

ARDAROSTIG LRD

VOLUME III
Appendices



ARDAROSTIG LRD

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CHAPTER ONE

INTRODUCTION

APPENDIX 1-1 Prescribed Body Consultation



Cork City Council Planning Department. For Inspection Purposes Only!

APPENDIX 1-1 Prescribed Body Consultation

11th March 2024

Re: Consultation on the preparation of an Environmental Impact Assessment Report for a proposed Large Scale Residential Development for the construction of 239 no. residential units, a crèche and all associated ancillary development works at Ardarostig, Bishopstown, Cork.

A Chara,

We are acting on behalf of Bridgewater Homes Ltd in the preparation of an Environmental Impact Assessment Report (EIAR) for a proposed Large Scale Residential Development (LRD) for the construction of 239 no. residential units, a crèche and all associated ancillary development works at Ardarostig, Bishopstown, Cork.

Research and baseline analysis for the EIAR has commenced and an impact assessment will be carried out following completion of the design of the proposed development.

If you have any comments in relation to the potential environmental impacts of the proposed development, I would be grateful if you would forward them to me as soon as is convenient. The details of the site location, project description, and proposed works are outlined further below.

Proposed Development

Bridgewater Homes Ltd are seeking permission for the construction of the following:

- the construction of c. 239 no. residential units comprising a mixture of 152 no. dwelling houses and 87 no. duplex/apartment units;
- 1 no. childcare facility
- The provision of landscaping and amenity areas and all associated infrastructure and services including vehicular and pedestrian/cycle access, roads, parking, lighting and drainage.

Please find enclosed a Site Location Map and the proposed draft Site Layout Plan which includes detail on the current proposed unit mix.

Please note that the details provided in the enclosed drawing are subject to change as the scheme progresses and feedback from the council and other statutory consultees are incorporated.

Site Location and Description

The site is located within the extended Cork City development boundary within the Southwestern Suburbs. The subject site is situated approximately 6.1km southwest of Cork City Centre (15 minutes' drive), 2.5km southwest of Wilton Shopping Centre (8 minutes' drive) and 1.1km west of Bishopstown Court Neighbourhood Centre. The site lies to the south of the Bandon Road roundabout and the South Ring Road N40. The Bandon Road (N71) and N40 South Ring Road are important routes providing direct access to the N22 (Killarney and Tralee Road). The land uses on the Bandon Road (N71) comprise light industrial uses including car sales show rooms, service stations, and a public storage warehouse.

The total site area comprises 5.73 hectares and has a flat topography. There is a net developable area of 4.95 hectares. The site is bounded by the N40 and 4 no. dwellings to the north, light industrial uses to the east, agricultural land to the south and a residential development to the west, which is currently under construction. Access to the proposed development is to the west along Waterfall Road.

The subject site is primarily zoned ZO 01 'Sustainable Residential Neighbourhood' and a portion of the site to the southwest of the development is zoned ZO 02 'New Residential Neighbourhood' as per the Cork City Development Plan 2022-2028. The proposed development is in accordance with these objectives.

The proposed development will see the creation of a sustainable residential neighbourhood and will promote compact growth in a location where it can be served by public transport, walking and cycling. The proposal will include high quality architectural design that will ensure the development will provide a robust and attractive neighbourhood for buyers seeking quality homes in the area.

EIAR Structure and Content

The EIAR is divided into three volumes as follows:

- Volume 1: Non-Technical Summary
- Volume 2: Main Environmental Impact Assessment Report
- Volume 3: Appendices

The overall structure of Volume 2 of the EIAR is as follows:

Chapter	Chapter Title
1.	Introduction
2.	Site Location and Project Description
3.	Alternatives Considered
4.	Population and Human Health
5.	Landscape and Visual
6.	Material Assets: Traffic and Transport
7.	Material Assets: Built Services
8.	Material Assets: Waste
9.	Land and Soils
10.	Water and Hydrology
11.	Biodiversity
12.	Noise and Vibration
13.	Air Quality
14.	Climate
15.	Cultural Heritage – Archaeological and Built Heritage
16.	Risk Chapter
17.	Interactions of the Foregoing
18.	Summary of Mitigation Measures and Monitoring

Each chapter is to include the following elements:

- Introduction and Methodology
- Description of the Existing Environment
- Impact Assessment. Each discipline will consider impacts under the following headings:
 - Do-Nothing Scenario
 - Construction Phase
 - Operational Phase

In assessing impacts regard will be had to direct impacts, indirect impacts, and cumulative impacts. Where relevant, reference may also be made to 'synergistic impacts' or 'secondary impacts'. The assessment of impacts will have regard to the EPA guidelines and advice notes for preparing EIAR.

As the EIA progresses any relevant permitted or proposed projects will be included in the assessment.

The EIAR will also consider:

- Mitigation Measures
- Residual Impacts

Summary

In summary, this EIAR will consider the potential impact of the proposed development, in combination with the relevant planning applications in the vicinity.

The EIAR is being co-ordinated by McCutcheon Halley Chartered Planning Consultants. If you have any comments in relation to the potential environmental impacts of the proposed, I would be grateful if you would forward them to me as soon as is convenient.

You can email any comments to me at cdineen@mhplanning.ie

Yours sincerely,



Ciaran Dineen

McCutcheon Halley

Ciaran Dineen

From: Michael McPartland <Michael.McPartland@fisheriesireland.ie>
Sent: Tuesday 8 April 2025 10:50
To: Ciaran Dineen
Subject: EIAR Consultation Request Bridgewater Homes Ltd

NOTE: This email originated from outside the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Ciaran

Thank you for your recent email regarding the above-mentioned.

It appears it may be proposed to dispose of septic effluent from the development to the public sewer. IFI would ask that Irish Water signifies there is sufficient capacity in existence so that it does not overload either hydraulically or organically existing treatment facilities or result in polluting matter entering waters. Should this not be the case then please forward proposals for alternative treatment and disposal options.

IFI would ask that there be no interference with, bridging, draining, or culverting of any watercourse its banks or bankside vegetation to facilitate this development, without the prior approval of IFI and that full cognisance is given to IFI "Guidelines on protection of fisheries during construction works in and adjacent to waters"

<https://www.fisheriesireland.ie/media/guidelines-on-protection-of-fisheries-during-construction-works-in-and-adjacent-to-waters>

Regards

Michael Mc Partland
Senior Fisheries Environmental Officer.

Iascach Intíre Éireann
Inland Fisheries Ireland

Tel + 353 (0)26 412 21/2
Fax + 353 (0)26 412 23
Email michael.mcpartland@fisheriesireland.ie
Web www.fisheriesireland.ie

Sunnyside House, Macroom, Co. Cork, Ireland. P12 X602

Help Protect Ireland's Inland Fisheries

Michael McPartland
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Uisce Éireann Ref: PN25000020038

McCutcheon Halley Planning Consultants
6 Joyce House,
Barrack Square,
Ballincollig,
Cork, P31 YX97

Attention: Ciaran Dineen
Email: cdineen@mhplanning.ie

4th April, 2025

Re: EIAR Scoping Request – Proposed Large Scale Residential Development at Bishopstown, Cork City.

A Chara,

Uisce Éireann has received your Environmental Impact Assessment (EIA) scoping request relating to a proposed Large Scale Residential Development by Bridgewater Homes Ltd., consisting of c. 239 no. residential units, a crèche and all associated ancillary development works at Ardarostig, Bishopstown, Cork

It is Uisce Éireann's current policy to maintain safe and secure drinking water supplies and that no development that will impact Drinking Water Source. Uisce Éireann must be satisfied that the proposed development has no impact on drinking water quality and that water sources are adequately protected. It is a requirement of the Water Framework Directive that waters used for the abstraction of drinking water are protected so as to avoid deterioration in quality.

The following aspects of Water Services should also be considered in the scope of an EIA where relevant;

- a) Where the development proposal has the potential to impact an Uisce Éireann Drinking Water Source(s), the applicant shall provide details of measures to be taken to ensure that there will be no negative impact to Uisce Éireann's Drinking Water Source(s) during the construction and operational phases of the development. Hydrological / hydrogeological pathways between the applicant's site and receiving waters should be identified as part of the report.

Uisce Éireann
Bosca OP 6000
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D01 WA07
Éire

Uisce Éireann
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Ireland

T: +353 1 89 25000
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www.water.ie

- b) Where the development proposes the backfilling of materials, the applicant is required to include a waste sampling strategy to ensure the material is inert.
- c) Mitigations should be proposed for any potential negative impacts on any water source(s) which may be in proximity and included in the environmental management plan and incident response.
- d) Any and all potential impacts on the nearby public water supply water source(s) are assessed, including any impact on hydrogeology and any groundwater/ surface water interactions.
- e) Impacts of the development on the capacity of water services (i.e. do existing water services have the capacity to cater for the new development). This is confirmed by Uisce Éireann in the form of a Confirmation of Feasibility (COF). If a development requires a connection to either a public water supply or sewage collection system, the developer is advised to submit a Pre-Connection Enquiry (PCE) enquiry to Uisce Éireann to determine the feasibility of connection to the Uisce Éireann network.
- f) The applicant shall identify any upgrading of water services infrastructure that would be required to accommodate the proposed development.
- g) In relation to a development that would discharge trade effluent – any upstream treatment or attenuation of discharges required prior to discharging to an Uisce Éireann collection network.
- h) In relation to the management of surface water; the potential impact of surface water discharges to combined sewer networks and potential measures to minimise and or / stop surface waters from combined sewers.
- i) Any physical impact on Uisce Éireann assets – reservoir, drinking water source, treatment works, pipes, pumping stations, discharges outfalls etc. including any relocation of assets.
- j) When considering a development proposal, the applicant is advised to determine the location of public water services assets, possible connection points from the applicant's site / lands to the public network and any drinking water abstraction catchments to ensure these are included and fully assessed in any pre-planning proposals. Details, where known, can be obtained by emailing an Ordnance Survey map identifying the proposed location of the applicant's intended development to datarequests@water.ie
- k) Other indicators or methodologies for identifying infrastructure located within the applicant's lands are the presence of registered wayleave agreements, visible manholes, vent stacks, valve chambers, marker posts etc. within the proposed site.

- l) Any potential impacts on the assimilative capacity of receiving waters in relation to Uisce Éireann discharge outfalls including changes in dispersion / circulation characterises. Hydrological / hydrogeological pathways between the applicant's site and receiving waters should be identified within the report.
- m) Any potential impact on the contributing catchment of water sources either in terms of water abstraction for the development (and resultant potential impact on the capacity of the source) or the potential of the development to influence / present a risk to the quality of the water abstracted by Uisce Éireann for public supply should be identified within the report.
- n) Where a development proposes to connect to an Uisce Éireann network and that network either abstracts water from or discharges wastewater to a "protected"/ sensitive area, consideration as to whether the integrity of the site / conservation objectives of the site would be compromised should be identified within the report.
- o) Uisce Éireann does not permit building over of its assets. As an applicant you are required to;
- survey the site to determine the exact location of the assets. Any trial investigations should be carried out with the agreement and in the presence of Uisce Éireann.
 - Provide evidence of separation distances between the existing Uisce Éireann assets and proposed structures, other services, trees, etc. have to be in accordance with the Irish Water Codes of Practice and Standard Details.
- p) Where a diversion of Public Infrastructure may be required subject to layout proposal of the development and separation distances, the applicant is required to submit a Diversions Enquiry to diversions@water.ie
- q) Mitigation measures in relation to any of the above ensuring a zero risk to any Uisce Éireann drinking water sources (Surface and Ground water).

Queries relating to the terms and observations above should be directed to planning@water.ie

Signed on behalf of Dermot Phelan
Connections and Developer Services

This is not an exhaustive list.

Please note;

- Where connection(s) to the public network is required as part of the development proposal, applicants are advised to complete the Pre-Connection Enquiry process and have received a Confirmation of Feasibility letter from Uisce Éireann ahead of any planning application.
- Uisce Éireann will not accept new surface water discharges to combined sewer networks.

Uisce Éireann is a statutory consultee under the Planning and Development Act 2000 (as amended). Uisce Éireann's job is to deliver the highest quality drinking water to taps every day and ensure that wastewater is properly treated and safely returned to the environment. To ensure the satisfactory completion of a development, any permission, approval, or consent granted pursuant to the Planning and Development Act 2000 (as amended) that requires a new connection(s) to water services should include a condition that requires the applicant or developer to enter into a connection agreement(s) with Uisce Éireann prior to the commencement of development. Any person discharging trade effluent to a sewer, must have a Trade Effluent Licence issued pursuant to section 16 of the Local Government (Water Pollution) Act, 1977 (as amended). Trade effluent is defined in the Local Government (Water Pollution) Act, 1977 (as amended).

Uisce Éireann is a statutory consultee under the Planning and Development Act 2000 (as amended). Uisce Éireann's job is to deliver the highest quality drinking water to taps every day and ensure that wastewater is properly treated and safely returned to the environment. To ensure the satisfactory completion of a development, any permission, approval, or consent granted pursuant to the Planning and Development Act 2000 (as amended) that requires a new connection(s) to water services should include a condition that requires the applicant or developer to enter into a connection agreement(s) with Uisce Éireann prior to the commencement of development. Any person discharging trade effluent to a sewer, must have a Trade Effluent Licence issued pursuant to section 16 of the Local Government (Water Pollution) Act, 1977 (as amended). Trade effluent is defined in the Local Government (Water Pollution) Act, 1977 (as amended).



Ciaran Dineen
McCutcheon Halley
6 Joyce House, Barrack Square,
Ballincollig,
Cork, P31 YX97

19 March 2025

Re: Preparation of EIAR for proposed LRD at Ardarostig, Bishopstown, Cork
Your Ref: n/a
Our Ref: 25/41

Dear Ciaran,

Geological Survey Ireland is the national earth science agency and is a division of the Department of the Environment, Climate and Communications. We provide independent geological information and interpretation and gather various data for that purpose. Please see our [website](#) for data availability.

With reference to your email received on the 11 March 2025, concerning the Preparation of EIAR for proposed LRD at Ardarostig, Bishopstown, Cork, we recommend using our various data sets when conducting the EIAR, SEA, planning and scoping processes for developments, plans and policies. For more detailed information on how to access this data please access 'Data and Maps' [Data & Maps \(gsi.ie\)](#) on our 'Geoscience for planning' webpage. Use of our data or maps should be attributed correctly (please refer to each individual dataset's metadata for correct attribution).

For specific data available for Environmental Assessment and Planning topics please follow this link [\[Data by Environmental Assessment and Planning Topic \(gsi.ie\)\]](#), where you will find our data arranged by environmental assessment topic as illustrated below:

Land and soils <i>Soil</i> <ul style="list-style-type: none">Subsoils (Quaternary Geology)Tellus GeochemistryGeotechnical <i>Geology</i> <ul style="list-style-type: none">BedrockGeophysicsBedrock & Quaternary 3D	Water <i>Groundwater</i> <ul style="list-style-type: none">Aquifers GW vulnerability, GWPSs (GWPPs) <i>Surface water</i> <ul style="list-style-type: none">Tellus Geochemistry <i>Estuarine & marine waters</i> <ul style="list-style-type: none">Marine and coastal <i>Flooding</i> <ul style="list-style-type: none">GWClimateKarst	Climate Change <i>Carbon accounting / Carbon balance</i> <ul style="list-style-type: none">GeothermalCarbon capture and storage <i>Climate change trends</i> <ul style="list-style-type: none">National coastal change assessment
Cultural Heritage <i>Archaeology</i> <ul style="list-style-type: none">Cherish <i>Underwater Archaeology</i> <ul style="list-style-type: none">Shipwrecks	Material Assets <i>Built Services</i> <ul style="list-style-type: none">Natural resources (Minerals & Aggregates)Active quarries	The Landscape <i>Landscape Appearance & Character</i> <ul style="list-style-type: none">Physiographic units <i>Historical landscapes</i> <ul style="list-style-type: none">Historic mines
Other Relevant Data		
<i>Natural (Geo) hazards</i> <ul style="list-style-type: none">Landslide Susceptibility MappingGroundwater floodingCoastal vulnerabilitySubsidenceRadon	<i>Natural heritage</i> <ul style="list-style-type: none">Geoheritage (County Geological Sites)Dimension Stone/Stone Built Ireland	



Other Comments

Should development go ahead, all other factors considered, Geological Survey Ireland would much appreciate a copy of reports detailing any site investigations carried out. The data would be redacted for confidentiality and added to Geological Survey Ireland's national database of site investigation boreholes, implemented to provide a better service to the civil engineering sector. Data can be sent to the Geological Mapping Unit, at <mailto:GeologicalMappingInfo@gsi.ie>.

If we can be of any further help, please do not hesitate to contact me Clare Glanville, or my colleague Trish Smullen at GSIPlanning@gsi.ie.

Yours sincerely,

Dr. Clare Glanville
Senior Geologist
Geoheritage and Planning Programme
Geological Survey Ireland

Trish Smullen
Geologist
Geoheritage and Planning Programme
Geological Survey Ireland

The publicly available data referenced/presented here, should in no way be construed as Geological Survey Ireland support for or objection to the proposed development or plan. The data are made freely available to all and can be used as independent scientific data in assessments, plans or policies. It should be noted that in many cases these data are a baseline or starting point for further site specific assessments.

Ciaran Dineen

From: Drainage Admin <drainage.admin@opw.ie>
Sent: Tuesday 18 March 2025 16:10
To: Ciaran Dineen
Subject: FW: 91-2025 RE: EIAR Consultation Request

NOTE: This email originated from outside the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Ciaran,

Please see comments from Engineer below.

"The Commissioners of Public Works would recommend that a flood risk assessment, in accordance with the guidelines on "The Planning System and Flood Risk Management" should be carried out to support the application for permission to carry out this development.

The issue of flood risk and the impact of the development on same should be considered in the EIAR to support the application for the development.

Among the issues to be considered in the flood risk assessment is the indication of the watercourse on the historic 6 inch mapping which is used as background mapping to show the site location on drawing number 23161/P/001A. This watercourse is shown flowing into the site from near the south eastern corner of the site. While it is possible that this watercourse may have been interfered with upstream of the site, the current status of this watercourse both on the site of the proposed development and upstream of the site should be investigated and considered as part of the flood risk assessment in support of this development. In addition to flood risk arising from this watercourse, the issue of pluvial (rainfall) runoff from the hill to the south of the development should also be considered as well as the drainage capacity of the drainage system within the development as proposed itself, so that flooding of property in the proposed development is prevented at least up to the 1% Annual Exceedance probability standard."

Kind Regards,
Amy

From: Ciaran Dineen <cdineen@mhplanning.ie>
Sent: Tuesday 11 March 2025 12:56
To: Ciaran Dineen <cdineen@mhplanning.ie>
Cc: Cora Savage <csavage@mhplanning.ie>
Subject: EIAR Consultation Request

A Chara,

We are acting on behalf of Bridgewater Homes Ltd in the preparation of an Environmental Impact Assessment Report (EIAR) for a proposed Large Scale Residential Development (LRD) at Ardarostig, Bishopstown, Cork.

Research and baseline analysis for the EIAR has commenced and an impact assessment will be carried out following completion of the design of the proposed development.

Please find attached a Site Location Map and the proposed draft Site Layout Plan which includes detail on the current proposed unit mix.

Please note that the details provided in the enclosed drawing are subject to change as the scheme progresses and feedback from the council and other statutory consultees are incorporated.

Also included are further details relating to the Project, including a description of the development.

If you have any comments in relation to the potential environmental impacts of the proposed development, I would be grateful if you would forward them to me as soon as is convenient.

Many thanks

Ciaran Dineen
Planning Consultant
McCutcheon Halley
CHARTERED PLANNING CONSULTANTS

Cork 6 Joyce House, Barrack Square, Ballincollig, Cork, P31 YX97 Tel: +353 (0)21 420 8710	Dublin 4 th Floor, Kreston House, Arran Court, Arran Quay, Dublin 7, D07 K271 Tel: +353 (0)1 804 4477	Bantry 1 st Floor, The Old Schoolhouse, Summerhill, Bantry, Co. Cork, P75 VP95 Tel: +353 (0)21 420 8710
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CHAPTER FIVE

LANDSCAPE & VISUAL

APPENDIX 5-1 Photomontages and Verified Views'



Cork City Council Planning Department. For Inspection Purposes Only!

APPENDIX 5-1 Photomontages and Verified Views'

Verified Photomontages

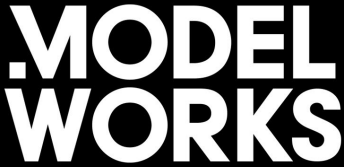
To be read in conjunction with the
Landscape and Visual Impact Assessment,

Proposed

Residential Development Ardarostig, Bishoptown, Cork

Prepared by Model Works Ltd

August 2025







◀◀ Angle of View 73° Horizontal (24 mm Lens) ◀ Angle of View 39° Horizontal (50 mm Lens) ▶▶



◀◀ Angle of View 73° Horizontal (24 mm Lens) ◀ Angle of View 39° Horizontal (50 mm Lens) ▶▶



◀◀ Angle of View 73° Horizontal (24 mm Lens) ◀ Angle of View 39° Horizontal (50 mm Lens) ▶▶

**.MODEL
WORKS**

project: Ardarostig

photography: 14-05-2025 13:19
Canon 5D Mark II
24 mm Lens

location:

E 563834.955 N 568898.979

viewpoint: **View 02 Existing**

issued: 27-08-2025



◀◀ Angle of View 73° Horizontal (24 mm Lens) ◀ Angle of View 39° Horizontal (50 mm Lens) ▶▶



◀◀ Angle of View 73° Horizontal (24 mm Lens)

◀ Angle of View 39° Horizontal (50 mm Lens)

▶

▶▶

**MODEL
WORKS**

project: Ardaraostig

photography: 30-07-2025 13:10
Canon 5D Mark II
24 mm Lens

location:

E 563398.411 N 569362.009

viewpoint: **View 03 Existing**

issued: 27-08-2025



◀◀ Angle of View 73° Horizontal (24 mm Lens)

◀◀ Angle of View 39° Horizontal (50 mm Lens)



**MODEL
WORKS**

project: Ardaraostig

photography: 30-07-2025 13:10
Canon 5D Mark II
24 mm Lens

location:

E 563398.411 N 569362.009

viewpoint: **View 03 Proposed**

issued: 27-08-2025



◀◀ Angle of View 73° Horizontal (24 mm Lens) ◀ Angle of View 39° Horizontal (50 mm Lens) ▶▶



◀◀ Angle of View 73° Horizontal (24 mm Lens)

◀ Angle of View 39° Horizontal (50 mm Lens)

▶

▶▶

**MODEL
WORKS**

project: Ardaraostig

photography: 30-07-2025 13:38
Canon 5D Mark II
24 mm Lens

location:

E 563681.447 N 569336.617

viewpoint: **View 04 Proposed**

issued: 27-08-2025



◀◀ Angle of View 73° Horizontal (24 mm Lens) ◀ Angle of View 39° Horizontal (50 mm Lens) ▶▶



◀◀ Angle of View 73° Horizontal (24 mm Lens)

◀ Angle of View 39° Horizontal (50 mm Lens)

▶

▶▶

**MODEL
WORKS**

project: Ardarostig

photography: 30-07-2025 13:56
Canon 5D Mark II
24 mm Lens

location:

E 564011.717 N 568969.161

viewpoint: **View 05 Proposed**

issued: 27-08-2025



◀◀ Angle of View 73° Horizontal (24 mm Lens) ◀ Angle of View 39° Horizontal (50 mm Lens) ▶▶

**.MODEL
WORKS**

project: Ardarostig

photography: 14-05-2025 16:22
Canon 5D Mark II
24 mm Lens

location:

E 564599.771 N 567577.348

viewpoint: **View 06 Existing**

issued: 27-08-2025



◀◀ Angle of View 73° Horizontal (24 mm Lens) ◀ Angle of View 39° Horizontal (50 mm Lens) ▶▶



◀◀ Angle of View 73° Horizontal (24 mm Lens) ◀ Angle of View 39° Horizontal (50 mm Lens) ▶▶

**.MODEL
WORKS**

project: Ardarostig

photography: 14-05-2025 15:36
 Canon 5D Mark II
 24 mm Lens

location:

 E 562167.720 N 568446.127

viewpoint: **View 07 Existing**

 issued: 27-08-2025



◀◀ Angle of View 73° Horizontal (24 mm Lens) ◀ Angle of View 39° Horizontal (50 mm Lens) ▶▶

**.MODEL
WORKS**

project: Ardarostig

photography: 14-05-2025 15:36
 Canon 5D Mark II
 24 mm Lens

location:

 E 562167.720 N 568446.127

viewpoint: **View 07 Proposed**

 issued: 27-08-2025



◀◀ Angle of View 73° Horizontal (24 mm Lens) ◀ Angle of View 39° Horizontal (50 mm Lens) ▶▶



◀◀ Angle of View 73° Horizontal (24 mm Lens) ◀ Angle of View 39° Horizontal (50 mm Lens) ▶▶



◀◀ Angle of View 73° Horizontal (24 mm Lens) ◀ Angle of View 39° Horizontal (50 mm Lens) ▶▶



◀◀ Angle of View 73° Horizontal (24 mm Lens) ◀ Angle of View 39° Horizontal (50 mm Lens) ▶▶



◀◀ Angle of View 73° Horizontal (24 mm Lens) ◀ Angle of View 39° Horizontal (50 mm Lens) ▶▶



◀◀ Angle of View 73° Horizontal (24 mm Lens) ◀ Angle of View 39° Horizontal (50 mm Lens) ▶▶



◀◀ Angle of View 73° Horizontal (24 mm Lens)

◀ Angle of View 39° Horizontal (50 mm Lens) ▶



**MODEL
WORKS**

project: Ardarostig

photography: 14-05-2025 15:05
Canon 5D Mark II
24 mm Lens

location:
E 563630.857 N 569203.230

viewpoint: **View 11 Existing**
issued: 27-08-2025



◀◀ Angle of View 73° Horizontal (24 mm Lens) ◀ Angle of View 39° Horizontal (50 mm Lens) ▶▶



◀◀ Angle of View 73° Horizontal (24 mm Lens)

◀ Angle of View 39° Horizontal (50 mm Lens)

▶

▶▶

**MODEL
WORKS**

project: Ardarostig

photography: 14-05-2025 13:41
Canon 5D Mark II
24 mm Lens

location:

E 563852.625 N 569215.650

viewpoint: **View 12 Existing**

issued: 27-08-2025



◀◀ Angle of View 73° Horizontal (24 mm Lens)

◀◀ Angle of View 39° Horizontal (50 mm Lens)



**MODEL
WORKS**

project: Ardarostig

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CHAPTER SIX

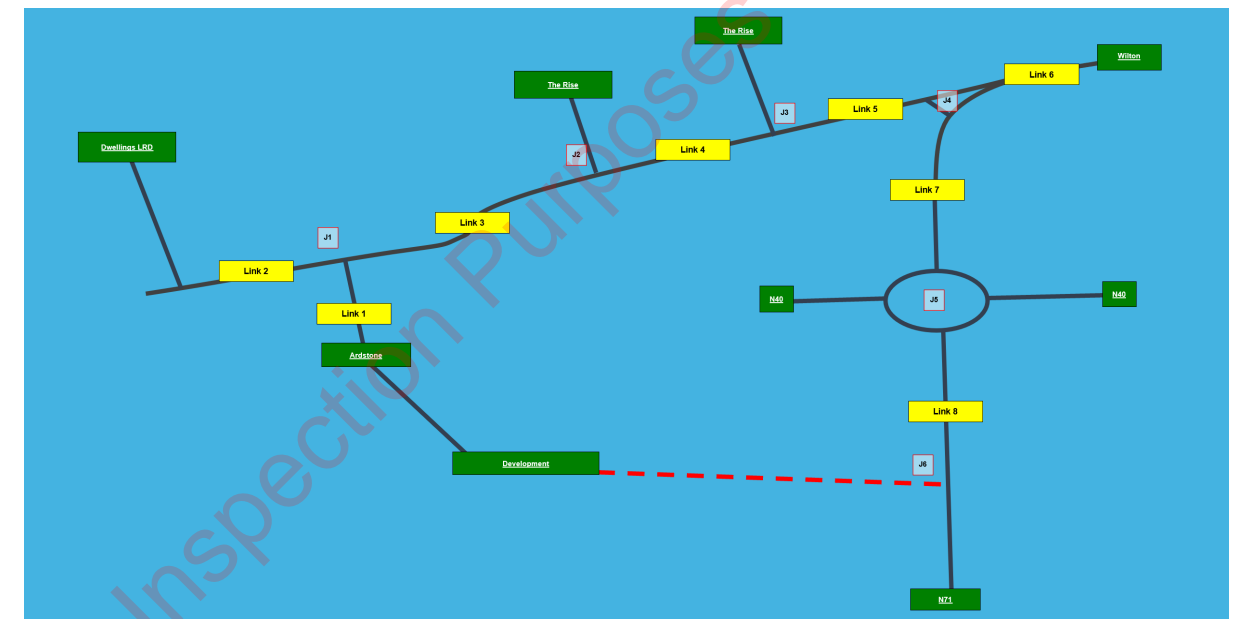
MATERIAL ASSETS: TRAFFIC & TRANSPORT

APPENDIX 6-1 Material Assets – Traffic and Transport



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APPENDIX 6-1 Material Assets – Traffic and Transport



6.4 Design Model AADT's

Link No.	Approach	Base Year	Opening Year		Opening Year +5		Opening Year +15		HGV %
		AADT 2024 without Development	AADT 2027 without Development	AADT 2027 with Development	AADT 2032 without Development	AADT 2032 with Development	AADT 2042 without Development	AADT 2042 with Development	
Link 1	Development Road	1569	1569	3620	1569	3620	1569	3620	2%
Link 2	Waterfall Road J1 West	1928	7274	7577	7655	7958	8193	8496	2%
Link 3	Waterfall Road J1-J2	6041	8283	10032	8743	10480	9382	11119	3%
Link 4	Waterfall Road J2-J3	5772	7588	8933	8025	9370	8642	9976	2%
Link 5	Waterfall Road J3-J4	5974	7846	9191	8294	9639	8933	10267	3%
Link 6	Bishopstown Road J4 East	13809	15344	15916	16376	16959	17844	18427	3%
Link 7	R849 J4-J5	14470	16320	17082	17418	18169	18942	19705	5%
Link 8	N71 South J5-J6	24087	26676	26788	28492	28604	31048	31160	3%

CHAPTER EIGHT

MATERIAL ASSETS: WASTE

APPENDIX 8-1 Operational Waste Management Plan

APPENDIX 8-2 Resource Waste Management Plan



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APPENDIX 8-1 Operational Waste Management Plan



DOCUMENT CONTROL SHEET

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Title	Environmental Consultant	Associate
Date	25/08/2025	25/08/2025

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Operational Waste Management Plan

Project Title: Large-scale Residential Development at Ardarostig, Bishopstown, Cork.

APPENDIX 8.2

CLIENT	DOCUMENT REFERENCE	DATE
Bridgewater Homes Ltd.	257501.0399WMR01	25/08/2025

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1. INTRODUCTION

AWN Consulting, a Trinity Consultants Team, has prepared this Operational Waste Management Plan (OWMP) on behalf of Bridgewater Homes Ltd. for the proposed Large-scale Residential Development at Ardarostig, Bishopstown, Cork.

This OWMP has been prepared to ensure that the management of waste during the operational phase of the proposed development is undertaken in accordance with the current legal and industry standards including, the *Waste Management Act 1996* as amended and associated Regulations ¹, *Environmental Protection Agency Act 1992* as amended ², *Litter Pollution Act 1997* as amended ³, the *National Waste Management Plan for a Circular Economy 2024 - 2030 (NWMPE) (2024)* ⁴ and the *Cork City Council (CCC) 'Cork City Council (Storage, Presentation and Segregation of Household and Commercial Waste) Bye-Laws' 2018* ⁵. In particular, this OWMP aims to provide a robust strategy for the storage, handling, collection and transport of the wastes generated at Site.

This OWMP aims to ensure maximum recycling, reuse and recovery of waste with diversion from landfill, wherever possible. The OWMP also seeks to provide guidance on the appropriate collection and transport of waste to prevent issues associated with litter or more serious environmental pollution (e.g. contamination of soil or water resources). The plan estimates the type and quantity of waste to be generated from the proposed development during the operational phase and provides a strategy for managing the different waste streams.

At present, there are no specific national guidelines in Ireland for the preparation of OWMPs. Therefore, in preparing this document, consideration has been given to the requirements of national and regional waste policy, legislation and other guidelines.

2. OVERVIEW OF WASTE MANAGEMENT IN IRELAND

2.1 National level

The Irish Government issued a policy statement in September 1998 entitled '*Changing Our Ways*'⁶, which identified objectives for the prevention, minimisation, reuse, recycling, recovery and disposal of waste in Ireland. A heavy emphasis was placed on reducing reliance on landfill and finding alternative methods for managing waste. Amongst other things, *Changing Our Ways* stated a target of at least 35% recycling of municipal (i.e. household, commercial and non-process industrial) waste.

A further policy document, '*Preventing and Recycling Waste – Delivering Change*' was published in 2002⁷. This document proposed a number of programmes to increase recycling of waste and allow diversion from landfill. The need for waste minimisation at source was considered a priority.

This view was also supported by a review of sustainable development policy in Ireland and achievements to date, which was conducted in 2002, entitled '*Making Ireland's Development Sustainable – Review, Assessment and Future Action*'⁸. This document also stressed the need to decouple economic growth and waste generation, again through waste minimisation and reuse of discarded material.

In order to establish the progress of the Government policy document *Changing Our Ways*, a review document was published in April 2004 entitled '*Taking Stock and Moving Forward*'⁹. Covering the period 1998 – 2003, the aim of this document was to assess progress to date with regard to waste management in Ireland, to consider developments since the policy framework and the local authority waste management plans were put in place, and to identify measures that could be undertaken to further support progress towards the objectives outlined in *Changing Our Ways*.

In particular, *Taking Stock and Moving Forward* noted a significant increase in the amount of waste being brought to local authority landfills. The report noted that one of the significant challenges in the coming years was the extension of the dry recyclable collection services.

In September 2020, the Irish Government published a new policy document outlining a new action plan for Ireland to cover the period of 2020-2025. This plan '*A Waste Action Plan for a Circular Economy*'¹⁰ (WAPCE), was prepared in response to the '*European Green Deal*' which sets a roadmap for a transition to a new economy, where climate and environmental challenges are turned into opportunities, replacing the previous national waste management plan '*A Resource Opportunity*' (2012).

The WAPCE sets the direction for waste planning and management in Ireland up to 2025. This reorientates policy from a focus on managing waste to a much greater focus on creating circular patterns of production and consumption. Other policy statements of a number of public bodies already acknowledge the circular economy as a national policy priority.

The policy document contains over 200 measures across various waste areas including circular economy, municipal waste, consumer protection and citizen engagement, plastics and packaging, construction and demolition, textiles, green public procurement and waste enforcement.

One of the first actions to be taken was the development of the *Whole of Government Circular Economy Strategy 2022-2023* '*Living More, Using Less*' (2021)¹¹ to set a course for Ireland to transition across all sectors and at all levels of Government toward circularity and was issued in December 2021. It is anticipated that the Strategy will be updated in full every 18 months to 2 years. There has not yet been an update released regarding a new iteration.

The *Circular Economy and Miscellaneous Provisions Act 2022*¹² was signed into law in July 2022. The Act underpins Ireland's shift from a '*take-make-waste*' linear model to a more sustainable pattern of production and consumption, that retains the value of resources in our economy for as long as possible

and that will to significantly reduce our greenhouse gas emissions. The Act defines Circular Economy for the first time in Irish law, incentivises the use of recycled and reusable alternatives to wasteful, single-use disposable packaging, introduces a mandatory segregation and incentivised charging regime for commercial waste, streamlines the national processes for End-of-Waste and By-Products decisions, tackling the delays which can be encountered by industry, and supporting the availability of recycled secondary raw materials in the Irish market, and tackles illegal fly-tipping and littering.

The *Department of Housing, Local Government and Heritage authored Sustainable Residential Development and Compact Settlements - Guidelines for Planning Authorities (2024)*¹³, suggests the below thresholds at which the need for the supplemental information such as the OWMP should be considered.

- ▶ 30 or more residential units

Since 1998, the Environmental Protection Agency (EPA) has produced periodic '*National Waste (Database) Reports*' which as of 2023 have been renamed *Circular Economy and Waste Statistics Highlight Reports*¹⁴ detailing, among other things, estimates for household and commercial (municipal) waste generation in Ireland and the level of recycling, recovery and disposal of these materials. The *2024 National Circular Economy and Waste Statistics* web resource, which is the most recent study published, along with the national waste statistics web resource (2024) reported the following key statistics for 2022:

- ▶ Generated – Ireland produced 3,190,000 tonnes of municipal waste in 2022. This is a slight increase since 2021. Of this, 55% came from households and 45% came from commercial and public service sources.
- ▶ Managed – In 2022, a total of 1.76 million tonnes of Household waste collected and treated by the waste industry.
- ▶ Unmanaged – An estimated 36,970 tonnes of household waste was unmanaged waste i.e., not disposed of in the correct manner in 2022.
- ▶ Recovered – A rounded 1.3 million tonnes of Ireland's municipal waste went for incineration with energy recovery in 2022. This tonnage is 43% of municipal waste managed and a marginal increase on the 42% achieved in 2021.
- ▶ Recycled – Some 1.3 million tonnes of municipal waste generated in Ireland was recycled in 2022, resulting in a recycling rate of 41%. This indicates that we face significant challenges to meet the upcoming EU recycling targets for 2025 to 2035
- ▶ Of the municipal waste recycled in 2022, over 825,000 tonnes went for material recycling (approximately the same as 2021) and over 480,000 tonnes were treated by composting/anaerobic digestion (approximately the same as 2021 but up 37% in 2020). The large increase of composted/anaerobically digested biowaste from 2020 is mainly due to a change in our way of estimating home composting.
- ▶ Disposed – Ireland's landfill rate for municipal waste managed was 15% in 2022. This is a 1% decrease from 2021's rate of 16%.
- ▶ Reuse – 54,800 tonnes of second-hand products we estimated by the EPA to have been reused in Ireland in 2021. The average annual Reuse rate per person in Ireland is 10.6 kg per person.

2.2 Regional Level

The proposed development is located in the Local Authority administrative area of Cork City Council (CCC).

The *Southern Region (SR) Waste Management Plan 2015 – 2021*, which previously governed waste management policy in the CCC area, has been superseded as of March 2024 by the NWMPCE 2024 – 2030, the national waste management plan for Ireland.

The NWMPCE does not dissolve the three regional waste areas. The NWCPCE sets the ambition of the plan to have a 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. This Plan seeks to influence sustainable consumption and prevent the generation of waste, improve the capture of materials to optimise circularity and enable compliance with policy and legislation.

The national plan sets out the following strategic targets for waste management in the country that are relevant to the proposed development:

National Targets

- ▶ 1A. (Residual Municipal Waste) 6% Reduction in Residual Municipal Waste per person by 2030.
- ▶ 2A. (Contamination of Materials) 90% of Material in Compliance in the Dry Recycling Bin.
- ▶ 2B. (Material Compliance Residual) 10% per annum increase in Material Compliance in the residual bin (90% by the end of 2030).
- ▶ 3A. (Reuse of Materials) 20kg Per person / year – Reuse of materials like cloths or furniture to prevent waste.

Municipal landfill charges in Ireland are based on the weight of waste disposed. In the Munster Region, charges are approximately €140-160 per tonne of waste, which includes a €85 per tonne landfill levy introduced under the Waste Management (Landfill Levy) (Amendment) Regulations 2015 (as amended)¹⁵. *The Circular Economy (Waste Recovery Levy) Regulations 2024*¹⁶ will also incur a levy of €10 per tonne for waste accepted for recovery. This will include backfilling at authorised recovery sites and at municipal waste landfills.

The *Cork City Development Plan 2022 – 2028*¹⁷ is guided by the National Planning Framework along with several other national and regional plans, including the current regional waste management plan and the Waste Action Plan for a Circular Economy. Waste management has been addressed under *Chapter 9 Environmental Infrastructure* and *Chapter 11 Placemaking and Managing Development*. Waste policies and objectives with a particular relevance to this development are as follows:

Objectives:

▶ Objective 9.12 - Waste Management:

- a) To support the sustainable management of waste in line with the objectives of the Southern Region Waste Management Plan 2015-2021 and the National Waste Management Plan for a Circular Economy (NWMPCE) when published, which will replace the existing Regional Waste Management Plans.
- b) To facilitate the transition to a circular economy facilitating the value recovery and recirculation of resources in order to generate minimal waste.

▶ Objective 11.3 Housing Quality and Standards:

- a) Waste: Housing should be designed with adequate and easily accessible storage space that supports the separate collection of dry recyclables, food waste and residual waste.

With reference to operational waste strategy, Section 11.270 of Chapter 11 requests:

‘Adequate bin storage provision shall be made for the storage, segregation, and recycling of waste in residential developments. In the case of communal refuse storage provision, the collection point for refuse should be accessible both to the external collector and to the resident and be secured against illegal dumping by non-residents. These shall be well screened from public view and adequately ventilated’.

2.3 Legislative Requirements

The primary legislative instruments that govern waste management in Ireland and applicable to the proposed development are:

- ▶ *Waste Management Act 1996 as amended;*
- ▶ *Environmental Protection Agency Act 1992 as amended;*
- ▶ *Litter Pollution Act 1997 as amended;*
- ▶ *Planning and Development Act 2000 as amended*¹⁸;
- ▶ *Circular Economy and Miscellaneous Provisions Act 2022.*

These Acts and subordinate Regulations transpose the relevant European Union Policy and Directives into Irish law.

One of the guiding principles of European waste legislation, which has in turn been incorporated into the Waste Management Act 1996 as amended and subsequent Irish legislation, is the principle of “Duty of Care”. This implies that the waste producer is responsible for waste from the time it is generated through until its legal disposal (including its method of disposal). As it is not practical in most cases for the waste producer to physically transfer all waste from where it is produced to the final disposal area, waste contractors will be employed to physically transport waste to the final waste disposal site.

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

A collection permit to transport waste must be held by each waste contractor which is issued by the National Waste Collection Permit Office (NWCPO). Waste receiving facilities must also be appropriately permitted or licensed. Operators of such facilities cannot receive any waste, unless in possession of a Certificate of Registration (COR) or waste permit granted by the relevant Local Authority under the *Waste Management (Facility Permit & Registration) Regulations 2007*, as amended, or a Waste 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.

2.3.1 Cork City Council Waste Bye-Laws

The CCC “Cork City Council Bye-Laws for the Segregation Storage and Presentation of Household and Commercial Waste” (2019)” came into use on the 1st of May 2019. The Bye-Laws set a number of enforceable requirements on waste holders with regard to storage, separation and presentation of waste within the CCC functional area. Key requirements under these Bye-Laws of relevance to the development include the following:

- ▶ Outside of Cork City Centre: Kerbside waste presented for collection shall not be presented for collection earlier than 6.00 pm on the day immediately preceding the designated waste collection day;
- ▶ Outside of Cork City Centre: All containers used for the presentation of kerbside waste and any uncollected waste shall be removed from any roadway, footway, footpath or any other public place no later than 7:00pm on the day following the designated waste collection day;
- ▶ Documentation, including receipts, are to be obtained and retained for a period of no less than one year to provide proof that waste has been disposed of in accordance with the bye-laws; and

- Waste containers shall be stored within the curtilage of the premise where the waste is produced and they shall not be stored on a road, footway, footpath or any other public place unless expressly authorised, in writing, by Cork City Council.

The full text of the Waste Bye-Laws is available from the CCC website.

2.4 Regional Waste Management Service Providers and Facilities

Various contractors offer waste collection services for the residential sector in the CCC region. Details of waste collection permits (granted, pending and withdrawn) for the region are available from the NWCPO.

There is only one active landfill in the Southern Region, at Powerstown in Co. Carlow, which is also now a civic amenity centre. There are two other landfills in the region with capacity for landfilling waste but neither are carrying out landfilling activity. Both sites, however, operate as recycling facilities.

There are a number of other licensed and permitted facilities in operation in the region including waste transfer stations, hazardous waste facilities and integrated waste management facilities. There is a proposed thermal treatment facility in Ringaskiddy, Co. Cork which was approved by An Bord Pleanála in 2018. However, a legal challenge in the high court has however slowed this application up and the applicant is now back engaged with dialogue with ABP. The High Court quashed the decision of the Board in case PA0045. The case was remitted under a new number (318802) for a fresh determination.

The development has a number of bring back centres located in the surrounding area. The Dunnes Stores, Bishopstown Court Shopping Centre Bring Back centre is located c. 1.2 km east of the proposed development and can be used by residents to dispose of household waste streams including clear, green and brown glass.

The CCC Civic Amenity Centre, Kinsale Road, Cork, located c. 5.4 km east of the development site, can be used by residents of the proposed development for other household waste streams. This centre can accept general waste, plastic, glass, paper, metals, Tetra Pak, batteries, electrical items, light bulbs, paints, varnish and waste mineral oil.

A copy of all CORs and waste permits issued by the Local Authorities are available from the NWCPO website and all Waste Licenses issued are available from the EPA.

3. DESCRIPTION OF THE DEVELOPMENT

3.1 Location, Size and Scale of the Development

The following development is proposed:

- (a) the construction of a residential development of 246 No. residential units
- (b) a creche facility and
- (c) all associated ancillary development works.

Vehicular access to the site is proposed via the Waterfall Road and the residential site to the west currently under construction (Waterfall Heights). Pedestrian access to the site is proposed via that site to the Waterfall Road and also via the permitted active travel route which will run to the north of the site (under construction) which then links to an existing path/cycleway which runs to the Bandon Road roundabout. Future linkages to adjoining sites are indicated as part of the development including vehicular links to the east via the site to the north of the permitted Primary Care Centre and to the lands to the south and pedestrian links to the east via the Primary Care Centre site and the site to the north. Part of the site was included in the application site for the adjoining lands – i.e. the crèche location and the active travel route to the north. 6 No. bike stores are proposed – 4 adjoining the apartment blocks to the north, 1 near the proposed crèche and the other to the north of the crèche.



Figure 3.1 Proposed Site Layout & Redline Boundary

3.2 Typical Waste Categories

The typical non-hazardous and hazardous wastes that will be generated at the proposed development will include the following:

- ▶ Dry Mixed Recyclables (DMR) - includes waste paper (including newspapers, magazines, brochures, catalogues, leaflets), cardboard and plastic packaging, metal cans, plastic bottles, aluminium cans, tins and Tetra Pak cartons;
- ▶ Organic waste – food waste and green waste generated from internal plants / flowers, landscaping and gardens;
- ▶ Glass; and
- ▶ Mixed Non-Recyclable (MNR)/General Waste.

In addition to the typical waste materials that will be generated at the development on a daily basis, there will be some additional waste types generated less frequently / in smaller quantities which will need to be managed separately including:

- ▶ Drink Cans and Bottles (Deposit Return Scheme)
- ▶ Green / garden waste may be generated from external landscaping;
- ▶ Batteries (both hazardous and non-hazardous);
- ▶ Waste electrical and electronic equipment (WEEE) (both hazardous and non-hazardous);
- ▶ Printer cartridges / toners;
- ▶ Chemicals (paints, adhesives, resins, detergents, etc.);
- ▶ Light bulbs;
- ▶ Textiles;
- ▶ Waste cooking oil (if any generated by the residents or the creche tenants);
- ▶ Furniture (and, from time to time, other bulky wastes); and
- ▶ Abandoned bicycles.

Wastes should be segregated into the above waste types to ensure compliance with waste legislation and guidance while maximising the re-use, recycling and recovery of waste with diversion from landfill wherever possible.

3.3 List of Waste Codes

In 1994, the *European Waste Catalogue*¹⁹ and *Hazardous Waste List*²⁰ were published by the European Commission. In 2002, the EPA published a document titled the *European Waste Catalogue and Hazardous Waste List*²¹, which was a condensed version of the original two documents and their subsequent amendments. This document has recently been replaced by the EPA '*Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous*'²² 2018. This waste classification system applies across the EU and is the basis for all national and international waste reporting, such as those associated with waste collection permits, COR's, permits and licences and EPA National Waste Database.

Under the classification system, different types of wastes are fully defined by a code. The List of Waste (LoW) code for typical waste materials expected to be generated during the operation of the proposed development are provided in Table 3.1 below.

Table 3.1 Typical Waste Types Generated and LoW Codes

Waste Material	LoW Code
Paper and Cardboard	20 01 01
Plastics	20 01 39
Metals	20 01 40
Mixed Non-Recyclable Waste	20 03 01
Glass	20 01 02
Biodegradable Kitchen Waste	20 01 08
Oils and Fats	20 01 25
Textiles	20 01 11
Batteries and Accumulators*	20 01 33* - 34
Printer Toner/Cartridges*	20 01 27* - 28
Green Waste	20 02 01
WEEE*	20 01 35*-36
Chemicals (solvents, pesticides, paints & adhesives, detergents, etc.) *	20 01 13*/19*/27*/28/29*30
Fluorescent tubes and other mercury containing waste*	20 01 21*
Bulky Wastes	20 03 07

* Individual waste type may contain hazardous materials

4. ESTIMATED WASTE ARISING

A waste generation model (WGM) developed by AWN has been used to predict waste types, weights and volumes expected to arise from operations within the proposed development. The WGM incorporates building area and use and combines these with other data, including Irish and US EPA waste generation rates.

The estimated quantum / volume of waste that will be generated from the residential units has been determined based on the predicted occupancy of the units and the floor area has been used to determine the estimated waste generated from the creche unit.

The estimated waste generation for the proposed development for the main waste types is presented in Tables 4.1 - 4.4.

Table 4.1 Estimated Waste Generation for the Residential Units of the Proposed Development

Waste Type	Waste Volume (m³ / week)			
	1-Bed House Unit (Individual WSA)	2-Bed House Unit (Individual WSA)	3-Bed House Unit (Individual WSA)	4-Bed House Unit (Individual WSA)
Organic Waste	0.01	0.02	0.02	0.02
DMR	0.08	0.11	0.13	0.18
Glass	0.01	0.01	0.01	0.01
MNR	0.05	0.07	0.08	0.09
Total	0.15	0.21	0.24	0.30

Table 4.2 Estimated Waste Generation for the Residential Units of the Proposed Development

Waste Type	Waste Volume (m³ / week)		
	Block 1 (Shared WSA)	Block 2 (Shared WSA)	Block 3 (Shared WSA)
Organic Waste	0.38	0.42	0.32
DMR	2.67	2.97	2.24
Glass	0.07	0.08	0.06
MNR	1.40	1.56	1.18
Total	4.53	5.03	3.79

Table 4.3 Estimated Waste Generation for the Residential Units of the Proposed Development

Waste Type	Waste Volume (m³ / week)		
	F1 – F2 Units (Shared WSA)	H & G Units 1 (Shared WSA)	H & G Units 2 (Shared WSA)
Organic Waste	0.08	0.13	0.15
DMR	0.54	0.93	1.10
Glass	0.01	0.03	0.03
MNR	0.28	0.49	0.58
Total	0.92	1.58	1.86

Table 4.4 Estimated Waste Generation for the Creche Unit of the Proposed Development

Waste Type	Waste Volume (m³ / week)
	Creche Unit (Individual WSA)
Organic Waste	0.08
DMR	2.75
Glass	0.01
MNR	1.50
Total	4.33

BS5906:2005 Waste Management in Buildings – Code of Practice²³ has been considered in the calculations of waste estimates. AWN’s modelling methodology is based on recently published data and data from numerous other similar developments in Ireland and is based on AWN’s experience, it provides a more representative estimate of the likely waste arisings from the proposed development.

5. WASTE STORAGE AND COLLECTION

This section provides information on how waste generated within the site will be stored and collected. This has been prepared with due consideration of the proposed site layout as well as best practice standards, local and national waste management requirements, including those of CCC. In particular, consideration has been given to the following documents:

- ▶ BS 5906:2005 Waste Management in Buildings – Code of Practice,
- ▶ The NWMPCE (2024);
- ▶ *The Cork City Council Development Plan 2022-2028*;
- ▶ CCC, *Cork City Council (Segregation, Storage and Presentation of Household & Commercial Waste) Bye-Laws* (2019); and
- ▶ DoHLGH, *Planning Design Standards for Apartments, Guidelines for Planning Authorities* (2025)²⁴.

Waste Storage Areas

Location of the Waste Storage Areas (WSAs) can be viewed on the drawings submitted with the planning application under separate cover and in the appendices of this report.

Locations

- ▶ There is one (1 no.) shared WSA for the apartments in Block 1 which is located internally in a ground floor level undercroft area.
- ▶ There is one (1 no.) shared WSA for the apartments in Block 2 which is located internally in a ground floor level undercroft area.
- ▶ There is one (1 no.) shared WSA for the apartments in Block 3 which is located internally in a ground floor level undercroft area.
- ▶ There is one (1 no.) shared WSA for the F1 – F5 residential units which is located externally at ground floor level.
- ▶ There are two (2 no.) shared WSAs for the H & G residential units which are located externally at ground floor level.
- ▶ There is a separate WSA designated for the creche unit which is located externally at ground floor level.

The locations of all WSAs can be viewed on the drawings submitted under a separate cover or in the appendices of this report.

The house units will have individual areas to store their waste located in their rear yard where external access is possible or when no external rear access is available they will have a shielded bin store located at the front of their unit.

Facilities management will supply all residents with shared WSAs and tenants of the proposed development with a document that shall clearly state the methods of source waste segregation, storage, reuse and recycling initiatives that shall apply within the development.

Using the estimated waste generation volumes in Tables 4.1 to 4.4, above, the waste receptacle requirements for MNR, DMR, organic waste and glass have been established for the WSAs. It is envisaged that all waste will be collected on a weekly basis.

Waste Storage Requirements

Estimated waste storage requirements for the operational phase of the proposed development are detailed in Table 5.1, below.

Table 5.1 Waste Storage Requirements for the Proposed Development

Area/Use	Bins Required			
	MNR ¹	DMR ²	Glass	Organic
Block 1 (Shared WSA)	2 no. 1100 L	3 no. 1100 L	1 no. 120 L	2 no. 240 L
Block 2 (Shared WSA)	2 no. 1100 L	3 no. 1100 L	1 no. 120 L	2 no. 240 L
Block 3 (Shared WSA)	1 no. 1100 L	2 no. 1100 L	1 no. 120 L	2 no. 240 L
F1 – F2 Units (Shared WSA)	2 no. 240 L	1 no. 1100 L	1 no. 120 L	1 no. 120 L
H & G Units 1 (Shared WSA)	1 no. 1100 L	1 no. 1100 L	1 no. 120 L	1 no. 240 L
H & G Units 2 (Shared WSA)	1 no. 1100 L	1 no. 1100 L	1 no. 120 L	1 no. 240 L
Individual Houses (Individual WSA)	1 no. 240 L	1 no. 240 L	Bottle Bank	1 no. 120 L
Creche Unit WSA	2 no. 1100 L	3 no. 1100 L	1 no. 120 L	1 no. 120 L

Note: 1 = Mixed Non-Recyclables

2 = Dry Mixed Recyclables

The waste receptacle requirements have been established from distribution of the total weekly waste generation estimate into the holding capacity of each receptacle type.

Waste storage receptacles as per Table 5.1 above (or similar appropriate approved containers) will be provided by the facilities management team in the shared WSAs. Residents in the house units and tenants in the creche unit will need to provide their own waste receptacles.

The types of bins used will vary in size, design and colour dependent on the appointed waste contractor. However, examples of typical receptacles to be provided in the WSA are shown in Figure 5.1. All waste receptacles used will comply with the SIST EN 840-1:2020 and SIST EN 840-2:2020 as the standards for performance requirements of mobile waste containers, where appropriate.

Figure 5-1. Typical waste receptacles of varying size (240L and 1100L)



Receptacles for organic, DMR, glass and MNR will be provided in the WSAs prior to first occupation of the development i.e. prior to the first residential unit or creche unit being occupied.

This Plan will be supplemented, as required, by the property management company with any new information on waste segregation, storage, reuse and recycling initiatives that are subsequently introduced.

5.1 Waste Storage – Residential Units

Residents will be required to segregate their waste into the following main waste categories within their own units:

- ▶ Organic waste;
- ▶ DMR;
- ▶ Glass; and
- ▶ MNR.

Provision will be made in all residential units to accommodate 3 no. bin types to facilitate waste segregation at source. An example of a potential 3 bin storage system is provided in Figure 5.2 below.

Figure 5.2 Example three bin storage system to be provided within the unit design



Graphical signage will be erected by facilities management, above or on the bins to show exactly which wastes can be put in each. Bins/containers will also be colour coded to avoid cross contamination of the different waste streams.

Access to the shared WSAs will be restricted to authorised residents, facilities management and waste contractors by means of a key or electronic fob access.

Other waste materials such as textiles, batteries, printer toner/cartridges, cooking oil and WEEE may be generated infrequently by the residents. Residents will be required to identify suitable temporary storage areas for these waste items within their own units and dispose of them appropriately. Further details on additional waste types can be found in Section 5.4.

5.2 Waste Storage – Creche Unit

The creche tenants will be required to segregate their waste into the following main waste categories within their own units:

- ▶ Organic waste;
- ▶ DMR;
- ▶ Glass; and
- ▶ MNR.

The creche tenants will be required to take their segregated waste materials to their designated WSA and deposit their segregated waste into the appropriate bins. The location of the WSA is illustrated in the drawings submitted with the planning application under separate cover.

Suppliers for the creche tenants should be requested by the tenants to make deliveries in reusable containers, minimize packaging or remove any packaging after delivery, where possible, to reduce waste generated by the proposed development.

If any kitchens are allocated in creche unit, this will contribute a significant portion of the volume of waste generated on a daily basis, and as such it is important that adequate provision is made for the storage and transfer of waste from these areas to the WSA.

If kitchens are required it is anticipated that waste will be generated in kitchens throughout the day, primarily at the following locations:

- ▶ Food Storage Areas (i.e. cold stores, dry store, freezer stores and stores for decanting of deliveries);
- ▶ Meat Preparation Area;
- ▶ Vegetable Preparation Area;
- ▶ Cooking Area;
- ▶ Dish-wash and Glass-wash Area; and
- ▶ Bar Area

Small bins will be placed adjacent to each of these areas for temporary storage of waste generated during the day. Waste will then be transferred from these areas to the designated creche WSA.

All bins / containers in the creche tenants area as well as in the WSA will be clearly labelled and colour coded to avoid cross contamination of the different waste streams. Signage will be posted above or on the bins to show exactly which wastes can be put in each.

Access to the creche WSA will be restricted to authorised tenants, facilities management and waste contractors by means of a key or electronic fob access.

Other waste materials such as textiles, batteries, printer toner/cartridges, cooking oil and WEEE may be generated infrequently by the tenants. Tenants will be required to identify suitable temporary storage areas for these waste items within their own units and dispose of them appropriately. Further details on additional waste types can be found in Section 5.4.

5.3 Waste Collection

There are numerous private contractors that provide waste collection services in the Cork City area. All waste contractors servicing the proposed development must hold a valid waste collection permit for the specific waste types collected. All waste collected must be transported to registered / permitted / licensed facilities only.

Bins from the creche WSA and the apartment blocks shared WSAs will be transported to designated temporary staging areas for collection which can be viewed in the appendices of this report. All other bins

from the proposed development shared WSAs will be collected directly from the shared WSAs there will be no need for a temporary staging/collection area for the rest of the development. It will be the responsibility of the facilities management or the waste contractor, depending on the agreement, to bring bins from the shared WSAs to the collection truck for emptying. The facilities manager or the waste contractor will ensure that empty bins are promptly returned to the WSAs after emptying.

Residents in the house units with their own individual WSAs will be responsible for relocating their bins to and from the roadside on designated collection days.

Suitable access and egress has been provided to enable the bins to be moved easily from the WSAs to the waste collection vehicle on the appropriate days. Waste will be collected at agreed days and times by the nominated waste contractors.

All waste receptacles will be clearly identified as required by waste legislation and the requirements of the CCC *Waste Bye-Laws*. Waste will be presented for collection in a manner that will not endanger health, create a risk to traffic, harm the environment or create a nuisance through odours or litter.

It is recommended that bin collection times are staggered to reduce the number of bins required to be emptied at once and the time the waste vehicle is on-site. This will be determined during the process of appointment of a waste contractor.

A road sweep analysis can be found in Appendix B of this report.

The collection of the waste will be such that it will not obstruct traffic or pedestrians (allowing a footway path of at least 1.8m, the space needed for two wheelchairs to pass each other) as is recommended in the *Design Manual for Urban Roads and Streets* (2019) ²⁵.

5.4 Additional Waste Materials

In addition to the typical waste materials that are generated on a daily basis, there will be some additional waste types generated from time to time that will need to be managed separately. A non-exhaustive list is presented below.

Deposit Return Scheme

Most drinks containers can be recycled via the deposit return scheme, such as bottles, cans and tins made from plastic, aluminium or steel can be returned once they are between 150ml and 3 litres in size and have the Re-turn logo on them.

At the shops you can either return the containers:

- ▶ Using a Reverse Vending Machine (RVM)
- ▶ Manually in the shop

If a shop does not have a RVM but they sell containers with the Re-turn logo, the shop may allow you to manually return containers in store, unless they have a take back exemption.

Locations of RVM machines can be found via the Re-turn website (www.re-turn.ie)

Green Waste

Green waste may be generated from external landscaping and internal plants / flowers. Green waste generated from landscaping of external areas will be removed by external landscape contractors. Green waste generated from gardens internal plants / flowers can be placed in the organic waste bins.

Batteries

A take-back service for waste batteries and accumulators (e.g. rechargeable batteries) is in place in order to comply with the S.I. No. 283/2014 - *European Union (Batteries and Accumulators) Regulations 2014*, as amended. In accordance with these regulations, consumers are able to bring their waste batteries to their local civic amenity centre or can return them free of charge to retailers which supply the equivalent type of battery, regardless of whether or not the batteries were purchased at the retail outlet and regardless of whether or not the person depositing the waste battery purchases any product or products from the retail outlet.

The creche tenant cannot use the civic amenity centre. They must segregate their waste batteries and either avail of the take-back service provided by retailers or arrange for recycling / recovery of their waste batteries by a suitably permitted / licenced contractor. Facilities management may arrange collection, depending on the agreement.

Waste Electrical and Electronic Equipment (WEEE)

The WEEE Directive (Directive 2002/96/EC) and associated Waste Management (WEEE) Regulations have been enacted to ensure a high level of recycling of electronic and electrical equipment. In accordance with the regulations, consumers can bring their waste electrical and electronic equipment to their local recycling centre. In addition, consumers can bring back WEEE within 15 days to retailers when they purchase new equipment on a like for like basis. Retailers are also obliged to collect WEEE within 15 days of delivery of a new item, provided the item is disconnected from all mains, does not pose a health and safety risk and is readily available for collection.

As noted above, the creche tenant cannot use the civic amenity centre. They must segregate their WEEE and either avail of the take-back / collection service provided by retailers or arrange for recycling / recovery of their WEEE by a suitably permitted / licenced contractor. Facilities management may arrange collection, depending on the agreement.

Printer Cartridge / Toners

It is recommended that a printer cartridge / toner bin is provided in the creche unit, where appropriate. The creche tenant will be required to store this waste within their unit and arrange for return to retailers or collection by an authorised waste contractor, as required.

Waste printer cartridge / toners generated by residents can usually be returned to the supplier free of charge or can be brought to a civic amenity centre.

Chemicals

Chemicals (such as solvents, paints, adhesives, resins, detergents, etc) are largely generated from building maintenance works. Such works are usually completed by external contractors who are responsible for the off-site removal and appropriate recovery / recycling / disposal of any waste materials generated. Any waste cleaning products or waste packaging from cleaning products generated in the creche unit that is classed as hazardous (if they arise) will be appropriately stored within the tenants own space. Facilities management may arrange collection, depending on the agreement.

Any waste cleaning products or waste packaging from cleaning products that are classed as hazardous (if they arise) generated by the residents will be brought to a civic amenity centre.

Light Bulbs

Waste light bulbs (fluorescent, incandescent and LED) may be generated by lighting at the creche unit. It is anticipated that creche tenants will be responsible for the off-site removal and appropriate recovery / disposal of these wastes. Facilities management may arrange collection, depending on the agreement.

Light bulbs generated by residents should be taken to the nearest civic amenity centre for appropriate storage and recovery / disposal.

Textiles

Where possible, waste textiles should be recycled or donated to a charity organisation for reuse. The creche tenant and residents will be responsible for disposing of waste textiles appropriately.

Waste Cooking Oil

If the creche tenant uses cooking oil, waste cooking oil will need to be stored within the unit on a bunded area or spill pallet and regular collections by a dedicated waste contractor will need to be organized as required. Under sink grease traps will be installed in any cooking space.

If the residents generate waste cooking oil, this can be brought to a civic amenity centre.

Furniture & Other Bulky Waste Items

Furniture and other bulky waste items (such as carpet, etc.) may occasionally be generated by the creche tenants. The collection of bulky waste will be arranged, as required by the tenant. If residents wish to dispose of furniture, this can be brought to a civic amenity centre.

Abandoned Bicycles

Bicycle parking areas are planned for the development. As happens in other developments, residents sometimes abandon faulty or unused bicycles, and it can be difficult to determine their ownership. Abandoned bicycles will be donated to charity if they arise or facilities management will arrange collection by a licensed waste contractor.

5.5 Waste Storage Area Design

The shared residential WSAs and creche WSA will be designed and fitted-out to meet the requirements of relevant design Standards, including:

- ▶ Be fitted with a non-slip floor surface;
- ▶ Provide ventilation to reduce the potential for generation of odours with a recommended 6-10 air changes per hour for a mechanical system for internal WSAs;
- ▶ Provide suitable lighting – a minimum Lux rating of 400 is recommended;
- ▶ Be easily accessible for people with limited mobility;
- ▶ Be restricted to access by nominated personnel only;
- ▶ Be supplied with hot or cold water for disinfection and washing of bins;
- ▶ Be fitted with suitable power supply for power washers;
- ▶ Have a sloped floor to a central foul drain for bins washing run-off;
- ▶ Have appropriate signage placed above and on bins indicating correct use;
- ▶ Have access for potential control of vermin, if required; and
- ▶ Be fitted with CCTV for monitoring.

The facilities manager, creche tenants and residents will be required to maintain the bins and storage areas in good condition as required by the CCC Waste Bye-Laws.

5.6 Facility Management Responsibilities

It shall be the responsibility of the facilities manager to ensure that all waste generated is managed to ensure correct storage prior to collection by an appropriately permitted waste management company.

The facilities manager will provide the following items to all residents with shared WSAs, creche tenants and any facilities management team appointed:

- ▶ Provision of a Waste Management Plan document, prepared by the facilities manager to all residents, creche tenants and facilities management staff which shall clearly state the methods of source waste segregation, storage, reuse and recycling initiatives that shall apply to the management of the development;
- ▶ Provision and maintenance of appropriate graphical signage to inform residents and creche tenants of their obligation to reduce waste, segregate waste and in the correct bin;
- ▶ Preparation of an annual waste management report for all residents and creche tenants to view;
- ▶ Designation of access routes to common waste storage areas to ensure safe access from the unit by mobility impaired persons;
- ▶ Provision of an appropriately qualified and experienced staff member, who will be responsible for all aspects of waste management at the development;
- ▶ Frequent inspection of waste storage areas and signing of a check list, which shall be displayed within the area; and
- ▶ Maintenance of a register, detailing the quantities and breakdown of wastes collected from the development and provision of supporting documentation by the waste collector to allow tracking of waste recycling rates.

5.7 Pest Management

A pest control operator will be appointed as required to manage pests onsite during the operational phase of this development. All waste generated within the development will be stored in closed waste receptacles both within the unit and within the WSAs. Any waste receptacles will be carefully managed to prevent leaks, odours and pest problems.

The WSAs will have access for potential control of vermin, if required, be supplied with hot or cold water, drainage point and will be regularly inspected by facilities management to deter pests.

6. SUMMARY AND CONCLUSION

In summary, this OWMP presents a waste strategy that addresses all legal requirements, waste policies and best practice guidelines and demonstrates that the required storage areas have been incorporated into the design of the proposed development.

Implementation of this OWMP will ensure a high level of recycling, reuse and recovery at the proposed development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus contributing to the targets set out in the *NWMPCE*.

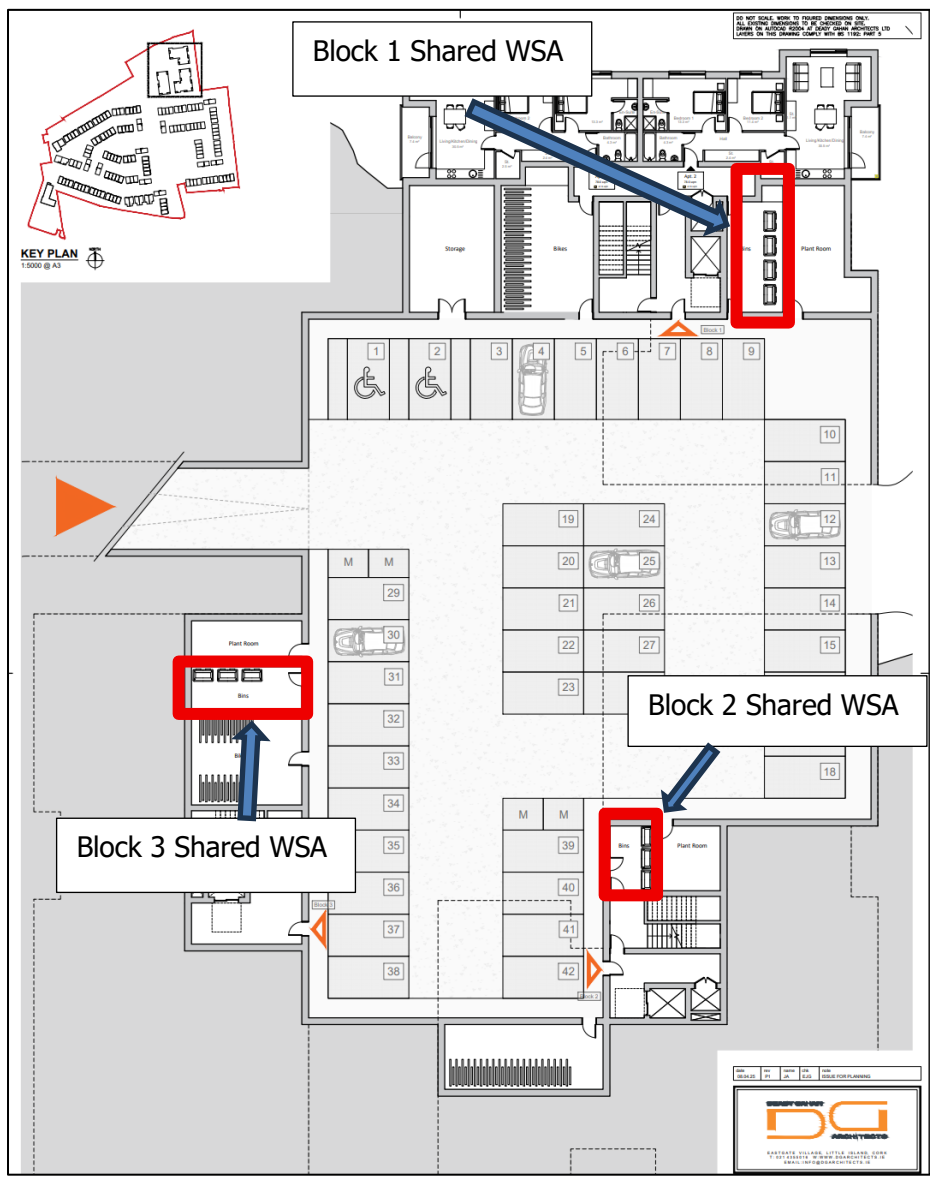
Adherence to this plan will also ensure that waste management at the development is carried out in accordance with the requirements of the *CCC Waste Bye-Laws*.

The waste strategy presented in this document will provide sufficient storage capacity for the estimated quantity of segregated waste. The designated areas for waste storage will provide sufficient room for the required receptacles in accordance with the details of this strategy.

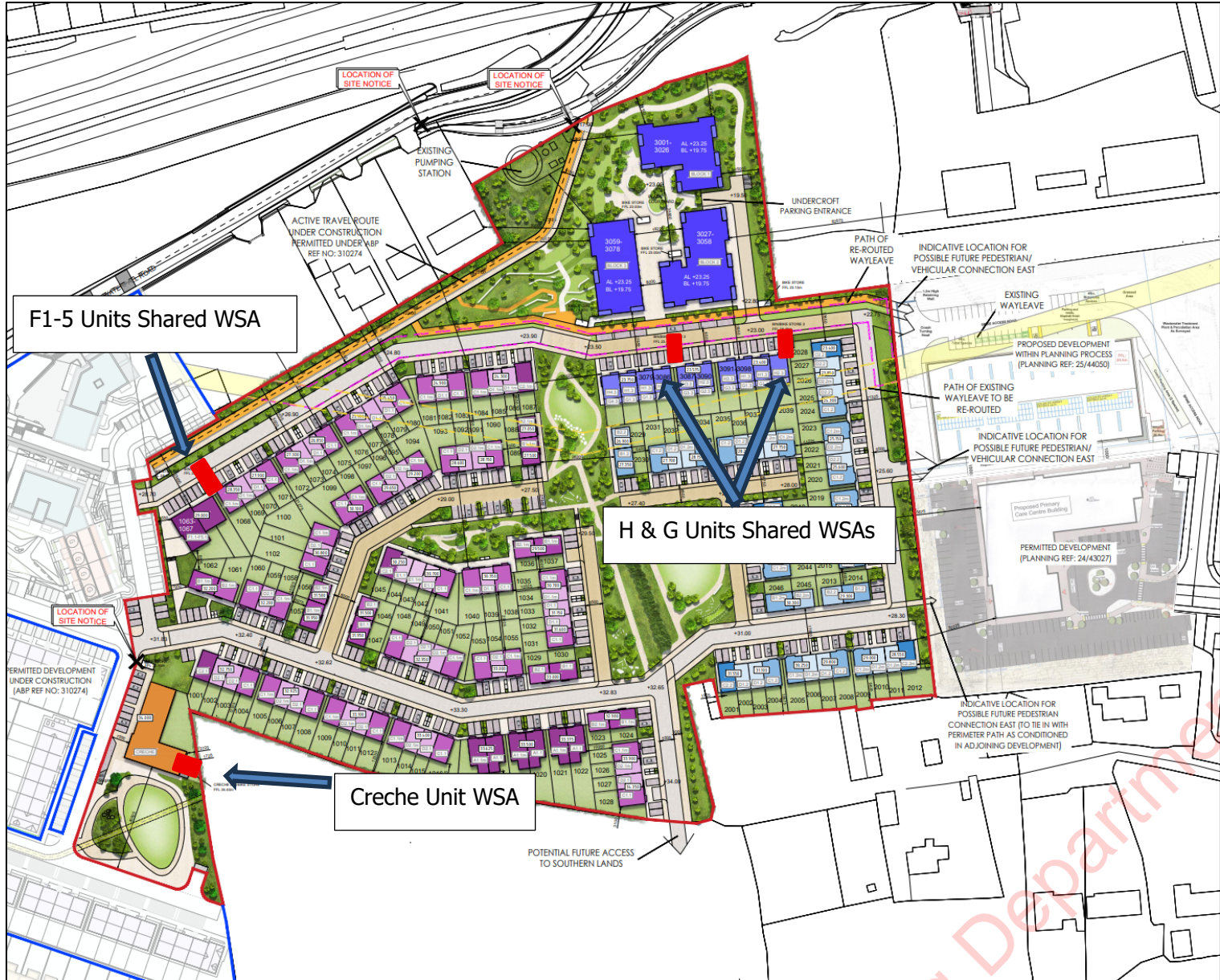
7. REFERENCES

1. Waste Management Act 1996 as amended.
2. Environmental Protection Agency Act 1992 as amended.
3. Litter Pollution Act 1997 as amended;
4. Regional Waste Management Planning Offices, *The National Waste Management Plan for a Circular Economy 2024 - 2030 (2024)*.
5. CCC Cork City Council (Storage, Presentation and Segregation of Household and Commercial Waste) Bye-Laws (2018).
6. Department of Environment and Local Government (DoELG) *Waste Management – Changing Our Ways, A Policy Statement* (1998).
7. Department of Environment, Heritage and Local Government (DoEHLG) *Preventing and Recycling Waste - Delivering Change* (2002).
8. DoELG, *Making Ireland's Development Sustainable – Review, Assessment and Future Action (World Summit on Sustainable Development)* (2002).
9. DoEHLG, *Taking Stock and Moving Forward* (2004).
10. Department of Communications, Climate Action and Environment (DCCAE), *Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025* (2020).
11. DCCAE, *Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less'* (2021).
12. Circular Economy and Miscellaneous Provisions Act 2022.
13. The Department of Housing, Local Government and Heritage authored *Sustainable Residential Development and Compact Settlements - Guidelines for Planning Authorities* (2024).
14. Environmental Protection Agency (EPA), *National Waste Database Reports 1998 – 2020* and the *Circular Economy and National Waste Database Report 2021 – 2022 (2024)*.
15. *Waste Management (Landfill Levy) (Amendment) Regulations 2015*
16. Circular Economy (Waste Recovery Levy) Regulations 2024.
17. The *Cork City Development Plan 2022 – 2028*.
18. Planning and Development Act 2000 (S.I. No. 30 of 2000) as amended.
19. European Waste Catalogue - Council Decision 94/3/EC (as per Council Directive 75/442/EC).
20. Hazardous Waste List - Council Decision 94/904/EC (as per Council Directive 91/689/EEC).
21. EPA, *European Waste Catalogue and Hazardous Waste List* (2002).
22. EPA, *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* (2018).
23. BS 5906:2005 Waste Management in Buildings – Code of Practice.
24. Department of Housing Local Government and Heritage (DoHLGH), *Planning Design Standards for Apartments, Guidelines for Planning Authorities* (2025)
25. DoHLGH, *Design Manual for Urban Roads and Streets* (2019).

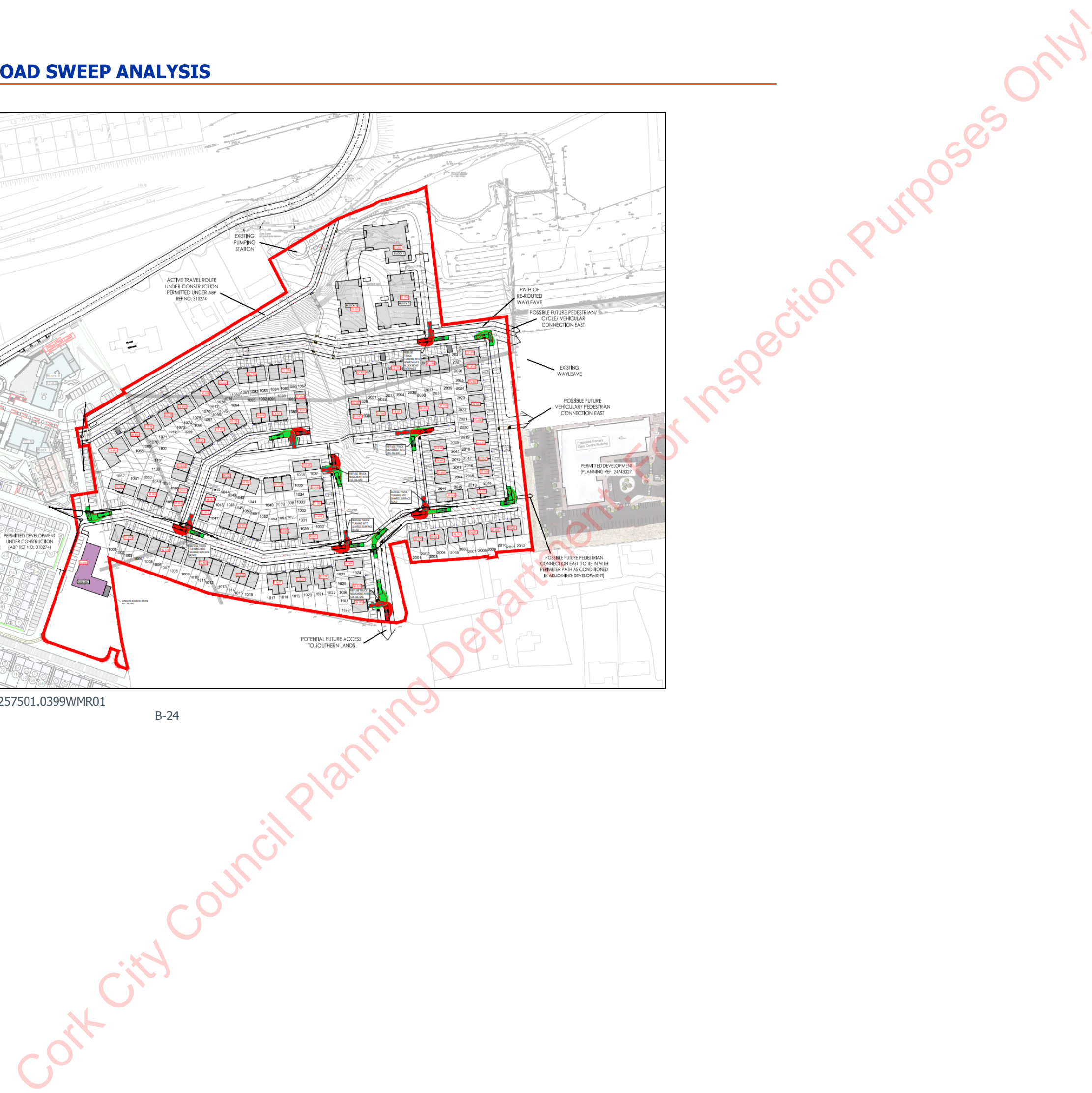
APPENDIX A. WASTE STORAGE AREA LOCATIONS



Bridgewater Homes Ltd. / 257501.0399WMR01
AWN Consulting Ltd



ROAD SWEEP ANALYSIS



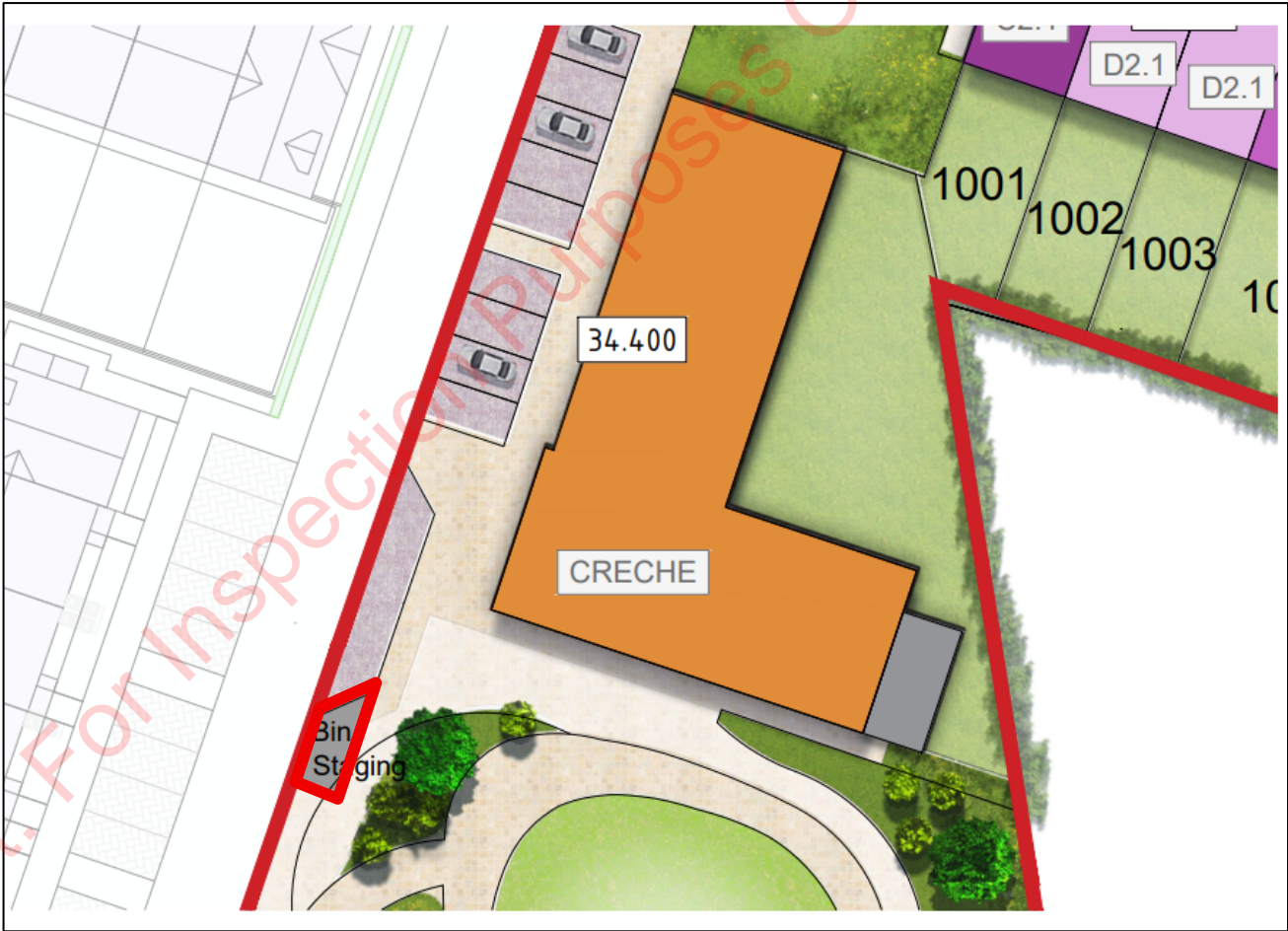
ROAD SWEEP ANALYSIS

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ROAD SWEEP ANALYSIS

APPENDIX C. STAGING AREA LOCATIONS



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APPENDIX 8-2 Resource Waste Management Plan



DOCUMENT CONTROL SHEET

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This report considers the specific instructions and requirements of our client. It is not intended for third-party use or reliance, and no responsibility is accepted for any third party. The provisions in this report apply solely to this project and should not be assumed applicable to other developments without review and modification.



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1. INTRODUCTION

AWN Consulting, a Trinity Consultants Company, has prepared this Construction and Demolition (C&D) Resource & Waste Management Plan (RWMP) on behalf of Bridgewater Homes Limited for the proposed Large-scale Residential Development at Ardarostig, Bishopstown, Cork.

This plan provides information necessary to ensure that the management of C&D waste at the site is undertaken in accordance with the current legal and industry standards including the *Waste Management Act 1996* as amended and associated Regulations ¹, *Environmental Protection Agency Act 1992* as amended ², *Litter Pollution Act 1997* as amended ³, and the *National Waste Management Plan for a Circular Economy 2024 - 2030 (NWMPCE) (2024)* ⁴. In particular, this plan aims to ensure maximum recycling, reuse and recovery of waste with diversion from landfill, wherever possible. It also provides appropriate measures in relation to the collection and transport of waste from the site to prevent issues associated with litter or more serious environmental pollution (e.g. contamination of soil and/or water).

This RWMP includes information on the legal and policy framework for C&D waste management in Ireland, estimates of the type and quantity of waste to be generated by the development and prescribes measures for the management of different waste streams. The RWMP should be viewed as a live document and will be regularly revisited throughout the project's lifecycle so that opportunities to maximise waste reduction / efficiencies are exploited throughout, and that data is collected on an ongoing basis so that it is as accurate as possible.

2. OVERVIEW OF WASTE MANAGEMENT IN IRELAND

2.1 National level

The Irish Government issued a policy statement in September 1998, *Changing Our Ways* ⁵, which identified objectives for the prevention, minimisation, reuse, recycling, recovery and disposal of waste in Ireland. The target for C&D waste in this report was to recycle at least 50% of C&D waste within a five year period (by 2003), with a progressive increase to at least 85% over fifteen years (i.e. 2018).

In response to the *Changing Our Ways* report, a task force (Task Force B4) representing the waste sector of the already established Forum for the Construction Industry, released a report entitled '*Recycling of Construction and Demolition Waste*' ⁶ concerning the development and implementation of a voluntary construction industry programme to meet the Government's objectives for the recovery of C&D waste.

In September 2020, the Irish Government published a policy document outlining a new action plan for Ireland to cover the period of 2020-2025. This plan, '*A Waste Action Plan for a Circular Economy*' ⁷ (WAPCE), replaces the previous national waste management plan, '*A Resource Opportunity*' (2012), and was prepared in response to the 'European Green Deal' which sets a roadmap for a transition to an altered economical model, where climate and environmental challenges are turned into opportunities.

The WAPCE sets the direction for waste planning and management in Ireland up to 2025. This reorientates policy from a focus on managing waste to a much greater focus on creating circular patterns of production and consumption. Other policy statements of a number of public bodies already acknowledge the circular economy as a national policy priority.

The policy document contains over 200 measures across various waste areas including circular economy, municipal waste, consumer protection and citizen engagement, plastics and packaging, construction and demolition, textiles, green public procurement and waste enforcement.

One of the first actions to be taken was the development of the *Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less'* (2021) ⁸ to set a course for Ireland to transition across all sectors and at all levels of Government toward circularity and was issued in December 2021. It is anticipated that the Strategy will be updated in full every 18 months to 2 years. There has not yet been an update released regarding a new iteration.

The *Circular Economy and Miscellaneous Provisions Act 2022* ⁹ was signed into law in July 2022. The Act underpins Ireland's shift from a "take-make-waste" linear model to a more sustainable pattern of production and consumption, that retains the value of resources in our economy for as long as possible and that will work to significantly reduce our greenhouse gas emissions. The Act defines Circular Economy for the first time in Irish law, incentivises the use of recycled and reusable alternatives to wasteful, single-use disposable packaging, introduces a mandatory segregation and incentivised charging regime for commercial waste, streamlines the national processes for End-of-Waste and By-Products decisions, tackling the delays which can be encountered by industry, and supporting the availability of recycled secondary raw materials in the Irish market, and tackles illegal fly-tipping and littering.

The Environmental Protection Agency (EPA) of Ireland issued '*Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects*' in November 2021 ¹⁰. These guidelines replace the previous 2006 guidelines issued by *The National Construction and Demolition Waste Council (NCDWC) and the Department of the Environment, Heritage and Local Government (DoEHLG)* in 2006 ¹¹. The guidelines provide a practical approach which is informed by best practice in the prevention and management of C&D wastes and resources from design to construction of a project, including consideration of the deconstruction of a project. These guidelines have been followed in the preparation of this document and include the following elements:

- ▶ Predicted C&D wastes and procedures to prevent, minimise, recycle and reuse wastes;
- ▶ Design Teams roles and approach;
- ▶ Relevant EU, national and local waste policy, legislation and guidelines;
- ▶ Waste disposal/recycling of C&D wastes at the site;
- ▶ Provision of training for Resource Waste Manager (RM) and site crew;
- ▶ Details of proposed record keeping system;
- ▶ Details of waste audit procedures and plan; and
- ▶ Details of consultation with relevant bodies i.e. waste recycling companies, Local Authority, etc.

Section 3 of the Guidelines identifies thresholds above which there is a requirement for the preparation of a bespoke RWMP for developments. The new guidance classifies developments on a two-tiered system. Developments which do not exceed any of the following thresholds may be classed as Tier 1 development, which require a simplified RWMP:

- ▶ New residential development of less than 10 dwellings;
- ▶ Retrofit of 20 dwellings or less;
- ▶ New commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 1,250m²;
- ▶ Retrofit of commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 2,000m²; and
- ▶ Demolition projects generating in total less than 100m³ in volume of C&D waste.

A development which exceeds one or more of these thresholds is classed as Tier-2 development.

This development requires a RWMP as a Tier 2 development as it is above following criterion:

- ▶ New residential development of less than 10 dwellings.

Other guidelines followed in the preparation of this report include 'Construction and Demolition Waste Management – a handbook for Contractors and Site Managers'¹², published by FÁS and the Construction Industry Federation in 2002 and the previous guidelines, 'Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects'(2006).

These guidance documents are considered to define best practice for C&D projects in Ireland and describe how C&D projects are to be undertaken such that environmental impacts and risks are minimised and maximum levels of waste recycling are achieved.

2.2 Regional Level

The development is located in the Local Authority administrative area of Cork City Council (CCC).

The Southern Region (SR) Waste Management Plan 2015 – 2021, which previously governed waste management policy in the CCC area, has been superseded as of March 2024 by the NWMPCE 2024 – 2030, the national waste management plan for Ireland.

The NWMPCE does not dissolve the three regional waste areas. The NWMPCE sets the ambition of the plan to have a 0% total waste growth per person over the life of the Plan with an emphasis on non-household waste, including waste from commercial activities and the construction and demolition sector. This plan seeks to influence sustainable consumption and prevent the generation of waste, improve the capture of materials to optimise circularity and enable compliance with policy and legislation.

The national plan sets out the following strategic targets for waste management in the country that are relevant to the development:

National Targets

- ▶ 1B. (Construction Materials) 12% Reduction in Construction & Demolition Waste Generated by 2030.
- ▶ 3B. (Reuse Facilities) Provide for reuse at 10 Civic Amenity Sites, minimum.

Municipal landfill charges in Ireland are based on the weight of waste disposed. In the Munster Region, charges are approximately €140 - €160 per tonne of waste which includes an €85 per tonne landfill levy introduced under the *Waste Management (Landfill Levy) (Amendment) Regulations 2015 (as amended)*¹³. The *Circular Economy (Waste Recovery Levy) Regulations 2024*¹⁴ will also add a levy of €10 per tonne to waste accepted for recovery. This will include backfilling at authorised recovery sites and at municipal waste landfills.

The *Cork City Development Plan 2022 – 2028*¹⁶ is guided by the National Planning Framework along with several other national and regional plans, including the current regional waste management plan and the Waste Action Plan for a Circular Economy. Waste has been addressed under Chapter 5 Climate Change and Environment, Chapter 9 Environmental Infrastructure and Chapter 11 Placemaking and Managing Development with the following objectives:

Objectives:

- ▶ Objective 5.13 Waste Management – Construction and Operation of Development: All development proposals should minimise waste and maximise the recycling and re-use opportunities during the construction and operation phases.
- ▶ Objective 9.12 Waste management:
 - a) To support the sustainable management of waste in line with the objectives of the Southern Region Waste Management Plan 2015-2021 and the National Waste Management Plan for a Circular Economy (NWMPCE) when published, which will replace the existing Regional Waste Management Plans.
 - b) To facilitate the transition to a circular economy facilitating the value recovery and recirculation of resources in order to generate minimal waste.
 - c) Continue to fulfil duties under the Waste Management (certification of historic unlicensed waste disposal and recovery activity) Regulations 2008 (S.I. No 524 of 2008), including those in relation to the identification and registration of closed landfills.
 - d) To encourage the recycling of construction and demolition waste and the reuse of aggregate and other materials in future construction projects. Applications for large infrastructure projects shall be accompanied by a Construction and Environmental Management Plan that includes details of how construction and demolition waste generated is to be managed and, where reuse/recycling is not practicable, disposed of, in line with legislative requirements.
- ▶ Objective 11.3 Housing Quality and Standards:
 - Waste: Housing should be designed with adequate and easily accessible storage space that supports the separate collection of dry recyclables, food waste and residual waste;

2.3 Legislative Requirements

The primary legislative instruments that govern waste management in Ireland and applicable to the development are:

- ▶ *Waste Management Act 1996 as amended;*

- ▶ *Environmental Protection Agency Act 1992 as amended;*
- ▶ *Litter Pollution Act 1997 as amended;*
- ▶ *Planning and Development Act 2000 as amended* ¹⁶; and
- ▶ *Circular Economy and Miscellaneous Provisions Act 2022.*

One of the guiding principles of European waste legislation, which has in turn been incorporated into the *Waste Management Act 1996* as amended 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 recycling, recovery or disposal (including its method of disposal). As it is not practical in most cases for the waste producer to physically transfer all waste from where it is produced to the final destination, waste contractors will be employed to physically transport waste to the final destination. 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 Developer ensures that the waste contractors engaged by construction contractors are legally compliant with respect to waste transportation, recycling, recovery and disposal. This includes the requirement that a contractor handle, transport and 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 Licence granted by the EPA. The COR / permit / licence held will specify the type and quantity of waste able to be received, stored, sorted, recycled, recovered and/or disposed of at the specified site.

3. DESIGN APPROACH

The Client and the Design Team have integrated the 'Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects' guidelines 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 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 wastes, reuse where possible and thereafter sustainably reduce and recover materials. The below sections have been the focal point of the design process and material selections and will continued to be analysed and investigated throughout the design process and when selecting material.

As noted in the EPA guidelines, the approaches presented are based on international principles of optimizing resources and reducing waste on construction projects through:

- ▶ *Prevention;*
- ▶ *Reuse;*
- ▶ *Recycling;*
- ▶ *Green Procurement Principles;*
- ▶ *Off-Site Construction;*
- ▶ *Materials Optimisation; and*
- ▶ *Flexibility and Deconstruction.*

3.1 Designing For Prevention, Reuse and Recycling

Undertaken at the outset and during project feasibility and evaluation the Client and Design Team considered:

- ▶ Establishing the potential for any reusable site assets (buildings, structures, equipment, materials, soils, etc.); and
- ▶ Enabling the optimum recovery of assets on site.

3.2 Designing for Green Procurement

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 will 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.

3.3 Designing for Off-Site Construction

Use of off-site manufacturing has been shown to reduce residual wastes by up to 90% (volumetric building versus traditional). 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 planning stage 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; and
- ▶ Designing for the preferential use of offsite modular units.

3.4 Designing for Materials Optimisation During Construction

To ensure manufacturers and construction companies adopt lean production models, including maximising the reuse of materials onsite as outlined in section 3.1, structures should be designed with the intent of designing out waste. This helps to reduce the environmental impacts associated with transportation of materials and from waste management activities. This includes investigating the use of standardised sizes for certain materials to help reduce the amount of offcuts produced on site, focusing on promotion and development of off-site manufacture.

3.5 Designing 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. Material efficiency is being considered for the duration and end of life of a building project to produce; 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.

4. DESCRIPTION OF THE DEVELOPMENT

4.1 Location, Size and Scale of the Development

The following development is proposed:

- ▶ (a) the construction of a residential development of 246 No. residential units
- ▶ (b) a creche facility and
- ▶ (c) all associated ancillary development works.

Vehicular access to the site is proposed via the Waterfall Road and the residential site to the west currently under construction (Waterfall Heights). Pedestrian access to the site is proposed via that site to the Waterfall Road and also via the permitted active travel route which will run to the north of the site (under construction) which then links to an existing path/cycleway which runs to the Bandon Road roundabout. Future linkages to adjoining sites are indicated as part of the development including vehicular links to the east via the site to the north of the permitted Primary Care Centre and to the lands to the south and pedestrian links to the east via the Primary Care Centre site and the site to the north. Part of the site was included in the application site for the adjoining lands – i.e. the crèche location and the active travel route to the north. 6 No. bike stores are proposed – 4 adjoining the apartment blocks to the north, 1 near the proposed crèche and the other to the north of the crèche.



Figure 3. 1 Proposed Site Layout & Redline Boundary Map

4.2 Details of the Non-Hazardous Wastes to be Produced

There will be small quantities of soil and stones excavated to facilitate the construction of new foundations and underground services. The volume of material to be excavated has been estimated by the project engineers to be 15,665.48 m³. It is anticipated that c. 2,210.52 m³ will be reused as backfill and all other excavated material will need to be removed offsite due to the limited opportunities for reuse on site. When removed offsite it will be taken for appropriate reuse, recycling or disposal.

During the construction phase there may be a surplus of building materials, such as timber off-cuts, broken concrete blocks, cladding, plastics, metals and tiles generated. There may also be excess concrete during construction which will need to be disposed of. Plastic and cardboard waste from packaging and supply of materials will also be generated. The contractor will be required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised.

Waste will also be generated from construction workers e.g. organic / food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided on site 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.

4.3 Potential Hazardous Wastes Arising

4.3.1 Contaminated Soil

Site investigations were carried out by IGSL in June 2025. The soil testing was performed by Eurofins Chemists Ltd. to test for Landfill Waste Acceptance Criteria (WAC) and tested for specific pollutants and asbestos. No elevated levels of contaminants were found in the test samples, and all samples were classified for inert waste landfill. No asbestos was detected in the samples taken. Further details on the soil testing results can be found in Chapter 9 (Land & Soils).

If any potentially contaminated material is encountered, it will need to be segregated from clean / inert material, tested and classified as either non-hazardous or hazardous in accordance with the EPA publication entitled 'Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous'¹⁷ using the *HazWasteOnline* application (or similar approved classification method). The material will then need to be classified as clean, inert, non-hazardous or hazardous in accordance with the *EC Council Decision 2003/33/EC*¹⁸, which establishes the criteria for the acceptance of waste at landfills.

In the event that Asbestos Containing Materials (ACMs) are found within the excavated material, the removal will only be carried out by a suitably permitted waste contractor, in accordance with *the Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010*¹⁹ and *the Best Practice Guidance for Handling Asbestos (2023)*²⁰. All asbestos will be taken to a suitably licensed or permitted facility.

In the event that hazardous soil, or historically deposited waste is encountered during the construction phase, the contractor will notify CCC and provide a Hazardous / Contaminated Soil Management Plan, to include estimated tonnages, description of location, any relevant mitigation, destination for disposal / treatment, in addition to information on the authorised waste collector(s).

4.3.2 Fuel/Oils

Fuels and oils are classed as hazardous materials; any on-site storage of fuel / oil, and all storage tanks and all draw-off points will be bunded and located in a dedicated, secure area of the site. Provided that these requirements are adhered to and the site crew are trained in the appropriate refueling techniques, it is not expected that there will be any fuel / oil waste generated at the site.

4.3.3 Invasive Plant Species

A site invasive species survey was undertaken by Enviroguide in July 2025. This included a site walkover survey of the entire site and perimeter to search for any invasive species listed on the Third Schedule of the *European Communities (Birds and Natural Habitats) Regulations 2011* (as amended).

High-impact Cherry Laurel (*Prunus laurocerasus*) was recorded in isolated pockets on Site along hedgerows and medium-impact Winter Heliotrope (*Petasites pyrenaicus*) and Sycamore (*Acer pseudoplatanus*) were also present with Sycamore now establishing throughout the cleared areas of the Site. However, no Third Schedule Invasive Species were found on site. Further detail on the invasive species survey and detailed mitigation measures can be found in Chapter 11 (Biodiversity) of the EIA.

In the unlikely event that a Third Schedule Invasive species is found on site, for example Japanese Knotweed, an Invasive Species Management Plan will be prepared which will include an eradication and treatment program to be submitted to CCC. This management plan will be continued as required during the Operational Phase until eradication is complete.

4.3.4 Asbestos

In the unlikely event that asbestos or Asbestos Containing Material (ACM) is located onsite, removal of asbestos or ACMs will be carried out by a suitably qualified contractor and ACMs will only be removed from site by a suitably permitted / licenced waste contractor, in accordance with the *Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010* and the *Best Practice Guidance for Handling Asbestos (2023)*. All material will be taken to a suitably licensed or permitted facility.

4.3.5 Other Known Hazardous Substances

Paints, glues, adhesives and other known hazardous substances will be stored in designated areas. They will generally be present in small volumes only and associated waste volumes generated will be kept to a minimum. Wastes will be stored in appropriate receptacles pending collection by an authorised waste contractor.

In addition, WEEE (containing hazardous components), printer toner / cartridges, batteries (Lead, Ni-Cd or Mercury) and / or fluorescent tubes and other mercury containing waste may be generated from during C&D activities or temporary site offices. These wastes, if generated, will be stored in appropriate receptacles in designated areas of the site pending collection by an authorised waste contractor.

5. ROLES AND RESPONSIBILITIES

The *Best Practice Guidelines on the Preparation of Resource Waste Management Plans for Construction and Demolition Projects* promotes that a suitably qualified Resource Manager (RM) with expertise in waste and resource management to implement the RWMP should be appointed. The RM may be performed by number of different individuals over the life-cycle of the Project, however it is intended to be a reliable person chosen from within the Planning/Design/Contracting Team, who is technically competent and appropriately trained, who takes the responsibility to ensure that the objectives and measures within the Project RWMP are complied with. The RM is assigned the requisite authority to meet the objective and obligations of the RWMP. The role will include the important activities of conducting waste checks/audits and adopting construction methodology that is designed to facilitate maximum reuse and/or recycling of waste.

5.1 Role of the Client

The Client are the body establishing the aims and the performance targets for the project.

- ▶ The Client has commissioned the preparation and submission of this RWMP as part of the design and planning submission;
- ▶ The Client is to commission the preparation and submission of an updated RWMP as part of the construction tendering process;
- ▶ The Client will ensure that the RWMP is agreed on and submitted to the local authority and their agreement obtained prior to commencement of works on site;
- ▶ The Client will request the end-of-project RWMP from the contractor.

5.2 Role of the Client Advisory Team

The Client Advisory Team or Design Team is formed of architects, consultants, quantity surveyors and engineers and is responsible for:

- ▶ Drafting and maintaining the RWMP through the design, planning and procurement phases of the project;
- ▶ Appointing a RM to track and document the design process, inform the Design Team and prepare the RWMP;
- ▶ Including details and estimated quantities of all projected waste streams with the support of environmental consultants/scientists. This will also include data on waste types (e.g. waste characterisation data, contaminated land assessments, site investigation information) and prevention mechanisms (such as by-products) to illustrate the positive circular economy principles applied by the Design Team;
- ▶ Handing over of the RWMP to the selected contractor upon commencement of construction of the development, in a similar fashion to how the safety file is handed over to the contractor; and
- ▶ Working with the contractor as required to meet the performance targets for the project.

5.3 Future Role of the Contractor

The future construction contractors have not yet been decided upon for this RWMP. However, once select they will have major roles to fulfil. They will be responsible for:

- ▶ Preparing, implementing and reviewing the RWMP throughout the construction phases (including the management of all suppliers and sub-contractors) as per the requirements of the EPA guidelines;
- ▶ Identifying a designated and suitably qualified RM who will be responsible for implementing the RWMP;
- ▶ Identifying all hauliers to be engaged to transport each of the resources / wastes off-site;

- ▶ Implementing waste management policies whereby waste materials generated on site are to be segregated as far as practicable;
- ▶ Renting and operating a mobile-crusher to crush concrete for temporary reuse onsite during construction and reduce the amount of HGV loads required to remove material from site;
- ▶ Applying for the appropriate waste permit to crush concrete onsite;
- ▶ Identifying all destinations for resources taken off-site. As above, any resource that is legally classified as a 'waste' must only be transported to an authorised waste facility;
- ▶ End-of-waste and by-product notifications addressed with the 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) will be maintained for the duration of the project; and
- ▶ Preparing a RWMP Implementation Review Report at project handover.

6. KEY MATERIALS & QUANTITIES

6.1 Project Resource Targets

Project specific resource and waste management targets for the site have not yet been set and this information will be updated for these targets once these targets have been confirmed by the Client. However, it is expected for projects of this nature that a minimum of 70% of waste is fully re-used, recycled or recovered. Target setting will inform the setting of project-specific benchmarks to track target progress. Typical Key Performance Indicators (KPIs) that will be used to set targets include (as per guidelines):

- ▶ Weight (tonnes) or Volume (m³) of waste generated per construction value;
- ▶ Weight (tonnes) or Volume (m³) of waste generated per construction floor area (m²);
- ▶ Fraction of resource reused on site;
- ▶ Fraction of resource notified as by-product;
- ▶ Fraction of waste segregated at source before being sent off-site for recycling/recovery; and
- ▶ Fraction of waste recovered, fraction of waste recycled, or fraction of waste disposed.

6.2 Main Construction Waste Categories

The main non-hazardous and hazardous waste streams that could be generated by the construction activities at a typical site are shown in Table 6.1. The List of Waste (LoW) code (2018) for each waste stream is also shown.

Table 6.1 Typical waste types generated and LoW codes (individual waste types may contain hazardous substances)

Waste Material	LoW Code
Concrete, bricks, tiles, ceramics	17 01 01-03 & 07
Wood, glass and plastic	17 02 01-03
Treated wood, glass, plastic, containing hazardous substances	17-02-04*
Bituminous mixtures, coal tar and tarred products	17 03 01*, 02 & 03*
Metals (including their alloys) and cable	17 04 01-11
Soil and stones	17 05 03* & 04
Gypsum-based construction material	17 08 01* & 02
Paper and cardboard	20 01 01
Mixed C&D waste	17 09 04
Green waste	20 02 01
Electrical and electronic components	20 01 35 & 36
Batteries and accumulators	20 01 33 & 34
Liquid fuels	13 07 01-10
Chemicals (solvents, pesticides, paints, adhesives, detergents etc.)	20 01 13, 19, 27-30
Insulation materials	17 06 04
Organic (food) waste	20 01 08
Mixed Municipal Waste	20 03 01

* Individual waste type may contain hazardous substances

6.3 Demolition Waste Generation

There is no demolition associated with this development and as such there will be no demolition waste generated as part of this application.

6.4 Construction Waste Generation

Table 6.2 shows the breakdown of C&D waste types produced on a typical site based on data from the EPA *National Waste Reports* ²¹ and the joint EPA & GMIT study ²².

Table 6.2 Waste materials generated on a typical Irish construction site

Waste Types	%
Mixed C&D	33
Timber	28
Plasterboard	10
Metals	8
Concrete	6
Other	15
Total	100

Table 6.3, below, shows the estimated construction waste generation for the proposed Project based on the gross floor area of construction and other information available to date, along with indicative targets for management of the waste streams. The estimated amounts for the main waste types (with the exception of soils, stones and clay) are based on an average large-scale development waste generation rate per m², using the waste breakdown rates shown in Table 6.2. These have been calculated from the schedule of development areas provided by the architect.

Table 6.3 Predicted on and off-site reuse, recycle and disposal rates for construction waste

Waste Type	Tonnes	Reuse		Recycle Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	492.7	10	49.3	80	394.2	10	49.3
Timber	418.1	40	167.2	55	229.9	5	20.9
Plasterboard	149.3	30	44.8	60	89.6	10	14.9
Metals	119.4	5	6.0	90	107.5	5	6.0
Concrete	44.8	30	13.4	65	29.1	5	2.2
Other	224.0	20	44.8	60	134.4	20	44.8
Total	1448.3		325.5		984.7		138.1

In addition to the information in Table 6.4, there will be 15,665.48 m³ of soil, stones and clay excavated to facilitate construction of new foundations and the installations of underground services. Any suitable excavated material will be temporarily stockpiled for reuse as fill. It is currently envisaged that c. 2,210.52 m³ of excavated material will be reused onsite as backfill and all remaining excavated material will be required to be removed for appropriate reuse, recovery and/or disposal.

It should be noted that until final materials and detailed construction methodologies have been confirmed, it is difficult to predict with a high level of accuracy the construction waste that will be generated from the proposed works as the exact materials and quantities may be subject to some degree of change and variation during the construction process.

6.5 Proposed Resource and Waste Management Options

Waste materials generated will be segregated on-site, where it is practical. Where the on-site segregation of certain wastes types is not practical, off-site segregation will be carried out. There will be skips and receptacles provided to facilitate segregation at source, where feasible. All waste receptacles leaving the site will be covered or enclosed. The appointed waste contractor will collect and transfer the wastes as receptacles are filled. There are numerous waste contractors in the Cork region that provide this service.

All waste arisings will be handled by an approved waste contractor holding a current waste collection permit. All waste arisings requiring disposal off-site will be reused, recycled, recovered or disposed of at a facility holding the appropriate registration, permit or licence, as required.

National End-of-Waste Decision EoW-N001/2023 (Regulation 28) published by the EPA in September 2023, establishes criteria determining when recycled aggregate resulting from a recovery operation ceases to be waste. Material from this development will be investigated to see if it can cease to be a waste under the requirements of the National End of Waste Criteria for Aggregates.

During construction, some of the sub-contractors on site will generate waste in relatively low quantities. The transportation of non-hazardous waste by persons who are not directly involved with the waste business, at weights less than or equal to 2 tonnes, and in vehicles not designed for the carriage of waste, are exempt from the requirement to have a waste collection permit (per Article 30 (1) (b) of the Waste Collection Permit Regulations 2007, as amended). Any sub-contractors engaged that do not generate more than 2 tonnes of waste at any one time can transport this waste off-site in their work vehicles (which are not designed for the carriage of waste). However, they are required to ensure that the receiving facility has the appropriate COR / permit / licence.

Written records will be maintained by the contractor(s), detailing the waste arising throughout the C&D phases, the classification of each waste type, waste collection permits for all waste contractors who collect waste from the site and COR / permit / licence for the receiving waste facility for all waste removed off-site for appropriate reuse, recycling, recovery and / or disposal.

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

The anticipated management of the main waste streams is outlined as follows:

Soil, Stone & Clay

The waste hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling / recovery, energy recovery (i.e. incineration) and, least favoured of all, disposal. The excavations are required to facilitate construction works so the preferred option (prevention and minimisation) cannot be accommodated for the excavation phase.

It is anticipated that c. 2,210.52 m³ of excavated topsoil and subsoil will be reused on site. It is anticipated that c. 13,454.96 m³ of subsoil material will need to be removed offsite for appropriate reuse, recovery and/or disposal. When material is removed off-site it could be reused as a by-product (and not as a waste). If this is done, it will be done in accordance with Regulation 27 of the European Communities (Waste Directive) Regulations 2011, as amended, which requires that certain conditions are met and that by-product notifications are made to the EPA via their online notification form. Excavated material should not be removed from site until approval from the EPA has been received. The potential to reuse material as a by-product will be confirmed during the course of the excavation works, with the objective of eliminating any unnecessary disposal of material.

The next option (beneficial reuse) may be appropriate for the excavated material, pending environmental testing to classify the material as hazardous or non-hazardous in accordance with the EPA *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* publication. Clean inert material may be used as fill material in other construction projects or engineering fill for waste licensed sites. Beneficial reuse of surplus excavation material as engineering fill may be subject to further testing to determine if materials meet the specific engineering standards for their proposed end use.

Any nearby sites requiring clean fill/capping material will be contacted to investigate reuse opportunities for clean and inert material. If any of the material is to be reused on another site as a by-product (and not as a waste), this will be done in accordance with Regulation 27. Similarly, if any soils/stones are imported onto the site from another construction site as a by-product, this will also be done in accordance with Regulation 27. Regulation 27 will be investigated to see if the material can be imported onto this site for beneficial reuse instead of using virgin materials.

If the material is deemed to be a waste, then removal and reuse / recovery / disposal of the material will be carried out in accordance with the Waste Framework Directive (Directive 2008/98/EC), the *Waste Management Act 1996* as amended, the *Waste Management (Collection Permit) Regulations 2007* as amended and the *Waste Management (Facility Permit & Registration) Regulations 2007* as amended. Once all available beneficial reuse options have been exhausted, the options of recycling and recovery at waste permitted and licensed sites will be considered.

In the event that contaminated material is encountered and subsequently classified as hazardous, this material will be stored separately to any non-hazardous material. It will require off-site treatment at a suitable facility or disposal abroad via Transfrontier Shipment of Wastes (TFS).

Bedrock

While it is not envisaged that bedrock will be encountered, if bedrock is encountered, it is anticipated that it will not be crushed on site. Any excavated rock is expected to be removed off-site for appropriate reuse, recovery and / or disposal. If bedrock is to be crushed on-site, the appropriate mobile waste facility permit will be obtained from CCC.

Silt & Sludge

During the construction phase, silt and petrochemical interception will be carried out on run-off and pumped water from site works, where required. Sludge and silt will then be collected by a suitably licensed contractor and removed off-site.

Concrete Blocks, Bricks, Tiles & Ceramics

The majority of concrete blocks, bricks, tiles and ceramics generated as part of the construction works are expected to be clean, inert material and will be recycled, where possible. If concrete is to be crushed on-site, the appropriate mobile waste facility permit will be obtained from CCC.

Hard Plastic

As hard plastic is a highly recyclable material, much of the plastic generated will be primarily from material off-cuts. All recyclable plastic will be segregated and recycled, where possible.

Timber

Timber that is uncontaminated, i.e. free from paints, preservatives, glues, etc., will be disposed of in a separate skip and recycled off-site.

Metal

Metals will be segregated, where practical, and stored in skips. Metal is highly recyclable and there are numerous companies that will accept these materials.

Plasterboard

There are currently a number of recycling services for plasterboard in Ireland. Plasterboard from the construction phase will be stored in a separate skip, pending collection for recycling. The site Manager will ensure that oversupply of new plasterboard is carefully monitored to minimise waste.

Glass

Glass materials will be segregated for recycling, where possible.

Waste Electrical & Electronic Equipment (WEEE)

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

Other Recyclables

Where any other recyclable wastes, such as cardboard and soft plastic, are generated, these will be segregated at source into dedicated skips and removed off-site.

Non-Recyclable Waste

C&D waste which is not suitable for reuse or recovery, such as polystyrene, some plastics and some cardboards, will be placed in separate skips or other receptacles. Prior to removal from site, the non-recyclable waste skip / receptacle will be examined by a member of the waste team (see Section 8.0) to determine if recyclable materials have been placed in there by mistake. If this is the case, efforts will be made to determine the cause of the waste not being segregated correctly and recyclable waste will be removed and placed into the appropriate receptacle.

Asbestos Containing Materials

Any asbestos or ACM found on-site will be removed by a suitably competent contractor and disposed of as asbestos waste before work begins. All asbestos removal work or encapsulation work must be carried out in accordance with the *Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010* and the *Best Practice Guidance for Handling Asbestos (2023)*.

Other Hazardous Wastes

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

On-Site Crushing

It is currently not envisaged that the crushing of waste materials will occur on-site. However, if the crushing of material is to be undertaken, a mobile waste facility permit will first be obtained from CCC and the destination of the accepting waste facility or if an application under Regulation 28 will be made using National End-of-Waste Decision EoW-N001/2023, will be supplied to the CCC waste unit.

It should be noted that until construction contractors are appointed it is not possible to provide information on the specific destinations of each construction waste stream. Prior to commencement of construction

and removal of any waste offsite, details of the proposed destination of each waste stream will be provided to CCC by the project team.

6.6 Tracking and Documentation Procedures for Off-Site Waste

All waste will be documented prior to leaving the site. Waste will be weighed by the contractor, either by a weighing mechanism on the truck or at the receiving facility. These waste records will be maintained on site by the nominated project RM (see Section 8.0).

All movement of waste and the use of waste contractors will be undertaken in accordance with the Waste Framework Directive (Directive 2008/98/EC), the *Waste Management Act 1996* as amended, *Waste Management (Collection Permit) Regulations 2007* as amended and *Waste Management (Facility Permit & Registration) Regulations 2007* and amended. This includes the requirement for all waste contractors to have a waste collection permit issued by the NWCPO. The nominated project RM (see Section 8.0) will maintain a copy of all waste collection permits on-site.

If the waste is being transported to another site, a copy of the Local Authority waste COR / permit or EPA Waste Licence for that site will be provided to the nominated project Waste Manager (see Section 8.0). If the waste is being shipped abroad, a copy of the Transfrontier Shipping (TFS) notification document will be obtained from DCC (as the relevant authority on behalf of all Local Authorities in Ireland) and kept on-site along with details of the final destination (COR, permits, licences, etc.). A receipt from the final destination of the material will be kept as part of the on-site waste management records.

All information will be entered in a waste management recording system to be maintained on-site.

7. ESTIMATED COST OF WASTE MANAGEMENT

An outline of the costs associated with different aspects of waste management is outlined below. The total cost of C&D waste management will be measured and will take into account handling costs, storage costs, transportation costs, revenue from rebates and disposal costs.

7.1 Reuse

By reusing materials on site, there will be a reduction in the transport and recycle / recovery / disposal costs associated with the requirement for a waste contractor to take the material off-site. Clean and inert soils, gravel, stones, etc., which cannot be reused on-site may be used as access roads or capping material for landfill sites, etc. This material is often taken free of charge or at a reduced fee for such purposes, reducing final waste disposal costs.

7.2 Recycling

Salvageable metals will earn a rebate, which can be offset against the costs of collection and transportation of the skips.

Clean, uncontaminated cardboard and certain hard plastics can also be recycled. Waste contractors will charge considerably less to take segregated wastes, such as recyclable waste, from a site than mixed waste.

Timber can be recycled as chipboard. Again, waste contractors will charge considerably less to take segregated wastes, such as timber, from a site than mixed waste.

7.3 Disposal

Municipal landfill charges in Ireland are based on the weight of waste disposed. In the Leinster Region, charges are approximately €140 - €160 per tonne of waste which includes an €85 per tonne landfill levy introduced under the Waste Management (Landfill Levy) (Amendment) Regulations. The Circular Economy (Waste Recovery Levy) will also incur a levy of €10 per tonne for waste accepted for recovery. This will include backfilling at authorised recovery sites and at municipal waste landfills.

Collection of segregated C&D waste usually costs less than municipal waste. Specific C&D waste contractors take the waste off-site to a licensed or permitted facility and, where possible, remove salvageable items from the waste stream before disposing of the remainder to landfill. Clean soil, rubble, etc., is also used as fill / capping material, wherever possible.

8. TRAINING PROVISIONS

A member of the construction team will be appointed as the RM to ensure commitment, operational efficiency and accountability in relation to waste management during the C&D phases of development.

8.1 Resource Manager Training and Responsibilities

The nominated RM will be given responsibility and authority to select a waste team if required, i.e. members of the site crew that will aid them in the organisation, operation and recording of the waste management system implemented on site.

The RM will have overall responsibility to oversee, record and provide feedback to the Client on everyday waste management at the site. Authority will be given to the Waste Manager to delegate responsibility to sub-contractors, where necessary, and to coordinate with suppliers, service providers and sub-contractors to prioritise waste prevention and material salvage.

The RM will be trained in how to set up and maintain a record keeping system, how to perform an audit and how to establish targets for waste management on site. The RM will also be trained in the best methods for segregation and storage of recyclable materials, have information on the materials that can be reused on site and be knowledgeable in how to implement this RWMP.

8.2 Site Crew Training

Training of site crew in relation to waste is the responsibility of the RM and, as such, a waste training program will be organised. A basic awareness course will be held for all site crew to outline the RWMP and to detail the segregation of waste materials at source. This may be incorporated with other site training needs such as general site induction, health and safety awareness and manual handling.

This basic course will describe the materials to be segregated, the storage methods and the location of the Waste Storage Areas (WSAs). A sub-section on hazardous wastes will be incorporated into the training program and the particular dangers of each hazardous waste will be explained.

9. TRACKING AND TRACING / RECORD KEEPING

Records will be kept for all waste material which leaves the site, either for reuse on another site, recycling or disposal. A recording system will be put in place to record the waste arisings on site.

A waste tracking log will be used to track each waste movement from the site. On exit from the site, the waste collection vehicle driver will stop at the site office and sign out as a visitor and provide the security personnel or RM with a waste docket (or Waste Transfer Form (WTF) for hazardous waste) for the waste load collected. At this time, the security personnel will complete and sign the Waste Tracking Register with the following information:

- ▶ Date
- ▶ Time
- ▶ Waste contractor
- ▶ Company waste contractor appointed by, e.g. contractor or subcontractor name
- ▶ Collection Permit No.
- ▶ Vehicle Reg.
- ▶ Driver Name
- ▶ Docket No.
- ▶ Waste Type
- ▶ LoW
- ▶ Weight/Quantity

The waste vehicle will be checked by security personal or the RM to ensure it has the waste collection permit no. displayed and a copy of the waste collection permit in the vehicle before they are allowed to remove the waste from the site.

The waste transfer dockets will be transferred to the RM on a weekly basis and can be placed in the Waste Tracking Log file. This information will be forwarded onto the CCC Waste Regulation Unit when requested.

Each subcontractor that has engaged their own waste contractor will be required to maintain a similar waste tracking log with the waste dockets / WTF maintained on file and available for inspection on site by the main contractor as required. These subcontractor logs will be merged with the main waste log.

Waste receipts from the receiving waste facility will also be obtained by the site contractor(s) and retained. A copy of the Waste Collection Permits, CORs, Waste Facility Permits and Waste Licences will be maintained on site at all times and will be periodically reviewed by the RM. Subcontractors who have engaged their own waste contractors, will provide the main contractor with a copy of the waste collection permits and COR / permit / licence for the receiving waste facilities and maintain a copy on file, available for inspection on site as required.

10. OUTLINE WASTE AUDIT PROCEDURE

10.1 Responsibility for Waste Audit

The appointed RM will be responsible for conducting a waste audit at the site during the C&D phase of the proposed Project. Contact details for the nominated RM will be provided to the CCC Waste Regulation Unit after the main contractor is appointed and prior to any material being removed from site.

10.2 Review of Records and Identification of Corrective Actions

A review of all waste management costs and the records for the waste generated and transported off-site will be undertaken mid-way through the construction phase of the proposed Project.

If waste movements are not accounted for, the reasons for this will be established in order to see if and why the record keeping system has not been maintained. The waste records will be compared with the established recovery / reuse / recycling targets for the site. Each material type will be examined, in order to see where the largest percentage waste generation is occurring. The waste management methods for each material type will be reviewed in order to highlight how the targets can be achieved.

Upon completion of the C&D phase, a final report will be prepared, summarising the outcomes of waste management processes adopted and the total recycling / reuse / recovery figures for the development.

10.3 Pest Management

A pest control operator will be appointed as required to manage pest onsite during the construction phases of the project. Organic and food wastes generated by staff will not be stored in open skips, but in closed waste receptacles. Any waste receptacles will be carefully managed to prevent leaks, odours and pest problems.

11. CONSULTATION WITH RELEVANT BODIES

11.1 Local Authority

Once construction contractors have been appointed and have appointed waste contractors, and prior to removal of any C&D waste materials off-site, details of the proposed destination of each waste stream will be provided to the CCC Waste Regulation Unit.

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

11.2 Recycling / Salvage Companies

The appointed waste contractor for the main waste streams managed by the construction contractors will be audited in order to ensure that relevant and up-to-date waste collection permits and facility registrations / permits / licences are held. In addition, information will be obtained regarding the feasibility of recycling each material, the costs of recycling / reclamation, the means by which the wastes will be collected and transported off-site, and the recycling / reclamation process each material will undergo off-site.

12. SUMMARY AND CONCLUSION

Adherence to this plan will also ensure that waste management during the construction phase at the development is carried out in accordance with the requirements in the EPA's Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects and the CCC Waste Bye-Laws and the NWMPCE.

13. REFERENCES

1. Waste Management Act 1996 as amended.
2. Environmental Protection Agency Act 1992 as amended.
3. Litter Pollution Act 1997 (S.I. No. 12 of 1997) as amended.
4. Regional Waste Management Planning Offices, *The National Waste Management Plan for a Circular Economy 2024 – 2030 (2024)*.
5. Department of Environment and Local Government (DoELG) *Waste Management – Changing Our Ways, A Policy Statement* (1998).
6. Forum for the Construction Industry – *Recycling of Construction and Demolition Waste*.
7. Department of Communications, Climate Action and Environment (DCCAE), *Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025* (Sept 2020).
8. DCCAE, *Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less'* (2021).
9. Circular Economy and Miscellaneous Provisions Act 2022.
10. Environmental Protection Agency (EPA) *'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects'* (2021).
11. Department of Environment, Heritage and Local Government, *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects* (2006).
12. FÁS and the Construction Industry Federation (CIF), *Construction and Demolition Waste Management – a handbook for Contractors and site Managers* (2002).
13. Waste Management (Landfill Levy) Regulations 2015 (as amended).
14. Circular Economy (Waste Recovery Levy) Regulations 2024.
15. Cork City Council (CCC), *Cork City Council Development Plan 2022 – 2028*.
16. Planning and Development Act 2000 (S.I. No. 30 of 2000) as amended.
17. EPA, *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* (2018).
18. Council Decision 2003/33/EC, establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.
19. The *Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010*.
20. Local Government Ireland, *Best practice guidance for handling asbestos* (2023).
21. Environmental Protection Agency (EPA), National Waste Database Reports 1998 – 2020 and the Circular Economy and National Waste Database Report 2021 – 2022.
22. EPA and Galway-Mayo Institute of Technology (GMIT), *EPA Research Report 146 – A Review of Design and Construction Waste Management Practices in Selected Case Studies – Lessons Learned* (2015).

CHAPTER NINE

LAND & SOILS

APPENDIX 9-1 Site Investigation and Sampling Factual Report



Cork City Council Planning Department. For Inspection Purposes Only!

**APPENDIX 9-1 Site Investigation and Sampling Factual
Report**



Final Report

Report No.: 25-20387-1

Initial Date of Issue: 02-Jul-2025

Re-Issue Details:

Client IGSL

Client Address: M7 Business Park
Naas
County Kildare
Ireland

Contact(s): Darren Keogh

Project 26043 Ardrostig Cork

Quotation No.:

Date Received: 19-Jun-2025

Order No.:

Date Instructed: 19-Jun-2025

No. of Samples: 4

Turnaround (Wkdays): 7

Results Due: 27-Jun-2025

Date Approved: 02-Jul-2025

Approved By:

Details: David Smith, Technical Director

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Leachate

Project: 26043 Ardrostig Cork

Client: IGSL	Chemtest Job No.:					25-20387	25-20387	25-20387	25-20387
Quotation No.:	Chemtest Sample ID.:					1988999	1989000	1989001	1989002
Order No.:	Client Sample Ref.:					TP01	TP02	TP03	TP04
	Sample Type:					SOIL	SOIL	SOIL	SOIL
	Top Depth (m):					0.5	0.5	0.5	0.2
	Date Sampled:					17-Jun-2025	17-Jun-2025	17-Jun-2025	17-Jun-2025
Determinand	Accred.	SOP	Type	Units	LOD				
Ammonium	U	1220	10:1	mg/l	0.050	0.29	0.26	0.29	0.34
Ammonium	N	1220	10:1	mg/kg	0.10	3.1	2.7	2.9	3.4

Results - Soil

Project: 26043 Ardrostiq Cork

Client: IGSL		Chemtest Job No.:				25-20387	25-20387	25-20387	25-20387
Quotation No.:		Chemtest Sample ID.:				1988999	1989000	1989001	1989002
Order No.:		Client Sample Ref.:				TP01	TP02	TP03	TP04
		Sample Type:				SOIL	SOIL	SOIL	SOIL
		Top Depth (m):				0.5	0.5	0.5	0.2
		Date Sampled:				17-Jun-2025	17-Jun-2025	17-Jun-2025	17-Jun-2025
		Asbestos Lab:				DURHAM	DURHAM	DURHAM	DURHAM
Determinand	HWOL Code	Accred.	SOP	Units	LOD				
ACM Type		N	2192		N/A	-	-	-	-
Asbestos Identification		U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture		N	2030	%	0.020	25	64	23	24
Soil Colour		N	2030		N/A	Brown	Brown	Brown	Brown
Other Material		N	2030		N/A	Stones and Roots	Stones	Stones and Roots	Stones and Roots
Soil Texture		N	2030		N/A	Loam	Clay	Loam	Loam
Boron (Hot Water Soluble)		M	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40	0.40
Sulphur (Elemental)		M	2180	mg/kg	1.0	< 1.0	< 1.0	< 1.0	1.5
Cyanide (Total)		M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	1.2	2.6	2.9	2.3
Sulphate (Total)		U	2430	%	0.010	< 0.010	< 0.010	< 0.010	0.020
Arsenic		M	2455	mg/kg	0.5	2.9	4.7	5.3	1.8
Barium		M	2455	mg/kg	0.5	26	30	39	24
Cadmium		M	2455	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chromium		M	2455	mg/kg	0.5	7.8	8.8	13	3.8
Molybdenum		M	2455	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5
Antimony		N	2455	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Copper		M	2455	mg/kg	0.50	14	10	15	5.3
Mercury		M	2455	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel		M	2455	mg/kg	0.50	8.4	9.4	12	4.9
Lead		M	2455	mg/kg	0.50	8.6	8.2	12	15
Selenium		M	2455	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25
Zinc		M	2455	mg/kg	0.50	32	38	53	30
Chromium (Trivalent)		N	2490	mg/kg	1.0	7.8	8.8	13	3.8
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	HS_2D_AL	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00	< 2.0	< 2.0	2.6	< 2.0
Aliphatic EPH >C12-C16 MC	EH_2D_AL_#1	M	2690	mg/kg	1.00	< 1.0	< 1.0	5.6	< 1.0
Aliphatic EPH >C16-C21 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00	< 2.0	< 2.0	5.6	< 2.0
Aliphatic EPH >C21-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	3.00	< 3.0	< 3.0	9.5	7.4
Aliphatic EPH >C35-C40 MC	EH_2D_AL_#1	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	5.00	< 5.0	< 5.0	23	11
Aromatic VPH >C5-C7	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05

Results - Soil

Project: 26043 Ardrostiq Cork

Client: IGSL		Chemtest Job No.:				25-20387	25-20387	25-20387	25-20387
Quotation No.:		Chemtest Sample ID.:				1988999	1989000	1989001	1989002
Order No.:		Client Sample Ref.:				TP01	TP02	TP03	TP04
		Sample Type:				SOIL	SOIL	SOIL	SOIL
		Top Depth (m):				0.5	0.5	0.5	0.2
		Date Sampled:				17-Jun-2025	17-Jun-2025	17-Jun-2025	17-Jun-2025
		Asbestos Lab:				DURHAM	DURHAM	DURHAM	DURHAM
Determinand	HWOL Code	Accred.	SOP	Units	LOD				
Aromatic VPH >C7-C8	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	HS_2D_AR	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic EPH >C12-C16 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic EPH >C16-C21 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00	3.0	8.2	3.7	3.4
Aromatic EPH >C21-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	7.4
Aromatic EPH >C35-C40 MC	EH_2D_AR_#1	N	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic EPH >C10-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	5.00	< 5.0	8.6	5.7	11
Total VPH >C5-C10	HS_2D_Total	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35 MC	EH_2D_Total_#1	U	2690	mg/kg	10.00	< 10	< 10	29	21
Mineral Oil EPH		N	2670	mg/kg	10	< 10	< 10	23	11
Benzene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene		N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.21
Phenanthrene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.15
Anthracene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.15
Fluoranthene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Coronene		N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
PCB 28		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 101		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010

Results - Soil

Project: 26043 Ardrostiq Cork

Client: IGSL		Chemtest Job No.:	25-20387	25-20387	25-20387	25-20387
Quotation No.:		Chemtest Sample ID.:	1988999	1989000	1989001	1989002
Order No.:		Client Sample Ref.:	TP01	TP02	TP03	TP04
		Sample Type:	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):	0.5	0.5	0.5	0.2
		Date Sampled:	17-Jun-2025	17-Jun-2025	17-Jun-2025	17-Jun-2025
		Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	HWOL Code	Accred.	SOP	Units	LOD	
PCB 153		U	2815	mg/kg	0.010	< 0.010
PCB 138		U	2815	mg/kg	0.010	< 0.010
PCB 180		U	2815	mg/kg	0.010	< 0.010
Tot PCBs Low (7 Congeners)		N	2815	mg/kg	0.05	< 0.05
Total Phenols		M	2920	mg/kg	0.10	< 0.10

Results - Single Stage WAC

Project: 26043 Ardrostiq Cork

Chemtest Job No: 25-20387 Chemtest Sample ID: 1988999 Sample Ref: TP01 Sample ID: Client Reference: Top Depth(m): 0.5 Bottom Depth(m): Sampling Date: 17-Jun-2025						Landfill Waste Acceptance Criteria Limits		
Determinand	SOP	HWOL Code	Accred.	Units		Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon	2625		M	%	< 0.20	3	5	6
Loss On Ignition	2610		M	%	1.7	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.05	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	< 10	500	--	--
Total Of 17 PAHs Lower	2800		N	mg/kg	< 1.0	100	--	--
pH at 20C	2010		M		8.3	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.0020	--	To evaluate	To evaluate
Eluate Analysis					10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg	
Arsenic	1455		U	0.0020	0.020	0.5	2	25
Barium	1455		U	0.006	0.061	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0023	0.023	0.5	10	70
Copper	1455		U	0.0030	0.030	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	< 0.0002	< 0.0020	0.5	10	30
Nickel	1455		U	0.0013	0.013	0.4	10	40
Lead	1455		U	0.0025	0.025	0.5	10	50
Antimony	1455		U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.014	0.14	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.15	1.5	10	150	500
Sulphate	1220		U	1.8	18	1000	20000	50000
Total Dissolved Solids	1020		N	11	110	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	2.9	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	5.4
WAC Sample Weight	748.7

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 26043 Ardrostiq Cork

Chemtest Job No: 25-20387 Chemtest Sample ID: 1989000 Sample Ref: TP02 Sample ID: Client Reference: Top Depth(m): 0.5 Bottom Depth(m): Sampling Date: 17-Jun-2025						Landfill Waste Acceptance Criteria		
						Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	SOP	HWOL Code	Accred.	Units				
Total Organic Carbon	2625		M	%	0.23	3	5	6
Loss On Ignition	2610		M	%	2.1	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.05	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	< 10	500	--	--
Total Of 17 PAHs Lower	2800		N	mg/kg	< 1.0	100	--	--
pH at 20C	2010		M		8.0	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis				10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455		U	0.0014	0.014	0.5	2	25
Barium	1455		U	0.005	0.053	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0020	0.020	0.5	10	70
Copper	1455		U	0.0024	0.025	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	< 0.0002	< 0.0020	0.5	10	30
Nickel	1455		U	0.0017	0.017	0.4	10	40
Lead	1455		U	0.0018	0.018	0.5	10	50
Antimony	1455		U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.010	0.10	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.091	< 1.0	10	150	500
Sulphate	1220		U	1.3	13	1000	20000	50000
Total Dissolved Solids	1020		N	9.0	90	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	3.2	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	6.9
WAC Sample Weight	578.8

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 26043 Ardrostiq Cork

Chemtest Job No: 25-20387 Chemtest Sample ID: 1989001 Sample Ref: TP03 Sample ID: Client Reference: Top Depth(m): 0.5 Bottom Depth(m): Sampling Date: 17-Jun-2025						Landfill Waste Acceptance Criteria Limits		
Determinand	SOP	HWOL Code	Accred.	Units		Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon	2625		M	%	< 0.20	3	5	6
Loss On Ignition	2610		M	%	2.2	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.05	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	< 10	500	--	--
Total Of 17 PAHs Lower	2800		N	mg/kg	< 1.0	100	--	--
pH at 20C	2010		M		7.8	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.0020	--	To evaluate	To evaluate
Eluate Analysis					10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg	
Arsenic	1455		U	0.0029	0.029	0.5	2	25
Barium	1455		U	0.009	0.090	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0035	0.035	0.5	10	70
Copper	1455		U	0.0046	0.046	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	< 0.0002	< 0.0020	0.5	10	30
Nickel	1455		U	0.0029	0.029	0.4	10	40
Lead	1455		U	0.0045	0.045	0.5	10	50
Antimony	1455		U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.019	0.19	4	50	200
Chloride	1220		U	1.6	16	800	15000	25000
Fluoride	1220		U	0.090	< 1.0	10	150	500
Sulphate	1220		U	2.9	29	1000	20000	50000
Total Dissolved Solids	1020		N	8.9	89	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	3.7	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	1.5
WAC Sample Weight	744.9

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 26043 Ardrostiq Cork

Chemtest Job No: 25-20387 Chemtest Sample ID: 1989002 Sample Ref: TP04 Sample ID: Client Reference: Top Depth(m): 0.2 Bottom Depth(m): Sampling Date: 17-Jun-2025						Landfill Waste Acceptance Criteria		
						Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	SOP	HWOL Code	Accred.	Units				
Total Organic Carbon	2625		M	%	0.79	3	5	6
Loss On Ignition	2610		M	%	3.3	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.05	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	< 10	500	--	--
Total Of 17 PAHs Lower	2800		N	mg/kg	< 1.0	100	--	--
pH at 20C	2010		M		6.6	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis				10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455		U	0.0003	0.0028	0.5	2	25
Barium	1455		U	0.007	0.067	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455		U	0.0012	0.012	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0037	0.037	0.5	10	30
Nickel	1455		U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455		U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455		U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.010	0.096	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.18	1.8	10	150	500
Sulphate	1220		U	3.6	36	1000	20000	50000
Total Dissolved Solids	1020		N	50	500	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	3.6	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	10
WAC Sample Weight	2296

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Chemtest Sample ID	Clients Sample Ref:	Clients Sample ID:	Clients Reference:	Sampled Date:	Deviation Code(s):	Containers Received:
1988999	TP01			17-Jun-2025	E	Amber Glass 250ml
1988999	TP01			17-Jun-2025	E	Plastic Tub 500g
1989000	TP02			17-Jun-2025	E	Amber Glass 250ml
1989000	TP02			17-Jun-2025	E	Plastic Tub 500g
1989001	TP03			17-Jun-2025	E	Amber Glass 250ml
1989001	TP03			17-Jun-2025	E	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
1010	pH Value of Waters	pH at 20°C	pH Meter	
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity at 25°C and Total Dissolved Solids (TDS) in Waters	Conductivity Meter	
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.	RE PW PL LE DW GW
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).	RE PW PL SW DW GW
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation	PL SW GW
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.	
2010	pH Value of Soils	pH at 20°C	pH Meter	
2015	Acid Neutralisation Capacity	Acid Reserve	Titration	
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <30°C.	
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES	
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection	
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry	
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.	
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N-dimethyl-p-phenylenediamine.	
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.	
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.	
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.	
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.	
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID	
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection	
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.	
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8–C10 Aromatics: >C5–C7,>C7–C8,>C8–C10	Water extraction / Headspace GCxGC FID detection	

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS	
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS. Reported PCB 101 results may contain contributions from PCB 90 due to inseparable chromatography.	
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.	
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge	
650	Characterisation of Waste (Leaching C2,C8,C10,WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge	

Report Information

Key	
U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection
<i>Text example</i> All items indicated in italic font represent customer-supplied information that may not be independently verified by the laboratory	
This report shall not be reproduced except in full, and only with the prior approval of the laboratory.	
Any comments or interpretations are outside the scope of UKAS accreditation.	
The Laboratory is not accredited for any sampling activities and reported results relate to the samples 'as received' at the laboratory.	
Uncertainty of measurement for the determinands tested are available upon request .	
None of the results in this report have been recovery corrected.	
All results are expressed on a dry weight basis.	
The following tests were analysed on samples 'as received' and the results subsequently corrected to a dry weight basis EPH, VPH, TPH, BTEX, VOCs, SVOCs, PCBs, Phenols.	
For all other tests the samples were dried at ≤ 30°C prior to analysis.	
All Asbestos testing is performed at the indicated laboratory .	
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1.	
NEW_ASB	Eurofins Chemtest Limited, 11 Depot Road, Newmarket, CB8 0AL
DURHAM	Eurofins Chemtest Limited, Unit A North Wing, Prospect Business Park, Crookhall Lane, Consett, Co Durham, DH8 7PW

Sample Deviation Codes

- As a result of any of the below deviations applying, the test results may be unreliable**
- A - Date of sampling not supplied
 - B - Sample age exceeds stability time (sampling to extraction)
 - C - Sample not received in appropriate containers
 - D - Broken Container
 - E - The required amount of sample for analysis was not received
 - H - Appropriate cooling measures were not taken for sample transportation

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt.
All water samples will be retained for 14 days from the date of receipt.
Charges may apply to extended sample storage.

Report Information

Water Sample Category Key for Accreditation

- DW - Drinking Water
- GW - Ground Water
- LE - Land Leachate
- NA - Not Applicable
- PL - Prepared Leachate
- PW - Processed Water
- RE - Recreational Water
- SA - Saline Water
- SW - Surface Water
- TE - Treated Effluent
- TS - Treated Sewage
- UL - Unspecified Liquid

Clean Up Codes

- NC - No Clean Up
- MC - Mathematical Clean Up
- FC - Florisil Clean Up

HWOL Acronym System

- HS - Headspace analysis
- EH - Extractable hydrocarbons – i.e. everything extracted by the solvent
- CU - Clean-up – e.g. by Florisil, silica gel
- 1D - GC – Single coil gas chromatography
- Total - Aliphatics & Aromatics
- AL - Aliphatics only
- AR - Aromatic only
- 2D - GC-GC – Double coil gas chromatography
- #1 - EH_2D_Total but with humics mathematically subtracted
- #2 - EH_2D_Total but with fatty acids mathematically subtracted
- + - Operator to indicate cumulative e.g. EH+EH_Total or EH_CU+HS_Total

Asbestos Tests LOD = LOQ

Limit of Detection = Limit of Quantification for asbestos results only

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

CHAPTER TEN

WATER & HYDROLOGY

APPENDIX 10-1 TII Criteria for Rating the Impact and Significance



Cork City Council Planning Department. For Inspection Purposes Only!

APPENDIX 10-1 TII Criteria for Ratings the Impact and Significance

Impact Ratings and Assessment Criteria (Soils, Geology and Hydrogeology)

Table 1 Criteria for rating site Attributes – Estimation of Importance of Soil and Geology Attributes (NRA)

Importance	Criteria	Typical Examples
Very High	Attribute has a high quality, significance or value on a regional or national scale Degree or extent of soil contamination is significant on a national or regional scale Volume of peat and/or soft organic soil underlying route is significant on a national or regional scale*	Geological feature rare on a regional or national scale (NHA) Large existing quarry or pit Proven economically extractable mineral resource
High	Attribute has a high quality, significance or value on a local scale. Degree or extent of soil contamination is significant on a local scale. Volume of peat and/or soft organic soil underlying route is significant on a local scale. *	Contaminated soil on site with previous heavy industrial usage Large recent landfill site for mixed wastes Geological feature of high value on a local scale (County Geological Site) Well drained and/or high fertility soils Moderately sized existing quarry or pit Marginally economic extractable mineral resource
Medium	Attribute has a medium quality, significance or value on a local scale Degree or extent of soil contamination is moderate on a local scale Volume of peat and/or soft organic soil underlying route is moderate on a local scale*	Contaminated soil on site with previous light industrial usage Small recent landfill site for mixed wastes Moderately drained and/or moderate fertility soils Small existing quarry or pit Sub-economic extractable mineral resource
Low	Attribute has a low quality, significance or value on a local scale Degree or extent of soil contamination is minor on a local scale. Volume of peat and/or soft organic soil underlying route is small on a local scale*	Large historical and/or recent site for construction and demolition wastes. Small historical and/or recent landfill site for construction and demolition wastes. Poorly drained and/or low fertility soils. Uneconomically extractable mineral resource.

* relative to the total volume of inert soil disposed of and/or recovered

Source: Box 4.1: 'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' by the National Roads Authority (NRA, 2009)

Table 2 Criteria for Rating Impact Significance at EIA Stage - Estimation Of Magnitude of Impact on Soil / Geology Attribute (NRA)

Magnitude of Impact	Criteria	Typical Examples
Large Adverse	Results in loss of attribute	Loss of high proportion of future quarry or pit reserves Irreversible loss of high proportion of local high fertility soils Removal of entirety of geological heritage feature Requirement to excavate / remediate entire waste site Requirement to excavate and replace high proportion of peat, organic soils and/or soft mineral soils beneath alignment
Moderate Adverse	Results in impact on integrity of attribute or loss of part of attribute	Loss of moderate proportion of future quarry or pit reserves Removal of part of geological heritage feature Irreversible loss of moderate proportion of local high fertility soils Requirement to excavate / remediate significant proportion of waste site Requirement to excavate and replace moderate proportion of peat, organic soils and/or soft mineral soils beneath alignment
Small Adverse	Results in minor impact on integrity of attribute or loss of small part of attribute	Loss of small proportion of future quarry or pit reserves Removal of small part of geological heritage feature Irreversible loss of small proportion of local high fertility soils and/or high proportion of local low fertility soils Requirement to excavate / remediate small proportion of waste site Requirement to excavate and replace small proportion of peat, organic soils and/or soft mineral soils beneath alignment
Negligible	Results in an impact on attribute but of insufficient magnitude to affect either use or integrity	No measurable changes in attributes
Minor Beneficial	Results in minor improvement of attribute quality	Minor enhancement of geological heritage feature
Moderate Beneficial	Results in moderate improvement of attribute quality	Moderate enhancement of geological heritage feature
Major Beneficial	Results in major improvement of attribute quality	Major enhancement of geological heritage feature

Source: Box 5.1: 'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' by the National Roads Authority (NRA, 2009)

Table 3 Criteria for rating Site Attributes - Estimation of Importance of Hydrogeology Attributes (NRA)

Magnitude of Impact	Criteria	Typical Examples
Extremely High	Attribute has a high quality or value on an international scale	Groundwater supports river, wetland or surface water body ecosystem protected by EU legislation e.g. SAC or SPA status
Very High	Attribute has a high quality or value on a regional or national scale	Regionally Important Aquifer with multiple well fields Groundwater supports river, wetland or surface water body ecosystem protected by national legislation – NHA status Regionally important potable water source supplying >2500 homes Inner source protection area for
High	Attribute has a high quality or value on a local scale	Regionally Important Aquifer Groundwater provides large proportion of baseflow to local rivers Locally important potable water source supplying >1000 homes Outer source protection area for regionally important water source Inner source protection area for locally important water source
Medium	Attribute has a medium quality or value on a local scale	Locally Important Aquifer Potable water source supplying >50 homes Outer source protection area for locally important water source
Low	Attribute has a low quality or value on a local scale	Poor Bedrock Aquifer Potable water source supplying <50 homes

Source: Box 4.3: 'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' by the National Roads Authority (NRA, 2009)

Table 4 Criteria for Rating Impact Significance at EIS Stage – Estimation of Magnitude of Impact on Hydrogeology Attribute (NRA)

Magnitude of Impact	Criteria	Typical Examples
Large Adverse	Results in loss of attribute and /or quality and integrity of attribute	Removal of large proportion of aquifer. Changes to aquifer or unsaturated zone resulting in extensive change to existing water supply springs and wells, river baseflow or ecosystems. Potential high risk of pollution to groundwater from routine run-off. ¹ Calculated risk of serious pollution incident >2% annually. ²
Moderate Adverse	Results in impact on integrity of attribute or loss of part of attribute	Removal of moderate proportion of aquifer. Changes to aquifer or unsaturated zone resulting in moderate change to existing water supply springs and wells, river baseflow or ecosystems. Potential medium risk of pollution to groundwater from routine run-off. ¹ Calculated risk of serious pollution incident >1% annually. ²
Small Adverse	Results in minor impact on integrity of attribute or loss of small part of attribute	Removal of small proportion of aquifer. Changes to aquifer or unsaturated zone resulting in minor change to water supply springs and wells, river baseflow or ecosystems. Potential low risk of pollution to groundwater from routine run-off. ¹ Calculated risk of serious pollution incident >0.5% annually. ²
Negligible	Results in an impact on attribute but of insufficient magnitude to affect either use or integrity	Calculated risk of serious pollution incident <0.5% annually. ²

1 refer to Annex 1, Method C, Annex 1 of HA216/06

2 refer to Appendix B3 / Annex 1, Method D, Annex 1 of HA216/06

Source: Box 5.3: 'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' by the National Roads Authority (NRA, 2009)

Table 5 *Rating of Significant Environmental Impacts at EIA Stage (NRA)*

Importance of Attribute	Magnitude of Importance			
	Negligible	Small Adverse	Moderate Adverse	Large Adverse
Extremely High	Imperceptible	Significant	Profound	Profound
Very High	Imperceptible	Significant/moderate	Profound/Significant	Profound
High	Imperceptible	Moderate/Slight	Significant/moderate	Profound/Significant
Medium	Imperceptible	Slight	Moderate	Significant
Low	Imperceptible	Imperceptible	Slight	Slight/Moderate

Source: *Box 5.4: ‘Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes’ by the National Roads Authority (NRA, 2009)*

CHAPTER ELEVEN

BIODIVERSITY

APPENDIX 11-1 Legislation and Policy
APPENDIX 11-2 Value of Ecological Resources



Cork City Council Planning Department. For Inspection Purposes Only!

APPENDIX 11-1 Legislation and Policy

APPENDIX I – LEGISLATION AND POLICY

International Legislation

EU Birds Directive

The Birds Directive constitutes a level of general protection for all wild birds throughout the European Union. Annex I of the Birds Directive includes a total of 194 bird species that are considered rare, vulnerable to habitat changes or in danger of extinction within the European Union. Article 4 establishes that there should be a sustainable management of hunting of listed species, and that any large scale non-selective killing of birds must be outlawed. The Directive requires the designation of Special Protection Areas (SPAs) for: listed and rare species, regularly occurring migratory species and for wetlands which attract large numbers of birds. There are 25 Annex I species that regularly occur in Ireland.

EU Habitats Directive

The Habitats Directive aims to protect some 220 habitats and approx. 1000 species throughout Europe. The habitats and species are listed in the Directives annexes where Annex I covers habitats and Annex II, IV and V cover species. There are 59 Annex I habitats in Ireland and 33 Annex IV species which require strict protection wherever they occur. The Directive requires the designation of Special Areas of Conservation (SACs) for areas of habitat deemed to be of European interest. The SACs together with the SPAs from the Birds Directive form a network of protected sites called Natura 2000.

Bern and Bonn Convention

The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982) was enacted to conserve all species and their habitats. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was introduced in order to give protection to migratory species across borders in Europe.

Ramsar Convention

The Ramsar Convention on Wetlands is an intergovernmental treaty signed in Ramsar, Iran, in 1971. The treaty is a commitment for national action and international cooperation for the conservation of wetlands and their resources. In Ireland there are currently 45 Ramsar sites which cover a total area of 66,994ha.

Water Framework Directive

The EU Water Framework Directive (WFD) 2000/60/EC is an important piece of environmental legislation which aims to protect and improve water quality. It applies to rivers, lakes, groundwater, estuaries, and coastal waters. The Water Framework Directive was agreed by all individual EU member states in 2000, and its first cycle ran from 2009 – 2015. The Directive runs in 6-year cycles; the second cycle ran from 2016 – 2021, and the current (third) cycle runs from 2022-2027. The aim of the WFD is to prevent any deterioration in the existing status of water quality, including the protection of good and high-water quality status where it exists. The WFD requires member states to manage their water resources on an integrated basis to achieve at least 'good' ecological status, through River Basin Management Plans (RBMP), by 2027.

National Legislation

Wildlife Act 1976 and amendments

The Wildlife Act 1976 was enacted to provide protection to birds, animals, and plants in Ireland and to control activities which may have an adverse impact on the conservation of wildlife. With regard to the listed species, it is an offence to disturb, injure or damage their breeding or resting place wherever these occur without an appropriate licence from the National Parks and Wildlife Service (NPWS). This list includes all wild birds along with their nests and eggs. Intentional destruction of an active nest from the building stage up until the chicks have fledged is an offence. This includes the cutting of hedgerows from the 1st of March to the 31st of August. The act also provides a mechanism to give statutory protection to Natural Heritage Areas (NHAs). The Wildlife Amendment Act 2000 widened the scope of the Act to include most species, including the majority of fish and aquatic invertebrate species which were excluded from the 1976 Act.

The current list of plant species protected by Section 21 of the Wildlife Act, 1976 (and amendments) is set out in the Flora (Protection) Order, 2015 (S.I. No. 356/2015). The Flora (Protection) Order affords protection to several species of plant in Ireland, including 68 vascular plants, 40 mosses, 25 liverworts, 1 stonewort and 1 lichen. This Act makes it illegal for anyone to uproot, cut or damage any of the listed plant species and it also forbids anyone from altering, interfering, or damaging their habitats. This protection is not confined to within designated conservation sites and applies wherever the plants are found.

EU Habitats Directive 1992 and EC (Birds and Natural Habitats) Regulations 2011

The EU Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive 1992) provides protection to particular species and habitats throughout Europe. The Habitats Directive has been transposed into Irish law through the EC (Birds and Natural Habitats) Regulations 2011.

Annex IV of the EU Habitats Directive provides protection to a number of listed species, wherever they occur. Under Regulation 23 of the Habitats Directive, any person who, in regard to the listed species, "Deliberately captures or kills any specimen of these species in the wild, deliberately disturbs these species particularly during the period of breeding, rearing, hibernation and migration, deliberately takes or destroys eggs from the wild or damages or destroys a breeding site or resting place of such an animal shall be guilty of an offence."

Invasive Species Legislation

Certain plant species and their hybrids are listed as Invasive Alien Plant Species in Part 1 of the Third Schedule of the *European Communities (Birds and Natural Habitats) Regulations 2011* (SI 477 of 2011, as amended). In addition, soils and other material containing such invasive plant material, are classified in Part 3 of the Third Schedule as vector materials and are subject to the same strict legal controls.

Failure to comply with the legal requirements set down in this legislation can result in either civil or criminal prosecution, or both, with very severe penalties accruing. Convicted parties under the Act can be fined up to €500,000.00, jailed for up to 3 years, or both.

Extracts from the relevant sections of the regulations are reproduced below.

“49(2) Save in accordance with a licence granted [by the Department of Arts, Heritage and the Gaeltacht], any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow in anyplace [a restricted non-native plant], shall be guilty of an offence.

49(3) ... it shall be a defence to a charge of committing an offence under paragraph (1) or (2) to prove that the accused took all reasonable steps and exercised all due diligence to avoid committing the offence.

50(1) Save in accordance with a licence, a person shall be guilty of an offence if he or she [...] offers or exposes for sale, transportation, distribution, introduction, or release—
(a) an animal or plant listed in Part 1 or Part 2 of the Third Schedule,
(b) anything from which an animal or plant referred to in subparagraph (a) can be reproduced or propagated, or
(c) a vector material listed in the Third Schedule, in any place in the State specified in the third column of the Third Schedule in relation to such an animal, plant or vector material.”

National Biodiversity Action Plan 2023-2030

The National Biodiversity Plan (NBAP) 2023-2030, the fourth such plan for Ireland, captures the objectives, targets and actions for biodiversity that will be undertaken by a wide range of government, civil society and private sectors. Actions required to achieve the strategic objectives as well as the lead and key partners responsible for their implementation are set out for each of the objectives and their outcomes (Table A1).

TABLE A1: OBJECTIVES AND OUTCOMES OF THE NATIONAL BIODIVERSITY ACTION PLAN 2023-2030.	
Objective	Outcome
1: Adopt a Whole-of-Government, Whole-of-Society Approach to Biodiversity	1A: Governance structures and reporting outputs have improved.
	1B: Organisational capacity and resources for biodiversity have increased at all levels of Government.
	1C: Responsibility for biodiversity is shared across the whole of government.
	1D: Biodiversity initiatives are supported across the whole of society.
	1E: The legislative framework for biodiversity conservation is robust, clear and enforceable.
2: Meet Urgent Conservation and Restoration Needs	2A: The protection of existing designated areas and protected species is strengthened and conservation and restoration within the existing protected area network are enhanced.
	2B: Biodiversity and ecosystem services in the wider countryside are conserved and restored – agriculture & forestry.
	2C: Biodiversity and ecosystem services in the wider countryside are conserved and restored – peatlands & climate action.
	2D: Biodiversity and ecosystem services in the marine and freshwater environment are conserved and restored.
	2E: Genetic diversity of wild and domesticated species is safeguarded.
	2F: A National Restoration Plan is in place to contribute to the ambition of the EU Biodiversity Strategy 2030 and global restoration targets.
	2H: Invasive alien species (IAS) are controlled and managed on an all-island basis to reduce the harmful impact they have on biodiversity and measures are undertaken to tackle the introduction and spread of new IAS to the environment.
3. Secure Nature's Contribution to People	3A: Ireland's natural heritage and biocultural diversity is recognised, valued, enhanced and promoted in policy and practice.
	3B: The role of biodiversity in supporting wellbeing, livelihoods, enterprise and employment is recognised and enhanced.

	3C: Planning and development will facilitate and secure biodiversity's contributions to people.
4. Enhance the Evidence Base for Action on Biodiversity	4A: Research funding bodies will have an improved understanding of the research and skills required to address biodiversity research gaps.
	4B: Data relevant to biodiversity and ecosystems, including conservation needs, is widely accessible and standardised.
	4C: Long-term monitoring programmes are in place to guide conservation and restoration goals.
	4D: Ireland has prepared national assessments of ecosystem services.
5. Strengthen Ireland's Contribution to International Biodiversity Initiatives	5A: Science, policy and action on biodiversity conservation and restoration is effectively coordinated in an all-island approach.
	5B: Ireland takes action internationally to cooperate with other countries, sectors, disciplines and communities to address the biodiversity crisis.
	5C: Ireland enhances its contributions to the international biodiversity data drive.

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APPENDIX 11-2 Value of Ecological Resources

APPENDIX II – VALUE OF ECOLOGICAL RESOURCES

The criteria outlined in the table below, taken from the *Guidelines for Assessment of Ecological Impacts of National Road Schemes* published by the NRA, were used for assigning value to designated sites, habitats and species within the Site of the Proposed Development and surrounding area.

TABLE A2.1. DESCRIPTION OF VALUES FOR ECOLOGICAL RESOURCES BASED ON GEOGRAPHIC HIERARCHY OF IMPORTANCE (NRA, 2009B).

Importance	Criteria
International Importance	<ul style="list-style-type: none"> - 'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation. - Proposed Special Protection Area (pSPA). - Site that fulfils the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended). - Features essential to maintaining the coherence of the Natura 2000 Network - Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive. - Resident or regularly occurring populations (assessed to be important at the national level) of the following: <ul style="list-style-type: none"> o Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or o Species of animal and plants listed in Annex II and/or IV of the Habitats Directive - Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971). - World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972). - Biosphere Reserve (UNESCO Man & The Biosphere Programme) - Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979). - Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979). - Biogenetic Reserve under the Council of Europe. - European Diploma Site under the Council of Europe. - Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).
National Importance	<ul style="list-style-type: none"> - Site designated or proposed as a Natural Heritage Area (NHA). - Statutory Nature Reserve. - Refuge for Fauna and Flora protected under the Wildlife Acts. - National Park. - Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park. - Resident or regularly occurring populations (assessed to be important at the national level) of the following: <ul style="list-style-type: none"> o Species protected under the Wildlife Acts; and/or o Species listed on the relevant Red Data list. o Site containing 'viable areas' of the habitat types listed in Annex I of the Habitats Directive
County Importance	<ul style="list-style-type: none"> - Area of Special Amenity. - Area subject to a Tree Preservation Order. - Area of High Amenity, or equivalent, designated under the County Development Plan.

	<ul style="list-style-type: none"> - Resident or regularly occurring populations (assessed to be important at the County level) of the following: <ul style="list-style-type: none"> o Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; o Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; o Species protected under the Wildlife Acts; and/or o Species listed on the relevant Red Data list. o Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance. - County important populations of species; or viable areas of semi-natural habitats; or natural heritage features identified in the National or Local BAP; if this has been prepared. - Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county. - Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.
Local Importance (higher value)	<ul style="list-style-type: none"> - Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared; - Resident or regularly occurring populations (assessed to be important at the Local level) of the following: <ul style="list-style-type: none"> o Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; o Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; o Species protected under the Wildlife Acts; and/or o o Species listed on the relevant Red Data list. o Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality; - Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.
Local Importance (lower value)	<ul style="list-style-type: none"> - Sites containing small areas of semi-natural habitat that are of some local importance for wildlife; - Sites or features containing non-native species that is of some importance in maintaining habitat links.

CHAPTER TWELVE

NOISE & VIBRATION

APPENDIX 12-1 Calibration Certs



Cork City Council Planning Department. For Inspection Purposes Only!

APPENDIX 12-1 Calibration Certs

12 Noise & Vibration – Appendix A Calibration Certificates



**CERTIFICATE
OF
CALIBRATION**



0653

Date of Issue: 10 September 2024
Calibrated at & Certificate issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Certificate Number: UCRT24/2196

Page 1 of 2 Pages

Approved Signatory


K. Mistry

Customer	AWN Consulting Limited The Tecpro Building 17, Clonshaugh Business & Technology Park Dublin			
Order No.	2423			
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator			
Identification	Manufacturer	Instrument	Type	Serial No. / Version
	Rion	Sound Level Meter	NL-52	01076328
	Rion	Firmware		2.0
	Rion	Pre Amplifier	NH-25	76545
	Rion	Microphone	UC-59	17212
	Rion	Calibrator	NC-75	34724227
		Calibrator adaptor type if applicable		NC-75-022
Performance Class	1			
Test Procedure	TP 10. SLM 61672-3:2013 <i>Procedures from IEC 61672-3:2013 were used to perform the periodic tests.</i>			
Type Approved to IEC 61672-1:2013	Yes <i>If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2013</i>			
Date Received	06 September 2024	ANV Job No.	UKAS24/09634	
Date Calibrated	10 September 2024			
The sound level meter submitted for testing has successfully completed the periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed. As evidence was publicly available, from an independent testing organisation responsible for approving the results of pattern-evaluation tests performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 specifications of IEC 61672-1:2013.				
Previous Certificate	Dated	Certificate No.	Laboratory	
	02 September 2022	UCRT22/2054	0653	
This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.				

CERTIFICATE OF CALIBRATION	Certificate Number UCRT24/2196
UKAS Accredited Calibration Laboratory No. 0653	Page 2 of 2 Pages

Sound Level Meter Instruction manual and data used to adjust the sound levels indicated.

SLM instruction manual title	NL-52/NL-42 Description for IEC 61672-1
SLM instruction manual ref / issue	No. 56034 21-03 Source Rion
Date provided or internet download date	19 March 2021

Case Corrections	Wind Shield Corrections	Mic Pressure to Free Field Corrections
Yes	Yes	Yes

Total expanded uncertainties within the requirements of IEC 61672-1:2013 YES

Specified or equivalent Calibrator	Specified
Customer or Lab Calibrator	Customers Calibrator
Calibrator adaptor type if applicable	NC-75-022
Calibrator cal. date	09 September 2024
Calibrator cert. number	UCRT24/2185
Calibrator cal cert issued by Lab	0653
Calibrator SPL @ STP	94.04 dB Calibration reference sound pressure level
Calibrator frequency	999.99 Hz Calibration check frequency
Reference level range	Single dB

Accessories used or corrected for during calibration - None

Environmental conditions during tests	Start	End	
Temperature	23.74	23.81	± 0.30 °C
Humidity	51.8	53.6	± 3.00 %RH
Ambient Pressure	99.59	99.59	± 0.03 kPa

Indication at the Calibration Check Frequency

Initial indicated level	95.0 dB	Adjusted indicated level	94.0 dB
Uncertainty of calibrator used for Indication at the Calibration Check Frequency ±			0.10 dB

Self Generated Noise

Microphone installed -	Less Than	18.9 dB A Weighting
------------------------	-----------	---------------------

Microphone replaced with electrical input device - UR = Under Range indicated

Weighting	A	C	Z
	10.8 dB UR	15.1 dB UR	21.0 dB UR

Self Generated Noise reported for information only and not used to assess conformance to a requirement

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Additional Comments The results on this certificate only relate to the items calibrated as identified above.

None

..... END

Calibrated by: K. Zablocki R 1



**CERTIFICATE
OF
CALIBRATION**



0653

Date of Issue: 20 February 2024
Calibrated at & Certificate issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Certificate Number: UCRT24/1277

Page 1 of 2 Pages
Approved Signatory
K. Mistry

Customer AWN Consulting Limited
The Tecpro Building
IDA Business and Technology Park
Clonshaugh
Dublin
D17 XD90
Ireland
2358

Order No. 2358

Description Sound Level Meter / Pre-amp / Microphone / Associated Calibrator

Manufacturer	Instrument	Type	Serial No. / Version
Rion	Sound Level Meter	NL-52	00586940
Rion	Firmware		2.1
Rion	Pre Amplifier	NH-25	87059
Rion	Microphone	UC-59	17049
Brüel & Kjær	Calibrator	4231	2263026
	Calibrator adaptor type if applicable		UC 0210

Performance Class 1

Test Procedure TP 10. SLM 61672-3:2013
Procedures from IEC 61672-3:2013 were used to perform the periodic tests.

Type Approved to IEC 61672-1:2013 Yes
If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2013

Date Received 19 February 2024 **ANV Job No.** UKAS24/02147
Date Calibrated 20 February 2024

The sound level meter submitted for testing has successfully completed the periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed. As evidence was publicly available, from an independent testing organisation responsible for approving the results of pattern-evaluation tests performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 specifications of IEC 61672-1:2013.

Previous Certificate	Dated	Certificate No.	Laboratory
	17 March 2022	UCRT22/1382	0653

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

CERTIFICATE OF CALIBRATION	Certificate Number UCRT24/1277
UKAS Accredited Calibration Laboratory No. 0653	Page 2 of 2 Pages

Sound Level Meter Instruction manual and data used to adjust the sound levels indicated.

SLM instruction manual title NL-52/NL-42 Description for IEC 61672-1			
SLM instruction manual ref / issue No. 56034 21-03		Source Rion	
Date provided or internet download date 19 March 2021			
Case Corrections	Wind Shield Corrections	Mic Pressure to Free Field Corrections	
Uncertainties provided Yes	Yes	Yes	
Total expanded uncertainties within the requirements of IEC 61672-1:2013 YES			
Specified or equivalent Calibrator Equivalent			
Customer or Lab Calibrator Customers Calibrator			
Calibrator adaptor type if applicable UC 0210			
Calibrator cal. date 20 February 2024			
Calibrator cert. number UCRT24/1274			
Calibrator cal cert issued by Lab 0653			
Calibrator SPL @ STP	93.95	dB	Calibration reference sound pressure level
Calibrator frequency	999.97	Hz	Calibration check frequency
Reference level range	Single	dB	
Accessories used or corrected for during calibration - Extension Cable & Wind Shield WS-15			
Note - The Extension Cable was used between the SLM and the pre-amp for this calibration.			
Environmental conditions during tests			
Temperature	22.74	22.02	± 0.30 °C
Humidity	57.6	52.1	± 3.00 %RH
Ambient Pressure	101.45	101.40	± 0.03 kPa
Indication at the Calibration Check Frequency			
Initial indicated level	94.0	dB	Adjusted indicated level 94.0 dB
Uncertainty of calibrator used for Indication at the Calibration Check Frequency ±			0.10 dB
Self Generated Noise			
Microphone installed -	Less Than	22.6	dB A Weighting
Microphone replaced with electrical input device - UR = Under Range indicated			
Weighting	A	C	Z
	11.6 dB UR	15.1 dB UR	20.9 dB UR

Self Generated Noise reported for information only and not used to assess conformance to a requirement

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Additional Comments The results on this certificate only relate to the items calibrated as identified above.

Prior to calibration the instrument's main PCB was replaced and the meter was realigned.

..... END

Calibrated by: K. Zablocki R 1

CHAPTER FIFTEEN

CULTURAL HERITAGE – ARCHAEOLOGICAL & BUILT HERITAGE

- APPENDIX 15-1 Historic Mapping
- APPENDIX 15-2 Walkover Survey Photos
- APPENDIX 15-3 Archaeological Testing Report



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APPENDIX 15-1 Historic Mapping

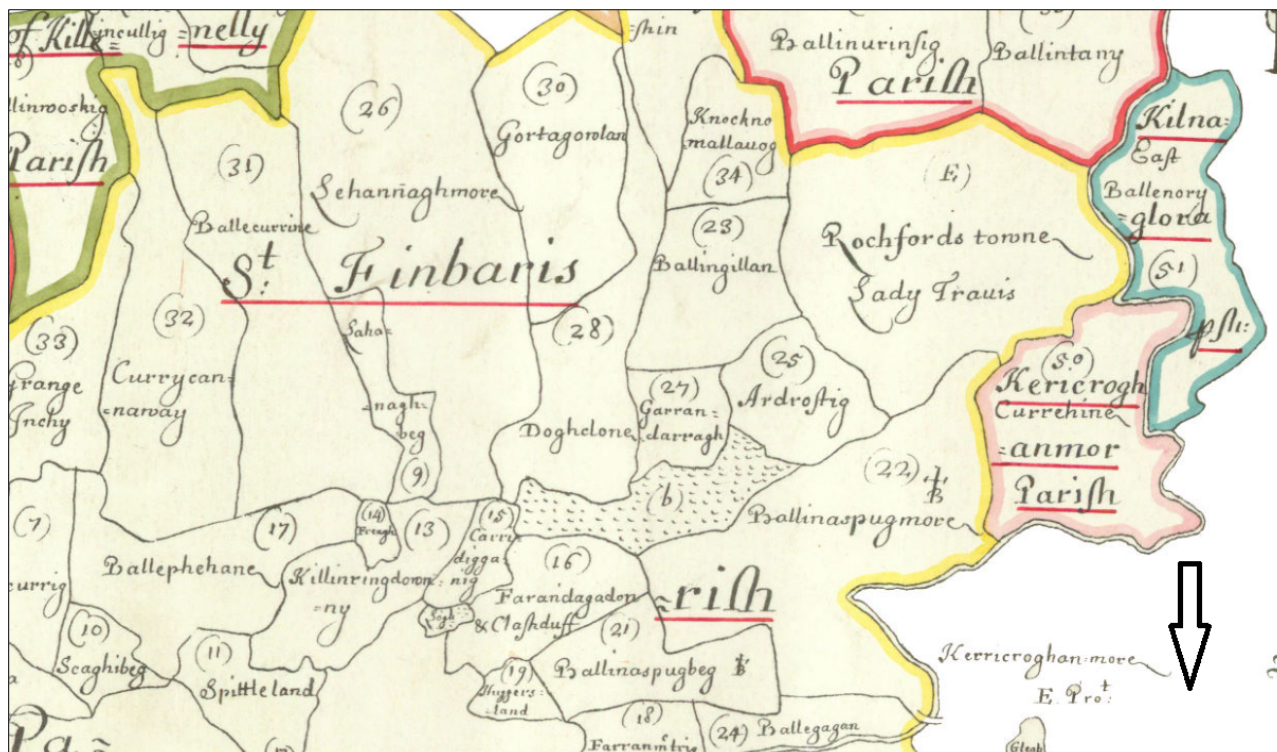


Figure 1: Down Survey parish map (1656-1658) showing the townland of Ardarostig (spelt 'Ardrostig'), with the northeastern half depicted in stippling/hatching to indicate unprofitable land. Source: Down Survey of Ireland, Trinity College Dublin, St. Finbarrs Parish Map www.downsurvey.tchpc.tcd.ie



Figure 2: Grand Jury Map, 1811 showing the townland of Ardarostig. Source: Grand Jury Map of County Cork www.corkpastandpresent.ie

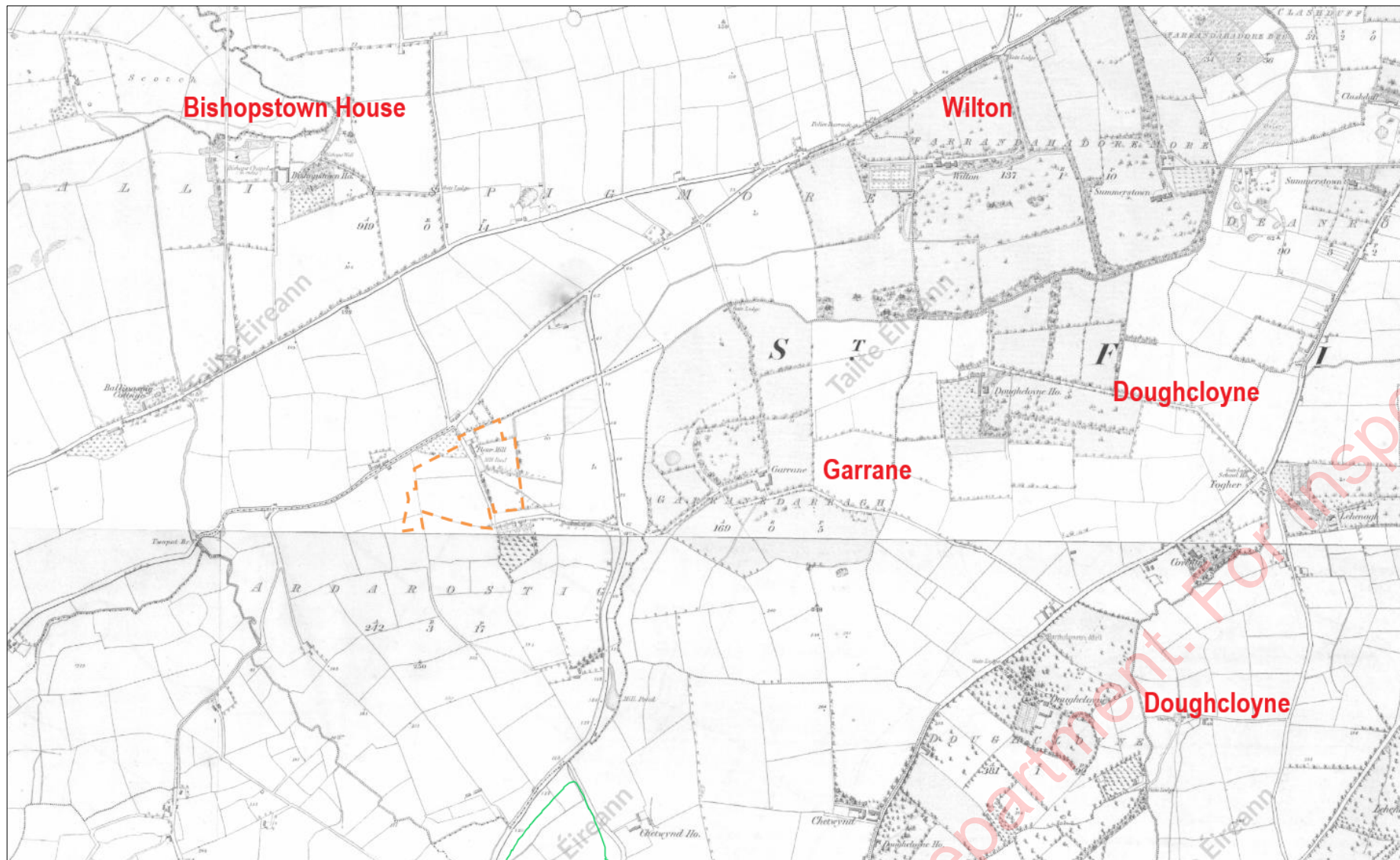


Figure 3: Proposed development site outlined on OS map (1841–1842), showing the surrounding rural landscape characterised by country houses - Garrane, Doughcloyne (two houses), Wilton, and Bishopstown - each set within demesne landscapes. Source: www.archaeology.ie.

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APPENDIX 15-2 Walkover Survey Photos



Plate 1: Aerial view of the proposed development site, with enclosure (CO086-134) clearly evident in the adjacent ploughed field to the south. Source: Google Earth Pro, imagery date: May 2017, accessed August 2025. <https://earth.google.com/web/>



Plate 2: Proposed development site on aerial photograph. Source: Google Earth Pro, imagery date: August 2025, accessed August 2025 <https://earth.google.com/web/>



Plate 3: Southern end of Field 1, looking northeast



Plate 4: Field 1, looking west



Plate 5: Substantial boundary between Fields 1 and 2, looking west



Plate 6: Field 2, looking northeast



Plate 7: Field 2, looking southeast



Plate 8: Northern end of the Field 2, looking west



Plate 9: Field 2, looking north



Plate 11: Northern end of Field 2, looking west



Plate 10: Northern end of Field 2, looking east



Plate 12: Structure evident on OS 6-inch map of 1841-42, outside the mid southern boundary of Field 2

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APPENDIX 15-3 Archaeological Testing Report

Abstract

Preplanning archaeological testing was carried out at this site to inform the site layout for a proposed development. The proposed development site is in Ardrostig townland at the southern edge of the Cork city suburb of Bishopstown. It is proposed to construct a Largescale Residential Development on the site.

There are no recorded archaeological sites on the proposed development site. The closest is an enclosure (CO086-134) located approximately 100m to the south.

Archaeological testing was carried out under licences 25E0524 in July 2025. No features or finds of archaeological significance were identified.

This report will form part of the planning application for the proposed development.

Archaeological Testing
Ardarostig, Bishopstown, Cork city

Licence Numbers 25E0524
Preplanning

Avril Purcell MA MIAI & Musetta O’Leary MA
August 2025

Lane Purcell Archaeology,
64 Fr Mathew Road,
Turner’s Cross,
Cork
Job Ref. LPA1271

on behalf of
Bridgewater Construction,
Unit 2, South Douglas Road,
Douglas,
Cork

1 Introduction

- 1.1 The proposed development site is in Ardrostig townland at the southern edge of the Cork City suburb of Bishopstown (ITM 563606 569020) (Figs. 1 and 2). It lies on the southern side of both Waterfall Road and the N40, close to the intersection of the latter with the N71. It is proposed to construct a Largescale Residential development (LRD) on the site (Fig. 3).

Figure 1: Ordnance Survey map showing site location in blue (www.archaeology.ie)

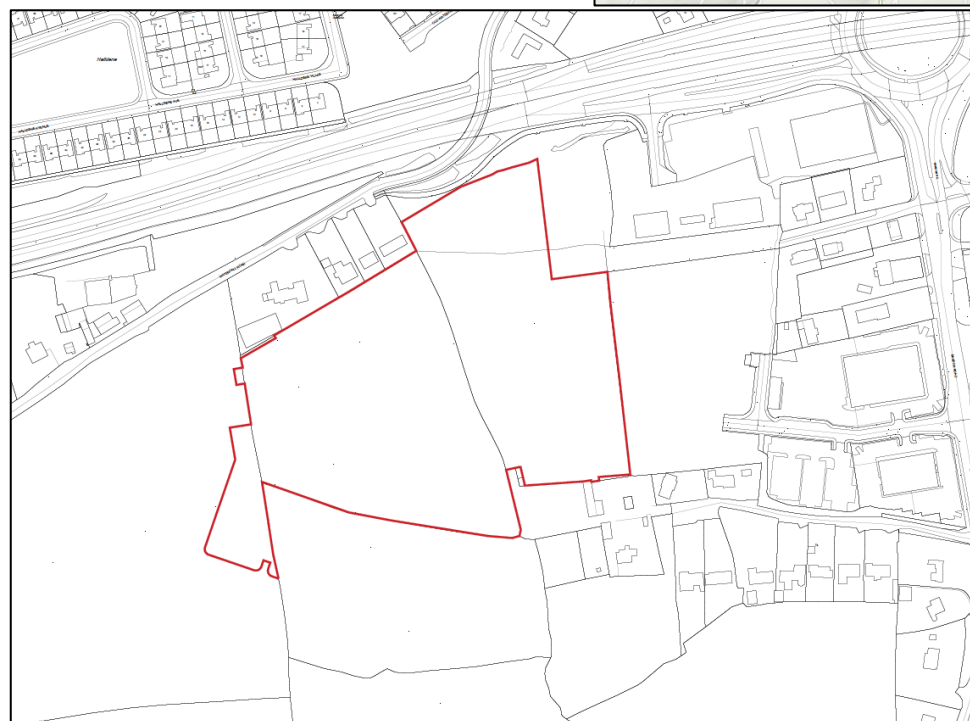
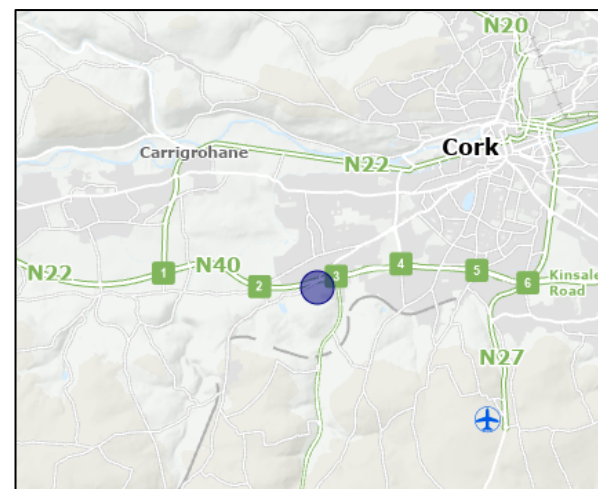


Figure 1: Ordnance Survey map showing site location in blue (after Deady Gahan Architects)

- 1.2 There are no recorded archaeological sites on the proposed development site (Fig. 4). The closest is an enclosure (CO086-134) located approximately 100m to the south.
- 1.3 The larger part of the proposed development site was in agricultural use until the 1990s /early 2000s after which time it was left unused and has since been covered in dense scrub and low trees. The scrub vegetation was removed during the last year, leaving the ground conditions unsuitable for geophysical survey. The small western extension of the proposed development site lies within the footprint of Waterfall Heights, a residential development partially under construction and already stripped of topsoil. As this lies within a permitted development it is not further assessed in this report. Pre development archaeological testing of the larger part of the proposed development site was agreed with Ciara Brett, Cork City Archaeologist in order to inform the development layout. Licensed archaeological testing was carried out in July 2025 under licence 25E0524. One small pit of unknown date was identified during the archaeological testing. No features or finds of archaeological significance were identified.
- 1.4 This report was compiled by Avril Purcell, Lane Purcell Archaeology, 64 Fr Mathew Road, Turner's Cross, Cork on behalf of Bridgewater Construction, Unit 2, South Douglas Road, Douglas, Cork.



Figure 3: Proposed development layout (after Deady Gahan Architects)



Figure 4: Extract from OS aerial photo 2013 to 2018 MapGenie Digital showing nearby archaeological monuments (www.archaeology.ie)

2 Archaeological and Historic Background

2.1 The proposed development site is located in Ardrostig townland in the parish of Inishkenny and the barony of Cork. There are no recorded archaeological sites on the proposed development site. The closest is a levelled enclosure (CO086-134), 100m to the south. In total, there are seventeen recorded archaeological sites within 1km of the proposed development site providing evidence for human settlement and activity dating to the Neolithic period (*circa* 4000-2400BC) (Fig. 5 and Table 1). These sites are listed in the RMP for Co. Cork and/or the Sites and Monuments Record (SMR) database of the Archaeological Survey of Ireland (ASI). The RMP lists all archaeological monuments and places known to be of archaeological importance in the county and affords them statutory protection under the National Monuments Act 1930 to 2004 (1994 amendment). The SMR database is a working database of all known archaeological monuments in the state and is continually updated.

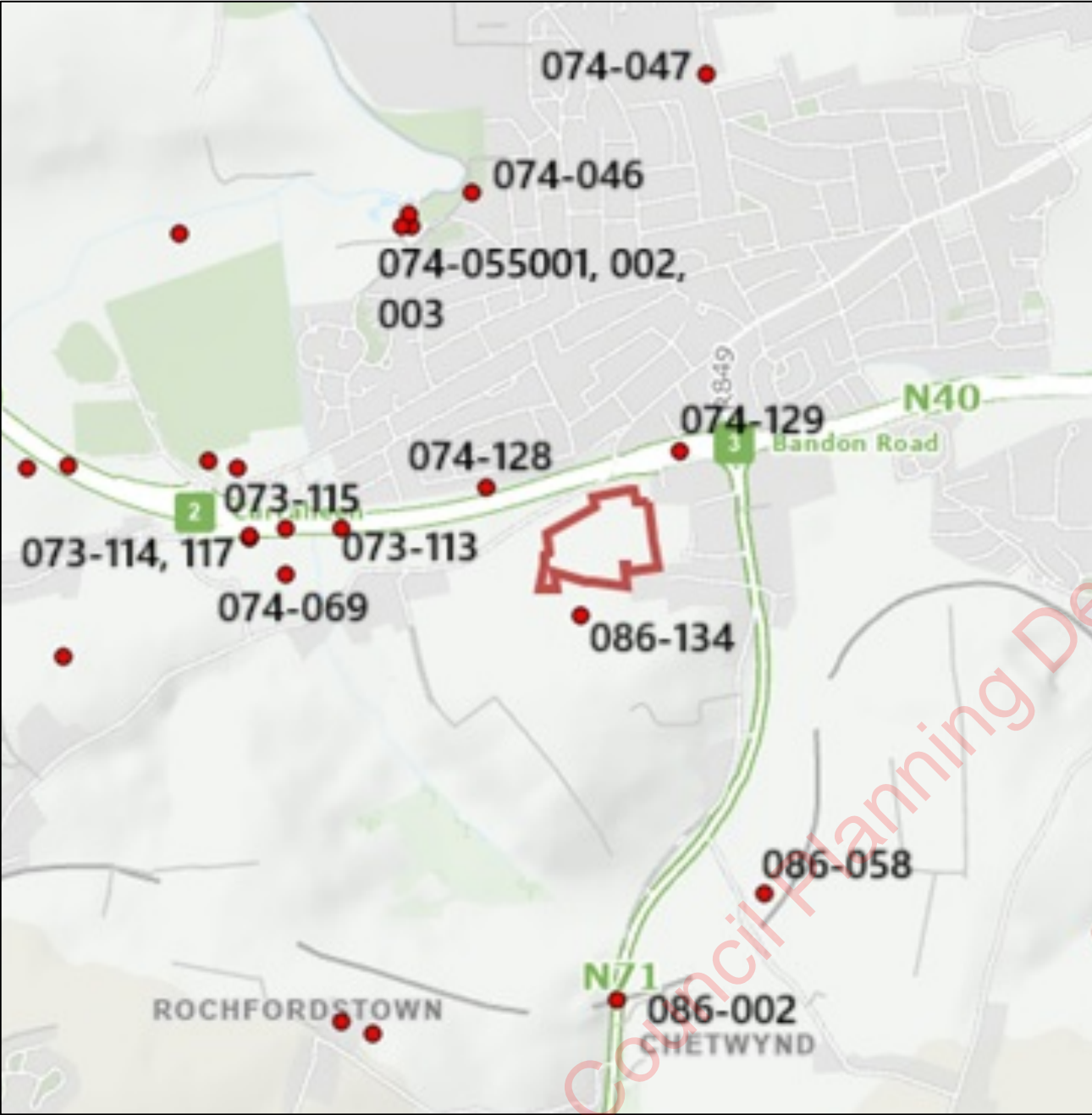


Figure 5: Proposed development site outlined in blue showing recorded archaeological monuments within approximately 1km radius of the proposed development site (www.archaeology.ie)

RMP	Site Type	Townland	Distance from site
CO073-069	Ringfort	Ballinaspig More	720m to the W
CO073-111	Fulacht fia	Ballinaspig more	940m to NW
CO073-112	Fulacht fia	Ballinaspig More	870m to NW
CO073-113	Pit burial	Ballinaspig more	550m to the W
CO073-114	Building	Ballinaspig More	800m to the W
CO073-115	Structure	Ballinaspig more	710m to the W
CO073-117	Excavation miscellaneous	Ballinaspig More	710m to the W
CO074-046	Lime kiln	Ballinaspig More	880m to the NW
CO074-047	Ringfort	Ballinaspig More	1.1km to the NE
CO074-055001-	Designed landscape feature	Ballinaspig More	915m to the NW
CO074-055002-	Church	Ballinaspig More	880m to NW
CO074-055003-	Country house	Ballinaspig More	880m to NW
CO074-128	Burnt mound	Ballinaspig more	210m to the NW
CO074-129	Fulacht fia	Ballinaspig more	166m to the NE
CO086-058	Country House	Chetwynd	910m to the SE
CO086-002	Railway bridge	Chetwynd, Rochfordstown	1.1km to the S
CO086-134	Enclosure	Ardarostig	100m to the S

Table 1: RMP/SMR sites within approximately 1km radius of the proposed development site

- 2.2 The earliest known archaeological site within 1km of the proposed development site is a pit burial (CO073-113) found during archaeological investigations in advance of construction of the N22 in the townland of Ballinaspig More. This burial consisted of a small subcircular pit (0.56m x 0.5m; depth 0.12m) containing a modest quantity of cremated bone and two sherds of Western Neolithic pottery. Radiocarbon dating placed the burial within the Early Neolithic period, between 3960–3700 BC (Ronan *et al.*, 2009).
- 2.3 A number of the recorded archaeological sites date to the Bronze Age, including three fulachtaí fia (CO073-111, CO073-112 and CO074-129), a burnt mound (CO074-128), and a building (CO073-114), all in Ballinaspig More and all discovered during construction of the N22 Ballincollig Bypass.

Fulachtaí fia (sometimes known as burnt mounds) are generally interpreted as ancient cooking sites, but could have been used for any purpose that required large quantities of hot or boiling water. They usually survive as a spread, or mound, of heat-shattered and burnt stone. The burnt stone generally fills and covers one or more troughs or pits cut into the ground. The trough, which was sometimes lined with timber, wattle or stone, would have been excavated below the water table, near a spring or stream and allowed to fill with water. A fire was set adjacent to the trough, to heat stones, and the water was then heated or boiled by immersing the fire-heated stones in it. Experiments have shown that large quantities of water can be boiled in this way in about twenty minutes and joints of meat wrapped in straw can be cooked over several hours. After each use the burnt and heat-shattered stones would have to be cleaned out of the trough. Over time this material accumulated to form a crescent shaped mound of burnt material around the trough. Fulachtaí fia are usually dated to the Bronze Age, although a minority of excavated examples have been dated to the Neolithic and early historic periods. Although they are generally interpreted as cooking sites they were also used for bathing, processing textiles, tanning, brewing, extraction of fats from meat, and soap making, or even a combination of these functions (Ó Drisceoil, 1988; Monk 2007; Quinn & Moore 2007).

Excavations at one of the fulachtaí fia sites (CO073-112) revealed three phases of activity and two distinct fulachtaí fia. The earliest phase included a sub-oval trough and associated stake-holes. A second trough lay to the northeast, and a third was discovered directly to the south, partially cutting into the second. Radiocarbon dating placed the earliest activity in the Late Neolithic (2800–2500 BC) (Danaher 2004k, 56; see

also Ronan *et al.*, 2009). Another fulacht fia (CO073-111) site, approximately 70m to the northwest, was dated to the mid-to-late Bronze Age (c. 1500–500 BC), based on radiocarbon evidence (*ibid.*).

Excavation of the building (CO073-114), identified during construction of the N22 revealed a slot-trench, post-holes, a hearth, and numerous pottery sherds (Ronan *et al.*, 2009). To the southwest, a concentration of pits and post-holes (CO073-117) spanning 20 square metres yielded additional Bronze Age pottery and tools (*ibid.*).

2.4 Evidence of Iron Age activity was also discovered during construction of the N22 within 1km of the proposed development site also in Ballinaspig More. A circular structure (CO073-115), measuring 7.4m in diameter and defined by an arc of eleven evenly spaced post-holes, was recorded. Charcoal from one post-hole returned a radiocarbon date of 360–280 BC, firmly placing the structure in the Iron Age (*ibid.*).

2.5 There are two ringforts (CO073-069 and CO074-047) within 1km of the proposed development site both in Ballinaspig More. Ringforts (also known by the names rath, lios, cathair or caiseal/cashel) functioned as defended farmsteads and are the most characteristic monument of this period. They are circular or oval in plan defined by an earthen bank with an external ditch or fosse. The sub-surface remains of circular dwelling houses and associated outbuildings are frequently revealed within ringforts during excavation. More occasionally, evidence of specialised craft-working is also found during excavation indicating the possibility of higher status sites. The main phase of construction and occupation of these sites dates from the beginning of the 7th century AD to the end of the 9th century AD. Many of these sites have been levelled in modern times as is the case with both ringforts.

The enclosure (CO086-134) in Ardrostig, situated approximately 100m to the south may also date to this period. The term enclosure is generally applied to sites whose exact function or date cannot be definitively determined. Many such sites are thought to represent ringforts or cashels that fall outside the typical size range for these monument types (i.e. less than 20m or greater than 60m in diameter). No surface trace of the enclosure is currently visible, however, the site is clearly identifiable on LiDAR imagery as a circular feature measuring approximately 60m in diameter, located in the southwestern corner of an agricultural field (GSI Open Topographic Data Viewer).

2.6 There are a small number of recorded monuments dating to recent centuries within 1km of the proposed development site. These including the site of a country house (CO074-055003-), church (CO074-055002-), landscape feature (CO074-055001-) and a lime kiln (CO074-046) in the former grounds of Bishopstown Demesne in Ballinaspig More. The house and chapel were built in the early 18th century for the Church of Ireland bishops of Cork (McCarthy, 1981). The land is now a public park, the house no longer extant and the church in ruins. A second country house Chetwynd House (CO086-058) lies to the south and nearby is the impressive Chetwynd viaduct (CO086-002) built as part of the Cork and Bandon railway (Power *et al.*, 1994).

2.7 No archaeological investigations have been undertaken on the proposed development site. Those undertaken in the vicinity of the proposed development site are listed and summarised in Table 2 below (www.excavations.ie).

Excavation Ref.	Townland/Location	Details
2001:105	Ballinaspig More	Test-trenching was undertaken in advance of construction of the N22 Ballincollig Bypass. During this process an area of black, charcoal-stained clay, with substantial inclusions of heat-cracked stone fragments, was noted. The surrounding area was stripped of topsoil, hand-cleaned and the extent of the deposit established. The deposit was irregular and separated into distinct parts. Overall maximum dimensions were 10m by 5m with a maximum depth of 0.4m. The irregularity of the deposit would suggest that it has been heavily

		truncated by ploughing. Excavation revealed that the spreads only survived in natural depressions within the prehistoric ground surface. No pits or associated features were discovered. The excavated deposits were poor in charcoal and no samples suitable for dating purposes were obtained (Murphy, 2001).
2001:107	Ballinaspig more	In the process of test-trenching along the proposed route of the N22 Ballincollig Bypass an area of dark brown sand containing burnt stone was identified. The surrounding area was stripped of topsoil and the full extent of archaeological deposits was established. The principal fulacht deposit measured 8m by 2m and the maximum depth was 0.2m. Underlying the deposit was a subrectangular pit with dimensions of 2.5m by 2m and a maximum depth of 0.4m. The sides of the pit were generally gently sloping, although on the southern side the edge was close to vertical. The base was flat and the fill consisted of fulacht material. It seems probable that this pit would have functioned as a trough during usage of the fulacht. No finds were recovered and no deposits produced samples capable of providing radiocarbon dates (Murphy, 2001).
2010:106	Ardarostig/Garranarragh	A second phase of testing was undertaken in Ardarostig /Garranedarragh 1 within the footprint of the N71 Chetwynd viaduct road scheme on 6 September 2010. Ardarostig/Garranedarragh 1, a wooded area to the west of the existing N71, was unavailable at the time of testing stage (i) undertaken by Sheelagh Conran between March and May 2009 (<i>Excavations 2009</i> , No. 11128, 09E0135). The area is densely wooded and overgrown with shrubbery and has non-specific archaeological potential. The Glasheen River bisects the area with Ardarostig townland to the west and Garranedarragh townland to the east. A total of six trenches were excavated within the heavily wooded area to the west of the Glasheen River. All trenches were excavated to subsoil using a 5-tonne tracked excavator fitted with a toothless bucket. No archaeological features or deposits were recorded during the testing. In tandem with the test-trenching, a wade survey, including a metal-detector survey, was carried out along the Glasheen River in the area of the proposed development. The survey did not identify any features or deposits of archaeological significance; however, the dense overgrowth in the survey area impacted greatly on the efficiency of the survey (Coughlan, 2010).
2010:127	Doughcloyne, Garrendarragh, Ardarostig	On 23–30 August 2010 testing was carried out on behalf of Cork City Council in advance of a proposed upgrade to the N25 Cork South Ring Road, specifically between the Sarsfield Road roundabout and the Bandon Road roundabout. None of the test-trenches investigated revealed any material of archaeological significance. The strata from the various box trenches proved relatively consistent and findings indicated the presence of deep to marginal peat formations over glacial outwash. The presence of a potential early Holocene alluvial fanning from the Glasheen River is suggested by the presence of substantial deposits of fine silt/clay in several of the trenches. The tested remains suggests the area was poor marginal bogland from the early Holocene period up until possibly as late as the 18th century, when deep deposits of sterile stony clay were introduced over the bog in an apparent effort to level off and dry out the land to become agriculturally productive. In fact

		severance, caused by the construction of the existing N25 Cork South Ring Road, led to the area reverting back to marshland (Conran, 2010).
2023:476	Ardarostig	Archaeological monitoring was carried out on the northern portion of this large residential development site. No features or finds of archaeological significance were identified. Further monitoring will be undertaken when the next phase of the development progresses (Purcell, 2023).

Table 2: Summary of archaeological excavations undertaken in the vicinity of the proposed development site

2.8 The 1842 OS 6-inch map (Fig. 6) depicts the area of the proposed development site as comprising portions of seven fields of varying sizes, set within a predominantly rural, agricultural landscape. The eastern half of the site is occupied by a flour mill complex, including a mill pond and associated mill races, characteristic of an early 19th-century water-powered industrial installation. The mill building lies north of the mill pond and a number of nearby roadside structures to the north (outside the proposed development site) likely represent workers' accommodation. Two mill races are depicted extending northwest to the mill pond, passing through the proposed development site from a second millpond and the Glasheen River to the southeast. A road leads to the mill complex from a cross roads to the east while the mill building and pond border a N-S road to their west. This road runs through the centre of the area of the proposed development site and then turns to join the Bandon Road a short distance to the east. There is a small rectangular roadside structure close to the east turning angle of the road at the end of a line of trees just beyond the southern site boundary. Remnants of this structure remain are visible on the site.

The western half of the site is depicted as agricultural land, comprising one medium-sized field and portions of three others containing no built features. Beyond the northern boundary of the site, there is a crossroads, with several small nearby structures representing rural dwellings or outbuildings. Outside the southern site boundary there is a cluster of buildings accompanied by a formally planted area, possibly indicative of a strong farmers estate. Overall, the cartographic evidence reflects a mixed-use rural setting with industrial activity in the 19th century.

2.9 The OS 25-inch map of 1902 (Fig. 7) shows the area of the proposed development site as comprising parts of five fields, all in agricultural use, likely for pasture or cultivation. The mill complex appears to have been dismantled, with only a couple of roofless structures remaining. The mill pond and associated races are no longer evident. There is one spring depicted at the northeast angle of the site.

The Macroom Direct Railway line is shown on this map running east–west, approximately 50m north of the proposed development site boundary, reflecting broader infrastructural development in the area by the turn of the century.

2.10 By the mid-20th century, the OS 6-inch map of 1950 (Fig. 8) depicts the area of the proposed development site as comprising portions of four separate field. The flour mill complex is now entirely absent and there are remnants of the more southerly millrace. The small rectangular building located just outside the southern boundary of the site remains, though it is shown as roofless.

2.11 The area of the proposed development site appears to have remained in agricultural use until the end of 1990s /early 2000s at which time it became densely overgrown with scrub vegetation and trees (Fig. 4). The trees were removed in 2024 in advance of proposed development.

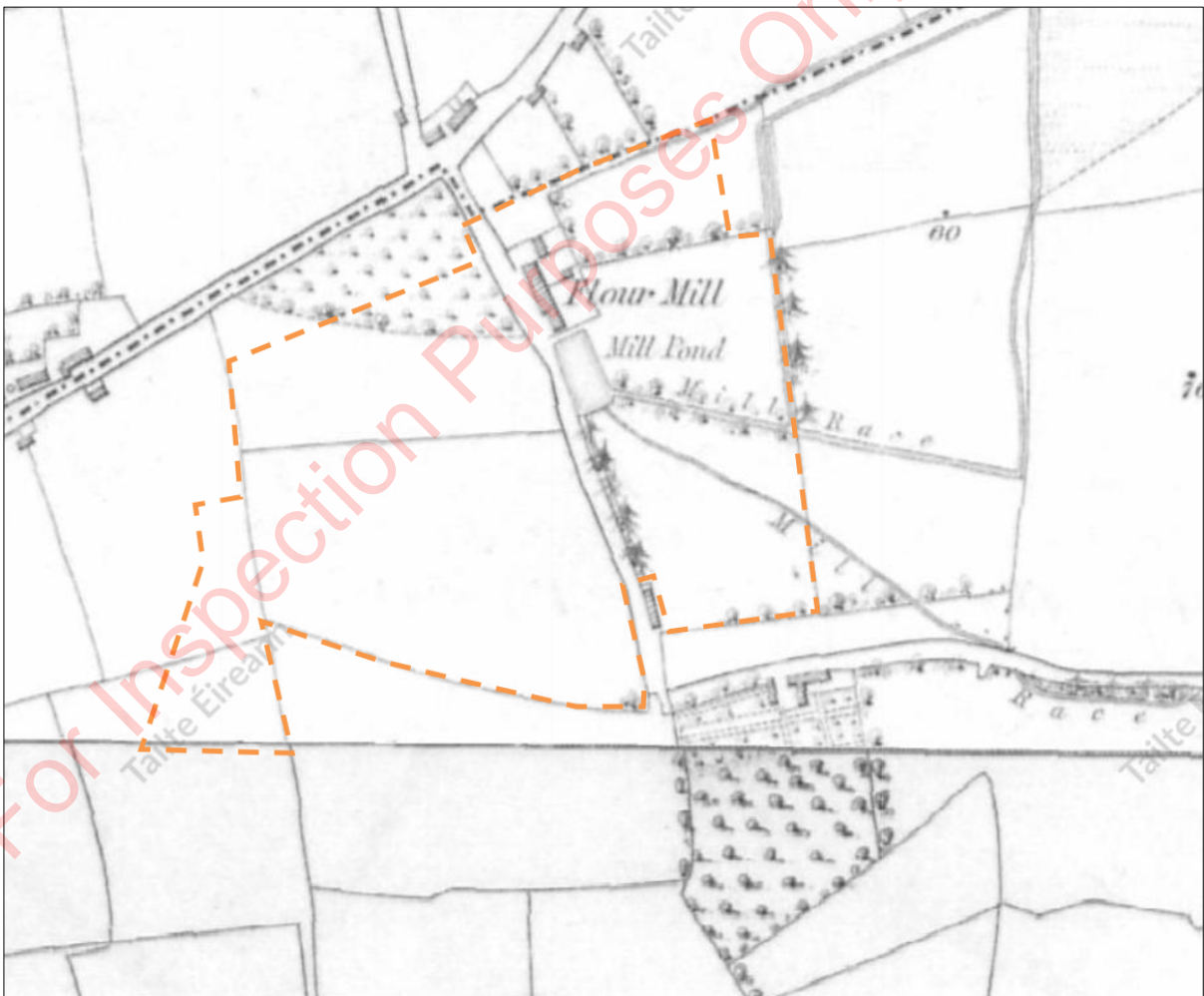


Figure 6: Proposed development site outlined on OS six-inch map of 1842 (www.archaeology.ie)

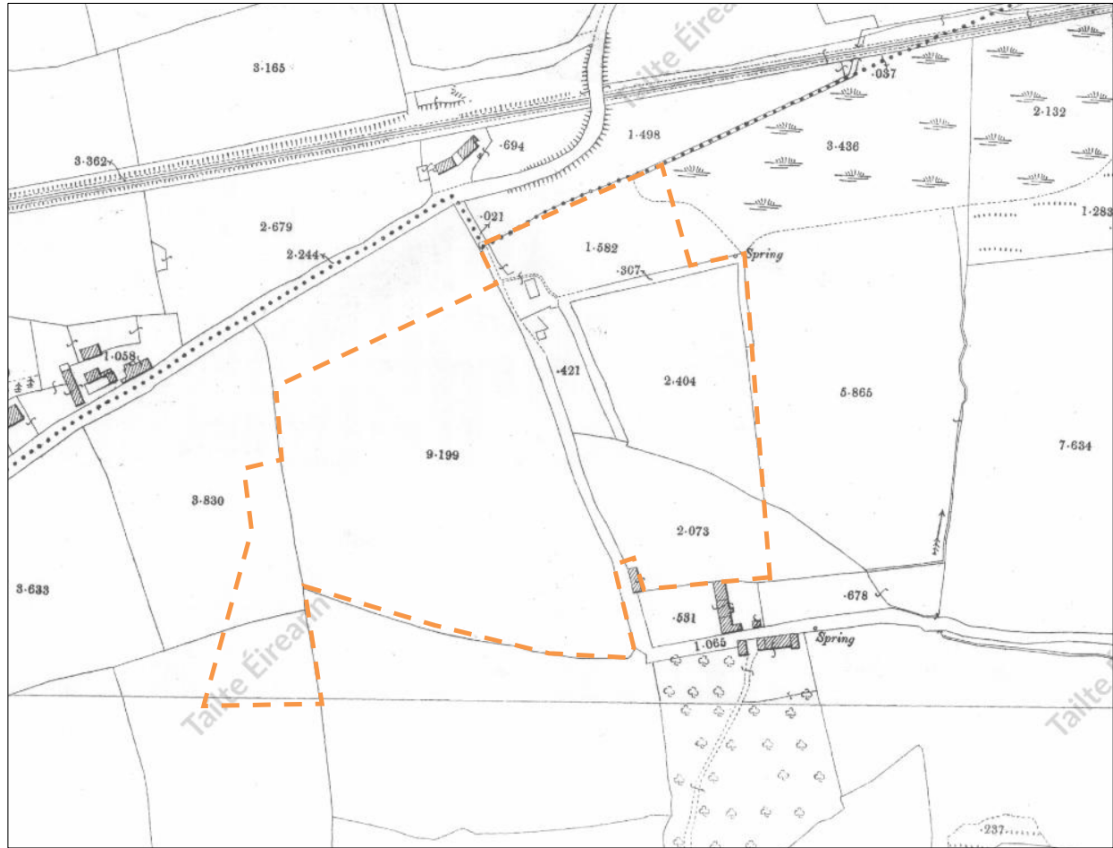


Figure 7: Proposed development site outlined on OS 25-inch map 1897-1903 (www.archaeology.ie)

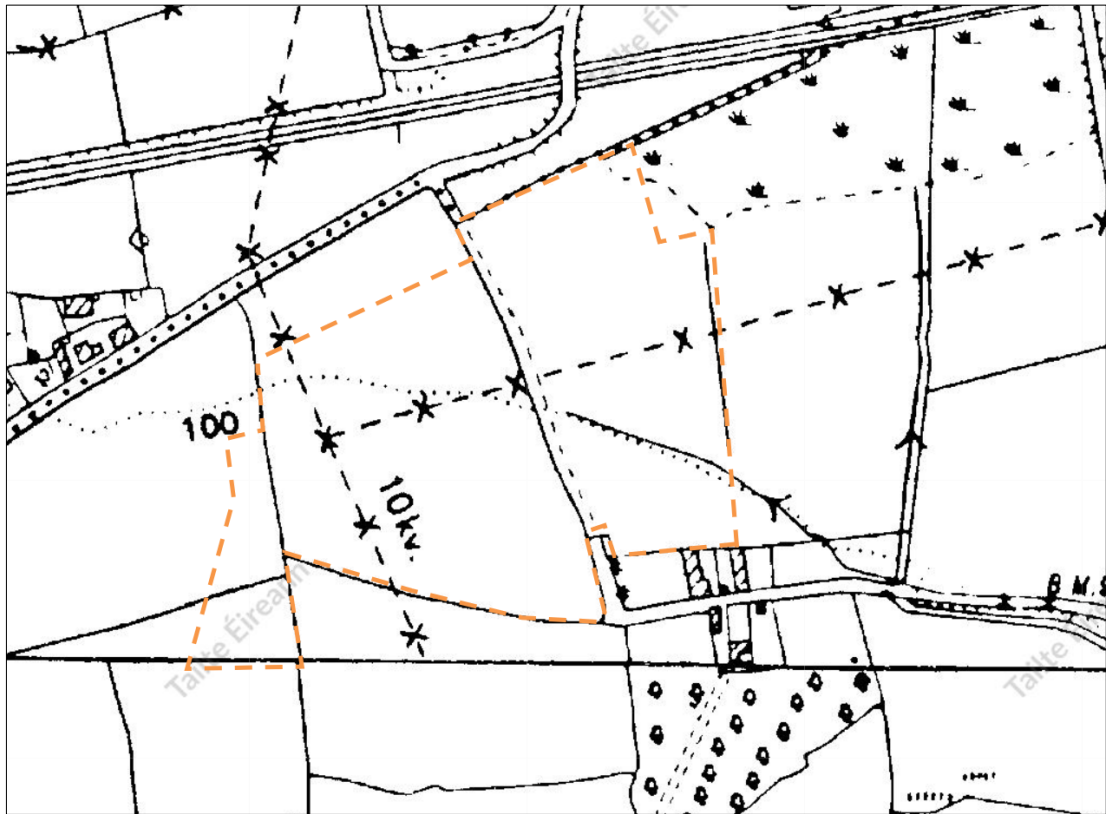


Figure 8: Proposed development site outlined on OS six-inch map 1950 (www.archaeology.ie)

3 Archaeological Testing

3.1 Archaeological testing was carried out on the proposed development site on the 16th and 17th July 2025 in wet weather conditions (under licence 25E0524) when fifteen trenches were mechanically excavated across it (Fig. 9). The two fields are separated by a narrow hedgerow, incorporating a number of mature trees. The ground falls generally to the south and southeast and the southern end of the site has been extensively disturbed by the construction of the N40 road and associated works and by a pumping station and access road, both just inside the southern site boundary. A large number of overhead power cables extend along the western site boundary and, for health and safety reasons, trenches were not extended into this area. All trenches were 1.8m wide.



Figure 9: Trenches 1-15 overlaid on proposed development layout

Trench No.	Description
Trench 1	82m long and oriented EW 0 – 0.1m Topsoil 0.1 – 0.3m Light pink-orange-brown pebbly loamy clay, rooty and with occasional charcoal flecking. No features or finds of archaeological significance were identified.
Trench 2	85m long and oriented EW 0 – 0.18m Topsoil 0.18 – 0.33m Light pink-orange-brown pebbly loamy clay, rooty and with occasional charcoal flecking. No features or finds of archaeological significance were identified.
Trench 3	101m long and oriented EW 0 – 0.14m Topsoil 0.14 – 0.26m Light pink-orange-brown pebbly loamy clay, rooty and with occasional charcoal flecking. Occasional bedrock was exposed. A modern machine dug trench extended SE NW across

	the trench. Although this appeared to be a service trench no service was apparent. No features or finds of archaeological significance were identified.
Trench 4	97m long and oriented EW 0 – 0.2m Topsoil 0.2 – 0.33m Light pink-orange-brown pebbly loamy clay, rooty and with occasional charcoal flecking. No features or finds of archaeological significance were identified.
Trench 5	95m long and oriented EW 0 – 0.18m Topsoil 0.18 – 0.3m Light pink-orange-brown pebbly loamy clay, rooty and with occasional charcoal flecking. No features or finds of archaeological significance were identified.
Trench 6	82m long and oriented EW 0 – 0.19m Topsoil 0.19 – 0.3m Light pink-orange-brown pebbly loamy clay, rooty and with occasional charcoal flecking. No features or finds of archaeological significance were identified.
Trench 7	92m long and oriented EW 0 – 0.14m Topsoil 0.14 – 0.26m Light pink-orange-brown pebbly loamy clay, rooty and with occasional charcoal flecking. No features or finds of archaeological significance were identified.
Trench 8	18.2m long and oriented ENE-WSW 0 – 0.12m Topsoil 0.12 – 0.26m Light orange-brown pebbly loamy clay, rooty and with occasional charcoal flecking. No features or finds of archaeological significance were identified.
Trench 9	37.7m long and oriented ENE-WSW 0 – 0.16m Topsoil 0.16 – 0.3m Light orange-brown pebbly loamy clay, rooty and with occasional charcoal flecking. No features or finds of archaeological significance were identified.
Trench 10	78m long and oriented ENE-WSW 0 – 0.18m Topsoil 0.18 – 0.33m Light orange-brown pebbly loamy clay, rooty and with occasional charcoal flecking. No features or finds of archaeological significance were identified.
Trench 11	108m long and oriented ENE-WSW 0 – 0.25m Topsoil 0.25 – 0.37m Light orange-brown pebbly loamy clay, rooty and with occasional charcoal flecking. A number of shallow drains were identified extending generally NS across the trench. They were filled with mid-brown fine loamy silt clay and were approximately 0.9m wide and 0.2m deep. No features or finds of archaeological significance were identified.
Trench 12	116m long and oriented ENE-WSW 0 – 0.2m Topsoil 0.2 – 0.38m Light orange-brown pebbly loamy clay, rooty and with occasional charcoal flecking. The shallow drain noted in trench 11 were also present here. A small pit was identified at the western end of the trench. It was subcircular in plan (measuring 0.45m NS x 0.4m EW x 0.23m deep) with sloping sides and a slightly rounded base. It was filled with dark brown charcoal-flecked humicy clay mixed with topsoil and was quite stoney and rooty. There were no finds and the feature appeared to be of limited archaeological potential.
Trench 13	118m long and oriented ENE-WSW 0 – 0.16m Topsoil 0.16 – 0.3m Light orange-brown pebbly loamy clay, rooty and with occasional charcoal flecking. No features or finds of archaeological significance were identified.
Trench 14	110m long and oriented ENE-WSW 0 – 0.14m Topsoil 0.14 – 0.38m Light orange-brown pebbly loamy clay, rooty and with occasional charcoal flecking. No features or finds of archaeological significance were identified.
Trench 15	87m long and oriented ENE-WSW

	0 – 0.13m Topsoil 0.13 – 0.25m Light orange-brown pebbly loamy clay, rooty and with occasional charcoal flecking. No features or finds of archaeological significance were identified.
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Table 4: Details of test trenches excavated across the proposed development site



Plates 2 & 2: Trench 1, looking east



Trench 2, looking east



Plates 3 & 4: Trench 3, looking west



Trench 4 looking east



Plates 5 & 6: Trench 5, looking west



Trench 6, looking west



Plates 7 & 8: Trench 7, looking west



Trench 8, looking WNW



Plates 9 & 10: Trench 9 looking ESE



Trench 10, looking WNW



Plates 11 & 12: Trench 11, looking east



Pit in Trench 11, looking west



Plates 13 & 14: Trench 12, looking WNW



Trench 13, looking WNW



Plates 14 & 15: Trench 14, looking WNW



Trench 15, looking ESE

- 3.2 Topsoil was generally quite shallow on the site reaching a maximum thickness of 0.25. The removal of the scrub vegetation had taken most of the sod from the site. The underlying subsoil was light orange-brown, pebbly loamy clay. Occasional charcoal flecking was apparent throughout the site and the subsoil was quite rooty from the scrub vegetation. Bedrock was exposed in just one trench and occasional drainage features were noted. The pit in Trench 12 was small in scale and there no associated finds. Its fill was dark brown charcoal-flecked humicy clay mixed with topsoil and it was quite stoney and rooty. The mixed fill appeared to be relatively modern and the pit was assessed to be of limited archaeological potential.
- 3.3 There was no evidence for the Flour Mill and its associated features depicted on the 1842 OS map. Particular note was taken of Trenches 3-7 where they crossed these features.

5 Conclusions

- 5.1 The proposed development site is in Ardrostig townland at the southern edge of the suburb of Bishopstown approximately 4.5km southwest of Cork city centre. It was in agricultural use until the 1990s prior to the construction of the N40, which along with the Waterfall Road defines its northern edge. Scrub vegetation developed on the site in the late 1990s/ early 2000s which was removed in 2024 in advance of proposed development.
- 5.2 There are no recorded archaeological site on the proposed development site. The closest is an enclosure (CO086-134) located approximately 100m to the south. It is, however, visible on LiDAR imagery as a circular feature measuring approximately 60m in diameter (GSI Open Topographic Data Viewer). A fulacht fia (CO074-129) located 165m to the northeast in the adjoining townland of Ballinaspig More and a burnt mound (CO074-128) 210m to the northwest also in Ballinaspig More were both identified during pre-construction works associated with the construction of the N40. There are seventeen recorded archaeological sites within approximately 1km of the proposed development site providing evidence of human activity in the landscape since the Neolithic period.
- 5.3 It is proposed to construct an LRD on the proposed development site. Pre development archaeological testing was agreed with Cork City Archaeologist to inform the layout of the development. Licensed archaeological testing was carried out in July 2025 under licence 25E0524 when fifteen trenches were mechanically excavated across the proposed development site. One small pit of unknown date was identified during the archaeological testing. Its mixed fill appeared to be relatively modern and it was assessed to be of limited archaeological potential. No features or finds of archaeological significance were identified.
- 5.4 This report will inform the planning application for the proposed development and will be submitted with the planning application. If development proceeds archaeological monitoring during construction is recommended. All recommendations are subject to approval of the planning authority and the National Monuments Service.

Bibliography

- Archaeological Survey of Ireland working files; www.archaeology.ie
- Conran, S. 2010:127 – Doughcloyne/Garrendarragh/Ardarostig, Cork www.excavations.ie
- Coughlan, T. 2010:106 – Ardarostig/Garrendarragh (1), Cork www.excavations.ie
- Database of Irish Excavations; www.excavations.ie
- Department of Arts, Heritage, Gaeltacht and the Islands 1999 *Framework and Principles for the Protection of the Archaeological Heritage*
- Department of Arts, Heritage, Gaeltacht and the Islands 1999 *Policy and Guidelines on Archaeological Excavation*
- Irish Place names in www.loganim.ie
- Hanley, K. and Hurley, M. 2013. *Generations The archaeology of five national road schemes in County Cork* Vols. 1 and 2, National Roads Authority, Dublin.
- Lewis, S. 1837. *A Topographical Dictionary of Ireland*, Volume 2
- Monk, M. 2007. A greasy subject. *Archaeology Ireland* **21**, 22-4.
- Murphy, D. 2001:107 – Ballinaspig More, Cork www.excavations.ie
- Murphy, D. 2001:105 – Ballinaspig More, Cork www.excavations.ie
- National Monuments Service (in progress) Sites and Monuments Database of the Archaeological Survey of Ireland (www.archaeology.ie). Department of Arts Heritage and the Gaeltacht.
- National Monuments and Historic Properties Service, 1997. *Record of Monuments and Places, County Cork*.
- Ó Drisceoil, D. 1988 Burnt Mounds: cooking or bathing? *Antiquity* **62**, (237), 671-80.
- Ordnance Survey aerial photographs dating to 1995, 2000 and 2005-2012 and 2013-2018 www.map.geohive.ie
- Summary of archaeological excavation from 1970-2022 www.excavations.ie
- Power, D., Byrne, E., Egan, U., Lane, S. and Sleeman, M. 1994 *Archaeological Inventory of County Cork Volume 2: East and South Cork*. Dublin.
- Purcell, A and O'Leary, M. 2023. *Archaeological Monitoring, Ardarostig, Waterfall Road, Cork*. Unpublished Report.
- Quinn, B. & Moore, D. 2007 Ale, brewing and *fulachta fiadh*. *Archaeology Ireland* **21** (3) Issue No 81. 8-11.
- Ronan, S., Egan, U., Byrne, E., *et al.* 2009. *Archaeological Inventory of County Cork, Volume 5*. The Stationery Office, Dublin

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