MOUNTAIN ROAD LRD

VOLUME III | EIAR

Appendices

awnconsulting

LANE PURCELL ARCHAEOLOGY

OSL·BUTLER CONSULTING ENGINEERS

JBA consulting

BRIDGEWATER HOMES

MHL

DEADY GAHAN DG ARCHITECTS

Enviroguide a DNV company

MODEL WORKS

McCutcheon Halley CHARTERED PLANNING CONSULTANTS

MOUNTAIN ROAD LRD

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CHAPTER ONE

INTRODUCTION

APPENDIX 1-1 Prescribed Bodies Consultation

McCutcheon Halley
CHARTERED PLANNING CONSULTANTS

APPENDIX 1-1 Prescribed Bodies Consultation

2024

Re: Consultation on the preparation of an Environmental Impact Assessment Report for a proposed Large Scale Residential Development at Mountain Road, Kilmoney (townland), Carrigaline, Co. 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) at Mountain Road, Kilmoney (townland), Carrigaline, Co. 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. 318 no. residential units comprising a mixture of 282 no. dwelling houses and 36 no. duplex/apartment units;
- 1 no. childcare facility, community room and café/retail unit;
- Access (including road and footpath improvements along Mountain Road), and
- 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, which is 11.4 hectares in area, with a net developable area of 9 hectares, is located along Mountain Road, in the townland of Kilmoney, Carrigaline, Co. Cork.

The site, in the south-west of Carrigaline, is within the settlement boundary of the town, and is located within 2km of the Main Street.

The site itself has features and characteristics which will help create a positive living environment by retaining the natural assets and ecological features contained within its parkland setting. There are a number of natural hedgerow boundaries on each side of the site, with an overgrown area located in the centre of the site which provides an opportunity to create a natural and central amenity area.

The subject site is zoned for new residential development with a specific objective contained within the Cork County Development Plan for a "Medium B density residential development to include a mix of house types accompanied with appropriate landscaping." Additionally, the objective specifies that access to the site is to be from the R611 and the Mountain Road and that specific arrangements will be made for the provision and construction of the link road (CL-U-07) the southern relief road, amenity walk (CLU-08), as identified in the Development Plan.

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, Soils and Geology
10.	Hydrology and Hydrogeology
11.	Biodiversity
12.	Noise and Vibration
13.	Air Quality
14.	Climate
15.	Cultural Heritage and Archaeology
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 Charted 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

McCutcheon Halley
CHARTERED PLANNING CONSULTANTS

Uisce Éireann
Irish Water

Our Ref: PN24000001292

For the attention of Ciarán Dineen

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

23rd July, 2024

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By Email: cdineen@mhplanning.ie

Re: EIA Scoping Request – Proposed residential development located for a Large Scale Residential Development (318 no. units) located at Mountain Road, Kilmoney (townland), Carrigaline, Co. Cork.

Dear Ciarán Dineen,

Uisce Éireann has received notification of your Environmental Impact Assessment (EIA) scoping request relating to Bridgewater Homes Ltd forthcoming planning application for a residential development in Co. Cork.

Please see attached, Uisce Éireann's scoping opinion in relation to Water Services. On receipt of the planning referral, Uisce Éireann will review the finalised Environmental Impact Assessment Report (EIAR) as part of the planning process.

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

Yours sincerely,

PP Ali Robinson

Signed on behalf of Geoffrey Burke

Connections and Developer Services

Uisce Éireann's Response to EIA Scoping Requests

At present, Uisce Éireann does not have the capacity to advise on the scoping of individual projects. However, in general the following aspects of Water Services should 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.

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 reservoir as 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 Irish Water network. All pre-connection enquiry forms are available from https://www.water.ie/connections/connection-steps/.

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) Mitigation measures in relation to any of the above ensuring a zero risk to any Irish Water drinking water sources (Surface and Ground water).

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.

Ciaran Dineen

From: INFO <Information@tii.ie>
Sent: Wednesday 17 July 2024 07:59
To: Ciaran Dineen
Subject: TII24-127709 - EIAR - Residential Development (LRD) at Mountain Road, Kilmoney (townland), Carrigaline, Co. Cork.

Dear Ms. Dinneen,

Thank you for your correspondence of 18 June 2024 regarding the above. Transport Infrastructure Ireland's (TII's) position in relation to your enquiry is as follows.

TII wishes to advise that it is not in a position to engage directly with planning applicants with respect to proposed developments. TII will endeavour to consider and respond to planning applications referred to it, given its status and duties as a statutory consultee under the Planning Acts. The approach to be adopted by TII in making such submissions or comments will seek to uphold official policy and guidelines, as outlined in the Section 28 Ministerial Guidelines 'Spatial Planning and National Roads Guidelines for Planning Authorities' (DoECLG, 2012) and TII publications. Regard should also be had to other relevant guidance available at www.TII.ie.

The issuing of this correspondence is provided as best practice guidance only and does not prejudice TII's statutory right to make any observations, requests for further information, objections or appeals, following the examination of any valid planning application referred.

With respect to EIAR Scoping issues, the recommendations indicated below provide only general guidance for the preparation of an EIAR, which may affect national road network.

The project promoter should have regard, inter alia, to the following:

Having regard to the EPA's 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (2022), it is recommended as appropriate that the national road and light rail networks are recognised as strategic transport assets under "material assets". EIAR assessment and mitigation should have regard to the following:

- National Roads: Official policy for development at or near national roads is set out in in the DoECLG's 'Spatial Planning and National Roads Guidelines for Planning Authorities' (2012), available at https://www.gov.ie/en/collection/85b83-planning-guidelines-standards/
- TII Publications: In addition, as part of TII's responsibilities for managing and improving the Country's national road and light rail networks, the Authority sets development guidance and standards for traffic and road assessments and construction, which may be necessary by reason of proposed development location, scale or typology, to be prepared to accompany applications for developments or works. Technical guidance and standards are contained in TII Publications, available at https://www.tiipublications.ie/.

In addition, the EIAR should have regard to, *inter alia*, to the following:

National Road Network

- TII would be specifically concerned as to potential significant impacts the development would have on the national road network (and junctions with national roads), in the proximity of the proposed development.

- Consultations should be had with the relevant Local Authority/National Roads Design Office, with regard to the locations of existing and future national road schemes.

- The developer should have regard to any EIAR/EIS and all conditions and/or modifications imposed by An Bord Pleanála regarding road schemes in the area. The developer should, in particular, have regard to any potential cumulative impacts.

- The EIAR should have regard to the provisions of Chapter 3 of the DoECLG 's 'Spatial Planning and National Roads Guidelines for Planning Authorities', in the assessment.

TII Publications

- It would be important that, where appropriate, subject to meeting the appropriate thresholds and criteria and having regard to best practice, a Traffic and Transport Assessment (TTA) be carried out in accordance with relevant guidelines, noting traffic volumes attending the site and traffic routes to/from the site, with reference to impacts on the national road network and junctions of lower category roads with national roads. In relation to national roads, TII's 'Traffic and Transport Assessment Guidelines' (2014) should be referred to in relation to proposed development, with potential impacts on the national road network. The scheme promoter is also advised to have regard to Section 2.2 of TII's TTA Guidelines, which addresses requirements for sub-threshold TTA.

- The designers are asked to consult TII Publications to determine whether a Road Safety Audit is required.

TII environmental assessment guidance

- The EIAR should have regard to TII's Environmental Assessment and Construction Guidelines, including the 'Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes' (National Road Authority (NRA), 2014).
- The EIAR should consider the European Communities '(Environmental Noise) Regulations 2018' (S.I. No. 549 of 2018)) and, in particular, how the development will affect future action plans by the relevant competent authority. The developer may need to consider the incorporation of noise barriers to reduce noise impacts (see 'Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes' (NRA, 2014)).

Haul routes utilising the national road network

- Elements of the national road network are operated and managed by a combination of (Public Private Partnerships) PPP Concessions, Motorway Maintenance and Renewal Contracts (MMaRC) and local road authorities, in association with TII. In relation to haul route identification, the applicant/developer should clearly identify haul routes proposed and fully assess the network to be traversed to ascertain any operational requirements, including delivery timetabling, etc., to ensure that the strategic function of the national road network is safeguarded.

- Separate structure approvals/permits and other licences and works specific deeds of indemnity may be required in connection with the proposed haul route, including where temporary modification to the road network may be required. Consultation with all relevant local authorities, PPP Companies and MMaRC Contractors, may also be required.

- All structures on the haul route should be checked by the applicant/developer to confirm their capacity to accommodate any abnormal load proposed, including abnormal weight load. Additionally, any damage caused to the pavement on the existing national road arising from any temporary works due to the turning movement of abnormal loads (e.g. tearing of the surface course, etc.) shall be rectified in accordance with TII Pavement Standards and details in this regard shall be agreed with the Road Authority prior to the commencement of any development on site.

Notwithstanding any of the above, the developer should be aware that this list is non-exhaustive, thus site and development specific issues should be addressed in accordance with best practice.

I hope that this information is of assistance to you.

Yours sincerely,

_____

Suzanne Cahill
Regulatory & Administration Executive

From: Ciaran Dineen <cdineen@mhplanning.ie>
Sent: Tuesday, June 18, 2024 12:33 PM
To: Landuse Planning <LandUsePlanning@tii.ie>
Cc: Cora Savage <csavage@mhplanning.ie>
Subject: EIAR Consultation Request - Carrigaline, Co. Cork.

> You don't often get email from cdineen@mhplanning.ie. Learn why this is important

CAUTION: This email originated from outside of TII. Do not click links or open attachments unless you recognise the sender and are sure that the content is safe.

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 Mountain Road, Kilmoney (townland), Carrigaline, Co. 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

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In accordance with TII's Right to Disconnect policy, if you are receiving this email outside of normal working hours, I do not expect a response or action outside of your own working hours unless it is clearly noted as requiring urgent attention.

De réir pholasaí BIÉ An Ceart gan a bheith Ceangailte, má tá an ríomhphost seo á fháil agat lasmuigh de na gnáthuaireanta oibre, nílim ag súil le freagra ná le gníomh uait lasmuigh de do ghnáthuaireanta oibre féin mura bhfuil sé ráite go soiléir go bhfuil gá gníomhú go práinneach.

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Próiseálann BIÉ sonraí pearsanta a sholáthraítear dó i gcomhréir lena Fhógra ar Chosaint Sonraí atá ar fáil ag https://www.tii.ie/about/about-tii/Data-Protection/?set-lang=ga

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Córas r-phoist BIE: Tá an ríomhphost seo agus aon chomhaid a tharchuirtear leis faoi rún agus beartaithe lena n-úsáid ag an duine aonair nó ag an eintiteas a bhfuil siad dírithe chuige/chuici amháin. Más rud é go bhfuair tú an ríomhphost seo trí bhotún, cuir sin in iúil do postmaster@tii.ie, le do thoil, agus scrios an ríomhphost bunaidh agus aon cheangaltáin.

Ciaran Dineen

From: Michael McPartland <Michael.McPartland@fisheriesireland.ie>
Sent: Wednesday 10 July 2024 14:58
To: Ciaran Dineen
Subject: FW: EIAR Consultation Request - Carrigaline, Co. Cork.
Attachments: EIAR IFI.pdf; 24001_SK_003G.PDF; 24001_P_002 (2).pdf

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 the adjacent river or 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

Additional any development works which would result in loss of flood plain or increase in off site flows above greenfield levels should be avoided.

Michael Mc Partland
Senior Fisheries Environmental Officer.

Iascach Intíre Éireann
Inland Fisheries Ireland

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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
Senior Fisheries Environmental Officer

Michael.McPartland@fisheriesireland.ie • +353 (0)26 41222 • www.fisheriesireland.ie • P12 X602

From: Housing Referrals <Referrals@npws.gov.ie>
Sent: Tuesday 18 June 2024 17:01
To: Ciaran Dineen
Subject: RE: EIAR Consultation Request - Carrigaline, Co. Cork.

A Chara,

I acknowledge receipt of your recent consultation.

In the event of observations, you will receive a co-ordinated heritage-related response by email from Development Applications Unit (DAU).

The normal target turnaround for pre-planning and other general consultations is six weeks from date of receipt. In relation to general consultations from public bodies under the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 to 2011, the Department endeavours to meet deadline dates, where requested.

If you have not heard from DAU and wish to receive an update, please email manager.dau@npws.gov.ie

Kind regards

David O'Connor
Executive Officer

An Roinn Tithíochta, Rialtais Áitiúil agus Oidhreachta
Department of Housing, Local Government and Heritage
Aonad na nIarratas ar Fhorbairt
Development Applications Unit
Oifigí an Rialtais
Government Offices
Bóthar an Bhaile Nua, Loch Garman, Contae Loch Garman, Y35 AP90
Newtown Road, Wexford, County Wexford, Y35 AP90
—

David.oconnor@npws.gov.ie
Manager.DAU@npws.gov.ie

From: Ciaran Dineen <cdineen@mhplanning.ie>
Sent: Tuesday 18 June 2024 12:23
To: Housing Referrals <Referrals@npws.gov.ie>
Cc: Cora Savage <csavage@mhplanning.ie>
Subject: EIAR Consultation Request - Carrigaline, Co. 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) at Mountain Road, Kilmoney (townland), Carrigaline, Co. 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.

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Many thanks

Ciaran Dineen
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McCutcheon Halley
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An Roinn Comhshaoil,
Aeráide agus Cumarsáide
Department of the Environment,
Climate and Communications

Geological Survey
Suirbhéireacht Gheolaíochta
Ireland | Éireann

Ciaran Dineen
McCutcheon Halley
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Barrack Square
Ballincollig
Cork, P31 YX97

03 July 2024

Re: Consultation on the preparation of an EIAR for a proposed Large Scale Residential Development at Mountain Road, Kilmoney, Carrigaline, Co. Cork.
Your Ref: n/a
Our Ref: 24/234

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 gather various data for that purpose. Please see our website for data availability. We recommend using these various data sets, when conducting the EIAR, SEA, planning and scoping processes. Use of our data or maps should be attributed correctly to '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 is 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 this data is a baseline or starting point for further site specific assessments.

With reference to your email received on the 18 June 2024, concerning the preparation of an EIAR for a proposed LRD at Mountain Road, Kilmoney, Carrigaline, Co. Cork., Geological Survey Ireland would encourage use of and reference to our datasets. Please find attached a list of our publicly available datasets that may be useful to the environmental assessment and planning process. We recommend that you review this list and refer to any datasets you consider relevant to your assessment. The remainder of this letter and following sections provide more detail on some of these datasets.

Geoheritage
A national inventory of geoheritage sites known as County Geological Sites (CGSs) is managed by the Geoheritage Programme of Geological Survey Ireland. CGSs, as adopted under the National Heritage Plan, include sites that are of national importance which have been selected as the very best examples for NHA (Natural Heritage Areas) designation. NHA designation will be completed in partnership with the National Parks and Wildlife Service (NPWS). CGSs are now routinely included in County Development Plans and in the GIS of planning departments, to ensure the recognition and appropriate protection of geological heritage within the planning system. CGSs can be viewed online under the Geological Heritage tab on the online Map Viewer.

The audit for Co. Cork was completed in 2024. The full report details can be found here. **Our records show that there are no unaudited CGSs in the vicinity of the proposed LRD development.**

Groundwater
Geological Survey Ireland's Groundwater and Geothermal Unit, provides advice, data and maps relating to groundwater distribution, quality and use, which is especially relevant for safe and secure drinking water supplies and healthy ecosystems. Proposed developments need to consider any potential impact on specific groundwater abstractions and on groundwater resources in general. We recommend using the groundwater maps on our Map viewer which should include: wells; drinking water source protection areas; the national map suite - aquifer, groundwater vulnerability, groundwater recharge and subsoil permeability maps. Please read all disclaimers carefully when using Geological Survey Ireland data.

The Groundwater Data Viewer indicates an aquifer classed as a 'Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones' underlies the proposed development.

The Groundwater Vulnerability map indicates the range of groundwater vulnerabilities within the area covered is variable. We would therefore recommend use of the Groundwater Viewer to identify areas of High to Extreme Vulnerability and 'Rock at or near surface' in your assessments, as any groundwater-surface water interactions that might occur would be greatest in these areas.

GWClimate is a groundwater monitoring and modelling project that aims to investigate the impact of climate change on groundwater in Ireland. This is a follow on from a previous project (GWFlood) and the data may be useful in relation to Flood Risk Assessment (FRA) and management plans. Maps and data are available on the Map viewer.

Geological Survey Ireland has completed Groundwater Protection Schemes (GWPSs) in partnership with Local Authorities, and there is now national coverage of GWPS mapping. A Groundwater Protection Scheme provides guidelines for the planning and licensing authorities in carrying out their functions, and a framework to assist in decision-making on the location, nature and control of developments and activities in order to protect groundwater.

The Groundwater Protection Response overview and link to the main reports is here: https://www.gsi.ie/en-ie/programmes-and-projects/groundwater/projects/protecting-drinking-water/what-is-drinking-water-protection/county-groundwater-protection-schemes/Pages/default.aspx

Geological Mapping
Geological Survey Ireland maintains online datasets of bedrock and subsoils geological mapping that are reliable and accessible. We would encourage you to use these data which can be found here, in your future assessments.

Please note we have recently launched QGIS compatible bedrock (100K) and Quaternary geology map data, with instructional manuals and videos. This makes our data more accessible to general public and external stakeholders. QGIS compatible data can be found in our downloadable bedrock 100k .zip file on the Data & Maps section of our website.

Geohazards
Geohazards can cause widespread damage to landscapes, wildlife, human property and human life. In Ireland, landslides, flooding and coastal erosion are the most prevalent of these hazards. We recommend that geohazards be taken into consideration, especially when developing areas where these risks are prevalent, and we encourage the use of our data when doing so.

Geological Survey Ireland has information available on landslides in Ireland via the National Landslide Database and Landslide Susceptibility Map both of which are available for viewing on our dedicated Map Viewer. Associated guidance documentation relating to the National Landslide Susceptibility Map is also available.

Geological Survey Ireland also engaged in a national project on Groundwater Flooding. The data from this project may be useful in relation to Flood Risk Assessment (FRA) and management plans, and is described in more detail under 'Groundwater' above.

Natural Resources (Minerals/Aggregates)
Geological Survey Ireland provides data, maps, interpretations and advice on matters related to minerals, their use and their development in our Minerals section of the website. The Active Quarries, Mineral Localities and the Aggregate Potential maps are available on our Map Viewer.

We would recommend use of the Aggregate Potential Mapping viewer to identify areas of High to Very High source aggregate potential within the area. In keeping with a sustainable approach we would recommend use of our data and mapping viewers to identify and ensure that natural resources used in the proposed development are sustainably sourced from properly recognised and licensed facilities, and that consideration of future resource sterilization is considered.

Geological Survey Ireland, Block 1, Booterstown Hall, Booterstown, Blackrock, Co Dublin, A94 N2R6
Bloc 1, Halla Bhaile an Bhóthair, Baile an Bhóthair, An Charraig Dhubh, Baile Átha Cliath, A94 N2R6
T +353 (0)1 678 2000 **www.gsi.ie** *Fáiltítear roimh comhfhreagras i nGaeilge*

An Roinn Comhshaoil, Aeráide agus Cumarsáide
Department of the Environment, Climate and Communications

Geological Survey
Suirbhéireacht Gheolaíochta
Ireland | Éireann

Guidelines
The following guidelines may also be of assistance:

- Institute of Geologists of Ireland, 2013. Guidelines for the Preparation of the Soils, Geology and Hydrogeology Chapters of Geology in Environmental Impact Statements.
- EPA, 2022. Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR)

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 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, 01-678 2795.

I hope that these comments are of assistance, and if we can be of any further help, please do not hesitate to the Geological Survey Ireland Planning Team at GSIPlanning@gsi.ie.

Yours sincerely,

Geoheritage and Planning Programme

Enc: Table - Geological Survey Ireland's Publicly Available Datasets Relevant to Planning, EIA and SEA processes.

Geological Survey Ireland, Block 1, Booterstown Hall, Booterstown, Blackrock, Co Dublin, A94 N2R6
Bloc 1, Halla Bhaile an Bhóthair, Baile an Bhóthair, An Charraig Dhubh, Baile Átha Cliath, A94 N2R6
T +353 (0)1 678 2000 **www.gsi.ie** *Fáiltítear roimh comhfhreagras i nGaeilge*

An Roinn Comhshaoil, Aeráide agus Cumarsáide
Department of the Environment, Climate and Communications

Geological Survey Suirbhéireacht Gheolaíochta Ireland | Éireann

Geological Survey Ireland's Publicly Available Datasets Relevant to Planning, EIA and SEA processes

following European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018
(S.I. No. 296 of 2018)

Geological Survey Ireland Programme	Dataset	Relevant EIA Topic	Coverage	Description / Notes / Limitations	Link to Geological Survey Ireland map viewer
Geohazards	Landslide: National landslide database and landslide susceptibility map	Land & Soil/Climate/Landscape	National	Associated guidance documentation relating to the National Landslide Susceptibility Map is also available.	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=b68cf1e4a9044a5981f950e9b9c5625c
Geohazards	Groundwater Flooding (Historic)	Water	Regional	Provide information of historic flooding, both surface water and groundwater. [A lack of flooding presented in any specific location of the map only indicates that a flood has not been detected. It does not indicate that a flood cannot occur in that location at present or in the future]	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=848f83c85799436b808652f9c735b1cc
Geohazards	Groundwater Flooding (Predictive)	Water	Regional	Provides information on the probability of future karst groundwater flooding (where available). [The maps do not, and are not intended to, constitute advice. Professional or specialist advice should be sought before taking, or refraining from, any action on the basis of the flood maps]	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=848f83c85799436b808652f9c735b1cc
Geohazards	Radon Map	Land & Soils/Air	National		http://www.epa.ie/radiation/radonmap/
Geoheritage	County Geological Sites as adopted by National Heritage Plan and listed in County Development Pla	Land & Soils/Landscape	Regional	All geological heritage sites identified by Geological Survey Ireland are categorised as CGS pending any further NHA designation by NPWS.	https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228
Geological Mapping	Bedrock geology:	Land & Soils	National	1:100,000 scale and associated memoirs.	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=de7012a99d2748ea9106e7ee1b6ab8d5&scale=0
Geological Mapping	Bedrock geology:	Land & Soils	Regional	1:50,000 scale	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=de7012a99d2748ea9106e7ee1b6ab8d5&scale=0
Geological Mapping	Quaternary geology: Sediments	Land & Soils	National	1:50,000 scale	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=de7012a99d2748ea9106e7ee1b6ab8d5&scale=0
Geological Mapping	Quaternary geology: Geomorphology	Land & Soils	National	1:50,000 scale	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=de7012a99d2748ea9106e7ee1b6ab8d5&scale=0
Geological Mapping	Physiographic units:	Land & Soils	National	Broad-scale physical landscape units mapped at 1:100,000 scale in order to be represented as a cartographic digital map at 1:250,000 scale	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=afa76a420fc54877843aca1bc075c62b
Geological Mapping	GeoUrban: Spatial geological data for the greater Dublin and Cork areas	Land & Soils	Regional	includes 3D models	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=9768f4818b79416093b6b2212a850ce6&scale=0
Geological Mapping	Geotechnical database	Land & Soils	National	Digitised geotechnical and Site Investigation Reports and boreholes which can be accessed through online downloads	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=a2718be1873d47a585a3f0415b4a724c
Goldmine	Historical data sets including geological memoirs and 6" to 1 mile geological mapping records	land & Soils/Water	National	available online	https://secure.dccae.gov.ie/goldmine/index.html
Groundwater & Geothermal	Groundwater resources (aquifers)	Water	National	Data limited to 1:100,000 scale; sites should be investigated at local scale	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef
Groundwater & Geothermal	Groundwater recharge.	Water	National	Data limited to 1:40,000 scale; sites should be investigated at local scale; long term annual average recharge	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef
Groundwater & Geothermal	Groundwater vulnerability.	Water	National	Data limited to 1:40,000 scale; sites should be investigated at local scale	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef
Groundwater & Geothermal	Group scheme and public supply source protection areas.	Water	National	Not all PWS / GWS have SPZ / ZOC. Check with IW / coco / NFGWS for private supplies.	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef
Groundwater & Geothermal	Groundwater Protection Schemes	Water	National	Data is limited to scale of 1:40,000. Data does not include all of the source protections areas	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef
Groundwater & Geothermal	Catchment and WFD management units.	Water	National		https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef
Groundwater & Geothermal	karst specific data layers	water	National	For areas underlain by limestone, includes karst features, tracer test database; turlough water levels (gwlevel.ie).	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef
Groundwater & Geothermal	Wells and Springs	Water	National	Not comprehensive, there may be unrecorded wells and springs	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef
Groundwater & Geothermal	Groundwater body Descriptions	Water	National	Not exhaustive; only those in designated SACs; could be other GWDTEs; for more information contact NPWS / EPA / site investigations	https://www.gsi.ie/en-ie/programmes-and-projects/groundwater-and-geothermal-unit/activities/understanding-ireland-groundwater/Pages/Groundwater-bodies.aspx
Groundwater & Geothermal	Geothermal Suitability maps	land & Soils/Water	National	Also, Roadmap for a Policy and Regulatory Framework for Geothermal Energy, November 2020	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=9ee46bee08de41278b90a991d60c0b9e
Marine & Coastal Unit	INFOMAR - Ireland's national marine mapping programme; providing key baseline data for Ireland's	Water	National		https://secure.dccae.gov.ie/GSI/INFOMAR_VIEWER/
Marine & Coastal Unit	CHERISH - Coastal change project (Climate, Heritage and Environments of Reefs, Islands, and Headla	Water	Regional		http://www.cherishproject.eu/en/
Marine & Coastal Unit	Coastal Vulnerability Index (CVI).	water /Land & Soils	Regional	Currently the project is being carried out on the east coast and will be rolled out nationally	https://www.gsi.ie/en-ie/programmes-and-projects/marine-and-coastal-unit/projects/Pages/Coastal-Vulnerability-Index.aspx
Minerals	Aggregate potential	Land & Soils/Material Assets	National	Consideration of mineral resources and potential resources as a material asset which should be explicitly recognised within the environmental assessment process	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=ee8c4c285a49413aa6f1344416dc9956
Minerals	Active quarries	Land & Soils	National		https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=ee8c4c285a49413aa6f1344416dc9956
Minerals	Historic mines	Land & Soils/Cultural Heritage	National	Inventory and Risk Classification 2009. Environmental Protection Agency, Economic Minerals Division and Geological Survey Ireland (DECC).	https://gis.epa.ie/EPAMaps/default?easting=?&northing=?&lid=EPA:LEMA_Facilties_Extractive_Facilities https://www.epa.ie/enforcement/mines/
Tellus	Geochemical data: multi-element data for shallow soil, stream sediment and stream water	Land & Soils	Regional	A national mapping programme	https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=6304e122b733498b99642707ff72f754
Tellus	Airborne geophysical data including radiometrics, electromagnetics and magnetics	Land & Soils	Regional	A national mapping programme	https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=6304e122b733498b99642707ff72f754
Tellus	urban geochemistry mapping (Dublin SURGE project),	Land & Soils	Regional		https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=6304e122b733498b99642707ff72f754

Notes:
1. The maps and data listed above are available on the Geological Survey Ireland map viewer https://www.gsi.ie/en-ie/data-and-maps/Pages/default.aspx
2. Please read all disclaimers carefully when using Geological Survey Ireland data
3. Geological Survey Ireland and Irish Concrete Federation published guidelines for the treatment of geological heritage in the extractive industry in 2008.

CHAPTER FIVE

LANDSCAPE & VISUAL

APPENDIX 5-1 Verified Photomontages

McCutcheon Halley
CHARTERED PLANNING CONSULTANTS

APPENDIX 5-1 Verified Photomontages

Verified Photomontages

Proposed

Residential Development
Mountain Road
Carrigaline
Co. Cork

Prepared by Model Works Ltd

January 2025

.MODEL WORKS

MODEL WORKS

project: Residential Development
Mountain Road
Carrigaline
Co. Cork

viewpoint: **View Location Map**

17-01-2025

Angle of View 73° Horizontal (24 mm Lens)

Angle of View 39° Horizontal (50 mm Lens)

MODEL WORKS

project: Residential Development
Mountain Road
Carrigaline
Co. Cork

photography: 12-09-2024 13:31
Canon 5D Mark II
24 mm Lens

location:
E 571526.861 N 561289.823

viewpoint: **View 01 Existing**

issued: 17-01-2025

Angle of View 73° Horizontal (24 mm Lens)

Angle of View 39° Horizontal (50 mm Lens)

MODEL WORKS

project: Residential Development
Mountain Road
Carrigaline
Co. Cork

photography: 12-09-2024 13:31
Canon 5D Mark II
24 mm Lens

location:
E 571526.861 N 561289.823

viewpoint: **View 01 Proposed**

issued: 17-01-2025

Angle of View 73° Horizontal (24 mm Lens)

Angle of View 39° Horizontal (50 mm Lens)

MODEL WORKS

project: Residential Development
Mountain Road
Carrigaline
Co. Cork

photography: 12-09-2024 13:40
Canon 5D Mark II
24 mm Lens

location:
E 571632.973 N 561359.340

viewpoint: **View 02 Existing**

issued: 17-01-2025

Angle of View 73° Horizontal (24 mm Lens)

Angle of View 39° Horizontal (50 mm Lens)

MODEL WORKS

project: Residential Development
Mountain Road
Carrigaline
Co. Cork

photography: 12-09-2024 13:40
Canon 5D Mark II
24 mm Lens

location:
E 571632.973 N 561359.340

viewpoint: **View 02 Proposed**

issued: 17-01-2025

Angle of View 73° Horizontal (24 mm Lens)

Angle of View 39° Horizontal (50 mm Lens)

MODEL WORKS

project: Residential Development
Mountain Road
Carrigaline
Co. Cork

photography: 20-09-2024 15:38
Canon 5D Mark II
24 mm Lens

location:
E 571592.430 N 561539.390

viewpoint: **View 03 Existing**

issued: 17-01-2025

Angle of View 73° Horizontal (24 mm Lens)

Angle of View 39° Horizontal (50 mm Lens)

MODEL WORKS

project: Residential Development
Mountain Road
Carrigaline
Co. Cork

photography: 20-09-2024 15:38
Canon 5D Mark II
24 mm Lens

location:
E 571592.430 N 561539.390

viewpoint: **View 03 Proposed**

issued: 17-01-2025

Angle of View 73° Horizontal (24 mm Lens)

Angle of View 39° Horizontal (50 mm Lens)

MODEL WORKS

project: Residential Development
Mountain Road
Carrigaline
Co. Cork

photography: 12-09-2024 13:55
Canon 5D Mark II
24 mm Lens

location:
E 571870.612 N 561157.693

viewpoint: **View 04 Existing**

issued: 17-01-2025

Angle of View 73° Horizontal (24 mm Lens)

Angle of View 39° Horizontal (50 mm Lens)

MODEL WORKS

project: Residential Development
Mountain Road
Carrigaline
Co. Cork

photography: 12-09-2024 13:55
Canon 5D Mark II
24 mm Lens

location:
E 571870.612 N 561157.693

viewpoint: **View 04 Proposed**

issued: 17-01-2025

Angle of View 73° Horizontal (24 mm Lens)

Angle of View 39° Horizontal (50 mm Lens)

MODEL WORKS

project: Residential Development
Mountain Road
Carrigaline
Co. Cork

photography: 12-09-2024 11:35
Canon 5D Mark II
24 mm Lens

location:
E 572563.366 N 560802.016

viewpoint: **View 05 Existing**

issued: 17-01-2025

Angle of View 73° Horizontal (24 mm Lens)

Angle of View 39° Horizontal (50 mm Lens)

MODEL WORKS

project: Residential Development
Mountain Road
Carrigaline
Co. Cork

photography: 12-09-2024 11:35
Canon 5D Mark II
24 mm Lens

location:
E 572563.366 N 560802.016

viewpoint: **View 05 Proposed**

issued: 17-01-2025

Angle of View 73° Horizontal (24 mm Lens)

Angle of View 39° Horizontal (50 mm Lens)

MODEL WORKS

project: Residential Development
Mountain Road
Carrigaline
Co. Cork

photography: 12-09-2024 12:13
Canon 5D Mark II
24 mm Lens

location:
E 571893.424 N 560800.648

viewpoint: **View 06 Existing**

issued: 17-01-2025

Angle of View 73° Horizontal (24 mm Lens)

Angle of View 39° Horizontal (50 mm Lens)

MODEL WORKS

project: Residential Development
Mountain Road
Carrigaline
Co. Cork

photography: 12-09-2024 12:13
Canon 5D Mark II
24 mm Lens

location:
E 571893.424 N 560800.648

viewpoint: **View 06 Proposed**

issued: 17-01-2025

Angle of View 73° Horizontal (24 mm Lens)

Angle of View 39° Horizontal (50 mm Lens)

MODEL WORKS

project: Residential Development
Mountain Road
Carrigaline
Co. Cork

photography: 12-09-2024 12:42
Canon 5D Mark II
24 mm Lens

location:
E 571356.531 N 559980.340

viewpoint: **View 07 Existing**

issued: 17-01-2025

Angle of View 73° Horizontal (24 mm Lens)

Angle of View 39° Horizontal (50 mm Lens)

MODEL WORKS

project: Residential Development
Mountain Road
Carrigaline
Co. Cork

photography: 12-09-2024 12:42
Canon 5D Mark II
24 mm Lens

location:
E 571356.531 N 559980.340

viewpoint: **View 07 Proposed**

issued: 17-01-2025

Angle of View 73° Horizontal (24 mm Lens)

Angle of View 39° Horizontal (50 mm Lens)

MODEL WORKS

project: Residential Development
Mountain Road
Carrigaline
Co. Cork

photography: 12-09-2024 13:12
Canon 5D Mark II
24 mm Lens

location:
E 571201.791 N 561008.575

viewpoint: **View 08 Existing**

issued: 17-01-2025

Angle of View 73° Horizontal (24 mm Lens)

Angle of View 39° Horizontal (50 mm Lens)

MODEL WORKS

project: Residential Development
Mountain Road
Carrigaline
Co. Cork

photography: 12-09-2024 13:12
Canon 5D Mark II
24 mm Lens

location:
E 571201.791 N 561008.575

viewpoint: **View 08 Proposed**

issued: 17-01-2025

CHAPTER SIX

MATERIAL ASSETS: TRAFFIC & TRANSPORT

APPENDIX 6-1 Modelled AADT HGV: scenario per linkage

McCutcheon Halley
CHARTERED PLANNING CONSULTANTS

APPENDIX 6-1 Modelled AADT HGV: scenario per linkage

6.1 Appendix

24051TT Bridgewater Carrigaline
EIAR Traffic AADT_ HGV.xlsx

ID	Location	Base Year	Base Year2	Do Nothing	Do Nothing	Do Nothing	Do Nothing	Do Something	Do Something	Do Something	Do Something	Speed KPH
Link Rd	Road Name	Base Year AADT 2024	Base Year %HGV 2024	Opening Year AADT 2026	Opening Year %HGV 2026	Design Year AADT 2041	Design Year %HGV 2041	Opening Year AADT 2026	Opening Year %HGV 2026	Design Year AADT 2041	Design Year %HGV 2041	
1	Mountain Road / Development Access	1500	3	1556	3.1	1794	3.6	4526	3.1	4820	3.1	50
2	Mountain Road/ R611	6500	2.9	6741	3.0	7774	3.5	9220	3.0	10494	3.0	50
3	R611 / Castle Heights Priority Roundabout	5100	1.9	5289	2.0	6100	2.3	5772	2.0	6771	2.0	50
4	R611 / Forest Road Signalised Junction	7000	2.5	7259	2.6	8372	3.0	9270	2.6	10642	2.6	50
5	R611 / Pottery Road Signalised Junction	7100	1.9	7363	2.0	8492	2.3	8528	2.0	9920	2.0	50
6	R611 / Church Hill Priority T Junction	8900	1.6	9229	1.7	10644	1.9	9521	1.7	11265	1.7	50
7	Pottery Road/ Mill Road Access Signalised T Junction	6100	0.4	6326	0.4	7296	0.5	6916	0.4	8112	0.4	50
8	Pottery Rd/ Ballea Road signalised T junction	9300	1.3	9644	1.3	11123	1.6	9734	1.3	11556	1.3	50
9	Cork Road/ Ballea Road Roundabout	12500	0.5	12963	0.5	14950	0.6	12900	0.5	15350	0.5	50

Modelled AADT HGV: scenario per linkage

CHAPTER NINE

LAND & SOILS

APPENDIX 9-1 Site Investigation Data

McCutcheon Halley
CHARTERED PLANNING CONSULTANTS

APPENDIX 9-1　Site Investigation Data

09th December, 2024

Messrs. OSL Butler
Unit 38 Eastgate Drive,
Little Island,
T45 YO49
Cork.

Re: Mountain Rd. Housing Development, Carrigaline, Desk study and Geotechnical review.

Introduction

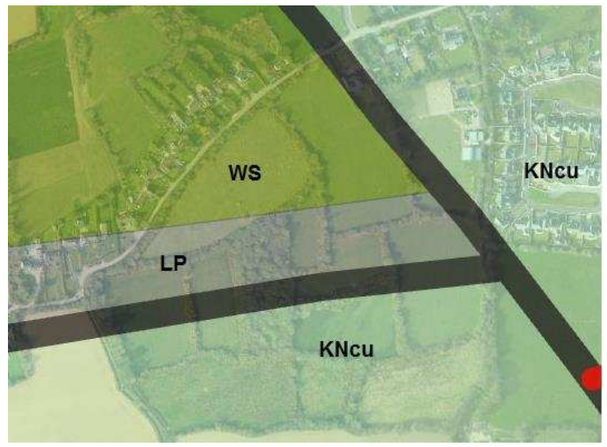
In December 2024, Priority Geotechnical were requested by OSL Butler, Civil, Structural & Project Engineering Services acting on behalf of their Client, Bridgewater Group, to undertake a review of available site investigation data in the vicinity of Mountain Road, Carrigaline (E171649, N61089).

Objectives

The purpose of the desk study was to provide details of the expected ground and groundwater conditions at the site of the proposed residential development on Mountain Rd, Carrigaline.

Published geology

A search of the Geological Survey data base and 1:100,000 mapping (Sheet 25) indicated the site is defined by three major lithological units. The White Strand Formation (WS) underlies the immediate area of the site and is described as Sandstone and interbedded pyritic Mudstone. The Lispatrick Formation (LP) described as Pyritic cherty Mudstone with Dolomite. This is followed by the Cuskinny Member (KNcu), characterised by flaser bedded Sandstone and Mudstone. A series of east west and North West/ South East trending structural faults offset the units in the area.



Teagasc subsoil mapping indicated the site is underlain by alluvium and glacial till derived from Namurian, Devonian and Carboniferous Sandstones and Shales. Mapping showed outcropping bedrock to the south east of the site. The national groundwater vulnerability mapping indicates the area is of high to extreme vulnerability indicative of a shallow depths to bedrock in the area. Historic borehole ID: 1705NWW112 and 1705NWW027 located approximately 700m south of the study area described a depth to rock of 3.1m and 9.8m respectively.

Historical site investigations

Historical site investigation works at the greenfield site on Mountain Rd. (E571350, N 561056) were commissioned by by JB Barry & Partners in September, 2018 and undertaken by PGL on the 24th and 25th September, 2018 in accordance with Eurocode 7- Geotechnical Design Part 2, ground investigation and testing (BS EN 1997-2: 2007) and the relevant British Standards (BS 5930 (2015) Code of Practice for Site Investigation and BS 1377, Method of Tests for Soil for Civil Engineering Purposes, *in situ* Tests Parts 1 to 9).

Trial excavations

Seventeen (17) number trial pits were excavated to depths 2.9m below existing ground level (bgl) to 3.6m bgl using a 3t tracked mini-excavator. Exploratory holes were backfilled with their arisings upon completion. The exploratory fieldworks are summarised as follows:

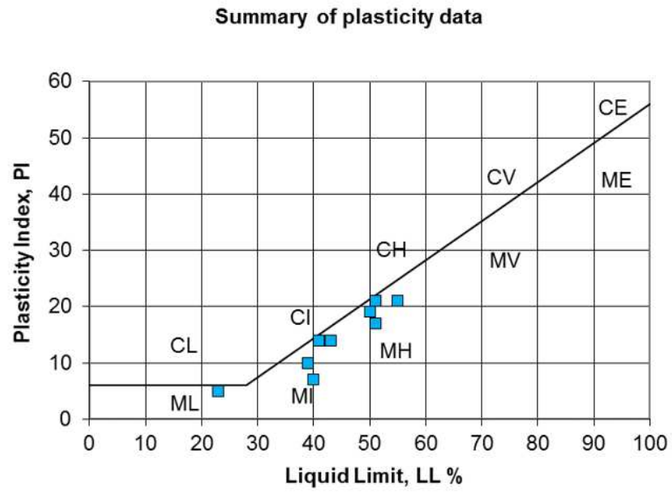
Location	Elevation, mOD Malin	Final depth, m bgl	Remarks	
			Stability	Groundwater
TP01	59.15	3.35	Good	None encountered.
TP02	60.26	3.40	Good	None encountered.
TP03	61.78	3.60	Good	None encountered.
TP04	60.94	3.50	Good	None encountered.
TP05	57.83	3.50	Good	None encountered.
TP06	56.72	3.40	Good	None encountered.
TP07	53.83	3.30	Good	None encountered.
TP08	54.71	3.40	Good	None encountered.
TP09	52.53	3.40	Good	None encountered.
TP10	54.47	3.30	Good	None encountered.
TP11	56.69	3.40	Good	None encountered.
TP12	57.25	3.50	Good	None encountered.
TP13	59.16	3.40	Good	None encountered.
TP14	55.43	3.40	Good	None encountered.
TP15	53.95	3.40	Good	None encountered.
TP16	52.60	3.60	Good	None encountered
TP17	54.53	2.90	Good	2.70m: Trickle flow rate.

A total of fifty three (53) bulk disturbed samples (B) and thirty five (35) small disturbed samples (D) were recovered.

Laboratory Testing

Laboratory testing was carried out by PGL in accordance with BS1377 (1990), Methods of test for soils for civil engineering purposes and was summarised as follows;

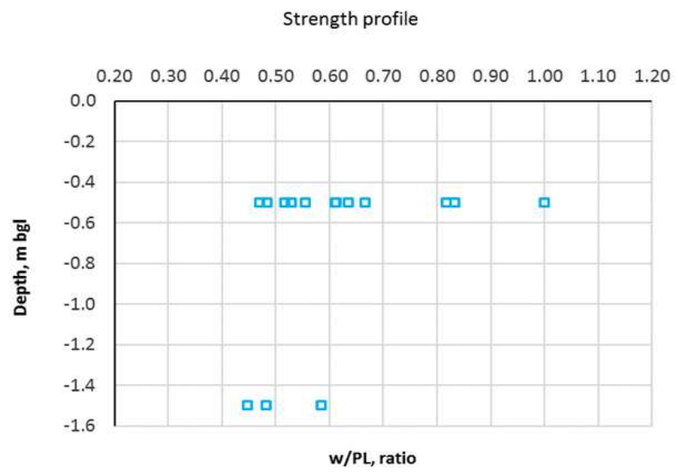
Type	Quantity, Nr.	Remarks
Natural moisture content	9	11% to 27%
Atterberg limits	9	Liquid Limit, LL 23% to 55%
		Plastic Limit, PL 18% to 34%
		Plasticity Index, PI 5 to 21
Grading analysis	9	No. hydrometer analysis on fine soils
pH	6	7.3 to 7.9
Sulphate water soluble	6	<0.010g/l
Sulphate acid soluble	6	<0.010% to 0.015%



Proposed ground model

Topsoil 250mm to 400mm thick, median thickness 300mm overlay mixed glacial deposits slightly sandy slightly gravelly SILT with low Cobble content to depths up to 3.6m.

Tactile assessment described firm SILT deposits. The ratio of natural moisture content *w* to plastic limit, PL; *w*/PL indicated firm to stiff deposits (C504 engineering in glacial tills) with expected undrained shear strengths 40kPa to >75kPa (BS5930, 1999).



Below depths of 1.3m to 2.7m there was an increase in Gravel content likely identifying a transition to the weathered Mudstone rockmass is areas within the greenfield site. Tactile assessment described stiff deposits typically below 2.0m.

A weathered rockmass was identified below depths 2.7m to 3.3m in areas to the south east within the site (KNcu).

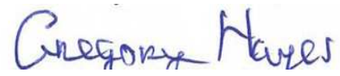
Groundwater was encountered at 2.7m at the boundary between the mixed glacial deposits and the weathered Mudstone rockmass, at a single exploratory location.

Geotechnical considerations

1. The greenfield site was characterised by firm to stiff mixed glacial deposits to depths 2.7m to 3.6m.
2. A presumed bearing value PBV 75kN/m^2 (kPa) to 150kPa is expected for the firm CLAY deposits (BS8004, Code of practice for foundations, 1986, Table 1).
3. It is expected traditional shallow strip foundations will be appropriate.
4. It is expected ground bearing floor slab will be appropriate.
5. pH and sulphate data did not indicate aggressive ground conditions.
6. It is not expected to encounter rock within excavations for either foundations drainage of services subject to a review of required invert levels and drainage connection points. Where weathered Mudstone is encountered it is expect to be easily excavated to depths up to 3.0m.
7. The firm to stiff glacial deposits with fines content >50% are expected to have poor drainage and infiltration properties which will impact the effectiveness of soakaways as a means of surface water control.
8. Moisture content/ plasticity data indicated values w/PL <1.2 and so a CBR2.5% is expected of the upper, firm mixed glacial SILT deposit. A provisional capping thickness of 400mm is provided for haul roads and pavement construction.
9. Presently there are no specific geotechnical risk identified.
10. The site was classified as geotechnical category GC-1.

Should you have any queries in relation to the details presented and discussed herein, please do not hesitate to contact our office.

Yours sincerely,
For **Priority Geotechnical,**



Greg Hayes BE MEngSc CEng MIEI
Geotechnical Specialist

Where additional information becomes available the contents of this desk study may be subject to change.

No account has been taken of potential subsidence or ground movement due to mineral extraction, mining works or karstification below or in proximity to the site, unless specifically addressed.

A geotechnical risk register of unresolved risk may be presented herein to inform the Designer of risk. Supplementary ground investigations shall be considered to further reduce such risk where identified.

Decisions made relating to the design process shall be the responsibility of the Designer. PGL shall be notified of any deviations from the proposed or intended construction relating to the tendered and agreed scope of works, herein. PGL accepts no responsibility or liability for this document being used other than for the purposes for which it was intended.

Any conflicts arising during the design process shall be communicated to PGL so their impact on the report recommendations shall be considered. Fee structures relating to such reviews shall be agreed in advance.

The design recommendations presented within this report shall rely on the proper execution of works at construction stage. Any deviations to the design, specification and construction drawings shall be notified to PGL where they may potentially impact the recommendation herein.

CHAPTER ELEVEN

BIODIVERSITY

APPENDIX 11-1 Legislation and Policy
APPENDIX 11-2 Value of Ecological Resources
APPENDIX 11-3 EPA Impact Assessment Criteria
APPENDIX 11-4 Bird Survey Results (Green-Listed Species)

McCutcheon Halley
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APPENDIX 11-1 Legislation and Policy

APPENDIX 11.1 – 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 from 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, 2022 (S.I. No. 235/2022). The Flora (Protection) Order affords protection to several species of plant in Ireland, including 89 vascular plants, 40 mosses, 25 liverworts, 2 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 Section s 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.”

APPENDIX 11-2 Value of Ecological Resources

APPENDIX 11.2 – 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 11.19 DESCRIPTION OF VALUES FOR ECOLOGICAL RESOURCES BASED ON GEOGRAPHIC HIERARCHY OF IMPORTANCE (NRA, 2009B).

Importance	Criteria
International Importance	- '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: 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	- 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: 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	- Area of Special Amenity. - Area subject to a Tree Preservation Order. - Area of High Amenity, or equivalent, designated under the County Development Plan.
	- Resident or regularly occurring populations (assessed to be important at the County level) of the following: 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)	- 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: 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)	- 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.

APPENDIX 11-3 EPA Impact Assessment Criteria

APPENDIX 11.3 – EPA IMPACT ASSESSMENT CRITERIA

In line with the draft EPA Guidelines (EPA 2022), the following terms are defined when evaluating and quantifying the quality, significance, extent/context, probability and duration/frequency of effects.

Table 11.20 Definition of quality, significance, extent/context, probability and duration/ frequency of effects

Term	Definition
Quality of Effects	
Positive	A change which improves the quality of the environment (for example, by increasing species diversity, or improving the reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Negative/Adverse	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem, or damaging health or property or by causing nuisance).
Significance of Effects	
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant	An effect which, by its character, magnitude, duration or intensity, alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity, significantly alters most of a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics. No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error
Extent and Context of Effects	
Extent	Describe the size of the area, the number of sites and the proportion of a population affected by an effect.
Context	Describe whether the extent, duration or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)
Probability of Effects	
Likely	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
Unlikely	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Duration and Frequency of Effects	
Momentary	Effects lasting from seconds to minutes.
Brief	Effects lasting less than a day
Temporary	Effects lasting less than a year.
Short-term	Effects lasting one to seven years.
Medium-term Effects	Effects lasting seven to fifteen years.
Long-term	Effects lasting fifteen to sixty years.
Permanent	Effects lasting over sixty years.
Reversible	Effects that can be undone, for example through remediation or restoration.
Frequency	Describe how often the effect will occur (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually).

APPENDIX 11-4　Bird Survey Results (Green-Listed Species)

APPENDIX 11.4 - BIRD SURVEY RESULTS (GREEN-LISTED SPECIES)

BBS - Transect Survey		07/08/2024 (BBS)			04/06/2024 (PEA Site Visit)			
Transect Distance Range >		0-25m	25-100m	>100m	0-25m	25-100m	>100m	Breeding & Conservation Status
Species	**Scientific**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	
Blackbird	*Turdus merula*	11	-	-	16	-	-	Confirmed Breeding – BoCCI Green List
Blackcap	*Sylvia atricapilla*	-	-	-	2	-	-	Probable Breeding – BoCCI Green List
Blue Tit	*Cyanistes caeruleus*	6	-	-	2	-	-	Probable Breeding – BoCCI Green List
Bullfinch	*Pyrrhula pyrrhula*	4	-	-	3	-	-	Probable Breeding – BoCCI Green List
Chaffinch	*Fringilla coelebs*	-	-	-	4	-	-	Probable Breeding – BoCCI Green List
Chiffchaff	*Phylloscopus collybita*	4	-	-	6	-	-	Probable Breeding – BoCCI Green List
Dunnock	*Prunella modularis*	5	-	-	4	-	-	Confirmed Breeding – BoCCI Green List
Goldcrest	*Regulus regulus*	9	-	-	3	-	-	Probable Breeding – BoCCI Green List
Goldfinch	*Carduelis carduelis*	-	-	-	4	-	-	Possible Breeding – BoCCI Green List
Great Tit	*Parus major*	-	-	-	3	-	-	Confirmed Breeding – BoCCI Green List
Greenfinch	*Chloris chloris*	-	-	-	2	-	-	Possible Breeding – BoCCI Green List
Hooded Crow	*Corvus cornix*	-	-	-	1	-	-	Possible Breeding –

BBS - Transect Survey		07/08/2024 (BBS)			04/06/2024 (PEA Site Visit)			
Transect Distance Range >		0-25m	25-100m	>100m	0-25m	25-100m	>100m	Breeding & Conservation Status
Species	**Scientific**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	
								BoCCI Green List
Jackdaw	*Corvus monedula*	-	-	-	3	-	-	Non-breeding – BoCCI Green List
Magpie	*Pica pica*	-	-	-	3	-	-	Possible Breeding BoCCI Green List
Mistle Thrush	*Turdus viscivorus*	-	-	-	2	-	-	Possible Breeding – BoCCI Green List
Reed Bunting	*Emberiza schoeniclus*	-	-	-	2	-	-	Confirmed Breeding – BoCCI Green List
Robin	*Erithacus rubecula*	5	-	-	8	-	-	Confirmed Breeding – BoCCI Green List
Song Thrush	*Turdus philomelos*		-	-	1	-	-	Possible Breeding – BoCCI Green List
Woodpigeon	*Columba palumbus*	9	2		5	-	-	Possible Breeding – BoCCI Green List
Wren	*Troglodytes troglodytes*	11			7	-	-	Probable Breeding – BoCCI Green List

CHAPTER THIRTEEN

AIR QUALITY AND CLIMATE

APPENDIX 13-1 Construction Phase AADT
APPENDIX 13-2 Operational Phase AADT

McCutcheon Halley
CHARTERED PLANNING CONSULTANTS

APPENDIX 13-1 Construction Phase AADT

Table 6.5 Construction Impact

Ref	Road Link	DM 2026			Construction Traffic AADF			Impact		
		HGV	LV	Total	HGV	LV	Total	HGV	LV	Total
1	Mountain Road / Development Access	39	1,269	1,307	60	40	100	155.3%	3.2%	7.6%
2	Mountain Road/ R611	167	5,498	5,666	60	40	100	35.8%	0.7%	1.8%
3	R611 / Castle Heights Priority Roundabout	88	4,353	4,440	60	40	100	68.5%	0.9%	2.3%
4	R611 / Forest Road Signalised Junction	161	6,092	6,253	60	40	100	37.3%	0.7%	1.6%
5	R611 / Pottery Road Signalised Junction	121	6,162	6,283	60	40	100	49.5%	0.6%	1.6%
6	R611 / Church Hill Priority T Junction	113	7,053	7,166	60	40	100	53.2%	0.6%	1.4%
7	Pottery Road/ Mill Road Access Signalised T Junction	24	5,399	5,423	60	40	100	253.3%	0.7%	1.8%
8	Pottery Rd/ Ballea Road signalised T junction	107	8,041	8,148	60	40	100	55.9%	0.5%	1.2%
9	Cork Road/ Ballea Road Roundabout	64	10,629	10,693	60	40	100	93.9%	0.4%	0.9%

APPENDIX 13-2 Operational Phase AADT

24051TT Bridgewater Carrigaline
EIAR Traffic AADT_ HGV.xlsx

ID	Location	Base Year	Base Year2	Do Nothing	Do Nothing2	Do Nothing3	Do Nothing4	Do Something	Do Something2	Do Something3	Do Something8	Speed KPH
Link Rd	Road Name	Base Year AADT 2024	Base Year %HGV 2024	Opening Year AADT 2026	Opening Year %HGV 2026	Design Year AADT 2041	Design Year %HGV 2041	Opening Year AADT 2026	Opening Year %HGV 2026	Design Year AADT 2041	Design Year %HGV 2041	
1	Mountain Road / Development Access	1500	3	1556	3.1	1794	3.6	4526	3.1	4820	3.1	50
2	Mountain Road/ R611	6500	2.9	6741	3.0	7774	3.5	9220	3.0	10494	3.0	50
3	R611 / Castle Heights Priority Roundabout	5100	1.9	5289	2.0	6100	2.3	5772	2.0	6771	2.0	50
4	R611 / Forest Road Signalised Junction	7000	2.5	7259	2.6	8372	3.0	9270	2.6	10642	2.6	50
5	R611 / Pottery Road Signalised Junction	7100	1.9	7363	2.0	8492	2.3	8528	2.0	9920	2.0	50
6	R611 / Church Hill Priority T Junction	8900	1.6	9229	1.7	10644	1.9	9521	1.7	11265	1.7	50
7	Pottery Road/ Mill Road Access Signalised T Junction	6100	0.4	6326	0.4	7296	0.5	6916	0.4	8112	0.4	50
8	Pottery Rd/ Ballea Road signalised T junction	9300	1.3	9644	1.3	11123	1.6	9734	1.3	11556	1.3	50
9	Cork Road/ Ballea Road Roundabout	12500	0.5	12963	0.5	14950	0.6	12900	0.5	15350	0.5	50

CHAPTER FOURTEEN

CULTURAL HERITAGE
ARCHAEOLOGICAL & BUILT HERITAGE

APPENDIX 14-1 Proposed Development Site Depicted on Various Maps
APPENDIX 14-2 Geophysical Survey Report
APPENDIX 14-3 Walkover Survey Photos

McCutcheon Halley
CHARTERED PLANNING CONSULTANTS

APPENDIX 14-1 Proposed Development Site Depicted on Various Maps

APPENDIX 14.1: PROPOSED DEVELOPMENT SITE DEPICTED ON VARIOUS MAPS

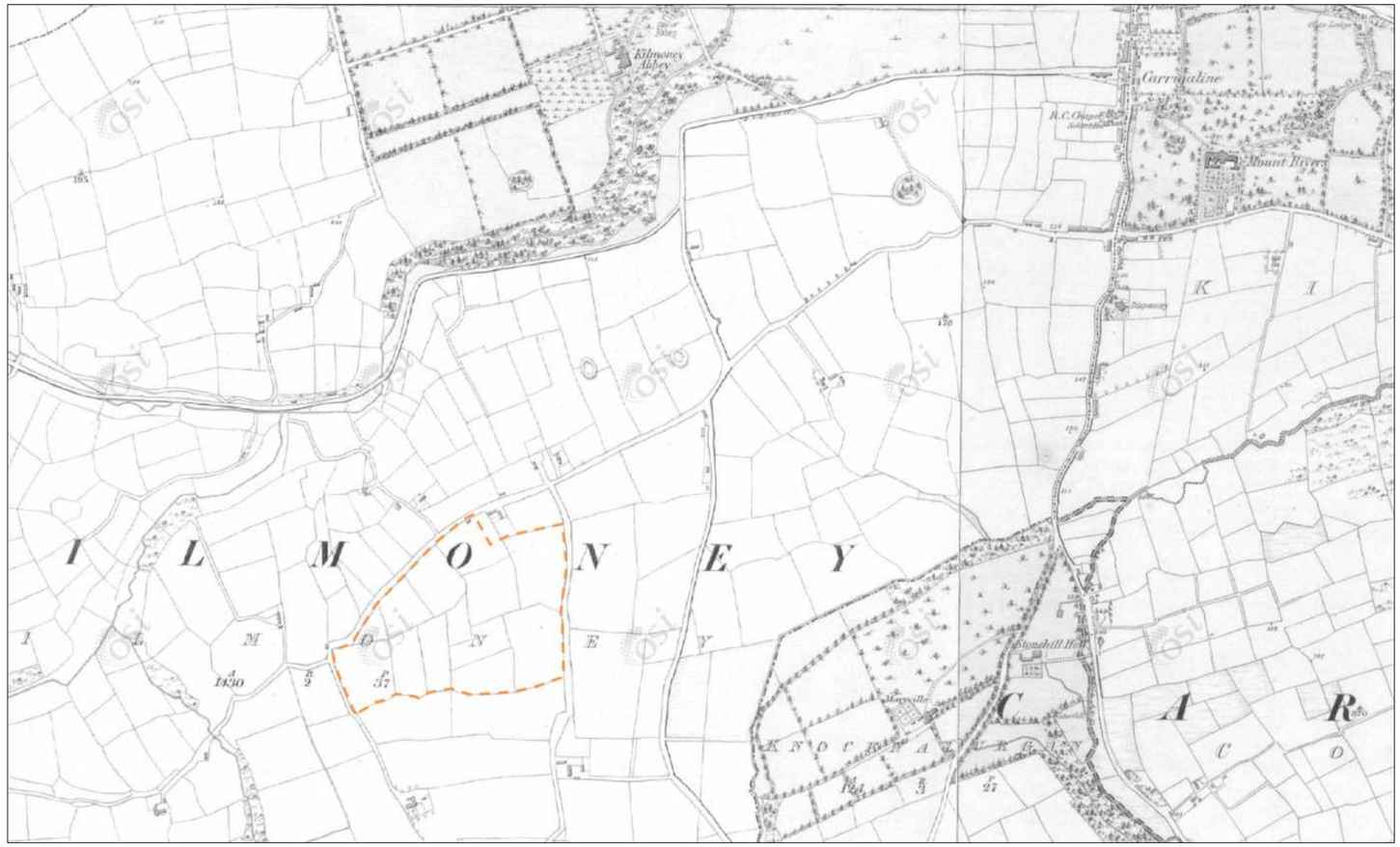

Figure 1: Proposed development site outlined on OS six-inch map of 1842 showing demesnes associated with the country houses of Kilmoney to the north, Mount Rivers to the northeast and Maryville and Stonehill to the east www.archaeology.ie

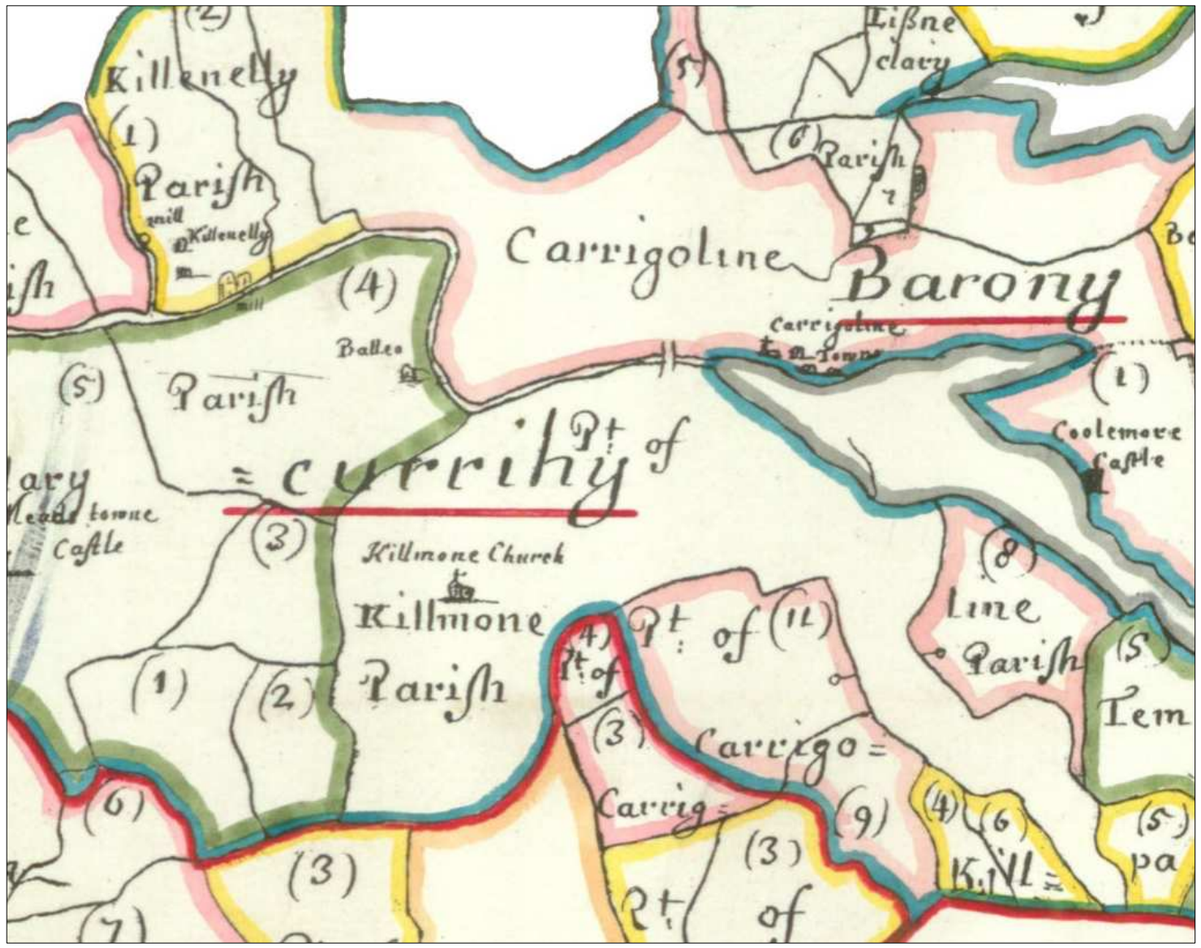

Figure 14.2: The parish of 'Killmone' on Down Survey map (1656-1658) www.downsurvey.tchpc.tcd.ie

APPENDIX 14-2 Geophysical Survey Report

Geophysical Survey Report

Proposed large-scale residential development (LRD) at Mountain Road, Kilmoney townland, Carrigaline, Co. Cork

Client
Bridgewater Construction Ltd.

Detection License
23R0032

TAG Project
2023IE6

Date
August 2024

Author
John Nicholls MSc.

TARGET Archaeological Geophysics Ltd.

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Web: www.targetgeophysics.com
Tel: +353 (0)87 858 0112 / +32 (0)483 50 42 80

c/o Finn & O'Sullivan Accountants,
2 Riversdale Industrial Estate,
Bluebell Avenue, Dublin 12, D12 KH67

TARGET GEOPHYSICAL SURVEY REPORT 2023IE6
PROPOSED LARGE-SCALE RESIDENTIAL DEVELOPMENT (LRD) AT MOUNTAIN ROAD, KILMONEY TOWNLAND, CARRIGALINE, CO. CORK

PROJECT BACKGROUND

Target Archaeological Geophysics Ltd. was appointed by Bridgewater Construction Ltd. to undertake a geophysical survey at the site of a proposed large-scale residential development (LRD) situated in Kilmoney townland, on the south-western outskirts of Carrigaline, in County Cork. Located immediately S of Mountain Road the site of the proposed development encompasses c.12.4ha of agricultural land and woodland situated c.0.2km W of the R611. A total 6.49ha of high-resolution recorded magnetometry was completed in 11 areas within the boundary of the proposed development, examining all lands suitable to geophysical investigation at the time of fieldwork.

This geophysical survey forms part of a pre-planning archaeological assessment being undertaken prior to proposed development. The survey was carried out under license from the National Monuments Service, Department of Housing, Local Government & Heritage with the following aims (detection license 23R0032):

- to identify geophysical anomalies of possible archaeological origin within the investigation areas
- accurately locate these anomalies and present the findings in graphical format
- describe the anomalies and discuss their likely provenance in a written report

ITM central coordinates: 571589 561138
Townland: Kilmoney
County: Cork
Landuse: Grazed pasture, poorly maintained pasture & woodland

Landscape, soils, geology

The proposed development occupies mostly level, poor quality pasture land and a small area of woodland situated 55-59m above mean sea level. Soils of the locality comprise of Clonroche (1100a) and Ross Carbery (900e) coarse to fine loamy drift, typically brownearths and brown podzolics (Irish National Soils Map, 1:250,000k, V1b, 2014). Superficial geology is characterised by till derived from Namurian sandstones and shales. Bedrock N-S comprises of White Strand formation sandstone and interbedded pyritic mudstone; Lispatrick formation pyritic cherty mudstone with dolomite; and Cuskinny Member flaser-bedded sandstone and mudstone (Geological Survey of Ireland Spatial Resources, Public Data Viewer Series).

Archaeology

No recorded monuments and places (RMPs) are located within the boundary of the proposed development. Fulacht fia CO098-085 lies in closest proximity to the site of proposed development, c.0.3km to the SW, with further monuments located also present within a 1km radius of the site. The following extract from the National Monuments Service SMR database provides summary details of all RMPs within 1km of the proposed development:

SMR No.	Townland	Class	East	North
CO098-009	Standing stone	Kilmoney	570718	560400
CO098-012	Standing stone	Kilmoney	571546	560060
CO098-013	Enclosure	Kilmoney	571229	561769
CO098-014	Ringfort - rath	Kilmoney	571198	562189
CO098-015	Ringfort - rath	Kilmoney	571715	562003
CO098-016	Country house	Kilmoney	571915	562247
CO098-017001	Ringfort - rath	Kilmoney	571842	561634
CO098-017002	Souterrain	Kilmoney	571842	561634
CO098-018	Ringfort - rath	Kilmoney	572036	561654
CO098-019	Ringfort - rath	Kilmoney	572478	561985
CO098-085	Fulacht fia	Kilmoney	571300	560637

Fieldwork	2nd August 2024
Geophysical technique	High-resolution recorded magnetometry (fluxgate gradiometry)
Report issue	8th August 2024
Author	John Nicholls MSc.
Detection license no.	23R0032
Client	Bridgewater Construction Ltd.
Archaeologists	Lane Purcell Archaeology

1 SURVEY METHODOLOGY

1.1 Methodology

1.1.1 Geophysical survey by high-resolution recorded magnetometry was conducted in 11 areas (M1-M11) within the boundary of the proposed development, investigating 6.49ha of land suitable to survey, within a site boundary encompassing c.12.4ha.

1.1.2 The geophysical survey employed an advanced multichannel fluxgate gradiometer system combined with cm precision GPS, recording magnetometer (fluxgate gradiometer) and GPS data simultaneously at rates of 50Hz and 1Hz respectively. The geophysical data were acquired along parallel instrument traverses 3.64m in width, with the instrumentation installed in 'tow configuration' for use with an ATV.

1.2 Instrumentation

1.2.1 The following table provides a summary of the survey methodology and geophysical instrumentation employed during the course of this work:

Technique	Sensor spacing	Sample rate	Instrumentation	Sensitivity/precision	No. of data recorded
Magnetometry (fluxgate gradiometry)	0.35m	50Hz	Multi-channel fluxgate gradiometer	<75pT/√Hz @ 1Hz (650mm baseline)	361,752
GPS	3.92m	1Hz	Trimble R10 (VRS)	<0.1m	9,046

1.2.2 The instrumentation and software employed for this geophysical survey were configured to apply a spatial resolution of c.80 magnetometer measurements per m^2. This spatial resolution meets with ease the 'Level 3 – Characterisation' EAC Guidelines for geophysical survey in archaeology (Schmidt et al, 2016).

1.3 Data processing

1.3.1 Post-fieldwork geophysical survey data processing was undertaken as follows:

Process	Description
i	Positioning of geophysical data based on real-time GPS measurements (WGS84 Geodetic CRS)
ii	Zero median transect processing for multi-sensor magnetometer data collected along parallel transects
iii	Transformation from WGS84 geodetic coordinate system to ITM (IRENET95) projected CRS
iv	Gridding (ordinary kriging)
v	Export of greyscale images georeferenced in ITM (IRENET95) projected CRS

1.3.2 To maintain the integrity of the processed geophysical data, and its correlation with the original raw on-site measurements, no further processing, filtering or 'smoothing' of the data was undertaken following steps i-v.

1.4 Data display

1.4.1 Figure 1 presents a location diagram highlighting the site of proposed development on the south-western outskirts of Carrgaline, to the W of the R611 (scale 1:75,000 & 1:25,000).

1.4.2 Figure 2 displays the soil and geological context specific to the site of proposed development and the surrounding area (scale of 1:20,000).

1.4.3 Figure 3 presents the locations of RMPs within a 1km radius of the proposed development (scale 1:10,000).

1.4.4 The results from geophysical survey in M1-M11 are presented in greyscale format in figure 4 at a scale of 1:1500.

1.4.5 An interpretation diagram based on the results from geophysical survey in M1-M11 is presented in figure 5 at a scale of 1:1500. Letters included on the interpretation diagram refer to notable anomalies recorded by the geophysical survey, and these are discussed in the results section of this report.

2 GENERAL CONSIDERATIONS

2.1 Ground conditions & access

2.1.1 The proposed development encompasses c.12.4ha of level, poor quality pasture land sub-divided in to small fields bound W-NE by private dwellings, a farm yard and stables facing Mountain Road. Dense rushes were cleared across much of the site prior to geophysical fieldwork. 2 fields within the site boundary were not subjected to geophysical survey due to poor access and very difficult terrain. Woodland SW of site centre was also not subjected to geophysical survey.

2.1.2 The following table provides a description of the terrain and landuse on site, and the hectares completed in during the course of this geophysical survey:

Area	Description of terrain	Ha
M1	Level, poor quality pasture field bordering Mountain Road N-NW, with recent clearance of rushes undertaken. Surface conditions poor and uneven throughout, resulting in slow progress of fieldwork.	0.82
M2	Level, poor quality pasture field bordering Mountain Road N-SW, with recent clearance of rushes undertaken. The uneven and poor quality ground surface across M2 impeded fieldwork progress.	0.58
M3	Level, poor quality pasture field bordering Mountain Road N-NW, with recent clearance of rushes. Very poor quality ground surface throughout resulted in slow progress of fieldwork.	0.74
M4	Very small, narrow, poor quality, level pasture field, with recent clearance of rushes. Poor quality ground surface throughout impeded the progress of fieldwork.	0.15
M5	Level, generally good quality pasture field bordering Mountain Road N-NW, with private dwelling to N.	1.65
M6	Northern part of level pasture field bordering private dwelling, stables and farm yard to NE. M6 covers and area used for exercising horses, with modern drainage installed and imported sand to the E.	0.21
M7	Eastern part of level pasture field bordering farmyard to E, with farm machinery and metal post and wire fencing at perimeter.	0.1
M8	South-eastern part of level pasture field bordering farm yard to NE, with post and wire fencing to N & W.	0.18
M9	Central, western and south-western part of level pasture field bound to the N and E by post and wire fencing.	0.25
M10	Level pasture field with very poor ground surface throughout.	1.22
M11	Mostly level, poor quality, pasture field with recent clearance of rushes. Very poor ground surface throughout.	0.59

2.2 Modern interference

2.2.1 The results from geophysical survey in M1-M11 display an abundance of small-scale ferrous throughout. These are a common occurrence in magnetometer data and relate mostly to modern metallic debris contained in the topsoil. Broad ferrous responses are also evident in the results, most notably in the eastern/north-eastern portion of the proposed development in proximity to private dwellings, a farm yard, stables, farm machinery, a feeding trough, post and wire fencing and metal gates.

2.2.2 Magnetic disturbance indicative of modern disturbance is evident across survey centre in M11.

2.3 Recent landuse & cultivation

2.3.1 Remnants of former field boundaries depicted on historic mapping have been recorded to the SW in M2 and in M5, with further possible former boundaries indicated in M5-M6, M9 and M10. Responses from past cultivation are also evident in the results from M1-M11, visible as closely spaced parallel linear anomalies on various alignments.

2.3.2 Linear anomalies indicative of buried land drains and a modern service have also been recorded from survey centre to the E in M6 and to the W-NW in M10.

2.4 Natural soil/geological variation

2.4.1 Faint irregular responses indicative of natural soil/geological variation are also present in the results S of survey centre in M11.

3 GEOPHYSICAL SURVEY RESULTS

3.1 General overview

3.1.1 The results from geophysical survey in M1-M11 at the site of proposed development demonstrate a varied magnetic background. In M1-M4 background variation in the range of +/-1nT is evident from site centre to the W, while in M5-M11 background variation exceeds +/-2.5nT. The increase in background variation across M6-M11 is largely expected to derive from intensive former cultivation across the eastern portion of the proposed development. Background 'noise' elsewhere in the geophysical data from M1-M11 can mostly be attributed to responses from former/suspected former boundaries, land drains/buried services and modern ferrous.

3.1.2 No responses of definite archaeological origin have been recorded by the geophysical survey in M1-M11, and no responses of significant potential are indicated in the data. Small-scale positives, poorly defined linear anomalies and trends of uncertain origin are apparent in the results. However, none of these demonstrate significant patterning or character to warrant an archaeological interpretation. In the majority of cases, where no immediate archaeological context is present in the geophysical data, poorly defined anomalies and trends such as those recorded in M1-M11, likely derive from effects of past cultivation, levelling of former boundaries, natural soil/geological variation and/or modern ferrous.

3.2 Survey results (figures 4-5)

3.2.1 The following table details the results from geophysical in M1-M11.

Northern land parcel			
Area	**Anomaly(s)**	**Location from survey centre**	**Description & likely provenance**
M1	NA	NA	*No significant responses recorded* No responses indicative of archaeological settlement/activity or significant potential are evident in the results. The results display an abundance of responses deriving from former cultivation, and small-scale modern ferrous. Discrete positives and a trend recorded across survey centre and to the N are deemed to be of limited interest, and likely derive from modern ferrous, natural soil/geological variation and/or past landuse.
M2	NA	NA	*No significant responses recorded* No responses indicative of archaeological settlement/activity or significant potential are evident in the results. The results display an abundance of responses deriving from former cultivation, modern ferrous small and large in scale, and remnants of a former boundary indicated on historic mapping. Discrete positives S-SE are deemed to be of limited interest, and likely derive from modern ferrous, natural soil/geological variation and/or past landuse.
M3	A, B, C	NE-SW, NE, SE	*Anomaly of uncertain origin | Trend* Poorly defined linear, potentially a drain or water supply, and clusters of small-scale positives uncertain in origin. B-C likely relate to ferrous debris from an adjacent boundary, natural soil/geological variation and/or former cultivation.
M4	NA	NA	*No significant responses recorded* No responses indicative of archaeological settlement/activity or significant potential are evident in the results. The data highlight responses from former cultivation, modern ferrous and a small-scale positive at the eastern survey limit.
M5	D, E, F	N-NW, centre, S-SW	*Anomaly of uncertain origin | Trend* Positive linear anomaly (D) with adjacent trends, and abundant small-scale positives (E-F). E-F are deemed to be of limited interest, and likely derive from a combination of recent landuse/cultivation, modern ferrous and/or natural soil/geological variation.

M6	NA	NA	*No significant responses recorded* Large-scale modern ferrous, drainage, a buried service and a possible former boundary recorded in M6 highlighting widespread disturbance across this portion of the proposed development. Small-scale positives W-NW of survey centre are deemed to be of limited significance.
M7	NA	NA	*No significant responses recorded* No responses indicative of archaeological settlement/activity or significant potential are evident in the results. Widespread modern ferrous and remnants of former cultivation have been recorded.
M8	G	SW of centre	*Anomaly of uncertain origin | Trend* Small-scale positive and curving trend of uncertain origin. Large-scale modern ferrous is evident N-NE and to the W. Remnants of former cultivation are also apparent throughout.
M9	H	Survey centre	*Anomaly of uncertain origin* Anomaly H highlights 1 of a number of small-scale positives in M9 which are of uncertain origin. These are expected to relate to past landuse, natural soil/geological variation and or modern/ferrous.
M10	I-J	E, S-SE	*Anomaly of uncertain origin* Small-scale positives of uncertain origin, likely associated with past landuse, natural soil/geological variation and or modern/ferrous.
M11	K	NE	*Anomaly of uncertain origin* Broad positive response at the north-eastern limit of survey in proximity to an existing boundary. Anomaly K should be targeted for further investigation to confirm its precise origin.

4 CONCLUSION

4.1 The geophysical survey at the site of the proposed development in Kilmoney townland has recorded no features of definite archaeological character and no anomalies of significant potential. Poorly defined linear responses, small and large-scale positives of uncertain origin and trends have been recorded. None of these anomalies exhibit patterns typical of buried archaeological remains, and the majority are expected to relate to past cultivation, responses from former/suspected former boundaries, natural soil/geological variation and/or modern ferrous. It is suggested that targeted archaeological testing be undertaken to confirm the precise origin of anomalies A, B, C and K in areas M3 and M11.

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ONLINE RESOURCES

Archaeological Survey of Ireland SMR Database: http://webgis.archaeology.ie/historicenvironment/

Bing Maps: https://www.bing.com/maps

Geological Survey of Ireland Spatial Resources, Public Data Viewer Series: https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228

Google Maps: https://www.google.com/maps

Geohive Mapviewer: http://www.geohive.ie

Irish National Soils Map, 1:250,000k, V1b (2014). Teagasc, Cranfield University (jointly funded by the EPA STRIVE Research Programme 2007-2013 & Teagasc): http://gis.teagasc.ie/soils/map.php

LIST OF FIGURES

APPENDIX

MAGNETOMETRY

Introduction

Magnetometry represents one of a suite of geophysical techniques employed in archaeological prospection to inform invasive work such as trial trenching and excavation.

Frequently used to determine the often non-visible boundaries of archaeological remains, magnetometer surveys enable archaeologists to identify the location, form and extent of a diverse array of archaeological features no longer visible at the surface.

Buried archaeological remains successfully identified using magnetometry include sites such as enclosure systems and deserted villages, hillforts and military encampments, henges and tumuli, villa/castle foundations, ecclesiastical settlements and formal gardens.

Background to application

The basis for use of magnetometry in archaeological prospection derives from the abundance of natural iron oxides in most soils, and our ability to measure subtle variations in the magnetic properties of these iron oxides caused by human activity. Discrete variations in soil magnetism associated with buried archaeological remains derive typically from in situ burning and organic enrichment of the soil, through activities such as cooking and heating; pottery manufacture and metal working; as well as use of fired building materials such as ceramic tiles and brick. These burnt, fired and organic rich deposits create subtle magnetic contrasts visible as discrete magnetic anomalies superimposed on the earth's geomagnetic field.

1. Magnetometer survey data in greyscale format highlighting pit remains SE of an enclosure and Roman villa.

2. Burnt-fired debris uncovered during excavation of the highlighted area SE of the same enclosure and Roman villa.

Magnetometer surveys conducted in both commercial and research archaeological investigations enable determination of the location, form and extent of buried archaeological remains. Data acquired from these surveys can be quickly generated into georeferenced images and interpretation layers to inform subsequent trial trenching and excavation.

Technology

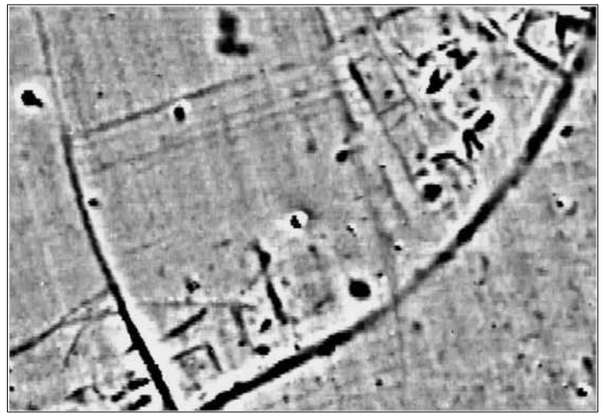
TARGET provides precise mapping and characterization of buried archaeological remains by employing an array of highly stable and sensitive fluxgate gradiometers, combined with an advanced data logging system and cm precision GPS. This state-of-the-art geophysical instrumentation, which is capable of collecting extremely dense data sets, permits detailed high-resolution survey of archaeological sites from as small as 1ha in size, to larger scale investigation of sites up to 150ha or more.

High resolution magnetometer surveys are undertaken as standard, recording data at c.5cm intervals with probe separations of 0.3m for precise measurement and characterization of buried archaeological remains. This spatial resolution meets with ease the 'Level 3 – Characterisation' EAC Guidelines recommendation for geophysical survey in archaeology (Schmidt et al, 2016).

Instrumentation is used in combination with cm precision GPS and data collected along parallel traverses with the system installed in 'tow configuration' for use with an ATV or in push mode.

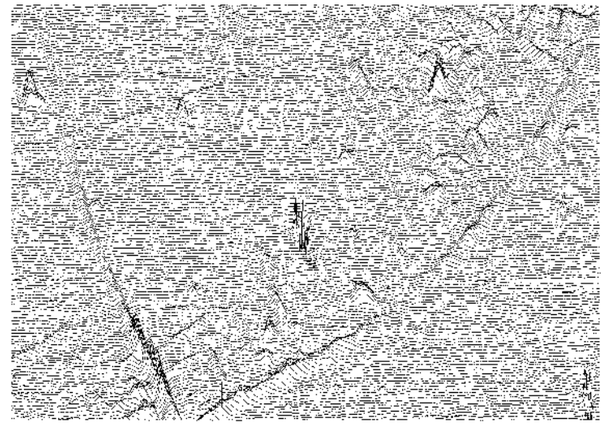
Data Display

Greyscale plots are the most common format for displaying magnetometer data. This display format assigns a cell to each datum according to its location on the grid. The display of each data point is conducted at very fine increments, allowing the full range of values to be displayed within a given data set. This display method also enables the identification of discrete responses barely visible above natural 'background' magnetic variation on site.

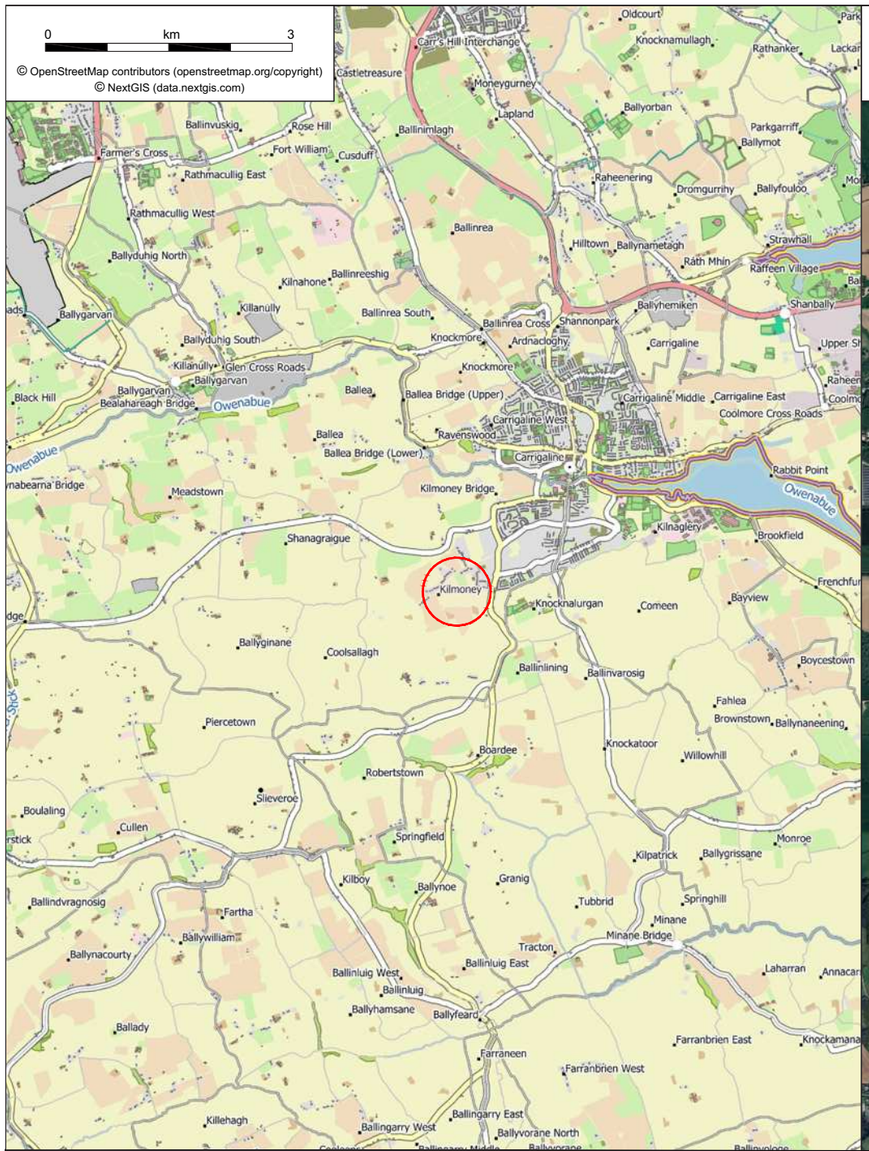


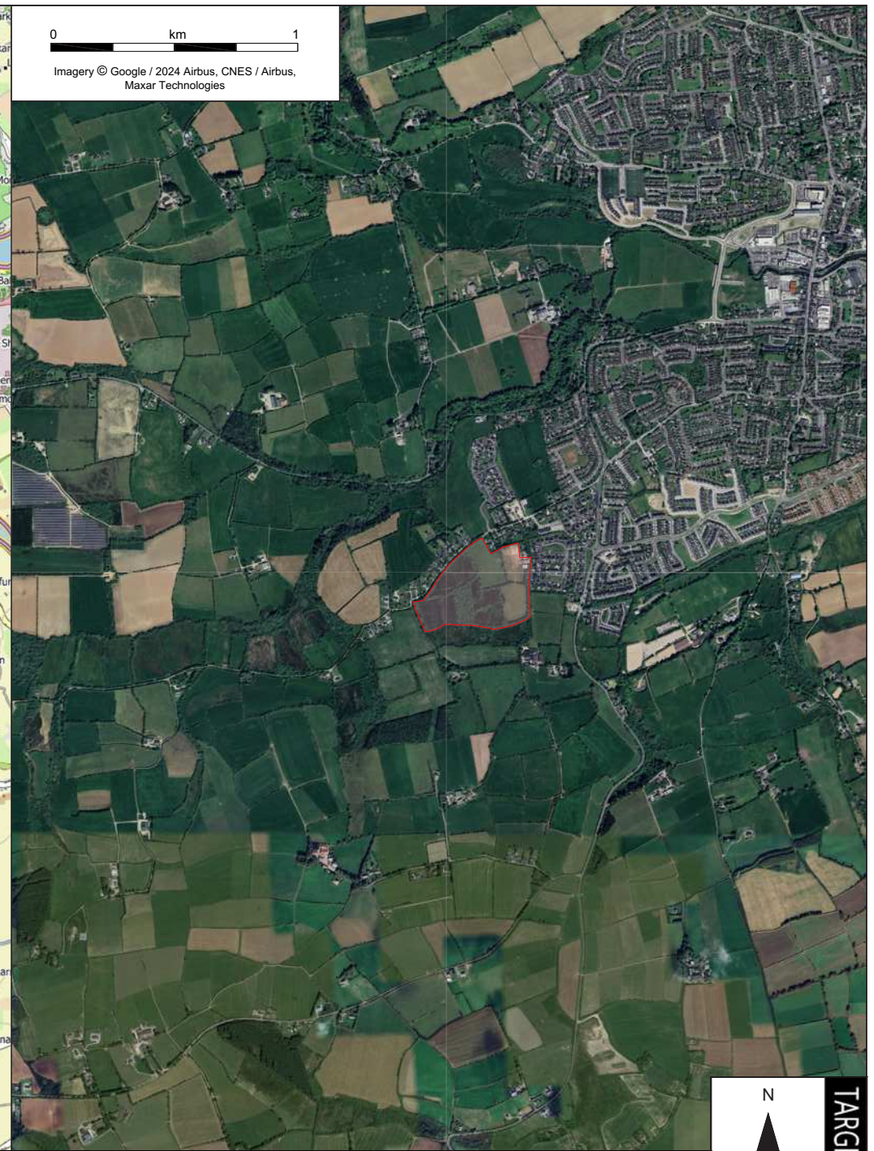
6. Greyscale from survey at the site of a deserted medieval village.

XY trace plots provide a near-perspective representation of measurements along individual lines of data recorded from each magnetometer sensor. The XY trace format is used as a conventional method for identifying responses of modern ferrous debris, and also as an aid in identifying locations of potential industrial features, such kilns and metal working.



7. XY trace from survey at the site of a deserted medieval village.

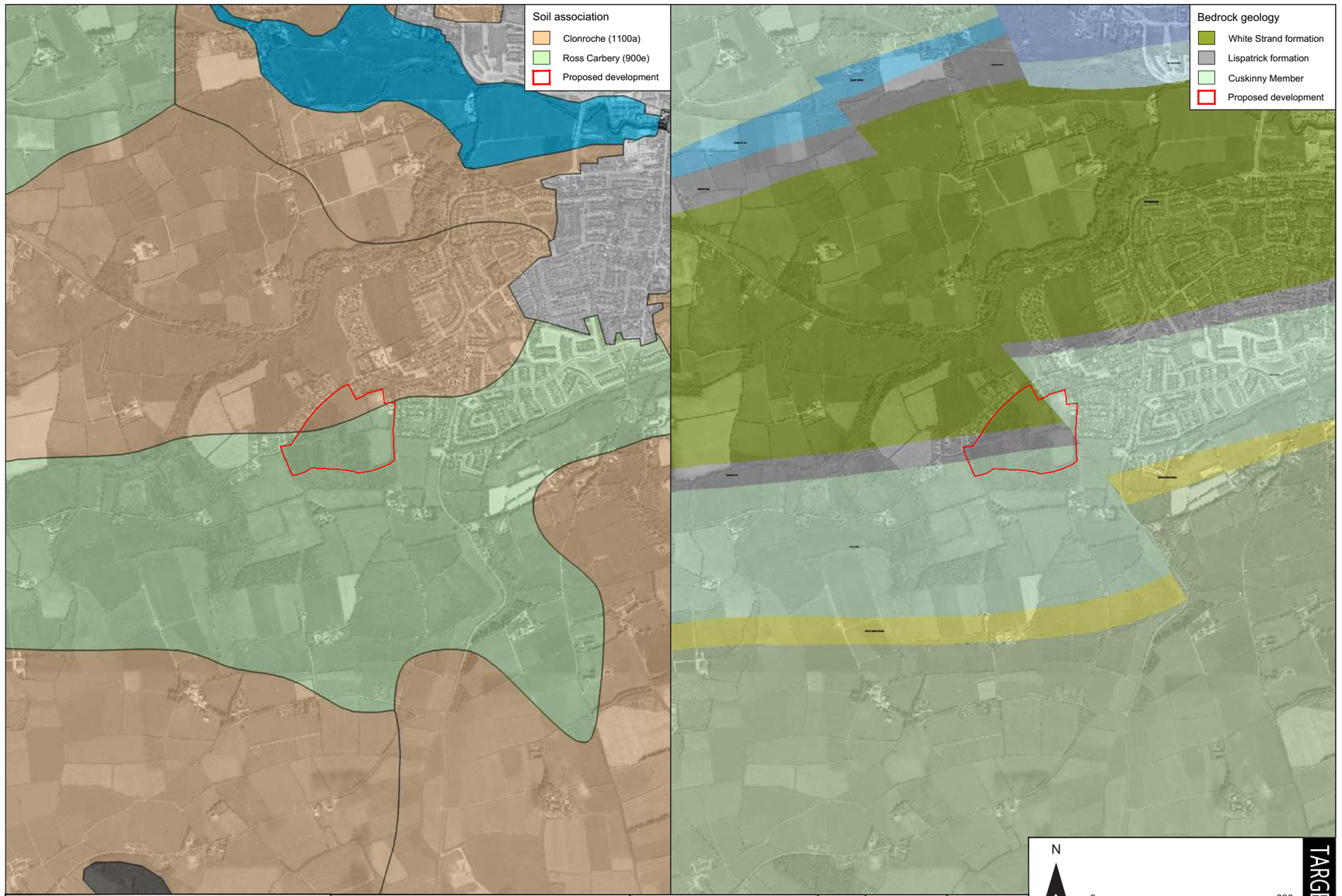




Project	Proposed large-scale residential development (LRD) at Mountain Road, Kilmoney townland, Carrigaline, Co. Cork	**Client**	Bridgewater Construction Ltd.	**Figure**	Site location diagram	**Fig.**	1	**Scale**	1:75,000 & 1:25,000 @ A4	**TAG**	2023IE6

N

TARGET



Project	Proposed large-scale residential development (LRD) at Mountain Road, Kilmoney townland, Carrigaline, Co. Cork	**Client**	Bridgewater Construction Ltd.	**Figure**	Soil & geological context of the proposed development	**Fig.** 2	**Scale** 1:20,000 @ A3	**TAG**	2023IE6

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Site location
1km radius from site boundary
SMR Zone & National Monument
Townland boundary
Aerial imagery © Google & Maxar Technologies 2023

CO098-014
CO098-016
CO098-015
CO098-019
CO098-013
CO098-018
CO098-017002
CO098-085
CO098-009
CO098-079
CO098-012

Shanagraigue
Kilmoney
Knockalurgan
Coolsallagh
Ballinlining
Ballinvarosig

N
0 m 400

Project	Proposed large-scale residential development (LRD) at Mountain Road, Kilmoney townland, Carrigaline, Co. Cork	**Client**	Bridgewater Construction Ltd.	**Figure**	Recorded monuments & places (RMPs)	**Fig.** 3	**Scale** 1:10,000 @ A3	**TAG** 2023IE6

TARGET

Project	Proposed large-scale residential development (LRD) at Mountain Road, Kilmoney townland, Carrigaline, Co. Cork	**Client**	Bridgewater Construction Ltd.	**Figure**	Greyscale areas M1-M11	**Fig.** 4	**Scale**	1:1500 @ A3	**TAG** 2023IE6

Project	Proposed large-scale residential development (LRD) at Mountain Road, Kilmoney townland, Carrigaline, Co. Cork	**Client**	Bridgewater Construction Ltd.	**Figure**	Interpretation areas M1-M11	**Fig.** 5	**Scale** 1:1500 @ A3	**TAG**	2023IE6

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APPENDIX 14-3 Walkover Survey Photos

APPENDIX 14.3: WALKOVER SURVEY PHOTOS

The proposed development site is accessed off the R611, Mountain Road, c. 2km to the southwest of the town of Carrigaline. The proposed development site comprises a total of fourteen fields (Plate 1), one of which is under dense woodland and was not inspected.

Fields numbered M1-M11 underwent geophysical survey using high-resolution magnetometry as detailed in the geophysical report by Nicholls (2024). The survey aimed to identify potential subsurface archaeological anomalies across these fields. However, Fields 12-14 were deemed unsuitable for geophysical survey due to vegetation cover and ground conditions. To maintain consistency, the numbering system established in the Geophysical Report is used in this report with additional fields numbered sequentially as 12, 13 and 14. A total of thirteen fields were walked the following observations were made;

- Four fields (M6-M9) at the northeastern part of the proposed development site are under level pasture divided by post and wire fencing and in use to exercise horses. To the east of the fields is a modern residential house and modern galvanised farm sheds which are accessed via a local road running south off Mountain Road;
- Nine fields (M1-M5, M10 and M11, 12 and 13) were found to be under low-lying hummocky rough pasture with pockets of rushes throughout. These fields are enclosed by very dense, wide hedgerows, one of which is up to 20m in width;
- One area (14) in the southern central section of the proposed development site is in dense woodland. It is heavily overgrown with trees and briars which obscure the ground surface making the detection of any potential archaeological sites extremely difficult. It was therefore, not inspected. This woodland is planned to be incorporated as part of an active open space for future residents, featuring amenities such as a wooded play area, a green amphitheater, a kick-about lawn and an exercise station.

No archaeological finds or features were noted during the site walkover survey.

Plate 1: Proposed development site on aerial photograph with individual fields numbered www.googlemaps.ie

Plate 2: Field 1, looking southeast

Plate 3: Field 2, looking northwest

Plate 4: Field 3, looking southwest

Plate 5: Field 3, looking northwest

Plate 6: Field 4, looking south

Plate 7: Field 5, looking northeast

Plate 8: Field 6, looking southwest

Plate 9: Field 10, looking north

Plate 10: Field 10

Plate 11: Field 11, looking southwest

Plate 12: Field 11, looking east

Plate 13: Field 12, looking southwest

Plate 14: Field 13, looking southeast