction relating to design from reducing demolition, considering reuse / upcycling and recycling of existing materials to approaching suppliers for green construction materials e.g., Responsible Steel and adopt Design of Off-Site Construction. *'The use of off-site manufacturing reduces residual wastes by up to 90% (volumetric building versus traditional)'* (EPA, 2021).

5.3 Design of Off-Site Construction

"The use of off-site manufacturing reduces residual wastes by up to 90% (volumetric building versus traditional)" (EPA, 2021). The decision to use offsite construction is typically cost led but there are significant benefits for resource management. Some further considerations for procurement which are being investigated as part of the design process are listed as follows:

- Modular buildings as these can displace the use of concrete and the resource losses associated with concrete blocks such as broken blocks, mortars, etc. Modular buildings are typically pre-fitted with fixed plasterboard and installed insulation, eliminating these residual streams from site.
- Use of pre-cast structural concrete panels which can reduce the residual volumes of concrete blocks, mortars, plasters, etc.
- The use of prefabricated composite panels for walls and roofing to reduce residual volumes of insulation and plasterboards.
- Using pre-cast hollow-core flooring instead of in-situ ready mix flooring or timber flooring to reduce the residual volumes of concrete/formwork and wood/packaging, respectively.
- Designing for the preferential use of offsite modular units.

Materials with a reduced environmental impact will be encouraged to be used in the detailed design phase of this project through re-use of materials or incorporation of recycled materials in place of conventional building materials wherever possible.

5.4 Design for Material Optimisation

As stated in the EPA (2021) guidelines, the key design principle for design for material optimisation *'is to ensure manufacturers and construction companies adopt lean production models, including maximising the reuse of materials onsite. This helps to reduce the environmental impacts associated with transportation of materials and from waste management activities.'*

Design for material optimisation includes the use of standardised sizes for certain materials to help reduce the number of offcuts produced on site, focusing on promotion and development of off-site manufacture. Some further considerations for design for material optimisation which are being investigated as part of the design process are listed as follows:

- Standardise design details and specified materials. The designs have been undertaken in line with the relevant Uisce Éireann Technical Standards, Codes of Practice and Specifications:
 - IW-TEC-800-01 Wastewater Gravity Sewers.
 - IW-TEC-800-02 Wastewater Pumping Stations & Rising Mains.
 - IW-CDS-5030-01 Wastewater Infrastructure Standard Details.
 - IW-CDS-5030-03 Code of Practice for Wastewater Infrastructure.



- Introduce design 'freezes' to promote concise Client design briefs and early engagement of the supply chain.
- Completing a cut and fill analysis, which can create the potential to use material within the project, such as embankments etc, in turn reducing the material been sent to landfill and decreasing imported fill.

5.5 Design for Flexibility and Deconstruction

Design flexibility has and will be investigated throughout the design process to ensure that where possible products (including buildings) only contain materials that can be recycled and are designed to be easily disassembled. As per the EPA (2021) guidelines '*consider material efficiency for the duration and end of life of a building project; flexible, adaptable spaces that enable a resource-efficient, low-waste future change of use; durability of materials and how they can be recovered effectively when maintenance and refurbishment are undertaken and during disassembly/deconstruction*'.



6. Key Material & Quantities

Table 6-1 shows the potential recycling/re-use targets of each waste stream for the Proposed Development. These are not project specific resource and waste management targets for the site. Once site specific targets are set and these targets have been confirmed by the Client, this information should be updated.

Table 6-1 - Potential Recycling/Re-use Targets

Waste type	Recycling/ Reuse %* (*WRAP best practice recovery rates)
Imported material	70-90
Excavated material	95
Concrete, track ballast etc	50-90
Wood	90
Packaging	95
Plastic	95
Asphalt (non-hazardous)	100
Metals	100
Paper and Cardboard	100
Haz soil	50
Foul waste	100

6.1 Type of Waste

The type of waste generated onsite is surplus or waste materials arising from either the materials imported to site or from those generated on site. Imported materials are those which are imported to site for inclusion into the temporary and permanent works (such as concrete, construction aggregates, asphalt and cabling etc.). Included within this waste stream is product packaging. This waste stream is produced from a range of potentially preventable activities. Such activities include damaged materials and the over ordering of materials. This waste stream is described as construction (C) waste within the RWMP. Site generated materials are those which exist within the proposed works footprint such as topsoil, sub-soil, trees and materials from demolition works etc. This waste stream is categorised as either excavation (E) or demolition (D) waste within the RWMP. Refer to Table 6-2 for the breakdown of waste. For both groups of materials there are a number of considerations to waste management such as waste reduction, segregation of waste, disposal of waste, financial impacts of waste disposal and recording, monitoring, education and reviewing data.



Table 6-2 - Breakdown of Types of Waste

Type of waste	Description
Imported material	Where possible, consideration should be given to the re-use of material back into the project development works. Any waste produced through the importation of materials needs to be monitored and included in the RWMP under construction works. Where possible, consideration should be given to the use of recycled imported material such as concrete, which has a higher recycled content.
Excavated materials (E)	Materials such as excavated soils should be segregated during the excavation process. Appropriately experienced staff should supervise the excavation works to manage the segregation of soil materials. Site-derived materials of a similar nature should be stockpiled together and any changes in the physical and/or chemical properties should prompt further segregation. Soils should be placed in clearly identified stockpiles and chemical testing undertaken to confirm the potential for re-use on site, or, if considered inappropriate for re-use (due to geotechnical or chemical properties or being surplus), to inform off site treatment and/or disposal routes. Where soil materials meet the geotechnical and chemical criteria for re-use given the proposed end use scenario, such materials may be re-used on site, if required. Disposal of excavated material will be by licensed carriers, to licensed landfill sites and handled in accordance with the Waste Management Regulations.
Concrete	This waste will be generated by works and clearance / demolishing of existing structures/buildings for the Proposed Development.
Wood	Packaging such as pallets.
Packaging	From construction materials, etc.
Plastic	Offcuts of pipework/ducting etc.
Vegetation	<i>Mortarstown WWTP Tree Survey Report</i> reveals that some of the trees and hedges in and around the project site will need to be removed to facilitate the expanded footprint of the WWTP and to allow for the works necessary to install the new service connections. The <i>Invasive Alien Plant Species Biosecurity Plan</i> (INVAS, 2025) states that there are abundant infestations of Japanese knotweed and Himalayan balsam throughout the Proposed Development site are west of the Kilkenny Road. If any material deemed acceptable from the enabling works is produced e.g. good quality topsoil, this should be stored and re-laid, within the Proposed Development or if this is not possible it should be sent for composting.
Metals	From the demolition and construction phases. Offcuts from reinforced concrete for building foundations. Metal components or assets removed for site clearance
Paper and Cardboard	Packaging from components delivered to site.
Segregated Waste	Haz Nominal 1% to account for packaging that contained hazardous material such as oils, solvents, sealants etc.

In relation to the overall works particular attention is drawn to the following waste/soil related activities:



- Given the site location deliveries/ removals are to phone ahead; Just-in-Time' (JIT) delivery processes; receive precise directions and named person to liaise with on site. The Contractor is to erect required signage approaching site and ensure deliveries are programmed to cause minimal disruption.
- Hazardous manual handling operations are to be avoided so far as is reasonably practicable.
- Note that waste generated by the project will be managed in compliance with Waste Management Act 1996, Waste Management (amended) Act 2003 and associated Regulations.

6.2 Summary of Potential Waste Streams (LoW/EWC Codes)

Waste arising from the construction works will be transported off site by an approved waste contractor holding all the necessary waste collection and transportation permits. All the waste arisings requiring reuse, recycling, recovery or disposal will be brought to facilities holding the appropriate Certificate of Registration, Waste Licence or Waste Permit, as required.

A summary of the main hazardous and non-hazardous waste streams which could arise during the Construction Phase are presented in Table 6-3, along with the relevant List of Waste (LoW) code. The LoW code (also referred to as European Waste Catalogue (EWC) code) serves as a common method of characterising various waste streams. Assignment of waste codes will determine how and where the generated waste can be disposed of. LoW codes must be selected for each waste type – a full description of each code is available on the EPA website².

It should be noted that the summary list presented in Table 6-3 is a non-exhaustive list and it will be the Contractors responsibility to ensure all waste streams generated onsite during the Construction Phase for this project are appropriately characterised, managed and disposed of in accordance with all relevant waste management legislation.

Table 6-3 - Summary list of LoW Codes, which may be relevant to the site (See Note 1)

Waste Material	LoW Code
Concrete, bricks, tiles and ceramics	
Concrete	17 01 01
Bricks	17 01 02
Tiles and ceramics	17 01 03
Mixtures of concrete, bricks, tiles and ceramics containing hazardous substances	17 01 06*
Mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06	17 01 07
Wood, glass and plastic	
Wood	17 02 01
Glass	17 02 02
Plastic	17 02 03

² <https://www.epa.ie/publications/monitoring--assessment/waste/2019--FULL-template.pdf>



Waste Material	LoW Code
Bituminous mixtures, coal tar and tarred products	
bituminous mixtures containing coal tar	17 03 01*
bituminous mixtures other than those mentioned in 17 03 01	17 03 02
metals (including their alloys)	
mixed metals	17 04 07
Soil (including excavated soil from contaminated sites), stones and dredging spoil	
soil and stones containing hazardous substances	17 05 03*
soil and stones other than those mentioned in 17 05 03	17 05 04
Gypsum-based construction material	
Gypsum-based construction material	17 08 02
Other construction and demolition wastes	
mixed construction and demolition waste other than those mentioned in 17 09 01, 17 09 02 and 17 09 03	17 09 04
Wastes from electrical and electronic equipment	
discarded equipment containing chlorofluorocarbons, HCFC, HFC	16 02 11*
discarded equipment containing free asbestos	16 02 12*
discarded equipment containing hazardous components (16) other than those mentioned in 16 02 09 to 16 02 12	16 02 13*
discarded equipment other than those mentioned in 16 02 09 to 16 02 13	16 02 14
hazardous components removed from discarded equipment	16 02 15*
components removed from discarded equipment other than those mentioned in 16 02 15	16 02 16
Miscellaneous Waste	
Paper and cardboard	20 01 01
biodegradable waste (Green waste)	20 02 01
batteries and accumulators included in 16 06 01, 16 06 02 or 16 06 03 and unsorted batteries and accumulators containing these batteries	20 01 33*
batteries and accumulators other than those mentioned in 20 01 33	20 01 34
Waste fuel oil and diesel	13 07 01*
Waste petrol	13 07 02*
Waste other fuels (including mixtures)	13 07 03*



Waste Material	LoW Code
hydraulic oils, containing PCBs	13 01 01*
chlorinated emulsions	13 01 04*
non-chlorinated emulsions	13 01 05*
mineral-based chlorinated hydraulic oils	13 01 09*
mineral based non-chlorinated hydraulic oils	13 01 10*
synthetic hydraulic oils	13 01 11*
readily biodegradable hydraulic oils	13 01 12*
other hydraulic oils	13 01 13*
mineral-based chlorinated engine, gear and lubricating oils	13 02 04*
mineral-based non-chlorinated engine, gear and lubricating oils	13 02 05*
synthetic engine, gear and lubricating oils	13 02 06*
readily biodegradable engine, gear and lubricating oils	13 02 07*
other engine, gear and lubricating oils	13 02 08*
Chemicals – Solvents	20 01 13*
Chemicals – Pesticides	20 01 19*
Chemicals - paint, inks, adhesives and resins containing hazardous substances	20 01 27*
Chemicals - paint, inks, adhesives and resins other than those mentioned in 20 01 27	20 01 28
Chemicals - detergents containing hazardous substances	20 01 29*
Chemicals - detergents other than those mentioned in 20 01 29	20 01 30
fluorescent tubes and other mercury-containing waste	20 01 21*
17 06 05* construction materials containing asbestos	17 06 05*
insulation materials other than those mentioned in 17 06 01 and 17 06 03	17 06 04
wastes from asbestos-cement manufacture containing asbestos	10 13 09*
wastes from asbestos-cement manufacture other than those mentioned in 10 13 09	10 13 10

Note 1: The use of an asterisk on a LoW code denotes that the material is characterised as hazardous.



6.3 Waste Generation

6.3.1 Demolition Waste

The total demolition waste (excluding asbestos) is an estimated 876m³ or 2190 tonnes. The Contractor will be required to ensure that all demolition materials are managed, stored and disposed of in an appropriate manner in accordance with all relevant waste legislation. Additional asbestos surveys must be carried out prior to any demolition works taking place, as outlined in Section 3.7. No demolition works will be permitted to commence until written confirmation has been obtained that all structures scheduled for demolition have been certified to be clear of asbestos material.

In accordance with best practice, a pre-demolition survey will be undertaken by the contractor prior to the commencement of the demolition works. It is intended that estimated waste figures will be determined by the demolition contractor during this phase, based on the results of this survey, and the Contractors proposed demolition methodology.

Final waste volumes arising from the pre-demolition surveys and demolition works can only be confirmed via. site audited waste disposal / recovery records. It is understood that all the waste arising from the demolition works will be transported off site by an approved waste contractor holding all the necessary waste collection and transportation permits.

6.3.2 Construction Waste

A typical breakdown of wastes generated during construction of this development type in Ireland is presented in Figure 6-1 (EPA, 2009). It is taken from the '*Development of an Audit Methodology to Generate Construction Waste Production for the Irish Construction Industry*' (EPA, 2009). In this EPA report, the definition of Construction Waste applies to all waste fractions deposited in waste skips and excludes any excavated soils which are discussed in Sections 6.3.3 and 6.3.4. Predicted construction waste volumes are based on the overall area of completed floor space.



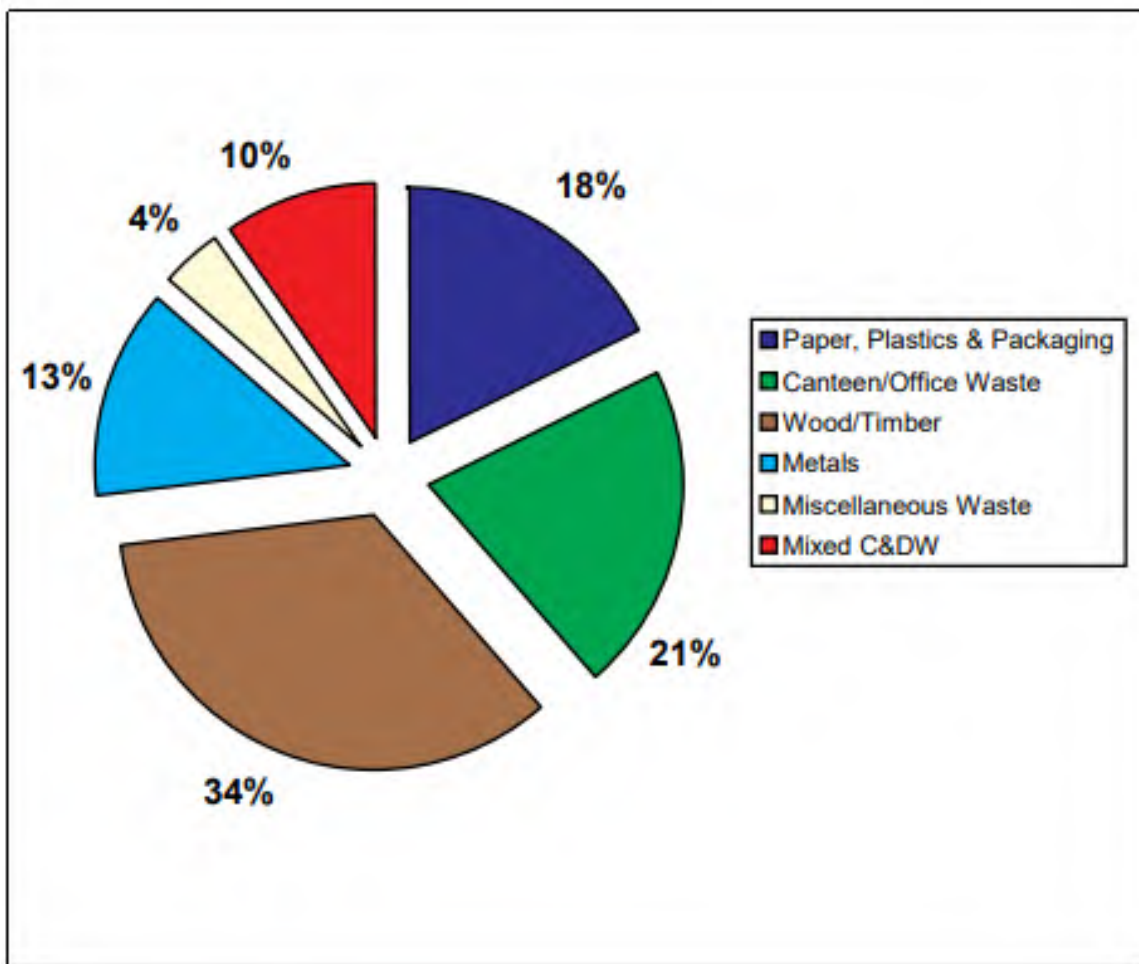


Figure 6-1 - New productive infrastructure construction composition by volume (m³) (EPA, 2009).

Taking account of an average generated waste factor of 0.098m³ per m² (of completed floor space) for 'new productive infrastructure construction' (EPA, 2009)³, and based on the building floor space areas for the Proposed Development provided, preliminary waste volumes during the construction phase have been calculated, and are estimated to be 1060m³ or 825 tonnes.

The total estimated construction waste volume of 1060m³ has been further broken down into various waste streams tonnages, as presented in Table 6-4. This calculation is based on representative data gathered during a case study of waste composition arising from a new productive infrastructure construction (EPA, 2009) (refer to Figure 6-1). Volumes have been converted to tonnes (now referred to as 'amounts') using factors obtained from relevant UK waste guidance.⁴

It is noted that these amounts are based on literature values for representative Irish construction sites and are an approximate guideline only. In addition, no specific allowance has been made for waste arising from the construction of access roads, utilities and services. Final amounts can only be confirmed via site audited waste disposal / recovery records.

³ Waste factor based on EPA audited data from new social infrastructure construction sites (2004 to 2005). EPA STRIVE Report Series 26 (2009) available at: http://www.epa.ie/researchandeducation/research/researchpublications/strivereports/STRIVE_26_Kelly_ConstructionWaste_syn_web.pdf

⁴ http://www.sustainabilityexchange.ac.uk/conversion_factors_for_calculation_of_weight_to_vol??end

Table 6-4 - Predicted Waste Amounts and Breakdown for each Waste Stream

Waste Stream	Estimated Amount (tonnes)
Mixed C&D Waste	127
Wood/Timber	252
Metals	165
Paper, Plastics & Packaging	114
Canteen Office Waste	167
Total	825

6.3.2.1 Mixed C&D Waste

Following segregation onsite, any residual mixed C&D waste (127 tonnes) will be collected in areas specifically for mixed C&D waste; these will be removed offsite for subsequent offsite separation and disposal at a waste disposal / recovery facility.

6.3.2.2 Wood/Timber

Timber waste (252 tonnes) will be segregated in order to prevent contamination by other wastes and will be stored so as to limit the potential for this material to rot. Wooden pallets will be returned to relevant suppliers where possible. Timber offcuts will be reused onsite where feasible. A covered receptacle for waste wood will be placed in the waste storage area, prior to removal from Site for recycling. All such timber will be free from chemical treatment.

6.3.2.3 Metals

Metal waste (ca. 165 tonnes) will be generated during the project, particularly arising from the use of rebar. All waste metal will be segregated offsite at the waste disposal / recovery facility for reuse and recycling. Given the significant scrap value associated with metal waste, this waste will be stored in a dedicated container within a secure part of the Site, and regular collections from Site to the waste recycling facility will limit the potential for unauthorised entry and theft.

6.3.2.4 Papers, Plastics and Packaging

Packaging wastes (ca.: 114 tonnes) will be removed (paper / cardboard / plastic / general waste) offsite for subsequent offsite separation and disposal at a waste disposal / recovery facility. Waste packaging will be stored in dedicated containers in the waste storage area for collection and subsequent segregation and recycling.

6.3.2.5 Canteen/Office Waste

Onsite staff canteens will generate food and packaging waste (ca. 167 tonnes). Dedicated containers will be provided at each canteen to permit easy segregation of these wastes; brown bins will be provided for compostable food waste, green bins will be provided for dry recyclables (packaging, hard plastic, paper, cardboard, tetrapak etc.) and black bins will be provided for any residual waste.

6.3.2.6 Other Wastes

In addition to the above waste streams other waste materials will be generated during the construction phase. These miscellaneous wastes are estimated to make up ca. 4% of construction waste, as shown in. These residual wastes will typically comprise non- recycling waste such as soiled paper / cardboard / plastics / cloth, canteen



food waste, fibreglass, polystyrene insulations and plasterboard. These materials will be stored separately to all other waste streams to prevent any cross contamination.

All mixed C&D waste materials will be segregated onsite into the various waste streams, via. dedicated skips and storage areas. Waste will be removed from site by a suitably permitted waste haulage contractor. The Contractor should clearly identify all proposed waste haulage contractors within the project specific Detailed RWMP. Each waste haulage contractor must hold a current valid waste collection permit issued by the National Waste Collection Permit Office (NWCPO). All waste materials generated during the Construction Phase must be removed offsite to an appropriately permitted or licenced waste disposal / recovery facility.

6.3.3 Contaminated Soils

The estimated volume of contaminated soil to be taken offsite during the construction phase is ca. 334m³ and is based on the area determined to potentially be contaminated with Japanese Knotweed seeds and Himalayan balsam. The contaminated soil will be removed offsite in accordance with all relevant waste management legislation.

6.3.4 Native Non-Contaminated Soils

The estimated volume of soil (including contaminated soils) generated during the construction phase (ca. 88,834 m³) will be minimised by reducing / eliminating the need for excavation. Lime stabilisation may also be used to reduce the amount of soil generated onsite. The balance of soil materials excavated from the site will be reused where possible for landscaping purposes, and infill where appropriate, ensuring that any residual soil waste is kept to a minimum. Any surplus soil will be characterised and removed offsite in accordance with all relevant waste management legislation. Based on preliminary engineering calculations it is anticipated that ca. 86,000 m³ of non-contaminated soils and 334 m³ of contaminated soils will require offsite disposal.

2,500 m³ of soil has been classed as a 'by-product'. Under Regulation 27 of the European Communities (Waste Directive) Regulations 2011, in order to minimise waste, non-contaminated soils may be classed as by-products and no longer defined as waste if:

6.3.5 Total Waste Volume

The total waste volumes are listed in Table 6-5.

Table 6-5 - Total Waste Volumes

Waste Stream	Estimated Volume (m³)
Demolition Waste	876
Construction Waste (excluding soils)	1060
Contaminated Soils	334
Non-contaminated Soils	86,000
Hazardous Waste (asbestos)	TBC
Total Volume	88,270 (excluding asbestos)



6.4 Tracking and Documentation Procedures for Off-Site Waste

All waste transport and disposal / recovery must be carried out in accordance with all relevant waste management legislation and any subsequent future legislation which may apply. A nominated RM for the project will be responsible for ensuring correct tracking and documentation procedures are undertaken for all waste removed from site during the project. Each consignment of waste removed from site will be tracked and recorded. A site record detailing the date, truck registration, waste type, estimated volume and destination will be filed onsite for each consignment, along with the corresponding truck docket and weighbridge record at the offsite disposal / recovery destination. A copy of the relevant waste collection permits and waste permit / waste licence for the relevant disposal / recovery facilities should be made available onsite for the duration of the project.

6.4.1 Uisce Éireann Waste Tracker

All waste movements must be recorded on Uisce Éireann's Waste Management Tracker (IDD-FM-06) and sent electronically to the project's/programme's Resident Engineer or Project Manager (as appropriate) on a monthly basis.

The supporting information (e.g. waste transfer note documentation for all waste removed offsite) must be uploaded to the project files or as directed by the Project Manager.

The objectives of this tracker, according to UÉ are:

- Identify the volumes and types of waste generated at UÉ sites and to track our progress against sustainability targets;
- Detail how the waste is treated at the final destination (recycled, reused, recovered, disposal) and identify opportunities to reduce waste generated through circular economy processes, e.g. Article 27 By-product, Article 28 End-of-Waste;
- Ensure regulatory compliance and that the required waste management information is included; and
- Track waste generated in a standardised and user-friendly format for ease of use across UÉ projects.

6.5 Construction Waste Management Costs

Under the Waste Framework Directive 2008/98/EC and in accordance with the polluter-pays principle, there is a legal requirement that the costs of disposing of waste must be borne by the holder of waste or by the producers of the product from which the waste came, thereby placing the legal obligation for the management of the waste on the Client.

In terms of waste management and disposal costs, at this preliminary juncture it would not be feasible to estimate the total cost of waste management and disposal associated with the Proposed Development. Estimated costs will be determined by the Contractor. The total costs of waste management will take into account handling costs, storage costs, transportation costs, revenues from rebates and disposal costs.



7. Site Management

The Contractor will nominate a Resource Manager for the duration of the Construction and Demolition Phase. The responsibilities of the RM are listed in Section 4.4.

7.1 Site Compound Location

The Construction compound will be located within the Construction areas and redline boundary, as clearly identified within Volume 2 of the EIAR (AtkinsRealis, 2026) submitted as part of this planning application. The location of the site compound areas has been selected to avoid any potential impacts to environmental receptors and to reduce any potential for impact on other sensitive receptors.

7.2 Training

All site personnel should receive waste management information and environmental induction before commencing work on the project, which will include a module on resource management as part of their initial site briefing from the RM. The initial briefing should include a discussion of the key points set out in the RWMP, along with the specific procedures to be implemented onsite to segregate and appropriately store the generated waste and key control measures such as refuelling procedures and oil, fuel and chemical storage requirements. This will ensure that all onsite personnel are familiar with the site-specific waste management strategy.

As a minimum the following will be included in the induction, as per the EPA (2021) guidelines:

- Scope and content of the RWMP;
- Project commitments and targets;
- List of anticipated resources and wastes and volumes to be generated;
- Procedures for the proper identification and segregation of resources and wastes;
- Temporary storage and the location of the WSAs; and,
- Clear instruction on hazardous wastes will be incorporated into the training programme and the particular dangers of each hazardous waste.

The environmental induction shall be provided and delivered by the Contractor and be tailored to suit the tasks and responsibilities of site personnel from management and supervisory level through to site operatives. Toolbox talks on resource management should be provided on a continuous basis. Regular toolbox talks shall ensure site staff are aware of the resource management practices associated with their work and the appropriate control measures that are required to carry out their work in compliance with the RWMP.

7.2.1 Disposal/Recycling Proposals for Each Waste Stream

All C&D waste materials will be segregated onsite into the various waste streams, via. dedicated skips and storage areas. Waste will be removed from site by a suitably permitted waste haulage contractor. Each waste haulage contractor must hold a current valid waste collection permit issued by the NWCPO.

All waste materials generated during the Demolition and Construction Phases must be removed offsite to an appropriately permitted or licenced waste disposal / recovery facility.

The client will seek the advice of the Resource/Waste Consultant in advance for appointing waste facilities and haulers, and a due diligence check will be carried out to ensure the proposed haulier holds a valid NWCPO permit



and the proposed waste disposal / recovery facility holds a valid permit or licence. A copy of the valid NWCP permit and waste disposal / recovery facility permit, or licence will be added to the site waste management folder.

7.3 Record Keeping

The Contractor, through the appointed RM, will be responsible for ensuring that the full details of all materials deliveries, materials movements and C&D waste generated is recorded during the Demolition and Construction Phases. Each C&D waste consignment removed from and to site will be tracked and documented to ensure full traceability of the material from site to the final destination. A single record will be completed for each individual consignment.

The Contractor will also receive printed receipts / weighbridge records from the waste disposal / recovery facilities for each individual consignment. These records will enable the Contractor to accurately quantify the total volume of waste removed for offsite disposal / recovery for each individual waste stream. These records will be maintained onsite and will be made available for auditing.

The type of information to be recorded in the site tracking system is described below in accordance with relevant guidelines and legislation:

- For each movement of resource off-site, a signed docket/invoice will be obtained by the RM from the haulier/contractor detailing the following:
 - Name the resource / waste stream.
 - List of Waste (Low) Code for each stream (where applicable).
 - Quantity of material moved off-site by the haulier/contractor (tonnes).
- The name and authorisation of the haulier to transport the material – in the case of a ‘waste’ this requires a valid Waste Collection Permit (WCP). In the case of by-product or other materials that are not a waste, no WCP is required. In both cases the vehicle registration number should also be recorded for each load of material removed from site.
- The name and authorisation of the destination site for the resource – again for ‘waste’ this requires a valid Cert of Registration, Waste Permit or Waste Licence and in the case of by-product the relevant by-product determination.

The waste contractors must be required to provide details of end-use or waste treatment in waste reports. This recording will be carried out for each resource type, and the system will also be linked with the delivery records. In this way, the percentage of residual resource generated for each material can be determined.

The system will allow the comparison of these figures with the targets established for the prevention, reuse and recovery of resources to highlight successes or failures against these targets.

7.4 Communications

The following communication tasks are recommended for the RM through the construction phase as per the EPA (2021) guidelines:

- Internal reporting of resource statistics to the Client and the Contractor management. This includes performance relative to agreed targets and objectives which should be included as an agenda item at site meetings;
- Engaging with relevant local authority on any site inspection or enforcement audits undertaken at the site. All follow-up actions and corrective actions should be logged and reported to the local authority;



- Engaging with other stakeholders (EPA, public, etc.) as appropriate in relation to the resource management on site; and,
- Upon completion of construction, the RM will prepare a final report summarising the outcomes of resource management processes adopted, the total reuse and recovery figures and the final destinations of all resources taken off-site. This report will be issued to the Client, Contractor management and the local authority. The local authority may make such a requirement a condition of planning and require the formal sign-off of same by the local authority for full planning compliance.

7.5 Outline Waste Audit Procedures

According to EPA (2021) a resource Audit represents a systematic study of the waste management practices applied in the Proposed Development and is required to highlight firstly, the potential issues that can arise during the waste management process and secondly, the benefits of waste prevention and minimisation. Therefore, waste audits should be carried out routinely onsite by the Resource Manager. These audits will cover work practices, record keeping, and off-site tracking as follows in accordance with the EPA (2021) guidelines:

- When materials arrive on site, they will be properly recorded including the assignment of such materials to specific uses within the works.
- A review will be undertaken of onsite waste management practices to identify any improvements which may be required:
 - Ensure adequacy of site signage and need for any repairs or upgrades.
 - Adequacy of storage infrastructure and need for any repairs or upgrades.
 - Compliance with resource segregation protocols and observed contamination in any resource streams.
 - Assessment of observed Contractor and Sub-contractor work practices for compliance with the RWMP.
- Onsite waste management processes / material management from materials delivery through to waste disposal / recovery (including the quantity, type and composition of all waste) will be reviewed to identify any opportunities for waste reduction.
- Corrective actions will be highlighted and implemented following each audit. Such actions include applying 'lessons learned' regarding efficient waste management on this project to other projects in the future to enable further waste reduction.

The key steps and findings from each waste audit should be presented in a summary report.



8. Consultation with Relevant Bodies

Appropriate consultation should be undertaken with relevant bodies by various members of the project team as required throughout the project. Relevant consultees include, but are not limited to, the following:

- Carlow County Council (as the relevant local authority for waste matters);
- The EPA (as the relevant regulatory body for environmental matters);
- NWCPO;
- Permitted hauliers; and,
- Suitably permitted / licenced waste disposal / recovery facilities.

9. References

Air Pollution Act 1987 (Emission Limit Values for use of Asbestos) Regulations 1990 (S.I. No. 28 of 1990).

Air Pollution Act 1987 (Emission Limit Values for Combustion Plant) 1996 (S.I. No. 264 of 1996).

AtkinsRéalis (2026) Volume 2 Environmental Impact Assessment Report.

AtkinsRéalis (2026) Construction Environmental Management Plan.

Carlow County Council (CCC) & Laois County Council (LCC). 2024. *Carlow Graiguecullen Joint Urban Local Area Plan 2024-2030*.

CCC. 2022. Carlow County Development Plan 2022-2028.

Department of the Environment, Climate and Communications (DoECC). 2012. *'A Resource Opportunity - Waste Management Policy in Ireland.'*

DoECC. 2020. *'A Waste Action for a Circular Economy – Ireland's National Waste Policy 2020-2025.'*

Department of Environment and Local Government (DoELG). 2002. *'Preventing and Recycling Waste: Delivering Change'*

DoELG, 2002. *'Preventing and Recycling Waste: Delivering Change'*

DoELG. 1998. *'A Policy Statement – Waste Management - Changing our ways.'*

Eastern Midlands, Southern Regional and Connacht Ulster Regional Waste Management Planning Offices. 2024. *'The National Waste Management Plan for the Circular Economy 2024-2030'*.

Environmental Protection Agency (EPA), 2022. *EPA Envision webmapping*. Available at <http://gis.epa.ie/Envision>. Consulted April 2023

EPA. 2021. *The Circular Economy Programme 2021-2027*.

EPA. 2021. *'Best Practice Guidelines for the preparation of resources & waste management plans for construction & demolition projects'*

EPA. 2018. *'Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous.'*

EPA. 2015a. *'Design out Waste: Preparation of Waste Reduction Factsheets for Design Teams.'*

EPA. 2015b. *'A review of Design and Construction Waste Management Practices on Selected Case Studies – Lessons Learned.'*

EPA. 2024. *'Green Procurement: Guidance for the Public Sector.'*

EPA, 2009. *'Development of an Audit Methodology to Generate Construction Waste Projection Indicators for the Irish Construction Industry.'* STRIVE Report Series No. 26.

European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011).



European Communities (Control of Emissions of Gaseous & Particulate Pollutants from Non-Road Mobile Machinery) Regulations 2007 (S.I. No. 147 of 2007) (as amended).

European Communities (Shipments of Hazardous Waste Exclusively within Ireland) 2011 (S.I. No. 324 of 2011).

European Communities (Transfrontier Shipment of Waste) Regulations 1994 (S.I. No. 121 of 1994).

European Communities (Waste Directive) Regulations Directive 2008/98/EC 2011 (as amended)

European Commission (Waste Framework Directive) Regulations 2011 (S.I. 126 of 2011) (EC, 2008).

European Commission. 2018. *'Guidelines for the waste audits before demolition and renovation works of buildings.'*

European Union (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended).

European Union (Environmental Impact Assessment) (Waste) regulations 2013 (S.I. No. 505 Of 2013).

European Union (Packaging Regulations) 2020 (S.I. No. 322 of 2020) (as amended),

European Union (Properties of Waste Which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015) (as amended).

European Union (Ship Recycling) Waste Regulations 2019 (S.I. No. 13 of 2019).

European Union (Waste Directive) Regulations 2020 (S.I. No. 323 of 2020);

European Union (Waste Electronic Equipment) Regulations 2008 (S.I. No. 556 of 2008) (as amended).

European Communities Council Decision (EC), 2003. 'COUNCIL DECISION of 19 December 2002 establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC' (2003/33/EC).

INVAS. 2025. *'Invasive Alien Plan Species Biosecurity Plan WwTP Mortarstown, Carlow.'*

Independent Tree Surveys Ltd. (ITSL). 2025. *'Tree Survey Report: Mortarstown WWTP Upgrade, Kilkenny Road, Carlow.'*

Litter Pollution Act of 1997 (Act No. 12 of 1997).

Litter Pollution Regulations 1999 (S.I. No. 359 of 1999).

Occupational Health and Safety Consultancy (OHSS). 2018. *'Asbestos Refurbishment Survey Report of Carlow WWTP Mortarstown, Carlow, Co. Carlow.'*

Uisce Éireann (UÉ). 2025. *Waste Tracker Guidance Note.*

Waste Electrical and Electronic Equipment Directive 2002/96/EC (as amended)

Waste Management Act of 1996 (Act No. 10 of 1996) (as amended).

Waste Management (Collection Permit) Regulations 2007 (as amended).

Waste Management (Facility Permit and Registration) Regulations 2007 (S.I. No. 821 of 2007) (as amended)



Waste Management (Food Waste) Regulations 2009 (S.I. No. 508 of 2009) (as amended)

Waste Management (Hazardous Waste) Regulations 1998 (S.I. No. 147 of 1998) (as amended)

Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015) (as amended)

Waste Management (Licensing) Regulations 2004 (S.I. No. 395 of 2004) (as amended).

Waste Management (Miscellaneous Provisions) Regulations 1998 (S.I. No. 164 of 1998).

Waste Management (Prohibition of Material Disposal by Burning) Regulations 2009 (S.I. No. 286 of 2009) (as amended).

Waste Management (Registration of Brokers and Dealers) Regulations 2008 (S.I. No. 113 of 2008).

Waste Management (Shipments of Waste) Regulations 2007 (S.I. No. 419 of 2007).

Waste Management (Transfrontier Shipment of Waste) Regulations 1998 (S.I. No. 148 of 1998).

Waste Management (Tyres and Waste Tyres) Regulations 2017 (S.I. No. 148 of 1998).

WRAP, 2018. 'Capacity Requirements.' Available at:
<http://www.wrap.org.uk/sites/files/wrap/Flats%20recycling%20capacity%20guidance.pdf>



AtkinsRéalis



AtkinsRéalis Ireland Limited
150-155 Airside Business Park
Swords
Co. Dublin
K67 K5W4

© AtkinsRéalis Ireland Limited except where stated
otherwise